29. 1934

In the Privy Council.

No. 63 of 1933.

ON APPEAL FROM THE SUPREME COURT OF CANADA.

BETWEEN

LIGHTNING FASTENER COMPANY LIMITED
(*Plaintiff*) *Appellant*

AND

COLONIAL FASTENER COMPANY LIMITED AND
G. E. PRENTICE MANUFACTURING COMPANY
(*Defendants*) *Respondents.*

RECORD OF PROCEEDINGS.

INDEX OF REFERENCE.

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EXHIBITS.

In the Privy Council.

No. 63 of 1933.

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BETWEEN

LIGHTNING FASTENER COMPANY LIMITED
(*Plaintiff*) *Appellant*

AND

COLONIAL FASTENER COMPANY LIMITED AND
G. E. PRENTICE MANUFACTURING COMPANY
(*Defendants*) *Respondents.*

RECORD OF PROCEEDINGS.

In the Exchequer Court of Canada.

No. 1. Statement of Claim, 17th April 1931.

No. 1.

Statement of Claim.

IN THE EXCHEQUER COURT OF CANADA.

Suit No. 13145.

BETWEEN :

LIGHTNING FASTENER COMPANY, LIMITED - *Plaintiff*

AND

COLONIAL FASTENER COMPANY, LIMITED and
G. E. PRENTICE MANUFACTURING COMPANY - *Defendants.*

Filed this 17th day of April, 1931.

Law Stamps ($2.00)

1. The plaintiff, LIGHTNING FASTENER COMPANY, LIMITED, is a joint stock company duly organized under the laws of the Dominion of Canada, and having its principal office at the City of St. Catharines in the Province of Ontario, Canada.

In the Exchequer Court of Canada.

No. 1. Statement of Claim, 17th April 1931—*continued.*

2. The defendant, COLONIAL FASTENER COMPANY, LIMITED, is a joint stock company duly organized under the laws of the Dominion of Canada and having its principal office and chief place of business at the City of Montreal, in the Province of Quebec, Canada.

3. The defendant, G. E. PRENTICE MANUFACTURING COMPANY, is a joint stock company having its principal office and chief place of business at New Britain, in the State of Connecticut, one of the United States of America.

4. By Letters Patent of the Dominion of Canada, No. 210,202, bearing date the 5th day of April, 1921, under the hand of Geo. F. O'Halloran, Commissioner of Patents, and the Seal of the Patent Office of Canada, there was granted to Kynoch Limited as assignee of Gideon Sundback for a period of 18 years from the date of the said Letters Patent, the exclusive privilege and liberty of making, constructing, using and vending to others to be used in the Dominion of Canada, an invention consisting of new and useful improvements in Machines and Methods for Producing Straight and Curved Fastener Stringers, description of which is contained in the specification of which a duplicate is attached to the said Letters Patent and made an essential part thereof. For greater certainty as to the description of the invention the plaintiff craves leave to refer to the original Letters Patent specification and drawings when produced to this Honourable Court.

5. The said Letters Patent were duly assigned to Canadian Lightning Fastener Company, Limited, as appears by assignment duly registered in the Patent Office of Canada, to which said assignment for greater certainty the plaintiff craves leave to refer when produced to this Honourable Court.

6. The said Canadian Lightning Fastener Company, Limited, by Supplementary Letters Patent, dated January 27th, 1928, under the hand of Fernand Rinfret and the Seal of the Secretary of State of Canada, changed its name to Lightning Fastener Company, Limited, the present plaintiff.

7. The plaintiff and its predecessors in title have complied with all the provisions and requirements of *The Patent Act* and other Statutes affecting patents, and the said patent No. 210,202 is now in full force and effect and the title thereto is fully vested in the plaintiff.

8. The defendant, Colonial Fastener Company, Limited, without license, permission or assent of the plaintiff or its predecessors in title, has since the date on which the said Letters Patent were issued, manufactured and used within the Dominion of Canada, machines which embody the invention described in the above recited Letters Patent, and has manufactured, used and sold to others to be used in the Dominion of Canada, the product of said machines, embodying the invention described in the above recited Letters Patent, and has infringed and is still infringing the said Letters Patent, and threatens to continue to do so unless restrained by order of this Honourable Court.

9. The defendant, G. E. Prentice Manufacturing Company, without license, permission or assent of the plaintiff or its predecessors in title, has since the date on which the said Letters Patent were issued, imported and caused to be imported into the Dominion of Canada, and has sold to others to be used in the Dominion of Canada, and has licensed others to use within the Dominion of Canada, machines which embody the invention described in the above recited Letters Patent, and has infringed and is still infringing the said Letters Patent, and threatens to continue to do so unless restrained by order of this Honourable Court.

10. By reason of the wrongful acts of the defendants, the plaintiff has suffered loss and damage.

THE PLAINTIFF THEREFORE CLAIMS:

(a) A declaration that the defendant, Colonial Fastener Company, Limited, has infringed the said Letters Patent by the importation and use of machines embodying the invention above referred to and by the manufacture, use and sale of the product of such machines.

(b) A declaration that the defendant, G. E. Prentice Manufacturing Company, has infringed the said Letters Patent by the importation, use and sale of machines embodying the invention above referred to and by licensing the said Colonial Fastener Company, Limited, to use the said machines.

(c) A declaration that the hereinbefore recited Letters Patent are good, valid and subsisting Letters Patent.

(d) That an injunction may be awarded restraining the defendants, their servants, agents and workmen from manufacturing, using and selling machines and/or articles embodying the invention described in the above Letters Patent.

(e) That the defendants may be ordered to deliver up to the plaintiff all articles in their possession or under their control which infringe the above recited Letters Patent.

(f) Payment of damages or profits as the plaintiff may elect.

(g) That all necessary accounting may be taken and enquiries made.

(h) Such further and other relief as the nature of the case may require and to the Court shall seem just.

(i) Costs.

(Signed) RUSSEL S. SMART,
(Signed) HAROLD G. FOX,
Of Counsel for the Plaintiff.

I HEREBY CERTIFY that the above document is a true copy of the original filed of record in the Exchequer Court of Canada.
Registrar's Office, Ottawa, April 17th 1931.

Arnold W. Duclos,
Deputy Registrar.

In the Exchequer Court of Canada.

No. 1. Statement of Claim, 17th April 1931—*continued.*

NOTICE TO THE DEFENDANTS WITHIN NAMED:

You are required to file with the Registrar of the Exchequer Court of Canada, at his office at the City of Ottawa, your plea, answer or exception or otherwise make your defence to the within statement of claim within four weeks from the service hereof. If you fail to file your plea, answer or exception or otherwise make your defence within the time above limited, you are to be subject to have such judgment, decree or order made against you as the Court may think just upon the plaintiff's own showing, and if this notice is served upon you personally you will not be entitled to any further notice of the further proceedings in the case.

This Statement of Claim is filed by

HAROLD G. FOX,
52 Niagara St.,
St. Catharines, Ont.
Solicitor for the Plaintiff.

Ottawa Agents: SMART & BIGGAR,
Victoria Building,
Ottawa, Ontario.

No. 2. Particulars of breaches, 17th April 1931.

No. 2.

Particulars of Breaches.

The following are the particulars of breaches complained of in the Statement of Claim herein.

1. The defendant, Colonial Fastener Company, Limited, is using at its factory in Montreal, Canada, machines which embody the invention described in the plaintiff's Letters Patent and has manufactured, used and sold to others to be used within the Dominion of Canada, from its factory in Montreal, Canada, the product of the said machines in infringement of the plaintiff's Letters Patent.

2. The defendant, G. E. Prentice Manufacturing Company, has manufactured in the United States of America and has imported into Canada and sold to Colonial Fastener Company, Limited, and has licensed the use in Canada by Colonial Fastener Company, Limited, machines which embody the inventions described in the plaintiff's Letters Patent.

3. The claims of the said Letters Patent No. 210,202 infringed by both defendants are claims Nos. 1 to 20 inclusive.

Delivered this 17th day of April, 1931.

HAROLD G. FOX,
St. Catharines, Ontario,
Solicitor for the Plaintiff.

No. 3.

Defence of both Defendants.

No. 3. Defence of both Defendants, 27th June 1931.

Statement of Defence on behalf of both defendants filed this 27th day of June, 1931.

1. The Defendants do not admit the allegations of the Statement of Claim and put the Plaintiff to the proof of the said allegations more particularly the allegations contained in paragraphs 1, 4, 5, 6 and 7 and deny the allegations contained in paragraphs 8, 9 and 10 of the Statement of Claim.

2. The Defendant G. E. Prentice Manufacturing Company does not admit the jurisdiction of this Honourable Court to try and adjudicate on the allegation of infringement alleged against it in the Statement of Claim.

3. The Defendants have not infringed the Patent referred to in the Statement of Claim herein.

4. The Patent referred to in the Statement of Claim is invalid for the reasons and on the grounds appearing in the Particulars of Objections delivered herewith.

5. The Defendants submit that this action should be dismissed with costs.

FRANK McCARTHY,
Of Counsel for Defendants.

No. 4.

Particulars of Objections.

No. 4. Particulars of objections, 27th June 1931.

The Letters Patent mentioned in the statement of Claim is invalid on the following grounds :

1. The machine and methods alleged to have been invented were not patentable in law and there was no invention having regard to the common knowledge of the art at the date thereof and to the patents and prior knowledge hereinafter set out.

2. The machines and methods alleged to have been invented described in the said patent were not new at the date of the alleged invention thereof or of the application for the said patent or of the grant of said patent; they were known and/or used by others before the date of said invention as appears from

(a) The common knowledge of the art at the said date;
(b) The prior knowledge shown by the following Letters Patent and by the application therefor;

In the Exchequer Court of Canada.

No. 4. Particulars of objections, 27th June 1931—*continued.*

PART I.

Great Britain

No.	Date	Inventor
24,444	Nov. 1, 1906.	
Accepted	May 16, 1907.	Bernhard Baron

United States

894,192	July 28, 1908.	Arthur Dansereau
85,249	Dec. 22, 1868.	Alfred J. Shipley
102,195	Apr. 19, 1870.	Solomon W. Young
584,773	June 22, 1897.	William H. Dougherty
799,624	Sept. 19, 1905.	Rudolph H. Beck and Henry Druschal
997,485	July 11, 1911.	John H. Alexander and William J. Brinkman
782,184	Feb. 7, 1905.	William J. Yeoell
1,027,454	May 28, 1912.	Frederick E. Willits
979,217	Dec. 20, 1910.	Charles F. Smith
986,232	Mar. 7, 1911.	Charles F. Smith
852,103	Apr. 30, 1907.	William H. Church
381,716	Apr. 24, 1888.	Samuel J. Murray
266,004	Oct. 17, 1882.	Robert Smith Allen
361,928	Apr. 26, 1887.	Harry A. Clow
199,524	Jan. 22, 1878.	Thomas B. Doolittle
240,477	Apr. 19, 1881.	Daniel C. Stover
292,467	Jan. 29, 1884.	Curtis B. Brainard
588,099	Aug. 10, 1897.	J. G. Blount and F. P. Robinson
948,615	Feb. 8, 1910.	Alonzo Comstock Pratt
785,652	Mar. 21, 1905.	Albert J. Bates.
699,760	May 13, 1902.	Whitcomb L. Judson
879,965	Feb. 25, 1908.	Vernon Hoxie
804,403	Nov. 14, 1905.	Vernon Hoxie
815,835	Mar. 20, 1906.	John G. Iverson
597,701	Jan. 18, 1898.	C. O. White
612,074	Oct. 11, 1898.	George W. Webb
805,726	Nov. 28, 1905.	Ole Hove
804,292	Nov. 14, 1905.	Erwin C. Wood

Germany

252,380	Mar. 29, 1912.	Johannesberg G.M.C.H.

PART II.

United States Patents

No.	Date	Inventor
1,075,492	Oct. 14, 1913.	Theodore P. Payne
1,133,594	Mar. 30, 1915.	Edward E. Wakefield
1,122,440	Dec. 29, 1914.	George P. Thomas
1,117,711	Nov. 17, 1914.	Ralph C. Simmons
1,114,177	Oct. 20, 1914.	Oscar J. Oln
1,271,944	July 9, 1918.	Anders Anderson Rosengren
1,146,952	July 20, 1915.	Andrew Raiche
1,108,837	Aug. 25, 1914.	Claude R. Dodge
1,108,836	Aug. 25, 1914.	Claude R. Dodge
1,197,627	Sept. 12, 1916.	Eduardo H. Heusch
1,093,297	Apr. 14, 1914.	Wm. S. Southwick

(c) The prior knowledge of the several applicants for the patents as set forth in paragraph 2 (*b*).

(d) The knowledge and/or use of the following persons :

1. George Edward Prentice of Berlin, Connecticut, U.S.A.
2. United Shoe Machinery Company and/or its officers at Beverly and Boston, Mass., U.S.A.
3. Carr Fastener Company and/or its officers at Cambridge, Massachusetts, U.S.A.
4. E. J. Manville Machine Company and/or its officers at Waterbury, Connecticut, U.S.A.
5. Waterbury Farrell Foundry and Machine Company and/or its officers of Waterbury, Connecticut, U.S.A.
6. Baird Machine Company and/or its officers formerly of Oakville, Connecticut, now of Bridgeport, Connecticut, U.S.A.

3. The machines and methods alleged to have been invented had been described in printed publications more than two years prior to the date of the application for the said Letters Patent as follows :

(a) In the Patents set out in Part 1 of paragraph 2 (b).

(b) In the following catalogues and bulletins :

(1) Catalogue " Knuckle Joint and Horizontal and Special Presses with Feeds and Attachments " published in 1908 by Waterbury Farrell Foundry and Machine Company of Waterbury, Connecticut, U.S.A.

(2) Catalogue " Power Press " published in 1908 by E. J. Manville Machine Company of Waterbury, Connecticut, U.S.A.

(3) Bulletin #204 entitled " Baird Single Action Pillar Pattern Presses " published in June, 1910, by Baird Machine Company of Bridgeport, Connecticut, U.S.A.

In the Exchequer Court of Canada.

No. 4. Particulars of objections, 27th June 1931—*continued.*

4. The alleged invention was with the consent of the patentee in public use or on sale for more than two years prior to the date of the application for Letters Patent among others by the following :

(a) Universal Fastener Company of Chicago, Illinois, from the year 1895 to the year 1905.

(b) Automatic Hook and Eye Company of Hoboken, New Jersey, from the year 1905 to the year 1914.

(c) Hookless Fastener Company of Meadville, Pennsylvania, U.S.A.

5. The machine and method alleged to have been invented were merely the result of mechanical skill in adapting the subject matter of the prior art and the Letters Patent hereinbefore in paragraph 2 (b) referred to, and do not show any invention or inventive step over same.

6. The machines and methods alleged to have been invented were not constructed or manufactured in Canada in accordance with conditions of said Letters Patent.

7. The subject matter of the alleged invention was imported into Canada contrary to the conditions of the said Letters Patent.

8. The alleged invention was not useful.

9. The Letters Patent referred to in the Statement of Claim does not describe the alleged invention thereof, to machine and/or method as required by law in such full, clear and exact terms as to enable any person skilled in the art or science to which the said Letters Patent appertains, or with which it is most nearly connected, to make or use the same, and does not point out and distinctly claim the parts or improvements claimed as the patentee or patentees alleged invention or inventions as required by law.

10. (a) The claims of the said Letters Patent do not state distinctly the things or combinations which the applicant regards as new and in which he claims an exclusive property and privilege.

(b) The said claims claim more than the applicant invented, if he invented anything.

11. The method claims 19 and 20 contained in the said Letters Patent show no invention and are unpatentable as showing a mere scientific principle or abstract theorem.

Delivered with the Statement of Defence this 27th day of June, 1931, by McCarthy & McCarthy, Solicitors for the Defendants.

No. 5.

Notice to amend Particulars of Objections.

TAKE NOTICE that a motion will be made on behalf of the defendants before the presiding Judge at the opening of the trial of this action on Wednesday, the 3rd day of February, 1932, for an Order amending paragraph 2 of the defendants' Particulars of Objections filed herein by adding to paragraph 2 (b) Part I, the following :—

" CANADIAN PATENT

No. 107456, Sept. 17, 1907, Peter Aronson, Devon, Conn.

UNITED STATES PATENTS

No. 136,340, Feb. 25, 1873, Samuel W. Shorey, Boston, Mass.
No. 295,513, Mar. 25, 1884, Geo. C. Baker, Des Moines, Iowa.
No. 525,914, Sept. 11, 1894, Albert D. Major, Detroit, Mich.
No. 614,786, Nov. 22, 1898, Walter E. Bennett, Portsmouth, N.H.
No. 683,599, Oct. 1, 1901, John H. Goodfellow, Lowell, Mass.
No. 763,804, June 28, 1904, Frank A. Seiberling, Akron, Ohio.

GERMAN PATENT

No. 254,038, Dec. 17, 1911, Gustav Gastrich, Barmen, Germany.

and to paragraph 2 (d), Part II, the following :—

" 7. Vulcanite Manufacturing Company and/or its officers at Lindenhurst, Long Island."

and for such further and other Order as to the said Court may seem meet.

AND TAKE NOTICE that upon and in support of the said Motion will be read pleadings in the action and the affidavit of S. A. Hayden filed.

Dated at Toronto, this 8th day of January, 1932.

McCarthy & McCarthy,
Solicitors for the Defendants.

To : Harold G. Fox,
Solicitor for the Plaintiff.

In the Exchequer Court of Canada.

No. 6. Notice to amend particulars of objections, 20th January 1932.

No. 6.

Notice to amend Particulars of Objections.

TAKE NOTICE that a motion will be made on behalf of the Defendants before the presiding Judge at the opening of the trial of this action in Ottawa, on Wednesday the 3rd day of February, 1932, or so soon thereafter as the motion can be heard, for an order amending par. 2 of the Defendants' Particulars of Objections filed herein by adding to par. 2 (d) the following :—

> " The knowledge and/or use of Automatic Hook and Eye Company, and/or its Officers, and/or its employees, at Hoboken, N.J., U.S.A., from at least January 23rd, 1907, and the several years thereafter down to August 1, 1913."

AND TAKE NOTICE that upon and in support of the said motion will be read the pleadings in the action and the affidavit of Salter A. Hayden, filed.

DATED at Toronto this 20th day of January, A.D. 1932.

McCARTHY & McCARTHY,
Solicitors for the Defendants.

To : HAROLD G. FOX, ESQ.,
Solicitor for the Plaintiff.

No. 7. Motion to amend defence and particulars of objections, 3rd February 1932.

No. 7.

Motion to amend Defence and Particulars of Objections.

Before the Honourable A. K. MacLEAN, President.

(Geo. H. Playle, sworn as Reporter)

Arnold W. Duclos, K.C., Deputy Registrar.

COUNSEL :

O. M. BIGGAR, K.C.
RUSSEL S. SMART, K.C. and
HAROLD G. FOX } For the Plaintiff.

D. L. McCARTHY, K.C., and
S. A. HAYDEN, } For the Defendants.

Mr. McCARTHY : I have a motion to amend the Defence, notice of which was first given by letter in November last, and then a formal notice was served on the 11th of January, asking to amend the second paragraph of the Particulars of Objection by adding certain parts, set forth in the Notice.

I am asking that the Particulars of Objection be amended accordingly.

We are abandoning the last paragraph of the notice, 2 (d) part 2.7.

Then the other notice is to add to paragraph 2 (d) (Proposed addition read).

HIS LORDSHIP: The Automatic Hook & Eye Company not being a party to the action?

These notices were given on the dates indicated?

Mr. MCCARTHY: Yes, one was sent by letter on November 23rd, before the Examinations for Discovery were had.

Mr. SMART: With respect to the first Notice of Motion, that dealing with the various patents, which my friend said was given in November, what happened was that in November McCarthy & McCarthy wrote to Mr. Fox the solicitor for the plaintiff and advised that they proposed before the trial to amend the Particulars. Some time later, in December, Mr. Fox wrote McCarthy and McCarthy, in the form of an affidavit. (Reading affidavit.)

So my learned friend had ample notice that if they wished to have their pleadings in this form and wished us to prepare for trial on the basis of the Pleadings as amended, they should have moved, instead of which they simply served this notice a few days before the trial.

With regard to the second motion, I object to that on the general ground that it is too late, a motion of that character just at the trial. That was not covered by the notice of November.

The rule as to an amendment of that kind is contained in a very recent issue of the Reports of Patent Cases, Volume 48, page 475.

HIS LORDSHIP: It is quite clear that the notice should have been given long ago. It is not proper to make a motion like this at this time.

On the other hand, it is not very satisfactory to either plaintiff or defendant to have a patent case half tried, it simply means further litigation at some other time. I shall allow both amendments to be made, with leave to the plaintiff to move for an adjournment of the action if you are taken by surprise.

The matter of costs I will reserve.

I hope in the end neither motion will turn out to be of any importance.

In the Exchequer Court of Canada.

No. 8. Opening statement by Mr. Smart, 3rd February 1932.

No. 8.

Opening Statement by Mr. Smart.

Mr. SMART: My Lord, I think it might be useful if I explain something about the nature of the case.

HIS LORDSHIP: Yes, I wish you would, and I am going to ask the other side to state in considerable detail their defence. I think it may save time.

Mr. SMART: The patent in question was issued in 1921 to Mr. Gideon Sundback for an invention relating to a machine for making sliding fasteners. I think your Lordship is familiar with the general type of fastener to which these machines relate. (Showing sample.)

HIS LORDSHIP: What is the difference between this and the Prentice?

Mr. SMART: Your Lordship was concerned with litigation in which the present defendant was the plaintiff. The litigation at that time had to do with the so-called spiral form of fastener, (Showing sample) where there was a slider and another meshing spiral wire which held the fastener together. At that time that was the only fastener being made by the Prentice Company. The slider causes the ends of the spiral wires to engage with each other.

Here is one fastener of the plaintiff with a little hole in it in the sliding member so that the way the members engage with each other can be seen.

There are two stringers. Clamped on that cord at short intervals are a series of fastening elements or units. Each of those units has a pin on one side, a little projection, and on the other side a little socket, with the result that when they are held together they are like a regiment of soldiers who are so close together that they cannot fall down. When you once get them into engagement the pin on the top of one element fits into the socket on the other element, and they are all held so closely together that they are practically inseparable, yet they may be flexed and bent and all kinds of things done with them. They are enormously useful.

HIS LORDSHIP: That is considered to be an improvement over Prentice?

Mr. SMART: Well, Mr. Prentice, knowing our fastener was on the market, commenced its manufacture. I have here one of the kind of fasteners made by the defendant.

HIS LORDSHIP: That is not this action, though?

Mr. SMART: Well it is as far as the machine making them is concerned.

You will see that as far as the stringer with the fastening element is concerned there is no substantial difference between the plaintiff's and the defendant's.

This spiral fastener was developed much later than this Sundback type, as an alternative to it, which did not meet the high hopes which even Mr. Prentice had at the time of our last trial.

HIS LORDSHIP: Sundback was an English company?

Mr. SMART: No, the Canadian rights were owned by Kynoch Limited, and the Canadian Lightning Fastener Company took over the Canadian patent. Mr. Sundback is a Swede, a highly technical engineer familiar with automatic machines. He was brought into the matter about 1908——

HIS LORDSHIP: The issue here relates to a machine which produces this fastener?

Mr. SMART: Yes, it produces the stringers from which the fasteners are made, the beaded tape on which the fastening elements are placed. The fastener is made by assembling two sections of this stringer, with a slider which brings them together.

HIS LORDSHIP: The machine does not produce the tape?

Mr. SMART: No, simply manufactures the fastening elements. Into the machine we feed at one end the tape, and a thin ribbon of metal, from which the fastening elements are made, and held in the metal strip and moved towards the tape and compressed about the tape, so that from the machine we get a continuous tape with the fastening elements arranged on it as they should be in the fastener, with gaps between them. That is it will make say ten inches of tape with fasteners on it, then it will jump a certain number of inches without fasteners, so that to make the finished fastener one just cuts up the tape into lengths and assembles it in pairs with the slider.

If your Lordship will look at this sample with the hole in it you will see the way they are forced into and out of engagement with each other. The slider just bends them into and out of engagement with each other, and when they are once in engagement they remain so.

The formation of an article as small as these fastener elements and the application thereof to a tape, is a considerable problem, because in order to compete with other forms of fasteners, that is hooks and eyes, buttons, etc., the cost must be low. One could not afford to make these individual elements by hand and apply them to a tape. Yet it must be done with an almost inconceivable degree of accuracy. They work within 1/4000ths of an inch.

In the machine which applies these fastening elements to the tape no less than three are applied per second, so that the machine makes an inch of this tape, with the fastening elements accurately spaced on it——

HIS LORDSHIP: Have you a sample of the metal that is fed into the machine?

Mr. SMART: Yes, (Showing coil of metal strip) and tape with beaded or corded edge.

HIS LORDSHIP: When was that machine patented?

Mr. SMART: Issued in 1921 in Canada on an application filed in 1918. There was an application filed in the United States in 1916.

In the Exchequer Court of Canada.

No. 8. Opening statement by Mr. Smart, 3rd February 1932—*continued.*

I have here some of these little units before they are applied and pressed on to the tape. The dimensions are of the order of 1/32nd of an inch, and that increases the problem of an automatic machine not only to form such small articles but to hold these articles after they are formed and move them into position on the tape.

On these little elements, each of them, there is a socket formed on one side and a little projection or pin on the other. That is what forms the interlocking of the fastener.

HIS LORDSHIP: You might call it a lug.

Mr. SMART: Yes. What this machine does is, at one end this ribbon of metal is fed in, and it is moved step by step in little short movements, jerks. There is a feeding mechanism at the back which does that.

The first thing that happens is the punching out of a blank from which these little elements are to be formed. They are punched out of the centre of this ribbon. They are separated from the ribbon but they are put back into the ribbon so that they may be carried on with the ribbon as the ribbon moves forward.

The next step or two it comes under the action of a forming punch and die, which puts the projection and recess into it, still maintaining its position in the ribbon, remaining guided and controlled by the ribbon of metal.

HIS LORDSHIP: What is underneath the ribbon as it travels?

Mr. SMART: There is a guideway through which it moves.

Also during this punching operation there are sort of wedges which temporarily hold it while the punching takes place, because these things have to be done with a considerable degree of accuracy.

It continues to move forward, the complete element with these open jaws diverging at quite an angle is fed forward step by step until the jaws come right over the edge of the bead on the tape. The tape at the same time is being fed step by step across the path of these jaws, there is a special tape-feeding mechanism. It is necessary that this tape should be fed with extreme accuracy across these jaws.

When it gets into position, when the jaw of the little fastening unit straddles the tape there are two pressure members which come in and squeeze the wide open jaws together about the tape, so that they are then firmly fastened to the tape, as one sees in the finished fastener, and in the exact space relationship, due to the co-ordination of the feeding mechanism on the metal strip, the feeding mechanism for the fastening element and the feeding mechanism for the tape. Therefore the whole machine is automatic when one starts it up and supplies it with the metal ribbon and the tape. It operates at quite a high speed, 175 r.p.m., and one gets at the rate of 3 per second these little fastening units actually made and formed and put on the tape. So an inch of this, that is 20 units, would be formed in a few seconds. When I said 20 units I mean 10 on each side.

That was the first automatic machine for forming these stringers with the fastening elements spaced on them; and having regard to the problem of speed and accuracy and cost with which it must be done, and to the fact that it applies these small units to a yielding material such as tape, I think we will show your Lordship that it involved a very considerable problem.

The history of the development bears that out. It runs back a number of years, because the present success of this type of fastener in the market is due not only to the form of the fastener but to the possibility of forming it on a machine of this type. The form of the fastener is in some respects governed by the necessities of the machine which makes it. That explains in part, perhaps, some of the previous failures.

The idea of a separable fastener which would do away with buttons, or with hooks and eyes, laces, etc. was attractive for many years. In 1893 Mr. Walker, who is still the President of the Hookless Fastener Company in the United States, which owns the corresponding United States rights to those owned in Canada by the Lightning Fastener Company, became interested in Chicago in the so-called Judson Fastener. The Judson Fastener was of course a great distance away from anything here. (Specimen shown). It was a series of two chains with hooks. Between the chains there were links, and the theory was that the hooks on the chain one side would fit in the links of the chain on the other.

There was a great deal of money spent in manufacturing, in the main by hand, apart from the formation of the individual parts, which could be stamped out; there was a great deal of money spent not only in an attempt to make these, but on attempting to get a machine which would enable it to be turned out at a competitive cost. Operations were first carried on in Chicago, then they interested some new capital and it moved to Illyria and then to Catasaugua, and then, as the provision of a machine on which the fastener could be made in quantity seemed to be the principal problem, it moved to Waterbury, Connecticut, which is the centre of a large industry for building automatic machines. From $65,000 to $70,000 was spent in endeavouring to get a machine which would make this old type of fastener. Nothing satisfactory resulted. The Company exhausted several series of capitalists, although the original parties still retained an interest. In 1906 the concern moved to Hoboken where a modified or different form of fastener was developed, still in the hope that it could be made on an automatic machine. That was called the C-curity fastener, and had the idea of the fastening elements being mounted on tape. These fastening elements were sheet metal parts, which were bent around, on one side it had a lot of hook elements, that is little cylinders of metal bent around the bead on the tape with hooks at one end, and on the other one had eyes into which the hooks engaged, and a slider by which the two were brought into engagement.

In making that they had a machine called the Aaronson machine, which did part of the operations. These little elements were separately formed and then they were placed by hand by girls one by one in what is

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No. 8.
Opening statement by Mr. Smart, 3rd February 1932—*continued.*

called a magazine, which was fed forward, and after they once got into the magazine they were brought below the tape—they were sort of U-shaped —and put with the U up, and there was a tape going across, and at intervals the tape was forced down. Your Lordship will probably hear more about that machine, it was hand fed, it did not apply the elements to the tape in the same way, nor clamp them on to the tape. It was not satisfactory in its operation, and although owned by those who still control the Hookless Fastener Company, it dropped out of sight.

One difficulty with this type of fastener also was that on buckling it would tend to open. There was also the difficulty that a separate and different form of member had to be made for each side of the tape. On one side there is the hook member and on the other an eye.

HIS LORDSHIP: They were made separately, and manually put into the magazine, and automatically fed to the tape?

Mr. SMART: Yes, and the tape forced down on them.

About that time Mr. Sundback, who was an electrical engineer with the Westinghouse Company, and had special skill in automatic machines, was brought in, and the first thing he did was somewhat of an improvement on the C-curity Fastener; they made what was called a Plako fastener, in an attempt to make a more satisfactory form of fastener. There was a difference in the form of the eye member, by which it was more securely engaged in the hook member.

But although a great deal of money and effort was spent on that, no satisfactory market developed, and about 1908 the company was in financial difficulty and could hardly carry on its operations. In fact from 1908 to 1912 Mr. Sundback kept the plant going, that is the machine shop, by engaging in the designing of special automatic machinery for outside customers.

About 1912 he was again induced by Mr. Walker to interest himself in a fastener which was likely to be practical to manufacture and successful on the market, and he developed what was called Hookless No. 1, which is a different type of fastener, although using on one side the beaded tape and on the other side using spring elements which are spread apart to grip over the tape. It sounds an attractive form, but in fact it was a complete failure on the market. It would work, but it was a commercial failure. The difficulty was in the manufacture, there was no machine that could make and apply the elements to the tape, and it does not open and close with anything like the facility of the others. Anyway it disappeared from the picture.

HIS LORDSHIP: The public did not like it?

Mr. SMART: They did not have a chance to like it, it was regarded by those in control as unsatisfactory, and was not put on the market.

Then for two years, 1913–14, Mr. Sundback was engaged in the development of this machine and of the fastener which I have explained to your Lordship. The United States application was filed in March, 1916, the Canadian on October 21st, 1918, issued on April 5th, 1921.

The history in Canada is slightly different as far as the commercial aspects are concerned. Mr. Sundback, who himself owned the rights to the inventions in Canada, had made arrangements with Kynoch Limited, a subsidiary of the Imperial Chemical Company, for the British and the Canadian rights. Kynoch Limited, through an associated company, the British Metal Corporation and the Dominion Cartridge Company, by that time having the complete machine covered by the patent, and having those operated in England, took up the question of the Canadian market. They carried on operations for two years, until the Canadian Lightning Fastener Company was formed, controlled by Mr. Sundback, he repurchased from them the rights in Canada. The Lightning Fastener Company has a considerable plant at St. Catherines and supplies the Canadian market.

The output of these machines is so large that only ten or so are necessary to supply the whole market in Canada.

Turning to the defendants, the infringement complained of is the lease by the Prentice Manufacturing Company of Connecticut to the Colonial Fastener Company of Montreal of, I think, three machines, which are operated by the latter company under an agreement the nature of which does not appear, and which is not important. It also appears that the product of other machines of the same type, which Prentice operates in New Britain, Connecticut, have been sold by the Prentice Company itself in Canada.

Mr. Prentice developed in 1924 this spiral type of fastener, and engaged in the manufacture and sale of that for two or three years, was entirely engaged in it at the time of the last trial. He still manufacturers it, but not to as great an extent as the fastener made on the machine here complained of. The spiral type, according to Mr. Prentice, has been found unsatisfactory for overshoes on account of the flexing and breaking of the spiral.

With a full knowledge of what Mr. Sundback's company was doing, he commenced the manufacture of a machine which we say is substantially equivalent to the machine of the plaintiff.

HIS LORDSHIP: Does the Prentice machine make the same type of fastener?

Mr. SMART: Yes. (Brown Specimen.) Your Lordship will see as far as the fastening element is concerned and the stringers on which they are mounted there is no substantial difference.

HIS LORDSHIP: Does the question of a patent on these fasteners enter into some of the other actions?

Mr. SMART: Yes, on the sliders for the fasteners. There have been different types of sliders, which have special utility, and the other action deals with those, as well as with some features of construction of the fasteners themselves.

In the Prentice machine there is a tape-feeding mechanism, this tape is fed under a sort of spring tension, and the feed has these large rollers over which the tape goes, there are special arrangements by which it is

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fed with a great degree of accuracy in a step by step motion, and every so often the tape jumps so as to space the fasteners in groups. That can be seen in Figure 27 of the patent, the idea being that the number of fasteners in a group will correspond to the amount one requires to make a complete fastener, all one has to do to make the complete fastener is to pair these groups off.

That tape-feeding mechanism I think your Lordship will find is substantially the same in each of the machines.

HIS LORDSHIP: What about the other side? There are two tapes here.

Mr. SMART: A single tape is made, with the fasteners in groups, and as each side of the fastener is identical and all fastener elements are absolutely identical, one can make a fastener by just cutting the tape between the groups and putting the two sides of the tape together. There is a different tape according to the size of the fastener being made, the tape on this machine is a wider tape. But the bead is only on one side. This tape will come out of the machine with say 10 inches of the fastener elements, then there will be a blank space, then another group of 10 inches with the fasteners on the same side. Each of the fastener elements is absolutely the same, that is one of the great features of this machine, that one takes uniform elements, spaces them so exactly on the tape that they can be assembled to form a complete fastener, disregarding whether they are right-hand or left-hand or anything of that kind, which would be necessary in a fastener of the hook and eye type.

So much for the tape-feeding mechanism on the defendants' machine.

As far as the metal is concerned, the defendant starts with the same kind of metal ribbon, he moves it forward with a step by step feeding mechanism which is substantially the same, and then he makes this change; instead of cutting the little element out and then forming it, he forms the socket and projection in the tape before the element is cut out. The little pin and socket are first formed, then the jaw members are punched out crosswise, that is the jaws face sideways, then they drop through and there is a slider which takes them sidewise and fits them with their jaws astride the tape. Then there are two pivoted pressure members which are operated to pinch and compress these on to the tape.

They are cut out forwardly, and as a consequence they have to be fed forward.

HIS LORDSHIP: In the first step they are not punched out of the ribbon?

Mr. SMART: No, they are first formed and then punched out. We say that is an obvious mechanical change——

HIS LORDSHIP: In the case of the plaintiff's machine they are actually punched out, although they remain in position?

Mr. SMART: Yes, my lord. Just a reversal of that order.

There has of course been a great success in the sale of this kind of article.

In the patent in suit we are relying on claims 1, 2, 3, 7, 8, 10 and 19.

No. 9.

Outline of Defence by Mr. McCarthy.

HIS LORDSHIP: Will you outline the Defence, Mr. McCarthy?

Mr. MCCARTHY: It is a little difficult to outline the Defence to what my friend has suggested. There are five actions before your Lordship, but I understood we were trying the machine action first.

Mr. SMART: My remarks were all directed to the machine.

Mr. MCCARTHY: Well it may be my friend's idea of it. My friend has rather gone into the history of slide fasteners, which, if my ideas of the issues involved in this action are correct, probably do not trouble your Lordship at all at this time.

The issues as I see them in the Machine Case are very similar to those which were before your Lordship in the Hosiers Limited case against Penmans, which was an action brought suggesting an infringement of a machine for making hosiery. The action in this case is brought by the plaintiff, the holder of a patent for Canada, they complain in paragraph 8 that the defendant, the Colonial Fastener Company, without license, permission or assent of the plaintiff or its predecessors in title has since the date on which the Letters Patent were issued, manufactured and used within the Dominion of Canada machines which embody the invention described in the above recited Letters Patent, and has manufactured, used and sold to others to be used in the Dominion of Canada the product of the said machines embodying the invention in the above recited Letters Patent, and has infringed and is still infringing the Letters Patent and threatens to continue to do so.

So you have the suggestion that the machine which we are using is an infringement of their machine, and that we are selling the products of the machine, which are an infringement of their products.

HIS LORDSHIP: Is the question of the product involved in this action?

Mr. SMART: Except so far as the sale of a product made on a patented machine can be an infringement of a patent on the machine or on the process of manufacture covered by a patent.

Mr. MCCARTHY: That is exactly the same question as was before your Lordship in the Penman case.

Then the Pleading goes on to say that the Prentice Company without license or permission or assent of the plaintiff or its predecessors in title has since the date on which the Letters Patent were issued imported and caused to be imported into Canada and has sold to others to be used in Canada and has licensed others to use within Canada a machine which embodies the invention described in the patent.

That is the issue as between Prentice and the plaintiff, and the issue between the Colonial and the plaintiff I have already outlined.

Then they ask a declaration that Prentice has infringed the patent by the importation of the machine, and ask for an injunction.

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The defence is shortly this; we say in the first place that the machine and methods alleged to have been invented were not patentable in law, that there was no invention having regard to the common knowledge of the art at the date; that the machines and methods alleged to have been invented and described in the patent were not new. And we plead the common knowledge of the art, and we cite in our particulars of objections certain patents in which we say that prior knowledge is set forth.

In addition we say that the machine and method alleged to have been invented were the result of mechanical skill in adapting the subject matter of the prior art into the machine as produced, that the machines were not constructed in accordance with the Letters Patent, and that the subject matter of the invention was imported into Canada contrary to the conditions of the Letters Patent: That the alleged invention was not useful, and that our machine is not an infringement of theirs.

Those are the issues before your Lordship.

HIS LORDSHIP: In the first place you say there is no invention in the plaintiff's machine. What is the nature of your Defence about the non-infringement? Supposing this machine is patentable, what is going to be the trend of your evidence?

Mr. MCCARTHY: We say that there is not any mechanical equivalence between their machine and ours. I am dealing simply with the machine.

HIS LORDSHIP: Is your machine patented?

Mr. MCCARTHY: It is not. The situation, as will be developed in evidence, is shortly this; Prentice has for many years been engaged in manufacturing fasteners of different types. At one time he invented the fastener that my friend has referred to as the spiral fastener, that was before your Lordship in another case, was commonly referred to as Zippers. Apparently a firm in the United States, Goodrich, had adopted the plaintiff's zippers, another firm had adopted Prentice's spirals, which were also known as Zippers, it was a popular name given to this type of fastener. The Lacrosse people were threatened with an action by the Goodrich people and the Sundback people for infringement, and Mr. Prentice was also sued by the Sundback people in regard to one of the sliders on his patent. The result was that Mr. Prentice's attorneys on his instructions began to study the state of the art, and they discovered that there was a patent known as the Kuhn-Moos patent, which although patentable, and for which patents had been taken out in Europe, there was no existing patent in America. Mr. Prentice was advised by his attorneys that the field was open as far as sliders which comprised individual units were concerned. Mr. Prentice thereupon made a machine—rather he used the ordinary power press punch to cut out certain units which he designed. Those units he attached to tape fasteners by hand, with pliers, he submitted them to his customers, they were pleased with them, and then Mr. Prentice designed the machine which the plaintiff now alleges is an infringement of their patent.

What we say in regard to the machine is that it was not the mechanical equivalent, that it does not turn out the same product, and further that we did not know of the Sundback patent at the time the machine was designed, but that even if we had known of it, what is disclosed in the Sundback patent would not have enabled a man ordinarily skilled in the art to design the Prentice machine, and that invention was necessary in order to accomplish what he did accomplish.

My friend has outlined shortly what their patent is. First you feed in the metal strip into a power press punch, which is an instrument as old as the hills, they have been punching small metal wares by a power punch I suppose for 50 or 100 years anyway. That was the instrument Prentice first used and which the plaintiff now uses in punching the metal to obtain their units.

As my friend has told your Lordship, their procedure is, the metal is fed into the machine and runs along a groove or trough, held in place. They first cut out a piece of metal which is to become the unit, that piece of metal after being cut out is immediately replaced in the string. It is then carried along, and another instrument is used in forming it. They form an article which we will prove our machine could not form.

It is then carried on, still in place protected by the stringers on either side, until it reaches the tape, then it is pressed against the tape, and two pincers come in on either side and pinch it to the tape, and there is the finished article.

We do not pretend to finish the article in our machine.

HIS LORDSHIP: No tape?

Mr. MCCARTHY: Yes, but the slider is not finished when it comes out of our machine. In other words, it is just pinched to the stringer, but the perfecting process is done on an entirely different machine.

Our machine is this; we feed it in the same way as they do, and we use the old fashioned power press to punch it out. But we first form it, that is we form the unit before we punch it out. Then we punch it out and drop it. It drops on a table and is then pushed by a pusher along the table until it becomes in apposition to the tape, and then there are two inclined planes or pincers, the operation of two doors when they come together, by the pressure of these simply pinch it loosely to the tape. Then that is taken out and treated in another machine, where the finished product is turned out.

We say that there is not in our machine the mechanical equivalent to theirs. In other words, they have in their machine defined a specific means of accomplishing a well known result. We have accomplished the same result by different means and different mechanical processes.

HIS LORDSHIP: That is probably the major point that will arise?

Mr. MCCARTHY: I think so. We say the product was old, the process is not new. We have accomplished the same thing that they have accomplished, by means of a different mechanical process.

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But we go further, and say that our machine does not actually turn out the finished article as theirs does, and moreover we say that our machine could not possibly in its present mechanical form make the same unit as they do. Your Lordship will see that they first cut out the form and then they form it afterwards. The form which they make afterwards is quite different from the form we make, because our form is made before it is cut out and then it is cut out and dropped. They cut theirs out and form it afterwards. The cutting out process as far as we are concerned does not enable us to form a unit of the same type or same dimensions or same qualities as theirs as described in their patent.

So we say, taking their patent with their claims and specifications and the essential features of their patent, compared with ours, we say the mechanical process is entirely different. Although we may turn out a unit which is in some respects the same, that is its functions are somewhat the same, we cannot turn out the unit on our machine which could possibly accomplish what they say their unit will do.

That I think will be our defence in the machine action.

Plaintiff's Evidence.

No. 10. G. Sundback. Examination.

No. 10.

Evidence of G. Sundback.

Mr. BIGGAR: The first thing I fancy will be to mark the Patent that your Lordship has before you as an Exhibit.

EXHIBIT NO. 1. Patent No. 210202 to Gideon Sundback, Dated April 5th, 1921.

EXHIBIT NO. 2. Assignment Sundback to Kynoch Limited, Dated April 28th, 1918, recorded as number 91106.

EXHIBIT NO. 3. Assignment from Kynoch, Limited, to Canadian Lightning Fastener Company, Limited, Dated June 30th, 1925, recorded as number 128281.

The Canadian Lightning Fastener Company's name was subsequently changed to the Lightning Fastener Company.

MR. GIDEON SUNDBACK. Sworn. Examined by Mr. BIGGAR:

Q. Mr. Sundback, you live at Meadville, Pennsylvania?—*A.* Yes.

Q. You are chief engineer of the Hookless Fastener Company?—*A.* Consulting Engineer.

Q. Which has its factory and headquarters at Meadville?—*A.* Yes.

Q. You were born in Sweden?—*A.* Correct.

Q. And you came to the United States when?—*A.* 1905.

Q. And joined the Westinghouse Electric Company?—*A.* Westinghouse Electric and Manufacturing Company of Pittsburg.

Q. When did you first become interested in slide fasteners?—*A.* In July 1906.

Q. At that time what happened?—*A.* I took a position with the Automatic Hook and Eye Company of Hoboken, New Jersey.

Q. What kind of fastener was that company manufacturing at that time?—*A.* The C-curity fastener.

Q. That is it is it (Showing specimen)?—*A.* Yes.

EXHIBIT NO. 4. Sample of C-curity Fastener.

Q. Had that company been in existence for sometime before you joined it?—*A.* Yes, for a couple of years anyway.

Q. How was that C-curity fastener made?—*A.* It was manufactured by a process of several punch presses with special tools for making hooks, and punch presses with other special tools for making eyes.

Q. And what happened to the hooks and eyes after they were removed from these punch presses after being formed?—*A.* They were tumbled and otherwise treated to prepare them for assembling to a fastener.

Q. Will you tell us what tumbling is and what the purpose is?—*A.* Tumbling is dumping the members together in a big barrel so that the sharp edges of the members were rubbed off.

Q. Then after this tumbling and preparing what was the next step?—*A.* The next step was to place them in a rack or bar, which we at that time termed a magazine, by hand.

Q. You mean individually by hand?—*A.* Individually by hand.

Q. Is this a sample of the bars, the magazines, that were used at that time for those fasteners?—*A.* It is.

EXHIBIT NO. 5. Sample Magazine.

Q. What was done with the magazine?—*A.* The magazine was handed to an operator of a machine.

Mr. McCarthy: Is the magazine the same as the rack or bar?—*A.* The same.

It was handed to an operator of a machine, hooked on to a string of preceding magazines and pushed into the machine. A roll feed took hold of, or was tightened around the sides of the magazine and fed the magazine step-wise forward, carrying the hooks and eyes which have been loaded in by hand with it.

Mr. Biggar: Did a given magazine contain both types of elements, hooks and eyes, or only one?—*A.* Only one.

Q. And what happened to the stringers to which either hooks or eyes, as the case might be, were attached?—*A.* The stringers coming out of the machine were taken by another operator who had hand tools, special pliers, pinching devices, and by taking one hook side and one eye side, matched up into a fastener.

Q. What did that matching up involve? What was done for the purpose of matching up?—*A.* Well I have to explain that in advance of this matching up there was another operation, involving the forming of the hooks and eyes into a final shape, and setting them on to the tape.

Q. How was that done?—*A.* That was done by a rolling mill which had grooves formed to give the shape of the final stringers.

Q. Did the stringers with the elements set on them by the machine you have described go straight from that machine to the rolls?—*A.* The string from the machine was first looked over and missing members, hooks or eyes, attached in a separate machine. The hooks and eyes were fed into this machine by hand, and the stringer was also laid into position by hand. It was to my recollection a power press into which this special machine was built.

The next step was for an operator or adjuster to find and correct misspaced members, hooks and eyes, by trying the two sides in a bench device. Trying to close up the two sides it was readily seen when the hooks and eyes did not mate up correctly. Then the operator had special tools for moving and accurately positioning the hooks and the eyes to make a fastener.

Q. Now speaking of the two machines, the machine for forming these units or elements and the machine for fastening them to the tape, will you tell us what the situation was with regard to the satisfactoriness of that pair of machines from the point of view of accuracy of product and economy of manufacture? Take accuracy first?—*A.* One could hardly speak of accuracy in connection with the two machines, because it was entirely lacking.

Q. And economy?—*A.* Also lacking.

Q. By reason really of what?—*A.* By difficulties in bringing out satisfactory products. The hooks and the eyes from these special machines making them were of a fidgety nature, and it required specially trained mechanics to set up and operate the machines.

Q. And what about the cost of that intermediate manual operation between the forming of the elements and their being fed to the machine to fasten them to the tape, was that expensive?—*A.* It was very expensive. And also the subsequent operations for adjusting and correcting the spacing to make a fastener.

Q. Can you tell us the number of operators that were necessary for any given number of finished fasteners?—*A.* Yes. The machine that set the members, the hooks and eyes, on to the tape required, in order to get a maximum out of the machine, five operators, usually girls, and girls specially selected with small fingers that could handle the members.

A machine with these five operators had a maximum capacity of something like 250 feet in a ten hour day.

Q. That is 250 feet of single stringer, or double stringer?—*A.* Of fasteners.

Q. That would be a total of 500 feet of stringer?—*A.* Yes. The subsequent operation required at least two, and on occasions three or four other operators on the bench, or adjusters, to complete the fastener to the point where it was ready for sliders and stops.

Q. So that the total number of individuals necessary to turn out 500 feet of stringer or 250 feet of fastener per day was what?—*A.* If you take the other operations into consideration it was considerably more than I have mentioned. Making the hooks and eyes required some operators. Putting on the stops which held the two stringers together,—First making the sliders and then attaching the sliders and then finishing up the fastener and inspecting it added some more to the force.

Q. So that the total to turn out 250 feet of fastener a day was how many?—*A.* I might say anywhere from 10 to 15.

Q. Now taking it only on the stringer production, and not by reference to finished fastener, on 500 feet of stringer how many of the 10 to 15 would be exclusively employed for the purpose of producing the stringer, a complete stringer ready to go into the fastener? Making the elements and putting them on the stringer in proper position ready to incorporate in a fastener?—*A.* Not less than 5, and subsequent adjusters, not less than two.

Q. Were you the only engineer in that company's employ at the time?—*A.* From 1906 there was another engineer, as superintendent of the plant.

Q. Who was that?—*A.* Mr. Aaronson.

Q. What were your duties during the years following 1906, say the first couple of years?—*A.* I started in as draftsman, and had partly charge under Mr. Aaronson of the development and improvements in the fastener, machine and machine construction.

Q. How did the business progress between 1906 and 1908?—*A.* There was not any progress made.

Q. What happened?—*A.* In 1908 the company was practically ready for bankruptcy. Everybody connected with it, President, Secretary-Treasurer, as well as the accountant and the manager, Mr. Aaronson, quit. I was left practically alone to take care of everything.

Q. What had the company in the way of a plant at that time?—*A.* The company had a machine shop employing 8 to 15 mechanics, that is machinists and tool makers, some extra hands for the production in the machine shop of the fastener making or production devices and tools and machinery and so forth.

Q. Will you tell us what happened in regard to the development of the fastener business and fastener machinery from 1908 on for the next five or six years?—*A.* Well it was quite apparent that the C-curity fastener was not a success. At the time when the staff which I spoke of gave up the ship I invented a Plako Fastener which was specially designed to stand the flexing which the C-curity would not.

Q. Is this a sample?—*A.* That is a sample of the Plako.

EXHIBIT NO. 6. Plako Fastener.

It was at first considered quite an improvement, but it was soon found out that it would not be commercially successful, at least no more so than the C-curity.

The staff left, decided to stay out and not come back, and have never taken much interest in the company since that time.

The company had a lot of debts, they owed employees for back pay and salary, they owed for raw material, material for fasteners and for making tools. My first job, while I was working with the Plako, was to go and see all the creditors of the company and ask them to have a little patience, and give me another chance, that we had reduced our overhead considerably and I might be able to pay them back the money that we owed them.

I started in to talk to my neighbors, a paper mill, a printer, a moving picture concern, to get them to give me something to do. I had a good machine shop, tool room, good mechanics, and in course of a few months I had considerable mill-wright work, helping my neighbors with their ordinary machinists problems. I started in to improve on the automatic and other machinery, to design new machinery, and help them with their technical and mechanical problems. I was engaged quite a bit, I started in to advertise and I had a considerable amount of outside work with the neighbors, and helping inventors to develop and manufacture inventions of theirs.

While this was going on of course I had my mind on the fastener. There was some production of the fastener, although small——

Q. Which was that?—*A.* Plako. And in course of the next four or five years I had with the outside work paid off the company's debts and all the back salaries except one, that was my own, and had a little bit of money in the company's account in the bank.

I had during this time tried to develop a fastener, and amongst other models of various constructions had a sample of a fastener built on the principle of Hookless No. 1., and when Col. Walker came to Hoboken one day I showed him the samples of fasteners, but I was more anxious to show him the fine position of the company, and made the suggestion that the company concentrate on that part of the business which had been the paying proposition during the past four years.

Q. This is Hookless No. 1.?—*A.* That is Hookless No. 1.

EXHIBIT NO. 7. Hookless No. 1. Fastener.

He did not listen much to what I had to say, he just had eyes for the Hookless No. 1.——

Q. You mean what you had to say about the financial position of the company?—*A.* Exactly. He had his eyes on Hookless No. 1. fastener, and persuaded me to concentrate more on fastener development, and give up part at least of the outside work. The result was the reorganization of the company, the Automatic Hook and Eye Company was sold to a new organization called the Hookless Fastener Company.

Q. That is the Hookless Fastener Company of which you are now consulting engineer?—*A.* Correct.

Q. Now up until that time when this Hookless Fastener Company was formed—and then went to Meadville didn't it?—*A.* Then went to Meadville.

Q. Up to the time it was formed and went to Meadville had there been any satisfactory development of any machine to make a fastener at all? Had there been any further development in the machines than that you have described?—*A.* There were some alterations made in the original machine which manufactured the C-curity fastener, but they were very slight.

Q. What were the results from the point of view of satisfactoriness, accuracy and economy?—*A.* No practical results.

Q. So now we have got to the point that you are at Meadville with the Hookless Fastener Company, with the proposed Hookless No. 1. fastener. What happened then?—*A.* Well the first thing was we reached the decision to discontinue all activities and all outside work. We had new capital and we had a new fastener. The decision was full speed ahead with the new thing, with Hookless No. 1.

In about 2 or 3 months, I kept very busy designing equipment for manufacturing, meanwhile I made samples of Hookless No. 1, and tried it out in practical use and found that the fastener was not good enough to make a commercial success, and I started in again to go over early experiments from 1908 on, groped around trying to find some means of making the fastener. We had burned our bridges behind us and there was only one thing, that was to go over the development again.

Q. You mean fastener development?—*A.* Yes. By that time I had arrived at and set down certain principles in fastener construction, such for instance as the proportionate sizes between the interlocking members and the fasteners when finished, and I was groping around trying to find means of making a member which in comparison with other fasteners which had up to that time been made by us, had more units to an inch, in order to get flexibility.

Q. You speak of fasteners that had formerly been made by you. What about fasteners made by others than yourself during this interval from 1906 until you moved to Meadville?—*A.* I never knew of any.

Q. Then you came to certain conclusions in regard to the size of the elements necessary to secure flexibility. Then what did you direct yourself to, what direction did your inquiries take?—*A.* At first I worked, as I recall it, with die-casting. I experimented with a drop hammer, I tried rolling a wire into a spiral shape, I was turning over in my mind punching or stamping out of flat metal.

Q. You were telling us what the situation was when you attacked the problem of designing machines to carry out these elements and attach them to the stringers. Will you tell us how the problems that that presented differed from those you had previously attacked in connection with automatic machinery?—*A.* Following the development along the line of new principles, I had resolved to make a greater number of units to a given length of fastener, and naturally I had to follow a little different

line, in fact radically different lines of development, in trying to piece together a practical fastener and a commercial way of making it. I was faced at that time just as much with the design of a practical fastener as with the way of making it.

Q. What were the considerations governing the machine?—*A.* A machine had to be built that would produce a fastener which was capable of going out on the market and selling, competing and making its own way in competition with the old fashioned buttons, hooks and eyes, lacings and so on.

Q. What did that involve as far as the making of the elements and their attachment to the stringer were concerned?—*A.* That involved first of all speed. To make a practical fastener with small units involved accuracy.

Groping around trying to find a way of manufacturing, I finally turned to stamping out the interlocking member——

Q. That is the elements?—*A.* The elements which are attached to the tape, out of a flat piece of metal.

Q. Had you considered other forms of raw material for those elements besides a flat strip?—*A.* Yes, as I stated before I considered drop forgings, or forgings by drop hammer, castings, that is die castings. I might also mention that in 1908 I made helical fasteners, the same as Prentice turned out in 1923–4, I considered making these by cutting out the individual coils, turning them up in a lathe and cutting each coil into a separate unit and clinching them on. And a good many other ways which I do not recall now.

Q. You are speaking now of 1914 and thereabouts or 1908?—*A.* I am speaking of the end of 1913, when the Hookless No. 1 had proven a failure. We were trying to make a practical fastener, and to find a way of making it.

Q. So you say you finally decided to use this strip metal?—*A.* To use a flat metal strip. In designing the particular machine which I ultimately arrived at, as described in the patent in suit, I tried different methods. I fed the metal from the side, and front to back, and vice versa and after a great many trials I concluded with the machine as it is in the patent.

Q. Did you consider separate machines for the making of the elements and for fastening them to the tape, or was your attention directed solely to the making of one machine to do both things?—*A.* I considered stamping the members individually out of a strip of metal and tumbling them.

Q. Would that have been an advantage, with that type of element, or not?—*A.* Oh it is always considered an advantage to be able to finish a member with plating, colouring, smoothing and so forth. Naturally it was one of my big efforts to follow that method. But in building a fastener that would be commercial I had to make it so small——

Q. You had to make what so small?—*A.* The interlocking element so small that they could not be handled by any human fingers. I tried

several methods of hoppering, that is selecting the members to get them into position to put on the tape, but I failed.

Q. Now you better explain that a little more. You say you tried or considered several methods of hoppering. Will you explain that?—*A.* A hopper to my understanding is a mechanical device which will select out of a mass of let us say metal articles pieces one after the other, and put them in a position to get control so as to be brought into position to be collected, to be clinched in this case on to the tape. I had revolving drums, and I had them slipping out of a batch of interlocking members and I floated these members on a salt solution, and mercury, heavier than metal, but I was unable to find a satisfactory way of solving my production problems. I came back again to my metal strip, blanking out of the metal strip, keeping control of the fastener member, and while I had control of it feeding it into position to put on to a carrier, which in this case is the tape. I had problems of feeding the metal, problems of working out the holes, of holding it in position, feeding the tape to get accurate spacing.

As I finally ended up I used a commercial power press into which I built the special tools and mechanical movements to accomplish what I was after.

Q. Supposing you had been able to work out a satisfactory method of hoppering, how would you have arranged the other operations, I mean the operations of making the elements and attaching them to the strip?—*A.* I would undoubtedly have split the machine into two operations, one for blanking for forming the members, and the other for hoppering in connection with the attachment to the tape.

Q. Where would your step of tumbling have come in?—*A.* In between the two machines.

Q. Can you add anything now to your answer to my question as to how these problems compared with those that you previously had to deal with in connection with other automatic machines, as far as accuracy, and the size of the elements, and that sort of thing are concerned?—*A.* I had to produce accuracy principally to get away from the hand adjustment, in order to get a commercial product at a marketable price. The hand adjustment was an expensive operation. In addition the members were now so many more on each length of fastener that the accuracy had to be increased. The members were so small. The holding portions proportionately small, so that the accuracy naturally had to be produced, and it was not an easy problem to produce it.

Q. When your stringer was finished what was the effect of any inaccuracy in the spacing of the elements on the stringer?—*A.* It would curve. As an illustration of the degree of accuracy, I might say that if the spacing between the members on one side of the fastener is altered about half of one one-thousandth of an inch, which is about one-sixth of the thickness of a piece of paper, and it is consistently carried out in the length of a fastener, it will curve on a radius of about two feet. In other words, if a long fastener were produced it would run in a circle of four feet diameter.

The tape feed in the case of the spacing is the responsible element, and I had to devise a grip of the tape, and surround it with other conditions to produce what I was looking for. A line contact between a pair of rolls failed utterly. I had to have a closer, more secure and reliable contact between the tape roll, that is the roller that feeds the tape, and the tape itself. I had to get more tension on the tape to get a uniform feed. The tape was to be held taut over that portion in which the fastener is being made, where the interlocking members are attached. A long piece of tape will naturally stretch more than a short piece, and I had to design a machine to bring the distance between the two grips, that is at the entrance and outlet of the machine, as small as possible.

Q. In order to make a complete fastener how many pieces of stringer do you have to have?—*A.* You have to have one for each side.

Q. And how important was it that any two pieces of the stringer should co-operate together when placed in a fastener?—*A.* It is quite obvious that if only one machine can make the two sides of a fastener it means economy from every view point.

Q. Do you recognize what makes this fastener that I hand to you curve as it does?—*A.* Yes, there is a difference in the spacing between the members on one side of the fastener compared with the other. The difference in spacing is perhaps one one-thousandth of an inch. As I stated before, it takes a difference of half a thousandth of an inch to make a two foot radius on the curve.

EXHIBIT NO. 8. Sample strip of curved fastener.

Q. Now can you tell me how long you were working at the design and construction of the machine, between the time when you commenced to attack it along the lines you had decided upon and the time you had it operating to your satisfaction?—*A.* I started with my first sample fastener and with the design of the machine late in 1913 or early in 1914, and it was October 1914 before a single fastener was sold. Meanwhile, I think about July 1914, I produced stringers out of the first machine. The first machine however had to be considerably redesigned, rebuilt.

Q. Why?—*A.* To improve conditions, such as the tape feed, the arrangement holding the metal strip after enduring the cutting and forming of the member, improvements of tape tension, and other details.

Q. Why were improvements of that kind in those details necessary?—*A.* To arrive at the accuracy.

Q. During how long did your studies of those improvements continue before you got the machine in its final form?—*A.* About 1916.

Q. You made an application for patent on the machine in the United States, didn't you?—*A.* Yes.

Q. Do you remember the date upon which that was done?—*A.* I think it was 1916.

EXHIBIT NO. 9. United States Patent corresponding to the Canadian Patent in question. It is No. 1,331,884, was applied for on March 16th, 1916, issued some four years later.

Q. I was asking you how long before that application was made you got the machine into a condition that you were satisfied with it?—*A.* As I recall now I probably was not satisfied with the machine until I filed the patent application.

Q. You see this machine in the corner of the room. Can you tell me whether or not that machine is built in accordance with the patent?—*A.* That is built in accordance with the patent.

EXHIBIT NO. 10. Machine built according to Plaintiff's patent.

Q. Now can you give me some particulars about the speed, accuracy, etc., at which that machine works?—*A.* The speed of the machine has naturally been increased from the experimental machine until the speed of to-day.

Q. Well I am speaking of this patented machine?—*A.* At the time they issued the patent the machine was running around 175 revolutions per minute, perhaps a few more.

Q. During a month, or some part of a month, it attached how many elements to the stringer?—*A.* Well the practical result, the production over a number of months from that machine was between 280 and 300 feet of fasteners finished per 10 hour day.

Q. How many elements are there per inch of stringer?—*A.* 10 or 11, depending on the size of the fastener. 20 or 22 per inch of fastener.

Q. Is there any difference in the size of the elements on these two types of fastener?—*A.* Yes.

Q. The elements differ slightly in size?—*A.* Correct.

Q. What is the size of the elements?—*A.* The smallest probably, in its open formation of the jaw member, perhaps one-eighth inch square or a little more, and forty one-thousandths thick.

Q. That is in the line of the completed fastener, each element has a thickness of forty one-thousandths of an inch?—*A.* Yes, and a larger type of fastener perhaps one-thirty second or thereabouts larger. In other words five thirty seconds square and forty three or even as high as forty five one-thousandths of an inch thick.

Q. Then the size of the projections and recesses would be proportionate to that?—*A.* Proportionate.

Q. I do not know if I asked you how many of these elements were attached to the stringer per minute or second at 175 revolutions per minute of the machine?—*A.* There is one element attached for each revolution, and at that rate the machine should produce considerably more than 280 or 300 feet in a day. But these figures are taken from production, which includes shut down of the machine for repairs, oiling, sharpening, accidents, etc.

In the Exchequer Court of Canada.

Plaintiff's Evidence.

No. 10. G. Sundback. Examination—*continued.*

Q. So in normal operation how many elements would be attached to the stringer each second?—*A.* That would be three and a third.

Q. It would be three and one third seconds per inch, wouldn't it? Nearly three per second, 175 per minute?—*A.* Correct.

Q. Within what degree of accuracy does the machine operate?—*A.* Well let us take half a thousandth difference in the spacing, that will produce a curve of two foot radius. A fastener with the slightest curve perceptible to the eye is not marketable. In other words the difference or variation in the spacing, if consistent, would have to be nil, practically nil.

Q. In practice how much variation is permissible? Within what degree of accuracy must the machine turn out the stringers?—*A.* It has got to be accurate.

Q. Exactly?—*A.* Exactly.

Q. There is no divergence from exact accuracy, is that the position?—*A.* That is the position.

Q. Now since that machine went into operation what has been the result as far as the sale of fasteners is concerned?—*A.* With this machine a new product was produced. It was a fastener that was practical for the applications for which it was intended. The commercial success has been growing constantly and steadily, slow at first and then faster.

Q. Can you tell us, roughly speaking, how many fasteners made in this way have been sold in a year recently?

Mr. McCarthy: In Canada?

Mr. Biggar: I do not care whether in Canada alone or Canada and the United States?—*A.* Over forty million fasteners were sold in 1931 in all the countries operating under the patents.

Q. What other countries are there besides Canada and the United States?—*A.* Europe. We have one factory in Birmingham, England; one in France; one in Germany; one in Austria; one in Mexico and one in South America, Argentine.

Q. And your forty million figure applies to all those factories?—*A.* Applies to all. Over forty million.

Q. It applies to what, stringers or completed fasteners?—*A.* Completed fasteners.

His Lordship: What do you mean by stringers?

Mr. Biggar: The terminology I have adopted is that the material, this cloth, I have called the tape. Then when the elements are fastened to it I have called it the stringer. When that stringer is cut into pieces and the two parts are together it becomes a fastener.

Q. To what kinds of things is it applied? I have here a catalogue, do you know that publication?—*A.* Yes.

Mr. McCarthy: Is a catalogue evidence of anything?

Mr. Biggar: I am not putting it in yet.

Q. Does that give a fair picture of the kinds of articles to which these fasteners are applied?—*A.* It did at the time it was published.

Q. That was in what year?—*A.* That is a few years ago. The articles are more numerous now.

Mr. BIGGAR: I ask to put that in simply as a convenient way——

HIS LORDSHIP: It is just to put in the pictures. I do not think it will hurt you. It is to indicate the articles to which the fasteners apply.

Mr. MCCARTHY: I have never seen it, I do not know if there is literature in it. I am not assenting to the introduction of literature.

Mr. BIGGAR: I am not relying on anything that is stated. Simply the pictures, to show the kinds of articles to which up to a few years ago these were applied.

EXHIBIT NO. 11. Catalogue.

CROSS-EXAMINED by Mr. MCCARTHY.

Cross-examination.

Q. I think, Mr. Sundback, you said you came to the United States in 1905?—*A.* That is correct.

Q. And joined the Westinghouse Company?—*A.* Correct.

Q. As what?—*A.* As draftsman and electrical engineer.

Q. How long did you stay with them?—*A.* Until July 1906.

Q. Then you became associated with whom?—*A.* Automatic Hook and Eye Company.

Q. Who were the officials in that company at that time?—*A.* The president was Frank Russell. Secretary-Treasurer V. M. Delamaitre, and the rest of them I don't recall.

Q. Who were the engineers with whom you were associated?—*A.* Mr. Aaronson was the Superintendent.

Q. And what was your position?—*A.* I was draftsman.

Q. Where was the company carrying on business then?—*A.* Hoboken, New Jersey.

Q. And that was the Automatic Hook and Eye Company at that time?—*A.* Correct.

Q. Then you produced a fastener which is called C-curity. When was that manufactured?—*A.* When I came to the Automatic Hook and Eye Company.

Q. They had manufactured it before you came had they?—*A.* Yes.

Q. And you were not in any way responsible for the manufacture of that particular type of unit, were you?—*A.* Not up to that time.

Q. Then you produced as Exhibit 4 a C-curity fastener. Were you familiar with the machine by which this was produced?—*A.* Yes.

Q. It is marked, Patent—is it 2506? You do not know the date of that patent, do you?—*A.* I think it was 1905.

Q. Then what part if any did you take in the further development of the fastener?—*A.* I started to make improvements in machinery and improvements in the fastener.

Q. What improvements did you make in the machinery?—*A.* First I designed a new machine for making hooks.

Q. When would that be?—*A.* Late in 1906, early in 1907.

Q. How had the hooks been made up to that time?—*A.* In a similar way.

Q. How?—*A.* By punching, forming and bending in a power press.

Q. The first operation was the punching, was it?—*A.* Yes.

Q. And the next operation was the forming?—*A.* Forming.

Q. What happened to the unit between the punching and the forming?—*A.* Nothing.

Q. How was it disposed of? What was the step between the punching and the forming?—*A.* It was carried—there was no step.

Q. Was it done in the same machine?—*A.* Yes.

Q. Out of what kind of metal?—*A.* Metal strip.

Q. Then after you punched it did you still keep it in the metal strip to form it?—*A.* It was cut loose and——

Q. Replaced?—*A.* No.

Q. How did you form it after you cut it loose?—*A.* The blanking was done by cutting the scrap around the blank, cutting the scrap metal from the outside.

Q. Did you punch it first?—*A.* That is what I call punching.

Q. That was the first step?—*A.* That was the first step.

Q. What happened to the element after it was punched?—*A.* It was left there.

Q. Left where?—*A.* Right on the die of the machine.

Q. And where did the formation take place?—*A.* That was the next step.

Q. Where was that?—*A.* In the same machine.

Q. Passed along?—*A.* Yes.

Q. You passed it along and it was formed, was it?—*A.* Correct.

Q. And then what was the next step?—*A.* Passed along on the same machine.

Q. And what was the next step?—*A.* Bent.

Q. And what next?—*A.* Pushed out of the machine in the bending operation.

Q. So that there were three distinct steps in that machine?—*A.* Well depends where you commence to count.

Q. I count the punching as one, the forming as two, and bending and putting out as three?—*A.* There was perhaps another operation.

Q. Well, I am asking you?—*A.* The piercing.

Q. When did that take place?—*A.* Oh ahead of the blanking.

Q. Which do you call the blanking?—*A.* I call the blanking when you cut out the outline.

Q. By blanking do you mean punching?—*A.* Yes.

Q. You have introduced a new element, that is putting in the eyes?—*A.* Yes, that is an improvement that came——

Q. Well we will get that later. I am speaking of the first—— ?—*A.* Three operations.

Q. That is punching, forming, bending, and in the bending the throwing out of the machine?—*A.* Correct.

Q. And those hooks and eyes would be just collected in an ordinary box below the machine?—*A.* That is where the hooks.

Q. How were the eyes done?—*A.* In a similar way.

Q. Punched?—*A.* No, that is not correct. They were slit and formed and then cut off and bent.

Q. When were they punched?—*A.* Well in this case we have to use a different expression. I call it cut off and bent.

Q. It was done by the same machine, a power press?—*A.* No, a different machine.

Q. What kind of a machine?—*A.* Power press, but different——

Q. Different kind of power press?—*A.* No, the same power press but a different machine.

Q. What was the machine?—*A.* The machine was the eye machine.

Q. But how did it operate?—*A.* It operated in a similar way.

Q. Tell me how. What was the first step?—*A.* Slitting and forming the eyes, and cutting off and bending.

Q. In that order?—*A.* In that order.

Q. What was the first movement?—*A.* Slit and draw or form the eyes, cutting off and bending.

Q. And then it is thrown out?—*A.* Correct.

Q. That is the way you did the eyes?—*A.* Correct.

Q. Now you had your hooks and your eyes. The next thing was to get them on the tape?—*A.* Not exactly, the next thing was to finish them up.

Q. How did you finish them? By tumbling?—*A.* Tumbling and heat treatment, plating, whatever was desirable to make the right kind of fastener. Nickel-plated or copper-plated——

Q. Well you had to treat them to get them to the condition in which you wanted them before you attached them to the tape?—*A.* Yes.

Q. Whether it was tumbling or plating, whatever it might be?—*A.* Correct.

Q. Now the next problem was to get them on the tape, was it?—*A.* Correct.

Q. In getting them on to the tape, is this the apparatus, Exhibit 5, that you used?—*A.* One of them.

Q. Had you any others?—*A.* Yes, I had another similar affair for the eye side. Had a machine——

Q. Do you call this a machine?—*A.* I call this a magazine.

Q. You had another one besides this?—*A.* I had many. Another kind for the eyes.

Q. This I have in my hand, Exhibit 5, which you have put in I assume is a sample of the way you worked. How was that operated?—*A.* That was taken by girls sitting around a table. They took the little hooks by their fingers and put them right in these little compartments that you see in the magazine.

In the Exchequer Court of Canada.

Plaintiff's Evidence.

No. 10. G. Sundback. Cross-examination—*continued.*

Q. Did they fill this all full of hooks, or half hooks and half eyes?—*A.* No, they filled all this with the hooks.

Q. Then there would be a corresponding one, would there, for eyes?—*A.* Yes.

Q. And then that was put into a machine. What did you call that machine?—*A.* Assembling machine.

Q. And the assembling machine attached them to the tape?—*A.* That is correct.

Q. Now you have put in one or two exhibits here. Take Exhibit 4. That is all one piece of tape, isn't it?—*A.* Yes.

Q. On one side are hooks and the other side eyes?—*A.* Correct.

Q. How was that done?—*A.* That was done by the operator of the machine hooking on an eye magazine directly on to a hook. In cases of a given length of fastener, where you had a given length magazine, there was a—way of doing it. For instance most of these fasteners we made for a placket for skirts, in that case we made a standard length of magazines and had the exact number of eyes.

Q. As a matter of fact these fasteners were all made for plackets on skirts at that time, weren't they?—*A.* Practically all.

Q. Was there any other use it was put to at that time?—*A.* Yes.

Q. Except men's trousers?—*A.* Yes, that was one.

Q. Any other?—*A.* They were probably not put to those uses, they were intended to be put to those uses.

Q. Well if they were not put to all——?—*A.* The biggest use was theatrical clothes, quick change artists, and special applications.

Q. What do you mean by special applications?—*A.* Such as for instance the quick change artists.

Q. Well you said that, and you said special applications?—*A.* Well let us take a tent, and mosquito nettings. We had shoes—

Q. At that time? I am speaking now of 1905 and 1906?—*A.* Well I am speaking of 1906–7. I cannot talk about 1905.

Q. Now they were originally designed, were they not, for plackets of women's skirts?—*A.* Yes.

Q. And in that case they were made up as this Exhibit 4 is made up?—*A.* Let me correct that, and say they were originally made I think for shoes and mail bags.

Q. By you?—*A.* No.

Q. Who by?—*A.* By the Automatic Hook and Eye Company.

Q. Who is that, Aaronson?—*A.* Judson, Aaronson, and I don't know who else.

Q. They were originally made for mail bags?—*A.* And shoes.

Q. By Judson, Aaronson and the Automatic Hook and Eye Company; is that right?—*A.* That is to the best of my knowledge.

Q. Was it after you came that they developed them for plackets on ladies' skirts?—*A.* They aimed to turn it out for plackets.

Q. And it was a success commercially wasn't it, they were sold commercially for that purpose?—*A.* It was not a success.

Q. You mean you did not sell many?—*A.* Oh we sold some but it never had a rapid sale.

Q. But there were a great many sold, were there not?—*A.* Oh a few.

Q. Only a few?—*A.* Well——

Q. Then as you say, having completed your hook and eye, to go back to the manufacture, you used these magazines. This is only a sample of the magazine you used?—*A.* That is right.

Q. There were a great many others?—*A.* Yes.

Q. Of similar construction used, some for hooks, some for eyes?—*A.* Right.

Q. And of different sizes?—*A.* Not so much.

Q. You had different sizes, hadn't you?—*A.* Yes, but not many.

Q. I didn't say many, I said you had different sizes?—*A.* I beg your pardon.

Q. Then was it in your time that Plako was developed?—*A.* Yes.

Q. Plako followed the C-curity, did it?—*A.* Correct.

Q. What was the difference between Plako and C-curity?—*A.* That is discernable from samples. Exhibit 4 is the C-curity and Exhibit 6 is the Plako.

Q. What is the difference between the C-curity and the Plako?—*A.* The eye member is different, and the hook member is slightly different.

Q. And Plako was also made, as the name indicates, for plackets on women's skirts?—*A.* Yes.

Q. Was the C-curity abandoned?—*A.* Yes.

Q. And the Plako substituted?—*A.* Correct.

Q. Was the Plako a success on women's skirts?—*A.* No.

Q. Did you sell a good many?—*A.* Less than C-curity.

Q. Do you recognize this folder in which Plakos were sold?—*A.* Yes.

Q. That was the way they were sold to the trade was it? These were made in your factory by you, were they?—*A.* Yes. Let me see—no I don't believe so. This was probably made up by the sales agent.

Q. Who were your sales agents?—*A.* Oh we had several hundred of them around the country.

Q. Was this shown to you? Look at that slider, that is a correct representation of Plako, isn't it?—*A.* Yes, that is undoubtedly a Plako.

Q. And you recognize this as the parcel or packet in which it was sold to the trade?—*A.* Yes.

EXHIBIT A. Sales Agent's packet for Plako.

Q. It says here "The C-curity made perfect." That was the idea was it?—*A.* That was the idea.

Q. Plako made C-curity perfect. And "This is a new sure way to close garments automatically." ?—*A.* Right.

Q. "Buttons, hooks and clasps are disappearing before Plako"?—*A.* That sounds good.

Q. "A pull and it is done"?—*A.* Yes.

Q. And that gives illustrations of ladies using Plako on their skirts?—*A.* Yes.

Q. Then on the back is a note of how they should be applied, is it?—*A.* Yes.

Q. Now, Mr. Sundback, how many machines had you making C-curity fasteners at that time in 1906–7?—*A.* In my experience I never saw more than three run at one time.

Q. That does not of course include the power press punch. I am speaking of the machine that attached the units to the tape?—*A.* So am I.

Q. You say you never saw more than three at one time?—*A.* Yes.

Q. You mean three operating at one time?—*A.* Three operating at one time.

Q. How many machines had you altogether?—*A.* To the best of my recollection five were built altogether in the years from 1904 on.

Q. From 1904 on to what date?—*A.* To date.

Q. There were only five built?—*A.* To the best of my knowledge.

Q. Then the machine that made the Plako fasteners put the units on the tape in spaced groups of hooks and eyes, didn't it?—*A.* Not the machine.

Q. What put them on?—*A.* The girls and——

Q. I am speaking of putting them on the tape. The machine put the units on the tape didn't it?—*A.* The assembling machine. The side tools in the assembling machine.

Q. The side tools in the assembling machine put the units on the tape?—*A.* Temporarily.

Q. Why temporarily?—*A.* To sort of get them attached and get them out of the machine, and later the process was finished.

Q. What required to be done after they came out of the machine?—*A.* They had to be formed so as to furnish an even and smooth surface for the slider, and to be set on to the tape.

Q. I thought the machine pinched them on to the tape?—*A.* It pinched them on just enough to carry them out, and they had to be loose enough to be adjustable in position by hand in the machine.

Q. Did the machine put them on in groups of hooks and eyes?—*A.* With the help of the girls.

Q. Well the machine did not pick them up itself, but it was the machine that pinched them on in groups to the tape, was it?—*A.* It pinched on the two sides of the channel-shaped members around the tape.

Q. Well, take one of these samples. I am looking at Exhibit 4, C-curity. Take the hook side of Exhibit 4; those elements or units were fastened on to the tape by the machine, were they not?—Yes, in a way.

Q. What do you mean by "in a way"?—*A.* They were just clinched on sufficiently to be carried by the tape, or lifted out of the magazine by the tape.

Q. They were not tightened, they were not clamped?—*A.* They were not clamped.

Q. They were just pinched on?—*A.* Well, they were clamped on in the same sense as they were pinched on, loosely.

Q. And they were done in groups, were they?—*A.* They were done according to the way they were spaced in the magazine by the girls.

Q. So that the girls could leave a space?—*A.* The girls left a space here and there. The girl apportioned so many hooks and then a long space of tape, provided they did not have the magazine to make it an exact length.

Q. The girls would have a definite number of units in each group, depending on what they were making?—*A.* That is correct.

Q. And then they would have a space, and a definite number of eyes to correspond?—*A.* Well, a definite number of hooks.

Q. Whichever you like. But for instance if they were making a placket for a lady's skirt they would know how many hooks to have and how many eyes?—*A.* That was given to them.

Q. And they would place the hooks or eyes in the magazine?—*A.* Correct.

Q. And then a space, and then the eyes to correspond. That is if they were doing it all on one tape, as here?—*A.* If they were doing it on one tape. But that was the more unusual operation.

Q. Then get to the usual one. Why did you put the unusual in as exhibits?—*A.* Oh they look a little better.

Q. The unusual one looks better than the usual. Well anyway, when you get down to the usual, having determined how many hooks you wanted in uniformity on a tape, the girls would put that number in the magazine?—*A.* Right.

Q. And they would leave a space and put so many more?—*A.* Yes.

Q. In any defined number?—*A.* Yes.

Q. Then how was the spacing of the individual units arranged in the groups?—*A.* By feeding of a tape.

Q. And that would depend I suppose on the length of the step in the feed?—*A.* Correct.

Q. Now did that machine leave a space between the groups on which there were no units attached?—*A.* The tape kept on feeding, and when there was an empty space, no member to clinch on, nothing——

Q. Nothing attached to the tape?—*A.* Nothing attached to the tape.

Q. And you would get those tapes with those spaces between the groups, and adjust them afterwards? Is that right?—*A.* Correct.

Q. Now then, having done that, you would then combine them in pairs and attach the slider?—*A.* One eye side with the hook side.

Q. Yes, combine the hooks and the eyes in pairs, if they were not on the same piece of tape, and then attach the slider, and that was the finished product as far as Plako was concerned?—*A.* Well when it was finally accomplished.

Q. Then that machine which accomplished that, did you design that machine?—*A.* Accomplished what?

Q. Just what you have been telling us. The machine which attached the hooks and eyes to the tape; did you design that machine?—*A.* You mean in Plako?

Q. No, Plako and C-curity?—*A.* No, I didn't design that.

Q. What did you call that?—*A.* That is what we call the Aaronson machine.

Q. Is that the one for which Aaronson took out a patent in Canada? No. 107,456, is that it?—*A.* Yes, that is the one.

Q. That is the patent dated 17th September, 1907, granted to the Automatic Hook and Eye Company, assignee of Peter Aaronson, and it is called, A machine for setting channels on tape. What do you mean by channels?—*A.* That is what we called the U-shaped members.

Q. What my friend and I have been referring to as elements or units?—*A.* We also called it the jaw member, but in this particular case the Patent Attorney preferred " channel."

Q. You called them jaw members or channels or elements or units. It was under the Aaronson machine that the hooks and eyes were attached to the tape in 1905-6-7 when you were there?—*A.* As described in the patent.

EXHIBIT B. Aaronson Patent, Canadian Patent No. 107,456, dated September 17th, 1907.

Q. Would you look at that fastener which I hand you and tell me what fastener that is?—*A.* That is a product of the same machine.

Q. What do you call that, is that C-curity?—*A.* C-curity.

EXHIBIT C. Fastener, C-curity.

Q. And will you look at that and tell me what that is?—*A.* That is a Plako.

EXHIBIT D. Fastener, Plako.

Q. Now how long did you continue at Hoboken?—*A.* Until 1913.

Q. Then where did you go?—*A.* To Meadville, Pennsylvania.

Q. And you continued in Meadville, Pennsylvania, from 1913 to the present time?—*A.* Yes.

Q. Then you told my friend the hard-luck story about being deserted by all the officials of the plant, and I think you carried on alone from—what was it, about 1908?—*A.* Yes.

Q. You carried on at Hoboken?—*A.* Yes.

Q. And when did Aaronson leave?—*A.* 1908.

Q. He went where?—*A.* He went to France, and came back.

Q. And——?—*A.* And went back to France again.

Q. When did he come back?—*A.* 1908 or early in 1909.

Q. All about the same time. He went to France, came back, and then went to France again?—*A.* Went again in 1910.

Q. Was he operating in France under these same patents, the Aaronson patents?—*A.* From 1910, yes.

Q. Up to what time?—*A.* Well, I don't know.

Q. But Aaronson had his patents established in France, didn't he?—*A.* I don't know.

Q. Anyway they continued the hookless fastener business in France?—*A.* He was operating a manufacturing business in France.

Q. And taking in machines with him?—*A.* Yes.

Q. How many?—*A.* One.

Q. Then did he dissociate himself from your Company?—*A.* I think he was still a stockholder.

Q. You think he was still a stockholder of the——?—*A.* Automatic Hook and Eye.

Q. Who is Mr. Aaronson?—*A.* He was the Superintendent of the Automatic Hook and Eye Company to 1908, when he went to France.

Q. He is an engineer, is he?—*A.* Yes. I don't know whether he has a degree or not.

Q. Have you?—*A.* Yes.

Q. And I understand that Aaronson is your father-in-law?—*A.* That is correct.

Q. And he has operated under these patents in France ever since, hasn't he?—*A.* Oh no.

Q. When did he give them up?—*A.* When the war started.

Q. Didn't he resume later?—*A.* No.

Q. Then you slaved along at Hoboken until you developed what you call Hookless No. 1?—*A.* Yes.

Q. You developed that when you were at Hoboken, did you?—*A.* Part of it.

Q. When was it first put on the market?—*A.* It was never put on the market.

Q. When you say part of it at Hoboken, how far did you get with it at Hoboken?—*A.* Well I was well on the way towards what I thought was a fastener.

Q. But as I understood your evidence you had given more of your time to a general mechanic's business?—*A.* Yes.

Q. Between 1908 and 1911?—*A.* Between 1908 and 1913.

Q. But at the same time you were still trying to develop your fastener?—*A.* Yes.

Q. And what you developed was known as the Hookless No. 1?—*A.* One of them.

Q. Then you say—was it Colonel Walker you mentioned?—*A.* Yes.

Q. Came back to Meadville, suggested you should throw over your mechanical business and go back in the fastener business, is that the idea?—*A.* Well to concentrate more on the fastener.

Q. Was Colonel Walker a member of your Company?—*A.* He was a stockholder.

Q. Of the original company?—*A.* Of the Automatic Hook and Eye.

Q. Was he taking any active interest in the Company between 1908 and 1913?—*A.* He came up and said hello once in a while.

Q. But when he came and said hello once in Meadville he persuaded you to go more actively into the fastener business?—*A.* No, he came to Hoboken.

Q. But when he cast his eye on Hookless No. 1 he wanted you to abandon your other work and go into fasteners, is that the idea?—*A.* That is the idea.

Q. So after you went to Meadville you devoted more time to fasteners?—*A.* Yes.

Q. From 1913 up to the present time your time has been more or less engaged in the fastener business, is that right?—*A.* Yes.

Q. Hookless No. 1, how were the units or elements on the black tape on Exhibit 7 attached, what machine was used to attach them?—*A.* The particular fastener you have in your hand was made by a little hand feed device.

Q. There is no machine of any consequence as far as that is concerned?—*A.* It was never completed.

Q. Well we will not waste time on the hand feed device. Then from 1913 on you told my friend of your efforts to perfect a machine for making slide fasteners?—*A.* Yes.

Q. And the machine which my friend has produced, and which is marked as Exhibit 10, is that the machine with which you now make your slide fasteners?—*A.* Not identically the same machine.

Q. What is the history of that machine, Exhibit 10?—*A.* As it stands.

Q. Well yes?—*A.* That machine was built in Meadville, Pa., between 1916 and 1918, and was shipped to Europe in 1918 or 1919, and came into Canada to the best of my knowledge in 1923 or 1924, and later on some modifications of the machine were built, a few improvements incorporated, and it was taken out of production.

Q. But that is the machine which is covered by your patent, is it?—*A.* That is the machine.

Q. And its history is, it went to England in 1918—would that be to Kynoch?—*A.* That is Kynoch.

Q. You assigned your patent rights to them I believe?—*A.* Right.

Q. And that machine was shipped to Kynoch. Did it ever produce commercially before it went, in the United States?—*A.* Yes.

Q. Was it ever used for commercial production?—*A.* Yes.

Q. During what years?—*A.* Until it was shipped to England, from the time it was built.

Q. When was it built, do you know?—*A.* Between 1916 and 1918.

Q. It was used for commercial production in the United States, then went to Kynoch. Was it ever used for commercial production in England that you know?—*A.* Yes indeed.

Q. And it was sent to Canada when?—*A.* 1924.

Q. Was it ever used for commercial production in Canada?—*A.* Yes.

Q. When?—*A.* 1923 or 1924-5.

Q. Where?—*A.* As far as I know at Brownsburg, Quebec.

Q. Who was operating it there?—*A.* That was under the direction of Kynoch. I do not know much about that.

Q. Do you know how long it was in Quebec?—*A.* Until 1925.

Q. And do you know whether it actually operated commercially in Quebec?—*A.* It must have.

Q. Do you know of any commercial product turned out at Brownsburg in that period?—*A.* I know of commercial product at Brownsburg, yes indeed.

Q. By this machine?—*A.* This or the other machines there.

Q. How many other machines were there there?—*A.* I have been told three more.

Q. That was under Kynoch, under their name?—*A.* As far as I am advised.

Q. Then from Brownsburg where did those machines go?—*A.* I don't know.

Q. Did they go back to Meadville?—*A.* No.

Q. Where was this one found?—*A.* I don't know.

Q. Where did it come from recently?—*A.* It was in Birmingham, England, in February, 1931.

Q. It went back to Birmingham, did it?—*A.* Yes, and then came back to Canada.

Q. When did it arrive here?—*A.* Shortly after.

Q. Within the last few weeks?—*A.* Within the next few weeks after February, 1931, or next few months.

Q. Where did it go then?—*A.* To St. Catharines.

Q. That is where the head office of the Lightning Fastener Company is?—*A.* Yes.

Q. And then sent down here as an exhibit?—*A.* Correct.

Q. Did it produce commercially at St. Catharines, do you know?—*A.* Not commercially.

Q. Then that is not the type of machine you are using at Meadville to-day?—*A.* We have a modified type in Meadville.

Q. Then what do they use at St. Catharines?—*A.* The same modified type—not the same, a similar modified type.

Q. Now dealing with your patent for a moment, you are responsible for the design of the units or elements, are you?—*A.* You mean the fastener produced by this machine?

Q. Yes?—*A.* Yes.

Q. I take it from what you told my friend, the difficulty you encountered was in getting the units, after they had been cut out and formed, over to the tape?—*A.* That is one of them.

Q. I take it there is no difficulty in cutting units of any description out of a ribbon or strip of metal?—*A.* Oh yes.

Q. It is only a matter of designing the tools, isn't it?—*A.* It is the question of description.

Q. I mean if you have decided what you want, if you have designed your unit, there is no trouble except designing tools to cut that unit out of a strip of metal, is there?—*A.* Well I would turn it the other way, and say that you do not design a unit that cannot be made. You have to design your unit so that it can be cut out.

Q. But you have got to design your unit, and then you have got to design tools that will cut it out of a strip of metal?—*A.* Well you design them together.

Q. How do you mean? You had to make up your mind first what your unit was going to be, hadn't you?—*A.* Oh no. I had to make up my mind what the unit was going to be when I found I could manufacture it. It is an easy thing to design a unit for a slide fastener if you do not have to make it. It is the making that is the hardest part, so that it can be made commercially.

Q. When I say making it I mean simply stamping or punching it out or forming it?—*A.* Well you have to design a unit so that it can be formed.

Q. Yes, obviously. You have to design a unit that could be formed?—*A.* Yes.

Q. And you are the man who designed this particular unit?—*A.* Yes.

Q. And the next thing was to cut it out on the ordinary power press punch?—*A.* No, I don't agree. That went hand in hand.

Q. Well you had to design it first and then cut it out afterwards, hadn't you?—*A.* No, I designed the method of making it at the same time. I always had to meet myself halfway. When I tried to get something in the way of making the unit I found that it could not be done and I had to modify my unit, then I tried it again and found, Well now I have got to modify the machine, and then I had to modify the unit.

Q. When you say "modify the machine," was there any more than altering the tools that you punched with?—*A.* I probably made ten or twelve different designs of an automatic machine to fit into that particular power press.

Q. Now you are getting ahead of the story. I am talking of the power press and punch only, I am not talking of the assembly?—*A.* Are you talking about the plain blanking?

Q. A plain blanking press is what I am talking about?—*A.* Taking out a disc of metal?

Q. Yes. Is there any difficulty about that?—*A.* That is a well known mechanical operation.

Q. Any mechanic can perform that?—*A.* If he is skilled in the art.

Q. The difficulty, I suggest, was, having cut your unit out, to bring your unit out to your tape and fasten it on?—*A.* That was a subsequent problem. I was facing problems in cutting it out.

Q. What was the problem in cutting it out?—*A.* In deciding on the thickness of the material, the hardness, the temper, the size of the unit in proportion to the size of the punch necessary to withstand the stress in blanking through a metal of such and such hardness.

Q. Those are all mechanical details, aren't they?—*A.* Technical details.

Q. Mechanical and technical details?—*A.* Mechanics enter into it.

Q. It is technical details?—*A.* It is engineering.

Q. That is the hardness of the metal, the type and hardness of the tool, the size of your unit, all those had to enter in before you designed your unit, hadn't they?—*A.* That is correct.

Q. For instance you want to know the hardness of your metal?—*A.* Yes.

Q. And you want to know the size?—*A.* Yes.

Q. And the shape?—*A.* Yes.

Q. And you want to know the thickness of your material?—*A.* Yes.

Q. And having done that, you design your unit, don't you? That is, you have got in your units projections and sockets. You had to design your projection and your socket?—*A.* Yes.

Q. And the shape of your units?—*A.* Yes.

Q. Having done that, then you have to cut them out?—*A.* After I had decided on the unit and the design, the machine, then I proceeded——

Q. Now what machine are you speaking of, the punch?—*A.* I am speaking about the whole machine.

Q. No, try and keep that separate in your mind. I am speaking only of the punching out or blanking out?—*A.* Cutting out of a blank.

Q. Yes, that is all I am speaking of. I am not speaking of the assembling afterward at all. I say the mere fact of using a power press to cut out any shape or form of metal is a simple thing that any mechanic understands, doesn't he?—*A.* Under given conditions.

Q. What do you mean by under given conditions?—*A.* When everything is within the limitations of past practice and within the limitations of technical development up to date.

Q. If I give you the particulars of a unit, and the strength I want and the size I want could not you or any ordinary mechanic design a tool that would cut that out for me?—*A.* It would depend on the description you gave me.

Q. You mean if I gave you too fantastic a description you could not do it?—*A.* Correct.

Q. So it has got to be comparatively simple?—*A.* Why——

Q. I mean that you have your limitations?—*A.* Yes indeed, I acknowledge that.

Q. I suggest to you that the real difficulty and the real invention is trying to get your units on your tape. The different steps that take place between that?—*A.* One of them.

Q. Is not that the big problem?—*A.* I have not tried to proportion the percentage of difficulty.

Q. Will you tell us just what takes place in your machine step by step? You feed the metal strip in between rollers, do you?—*A.* No sir.

Q. Well you feed the tape into the machine in some way?—*A.* Yes.

Q. What is the first operation as far as the metal ribbon—I mean you feed it in over rollers, do you?—*A.* In this particular machine it is fed in between rolls.

Q. What is the first step?—*A.* You mean in the feeding of the metal?

Q. Yes?—*A.* There is the connecting rod on the main shaft on the power press leading down to a pawl holder on the extension of one of the shafts, on the shaft of the lower roll——

Q. Well I want to get the first operation on the metal strip?—*A.* Well that is the first operation.

Q. What takes place to the metal strip?—*A.* It is fed.

Q. Then what happens next?—*A.* It is fed forward and it gets under the punches and it is blanked out.

Q. Who designed the punches?—*A.* I did.

Q. In conformity with the terms of your patent?—*A.* As far as I understand the patent, yes.

Q. Then what happens next?—*A.* The blank is pushed back up into the metal strip.

Q. Then what happens?—*A.* Then the metal strip is fed forward with the blank in the strip.

Q. Then what happens?—*A.* And a blank immediately back of the first one is being punched out.

Q. Now keep on with this one that is punched out. What happens after it is pushed back on to the metal strip?—*A.* Then it is fed one step forward, and nothing happens. Then it is fed another step forward, and there is a little piece right in the centre is pushed out.

Q. Is that what you called formed?—*A.* No, pushed out. Then it is fed forward another step and nothing happens again. Then it goes forward still another step and it is being formed.

Q. By what?—*A.* By the die and the punch co-acting.

Q. Who designed these?—*A.* I did.

Q. That is in conformity with your patent, is it?—*A.* Correct.

Q. Then what happens next?—*A.* Then I think nothing happens at the next step.

Q. Well, carry it on?—*A.* The following step it is in a position where the jaws straddle the corded edge of the tape.

Q. Still in the metal strip is it?—*A.* Well you can hardly call it a metal strip. The metal strip in the centre is cut up into small pieces.

Q. What holds the jaws in position?—*A.* The two outside edges of the strip, which are left intact, carry the pieces and the blank forward to the corded edge of the tape.

Q. The two outside edges or pieces of the metal strip carry the unit with the jaws open until it meets the tape?—*A.* The tape.

Q. Then what happens to it?—*A.* You mean to this member?

Q. Yes, I want to keep to this member?—*A.* It is pressed on to the corded edge of the tape by two side tools.

Q. What do you call them?—*A.* The side tools.

Q. Pincers or tools?—*A.* Side tools.

Q. How are they operated?—*A.* They are operated by a bell crank operated by the power ram of the power press.

Q. And that clamps the unit on to the tape, does it?—*A.* Yes.

Q. And that is one unit of the completed article?—*A.* It is one unit as it is put on the stringer.

Q. That completes the operation?—*A.* Which one?

Q. That completes the operation on that particular unit?—*A.* Of the metal strip?

Q. No, of the unit on the strip?—*A.* No, not necessarily

Q. Well, what else is there to be done?—*A.* Well we have a few secret processes afterwards. We hold the members down to a finished size.

Q. But they are tightly clamped on to the tape, are they not?—*A.* More or less.

Q. What do you mean by "more or less"?—*A.* The machine can stick them on in a finished form.

Q. Then you have some secret process after that before you turn out the finished article, is that it?—*A.* Yes.

Q. Now you told my friend of the output for 1931 in the different countries. Under what patents are they operating in other countries?—*A.* Under my patents.

Q. In France?—*A.* Yes.

Q. Germany?—*A.* Yes.

Q. Under no other patents?—*A.* To my knowledge they have not acquired any substantial amount of other inventors patents.

Q. As far as your knowledge goes they have not got any other?—*A.* Oh they have, but I say not a substantial——

Q. What do you mean by substantial?—*A.* In proportion to what I have contributed to the invention.

Q. But they are using a combination of machines over there, partly yours and partly someone else's, are they not?—*A.* No.

Q. Is not there a combination, haven't they taken certain features from you and certain features from other people, and are they not operating on machines which differ from yours to a slight extent?—*A.* They may have made some improvements locally in the different factories on the original Sundback machine, the details of which I do not know.

Q. What you call the original machine is not the one that is in production commercially today, is it?—*A.* The original machine is right there.

Q. That is what I say, that is not the one that is producing commercially to-day?—*A.* Not the particular machine there. It is a modified type.

Q. And you hold patents, of course, for those modifications and changes?—*A.* They are assigned.

Q. But you did originally take out patents for the modifications?—*A.* I made some.

Q. How many?—*A.* I don't remember.

Q. When you speak about your production of forty million in 1931 you are speaking of production under your product patent, are you not?—*A.* I am speaking of the product produced by the machine.

Q. All your machines?—*A.* Under my patents, yes.

Q. But you have got forty or fifty patents, haven't you?—*A.* I have never counted.

In the Exchequer Court of Canada.

Plaintiff's Evidence.

No. 10. G. Sundback. Cross-examination—*continued.*

Q. You have a great many?—*A.* Not as many as——

Q. Well you have a great many patents?—*A.* Yes.

Q. And when you speak about your total production you are speaking of the total production under all your patents?—*A.* Oh no. There is a lot of patents under which there is not any production.

Q. But I say when you speak of the total production it is not confined to one patent or one type of machine? All your patents that are in commercial production?—*A.* It is as I understand confined under the patents of that particular machine, the patent in suit.

Q. With improvements?—*A.* Yes, there are some improvements in details.

Q. For which you hold patents?—*A.* They may be improvements on which I hold patents, and some one else may have made improvements also.

Q. Now will you look at this and tell me is that one of your products? If so, what is it?—*A.* Yes, it looks like one.

Q. What type would you call that?—*A.* That looks to me to be the Hookless No. 3.

Q. And made by——?—*A.* The Hookless Fastener Company in Meadville, not to-day but for a short period many years ago.

Q. Do you remember when?—*A.* Prior to 1919 anyway.

Q. And you call that Hookless No. 3?—*A.* Right.

EXHIBIT E. Sample fastener Hookless No. 3.

Q. That was made you say by the Hookless Fastener Company at Meadville prior to 1919?—*A.* Yes, as far as I am able to identify it.

Q. Would that be made on this machine?—*A.* Yes, or the same type of machine.

Q. Now could you give me with any greater degree of accuracy, because that is your long suit, just when this machine first came to Canada?—*A.* That is as close as I can——

Q. What date did you fix?—*A.* 1923 or 1924.

Q. And you say it went to Brownsburg, Quebec?—*A.* Yes.

Q. And from Brownsburg it went to Birmingham?—*A.* I don't know.

Q. Anyway it was recently found in Birmingham?—*A.* Yes, in February, 1931.

Q. In what factory?—*A.* Of Lightning Fasteners, Limited.

Q. And was then shipped to St. Catharines to the Lightning Fastener Company?—*A.* Shortly after that.

Q. Were any of these machines ever made in Canada, of the type of Exhibit 10?—*A.* I don't know, I could not tell you.

Re-examination.

RE-EXAMINED by Mr. BIGGAR:

Q. You were speaking about the successive operations, the successive steps of the process. Will you tell me what that is?—*A.* That is a piece of the metal strip taken out of this machine, Exhibit 10. Part of it is the metal strip in its original form, and the two sides which remain after the——

Mr. McCARTHY : Just a moment. Do you identify that as coming from this machine ?—*A*. Yes.

Q. Did you take it out ?

Mr. BIGGAR : What my friend is asking is, is it out of this particular Exhibit 10, or a machine of the same kind ?—*A*. Taken out of this particular machine under my direction.

Q. When ?—*A*. In St. Catharines a few days ago.

Q. And you were going to say—— ?—*A*. Part of this metal strip is the original metal strip, and the other part is the two sides which remain after the interlocking members have been punched out, formed, carried on and attached to the tape.

Q. How does that outline at the bottom where the solid strip is, come to be in that condition ?—*A*. This is where the power press has been arrested, the motion of the punch has been arrested and withdrawn to show the exact position of the interlocking member in the strip.

Q. And if it had not been arrested what would have happened to that depressed part ?—*A*. It would have been cut out completely and then pushed back up.

EXHIBIT NO. 12. Sample metal strip with some elements punched out.

Q. Then I show you some little pieces. What are these ?—*A*. Those are the interlocking members finished and taken out of the strip, just prior to the operation of pressing them on to the tape.

Mr. McCARTHY : Do you know that ?—*A*. Yes, those are members that were taken out at the same time.

Q. Of the same strip ?—*A*. Yes.

EXHIBIT NO. 13. Sample elements.

Mr. BIGGAR : Now with regard to this machine, Exhibit 10, you told my friend you did not know what happened to the machine between the date it came here. Have you any connection with Kynoch's ?—*A*. Not with Kynoch's.

Q. Are you in a position to have had any information with regard to the history of the particular machine in question, Exhibit No. 10, as to what was done by Kynoch's when they owned the patent ?—*A*. No.

Q. You have told my friend something about the adjustment of those Plako fasteners, and you spoke of the adjustment on the side, the hook side. Will you tell me what that adjustment consisted of ? That is Exhibit 6 ?—*A*. Well that consisted in taking for instance a long stringer of eye sides as it came out of the machine, and a string of hook sides, and starting the first hook into the first eye at the bottom, and with a pair of pliers that were fashioned similar to the slider, with a little different contact on the members, the pliers were pulled up, and then it became evident as you pulled it up how the hooks were going in.

Q. The pliers were pulled up ?—*A*. A pair of pliers were opened up and then clamped over the string on the eye side as they were connected

first one hook into the first eye; these pliers had a similar effect on the fastener as the slider. In other words, tended to close the hook side and the eye side together. It took a little wiggling, you had to move and push and keep on——

Q. Move what?—*A.* Move the pliers on the two stringers in order to wiggle the hooks into the eyes. If the fastener curved, take another pair of pliers and move the hooks or move the eyes or move them both.

Q. Move the hooks and the eyes by reference to what?—*A.* Lengthwise on the tape, in order to correct the spacing, that would make a straight fastener. Prior to that hooks and eyes that had gone through the machine and were set on so out of symmetry that it could not be brought back into the correct form to fit the slider, they were taken off and put in by hand on a separate machine. Then again when these stringers came out of the machine the jerk of the machine had shaken hooks or eyes out of the magazines, and there were blank spaces, and they had to be attached by hand also.

Q. Was that done by the same employees?—*A.* It was done in a separate operation. And also if there were too many missing went into production,—some went to the adjuster for hooks and eyes to be pulled off or pushed lengthwise on the fastener——

Q. What was the other, in production?—*A.* If there were missing hooks and eyes they went direct to a machine operated in a similar way, to the machine which set the hooks and eyes on in the magazine. In this particular machine there was only one space for either a hook, or the other machine an eye, and they were set in, a fastener was pressed in by hand, and the hook or the eye attached by two side tools in a similar way.

Q. Now between those two processes, did all the stringers undergo them, or did only some stringers undergo either one or the other of the processes?—*A.* Well some stringers went under both, and all stringers went under one.

Q. Which was the one that they all went under?—*A.* The adjustment lengthwise with the pincers, and the closing up, trying to close them up.

Q. And you spoke about there being a number of sales agents of the Automatic Hook and Eye Company. What kind of people were those sales agents?—*A.* Agents selling directly from house to house.

Q. Oh you mean peddlers?—*A.* Peddlers.

Q. There were a number of those?—*A.* Yes. There were also—I recall one organized sales company who attempted to market the fastener at their own expense, that is made a real effort to market the fastener.

Q. What happened to them?—*A.* Oh they gave up the ship after they lost their money.

Mr. McCarthy: That must be hearsay.

Mr. Biggar: Answer my friend's question; is that hearsay?—*A.* No.

Q. Where did your information come from?—*A.* From Mr. Clark who was the head of the Sales Company.

Q. Well how often did you see Mr. Clark when this company was acting as sales agent?—*A.* I was in contact with him almost daily.

Q. Did there ever come a time when he ceased to take any more fasteners?—*A.* Yes, indeed.

Mr. McCarthy: My friend is leading very extensively.

Mr. Biggar: Well he is not still continuing to sell the fasteners?

His Lordship: Oh I think it is agreed that they gave up the ship and lost some money.

Mr. Biggar: Two questions I would like to ask that I did not ask in chief.

Q. I did not ask you to tell me the number of employees per 500 feet of stringer of fastener or something with this machine, Exhibit No. 10?—*A.* One operator had charge of two machines.

Q. And between them they would turn out you told us about 280——?—*A.* 560 to 600 feet of finished fastener.

Q. And you told me that there were no other fasteners at some early date, but I did not ask you what other fasteners were there on the market than those you were selling, I mean the Automatic Hook and Eye Company or Hookless Fastener Company were selling up to the time you got the production of machines like Exhibit 10 on the market?—*A.* Well there were the ordinary hooks and eyes, buttons, snap buttons, laces, and two or three fasteners with clips sliding on tape. One was the Baumgartner, another one I think the X-L something, and one which was called the Princess. The three last ones however were only occasionally found, that is they were not on the market prominently, and could probably not be purchased.

Q. So that the only ones that were on the market prominently were which?—*A.* Hooks and eyes, buttons, laces——

Q. Of slide fasteners were there any?—*A.* None of the type that is being manufactured today.

Q. But apart from this type you have spoken of, I.X.A., Princess, the ones that slide as you describe, what other slide fasteners were there?—*A.* Nothing.

Q. I would like to put in one of those Princess. That is the type—well there were something like three of this general type?—*A.* Well there was still another, a fourth one, a French.

Q. Of this general type?—*A.* Yes, all of the same type, all four.

EXHIBIT NO. 14. Sample I.X.A. fastener.

Q. Will you indicate how continuous your interest in the Canadian patent in question has been since it was issued?

Mr. McCarthy: He has not said it was continuous so far.

A. I might answer that by saying that I had no interest in the Canadian patents between 1921 and 1925.

In the Exchequer Court of Canada.

Plaintiff's Evidence.

No. 11. E. J. Johnson. Examination.

No. 11.

Evidence of E. J. Johnson.

EDWIN JOHN JOHNSON—Sworn, Examined by Mr. SMART.

Q. Mr. Johnson, I understand you are production manager of the Dominion Ammunition Division of Canadian Industries Limited?—*A.* I am.

Q. How long have you been associated with that company?—*A.* 25 years this month.

Q. In 1922 what was your position?—*A.* I just forget.

Q. Director of Ammunition manufacture?—*A.* That is right.

Q. Of the Dominion Cartridge Company. Did that Company become interested in the Sundback machine for making separable fasteners?—*A.* Yes.

Q. Through what connection?—*A.* Through British Metal and Kynoch.

Q. Do you recognize this machine, Exhibit 10?—*A.* There are three or four machines exactly like that. We had blueprints.

Q. When were complete blueprints of the machine sent you?—*A.* Early in 1923.

Q. What was the purpose of sending the blueprints to you?—*A.* To build a machine for British metals.

Q. Did you commence the manufacture of the machine?—*A.* We did, yes.

Q. How did you come to commence the manufacture?—*A.* We were told that to protect the Sundback patent we had to manufacture the machine prior to April, 1923.

Q. Did you actually commence the manufacture?—*A.* We did.

Q. Whereabouts?—*A.* Brownsburg.

Q. Did you have to do with sending the instructions for that?—*A.* I did.

Q. When were the instructions sent?—*A.* I would say early in 1923.

Q. Were you personally at the Brownsburg plant to give the instructions?—*A.* No, I had moved to Montreal then, but was visiting there weekly, which I still do.

Q. Have you been able to locate any documents to indicate when that manufacture was commenced?—*A.* Yes.

Q. Will you tell me what this document is?—*A.* This is a back sheet of our payroll analysis for March, 1923.

Mr. MCCARTHY: What is this evidence of?

Mr. SMART: What is my friend objecting to?

Mr. MCCARTHY: I do not know whether it is evidence.

Mr. SMART: It has not been offered as evidence yet.

Mr. MCCARTHY: The witness has it in his hand.

HIS LORDSHIP: There is nothing objectionable in the question. He is evidently establishing some date, and using a payroll to do it.

Mr. MCCARTHY: I do not know how he can establish it by a payroll.

HIS LORDSHIP: That is a very good way of establishing dates.

Mr. McCARTHY : It depends who made the entries on the payroll.

Mr. SMART : Will you tell me what this document is ?—*A.* It is the rear sheet of a payroll analysis for the month of March, 1923. The work done during that month is stated.

Q. What does it indicate with regard to the commencing of this machine ?—*A.* It says here, British Metal Corporation, Canada, Limited, Ready Fastener Chain Machine, see letter March 22nd, your file O.J. 177-B. That is my own file in Montreal.

Q. Then there are certain items—— ?—*A.* $14.49 in the first fifteen days of March.

Mr. McCARTHY : I object to that evidence.

HIS LORDSHIP : What is the point you are seeking to establish ?

Mr. SMART : The actual date when the manufacture was commenced.

HIS LORDSHIP : The manufacture of this machine ?

Mr. SMART : Yes, of a machine of that kind. I offer it as an exhibit.

By Mr. McCARTHY :

Q. What were you reading from, witness ?—*A.* (Showing document.)

Q. Did you make this entry ?—*A.* No, that is the Chief Clerk, or one of the clerks.

Q. How do you identify it with any date ?—*A.* (Shown.)

Q. All you have got is Sundry Small Accounts, and under the heading you have, British Metal Corporation (Canada) Limited, Ready Fastener Chain Machine, see letter March 22nd, your file——. What is the amount, $14.49 ?—*A.* $14.49 in the first period and $35.88 in the second period.

Mr. SMART : You say you know what that was spent on. What ?—*A.* Spent on parts to build this type of a machine.

Q. Have you been able to locate any bills for any of the castings ?—*A.* We have. This is a voucher of ours covering the casting, covering our orders to make the castings from two patterns we sent down, and on the side it is marked, Sundry Small Accounts, British Metal Corporation (Canada) Limited, Ready Fastener Machine.

Q. That is dated April 2nd, 1923.

Mr. McCARTHY : What is that evidence of, that they made a casting ?—*A.* We made the pattern, and this is the casting made from it.

Mr. McCARTHY : It does not say so on that, does it ? I do not know how you identify it with this machine.

Mr. SMART : Have you the factory order ?—*A.* This is the factory order.

EXHIBIT NO. 15. Payroll analysis sheet.

EXHIBIT NO. 16. Voucher, for castings, dated April 2nd, 1923.

EXHIBIT NO. 17. Factory order dated March 24th, 1923.

Q. Have you the cheque issued to Mr. McOuatt ?—*A.* Yes.

EXHIBIT NO. 18. Cheque to McOuatt.

Q. Then were Kynochs, or British Metal Corporation, billed with this work ?—*A.* Yes.

In the Exchequer Court of Canada.

Plaintiff's Evidence.

No. 11. E. J. Johnson. Examination—*continued.*

Q. What is this?—*A.* That is one of our Montreal vouchers that they send to any outsiders that owe us money. It was reported by the factory to the Montreal office, and then they billed it.

EXHIBIT NO. 19. Bill to British Metal Corporation.

Q. And a cheque by which that was paid?—*A.* Yes, that is the cheque.

EXHIBIT NO. 20. Cheque.

Q. Was the machine you commenced to manufacture ever completely built?—*A.* No.

Q. What happened?—*A.* We had completed as much as we wanted at the time, and then there was talk about sending us up some machines.

Q. Did you receive any demand from any outside party for a machine?—*A.* No.

Q. Did you hear of a new Patent Act at that time?—*A.* Yes, the Act was changed in that year.

Q. You had facilities at Brownsburg, had you, for manufacturing?—*A.* Yes, we manufacture quite a lot of our own machinery.

Q. Had you complete blueprints of this machine?—*A.* Yes.

Cross-examination.

CROSS-EXAMINED BY Mr. McCARTHY:—

Q. Now what do these exhibits you have put in represent? Is that the entire work your factory did?—*A.* Yes sir.

Q. Which amounted to $63.65?—*A.* Yes.

Q. What was that spent on? Getting some castings?—*A.* Castings and making parts of the machines.

Q. Do you know what parts were made?—*A.* No, I am not sure.

Q. You do not know whether it was the power press?—*A.* It was the power press.

Q. But there is more than the power press there isn't there?—*A.* No, that is just the power press with the attachments.

Q. Was this for the attachments or the power press?—*A.* That is to build the whole thing. Just small castings for that machine, the cams and sub-base of the machine.

Q. You could not identify this unless you had the blueprints, could you?—*A.* No.

Q. Cast iron castings of pattern 191 and 4 and 5, Ready Fastener Chain Machine?—*A.* Yes.

Q. And that is the same. And you paid some firm $63.65—— ?—*A.* No, we only paid for the castings to P. McOuatt.

Q. You paid $9.07 for castings?—*A.* 124 pounds of castings.

Q. And did you get the castings?—*A.* Oh yes.

Q. And then the British Metal Corporation paid you $63.65 for what?—*A.* For the work we did on those castings.

Q. And that is all you ever did in regard to the machine is it?—*A.* Yes.

No. 12.

Extract from Examination on Discovery of G. E. Prentice.

Mr. SMART: I read from the Examination of Discovery of GEORGE E. PRENTICE, President of the G. E. Prentice Manufacturing Company.

" 1. *Q.* Your residence?—*A.* Berlin, Connecticut.

2. *Q.* Your position in the G. E. Prentice Manufacturing Company?—*A.* President.

3. *Q.* When was that company incorporated?—*A.* In 1912.

4. *Q.* And it has carried on business continuously since?—*A.* Yes.

5. *Q.* One of the articles which is manufactured is a separable slide fastener?—*A.* It is.

6. *Q.* Will you produce a sample of it?—*A.* If you will show me what article we make on which you claim there is infringement I will give you a duplicate of it.

7. *Q.* I am showing you a separable slide fastener and perhaps you can identify it as your manufacture and, if not, then you can furnish us with one?—*A.* I would prefer to furnish a duplicate.

8. *Q.* You have produced a fastener which I will ask to have marked Exhibit No. 1?—*A.* Yes.

EXHIBIT NO. 21. Fastener marked on examination for Discovery, as Exhibit No. 1.

9. *Q.* Am I correct in understanding that the fastener on the side with the beaded tape is applied with a machine?—*A.* Yes.

13. *Q.* You have not any drawings of the machine?—*A.* No.

14. *Q.* Is there any written agreement in existence between yourself and the Colonial Fastener Company Limited in respect to the manufacture of these fasteners or the sale of them in Canada?—*A.* I believe there is.

15. *Q.* Will you produce a copy of this agreement?—*A.* I have no copy of the agreement.

18. *Q.* Perhaps in the absence of the document you will tell me the nature of it?—*A.* I could in a brief way.

19. *Q.* If you will?—*A.* It is giving them, as I remember it now, the exclusive agency for the manufacture and sale of patented fasteners in Canada and also enjoining them not to disclose our machine as it is a secret process and not protected by patents.

20. *Q.* When was this machine sent into Canada?—*A.* Really, I could not tell that.

21. *Q.* Is it the matter of a year or what?—*A.* Longer than that, I should say.

22. *Q.* Three or four years ago?—*A.* I would say so now.

23. *Q.* In any event it was after 1921 and before these proceedings were started?—*A.* Correct.

In the Exchequer Court of Canada.

Plaintiff's Evidence.

No. 12. G. E. Prentice. Extract from Examination on Discovery—*continued.*

24. *Q.* Do you own the machine or does the Colonial Fastener Company Limited now own the machine?—*A.* I really do not know just what the agreement was in that respect.

25. *Q.* You cannot tell me whether you parted with ownership of the machine or not?—*A.* To the best of my knowledge it is still in our ownership but they pay us a rental on it; I may be wrong but the agreement tells that. I believe that is correct.

152. *Q.* How many machines of this type are there in Montreal?—*A.* I do not know I am sure, but really very few.

153. *Q.* When did you first start making this type of fastener, Exhibit No. 21?—*A.* Tell me just what you mean by that, this unit type broadly speaking?

154. *Q.* Yes?—*A.* In 1925; we first put that on the market early in 1926.

155. *Q.* Did you put that on the market in Canada about the same time?—*A.* I would have to go through my records to see about that.

156. *Q.* Roughly?—*A.* Not quite as early. We were selling our spiral wire fastener in Canada first and then this followed. I could not say positively but would say the latter part of midsummer or later in 1926.

157. *Q.* Do you still make a spiral wire fastener?—*A.* Yes, in great quantities.

158. *Q.* When you commenced marketing the fastener, of the type of Exhibit No. 1, in Canada, you knew the Plaintiff company was already marketing this type?—*A.* Yes."

No. 13. W. R. Willetts. Extract from Examination on Discovery.

No. 13.

Extract from Examination on Discovery of W. R. Willetts.

Mr. SMART: Then from the Examination Discovery of WILLIAM R. WILLETTS, an Officer of Colonial Fastener Company, Limited, taken December 18th, 1931.

" 1. *Q.* What is your position with Colonial Fastener Co. Ltd., one of the Defendants herein?—*A.* Manager.

2. *Q.* How long have you been Manager?—*A.* I would say three or four years.

3. *Q.* What is the general nature of the business of Colonial Fastener Company, Limited?—*A.* The making of dress fasteners and fasteners of the type in question.

6. *Q.* You have produced two strips of tape with interlocking fasteners on them; do you manufacture them in Montreal?—*A.* Yes; but there is one piece and you said two.

7. *Q.* Two tapes?—*A.* Yes.

Sample of Colonial Fastener Company, Limited, manufacture filed as Exhibit No. 1.

EXHIBIT NO. 22. Sample of Colonial Fastener Company Limited manufacture marked in Examination for Discovery as Exhibit No. 1.

8. *Q.* That is manufactured by a machine which you have in your premises at Montreal?—*A.* Yes.

10. *Q.* Now, Mr. Willetts, it was agreed when we were before the Judge that if you would agree that this fastener Exhibit No. 1 was made on the machine which we are going to inspect tomorrow, then we would not ask you to describe the machine?—*A.* It was made on that machine.

12. *Q.* I understand then that you do not own the machine on which these fasteners are made?—*A.* You are right.

13. *Q.* And you operate them on a leasing agreement with the G. E. Prentice Manufacturing Company?—*A.* Yes, that is the arrangement."

HIS LORDSHIP: Is this machine an ordinary press machine with attachments to it?

Mr. SMART: No, my lord, except in so far as the punches are moved by a reciprocating head. The whole machine is built as one machine. It is not a punch machine with attachments put on.

HIS LORDSHIP: Built for the purposes of the plaintiff?

Mr. SMART: Yes, my lord.

No. 14.

Evidence of F. Ray.

Thursday, February 4th, 1932.

FREDERICK RAY, sworn. Examined by Mr. SMART:

Mr. SMART: Mr. Ray, I understand you are a Consulting Engineer and reside at Shorthills, New Jersey?—*A.* Correct.

Q. Will you give a short statement of your training, related to the matters with which we are concerned in this action?—*A.* I studied mechanical engineering at Stanford University, and Physics and Mathematics in the Graduate Schools of Columbia and Harvard, received the degree of Master of Arts from Columbia University.

I was engaged in practical engineering work as draughtsman, designer and engineer from 1900 to the fall of 1914. In the spring of 1914 I began as a Consulting Engineer, and have continued such work from that time to the present.

Q. What class of work have you been largely concerned with?—*A.* My work has been mostly in connection with the handling and fabrication and construction of metal and metal objects. I have had considerable experience in the forming of objects by power presses and that class of work.

In the Exchequer Court of Canada.

Plaintiff's Evidence.

No. 14.
F. Ray.
Examination—*continued.*

Q. Are you familiar with the art with which this patent is concerned?—*A.* Yes, I am generally familiar with this art.

Q. And with automatic machinery generally?—*A.* Yes, I have considerable to do with it.

Q. Before asking you to describe the machine set forth in the patent in suit, perhaps you will compare the problem presented by the operations performed by that machine with those with which you were familiar in the field of automatic machines, at that time?—*A.* Having in view particularly the size of the objects, and the accuracy with which they had to be made, the problem involved in the construction of this machine was quite different from that of the usual machine which automatically forms metal parts.

This problem required the production of a very large number of quite small metallic parts, each of which had to be the exact duplicate of each and every other one, and they had to be formed with an accuracy of considerably less than 1/1000th of an inch, in most of their dimensions at least. They had to be applied to the edge of the tape, and fastened thereon, and spaced with a high degree of accuracy so that in effect it was like constructing a gear member or a rack member out of little metallic teeth mounted upon a fabric tape, and so accurately made and positioned that any portions of this resulting structure or stringer would co-operate or co-act with any other portion so that they could be combined together to make this fastener.

This co-operation between the stringer as far as I know the art is different from practically all other structures. These two stringers have to work together so that these metallic teeth mesh with each other a good deal like teeth of a gear mesh with the teeth of another gear, so that they can come together and hold together, and open and separate with practically a smooth operation, and with perfect alignment and perfect spacing.

This is a structure which in many ways is like an ordinary metallic rack or gear, and which would ordinarily be thought of as requiring to be made by very accurate machine methods out of solid metal, whereas in this case it has to be made of very small individual parts which in themselves have to be made very rapidly and very cheaply, and then these parts have to be mounted upon this flexible elastic material, this tape, and still the resulting structure must be very much like a gear or rack made by very accurate machine methods.

Q. What do you include in that term?—*A.* They are ordinarily made on a milling machine, or a gear-cutting machine, of that general characteristic.

Q. Then please continue?—*A.* This in my opinion presented at that time a very difficult problem, one which I myself would have thought quite impossible of satisfactory solution. At the present time of course they are in such common use that we think nothing of it.

Q. To what extent were stamping and punching machines used for making small parts?—*A.* Such machines had been extensively used for making small individual parts and large parts for many years.

Q. What would you say about the applicability to making this product?—*A.* As far as I know the art there were no punching machines adapted to making this product just as it is, without changes and modifications and possibly many improvements. This product is a little bit different from the ordinary product which is made in presses or punching machines of this variety, not only due to its small size and the accuracy required, but due to the fact that the scoop on one side——

Q. That is what we call the element?—*A.* Yes, and the projection on the other side are pressed out of the solid metal; that is they are not merely cut from strip as in ordinary punching operations, but this little blank has to be pressed so that the metal has to be caused to flow to form the scoop, and the flow of that metal in the forming of the scoop is caused to go on the other side beyond the original surface of the metal to form the projection.

Q. By the scoop you refer to what we have been calling the recess or socket?—*A.* Yes.

His Lordship: That is the depression?—*A.* The depression.

Q. Both elements are not the same?—*A.* In this fastener, yes, both elements are identically the same.

Q. Each element has the projection and the depression?—*A.* That is correct.

That element, before the depression is made in it, represents the more common product of presses and punches. It was common to cut out various formed articles from a flat strip, to bend such articles from flat strips or from wires; but in this particular problem it required the combination of those various steps and the addition of this die-forming of the metal itself.

Mr. Smart: What do you say as to the problem of putting the fastening elements on to the tape?—*A.* That in my opinion was quite a problem indeed. The elements of course had to be carried to the tape and properly placed about it so that they could be compressed upon it. And the tape being quite flexible had to be very carefully handled so that the elements could be placed upon it with uniform spacing. The fork of the element, the two legs which form that fork and which have to be bent round the beaded edge of the tape had to be both bent exactly the same so that the scoop or recess and the projection on each and every element would be in very perfect alignment with the plane of the tape itself. In other words, in bending up an object of that kind the tendency is for the bending to take place more in one part than another, and that would have thrown off the element from proper alignment. The tape had to be fed forward with a very high degree of accuracy, and its length between successive elements had to be maintained very accurately; that is that length could not be changed by varying tension in the tape, or varying stretch in the tape.

Q. What do you say as to the possibility of forming and attaching operations on two separate machines?—*A.* That would have been very difficult indeed, if not impossible, because it would have involved the taking

of the finished elements from one machine and in some way transferring them and again holding them and presenting them to the tape in another machine.

Q. What machines of an automatic character were already known, working with small metal parts?—*A.* Well there were many machines for making barbed wire for instance, wherein a couple of strands of wire are fed into a machine in a certain direction step by step, the steps usually being of the order of several inches; then another wire being fed into the machine from some other direction, which wire was cut off and pointed by being cut diagonally into lengths of possibly one or one and a quarter inches, and then these pieces of wire or barbs were bent around one of the two wires coming into the machine, and then those two wires later twisted forming the barbed wire. Such machines were quite common.

Q. What other machines could you suggest of that character?—*A.* Then there were machines for making staples, taking a piece of wire and bending it up into staples for various purposes. In some instances those staples were in the same machine bent round other wires to hold them together.

Then there were machines for making these little hooks and eyes used on dresses. Those machines consisted merely in bending up little pieces of wire which were fed into the machine and cut off and bent by suitable dies.

No particular accuracy was required from any of those machines. In some of those machines the hooks and eyes were mounted upon cards for the purpose of sale, carding machines.

Q. How would you compare those machines with the machine in question in this action?—*A.* I do not think they would compare at all. Of course they had many of the same elements that the machine of the patent in suit has, that is elements in general of the same form. The elements were not made the same, they did not have the same accuracy, they did not have to perform the work with the same degree of accuracy. None of them had the same general combination of parts that this machine has.

Q. Did any of them operate on as small material?—*A.* No, none of them. The hooks and eyes were quite small, but even so they were larger, and of course in that case it was the mere bending up a little piece of wire.

Q. In those machines what do you say as to the effect of any irregularity in the product?—*A.* It would have no effect. In fact the product would be quite irregular, the dimensions would be different in the various pieces turned out by such machines. Their shape should be different, that would be quite immaterial.

Q. And as to the speed at which they operated?—*A.* Well most of the machines, as far as I know all of them, would operate much slower. Possibly some of the wire-bending machines, these small machines, would operate quite fast. The barbed wire machines I have seen in operation are not nearly as fast.

Q. Now you are familiar with the patent, and also with this machine, Exhibit 10?—*A.* Yes, I am.

Q. Does the machine, Exhibit 10, correspond to the patent?—*A.* Yes it does in all respects with the exception of the variable feed device which feeds the tape. The patent shows such a device which can be used when desired so as to give curved stringers. With this particular machine that device is left off, so that this machine will only give straight stringers.

Q. But as far as the patent describes the straight attachment and not the curved, does this correspond?—*A.* Yes, it does.

Q. Now perhaps you will give a short description of the operation of the machine, Exhibit 10?—*A.* The machine, of course, is a power driven machine, from a belt. Mounted on this shaft at the top, which reciprocates, is the die-head, and to which the punches are attached.

The strip of metal from which the elements are made is fed at the back of the machine from a suitable roll or coil. It passes first into a guide, and then between a pair of rollers at the back of the machine, which are pressed together under spring pressure so that they will get a good firm grip upon this strip of metal. Those rollers, or one of them—in fact they are geared together so it is proper to say both, are advanced in a step by step motion by a ratchet wheel on the side with a pawl and reciprocating lever which is reciprocated back and forth by a cam mounted on the main shaft so that at each revolution of the shaft the strip is advanced one step. That strip then passes on through other guides, and finally comes to the front of the machine where it can be operated upon by the punches.

The reciprocating head first has a punch which passes down through a cover plate or stripper plate which comes down and at times rests upon the top of the metal strip to hold it in place, and it cuts out from the strip a little element. That element is forced down into the die-plate, the die-plate simply having a hole the shape of the element.

HIS LORDSHIP: Well it is not separated from the strip?—*A.* Yes, it is separated entirely from the strip by the punch, and pressed down into the die-plate. There is a hole in the plate just the shape of the element.

Mr. SMART: That is the first punch?—*A.* The first punch. Then there is a punch located down below, which projects up into that hole in the die-plate, that is spring pressed, and it is also positively moved by another cam on the main shaft, so that after the element has been punched down in the die-plate a little plunger comes and pushes it up again, pushes it right back into the strip from where it was cut out and at the same time it lifts that strip up.

Q. Anything done to the element?—*A.* No, nothing done at that time, it is simply replaced in the strip. Of course a punching like that, replaced into the strip from which it is punched, will fit quite tightly in the strip, be held tightly.

Then the next step, or it may take two steps of the strip, that punching is advanced with the strip until it comes under another little punch, which punches out a little loose piece in between the legs or forks of the element.

There is a little loose piece in there due to previous punchings, that just punches that out and that goes down through a hole in the die plate and passes away as scrap.

HIS LORDSHIP: That is the second punch?—*A.* Yes, that is the second punch. Then there is a third punch that comes down again on the next rotation of the press, after the element has been advanced another step or two, and that punch simply comes down and forms the little depression. It is set at just the right length so that it will just in effect pass into the element, press into it a definite distance, forming that little depression, and just below that there is a depression in the die plate, and when the punch forms the depression on the top side it forces the metal down into this depression of the lower die plate, thus making the projection on the back of that element.

The element is then complete. It is still being held between the sides of the original metal strip. It is then advanced another step or two so that the fork end then surrounds the beaded edge of the tape. After it has been placed in that position these two side-pressing tools, which are connected by means of cranks——

HIS LORDSHIP: Where is the tape now?—*A.* (Shown.) We can consider that this little element which has been formed has been advanced so that the forked end surrounds the bead of the tape. Then the side-pressing tools at the proper time are advanced, and the front edges of those tools contact with the sides of the strip, which is lying at each side of the element itself. They press that strip in so strongly that they bend those two legs, and bend them right around the beaded edge of the tape without coming in direct contact with the element itself.

The tape, after the element has been attached to it, is advanced a step ready for the next element to come on below.

The tape is taken from a suitable reel, and passes up over there—there is a reel shown at the top, but the particular source of supply is immaterial—it comes down, passes through a guide and comes up through a little tension device underneath the machine, which consists of a little clamp, spring-pressed so as to give uniform frictional resistance to the movement of the tape. The tape is pulled up against that friction. I thought at first hand that the tension device was further down, it is located here as you can see, just below the die-plate. It can be removed, it simply consists of a little spring-pressed clamp with a groove in it for the beaded edge to pass through.

The tape then passes up by the point where the elements are applied, and then continues on up through the machine and over the tape-feed wheel.

This particular tape-feed wheel has a corrugated or knurled surface, so that there is good frictional contact with the tape. The tape is pressed against the wheel by a little spring-pressed shoe at this point so that the movement of the tape will correspond exactly with the movement of the wheel and there will be no slippage between the wheel and the tape. This wheel is mounted on this horizontal shaft, and that is turned step by step

by a pawl and ratchet wheel at the left of the machine, that pawl being mounted on this reciprocating lever which in turn is driven by a connecting rod to this crank mounted on the main shaft of the machine, so that when the machine turns around the pawl is reciprocated back and forth, and that reciprocation is over quite an arc. There is a cam on one side that this pawl rides on through most of its movement, so that it is only allowed to drop to the teeth of the ratchet wheel near the end of its movement, so that it will just move them one step at a time.

Now there is a little device here, another supplemental ratchet device, a friction device, that is caused to reciprocate back and forth by a lever which in turn is moved by contact from a connecting rod running down from this cam, so that this lever reciprocates back and forth a small amount, and it turns this friction ratchet around slowly, requiring to turn it completely, a definite number of strokes of the machine. That number can be varied by changing the throw at the back by a micrometer adjustment. So if it is desired to mount on the tape 50 elements in a group, this reciprocating ratchet requires 50 movements to make a definite proportion, almost a complete revolution. In doing that it carries a supplemental pawl just at the backside of the wheel, and when that supplemental pawl reaches its definite position the main pawl comes in contact with it and then it connects to the ratchet tooth and there is a large movement of the ratchet wheel, which then gives the spacing between the groups.

HIS LORDSHIP: Those punches I suppose are in line, one follows the other?—*A.* That is true. And they are definitely spaced apart so that they will hit the blank after one or two steps exactly at the point desired.

Mr. SMART: You have inspected the machine of the defendant which is alleged to infringe? I understand you visited the factory of the Colonial Manufacturing Company in Montreal on December 19th, and also inspected the machine at the Chateau Laurier immediately before this trial?—*A.* That is correct.

Q. Will you describe that machine?—*A.* I asked my friends to produce this machine——

Mr. MCCARTHY: We hope to have it here this afternoon. It weights about half a ton.

HIS LORDSHIP: Mr. McCarthy spoke to me about it this morning. It might be dangerous moving it up here, I could inspect it downstairs, it could be explained to me there, and the explanation later given here in the record.

Mr. SMART: Will you go on with your description?

WITNESS: I will describe it in connection with this machine, (Exhibit 10) using this machine to illustrate the other.

The machine is mounted on legs with a table very similar to this. It has a frame very similar to that with a crank shaft at the top, arranged in substantially the same manner. There is also the reciprocating head

In the Exchequer Court of Canada.

Plaintiff's Evidence.

No. 14.
F. Ray.
Examination—*continued.*

which carries the punches, very similar to this. The machine is belt-driven just like this machine.

It has a strip of metal fed into the machine, this strip being taken from a reel which is placed on the floor at the left of the machine, and passes up and into the machine from the lefthand side across the front of the machine, instead of coming in from the back as in this.

HIS LORDSHIP: Transversely.

A. Yes. There are mounted at the left of the machine a number of rollers which are pressed together and which are operated with a ratchet and pawl, in general just the same as the feed of this machine, that is the feed of the strip. So that this strip is advanced step by step, one step for each revolution of the press.

In the machine of the patent the various eccentrics and eccentric rods and cranks for controlling this auxiliary mechanism are mounted directly on the crank shaft of the machine. In the defendants' machine there is another shaft which is placed at right angles to the crank shaft, and in alignment with it, and which is geared to it with bevel gears, so that this auxiliary shaft makes one rotation for one rotation of the crank shaft. Various operating mechanisms, cams and cranks and eccentrics are mounted on this auxiliary shaft. That is due perhaps to the change in direction of the movement of the feeds.

Now this strip passes into guides at the left, just like the guides on the machine of the patent, and comes into a die-plate, that is over a die-plate with a strip plate above it having holes through it where the punches can operate.

There are two punches on the defendants' machine, and they are in alignment in the same direction as the strip moves, that is perpendicular to the alignment of the punches in the plaintiff's machine.

The first punch is the forming punch. It is a punch which comes down and makes a little depression on one side and forms the projection on the other side, and that little projection and depression are formed right in the strip. There is no element at that time, they are pressed right into the strip.

Then the strip advances a step or two and the cutting punch comes down and cuts out the element, and that element that is cut out of course is so arranged and spaced that it contains the little recess and the projection.

Then that element is pressed right through the die plate down to a lower level and into a little cavity in a transverse slide. There is an auxiliary slide which is moving from the front to the back of the machine, that slide being controlled by a cam arrangement which is attached to the reciprocating head so that it will be in its back position when the element is pressed down through the die-plate into the hole in the slide. Then it advances the element until the forks or prongs encircle the beaded edge of the tape, and it advances it even further and bends the tape out somewhat in this advancement. It does that because the side tools which are used to press the forked ends of the element about the tape are mounted on vertical

axes, one on each side of the tape, so that those side tools instead of moving directly in and out, as the side tools of the machine of the patent do, rotate in a horizontal plane about these vertical axes. They are so set that their front or working ends slope in towards the machine in their normal position, being held there by little springs. And they are so placed apart that when they are in that normal position their working or front edges just come in contact with the legs or prongs of the element; then as the element is moved outward these side tools rotating upon their axes, their ends in effect come together due to that rotation, and thereby they press those legs right together around the beaded edge of the tape. Those levers are moved forward or rotated by that reciprocating slide, as well by the element itself possibly.

The elements themselves have been stamped out of the strip of metal which has been fed transversely to the machine, and that strip passes on out to the side of the machine, and of course is scrapped.

The tape is supplied to the machine in the form of a roll or spool mounted underneath the machine, passes down through a take-up device, and then up through the machine, just as in the machine of the patent, and it has likewise a very similar tension device which presses against the tape just below the die-plate. It then passes up over a knurled roller which is very similar to the feed disc or roller of the patent in suit except that that roller is turned around with its axis running front and back of the machine, or in a line perpendicular to the feed roller in the patent machine. That tape runs over this roller and down and under another roller, which is likewise corrugated, and which is geared to the first one so that they both turn together at exactly the same speed, and then up to a reel where it is wound up, on the left-hand side of the machine.

This tape feed disc, or the two of them, are turned step by step by means of a pawl and ratchet wheel substantially the same as shown in the patented device. The reciprocating arm being driven by means of a connecting rod to a variable crank, that crank of course being mounted on the end of this shaft which runs fore and aft, the connecting rod running down and the reciprocating lever operating in a plane at right angles to this one.

The left-hand pair of the feed discs are mounted on a shaft which has a relatively small pinion in the front, that is geared to a larger gear which is located in the bearings of this structure; so that as the feed disc is advanced step by step it gradually turns this large gear, and after a due number of revolutions of the press this large gear has been turned sufficiently to advance another ratchet wheel to a definite point, where a reciprocating pawl which is also being worked from this same shaft drops into one of the teeth, and that gives it a large turn to give the spacing between the groups.

Mr. SMART: Now as to the product turned out by the defendant's machine?—*A*. The product is substantially identical.

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Plaintiff's Evidence.

No. 14.
F. Ray.
Examination—*continued.*

Mr. SMART: I will put in a sample, a small section of the product as it comes from the plaintiff's machine?—*A.* Yes, that is a stringer with a number of groups of fastener elements mounted upon it.

Mr. MCCARTHY: Does that mean this identical machine?

Mr. SMART: The plaintiff's machine, Exhibit 10. Not that one machine.

Mr. MCCARTHY: How does he know?

Mr. SMART: It does not matter if he knows or not. It is illustrative of the stringer.

Mr. MCCARTHY: He did not say that. He put that in as a product of this machine.

WITNESS: I did not mean to.

HIS LORDSHIP: He said the plaintiff's machine.

Mr. MCCARTHY: The plaintiff has a good many machines.

HIS LORDSHIP: I suppose they are much the same.

Mr. MCCARTHY: We do not know that.

Mr. SMART: This is an illustration of a thing shown in the patent.

Mr. MCCARTHY: My friend is saying that, I am not accepting it.

EXHIBIT NO. 23. Sample of product of plaintiff's machine.

Mr. SMART: As to the form of elements that are formed, these units, is there any difference between the ones which you see here in the plaintiff's fastener and those made by the defendant?—*A.* There is a slight difference in the form of the elements.

Q. Now I would like you to compare briefly certain of the mechanisms. First the mechanism for feeding the tape and securing the proper spacing of the elements from each other, and the groups from each other, how does that compare in the machine of the patent, and the defendants'?—*A.* I should say as a general thing they are the same. They differ in details of mechanical construction. The same result is obtained.

Q. By both feeding mechanisms?—*A.* I should say the same degree of accuracy in the feed, the same tension on the tape, and the same close spacing for the attachment of the elements, and then the large step to separate the groups.

Q. That group-separating mechanism, what term do you apply to that?—*A.* Oh a double pawl and ratchet mechanism.

Q. Then as to the mechanism for compressing the jaws of the elements on to the corded tape, will you compare that?—*A.* Both devices are a mechanism for exerting a pressure substantially at right angles to the tape. They differ in mechanical detail, and in the details as to how they are operated. They both receive their power from the reciprocating head of the press. In the case of the plaintiff's machine there is a connecting link, a horizontal lever, a rocking shaft and a vertical lever to cause this horizontal movement of each of the side tools. In the defendant's machine

there is a vertical cam which co-acts with the horizontal sliding plate, which in turn presses against the rocking or pivoted levers and turns them about their axes, and as a result causes the force set up perpendicular to the tape which presses the jaws together. I should say they are well known mechanical equivalents.

Q. Then as to the mechanism for transferring the punched and formed element from the punching and forming dies to their position straddling the tape?—*A.* In both instances the element is held fixedly in the transfer mechanism. In the machine of the patent this transfer mechanism is the balance of the metal strip itself, over and above the element which has been punched from it. In the defendant's machine it is a separate slide, in which the element is placed directly by the punch, and in which it is held and then moved to the tape. I should say that they are equivalent methods of doing the thing, as the essential thing is that the control of the element be not lost in the machine, or that it is always held in a definite relation. It is held in the relation in which it is punched from the metal strip.

Q. Then what do you say as to the punching and forming mechanism?—*A.* I should say they are substantially the same. The steps have been reversed, but the same general steps are taken, the same type of punches and dies, and substantially the same result obtained.

Cross-Examined by Mr. McCarthy.

Cross-examination.

Q. Mr. Ray, I think you said it was common practice before 1913 to die-form a metal strip before punching it out?—*A.* No, I didn't say that.

Q. I took you down as saying that?—*A.* No, I didn't say that.

Q. Is it so?—*A.* I don't think it is.

Q. Not in your experience?—*A.* By die-forming I understand you to mean the actual flow of the metal of the strip, not mere cutting or bending of it?

Q. I mean the die-forming in the metal?—*A.* Well would you define the meaning?

Q. Isn't that clear enough?—*A.* No, I don't think so. The term could be used differently by different people.

Q. How do you use it?—*A.* I use it to mean the actual flow of the body of the element itself, forming the depression on one side and the projection on the other.

Q. What do you mean by the actual flow of the metal itself?—*A.* Under the pressure of the punch the metal flows down below it.

Q. What do you mean by flows?—*A.* I cannot express it any differently. Metal under heavy pressure flows, is a viscous solid, and that metal flows under the pressure of this punch.

Q. Which punch are you speaking of?—*A.* The punch which forms the depression.

Q. In which machine?—*A.* In either machine. Either the machine of the patent or the defendant's machine.

Q. In which case does the metal flow more?—*A.* I haven't measured it.

Q. Now in these examples you have been giving are you dealing with the plaintiff's modern machine or this machine we have before us?—*A.* I am dealing with this machine.

Q. You know that in the plaintiff's modern machine the metal is not made in ribbon but in wire, don't you?—*A.* No. I don't know that.

Q. Now roughened feed rolls for feeding fabric without slipping have been in use before 1913, haven't they?—*A.* I don't know of any instances.

Q. What are called the side punches in the plaintiff's patent which you refer to as the side tools, they are positively actuated are they not?—*A.* Yes.

Q. And in Prentice's patent they are moved, the vertical pieces that you speak of are moved by the unit itself, the element itself?—*A.* As far as I can determine by the inspection I was able to make of the machine, they are moved by the horizontal slide which fits the element to the tape.

Q. There is no micrometer on the Prentice machine for accurately regulating the tape feed, is there?—*A.* No, nor is the one on the machine of the patent for that purpose.

Q. Now you spoke of other machines that you are familiar with, for instance machines for making barbed wire. What machine have you reference to?—*A.* I don't remember the particular machine. I have seen a number of those machines for many years past.

Q. In actual operation have you seen them?—*A.* Yes.

Q. Where?—*A.* Well I saw them in San Fancisco, just where I cannot say. I have seen a number of them.

Q. Operating commercially?—*A.* Yes.

Q. That is what is known as the barbed wire making machine, you have reference to several types of them?—*A.* Yes.

Q. And then the machine for making hooks and eyes, you have seen those in operation?—*A.* I don't know, I don't remember any instance. I may have.

Q. You instanced those. Then what you call the carding machine?—*A.* Yes, I believe I have seen such machines in operation.

Q. Where? Do you know?—*A.* No, I cannot say. I have a remembrance of having seen them.

Q. But you cannot tell me where.

Mr. SMART: Would your Lordship permit another question, not strictly re-examination?

By Mr. SMART:

Q. What would you say as regards the plaintiff's machine as to the necessity of holding the elements that are to be fastened on the tape against twisting or turning?—*A.* I should say that was important, so as to get a uniform bending of the forked end.

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Plaintiff's Evidence.

No. 14.
F. Ray.
Cross-examination—*continued.*

Q. And in the tape-feeding mechanism what do you say as to the necessity of having more than a spot contact for the tape feed?—*A.* That of course is very important, because in my opinion it would be impossible to feed the tape accurately between rollers that just had a line contact, I believe is what you really mean. There is a creeping of a fabric tape between the rollers in such conditions.

Q. Which kind of mechanism is employed in the defendant's machine in that respect?—*A.* A mechanism similar to that of the machine of the patent, having a long arc of contact between the tape and the feed wheel.

No. 15.
L. Walker.
Examination.

No. 15.

Evidence of L. Walker.

The evidence of Lewis Walker, taken on Commission at Meadville, Pa., December 28th, 1931, was read, by Mr. Fox.

The examination of Lewis Walker, on behalf of the Plaintiff before Eleanor E. Heil, Notary Public, in and for the County of Crawford, State of Pennsylvania, at Meadville, Pennsylvania, December 28th, 1931.

COUNSEL: O. M. Biggar, K.C. for Plaintiff;
S. A. Hayden, Esq. for Defendants.

LEWIS WALKER, sworn. Examined by Mr. BIGGAR.

1. *Q.* Colonel Walker, would you give your name in full, your age and position in the Hookless Fastener Company?—*A.* Lewis Walker. I am in my 77th year, born in '55. I am the President of the Hookless Fastener Company, have occupied that position since 1913.

2. *Q.* When did you first get interested in Hookless fasteners?—*A.* I became interested as an investor in 1893 on my way to the Pacific coast—I stopped off at Chicago and met the inventor of that day, W. L. Judson and his associate, H. L. Earl.

3. *Q.* And you continued to be interested in Hookless fasteners since that time?—*A.* From that time to the present.

4. *Q.* At that time Mr. Judson, whom you speak of, had developed a fastener which he was endeavouring to manufacture commercially had he not?—*A.* At that time they were organizing the company to vest Mr. Judson's patents in that company to obtain money to carry on the practical development.

5. *Q.* And did they succeed in carrying on the practical development?—*A.* Yes, he had a little shop that he was working in and they built a machine such as it was, according to their ideas at that time.

6. *Q.* And when was that machine completed?—*A.* It is not completed today. They were still working on it when they abandoned it.

In the Exchequer Court of Canada.

Plaintiff's Evidence.

No. 15.
L. Walker.
Examination—*continued.*

7. *Q.* When did they begin to try to work it?—*A.* Well, from Chicago, there was a man by the name of Ely of Elyria, Ohio, a capitalist became interested and identified with the enterprise and such shop equipment as was partially developed was brought along with the very early machine, to Elyria, Ohio, and put into a shop there and Judson was active in it.

8. *Q.* And was work done at that time in trying to improve this machine?—*A.* From 1893 up to the present time, I do not think we ever suspended our effort to improve that machine.

9. *Q.* And as far as that original machine of Judson's was concerned, did it ever turn out actual fasteners?—*A.* Colonel, I would not know how to answer that question directly.

10. *Q.* It never turned out commercial product?—*A.* No.

11. *Q.* It did turn out fasteners but not commercially?—*A.* I could not explain how much of that early product was hand work and how much was machine work.

12. *Q.* The machine was not successful in turning out fasteners?—*A.* No, not commercially—not in quantities.

13. *Q.* And during how long did Judson continue his efforts to make that machine successful in Elyria, I mean approximately?—*A.* Fifteen to twenty years.

14. *Q.* In Elyria?—*A.* In Elyria, oh, I think that we were in Elyria about five or six years.

15. *Q.* And the next move was where?—*A.* I think to Catasauqua, Pennsylvania.

16. *Q.* Before leaving Elyria, I might ask, was there any other engineer at work with Judson in Elyria or was he alone?—*A.* He was alone.

17. *Q.* And then at Catasauqua, did he have any assistants there?—*A.* No mechanical assistants except such employees as we had.

18. *Q.* Then was there any change in practice as regards the building of the machines with Judson's assistants at that stage?—*A.* As I recall about the time we went to Catasauqua—you are asking me to cover a period of over thirty years—and it has been my rule to bury my dead horses as I went long especially in this business, and not to dig them up and smell them over again. I have not been dwelling in that past a great deal in the last fifteen or twenty years so if I seem a little hazy in my testimony as to the early period owing to a long time past——

19. *Q.* I understand. About that time there was some effort to get a machine built by a machine company?—*A.* Yes, about the time we were leaving Catasauqua and went to Waterbury, Connecticut, following Elyria, we got some funds in the treasury and then went down to Waterbury, Connecticut, and they got all the help in one of the toolmaking establishments there and went into a second toolmaking establishment. We must have been a year and a half in those two shops.

20. *Q.* Do you remember the names of those two shops?—*A.* I think that Manville, E. J. Manville, was one. I would have to look up my records to find out.

21. *Q.* And was there not a considerable sum of money spent at that time?—*A.* As I recall, we spent from sixty-five to seventy-five thousand dollars.

22. *Q.* And did a machine result from the efforts of those machine companies?—*A.* A machine which made fasteners of that day which we called a C-curity which was entirely metal.

23. *Q.* And what happened to that machine?—*A.* It never got into practical commercial production.

24. *Q.* Was it set up elsewhere than at Waterbury?—*A.* From Waterbury we went to Hoboken, N.J.—no—to Catasauqua, I guess. They had that machine there at Waterbury.

25. *Q.* And they set it up at Catasauqua, I mean, they had it already up?—*A.* And were trying it.

26. *Q.* And you say that it did not turn out commercial fasteners in quantity at Catasauqua?—*A.* It early developed in our experience that the problem was not so much to get a fastener as to get a machine that would make it commercially.

27. *Q.* And did this machine succeed in making it commercially?—*A.* No, sir.

28. *Q.* Subsequent to the company moving to Hoboken, had you been long at Catasauqua when they moved?—*A.* Well, I should judge on to two years.

29. *Q.* At Catasauqua?—*A.* I think so.

30. *Q.* And then went to Hoboken?—*A.* Went to Waterbury from Catasauqua.

31. *Q.* And then perhaps with the Waterbury experience and the Catasauqua experience finally went to New Jersey?—*A.* Yes, to Hoboken.

32. *Q.* And what machines were to be used at Hoboken for the purpose of making fasteners?—*A.* About the time we got ready to do some machine work at Hoboken, they got the idea of a tape machine on fabric and changed the form of the old devices and modified the pull or slider.

33. *Q.* And was a machine for the purpose developed?—*A.* And the machine for that purpose—at that time it was just prior to what I am going to mention—there was a Mr. Lepper and Mr. Aronson, also Mr. Judson and Mr. Sundback came into the enterprise as a draughtsman and I might almost say, as an inventor when he first came there—does that answer you in any way? Probably called himself a draughtsman only at that time but he had some sprouting tendencies in that direction.

34. *Q.* Now, when Mr. Lepper, and Mr. Judson and Mr. Aronson were working and before Mr. Sundback came, did they succeed in developing a satisfactory machine?—*A.* Well, that first year I cannot recall any change. Those men came into the scene of activity—it was Lepper first with Judson, then Judson and then Sundback, but they were in a period of a couple of years. They were all interested more or less in the development. Sundback became the inventor afterward.

35. *Q.* Did you ever have a machine that Aronson's name was connected with?—*A.* I do not think we ever called a machine an Aronson

Machine. Now, when you are away you cannot remember twenty and twenty-five years. The whole mechanical detail was a stepwise development.

36. *Q.* Now, speaking of the time to 1908 or during that time, you had Aronson, Lepper, Judson and Sundback?—*A.* Yes.

37. *Q.* All working? Now speaking of the time up to 1908—did they or any of them up to 1908 succeed in developing any satisfactory machine?—*A.* Partially so, but I do not know that it was largely from any invention. I think the only real practical commercial value we got was after those several years of work.

38. *Q.* And that was the machine in question that was patented in the United States about 1914?—*A.* I think so.

39. *Q.* And until that machine was developed by Sundback, about that time, had any of the others succeeded in getting a satisfactory machine?—*A.* Very definitely and positively, no.

40. *Q.* The company stayed at Hoboken until I think, 1912, was it or 1913?—*A.* 1913.

41. *Q.* 1913. And then moved to here—Meadville—and when you came from Hoboken to Meadville, it had no satisfactory machine at that time?—*A.* As it proved it was not satisfactory, although we were misled and thought possibly it was, but it did not so prove.

42. *Q.* And in 1913, when you came to Meadville, you had quite a small company I guess?—*A.* Just a little old shack out here that I rented for $300 a year.

43. *Q.* Then in the next ten years between that time and 1924 you had other quarters, not the present one at Meadville?—*A.* Yes, we moved from there to Race Street and in the block near the post office, from that building to a building which we built ourselves—we bought a piece of land about 80 feet square and built a four story building, and from there came up here.

44. *Q.* And your business began to expand after this machine had been developed?—*A.* Yes, quite a healthy demand.

45. *Q.* And the company was beginning to do a good business from then on and the business increased rapidly?—*A.* Steadily, for you know there is a long period of years there.

46. *Q.* Well, I am speaking of a period of ten years. I think you have a photograph of the first premises the company occupied in Meadville?—*A.* Yes, we might get a copy of that.

(Photograph produced from catalog.)

47. *Q.* This catalog that I show you has a series of photographs opposite the title page that appear to be a succession of premises of the company in Meadville showing those in the upper left hand corner in 1914 and then the second was made in 1924 and the third the present one marked 1927.

Mr. BIGGAR: This photograph is introduced as Sundback Exhibit 1. When you moved into the premises marked 1924 you only had a part of them did you not?—*A.* Yes, we rented a building in the foreground and

subsequently bought the land and built the building in the background of the picture.

48. *Q.* And it was 1924 that you owned the premises and built the bigger building?—*A.* We had one building at that time that was just opposite the building in the background.

DIRECT EXAMINATION CLOSED.

Cross-Examination by S. A. HAYDEN.

49. *Q.* This original company that you were speaking about, was the Automatic Hook and Eye Company?—*A.* You mean in Chicago?

50. *Q.* No, when you were speaking of Elyria and Hoboken?—*A.* The Automatic Hook and Eye Company was a New Jersey corporation.

51. *Q.* Yes. And this man Aronson that you mentioned—he was employed by the Automatic Hook & Eye Company?—*A.* Yes. It was some Machine and Manufacturing Company and later the Automatic Hook & Eye Company.

52. *Q.* And this man that you mentioned—Lepper—was he in the employ of the Automatic Hook & Eye Company at the same time?—*A.* Yes, sir. Well, I cannot just explain, Mr. Hayden, when Lepper was let out and Aronson came in—it was a gradual change. I think Lepper preceded Aronson and then Aronson and then Sundback. That is as I have it in my schedule.

53. *Q.* Where did you mention the fourth one, Judson?—*A.* He was the original inventor, W. L. Judson.

54. *Q.* Did he precede Lepper and Aronson?—*A.* Yes.

55. *Q.* So that the order of succession, if I may call it that, was Judson, Lepper, Aronson and Sundback?—*A.* I should think so.

56. *Q.* And while Aronson was in the employ of the Automatic Hook & Eye Company Mr. Sundback was also employed by the same company?—*A.* Oh, yes.

57. *Q.* And are you familiar, Colonel Walker, with the commercial construction and operation of these machines or did you leave that for the engineers and draughtsmen to look after? * **Sic.*

58. *Q.* So that the survey that you gave my friend is more of a historical survey than from a knowledge of the mechanics of the question?—*A.* I had a mechanical knowledge of the difficulty of the development if that would answer your question. I did not furnish the mechanical genius but I did have something to do with supplying the money.

59. *Q.* But the various steps that you told my friend of the development of these machines you did not take any active part in that?—*A.* I supplied the money.

60. *Q.* And what you have told him in connection with what those different machines accomplished, this information was passed on to you by reason of your association?—*A.* That is not quite so, Mr. Hayden, it was information that I had acquired by contact with the development and the growth of the entire enterprise.

61. *Q.* But you have not actively engaged in the construction of these machines?—*A.* I did not use any monkey wrenches or files.

62. *Q.* Now then, Colonel Walker, did you know that Aronson had taken out a patent or patents covering such a type of machine as you were speaking about, that he was working on?—*A.* Yes.

63. *Q.* And a machine or machines as mentioned in that patent was constructed by him or under his direction when he was in the shop of the Automatic Hook and Eye Company?—*A.* And the other engineers, yes.

64. *Q.* What was Aronson's position, was he superintendent?—*A.* Superintendent, yes.

65. *Q.* Now then, we might have differences as to just what you mean by a satisfactory machine. Colonel Biggar asked if it were a satisfactory machine. What do you mean by a satisfactory machine?—*A.* A machine that would produce a product at a commercial price and that the product would have durable qualities.

66. *Q.* Still, of course, with regard to the question of price, I suppose that depends to some extent on your market and the volume of your production, does it not?—*A.* Depends on a good many things.

67. *Q.* It is quite an influencing factor in developing whether the machine is satisfactory commercially or not?—*A.* If it would sell, yes.

68. *Q.* And in a commercial operation of a machine, where a machine might produce perhaps a limited quantity of fasteners, if your market were only equal to your production, what would you say?—*A.* Now, Mr. Hayden, you talk about a market. When we began the development of this first machine and thought that we had a machine, we felt that we were in sight of producing a product that the market would absorb by the carload. That was the expression that we used among ourselves. We had high expectations and the fact is that when that situation arose there was larger expectations as to its practical mechanical production value.

69. *Q.* Well now, during this long period of years that you have mentioned here from 1893, I think you went back that far, down to say 1908, did you not—in that period, produce and market fasteners?—*A.* Not such volume that you should consider that we were a manufacturing proposition.

70. *Q.* But you did market fasteners that you had manufactured?—*A.* What do you mean by "market"?

71. *Q.* Sell to the public in any volume?—*A.* In any volume?

72. *Q.* Any volume at all?—*A.* In a small way.

73. *Q.* In any volume at all?—*A.* Yes.

74. *Q.* Perhaps in 1907 or 1908?—*A.* In 1907 and 1908—in a very small way.

75. *Q.* And this machine of Aronson, it was used to manufacture fasteners that you marketed in this small way, that you have mentioned?—*A.* I would think so, yes.

76. *Q.* Was this machine by Aronson in use anywhere else than in your own factory at that time, round 1908?—*A.* No.

77. *Q.* Did you see this machine of Aronson operate in your factory?—*A.* Yes.

78. *Q.* As you recall that machine, did it have means on it for feeding the tape to the machine?—*A.* If it did not have then it did shortly after that.

79. *Q.* Did it have means for feeding the metal to the machine?—*A.* As I recall it—you see right about that time we changed from the old Plako fastener to the fastener we afterwards called the Hookless Fastener.

80. *Q.* I would not consider so much the product of the machine as just some of the devices or parts of the machine and what I suggested to you was that machine of Aronson, did it have means for feeding the metal to the machine out of which the fasteners were punched and also means for feeding the tape to the machine?—*A.* I had not thought of that Aronson machine for fifteen or twenty years. That is a long time, for me to be specific. I am not, without refreshing my memory, prepared to answer that question.

81. *Q.* What would you have to do in order to refresh your memory?—*A.* I would have to look back over my correspondence. Perhaps hunt up some old papers and one thing and another on different machines. When you get to be 86* years old perhaps you won't recall a little incident of thirty years. The men that were actively in the shop ought to be able to give you the answer to these questions accurately.

*Sic.

82. *Q.* I was just trying to continue the flow of your recollections?—*A.* You know the whole development was a stepwise development. It proved positively a fact that the machine for practical purposes that we produced in Waterbury costing some place from sixty-five to seventy-five thousand dollars had no real practical value until these later engineers went to work on it.

83. *Q.* The patent in suit in this particular action, Colonel Walker, was the property of Kynoch, Ltd. Who is Kynoch, Ltd.?—*A.* That was one of the constituent companies of the Imperial Chemical Company and later the Nobel Industries of England.

84. *Q.* And what relationship is there between Kynoch and the Lightning Fastener Company?—*A.* At the present time, they are operating under a licence grant from Mr. Sundback.

85. *Q.* Which—the Kynoch?—*A.* Yes.

86. *Q.* I was asking you what was the relationship, if any, between Kynoch and Lightning Fastener Company of Canada?—*A.* You mean now?

87. *Q.* Now, first?—*A.* They are operating under the patents received from Canadian Lightning and Mr. Sundback who sold first his patents to the Kynoch Company including Canada and then afterwards repurchased them and vested them in the Canadian Lightning Company.

88. *Q.* Do you remember when that was,—in or about 1924?—*A.* Mr. Sundback can give you that information correctly and direct. I can't recall the facts and it is all a matter of record.

89. *Q.* Had the Hookless Fastener Company any interest in the foreign patents granted to Mr. Sundback outside the United States in this machine?—*A.* Our contract with Mr. Sundback was that he would own the foreign patents. Shortly after 1913 when we came out here, we had a fractional interest and rather than keep up the expense of foreign patents, we amended

our contract so that he owned all the foreign inventions outside the United States and its dependencies, developed by Hookless Fastener Company and that we had owned prior to 1913 or 1914.

90. *Q.* Was it in or about 1914 that your company started to use the machine which I will call say, the Sundback machine?—*A.* Well, whenever it was invented.

91. *Q.* That is the machine covered by United States patent of 1914 is it, Mr. Fox?

Mr. Fox: I could not give you that offhand.

92. You see the patent on this machine in Canada was much later, Colonel Walker. I am trying to ascertain from you if I can the American patent on this same machine, you cannot help me on that, can you? You see, there is a Canadian patent covering the machine and that Canadian patent is dated 1921 and it is the machine under the patent which it is alleged that the defendants have infringed. Now, what I was asking you from your recollection, was the corresponding United States patent?—*A.* I could not answer that without going into the records and refreshing my memory.

93. *Q.* Well, I think in answer to a question of my friend you made the statement that the machine you were speaking about was developed and patented in 1914, it was 1915 in the first application. He made reference to a machine that was patented in 1914 and you agreed with him so I understand now that it should have been 1915 so far as the patent is concerned. Now, that machine that you told Colonel Biggar about having been developed and patented in 1914 or 1915, let us take both years, that is the machine that was subsequently covered by the Canadian patent which is the basis of the present action in Canada?—*A.* I cannot answer that question.

94. *Q.* Well, do you know what machine was developed and patented in 1914 and 1915 in the States?—*A.* As distinguished from the 1921 machine?

95. *Q.* No. As you discussed with my friend, a machine which was developed and patented by Mr. Sundback in 1914 and 1915 in the States. I am asking you what machine was that?—*A.* I would not know how to describe it to you now, Mr. Hayden.

96. *Q.* Have you ever seen the machine which was made under the subsequent Canadian patent in 1921?—*A.* I suppose I have—yes. We have had many machines. Some of them were very valuable and some of them did not amount to anything. As I have said this was a stepwise development.

97. *Q.* I appreciate that and the only reason that I am being particular at this moment is, Colonel Walker, because you told my friend about a machine that was developed and patented in 1914 and 1915 and I want to see what your recollection was with respect to that machine for making fasteners?—*A.* Yes, and it was the first successful one. You know, Mr. Hayden, this has been a long rocky road and we often thought we had

success. Take this one little element in this year's development, we have spent seventy to eighty thousand dollars trying to improve that development this year. We had that all along down the line for years. If you care to be more specific perhaps I can be more direct in my answer but to take the whole thing clear through—a continuous development period of thirty years and spending hundreds of thousands of dollars——

98. *Q.* But you are not suggesting, Colonel Walker, that during this period, you were the only one working and endeavouring to develop the production of fasteners?—*A.* You mean me personally?

99. *Q.* You and your associates?—*A.* As far as I know. There were others but they never got to the commercial stage until very recent years. I had one manufacturer's representative that came in here two years ago to our office and threw his fastener on Mr. Gilmore's desk and said " There's our hardware. We have spent two or three years trying to imitate your fastener and thousands of dollars. We're through. We want to buy fasteners " and they are buying fasteners from us to-day by the tens of thousands.

CROSS-EXAMINATION CLOSED.

REDIRECT EXAMINATION by O. M. BIGGAR, K.C.

Re-examination.

100. *Q.* Mr. Hayden, Colonel Walker has raised some question about what commercial success consists in. What was the position of the company between 1908 and 1913, financially?—*A.* Well, we had pretty good financial success by sale of stock.

101. *Q.* Yes, but apart from the sale of stock. I mean the sale of fasteners?—*A.* 1908 you say to 1913? We had quite a volume.

102. *Q.* Between those dates?—*A.* I should think so.

103. *Q.* Have you any records of that time?—*A.* I think I could dig some up.

104. *Q.* Well, perhaps we can get them again. And after Mr. Sundback's machine was developed in 1914 and 1915 you say that the development has been steady and continuous?—*A.* Since that time, yes.

105. *Q.* And how do the sales compare in volume since 1915 and from 1908 on, taking five years in each case?—*A.* They steadily increased much more rapidly after 1914.

EXAMINATION CONCLUDED.

I certify that this and the preceding 15 pages of typewritten matter contain a true transcription of my shorthand notes taken at Examination of Lewis Walker, President of Hookless Fastener Company, on behalf of the Plaintiff, in action 13145, at the time, place and before the officer named on the first page hereof.

Meadville, Pa., January 6, 1932. GRACE DAVIS.

In the Exchequer Court of Canada.

Plaintiff's Evidence.

No. 15. L. Walker. Re-examination—*continued.*

EXHIBIT NO. 24. Photograph of factory buildings. (Marked Exhibit No. 1 in the evidence of L. Walker, taken on Commission.)

Mr. McCARTHY : I do not know what it is intended to prove.

His LORDSHIP : Oh let us have a little romance !

(Cross-examination read by Mr. McCARTHY.)
(Re-examination read by Mr. FOX.)

Mr. SMART : That is the plaintiff's case.

Defendants' Evidence.

No. 16. G. Sundback. Examination on Discovery.

No. 16.

Evidence of G. Sundback on Discovery.

The Examination for Discovery of Gideon Sundback as President of Lightning Fastener Company, Limited, taken December 2nd, 1931. (Read by Mr. HAYDEN) :

" 1. *Q.* You are President of the Lightning Fastener Company, Limited ?—*A.* Yes.

2. *Q.* When was that company incorporated ?—*A.* I believe some time in 1924.

3. *Q.* What was the name of the company which this Lightning Fastener Company Limited succeeded, I mean the name of the earlier company, or was there an earlier company ?—*A.* I do not know of any.

4. *Q.* Who was the Canadian Lightning Fastener Company ?—*A.* That was the same company as the Lightning Fastener Company Limited; we changed the name.

5. *Q.* The Canadian Lightning Fastener Company was incorporated in 1924 ?—*A.* Yes, the Canadian Lightning Fastener Company Limited.

6. *Q.* And subsequently the name was changed to the Lightning Fastener Company Limited ?—*A.* Yes, that is correct.

7. *Q.* When the Canadian Lightning Fastener Company Limited was incorporated in 1924 did it immediately go into the manufacture of these fasteners ?—*A.* I do not know exactly.

8. *Q.* Can you tell me when they went into production ?—*A.* As far as I know, they went into production in 1924 or even before. Kynoch, who incorporated the company, probably had a production prior to the incorporation of the company.

9. *Q.* Are you speaking of your own knowledge now of the Kynoch operations ?—*A.* Not of my own knowledge, no.

10. *Q.* Now this patent on which this particular action is founded was issued to Kynoch Limited as your assignee ?—*A.* I think that is correct.

11. *Q.* Who is Kynoch Limited ?—*A.* A British corporation, to the best of my knowledge.

12. *Q.* What is your connection, if any, with Kynoch Limited ? (Objection.)

Mr. HAYDEN : 13. *Q.* Now, Mr. Sundback, in the claim in this action it is alleged that there were subsequent assignments of this patent 210202. Have you copies of those assignments to Canadian Lightning Fastener Company Limited ?

Mr. SMART : We will undertake to produce them.

Mr. HAYDEN : 14. *Q.* The machine which this patent 210202 covers, is that the machine in use now ?—*A.* Yes.

15. *Q.* By Lightning Fastener Company Limited ?—*A.* It is not in production.

16. *Q.* Was it ever in production by Lightning Fastener Company Limited in Canada ?—*A.* By Canadian Lightning Fastener Company.

17. *Q.* Would you tell me when that production commenced ?—*A.* In 1924 or prior to 1924.

18. *Q.* Not by the Canadian Lightning Fastener Company prior to 1924 ?—*A.* By Kynoch.

19. *Q.* But my question was addressed to Canadian Lightning Fastener Company ?—*A.* From 1924.

20. *Q.* How long was that machine used in Canada by the Canadian Lightning Fastener Company Limited ?—*A.* Until 1925.

21. *Q.* Do I take it then that the machine has not been used in Canada by the Canadian Lightning Fastener Company Limited or the company now operating under the name of the Lightning Fastener Company Limited since 1925 ?—*A.* That is practically correct.

22. *Q.* You insert the word " practically," why do you use that word ? —*A.* That is to answer your question as to whether it has been in use. If you asked if there was any production I would answer NO.

23. *Q.* Has it been in production by either the Canadian Lightning Fastener Company Limited or the Lightning Fastener Company Limited since 1925 ?—*A.* No.

24. *Q.* What is your distinction between being in production and in use ?—*A.* In saying production I mean commercial production, filling orders.

25. *Q.* What use has been made of it since 1925 ?—*A.* Special fasteners.

26. *Q.* This machine which you have told me was in use in production in 1924 and up to 1925, is that the machine constructed in accordance with the disclosure contained in specifications in this patent 210202 ?—*A.* I would say Yes; there maybe additional features specified in the patent which are not on the machine.

27. *Q.* Now, this machine which was in use and in production in 1924, was it adapted for the production of straight and curved fasteners ?—*A.* Yes, there were some of the machines adapted for making curved fasteners and others only adapted for straight fasteners.

28. *Q.* How many machines did you have in use and in production in 1924 of this pattern of which you are talking now ?—*A.* I do not know exactly how many.

In the Exchequer Court of Canada.

Defendants' Evidence.

No. 16. G. Sundback. Examination on Discovery—*continued.*

29. *Q.* Is that a matter which you can easily find out for me?—*A.* I may be able to.

Mr. SMART: He was not President then.

Mr. HAYDEN: 30. *Q.* Now, in order to assist you in that investigation, Mr. Sundback, where did these machines come from which the Canadian Lightning Fastener Company Limited were using in 1924?—*A.* To the best of my knowledge they came from England; at any rate they came from Europe.

31. *Q.* Were these machines purchased by the Canadian Lightning Fastener Company Limited at that time, 1924?—*A.* That I could not tell you.

32. *Q.* Will the records of the Canadian Lightning Fastener Company Limited, now the Lightning Fastener Company Limited, show this?—*A.* Possibly.

33. *Q.* And if in fact there was a sale the records will so show?—*A.* Possibly.

Mr. SMART: We will get that information if possible.

Mr. HAYDEN: 34. *Q.* Now, Mr. Sundback, you understand, for the purposes of this examination, you are to get this information for me, the number of machines you had in use in 1924 and whether they were purchased or on what basis they were acquired by Canadian Lightning Fastener Company Limited?—*A.* Yes.

35. *Q.* Have you a specimen there to illustrate the product of this machine?—*A.* I have one right here.

Specimen produced and filed as EXHIBIT " A."

36. *Q.* Was this production you have just given me, marked Exhibit " A," the commercial type of fastener which was sold by the Canadian Lightning Fastener Company at that time, in 1924 or 1925?—*A.* Yes.

EXHIBIT " F " (Specimen filed as Exhibit " A " in examination.)

37. *Q.* Is there any other type which was the product of this machine and which was more largely sold commercially than this one which you produced and which is marked " A "?—*A.* No different type of fastener but a smaller size; more production of it.

38. *Q.* When you say a smaller size, do you refer to a smaller size of unit?—*A.* A smaller size of fastener made by the machine.

39. *Q.* Where did this come from, Mr. Sundback; did it come from the plant of the Canadian Lightning Fastener Company, that is, Exhibit " A "?—*A.* It comes from the office of the Lightning Fastener Company, Limited.

40. *Q.* Is there anything in connection with this fastener, exhibit " A," which would lead you to say that this is one of the fasteners that were sold by the Canadian Lightning Fastener Company?—*A.* Yes, I recognize the fastener as a product of that machine.

41. *Q.* But my question goes a little further than that—not as a product of the machine but as a product of the machine that was sold.

Mr. SMART: This particular one was brought from the office and not sold.

Mr. HAYDEN: A similar one. This type of fastener, exhibit "A", being produced by you as coming from the office of the Lightning Fastener Company Limited, the fasteners that were sold by the Canadian Lightning Fastener Company Limited were similar, were they not? That is, similar to exhibit "A"?—*A.* That is right.

42. *Q.* I mean similar in every way, including the slider attachment?—*A.* Yes. Your expression is correct. As far as the slider is concerned I want to add that there were several makes of sliders in production.

43. *Q.* But this is one of the types of slider that was in production at that time in 1924 and 1925?—*A.* Yes, sold at that time.

44. *Q.* Why do you make the question your own before you answer? I said this was a type of slider attachment that was made and sold by the Canadian Lightning Fastener Company in 1924, is that correct?—*A.* To the best of my knowledge that slider was never manufactured in 1924.

45. *Q.* On fasteners which were sold in 1924 you did not have a slider attachment which we have on exhibit "A"?—*A.* The company may have at that time imported some sliders in use.

46. *Q.* Is this exhibit "A" a type of slider that was imported in 1924?—*A.* I cannot tell you whether it was manufactured or imported.

47. *Q.* Would it be one or the other?—*A.* Yes, one or the other.

48. *Q.* Could you produce for me a smaller type of fastener which you told me was also in production at that time?—*A.* Yes, here is one of the smaller size.

Smaller size fastener produced and marked Exhibit "B".

EXHIBIT "G".

(Smaller size fastener marked Exhibit "B" in examination.)

49. *Q.* This type of fastener which you have now produced, and which is marked exhibit "B", was it taken out of your production or is this a special sample that has been made up?—*A.* It is the commercial production 1924–1925.

50. *Q.* And I take it that exhibit "A" is the same?—*A.* Yes, the same.

51. *Q.* And the slider attachment which I find on exhibit "B", is that the slider attachment which was either manufactured by the Canadian Lightning Fastener Company or imported for use at that time?—*A.* One or the other.

52. *Q.* Have you a specimen of the scrap after you have punched out your unit?—*A.* Not here.

53. *Q.* As made on the machine in suit in this action?—*A.* No sir.

54. *Q.* I want to get a specimen of that scrap.

Mr. SMART: I do not think you can. It was 1925 when the machine went out of production.

In the Exchequer Court of Canada.

Defendants' Evidence.

No. 16. G. Sundback. Examination on Discovery—*continued.*

Mr. HAYDEN: As I understand this witness, he has not said it is not out of use. If the machine is in use they must have been using it and they would have scrap.

Mr. SMART: We can get it, but whether we are obliged to get it that is another question.

The REGISTRAR: They are attacking the patent and I think they are entitled to get it.

Mr. HAYDEN: 55. *Q.* Will you be using this machine covered by this patent in this action say within the next month?—*A.* I cannot tell you; it is not in use now.

56. *Q.* If this machine is in use between now and the date of trial you will save a piece of scrap for me?

Mr. SMART: We will give you a piece of scrap.

The WITNESS: There is a good picture of the scrap in the patent drawings.

57. *Q.* I take it, Mr. Sundback, that you have here in Canada several of these machines, which are in use as you describe, but there is not any commercial production made under this patent in suit?—*A.* We have only one that is capable of being used today.

58. *Q.* Only one capable of being used today. Will you tell me how long you have had that one?—*A.* I could not tell you that.

59. *Q.* How long have you been President of the company?—*A.* Since 1925.

60. *Q.* Have you had that machine since 1925 in Canada, the machine which you now say is capable of being used?—*A.* The machine has been out of the country but it may have been in the company's possession.

61. *Q.* This machine of yours which you are now speaking of as being used but not in production has been out of the country since 1925; when did it come back in?—*A.* A few months ago.

62. *Q.* Where did it come from?

(Objection.)

63. *Q.* In connection, Mr. Sundback, with the feeding of the machine made under this patent in suit, I note that what you propose or say that you do in the operation of the machine under the patent is to feed a blank strip or metal blank to the machine and the fasteners are subsequently punched or wrought out of that metal blank?—*A.* That is right.

64. *Q.* Is that the method which is employed in the machines, which as you told me, you now have in production as distinguished from in use and made under this patent in suit?

Mr. SMART: He is not entitled to examine into other machines in use at the present time other than those covered by the patent.

Mr. HAYDEN: The witness has told me there are machines in production today, as distinguished from use, made under this patent.

Mr. SMART: I thought your question was directed to other machines.

WITNESS' answer to Q. 64: (*A*) The members are cut from a strip of metal.

65. *Q.* The blanks which you feed to the machine are still cut from a strip of metal?—*A.* Yes.

66. *Q.* Are they blanked in the same machine that puts the units on the tape?—*A.* They are cut on the same machine.

67. *Q.* Formed?—*A.* Yes.

68. *Q.* Now, Mr. Sundback, in the claim it is charged that the G. E. Prentice Manufacturing Company has imported or caused to be imported into Canada and sold to others to be used in Canada and licensed others to use in Canada machines which embodied the invention described in this patent 210202; what is your foundation for the allegation that the defendant, the Prentice Manufacturing Company, has imported machines which embodied the invention which is described in the patent referred to?

(Objection.)

Mr. HAYDEN: I will put it in another way. Have you seen the machine which you say that Mr. Prentice is importing or causing to be imported into Canada and which embodies the invention described in the patent?

Mr. SMART: I object again.

(Discussion.)

The REGISTRAR: Witness, answer the question.

WITNESS: I have not seen it.

Mr. HAYDEN: Mr. Smart, could you produce for me a specimen of the product of the Defendant's machine which you say is an infringing machine? Now, witness, I am showing you here Exhibit No. 1, which was filed in the examination for discovery of Mr. Prentice in this same action; will you tell me whether that is a specimen of the work of the Defendant's (Prentice's) infringing machine as alleged?—*A.* I am told it is.

69. *Q.* I am asking you of your own knowledge?

Mr. SMART: He does not know. We have examined Mr. Prentice on it.

Mr. HAYDEN: 70. *Q.* Is that a specimen of what you allege is made in the infringement of your machine patented?

(Discussion.)

Mr. HAYDEN: As we have to observe the exact refinement as between Mr. Sundback as President of the Company and Mr. Sundback as the Assignor, I will now proceed to the latter branch of my examination.

Mr. SMART: First, let me ask one question, Mr. Sundback, when did you become President of the Plaintiff company?—*A.* In 1925.

Mr. SMART: In what part of the year?—*A.* June or July to the best of my recollection.

Mr. HAYDEN: What was your connection with the company before you became President?—*A.* None whatever.

Mr. HAYDEN: Neither as an officer or as a shareholder?—*A.* Neither.

In the Exchequer Court of Canada.

Defendants' Evidence.

No. 16. G. Sundback. Examination on Discovery—*continued.*

Mr. McCARTHY: Then I put in as an exhibit the stipulations which were agreed to between the parties in regard to the production of the patents.

EXHIBIT H. STIPULATIONS.

Then I put in, in accordance with the agreement, a book of machine patents relating to the prior art in so far as it relates to machines. There is an index in the first part giving a list of the patents which we put in as illustrating the prior art. I have furnished my friends with a list of those we are putting in.

EXHIBIT J. Book of prior art patents, re machines.

Then I put in another book of patents illustrating the prior art in so far as it relates to the product. I am furnishing my friends with a list.

EXHIBIT K. Book of prior art patents re product.
(Afterwards withdrawn.)

Mr. SMART: They are all within the particulars I take it?

Mr. HAYDEN: Yes.

No. 17. G. E. Prentice. Examination.

No. 17.

Evidence of G. E. Prentice.

GEORGE E. PRENTICE, sworn. EXAMINED by Mr. McCARTHY.

Mr. McCARTHY: I suggest to your lordship that the evidence as to Mr. Prentice's history and qualifications be made common to all suits, to save repeating.

Then another suggestion I make is there are representatives here from the American company. I think inasmuch as Mr. Prentice's machine is not patented, and as it is claimed to be a secret process, that they should be excluded while the evidence in regard to his machine is given. They are not parties to the litigation, they are only here as interested listeners. Counsel I am sure will freely give their undertaking that the information is only to be used for the purpose of this litigation. But as to outsiders interested in a rival concern in the United States, I suggest that some arrangement should be made by which the process should be protected.

HIS LORDSHIP: The witnesses for the other side?

Mr. McCARTHY: No, not the witnesses, the representatives of the Hookless Fastener Company, who are not parties to this litigation. They are probably here only to glean some information, we want them excluded when the description of the machine is being given.

Mr. BIGGAR: It raises so difficult a point that I hesitate to agree. I have never heard of a patent case being heard in camera, and I do not see

what possible advantage there would be, unless your Lordship has power to direct that the record of the trial should not be available for public inspection.

HIS LORDSHIP: I will consider that when the time comes. I cannot believe there is anything about it that is worth keeping a secret, there are so many ways of finding out these secret things. However, if Mr. Prentice thinks he has something that is secret, make your application at the proper time. Of course as Mr. Biggar suggests, it has got to go down in the record.

Mr. MCCARTHY: Quite true, but the record is not necessarily open.

HIS LORDSHIP: Well, it is pretty hard—this case may go on to appeal.

Mr. MCCARTHY: Well when we come to it.

Mr. SMART: I have just checked over Exhibit K, which is the book of patents. I am informed that none of the patents in that book are contained in your Particulars.

Mr. MCCARTHY: I have not checked them over. They are not put in as anticipation, only showing the history of the prior art as to production.

HIS LORDSHIP: It cannot go in in evidence if Particulars were not given, unless it comprises those that were included in your motion yesterday.

Mr. SMART: No.

HIS LORDSHIP: Well they better not go in.

(EXHIBIT K. Book of Patents illustrating prior art re product, withdrawn.)

Mr. MCCARTHY: We can identify them in evidence.

EXAMINATION of Mr. PRENTICE:

Mr. MCCARTHY: Now, Mr. Prentice, I believe you are of English origin?—*A.* I am.

Q. Born in Leicester I think in 1868?—*A.* That is right.

Q. You came to the United States I believe at the age of 15, in 1883?—*A.* Yes sir.

Q. I think you became apprenticed to a jeweler in New Britain?—*A.* Correct.

Q. After becoming apprenticed to a jeweler, what was the next step?—*A.* I served seven years apprenticeship at this jewelry house, that made rich jewelry all by hand, very wonderful training for my working life. I continued with that——

Q. For seven years you say?—*A.* I continued with them longer than that. In 1892 for economic reasons they decided to move to New York, and wished to have me go with them. Not caring to tear away from my home that I had established there——

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Examination—*continued.*

Q. Well I do not think you need go into those details. I only want your actual experience in the trade ?—*A.* I immediately started out to look for a new occupation, learn a new trade. I went to the Traut & Hine Manufacturing Company in April, 1892.

Q. What were Traut & Hine engaged in at that time ?—*A.* In the manufacture of small sheet metal and wire goods, suspender buckles, garter buckles, numerous novelties of that kind.

Q. What was your position with them ?—*A.* I went there to learn tool making, but within three weeks I believe I was made foreman of one of the departments.

Q. And from foreman of one of the departments what was the next step ?—*A.* In three months' time I was foreman of another department, and doing what four men were doing when I first went there. In two years time I was superintendent of the factory, at that time employing about 100 hands.

Q. How long did you remain in that position ?—*A.* In that position I was there eighteen years. I was with them for twenty years.

Q. As you said, their business was the manufacture of small—— ?—*A.* Sheet metal and wire goods.

Q. What was the size of the business ?—*A.* About 100 employees. Along in 1895 or 1896 I assisted Mr. George Adams——

Q. Well was that the size of the business when you went there or when you left ?—*A.* When I went there.

Q. What was the size of the business when you left ?—*A.* 625 employees.

Q. Then what was the first association you had with any type of fastener ?—*A.* About 1895 or 1896 the fastener gotten out and patented by George Adams, it was called the Adams Fastener, it was a snap fastener for putting on gloves, bags and suspender buttons, and probably was the largest selling fastener that was ever made, reaching a producing of more than 1000 gross per day.

Q. Is that the press fastener that we are accustomed to see on gloves ?—*A.* It was a snap fastener, a particular form made out of a star-shaped piece of metal.

Q. How long did you continue to manufacture those fasteners ?—*A.* Still being manufactured when I left their employ.

Q. In the same quantities ?—*A.* Very near the same probably. They went down a little later on account of other competition.

Q. But during the time you were there the firm of Traut & Hine were making the Adams fastener ?—*A.* They were.

Q. And in the quantities you say, 1000 gross a day ?—*A.* More than 1000 gross a day.

Q. Did you later on develop another type of fastener ?—*A.* About 1900, possibly 1901, we made what was called the Securo fastener, a small fastener made to sew on ladies' skirts and other dress goods, a snap fastener, to snap together and bind, instead of hooks and eyes.

Q. The fastener that has been put in which is called the C-curity?—*A.* Securo.

Q. You have not got a sample of that?—*A.* No.

Q. You called yours Securo, and it was a type of snap fastener used on ladies' dresses?—*A.* Yes.

Q. My friend put one in called I.X.A. which is Exhibit 14. Is that the type of fastener you have reference to?—*A.* Oh no, it was a small snap fastener.

Q. You have not got any sample of that?—*A.* I have not.

Q. Or anything to illustrate it?—*A.* No. I have the box.

Q. It would not illustrate it?—*A.* No, it just shows the name.

Q. Was it on a tape or stringer?—*A.* No, it was carded in dozens and marketed by the gross on cards. It was something like the Koh-i-nor being made today.

Q. A fastener that snaps on dress goods?—*A.* Yes. A socket and stud, sewn on, one on each side.

Q. Was that type of fastener developed further by you?—*A.* Yes.

Q. I don't know whether you gave me the date when you developed Securo?—*A.* That came out in 1901 or about then. Then about 1902 or 1903 we developed the same fastener to be attached to tapes. It can be readily seen that if the dressmaker or housewife, applying one that is sewed on, sewed them on a little out of alignment, there would be a gap in the placket of the ladies' skirt. That was objectionable. That created a demand for something that would be put on very accurately, and we made the fasteners with prongs instead of for sewing. Those prongs were attached on tubular tape, tubular because we found a single tape was not firm enough, they were attached in spaced relation, possibly $1\frac{1}{4}$ inches apart, sometimes in groups of six, sometimes 8, with spacing between the groups so they could be cut apart to be assembled together.

Q. How was the spacing between the groups done?—*A.* All done by machinery.

Q. What was the machine that was used for that purpose?—*A.* It was a press with hopper feed the same as described by one of the gentlemen here. The units came down a chute under the punch of the press, and pressed through the tape, clinched on you might say, then the tape jumped forward the distance apart from unit to unit, and when the predetermined number of units were attached the tape jumped a larger distance, probably three times as far, and commenced the second group.

Q. Now what machine was that?—*A.* One we built in the factory. It was a very simple machine, it had a ratchet feed to make the steps between the units, and then jumped forward between the groups.

Q. But how were the steps between the groups performed by the machine?—*A.* By this ratchet. A single ratchet.

Q. When you wanted the step more than the normal step how was it done?—*A.* The ratchet teeth themselves were wider apart.

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Q. And that enabled you to place the elements at definite distances in the group, and then when you had completed that group you could make a further step?—*A.* That is correct.

Q. And you say those came out in sets and could be cut with scissors and matched?—*A.* Male and female members assembled together.

Q. And that avoided the difficulty which occurred by people not sewing the elements in apposition?—*A.* That is correct. That was marketed under the name of Securo tape.

Q. You have not got any samples of that either?—*A.* I have not.

Q. Was that commercialized or used extensively in the trade?— *A.* Yes, quite considerably, in fact it was the predecessor of all these other so-called placket fasteners that came out soon after.

Q. Then what was the first fastener that came out that you manufactured, which had the name placket attached, and how did that come about?—*A.* That was a placket fastener.

Q. I say called placket?—*A.* That was called a placket.

Q. Then do you remember the one that was called the Princess?— *A.* Yes, Mr. Bowen came to us——

Q. When you say " us " you mean——?—*A.* Traut & Hine Manufacturing Company, I assume on account of his knowledge that we were manufacturing the other fastener, and asked us to manufacture his fastener, which we did in very large quantities. It was marketed under the name of the Princess Placket Fastener.

Q. I show you a sample. Was this the Princess Placket Fastener as manufactured by you for Mr. Bowen?—*A.* That is right. It works very nicely. The name is printed on the back.

EXHIBIT K. Sample of Princess Placket Fastener.

Q. Patented August, 1908?—*A.* We were manufacturing before the patent was issued. I may mention that there were several other types put out by other people. This one for instance.

Q. You mean Exhibit 14. You had seen that?—*A.* I had not seen that one, but I had another kind.

Q. At the time you manufactured the Princess Placket Fastener for Mr. Bowen were there any other similar fasteners on the market?—*A.* In small volume, yes.

Q. To what extent was that Princess Placket Fastener commercialized or put on the market?—*A.* Many hundreds of thousands of them were made.

Q. Covering what period?—*A.* Well I think about 1906 or '07 we commenced manufacturing, went up to a peak about 1909 or '10, and when I left the employ of Traut & Hine in 1912 they were still manufacturing them, but in diminished quantities.

Q. What was it caused the diminution in quantity, do you know?— *A.* The change of styles in ladies' dresses. At the time we first made our Securo tape they nearly all were open down the back, and it was the gaping

plackets when attached with hooks and eyes that caused the demand for something better.

Q. How were these made, by machine or by hand?—*A.* Made by machine.

Q. The machine designed by you?—*A.* Yes.

Q. Then you say the Princess Placket Fastener was extensively used for many years?—*A.* Yes.

Q. Did you at this time have any knowledge of any other placket fastener that came on the market?—*A.* Yes, there was the Judson fastener.

Q. What was the Judson fastener?—*A.* A hook and eye type, I think one was put in as an exhibit yesterday.

Q. Exhibit 4 (Shown)?—*A.* That is it.

Q. You refer to Exhibit 4 which has been called C-curity?—*A.* That is correct.

Q. That you say was called——?—*A.* I knew it as the Judson fastener.

Q. And you say that came out about this time?—*A.* About this time.

Q. Are you able to tell His Lordship whether that was extensively used in the market?—*A.* Very extensively in our locality, every department store or dress-goods or dry-goods store carried them in stock.

Q. Was the one known as Plako a more recent development?—*A.* It is marked here C-curity.

Q. But were you familiar with one called Plako?—*A.* Yes, that came out somewhat later.

Q. That is Exhibit 6. Will you look at Exhibit 6 and tell me if you are familiar with that?—*A.* The units were exactly like this, but the slider was different in the one I was familiar with.

Q. Will you look at this Exhibit D and tell me——?—*A.* That is something that I was familiar with at that time, at a little later time.

Q. Well the elements in Exhibits 6 and D are quite different?—*A.* The elements are the same, the only variation is the slider.

HIS LORDSHIP: Is all this evidence to be common in the other cases?

Mr. MCCARTHY: All to be common in the other cases up to this point.

Mr. SMART: Well we can agree when the other cases are opened how much we will put in. A great deal will not be relevant. We are not agreeing to this now.

Mr. MCCARTHY: Well I don't want to go through——

HIS LORDSHIP: No, certainly not.

HIS LORDSHIP: When you come to the matter of this secret I would like to hear you. I would like to protect anyone that has a secret process, if it can be done.

Mr. MCCARTHY: I will call your Lordship's attention when I get to that stage.

Q. Now, I think, Mr. Prentice, at the adjournment I was asking you about the Plako, and I think you told me that was on the market about

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this time and favourably known and had a large sale throughout the country?—*A.* It did.

Q. And it was in direct competition I take it with your product?—*A.* It was.

Q. Can you give any idea as to the extent of the sales, or commercializing, of the Judson Plako?—*A.* I do not believe I could give you anything real on that, but I will say that since I got into the fastener business I have found them in Minnesota, Wisconsin, Pennsylvania, New York, up in Canada. It must have had a very wide distribution. Around our own town they were in every dry-goods and clothing store.

Q. Now you resigned I believe from the Traut & Hine firm in 1912?—*A.* I did.

Q. And started in business for yourself as the George E. Prentice Company, Limited?—*A.* I did.

Q. And you have carried on business under that name ever since, and are carrying on business as such at the present time?—*A.* That is right.

Q. Your business I understand has prospered?—*A.* We started with $12,500 in 1912, I think it is safe to say we are worth a million dollars today.

Q. How many factories have you?—*A.* We have two factories, one in New Britain and one in Berlin.

Q. And have you remained as head, superintendent of the factory?—*A.* I am not superintendent, I am President of the Company and I say General Manager.

Q. I believe your goods are usually referred to as Personal Hardware?—*A.* That is correct.

Q. What type of goods do you make?—*A.* We make all kinds of sheet metal—I will say many kinds of sheet metal and wire goods, suspender buckles, garter buckles—oh we make over ten thousand different articles, it is hard to enumerate them all.

Q. I would not want you to?—*A.* But that is where we get the name of Personal Hardware, we concentrate on clothing hardware.

Q. Then something happened in 1923 which appears to have been of importance. You were approached by a certain firm. Will you tell His Lordship just what happened?

Mr. BIGGAR: I object to conversations between the witness——

Mr. MCCARTHY: I am not introducing conversations.

HIS LORDSHIP: This evidence would not seem to be very relevant to the machine, Mr. McCarthy.

Mr. MCCARTHY: It is, my lord.

HIS LORDSHIP: I will allow the question upon you saying it has some importance.

WITNESS: I think I ought to go back to May, 1923.

Mr. MCCARTHY: I did not stop at any part of the year?—*A.* I was in Washington, and always looking out, always thinking of something to advance our business, I conceived the idea of the helical springs, knowing

that a right and left helical of the same number of units per inch would go together; and the thought occurred to me that if one of the side units was deformed the least bit they would stay locked very much in the same form, but a great deal better than the old Judson fastener. I came home and started to work on it,—with my many duties it was hard to develop very rapidly. In December, 1923, there was a party came from Lacrosse, Wisconsin, and brought a Judson fastener and asked me——

Mr. BIGGAR: What this person asked is not evidence.

Mr. MCCARTHY: Do not give conversations.

Mr. SMART: What relevancy has a spiral fastener?

Mr. MCCARTHY: You will see if you wait.

HIS LORDSHIP: This machine is intermixed with the fastener apparently. It is not necessary to say much about the helical spring, because I can take judicial notice—I have had the thing before me.

WITNESS: He brought on one of the Judson fasteners as made in 1905, and wanted me to make that for overshoes, as the Goodrich Company the year before came out with something they tried to popularize on overshoes as the Zipper overshoe. That "Zipper" has gone to the fastener all over the world today. He thought I could do something better, that would not do on an overshoe on account of the numerous hooks, that would be catching. I produced the fastener that I had made but had not got prepared to manufacture. They asked me how quickly I could get samples of it out in Lacrosse. I said a few weeks time. And I believe that in the latter part of January, 1924, I went to Lacrosse, and they tested them out and were delighted with the product, and gave me a contract—gave me a cheque I will say to confine the exclusive right of that fastener for overshoes. I improved it somewhat, and applied for a patent in April, 1924, finished the fastener up and went to work supplying them, and we made 750,000 pairs in 1924 of this helical spring fastener for the Lacrosse Rubber Mills Company.

Q. Is this fastener I show you the type of fastener that you made for the Lacrosse Rubber Mills Company?—*A.* It is.

EXHIBIT L. Sample fastener made by Prentice for Lacrosse Company in 1924.

We made several different sliders for it, I might say I was informed last night that since I left home there has been an order come in, one order for 60,000 of our helical spring fastener, so it is not extinct by any means.

HIS LORDSHIP: We are glad to see you prosperous, but——?—*A.* We have continued to prosper through every depression.

HIS LORDSHIP: As long as you advise the Income Tax Officers at Washington?—*A.* We paid them $40,000 one year.

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Mr. McCARTHY : Did anything happen as a result of that, of your supplying these fasteners to the Lacrosse Rubber Mills Company ?—*A*. Yes, in the fall of 1924 it was found that in many cases when they got into use on overshoes the constant flexing at the instep——

Q. Well I do not think we are interested in that particularly. What happened as a result of that ?—*A*. No sooner got on the market than the Lacrosse Rubber Mills Company were threatened with a lawsuit by the Hookless——

Mr. BIGGAR : I object. The witness is now giving evidence of some written communication that passed between people not parties to the action.

HIS LORDSHIP : What is the point, Mr. McCarthy ?

Mr. McCARTHY : The witness is going into more detail than I intended.

HIS LORDSHIP : Is this leading up to the statement that he made a new—if so put the question directly. I suppose you are intending to show that in the development of the fastener he had to develop a machine.

Mr. McCARTHY : He developed the fastener first and the machine afterward.

WITNESS : Early in 1925 suit was brought against us by the Hookless Fastener Company on a slider we made. On taking it up with our attorneys, and through their investigation they called to my attention the Kuhn-Moos fastener patented in England, France, Switzerland, Germany——

Mr. SMART : I object, that is one of the exhibits in the rejected exhibit.

HIS LORDSHIP : As long as he does not describe it——

WITNESS : I was told that inasmuch as that was not patented in the United States, and that the patents had expired in the other countries, or lapsed, that it was free to anyone to use. I immediately or soon proceeded to make up a fastener of that type.

Mr. McCARTHY : Now I am tendering a copy of the Kuhn-Moos patent.

HIS LORDSHIP : It is in your Particulars, is it ?—*A*. No, it is not.

HIS LORDSHIP : Then why do you want it in ?

Mr. McCARTHY : Just to show part of the story.

HIS LORDSHIP : His statement is ample.

Mr. McCARTHY : If your Lordship thinks so I am content.

Q. Then as a result of that you say you made—do you say the fastener or the units ?—*A*. The units must be made to make the fastener.

Q. And you designed I understand a type of unit ?—*A*. I did.

Q. And have you made a copy of the Kuhn-Moos unit ?—*A*. I did.

Mr. McCARTHY : I tender this as evidence.

Mr. SMART : I object. If the patent cannot go in surely a model of what is in it cannot.

HIS LORDSHIP : Why not ? Supposing Kuhn-Moos never existed, did not invent it, never patented it, the witness is only stating a fact, namely that he followed an expired patent and made a fastener of a certain type. Surely he can say that.

Mr. SMART : If Kuhn-Moos is relied on as anticipation in this case it must be pleaded.

Mr. McCARTHY : No it is not. We are not touching the Kuhn-Moos machine at all, just the Kuhn-Moos product.

Mr. SMART : It is an indirect way of giving evidence about what a patent contained, which patent could not be put in because it is outside the Particulars.

HIS LORDSHIP : I understand Mr. McCarthy is just narrating the events in the witness's experience as a manufacturer of fasteners up to the point where he found it necessary to have a machine.

Mr. McCARTHY: Exactly.

HIS LORDSHIP : I apprehend that is fairly good evidence. It accounts for what he claims is a machine. Sundback had to go through the same jungle.

Mr. McCARTHY : *Q.* I show you these two samples. Can you identify these as samples of the Kuhn-Moos units ?

Mr. SMART : Are these just made up now, or something he had in 1923 ?

Mr. McCARTHY : When did you make these ?

WITNESS : I made these up two or three years ago. I made a whole fastener four feet long. The story got around——

Mr. McCARTHY : Never mind.

Mr. SMART : That is now out of the historical narrative. Here is something made two or three years ago, which must have been after the machine in question in this action was made.

HIS LORDSHIP : I do not know the point you are after now. It is not the fastener, it is the means by which he made it.

Mr. McCARTHY : It is what he learned of the Kuhn-Moos product.

HIS LORDSHIP : Well he better tell us what he learned, without reference to that exhibit.

Mr. McCARTHY : Your Lordship probably appreciates that it is only on a large model, made so that your Lordship can see——

HIS LORDSHIP : Oh it is a model of the fastener ?

Mr. McCARTHY : Yes. Perhaps I better put a copy in first.

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Q. I show you copy of the Kuhn-Moos fastener, can you identify that?

Mr. SMART: Well, my Lord, this is not one made by the Kuhn-Moos people, it is one made by Prentice.

Mr. MCCARTHY: No, it is not. This was bought commercially.

Mr. SMART: I object——

HIS LORDSHIP: I cannot understand why you are objecting. Surely it is as good as a great deal of your own evidence this morning. Let us get along. Do I understand the witness made fasteners just like that?

Mr. MCCARTHY: Almost the same. I will show your Lordship the difference.

For your Lordship's benefit and information may I put these large ones in so that you can visualize the situation?

HIS LORDSHIP: That is just a representation of the hook and eye?

Mr. MCCARTHY: Yes.

EXHIBIT M: Sample of Kuhn-Moos fastener.

EXHIBIT N: Enlarged model of elements of same.

Q. Then you told me you did design units of your own?—*A.* I did.

Q. I think there is before the Court now as Exhibit 1 on Discovery and Exhibit 21 at this trial—what is that?—*A.* That is one of the fasteners I designed in 1925.

Mr. MCCARTHY: Then I ask permission to put in a heroic sample of our units, which enables your Lordship better to understand it.

HIS LORDSHIP: I suppose it is necessary to use the word "heroic."

WITNESS: Heroic size. That is an enlarged example of our units as made and patented in Canada, so it can be better visualized.

EXHIBIT O. "Heroic" model of elements in Prentice fastener, exhibit 21.

Mr. MCCARTHY: You obtained a patent for this, did you?—*A.* I did.

Mr. MCCARTHY: I put in the patent, dated 15th January, 1929.

HIS LORDSHIP: Why do you want it in? The witness says he took out a patent, that is all that is necessary.

Mr. MCCARTHY: Very good, that satisfies me.

Q. Now I am coming to the machine. Having designed these units the next step I believe was the design of a machine to make these units?—*A.* It was.

Q. Will you tell His Lordship the different steps. When did you first design and plan out your machine?—*A.* In November, 1925, I first made the unit. I went out in the factory, took one of our regular presses, made a punch press die and punch to blank out the units, and made up the first fastener by hand. In December, 1925, I had the machine well along to completion.

Q. Now pause for a moment. Your first step was to do what?—*A.* To make the blanking die and punch to cut out the unit.

Q. Which you designed?—*A.* Which I had designed.

Q. What did you use for that purpose?—*A.* One of our machines, presses, out in the factory, a regular press.

Q. The regular power press?—*A.* The regular power press, some call them punch presses.

Q. Was that a process which was in use at that time?—Why yes, very very old, too old even to think of the start of it.

Q. Of what?—*A.* Of the making blanking dies and punches.

Q. In that operation did you form your die first, or how is it done?—*A.* Yes, I formed the pin and socket before cutting out.

Q. But was that customary, was that a usual process?—*A.* Very usual in our manufacturing of other goods.

HIS LORDSHIP: I would think that would be very common.

A. It is common.

Mr. MCCARTHY: I think so, except for what Ray said.

HIS LORDSHIP: But of course that is not the machine in question.

Mr. MCCARTHY: You first made your units by the use of an old power press?—*A.* Yes.

Q. I show you a catalogue, does that illustrate the type of press that you used?—*A.* It does.

EXHIBIT P. Catalogue of presses (Two pages).

Mr. MCCARTHY: He will show your Lordship on this what he added to it, what he now claims to be his secret process.

Mr. BIGGAR: My friend is only putting in the picture?

HIS LORDSHIP: Yes, the picture only.

Mr. MCCARTHY: Then I take it a problem was how to put your units on your tape?—*A.* Yes.

Mr. MCCARTHY: Now this is the point at which the secret process will be disclosed, my lord. In that connection I find a decision of the Master of the Rolls in *Reddaway* v. *Flynn*——

HIS LORDSHIP: First what is the secret process referred to? The manner of making a particular thing?

Mr. MCCARTHY: As I understand, it is the manner of making and conveying to the tape.

Mr. SMART: It has been described already.

HIS LORDSHIP: Ray saw it, didn't he?

Mr. MCCARTHY: Yes, but under an order of the Court not to disclose it.

Mr. SMART: Until the trial of the action. He has disclosed it in Court.

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Mr. McCARTHY: Does my friend want to go back on the order? The term of the order is: (Read.)

HIS LORDSHIP: Well I suppose that was lived up to, and that is ended.

Mr. McCARTHY: I do not think anyone could make the machine from what Ray told us.

WITNESS: My lord, may I say a word, and perhaps it will clear the field?

There is one mechanical movement that I developed for my machine that to the best of my knowledge has never been used on any machine whatsoever.

HIS LORDSHIP: Perhaps you can get along without disclosing it?—*A.* I cannot and make it clear.

HIS LORDSHIP: Then we cannot try the case very well.

Mr. McCARTHY: What the Master of the Rolls said in this case was:—

> "I know of no authority limiting the right of inspection. It seems to me in a case of this kind plaintiffs may have very good reason to apply to the judge and to say:—'This is an action involving the breach of a secret process. It ought to be tried in camera.' There is very high authority . . . for saying that it is competent to the Court to hear such a case in camera, and the Court will then hear it in the presence of the legal advisers, and of the parties only."

(*Reddaway* v. *Flynn*, R.P.C. 30, page 17.)

HIS LORDSHIP: Looking it up at recess I did not find anything directly. I think it is proper for the Courts to try to protect a man who has a secret process. Your request is after all a simple matter, it means the exclusion of the witnesses from the Court, they will probably be more comfortable outside, I think I will grant that. That applies to whom?

Mr. SMART: We have no witnesses who would come under an order of that kind.

Mr. McCARTHY: It applies to two representatives of the Hookless Fastener Company.

HIS LORDSHIP: I do not know if I am doing the proper thing, but it does not do you any harm to meet the request of counsel.

Mr. SMART: I understand your Lordship is making no order, but as the matter stands there is no objection.

Mr. McCARTHY: If you have any officers of the Hookless Company. I am not excluding the parties to the suit.

HIS LORDSHIP: You do not object to Mr. Sundback?

Mr. McCARTHY: No, he is a plaintiff.

Mr. SMART: In the Court room at present there is Sundback and Ray.

Mr. MCCARTHY: I am not objecting to those at all.

Q. Now, Mr. Prentice, will you go on? You have got your power press, what did you do then?—*A.* Power press with the die and punch for making the units. The next point was to decide how to carry the tape past the die. I went back to the machine I had designed in 1913 or 1914 for a step by step feed and additional space, and it seemed that would lend itself very well to the proposition.

Then the problem of carrying the unit forward came up, and there is where something extremely unique was made. The unit I carried clean through the die on to a table, and put a slider in back to push the unit forward, and I put at first two little inclined planes perfectly stationary, on an angle like that, and the slider pushed the unit with the arms split up against that, and the unit itself closed——

HIS LORDSHIP: State it again.

The slider pushing the units up against two inclined planes closed themselves on to the tape, in this manner. Afterwards on account of the wear I hinged those.

EXHIBIT Q: Part of machine, claimed as novel by Prentice.

HIS LORDSHIP: Illustrate from the machine here what you were showing me?—*A.* The levers, or pincers as we call them, are inclined away from the unit. I will put in one of the units and you can see the action. The punch comes down through the die, clear through to the bottom.

HIS LORDSHIP: Where the letter B is.

WITNESS: That is the die for the unit. The slider comes forward, pushes the unit forward, forms its own motive power for closing—we changed them to swinging because the steel itself wore too much. I think Mr. McCarthy disclosed it yesterday better than I can, he got his fingers between a door and closed it. They were squeezed. The units furnish you might say their own motive power for closing that.

Q. Then they are fed foward, the elements fed forward one after the other?—*A.* Through the die underneath on the table to the pincers which pinch them on the tape coming up through there.

Mr. MCCARTHY: What is the function of these two inclined planes, or pincers as you call them?—*A.* To close the units around the corded edge of the tape.

Q. To what extent, are they completely closed?—*A.* They are loosely closed on the tape. Then for the final adjustment we go to another machine entirely.

Q. Which finishes——*A.* Finishes the stringers in pairs, does the proper sizing and spacing so as to make a perfect fastener.

HIS LORDSHIP: In what year was that machine made?—*A.* That was made in January, 1926, two months from the time I started it I had it in running order.

In the Exchequer Court of Canada.

Defendants' Evidence.

No. 17.
G. E. Prentice.
Examination—*continued.*

Mr. McCARTHY: When did that machine first go into production?—*A.* Samples were gotten out in January. There was quantity, heavy production in February, 1926.

Q. And you started on it in November, 1925?—*A.* I did not start on the machine—I started on the first experiments in November, 1925, the first machine in December, 1925, finished the machine in January, 1926, got it into good production in February, 1926.

Q. Now did you ever see the plaintiff's machine?—*A.* I have never seen the plaintiff's machine until yesterday. I never saw the patent until about the first week in January, 1926. How that came about was, our attorneys knowing suits were going to be brought asked if I had seen the machine, and I had not, so he showed me the patent on the machine. I made the inquiry whether that was a patent for a claim or for a machine, I was told it was for both.

Q. Had your machine been designed and laid down by that time?—*A.* It was practically complete.

Mr. McCARTHY: I do not know whether it should be in, but there is a Sundback patent mentioned in the patent in suit for the product of their machine. The machine is to make that product, just as our machine is to make ours.

HIS LORDSHIP: You cannot put a patent in unless you have pleaded it.

Mr. McCARTHY: This is mentioned in their patent in suit, that the machine is to make the product of this patent. I think perhaps it should have been in in the plaintiff's case.

HIS LORDSHIP: All right, Mr. Smart agrees.

EXHIBIT R. U.S. patent 1,219,881 to Sundback, dated March 20th, 1917.

Mr. McCARTHY: Then I show you two other enlarged models, which I am instructed are enlarged models of the product of the Sundback machine, the patent I mean?—*A.* Those are enlarged models, I believe 20 diameters larger than disclosed in the patent just put in.

Mr. SMART: 20 diameters, 1/32 would be about one inch.

EXHIBIT S. Enlarged model of elements shown in patent Exhibit R.

Mr. McCARTHY: What is that enlargement of?—*A.* Of the elements shown in the patent just handed in.

Q. Here is the unit shown in the patent, at Fig. 4?—*A.* That is $\frac{5}{8}$ inch long. It is not 20 times that, it is 20 times the unit as made in the patent.

HIS LORDSHIP: What is the point for disclosing this?

Mr. McCARTHY: The next question will illustrate that.

Q. Could you make those units on your machine?

WITNESS: It would be physically impossible.

Q. Now I had only got a part of your machine. Having got the element or unit in the position you have indicated, you told us it is pinched on to the tape?—*A.* Right.

Q. Now how are the units arranged on the tape, what is the process adopted for placing them uniformly on the tape, or spacing them, that is grouping them and spacing them?—*A.* The same means is used for feeding the metal strip, a ratchet and roll feed, driven with a pawl and ratchet, an eccentric roll feed driven by a connecting rod and ratchet and pawl, the connecting rod driving the roll feed through a ratchet and pawl, the same as the metal is fed.

Q. The tape is fed at the same pace as the metal?—*A.* At the required pace for the spacing of the units. It is an exact duplicate of the metal feed.

Q. And that is arranged from the——?—*A.* From the main shaft.

Q. On the power press?—*A.* The main shaft there and a shaft running at right angles through a bevelled gear, as shown in the press as we buy it.

Q. Then as I understand the tape is fed through rollers?—*A.* Yes.

Q. The unit is fed until it approaches the punch. What is the first operation?—*A.* Are you speaking of the fabric or the metal?

Q. The metal tape.—*A.* The metal is fed forward, the first punch comes down and makes a pin and socket, cylindrical pin and cylindrical socket. The next step forward completely cuts out that unit, carries it through the die. Now it is on the platform on the lower level——

Q. Now those two operations are performed by a power press?—*A.* Yes.

Q. Then the rest of the operation is I take it your invention, what you claim to be your invention?—*A.* Yes.

Q. What is the difference or distinction between your method of operation as far as the power press is concerned and the plaintiff's patent?—*A.* Very much different.

Q. Tell us what it is.—*A.* We simply cup it, as we call it, make the pin and socket and blank it out, that is all. Their method is to blank out the unit, replace it in the stock, step it forward, take out the scrap, step it forward again and form the cup and socket, which in their machine and their unit is very difficult; then while it is still in the stock, through the side pierces, a very roundabout way, the units are pressed on to the tape. I don't wonder it is a delicate operation.

His Lordship: Now, Mr. McCarthy, the plaintiff's machine antedates Prentice's by quite a long period of time—I am just giving my first impression—let us assume there was invention in that machine, is your case going to be that Prentice has invented something new?—You used the word "invented" a while ago—some element in the combination that is new, that differentiates it from the plaintiff's machine.

Mr. McCarthy: Yes, an element in the combination, the combination being the power press and the assembly method afterward. We do not say there is anything new in the power press, but the way the element is handled afterward is new we say.

In the Exchequer Court of Canada.

Defendants' Evidence.

No. 17. G. E. Prentice. Examination—*continued.*

HIS LORDSHIP: A particular element or elements?

Mr. McCARTHY: A particular element. We have a patent for this element. We have a patent for this unit.

HIS LORDSHIP: For this improvement?

Mr. McCARTHY: No for the unit itself.

Mr. SMART: The fastener unit, not the machine.

Mr. McCARTHY: I am not talking of the machine.

HIS LORDSHIP: I am talking about the machine.

Mr. McCARTHY: You asked me if it was new for all purposes, or only for this purpose. I was answering your Lordship in this way, that we have a patent, our unit is patented. And this is the machine by which we say we make the individual units that go to make our fastener, and pinch it on the tape, which makes the fastener. There are two operations.

HIS LORDSHIP: That really was not my question. I was suggesting, suppose there is invention in this machine of the plaintiff's, it antedates Prentice's. I was inquiring if in the Prentice machine there was some new element which you claim differentiates it in that particular from this machine.

Mr. McCARTHY: Yes.

HIS LORDSHIP: But you have no patent on it.

Mr. McCARTHY: We have no patent on it, that is the point.

HIS LORDSHIP: If you had patented it it would be an improvement.

Mr. McCARTHY: It would be different. We say it is entirely different, different mechanism.

HIS LORDSHIP: Yes I understood the witness to say that on his machine he could not make the plaintiff's fastener. He went as far as to say it was physically impossible.

Mr. McCARTHY: Now would your Lordship like to see the machine? It is in a case downstairs.

HIS LORDSHIP: I think later. I have a fair idea. I suppose the machines resemble one another very much.

Mr. McCARTHY: Well they claim theirs is not the ordinary power press, that is the background of their machine is specially designed. Ours is a simple old-fashioned power press with the attachment put on.

HIS LORDSHIP: Outwardly they are much alike, I am not thinking of details. They had the same idea apparently, the feeding——

Mr. McCARTHY: Well of course you have to feed the wire to the machine, and you have to punch the metal at some stage. From our standpoint it depends in what order the metal is dealt with and what is done with the individual units thereafter, and how they are attached to the tape.

Q. With the knowledge that you acquired of the Sundback patent could you have designed your machine without some inventive faculty.

WITNESS: I would have been ashamed to have built it.

Q. That is not the question I asked you. Listen to my question: With the knowledge, or on reading the Sundback patent could you with the facts disclosed and without any inventive genius have made your machine?—*A.* I could not.

Q. Some stress was laid on the fact that the fabric was put over roughened rollers. What do you say as to whether that was new or not? —*A.* In roll feeds for metal it is always customary to have smooth highly polished rolls. In roll feeds for paper or fabric one of two things is customary, either to have what they call a knurled roll or else to have one covered with fabric. The object is, in metal there is no danger of injuring the metal by going through a reasonably tight roll, but in fabric the crushing necessary to get the adhesion, without being roughened, is very apt to weaken the threads of the fabric. Covering with canvass answers the same purpose.

Q. How long has that been common practice?—*A.* As far back as I know anything about machines, which started with Traut & Hine in 1892.

Q. Perhaps I ought to ask you, Does this machine turn out the finished stringer?—*A.* No, sir.

Q. Where do you get your precision?—*A.* In the secondary machine.

Q. That is a process, I think you said, that followed this?—*A.* Correct.

CROSS-EXAMINED by Mr. SMART:—

Cross-examination.

Q. Will you produce a sample of the product that comes out of your machine? Some was made at the inspection in Montreal?—*A.* (Sample produced.)

Q. This is as it comes from the machine in question without any of the second machine you referred to?—*A.* Yes.

Q. Am I correct in understanding that the second machine just rolls the edges——

Mr. MCCARTHY: We have nothing to do with the second machine, have we?

Mr. SMART: What does the second machine do?—*A.* If there is any variation between the units as they come out the second machine brings them into proper alignment, and rolls them. That is why our product is so very accurate.

HIS LORDSHIP: What do you mean by rolling?—*A.* It sizes them, I will put it.

Mr. SMART: It has a pair of rollers which roll on the outside of these fastening elements——?—*A.* It is more than that.

Q. Will you describe it?—*A.* No.

Mr. MCCARTHY: I do not know why he should.

HIS LORDSHIP: We do not want to go into it too far. First it aligns?

WITNESS: And the rolls size it. First aligns and then sizes.

Mr. SMART: Well if it is not relied on as forming any distinction I do not want to go into it.

HIS LORDSHIP: I do not think it is put in for that purpose. Mr. McCarthy referred to it as a secondary machine. I just wanted to know what it was in case it had something to do with the case.

But you are not relying on that, Mr. McCarthy?

Mr. MCCARTHY: We are to this extent, that we do not produce the finished article on our machine.

HIS LORDSHIP: Yes, that is only another way of saying that the machine in question does not complete the product.

Mr. MCCARTHY: That is all.

HIS LORDSHIP: I do not think that is enough to go into it.

WITNESS: My lord, may I state that we never have work go out like that.

HIS LORDSHIP: Well we are not going to try which is the best product.

WITNESS: I referred to that to illustrate the difference in the secondary machine.

EXHIBIT No. 25. Two samples produced by witness, product of Colonial Fastener Machine.

Mr. SMART: Well they are really separate. What I would like is the length of stringer that we cut off, that we asked to have produced——

Mr. HAYDEN: That is what we are looking for.

Mr. SMART: If I had it produced it would look like Exhibit 23, apart from the exact shape of the unit elements. Is that right?—*A*. That is correct.

Q. Now in Exhibit 25 we have a corded tape?—*A*. Yes.

Q. And we have a series of spaced fastener elements firmly attached to the corded bead of the tape?—*A*. No.

Q. Do you say they are not attached to the beaded cord of the tape?—*A*. You said firmly attached.

Q. Well I suppose firmly is a matter of degree. It is not like the Rock of Gibraltar, but it is attached in a definite position?—*A*. It is either firmly attached or it is not firmly attached. I say it is not firmly attached.

Q. I am suggesting that two people might use the word " firmly " with a different degree of meaning. They are attached in a definite position on the beaded edge of the tape?—*A*. Reasonably so, but not definitely.

HIS LORDSHIP: You might perhaps compromise and say lightly attached.

Mr. SMART: Well I think the exhibits speak for themselves. (Shown to His Lordship.)

HIS LORDSHIP: They are pretty firmly attached.

WITNESS : They are just left loose enough so that when they need to size themselves they can. You see they are out of line now. That is where we get the very fine adjustment. Just as Mr. Sundback said they did on the earliest Aaronson machine, left there on purpose so that they can align themselves very accurately.

HIS LORDSHIP : Nevertheless it is firmly attached ?—*A*. Well reasonably firm, there is just that distinction.

HIS LORDSHIP : Oh they flex of course ?—*A*. That is correct.

Mr. SMART : Now going back to the early part of your examination, and first to Exhibit K, which is the Princess Placket Fastener; would you tell me if the small metal elements which unite the beads are formed on a separate machine ?—*A*. I do not quite get what you want.

Q. I asked you if the metal elements—and there is only one kind of metal elements on this exhibit—are made on a separate machine by themselves before they are assembled on the tape ?—*A*. Yes.

Q. Are they made on one machine or two, or do you know ?—*A*. The elements are all made on one machine.

Q. I am asking is this form, on exhibit K, one of the forms that you made ?—*A*. It is.

Q. And those little metallic elements—which are made from sheet metal, are they ?—*A*. No.

Q. What are they made from ?—*A*. From what is called flattened wire, wire ribbon.

Q. Are they bent to the form in which they are shown on one machine ? —*A*. No, not quite.

Q. What do you mean by " not quite " ?—*A*. They are bent to the form as shown on the front, on the cord, but the rear part is left a trifle open so that the tape can be threaded through, and then closed tightly on that.

Q. I am dealing with the formation of the metallic elements themselves, before we come to apply them to the tape. Will you describe to me how these metallic elements were made ?—*A*. They were formed, bent down and everything, except the tight-closing on the tape at one operation.

Q. And that tight closing on the tape was done on another machine ?— *A*. Yes.

Q. Then having got those on the tape as you explained, they were then assembled by hand I take it on to the corded tape ?—*A*. That is right.

Q. I take it that the same description would apply in general to a fastener like Exhibit 14 ?—*A*. There is no way of knowing.

Q. Now this fastener, Exhibit M that you produced, that is a fastener sold by the United States Rubber Company, isn't it ?—*A*. I am not sure, I think it is.

Q. In fact The Kwik is the name under which they are marketing that fastener, isn't it ?—*A*. I don't know.

Q. Don't you know where this fastener came from ?—*A*. No, I don't.

In the Exchequer Court of Canada.

Defendants' Evidence.

No. 17. G. E. Prentice. Cross-examination—*continued.*

Q. When did it come into your possession?—*A.* I don't think it came into my possession, I think that came into the possession of our attorneys.

Q. And was just handed to you in Court now?—*A.* Yes.

Q. So you know nothing of this particular exhibit?—*A.* I know it is the Kuhn-Moos type.

Q. I did not ask you to express an opinion what it looked like. I say do you know the history of this particular fastener article?—*A.* I cannot follow the history of everything.

Q. Well did you ever see it?—*A.* Yes, when it was handed to me by our attorney.

Q. Have you ever seen it on the market, a similar article sold by the United States Rubber Company?—*A.* I believe I have. I cannot say exactly like that.

Q. Well do you not observe what fasteners are on the market?—*A.* Fairly well.

Q. Have you observed that the United States Rubber Company are selling this fastener like Exhibit M?—*A.* I don't recognize that Kwik on the front.

Q. But as far as the form of the fastener——?—*A.* The units look very much the same.

Q. And they have been doing that the last few years?—*A.* Yes.

Q. I noted the reference you made to the spiral form of fastener. I understand that in evidence given by you recently in Connecticut that has not proved satisfactory for use on overshoes?—*A.* On overshoes it was not satisfactory. Many other uses.

Q. But the high hopes you had when the case was tried here before as to its use on overshoes were not fulfilled?—*A.* It has been growing up very wonderfully.

Q. On overshoes though?—*A.* Well that is only one use.

Q. My question is, the hopes you had in 1928 when the case was tried, as to its use on overshoes, have not been fulfilled?—*A.* I have already stated that.

Mr. McCarthy: He knew and stated that then, in that case.

His Lordship: Well that is not important.

Mr. Smart: That report of your attorney to you, as a result of which you started making the unit type of fastener, was that verbal or in writing?—*A.* Verbal, just in conversation.

Q. Had they made a search for you at that time?—*A.* They had.

Q. Did they deliver to you copies of patents found as a result of that search?—*A.* I don't remember, it is so long ago.

Q. Did you ask them to look up any patents of Sundbach or Hookless Fastener Company?—*A.* I did not. It was voluntary on their part, on account of the suit that was pending.

Q. Well I understood that you had the search made on account of a possible suit by the Hookless Fastener Company under the Sundback patent. Is that right?—*A.* No sir, it is not right.

Q. Why did you have the search made?—*A.* They brought suit on a slider, and they were looking up the sliders, that is all. Nothing to do with the fastener itself. They ran into the fastener incidentally.

Q. That is not the way I understood the matter came to you. You spoke of the conversation with the Lacrosse Company, and it was that that started you to have this search made?—*A.* It was the suit they brought against us that caused us to have the search made, when turned over to our attorneys for their attention.

Q. And that was the only search that was made?—*A.* I don't know how many searches were made. I did some myself in Washington.

Q. The slider that was referred to was a slider that formed part of a complete fastener with stringers and fastener elements?—*A.* The suit was only brought on the slider, had no reference whatsoever to the fastener at that time.

Q. But the slider was shown in the patent in suit on a stringer with fastening units, wasn't it?—*A.* Oh no, it was not. If you look at U.S. patent 13,020,606 you will see you are entirely wrong.

Q. You were aware at that time that the Hookless Fastener Company had a number of patents relating to fasteners and methods of manufacturing same?—*A.* I didn't know anything about the methods of manufacture. I was aware of several patents.

Q. And when you decided to begin the manufacture of this unit type of fastener had you no curiosity as to what patents they might have that would affect the manufacture of them?—*A.* I had none whatever, never supposed anyone would take out a patent on a machine, as I always understood that was nothing more than a mechanic's choice.

Q. You have taken out yourself a number of patents on machines haven't you?—*A.* I have not.

Q. You told us you had taken a hundred patents?—*A.* You never heard me say I took a patent on a machine. I feel that is a mechanic's choice, and I have never applied for one, to say nothing about taking them out.

Q. I should think the machine was one of the best things to take patents on. However, you do a great deal of improving on machines?—*A.* I think I do as much as most people do.

Q. There are very few machines you could not improve. I mean with your experience you feel you could improve most machines, don't you, that come your way?—*A.* I have never seen anything yet so perfect that I feel I could not improve it. When I get to the point that I feel I cannot improve it I would think I am going backward.

Q. That is what I thought. And you do not regard these improvements that you make in the machines as forming subject matter to make application for patent?—*A.* That is correct.

Q. It is just a matter of mechanical skill, the making of these various improvements, in your opinion?—*A.* It is.

Q. Now in this Exhibit Q, what is the top plate, in which we see a small V, what do you call that element?—*A.* That is the blanking die.

In the Exchequer Court of Canada.

Defendants' Evidence.

No. 17. G. E. Prentice. Cross-examination—*continued.*

Q. That blanking die is about $\frac{3}{8}$" thick?—*A.* Oh no, it is made from quarter inch stock, it is probably 1/32 under a quarter now.

Q. That is 7/32?—*A.* Yes.

Q. How far below that is the uppermost one of these slides which go forward?—*A.* It fits perfectly under the bottom of that die.

Q. So that the fastening element or unit of the V-shape which is cut out has only to move down, immediately passes out of the plane of the strip, it is in the slide which carries it forward?—*A.* It immediately passes through the die and it is in position in the slide which carries it through.

Q. Those are right against each other?—*A.* Just a sliding fit, as you see.

Q. The form of the projection and recess in any of these fastener units is determined by the shape of the punch and die?—*A.* Yes.

Q. By changing the shape of the punch and die you could change the shape of the projection and recess?—*A.* Yes. In a separate machine. You could not make the Sundback——

Q. No, that was not my question for the moment. I know you said you could not make the Sundback unit on your machine. But what I was putting to you was that by changing the shape of the die and recess one can get any desired shape of projection or recess in the fastener unit?—*A.* Within limitations of course. You could not get a larger pin than you have socket, for instance, out of flat metal.

Q. No, you must make your recess and projection of such size that they would be contained within the strip of metal with which you are operating?—*A.* And again you have got to keep within limitations, you could not make the projection larger than the recess, you would not have material enough.

Q. But if I wanted a larger projection I would make a larger recess?—*A.* Well I say you could not make anything. You could not make the same recess and a big projection.

Q. I understood you to tell my friend—perhaps you were talking at cross purposes, I was not sure whether he was talking of the fabric tape or the metal tape. I would like to clear it up—whether you said that the feeding mechanism for the metal strip was the same in your opinion as that for the fabric tape?—*A.* The feeding mechanism is identically the same, an eccentric, connecting rod, ratchet and pawl.

Q. But in the fabric tape the tape turns around the periphery a considerable distance of the feed roller, and it has a tape tension device. Neither of those things would be present in the feed for the metal strip?—*A.* Not the tension device.

Q. The contact between the feed rollers on the metal is a light contact?—*A.* That is right.

Q. And in the tape it is a surface contact extending partly around a roll or drum?—*A.* It is a double surface contact, going up around one, over the other——

Q. Well the larger includes the lesser. This form of element on which you said you had a patent, Exhibit O, the corresponding patent in the

United States on that became involved with an application of Mr. Sundback's didn't it?—*A.* If it did I won out. I got the patent issued.

Q. But after issue it became involved in an Interference?—*A.* There is nothing we make but what becomes involved with him anyway.

Q. And there was a decision before the Primary Examiner and the Board of Appeals in favor of Sundback on the ground of priority of those claims so involved, is not that so?—*A.* But that is nothing material to that unit.

Q. Well to save putting in records——

Mr. McCarthy: I think if you are going to give evidence of it you better give it by record, and not yourself.

Mr. Smart: It was a patent on the element corresponding to the Canadian patent which was so involved in the interference?—*A.* It was.

Q. And the exact form of the claims so involved, priority of which was awarded to Sundback, you do not remember?—*A.* Nothing like that whatsoever.

Q. Well the record will show what they are?—*A.* Yes, if you have the records you will see it.

Mr. Smart: If there is to be an examination of the machine possibly I should reserve further cross-examination.

His Lordship: Yes, if you leave Prentice now and come back in the morning.

Mr. McCarthy: And my re-examination the same way.

(*For further cross-examination and re-examination see p.* 129.)

No. 18.

Evidence of C. Grover.

CHARLES GROVER, sworn. Examined by Mr. McCarthy:

Q. Where do you live?—*A.* Boston, Massachusetts.

Q. What is your profession?—*A.* I am a Patent Lawyer.

Q. Will you give me your qualifications and experience?—*A.* I took a 4-year course in engineering, having graduated with the degree of B.Sc. at Purdue University in 1910. Following that I took a student apprenticeship course with the General Electric Company for twelve months in their factory at Fort Wayne, Ind., going from one department to another, learning the technique of manufacture of different kinds of machines. They had some 14 different departments making different kinds of apparatus, I spent twelve months in that capacity.

At the end of that time I went to the United States Patent Office where I served as Patent Examiner for a period of five years. During that time I examined different classes of inventions, studied the specifications,

made searches through the prior patents relating to the pending applications, and passed upon questions of patentability and invention.

At the end of that 5-year period, in 1916 I went to Boston, where I have been practising Patent Law since, the last 16 years.

Q. Will you explain to the Court the patent in suit with reference to the prior art?—*A.* In order to compare the machine of the patent in suit with the defendant's machine I think it is necessary first to consider the prior art to see what parts of those machines are old expedients in the art, that is to separate the wheat from the chaff and find out what features of the two machines are ordinary mechanical expedients which occur in various types of machines, and to determine which features of those machines are really of importance in the formation of this particular product.

Now in determining the character of machines in this case I notice in the patent to Sundback, U.S. patent 1,331,884 (Exhibit 9) corresponding to the patent in suit, that patent states that this invention relates to a machine for forming and setting metal punchings, and has particular reference to a special form of power press with automatic blank feeding means whereby punchings are formed from a strip blank and set on a carrying element.

That is it says this machine has to do with the field of machines for forming and setting metal punchings.

Now the first machine of that kind to which I will refer is a patent to Brainard, No. 292,467. That patent dates back to 1884. It has means for feeding a metal ribbon F, Fig. 2, into a machine from the left, that is the ribbon from which the punchings are to be formed. It also has feeding means for feeding a wire W into the machine from the rear. The metal ribbon F feeds under a power press punch-head which carries tools, those tools appear in Fig. 1 as v and d'. The first tool punches two jaws from the metal and those two jaws appear in Fig 7 as p'. After those two jaws have been punched from the metal the ribbon feeds over the wire W and at that point the end of the wire is cut off, that is the end of the ribbon, and the part that is cut off is pressed down as shown in Fig. 5, so that the part shown in Fig. 7 is clamped on to the wire. That is the two jaws p' of Fig. 7 are caused to pass around the wire and clamp it on.

There is a machine that has two feeds, one for the metal ribbon, one for the stringer. Each one is driven by ratchet and pawl, the ratchet and pawl for the metal ribbon is shown best in Fig. 1, the ratchet is marked R-2, and the pawl is C-4.

And of course every time the pawl steps one of the teeth of the ratchet forward the metal ribbon is fed forward a definite amount. That is as far as accuracy is concerned in feeding the metal ribbon, this pawl and ratchet mechanism is perfectly fixed and definite, each step is equal to every other step.

Incidentally the punching is shaped to some extent the moment it is put on the wire, that is whereas it is flat when cut from the ribbon, it is bent as shown in Fig. 5 when put on the wire.

The next patent is to Stover, No. 240,477. This is a similar machine for making a similar product. It has a means for feeding a metal ribbon into one side, means for feeding a wire through the machine, tools for shaping the metal ribbon and then cutting off punchings which are clamped over the wire.

I call attention particularly to the punches which clamp the jaws of the punchings over the wire. These punches or plungers are shown in Fig. 17 and Fig. 19 at O-1 and O-2. Here the wire and the ribbon are advanced step by step in time relation by means of ratchet and pawl feeds of the customary type.

The next patent is Major, 525,914. The two previous patents have had to do with the manufacture of barbed wire, this patent has to do with the manufacture of hooks and eyes and fastening them on sheets of cardboard fed through the machine in the form of a tape.

The machine has a reel of wire G which is fed in from the front, this wire is shaped in the machine in the form of eyes. Another reel M at the rear supplies wire which is shaped in the form of hooks, and cut off in the machine.

After these parts are shaped and cut off—as a matter of fact they are cut off before being shaped—they are fed to two discs, C and H, shown in Fig. 1, and over these two discs is fed a ribbon of paper or cloth from a reel O. As the tape passes over the discs, upon which the hooks and eyes have been deposited, a stapling machine above forms staples from two reels of wire, forces the staples through the paper and thence through the openings in the hooks and eyes to fasten the hooks and eyes to the bottom of the paper.

The paper is stepped ahead by means of ratchet and pawl as in the previous patents, but in this case in addition to the step by step feed between the pairs of hooks and eyes the inventor desired to form a longer space at intervals; that is, after he had clipped on 12 pairs of hooks and eyes he desired to have a larger space between the last hook and eye and the first of the next group so that the paper could be cut off between the groups, and each card or rectangle of paper would carry one dozen hooks and one dozen eyes. So after twelve steps he produced a considerably longer step. That was done by means of the mechanism shown in Fig. 10 on page 7 of the drawings. As shown in that figure, the pawl R engages the teeth of ratchet wheel q-6, and each time the pawl R is retracted it steps the wheel q-6 around the length of one tooth. That is the unit spacing between the successive hooks and eyes on each group. After twelve steps of that sort, that is twelve short steps, the long step is produced by the pawl R', Fig. 10, which is pivoted beside the first pawl R, but which extends along the side of the ratchet wheel and engages a pin q-7, so that once in each revolution of the ratchet wheel the pin q-7 passes under the secondary pawl R', and upon retraction of the two pawls together a long step is taken.

The next patent is to Aaronson, No. 107,456 Canadian patent. (Exhibit B).

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This is a machine for making slide fasteners, in which the fasteners comprise jaws or channels that are clamped over the corded edge of the tape. The mechanism for feeding the tape through the machine is very much like the patent in suit, very much like the defendant's machine, in that the tape first passes through a tension device which is shown at 28, Fig. 2. The tension device is simply two plates spring-pressed together so that the movement of the tape through the tension device is resisted, so that the device exercises a pull on the tape as it feeds through. Then the tape passes over a roller to the feed rolls, and by virtue of the tension device at the bottom the tape is held taut in between the tension device and the feed rolls so that it is stretched more or less. And the fastener units are applied to the tape in between these two points, that is the tension device and the feed rolls, in the region where it is under tension. It is held taut and stretched. The tension device as far as I can see is to all intents and purposes the same as used by Sundback and Prentice. The feed rolls are quite similar. They comprise two opposed rolls so that the tape can pass between them, the tape is gripped by the rollers, the rollers have a groove to accommodate the corded edge of the tape, and the rolls are geared together so that they turn in unison. Of course they turn in opposite directions so that they pull the tape through between them.

The patent does not say whether these rolls are roughened or not. As far as I can tell it does not say whether the tape is fed around one roll and then to the other. Those expedients of getting a grip on the roller are of course well known expedients. In snubbing a rope around a tree or post, if it slips the first time you give it another turn to get more friction, so that the greater portion of the roller that the tape contacts with, the more grip the roller gets on the tape to pull it through. Also the slippage over the roller is governed by the degree of roughness of the roller, and it is a common expedient to use roughened rollers for the purpose of preventing slippage.

The patent to Olm, No. 1,114,177 is an example of the use of roughened rollers in feeding a paper tape. The rollers are shown in Fig. 5, numbered 23 and 24, they are used for feeding a paper tape 16. As shown in Fig. 6 the surfaces of those rollers are roughened. The purpose of course is to get a better grip on the tape. The specification mentions that the surfaces are roughened, on page 1, lines 87 and following.

So that while Aaronson does not specifically say that the rolls were roughened, they probably were so roughened. In any event it is a very common expedient to use to prevent slippage.

HIS LORDSHIP: Did Aaronson ever build a machine which was operated?

Mr. SMART: Yes, Sundback gave evidence about that, that was one of the machines that was discarded. Walker refers to it also.

WITNESS: In this machine the tape is held under tension, is stepped ahead step by step by ratchet and pawl, which gives an accurate spacing

between the units, one unit or fastener element being attached to the tape at each step.

The patent also discloses the idea of grouping these units in groups, that is of fixing a series of units close together, then leaving a large space before making the next group. In this case the grouping arrangement is produced, not by advancing the tape a longer step between groups as in the case of Major, but by feeding the fastener units into the machine in groups, which groups are spaced apart. So in this case it was unnecessary to take the longer step of the tape, as in the patent to Major.

This patent also resembles the two machines of Sundback and Prentice in that it has means for pinching the jaws of the fastener units over the corded edge of the tape. In this respect it resembles the Sundback machine more closely, because these devices or tools are in the form of plungers or punches which are positively driven by links, cams and a train of mechanism, so that they are brought in at the proper time and hammer these two jaws of the units over the corded edge of the tape.

Coming to the patent in suit, Mr. Ray has described some of the parts of the machine, but the more vital parts, relating to the shaping and transfer of the units to the tape have not been very fully described. Some of them have not even been referred to.

(Adjourned to February 5th, 1932.)

(NOTE.—After adjournment His Lordship viewed the defendant's machine in the Court-House in presence of the parties and their counsel. The operation of the machine and its parts was explained by Mr. Prentice.)

Friday, February 5th, 1932.

Mr. MCCARTHY : Samples were given to the Registrar last night of the product of our machine. I have not asked for the product of my friend's machine yet, because I understood it was not operating properly until today. If they are going to be put in as exhibits I suggest that similar strips be put in from my friend's machine.

Mr. SMART : There are strips in from our machine.

The difficulty is this machine was injured in transit, we have had a mechanic adjust it, but we are not sure that it is in normal condition for operation yet. The operation has been described.

HIS LORDSHIP : There is no way by which I can compel the plaintiffs to produce a sample of the product from their machine. But I would like to see it, it is just as well to have it done, if it can be done it should be.

Mr. SMART : We will do it.

HIS LORDSHIP : In order to avoid any possible trouble later, Mr. McCarthy spoke to me about returning the machine that is downstairs, which we viewed yesterday. I told him that as far as I was concerned it might be returned. It is a machine that is in production.

Mr. BIGGAR : We have no objection.

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CHARLES GROVER, EXAMINATION RESUMED :—

HIS LORDSHIP : Before you proceed to discuss the patent in question I wish you would take the Aaronson patent and point out to me in that the features relating to the feeding mechanism, of the metal and the tape ? —*A.* The feeding mechanism for the fastener units themselves involves the use of carriers.

HIS LORDSHIP : What are you looking at ? Have you got the patent ? —*A.* I have. The typewritten patent. According to my paging the magazines are described at page 4, line 25 to page 5, line 8, and are shown in Figs. 11 to 14.

Q. Now just explain to me the feeding mechanism of the metal and the tape and the putting on of the elements ?—*A.* The elements are carried in magazines such as shown on Figs. 11, 12, 13, 14, the magazine being like Exhibit 5. The fastener units are set into pockets on top of the magazine, with the jaws facing upward.

Q. That magazine was a part of the whole mechanism was it or was it used outside of the machine ?—*A.* The fastener units are placed into it outside the machine, then it is fed into the machine. One of these carriers hooks on to another, they pull each other through. A sort of train.

Q. Then Aaronson has no resemblance to what we are talking about ?— *A.* He has no means for forming the units in the machine itself. They are formed before they come to that machine.

As to his feeding means for feeding these magazines through, it is the ordinary ratchet and pawl feed, that is rollers with a ratchet wheel and a pawl which steps it ahead one step at a time.

Q. Then you were just about to take up the patent in suit, as we closed last evening ?—*A.* Inasmuch as the patent in suit has already been explained once, and the defendant's machine has been discussed, rather than attempt to describe completely both machines again, I will try to shorten the description by comparing certain features of the two machines.

In the first place I would like to point out that the Sundback machine is a special machine, and is not an ordinary punch press. The whole thing has been designed specially for making this particular fastener, the Sundback fastener.

The defendant's machine on the other hand is an ordinary power press or punch.

HIS LORDSHIP : Well you mean the plaintiff's machine is all originally constructed throughout ?—*A.* Throughout.

Q. Of course that is not of importance up to that stage, is it ?—*A.* We say that the defendant's machine is an ordinary punch press plus mechanism on the front to feed the tape through the machine, a ratchet and pawl tape feed of the type shown in the patent to Shipley, No. 85,249. That feed mechanism comprises the ratchet wheel, with a pawl G for stepping that ratchet wheel around step by step. That produces a short step feed, and after a certain number of those short steps the second pawl and ratchet comes into play. The second ratchet wheel is numbered f, and the second

pawl which actuates the second ratchet wheel is marked m. So that one ratchet wheel steps the metal tape ahead step by step——

Mr. SMART: The strip of metal?—*A.* Yes, the metal strip; and after a certain number of short steps the second ratchet and pawl produces a long step. Then another series of short steps.

The mechanism that Mr. Prentice has added to the power press to feed the tape in his machine is precisely this feeding mechanism, which dates back to 1868 at least. He has taken that old tape-feeding mechanism and simply attached it to the front of the power press. That is one change he made in the power press.

The only other changes were the addition of a pusher to push the blank unit fastener from under the die after it has been cut out over to the tape, and the two little pincers to pinch it off. Otherwise the defendant's machine is a standard power press, such as shown in the catalogue in evidence.

Now the tape-feeding mechanism in the defendant's machine differs from that in the Sundback machine in this respect, that in the plaintiff's machine there is only one ratchet wheel, which is at the upper left-hand side of the machine. That one ratchet wheel is actuated by two different pawls, a pawl that steps it ahead by short steps, and another pawl that slowly revolves and comes under the first pawl only at relatively long intervals. When the second pawl comes under the first pawl a long step is taken. That is the plaintiff's machine has a single ratchet wheel with two pawls acting on the same wheel. That is shown in the patent of Major. In other words, the Sundback tape feed is substantially like the Major feed, one ratchet wheel and two pawls. The defendant's tape feed is precisely like the old Shipley feed, that is two ratchet wheels with a separate pawl for each wheel.

Mr. MCCARTHY: When you speak of tape feed——?—*A.* In every case where I used the word "tape" I have referred to the fabric tape with corded edge.

Mr. SMART: Except when you referred——?—*A.* Except when I referred to Shipley.

Q. Then you mean the metal strip?—*A.* I mean the metal strip.

The second difference between the two machines is that in the Sundback machine the jaws are tightly clamped on to the tape. That is referred to on page 3 of the Sundback specification: The jaws (that is referring to the jaws of the unit fasteners) are firmly set on the carrier element or tape. In the plaintiff's machine these jaws are hammered on by two plungers that come at the side, and are driven by eccentrics, so that when the unit fasteners are pushed astride the tape these two plungers come in and firmly clamp the jaws of the fastener on the tape; whereas in the defendant's machine the jaws of the unit fasteners are simply lightly pinched over the edge of the tape. They are pinched so slightly that they can be slipped along the tape by the finger. In the samples that came off the machine last evening it is evident that those fasteners can be pushed lengthwise of the tape by

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means of the fingers, they are only very slightly clamped. That is not merely accidental, it is not in order to be different from the patent, but it is to permit the accurate placing of those things in a subsequent process. Those units are clamped on so slightly that a slider which operates the fastener after the device is completed could not be slipped over those units.

The next difference between the two machines to which I will refer is the fact that in the plaintiff's machine these plungers or hammers which firmly clamp the jaws of the unit over the tape do not engage the jaws directly, but act on those jaws through the waste portions of the tape. The patent makes quite a point of the fact that if these plungers should hit the jaws directly they would leave tool marks. That I take it would make the finished product unsightly, would make it rough and perhaps would interfere with the operation of the slider over the units. In any event the patent says that it is of great advantage not to have these plungers hit the jaws of the fastener units, because if they did they would leave tool marks.

It is perfectly evident why that would be so, because these plungers are positively driven by a machine they act like hammers, they are in effect small punch presses. In the plaintiff's machines those hammers hit the outside edge of the ribbon in which these fastener units are held in pockets. That is, they are first cut out and then replaced in the ribbon, on each side of each unit there is a piece of ribbon, which is later thrown away as scrap. So these hammers which come in to clamp the jaws on the tape do not hit the jaws of the unit, they only hit parts of the ribbon, which are later thrown away as scrap.

In the defendant's machine that feature, which the patent in suit says is important, is not employed. On the contrary the jaws of the fastener units are pinched together lightly by means of these swinging levers or jaws or pincers. They are not driven by the machine, they are freely swinging on pivots. There are two springs for snapping them into a forward position, and when the fastener unit is punched down through the die plate and is pushed forward by the slider, the jaws of the unit engage the noses of these two levers and push them either way. So that these pincers or pivoted jaws are only actuated by the small fastener unit itself, which of course could not transmit much power or force, so it is apparent that these pincers when driven through this tiny unit, which is made of fairly soft metal, could not possibly pinch very tightly.

In this particular model, Exhibit Q, the corners of the pusher have not been bevelled off, that is the forward end of the pusher is straight across, except for a little recess to receive the tail end of the fastener unit. In practice when these pushers are put into the machine and connected up with the driving mechanism, the corners are bevelled off, that is fitted to the machine as connected, in each particular machine a separate fitting operation.

I call attention to that for this reason, that in this model, inasmuch as the corners of the pusher have not been cut off, the pusher would engage the jaws directly, or might engage the jaws. But in the machine downstairs

which was viewed yesterday, and in all other machines, when put in use these corners are bevelled off, so that the pusher never engages the jaws. The jaws are moved only by the fastener unit itself, which is being pushed by the pusher. That is, the only power or motive force transmitted to the pincers is transmitted through the fastener unit.

Mr. McCarthy: You said does not engage the jaws——?—*A.* Of the fastener unit. I said that the pusher never engages the pincers.

Q. You used the word "jaws" in two connections?—*A.* I mean the parts which I previously called pincers, the two pivoted arms.

So that in the plaintiff's machine the jaws of the fastener elements are never engaged directly——

Q. You say the plaintiff's machine?—*A.* Yes. In the plaintiff's machine the plungers or pincers which clamp the jaws of the fastener units over the edge of the tape never engage these units directly, but only through the waste stock——

His Lordship: Do you mean they do indirectly?—*A.* Through the waste stock. That will be clear from one of the figures of the patent in suit, Figure 26, Sheet 13, of the drawings. As shown in that figure, the series of units 35 have been stamped out of the ribbon of metal marked 1, replaced in the openings from where they have been cut out, and fed forward. At the point where these side pincers or plungers clamp the jaws of the unit over the tape the units are still carried in the hole in the ribbon, so that the margins of the ribbon, which are later thrown away as scrap are still between the pincers of the press and the jaws of the unit. So that these hammers that do the clamping do not engage the units directly, but only apply the hammering force through these marginal portions of the ribbon that are later thrown away.

His Lordship: There is no use taking up time explaining the differences between the two machines, because differences have nothing to do with invention. It does not follow that because one machine is built in some detail differently from the other that that has anything to do with invention. The thing may be new and useful, but as remote as the poles from invention.

Can you help me by pointing out serious real differences between the mechanisms? Not that a pawl is built in one way or a ratchet wheel in another?—*A.* I had quite a list of differences, but I will skip all but two, which I consider the most important.

His Lordship: Do not skip anything that is important, but there is no use talking about the differences between a machine that is patented and one that is said to infringe unless there is some real distinction.

I think there is a good deal in what was said yesterday, that he could not understand why anybody should be able to patent a machine to-day. There is a great deal to say in favour of it. There is no use taking time differentiating in little details that have nothing to do with invention.

Witness: Well one of the two most important differences between the two machines I think is the fact that in the plaintiff's machine the

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punching is first cut out before the lug and socket is formed, and the punching is then replaced in the ribbon so that the ribbon feeds the punching forward to the succeeding operations, that is the operation of forming the lug and socket, and then continues to feed it on to the tape; whereas in the defendant's machine the lug and socket are formed first before the unit is cut out from the metal ribbon, and when the unit is ultimately cut out from the ribbon it stays out, it drops down through the die as in the ordinary punch press to a lower level. Ordinarily the punching falls into a box, in this case it falls on to a table and a pusher pushes it forward astride the tape.

That is to say, the defendant's machine does not use the metal tape or ribbon as a carrier for the punching.

The other distinction which I consider very important is the fact that in the plaintiff's machine, after this punching has been replaced in the metal ribbon, in the hole where it was cut out, it is fed forward step by step, stopped for first one operation, then another; each time the ribbon stops to permit another operation to be performed on this punching there are side guide-plates that come in and squeeze the ribbon on the edges. These guide plates are operated by wedges, which gives a powerful force and those guide plates squeeze the edges of the ribbon, first while it is being cut out, second while the lug and socket are being formed at a later stage. Then those guide plates, which are operated by wedges, move apart to permit the metal tape to feed forward. That is it takes a step, and is then clamped on the edges. It is not only clamped on the edges, but is clamped from top to bottom, in the last operation where the lug and socket are formed, so that at the time the lug and socket are being formed in the fastener it is being clamped from the edges, it is also being clamped up and down. And the patent at great length points out that that is of the utmost importance to get accuracy, to centre the device, to have the unit in exactly the right location with respect to the tools, and also to keep the metal from spreading and getting distorted in shape other than intended.

That is a feature which the patent refers to repeatedly. On page 5 of the patent in suit, near the bottom:

> "the blank 1 enters guide 2 and passes through feed rolls, 3, 3, then through guide 9 to the die unit 10, and between the side guide plates 11. The guide plates 11 are controlled by wedges 12 (Figs. 3 and 10)."

Again at the bottom of page 6:

> "On the down stroke of head 15, as the punches are nearing the blank, the cam plates 14 draw the wedges 12 towards the back, pressing the guide plates 11 toward each other with the blank in between, thus holding the blank firmly in place until released by the forward movement of the wedges 12 on the up-stroke of head 15. Figs. 3 and 4 show the position at the moment the clamping movement of the guide plates 11 has been effected."

Again on page 7 :

" The function of the guide plates 11 is of vital importance. At the time of punching, the two plates hold the material firmly against spreading and distortion either of the punching or of the blank. This enables the subsequent operations on the punching to be controlled through the blank, and ensures such perfect shape of the finished punchings and correct positioning thereof in the dies as to produce a highly uniform and symmetrical fastener member and product. When the guide plates 11 draw tight around the blank 1 they not only bring the blank into a central position over the dies, but force the punchings, if they should happen to get out of place, into correct position lengthwise of the blank. The guide-plates spread apart during the feed and allow an easy and free movement of the blank. It also allows the interlocking or projecting end of the fastener punching to lift up out of the recess 39 in die unit 10 after the impression of punch 38."

Again on page 8, where it describes the stage of the process where the lug and socket are being formed :

" At this time it is necessary to hold the blank and punching down on to the face of the die unit 10 and also to hold it against lateral spreading by contraction of the side guides 11. The stripper plate 21 partly performs this function, but in addition there is provided a yielding presser or floater 40 which is mounted in stripper plate 21 and bears down on the jaws 35 of the punching."

This presser or floater is mounted on top and presses down on top of the forward end of the punching.

Referring to Exhibit S, the floater or presser referred to presses down on top of the jaws of the fastener unit while the socket and projection are being formed in the unit. That is, the punching which has previously been cut out and put back in the metal ribbon is clamped top and bottom throughout the entire extent except the part that is to be shaped. The metal ribbon, which is the two waste portions on each side of the unit, the units being held between those two waste pieces, are clamped from the side by clamp guides 11 in the patent. After the units are stamped out of the ribbon they are put back into the holes where they were cut out. If these two pieces of waste margin are pulled together they will show openings corresponding in shape to the fastener units cut out. These fastener units are fed along step by step in those openings. When they get to the last stage, of forming the lug and socket, the edges of this ribbon are tightly clamped by means of wedges so that the fastener unit cannot spread when the socket and lug are being shaped. That is the punching is clamped top and bottom and sides, in both dimensions. That is a thing that the patent says on page 7 is of vital importance.

Mr. McCarthy : I think possibly your evidence is unintelligible unless you explain that your last remarks have reference to the machine

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Exhibit No. 10?—*A.* Yes. In the defendant's machine, instead of the punching being clamped top and bottom and side to side, the metal ribbon is always freely moveable through the guide channel through which it feeds. That is the feeding rollers push the metal ribbon in through a channel, which is slightly deeper than the thickness of the ribbon and slightly wider than the width of the ribbon. The first operation is a punching operation, that is the round socket is punched in the top of the ribbon and a corresponding pin caused to protrude from the bottom of the ribbon. During that stage, which corresponds to the stage of forming the lug and socket of the Sundback fastener, the ribbon is not confined either vertically or horizontally.

In the Sundback machine the ribbon is free to move forward only between operations, the wedges release the ribbon between the punching step and the shaping step, whereas in the Prentice machine the ribbon is never clamped, it always has a free and easy fit in the channel.

Mr. Ray referred to the legs of the machine and the fly wheel and the frame and a good many other parts that are common to a great variety of machines since time immemorial, but failed to mention this part which the patent says is vital. That is in contrasting the two machines this vital part was not even referred to.

In the defendant's machine there are not only no guide plates, but nothing else which has the function of these guide plates——

Mr. SMART: Could you locate that on this copy?—*A.* "The function of the guide plates 11 is of vital importance." (Near top of page 7.)

Mr. BIGGAR: In other words the guide plates are not vital but their function is vital?—*A.* Their function is vital.

In the Prentice machine there are not only no side guides which are squeezed in by wedges, there is merely a channel. That is the die plate has a channel through which the metal ribbon feeds, and the channel just has stationary walls. The metal ribbon does not quite fill the space either crosswise or up and down, so it is perfectly free to move lengthwise of that channel at all times, as far as any clamping or squeezing is concerned either on the edges or top and bottom. Of course back behind are the feed rollers which step it ahead and hold it, but as far as any lateral squeezing either edgewise or flat-wise is concerned, the ribbon is never subjected to any pressure.

So there is nothing in the defendant's machine which remotely suggests this function of the guide plates 11.

Referring next to the question of accuracy; the evidence has been that great accuracy is required. At page 3 of the patent in suit that is again emphasized. It points out that this great accuracy is obtained by virtue of two principal factors; first, cutting out the punching and replacing it in the metal ribbon and then feeding it ahead in the ribbon, and secondly the use of these guide plates 11 which squeeze the ribbon and the punching into definite and fixed position each time an operation is performed on the punching as it goes through the machine.

Now the reason for this accuracy is the shape of the unit which Mr. Sundback set out to produce. He says, in the first paragraph of the patent in suit:

> "This invention relates to a machine and method for producing straight and curved fastener stringers, such as shown in Letters Patent of United States No. 1,219,881."

Now by reference to that U.S. patent it is evident from Fig. 4 and again in Fig. 9, also after Fig. 1 and Fig. 5 and Fig. 2, that a characteristic feature of the unit is a slope on the end of the unit which extends throughout the entire thickness of the unit. That is, instead of having the lug confined to the top of the thickness of metal constituting the metal ribbon, as in the Kuhn-Moos device, Exhibit M, and the Prentice fastener Exhibit O, in the Sundback fastener the lug is not confined to the top surface of the unit, but one of the surfaces of that lug extends down through the body of the fastener, that is through the thickness of the metal ribbon from which the unit was fashioned. The United States patent not only fully discloses that feature, but the claims are directed to it. In other words, that was the feature which distinguished the Sundback fastener unit from the Kuhn-Moos of the prior art. That is, the reason why Sundback got that U.S. patent was because of this very bevel which extends all the way down to the lower edge instead of stopping at the top of the ribbon as in the Prentice fastener and the Kuhn-Moos fastener. Of course the Prentice fastener was not prior art in respect to the U.S. Sundback patent, the Kuhn-Moos was, and the United States patent was granted because of that difference.

That bevel not only extends down to the lower edge of the unit, but the socket is shaped quite differently. Instead of being a round hole as in the Prentice fastener it is rather prismatic or pyramidal in shape. It has four flat surfaces constituting side walls, it has four right-angle corners. Each of the side walls is bevelled, instead of being perpendicular to the face of the fastener.

HIS LORDSHIP: Do you mean to say that that was of any importance, if the hole is round or square?—*A.* It makes a vast difference in the manufacture of the device.

Q. Possibly, but do you mean to say there is any invention in a thing like that?—*A.* It takes invention to make a thing like this. It takes great accuracy——

Q. Accuracy is not invention, is it? I mean if you have got to make a thing 12 inches long it is not invention to make it 12 inches long? It would be carelessness to make it 11 or 13?—*A.* It requires a much more complicated machine to make a shape such as this (Exhibit S) than to punch a round hole. To make a round projection or punch a round hole is one of the simplest of punch press operations. To make a round hole you take simply a cylindrical die——

HIS LORDSHIP: I thought all the witnesses heretofore have said this punching operation is a simple thing, an old thing. Prentice I think

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said within some limitations anyone could do it. I think he would even say that a lawyer could do it if you gave him time?—*A.* By virtue of the peculiar shape of the Sundback fastener unit, which the patent says is what Mr. Sundback set out to do in this machine, that is to make a fastener of this kind as described in his United States patent——

HIS LORDSHIP: He says "such as shown." He does not say "as shown." He is not limited to that?—*A.* This particular fastener unit could not be made on the defendant's machine, because it can only be made where the blank is first cut out and the lug and socket is later shaped. In the Prentice machine the lug and socket are formed first, and then later the metal surrounding that lug and socket stamped out in the shape of the fastener. That reversal of steps is of vital importance, as exemplified by the fact that because of the reversal of procedure the Prentice machine could not possibly produce the thing that Sundback set out to produce.

I will endeavour to explain why it could not. It is because of this bevel on the forward end of the Sundback fastener, which extends not only the height of the projection but also through the thickness of the fastener, the thickness corresponding to the thickness of the ribbon. If the lug and socket were shaped first and then cut out, the end wall of the fastener would be straight like the end wall of the Prentice fastener Exhibit O. That is a punch press can only cut perpendicular to the ribbon, it cannot cut at an angle, the head moves straight up and down. So that every cut formed by a press must be a vertical cut perpendicular to the faces of the unit.

If the Sundback unit, or any unit, is shaped before being cut out, then the end wall of the unit will be perpendicular to the two faces of the unit, instead of bevelled.

Another way to explain why this could not be produced on the defendant's machine is to say that this end bevel which extends through the thickness of the ribbon is buried in the body of the ribbon until the thing has been cut out.

HIS LORDSHIP: Do you mean to say that the exact model which you hold in your hand could not be produced in the Prentice because the machine is not fitted to produce that? Is that what you mean?—*A.* No, your Lordship, I go very much further than that.

Q. Could the Prentice be changed to produce that?—*A.* It could not possibly be changed to produce the Sundback fastener. You have to reverse the operations. That is, this difference of sequence of steps, first shaping and then cutting out in Prentice, whereas in Sundback it is first cutting out and then shaping, is of vital importance. The patent says it is important. And I say it is impossible to make a fastener having the feature upon which the U.S. patent was granted, namely this bevelled edge. I say it is impossible to make that, not only with the Prentice machine, but with any machine in which the shaping is done first and the cutting out last.

I will endeavour to explain that in a different way, as to why that is so.

The characteristic feature of the Sundback fastener, as disclosed by the U.S. patent, is that the slope on the projection or lug does not stop at the top surface of the ribbon or fastener but extends all the way through to the far edge. Perhaps it is well to refer to the claims of the Sundback patent to get his exact words.

Mr. SMART: Is that the U.S. patent on the product?—*A.* On the product, the thing the Canadian patent in suit is said to do.

Mr. SMART: Are we required to discuss the claims of a patent that is not in suit?

HIS LORDSHIP: We are not going to discuss it, he is just refering to it in order to get the particular language.

WITNESS: Well perhaps it is not necessary. Suffice it to say that the feature of that patent is this bevel which extends from the top of the projection to the opposite side of the fastener.

HIS LORDSHIP: Of course the Canadian patent would be just the same if the words "such as shown in U.S. patent so and so" were left out. Those words are perfectly harmless. You cannot draw any inference from them one way or the other. It perhaps goes to explain the purpose of it, but the specification is just like any other document, it has got to be construed in a common-sense way.

However, do not let me cut you short on that explanation. All I mean to say is that this patent is not affected by the insertion of those words, because what the patent relates to is a machine and method for producing fastener stringers of a type.

WITNESS: I think that is the end of the answer.

HIS LORDSHIP: What is the prior art now? You referred to four or five, which of these patents in your judgment comes more closely to disclosing the Sundback?—*A.* The patents to Major, Stover and Brainard are patents for forming metal punchings and setting those punchings on to a tape.

Q. On the metal?—*A.* In two cases it is a metal stringer.

Q. Everyone is agreed that there is no invention in a punch?—*A.* These machines not only punch out the units but they attach them to a stringer which travels continuously through the machine.

Q. The three of them?—*A.* In the case of Stover and Brainard the stringer is a metal wire. The units are stamped out of a metal ribbon, they are stamped out and shaped, the jaws are placed over the wire and clinched and the wire steps forward. Another punching is punched out of the ribbon, shaped in the machine, put astride the wire and clinched on, the wire spaced ahead another step, another punching is stamped out, and so forth.

That is the patents to Stover and Brainard show the general scheme of feeding in a stringer, a wire as in the case of Stover or Brainard, a tape as in the case of the patent to Major, but in any case it is a stringer that goes through the machine step by step. In that same machine a metal

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ribbon is fed in and punchings formed, they are first shaped, they are later cut out, they are then crimped on to the stringer, which may be either wire or tape.

The general scheme, the general conception of an automatic machine which forms the punching in the same machine as applies it to the stringer.

Now in the United States patent corresponding to the patent in suit Sundback has said that "my invention" relates to that field." "This invention relates to a machine for forming and setting metal punchings and has particular reference to a special form of punch press." Now in these patents to Stover, Major and Brainard you have the small punching. It is cut out of a metal ribbon, it is set on a stringer. I think those patents are the most important as showing the general conception of the machine.

Then again that general scheme of procedure, the idea of feeding a stringer through one way and the metal ribbon another way, punching out the punching, transferring and clinching them over, that idea which is very, very old. The choice of particular ways of doing each step is mere mechanical skill. That is to say, Stover and Brainard set out to make barbed wire. They chose punches which would stamp out barbs with jaws that clamp over the wire. Major set out to make hooks and eyes; he shaped little hooks and eyes, set them on a tape and stapled them on. Prentice set out to make the Kuhn-Moos fastener. But these three patents I say are probably the most important, as showing the general conception, the general mode of procedure.

HIS LORDSHIP: Forgetting for the moment that there is any published prior art, and going back to actual practice, what did Sundback have before him to enable him to describe this machine?—*A.* I understand the law presumes he had all these patents before him.

Q. I know, but I have asked you to presume they were not before him.—*A.* I think he has admitted that he had the parent patent of Aaronson which discloses everything of the patent in suit except forming these punchings in the same machine.

Q. Well Aaronson was a working colleague of his?—*A.* Yes. Aaronson discloses all of this tape feed——

Q. But Aaronson did not make the thing that Sundback describes. He was short. If it is short a foot it is just as bad as if it is short a mile, isn't it?—*A.* It is a slide fastener, a machine for making a slide fastener.

Q. I understand you to suggest now that Sundback did not invent anything, but he simply gathered up into an apron everything that had been done in his factory, extending over a long period of years, and which cost $60,000 or $70,000 of someone's money?—*A.* No, your Lordship, I think he did make an invention. I think this scheme of punching out before shaping the lug and socket and replacing in the ribbon, this idea of clamps on the side of the ribbon for making what he says he set out to make, this particular shape of fastener, I think that was invention.

My point is, not that he did not make an invention, but that he made one invention to make his fastener, and Prentice has used a machine-shop

practice, an ordinary power press, everyday mechanical expedients for making the same thing quite different, which did not require this precision.

HIS LORDSHIP: Then everyone who makes a machine with the slightest difference is entitled to a patent; a curved shoulder or square shoulder and so on, is that what you mean?—*A.* No, in most cases he is not entitled to a patent. In this particular case I have not the slightest doubt that Prentice, had he chosen to take advantage of it, was entitled to a patent, particularly on these pincers which are operated through the medium of the pusher.

Mr. MCCARTHY: You mentioned the Aaronson patent, and you told His Lordship that the hooks and eyes were put in the magazine. What I want to ask you more particularly is how the tape was stepped up in the Aaronson machine, or how they were attached to the tape?—*A.* The tape was advanced in the Aaronson machine in much the same way as the plaintiff's machine and the defendant's machine, also the Major patent.

Q. Well I am speaking of the Aaronson?—*A.* Pawl and ratchet mechanism, step by step feed.

Q. Admittedly the units or elements were placed in a magazine?—*A.* Yes.

Q. And you say the tape was stepped up, and they were attached to the tape by the ordinary pawl and ratchet mechanism?—*A.* The mechanism for attaching the fasteners to the tape in the patent of Aaronson is more or less the equivalent of the Prentice mechanism. In the Aaronson patent the units in the magazine were placed with the jaws or channel uppermost, the tape was fed across the channel. With the tape in that position there were two pairs of pushers that took hold of the tape and pushed it down edgewise into the channel of the fastener units, being held in the carrier. Then side punches came in, to all intents and purposes like the Sundback punches, and clamped the jaws over the tape. The tape was then released by those pushers and snapped back into a straight line just above the level of the fasteners.

In the defendant's machine, instead of pushing the tape into the channels the channels are pushed astride the tape.

Q. And in the plaintiff's machine too?—*A.* In the plaintiff's machine there is quite a different——

Q. I mean the jaws of the units?—*A.* Are pressed astride the tape, yes.

Q. In the Aaronson one there is a mechanism for pulling the tape between the jaws of the elements or units?—*A.* Yes.

Q. And having pulled it there you say two side punches from either side clamp it, and then the mechanism releases its hold on the tape?—*A.* Yes.

Q. Then explain to His Lordship how the two jaws of the barb in the barbed wire patent are brought in apposition or in connection with the other piece of wire, which would be the tape in this machine?—*A.* In the patent to Brainard the punch which cuts out the unit or punching

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forces it directly astride the wire or stringer, by a straight motion. In the patent to Stover——

Q. Wait. The punch that cuts out the barb in the Brainard machine, the same action forces the jaws of the barb astride the wire?—*A.* That is right.

Q. Then how are they clamped?—*A.* In the patent to Brainard they are forced against inclined surfaces, which causes those two jaws gradually to swing together around the wire, and ultimately clamp the wire between them.

Q. Now take the Stover mechanism, how are the jaws of the barb brought in contact with the wire or tape?—*A.* In that case the punching is formed at one side of the wire, by means of punch and die. After the jaws are formed and the punching is severed from the ribbon it is lifted up and moved over and dropped down astride the wire, and then side punches come in beneath the wire and clamp the jaws around the wire.

Q. So that there are many different modes of bringing the jaws astride the tape or wire to which it is to be clamped, but it seems to be a universal method of punching them when you get them in that position? —*A.* And the particular mode of clamping depends largely on the particular shape required to be clamped.

Q. Now you emphasize the impossibility of producing this particular element or unit on the Prentice machine. As I understood you, it was because the element had been cut out before the process of formation was undertaken, and that that had some bearing on the process of formation. Am I right?—*A.* Yes. The Sundback device can be made only by cutting it out before it is shaped.

Q. Could you illustrate that to me with a piece of paper?—*A.* I have a sketch here which shows my attempt to illustrate the fact.

Q. What does this illustrate? What is the top figure?—*A.* The figure to which you refer is as a matter of fact the bottom of the sheet. That corresponds to a figure of the Sundback patent, Fig. 26, and shows one entire blank and part of another that follows behind.

Q. One entire blank?—*A.* Marked " C."

Q. What does Figure C. represent?—*A.* Fig. C. corresponds to Fig. 26 of the patent in suit, and shows one complete punching, which I will mark P, and part of a succeeding punching P1. This shows the relationship between the punchings which follow each other through the machine.

Q. Which way is that going? Show by an arrow?—*A.* The punchings are travelling towards the right.

Q. What does Figure B represent?—*A.* That is a section representing how the lug and socket are shaped in the punching. That is, Fig. C shows the punching before the lug and socket are made, Fig. B. shows how the lug and socket is formed.

EXHIBIT T. Sketch.

Q. What I want you to do is to connect that with what you said in regard to the difficulty of making that particular element or unit, and the

necessity of punching it out first?—*A.* In order to make the Sundback unit it is necessary first to cut out the metal opposite the end of the punching, as indicated by the triangular shaped space in Fig. C. of this sketch.

After that piece is cut out and kicked out of the machine in the second operation before the punching reaches the part that makes the lug and socket, the punch which forms the socket is free to push the metal at the end of the fastener over into the space that has previously been cut out. If that had not been previously cut out, the edge of the fastener, which is the sharp underedge of Exhibit S., could not be thrown over. Fig. A shows what would happen if you did attempt first to shape it and then cut it out. The dotted line, X, shows where the cut would come to cut off the end of the unit from the ribbon. That cut would necessarily be perpendicular to the face of the ribbon, consequently the end of the unit would be, not sloping, but at right angles to the face of the unit, as in the Kuhn-Moos and Prentice.

His Lordship: One thing I do not think I have got quite clear, that is the magazine for feeding the channels into the machine in the Aaronson thing. The Aaronson machine uses the tape, what he calls the channels are applied mechanically to the tape, but does he feed these channels into the machine from the magazine?

Witness: This magazine, Exhibit 5, has a series of pockets in its upper surface. The fastener units are formed in a separate machine and set into these pockets by hand. The pockets are so shaped, and they are so set into the pockets, that the jaws of the fastener project up. That is, these fastener units are in general V or U-shaped before the jaws have been punched in. Those are set in there with the jaws pointing upward, and with the channel between the jaws extending crosswise of the magazine. They simply rest lightly on top. The jaws project out beyond the top face of the magazine. It feeds through the machine.

Q. Is the magazine within the machine?—*A.* Well it is a separate part. There is a little gateway——

Q. It is put into the machine?—*A.* Yes.

Mr. Smart: They are hooked together.

Witness: With these little units projecting upward. The tape feeds crosswise, at a certain position here, this thing is step by step like this, and when the foremost unit comes under the tape the tape is pushed down so that the corded edge passes between the two legs of the first unit. Then the side jaws come in and force the two jaws of the unit over the corded edge of the tape.

His Lordship: The thing I wished to be informed about was how the magazine fed the units to the tape. I see now.

Mr. McCarthy: Now I want you to take up with me the claims in the plaintiff's patent, the one in suit.

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The first claim is:

"A machine for making fasteners having means for feeding a tape step by step, means for feeding fastener members into position to be compressed on to said tape, and means for compressing the fastener members thereon."

That is it refers to three means; first the means for feeding a tape; second the means for feeding fastener units into position to be compressed on to the tape, and means for compressing the fastener members thereon. Can you tell me where we can find what those means are?

Mr. SMART: Do you mean in the patent?

Mr. MCCARTHY: Yes.

Mr. SMART: Surely we are not requiring direction from the witness as to how we are to construe what is defined in certain claims.

Mr. MCCARTHY: I want him to describe from the patent what the means are and say whether we infringe those means.

Mr. SMART: That depends on what he thinks the language of these claims means. He is not the Court.

HIS LORDSHIP: I never can see much use in asking the witness about the claims in the patent, because really that is what the Court is for. I do not want his opinion whether or not there is an infringement.

Mr. MCCARTHY: No, I am not asking that.

HIS LORDSHIP: I think the question is all right if you ask him if he finds these means in the specification or if they are missing.

Mr. MCCARTHY: That is all I am asking. What I want to ask is if the means for feeding the tape are disclosed in the patent and if so where.

WITNESS: The means for feeding the tape is described in general on page 12, lines 1 to 19; and more specifically on page 12, line 20, to page 19, line 10.

Q. That is means for feeding the tape step by step?—*A.* Yes.

Mr. MCCARTHY: Now I was going to ask whether there was anything new or novel in that?

HIS LORDSHIP: Oh no. He has already answered. He has discussed the prior art, with the idea, I presume of showing that this was not new. I do not want his opinion as to whether there is invention in this patent. I assume he has already told me everything he knows.

Mr. MCCARTHY: I only offer it in this view, that in every case where expert evidence is necessary there probably will be opinion evidence on either side. The Court has to judge between that opinion evidence, which is right and which is wrong.

HIS LORDSHIP: I take it the witness has already answered your question. He has gone over the prior art, it is his opinion that there has been anticipation, there has been prior user. And I think he has also left me with the impression that he thinks there is no invention.

Mr. SMART: He said the contrary, he said he thought there was invention in Sundback.

Mr. McCARTHY : Not of the Sundback machine. What he said is on record.

But what I had more in mind is, in a patent for a machine, while I am agreeing with your Lordship that there should not be patents for a machine, but if there are, a man can only patent in a machine patent the means by which a certain product—that is if it is an old well-known product he can only patent the means by which a certain part of the product is produced as it goes through the machine, if it is patentable at all.

HIS LORDSHIP : That is you mean he cannot patent the product, only the mechanism.

Mr. McCARTHY : Not if it is an old product. He can only patent the means.

HIS LORDSHIP : That is a matter of argument, isn't it?

Mr. McCARTHY : I think so. What I was getting at is, I only wanted the means adopted by the plaintiff in his patent compared with the means adopted by us in our machine. If your Lordship thinks that has been fully dealt with——

HIS LORDSHIP : Oh yes, the witness has gone over that. In fact I stopped him going into the thing in too much detail.

Mr. McCARTHY : I was going to ask perhaps one other thing. Without going into details he gave us two essential elements in which he thought there was very distinct difference——

HIS LORDSHIP : I would be very glad to hear that question answered in direct form. The evidence is rather too diffusive. I will allow that question.

Mr. McCARTHY : I was going to suggest, if he would give me, not in detail, but the other elements in which he thinks there is a distinction.

Q. Just give them under headings, without going into particulars.

WITNESS : I have a list here of nine different points. I have given the first three and the last two.

Q. Just give them in the order you have them, beginning at the beginning?—*A.* (1) In the Sundback machine the tape-feeding mechanism has one ratchet wheel with two pawls acting on the same wheel, as in the Major patent, who shows in Fig. 10 one ratchet q-6 with two pawls, pawl R for the normal short step feed, and second pawl R1 acting on the same ratchet for the long step feed.

In the Prentice machine the tape feed comprises two ratchet wheels, with separate pawl for each wheel, exactly like the Shipley, which has one ratchet and one pawl g for normal step by step feed and another ratchet f and pawl m for the less frequent long step feed.

The former point referred to the tape feed, the following refer to the cutting, shaping and setting operations.

(2) In Sundback the jaws are firmly set on the tape by the machine of the patent, whereas in the Prentice machine the jaws are only loosely

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pinched on to the tape for transference to another machine which finishes the product.

(3) The jaw punchers or plungers which squeeze the jaws of the units over the tape in the Sundback machine do not engage the units directly, but hammer the legs of the units together over the corded edge by hammering the waste pieces of ribbon at each side of the units carried therein.

In the Prentice machine——

Q. Well you have gone into that very fully?—*A.* Yes. In the Prentice machine the pincers engage the unit jaws directly, as do the plungers 20 Fig. 13 of Aaronson, and the pincers O1, O2, Figs. 17 and 19 of Stover.

(4) In the Sundback machine the jaws of the units are clamped on the tape by side punches or plungers, which are mechanically driven in time relation to the other parts of the machine; whereas in the Prentice machine the jaws of the units are pinched together by swinging pincers which are always free to be pushed back and forth and which are moved only by the units themselves.

(5) In the Sundback machine the units are fed astride the tape by the ribbon, that is while carried in the ribbon; and after being cut out they are always fed in the same direction, from the rear of the machine to the front, astride the tape.

In the Prentice machine the units, instead of being fed by the ribbon are fed by a pusher operating transversely to the path of the metal ribbon like the pusher D, Fig. 5 of Brainard.

(6) In the Sundback machine the units are cut out of the ribbon lengthwise of the ribbon, that is with the legs of the units extending lengthwise of the ribbon; whereas in the Prentice machine the units are cut out with the legs extending transversely on the ribbon.

That point is not of much consequence in itself, but it is of considerable consequence in the general scheme of operation.

(7) In the Sundback machine the units are cut out before being formed, that is before the pin and socket are formed in the units; whereas in the Prentice machine the lug and socket are formed first and the unit is cut out later, following the procedure of Stover and Brainard.

(8) In the Sundback machine, after the punching is cut out of the metal ribbon it is immediately replaced in the ribbon; whereas in the Prentice machine after the punching has been cut out of the ribbon it drops through the die plate as in the ordinary punching machine and as in the patent of Brainard.

(9) In the Sundback machine the metal ribbon is clamped top and bottom and edge to edge after each step, and while each operation is being performed on the ribbon; the side clamps being numbered 11 and the top and bottom squeezer being No. 40.

In the Prentice machine the metal ribbon is never clamped, either edgeways or flatways, but always has free and easy movement through the machine.

Mr. McCarthy: I understand your Lordship would rather I discuss the claims in argument.

Mr. Smart: My friend Mr. Biggar has just been called to the Supreme Court, he will not be long. I wonder if my friend would go on with the rest of his case.

Mr. McCarthy: If my friend would like to finish the cross-examination of Prentice now.

Mr. Smart: Yes.

(*For cross-examination, see page* 133.)

No. 19.

Further Evidence of G. E. Prentice.

GEO. E. PRENTICE, Cross-Examination by Mr. Smart (concluded).

Mr. Smart: I want to mark the samples made on the machine last night.

Q. This stringer is one made on the machine last night?—*A.* That is so. The Registrar had it, it was delivered to him.

EXHIBIT NO. 26. Stringer made on defendant's machine.

Q. And this piece of metal is a strip of waste?—*A.* It is a piece of the waste, and also the plain stock before cutting.

EXHIBIT NO. 27. Piece of metal stock partly cut (from defendant's machine).

Re-Examined by Mr. McCarthy:

Q. Will you take Exhibit 26 and show His Lordship how those individual units are attached? I mean with what security or firmness they are attached?—*A.* (Showing.) They can slide along—Of course they do not have to slide far—in order to get that final fine adjustment, so that the second machine can do that very fine adjustment. They are practically on, but not exactly.

Mr. Smart: I do not like that exhibit being destroyed.

His Lordship: It is not being destroyed.

Mr. McCarthy: Can you operate a slider on that unit?—*A.* You cannot.

Q. Will you illustrate that?

My friend is promptly destroying it.

Mr. Smart: I am trying to move them, I cannot move them with my finger.

WITNESS: Perhaps, my lord, if I may state it the other way around. These units are made on the machine .125 thick——

Mr. MCCARTHY: I do not think it is on the record, the fact that you did move one of the units on the tape?—*A.* The normal thickness of the complete fastner is .112, or.113, we are not fussy over a few thousandths. This slider positively will not go on there. If they did go on they would be absolutely useless, because the units would move. You cannot get that fastener on a normal slider.

HIS LORDSHIP: What fastener is that?—*A.* This is the fastener made by the Colonial Fastener Company in Montreal, the Prentice type fastener.

Mr. MCCARTHY: Fastener or slider?—*A.* The fastener cannot——

Q. You are using the word "fastener," that is not synonymous with slider?—*A.* I should say the stringer cannot go on the slider. It takes the stringer and the slider to make the fastener.

Q. Then on what do you rely for the accuracy of your fastener?—*A.* On the secondary machine.

Q. What do you get in the secondary machine?—*A.* We get a finer adjustment of the spacing, both lengthwise and cross-wise, and in thickness.

Q. At what stage do you clamp the jaws?—*A.* They are temporarily clamped on the machine in suit, but they are firmly clamped in the second machine.

Q. My friend referred to your spiral form of fasteners, which he suggested had not been a success since the last action. What do you say as to that?—*A.* I say it has been very successful. In fact since I left home we have had one order for 60,000 pieces.

Q. My friend also referred to the reports of your attorneys on the Kuhn-Moos patent, and you told him you had received copies of that patent. Could you indicate to the Court what patent that was you had reference to?—*A.* It was the British Kuhn-Moos fastener patent taken out in England in 1912.

Mr. SMART: This witness cannot prove that, my lord, unless the patent can go in as a piece of evidence.

Mr. MCCARTHY: I was going to tender that, as my friend referred to it.

Mr. SMART: I didn't refer to it.

Mr. MCCARTHY: You asked if his attorneys examined the patent, and whether he had read it. He said he had. Now I ask him to identify the patent, and I ask to put it in.

Mr. SMART: My learned friend has misunderstood what I asked Prentice. I asked him if he had read the Sundback patent, and if his attorney had reported the Sundback patent to him.

Mr. MCCARTHY: It is true you also asked that.

HIS LORDSHIP: My impression is that Mr. McCarthy's recollection is correct, that you did bring that out, something from the witness in reference to this patent.

Mr. SMART: In his examination in chief he referred to this.

Mr. MCCARTHY: I know, but did not my friend cross-examine on it.

HIS LORDSHIP: Nevertheless I do not see my way clear to allow you to bring the patent in. The witness can give oral evidence as to a particular point.

Mr. MCCARTHY: It is only on the product. Your Lordship will see in claim 19 they claim the product. As I understand the law and practice, it is not necessary except in cases of anticipation to plead the prior art. In cases of product only I am able to give evidence of prior product without actually citing a patent, as a product.

HIS LORDSHIP: If your law is right I should not like to exclude the evidence. I would like to admit it subject to objection, and decide the point later.

Mr. SMART: My lord, there is no claim on the product in this patent.

Mr. MCCARTHY: Oh yes, claim 19.

Mr. SMART: Oh yes, we claim that this machine patent has been infringed by the sale of a product made on it. That is a question of law.

HIS LORDSHIP: I do not know if it is definitely and clearly settled that you can patent a product at all. I am going to allow you to put that in, Mr. McCarthy, subject to objection, and reserving the right to strike it out.

EXHIBIT U. Patent.

Mr. MCCARTHY: Then one or two other small matters. You referred to the improvement to machines as being merely a matter of mechanical skill. What do you say as to that as compared with your present machine?

Mr. SMART: Didn't he deal with that in chief? I did not ask about that.

Mr. MCCARTHY: I beg your pardon, I am taking the notes I made of your examination.

Mr. SMART: But in opening you dealt with the very question you are dealing with now.

Mr. MCCARTHY: That does not prevent me asking him the question.

HIS LORDSHIP: I thought that expression of opinion came out on cross-examination, Mr. Smart.

Mr. SMART: Yes, that part, but in chief——

HIS LORDSHIP: Yes, of course Mr. McCarthy must not go over ground which he covered.

Mr. MCCARTHY: I am not, this is a matter entirely new that came out in cross-examination.

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Re-examination—*continued.*

HIS LORDSHIP : Well that is not important. I suppose all Mr. Prentice meant was that given any problem in mechanics in the world, there ought to be to-day men who can solve any problem. That is what he means.

Q. Is that correct?—*A.* That is correct. I would like at this point, if it is permissible, to make a few remarks that will clear up——

HIS LORDSHIP : Oh no, you must not take the bread away from your counsel!

Mr. MCCARTHY : His Lordship means you must not hire a dog to bark and bark yourself!

Q. Then in regard to the model, Exhibit Q, would you tell me — I should have asked at the time, with your Lordship's permission I would like to ask the question, subject to my friend's right to cross-examine, because I put it in without realizing what it was.

Does that correctly represent the die-plate and table and the pusher and the two wings as they appear in the machine, as they appeared in the machine downstairs?—*A.* That is a new die-plate pusher and wings as applied to the machine but the final fitting—this has never been in use—the final fitting of the pusher is done when applied to the machine.

Q. My question is, does that correspond with the one downstairs?—*A.* With one exception, the fitting into the machine.

Q. Tell me what has to be done?—*A.* In the final fitting, as is disclosed in the machine downstairs, the corners of the pusher are cut away so as to put all of the labor on to the units. You see this pusher can touch the side arms or grippers now, but when in use it cannot.

Q. So that they have to be bevelled off?—*A.* Bevelled off. If it were not so the unit could not be clamped. If the pusher could touch those grippers they could not clamp the unit. But that is done when fitted into the machine.

Q. Then you also made the remark in your cross-examination that the metal ribbon through the guideway, in passing through the guideway, fitted perfectly. What did you mean by that?—*A.* Well that does not mean tight. For instance the metal ribbon is supposed to be under .250, that is the limit it may go.

Q. Are you speaking of thickness or width?—*A.* Width of metal. It is .040 thick. This particular piece, taken out of the machine last night is .219.

Q. That is Exhibit 27?—*A.* Exhibit 27 is .219 of an inch in width. That same metal after the piercing is punched out of this strip as I have it here is .222.

Q. How do you allow for the difference in the guideway?—*A.* The guideway is made sufficiently wide to compensate for the spreading of the metal in blanking out, which it does spread in cutting. That is immaterial in our machine.

HIS LORDSHIP: Mr. Smart, what is your evidence as to when Sundback came into production?

Mr. SMART: About 1916.

Mr. MCCARTHY: In Canada?

Mr. SMART: No, in the United States. Canada, 1924.

Mr. SMART: I will operate this machine now.

(Mr. Smart commences to operate Exhibit 10.)

Mr. MCCARTHY: When were those put on?

Mr. SMART: They were put on last night.

Mr. MCCARTHY: Give us some for to-day.

Mr. SMART: We are not resting this on what this particular machine does in Court.

(The machine has to be threaded up again.)

AFTERNOON SESSION.

(Mr. Smart resumes attempt to operate machine, Exhibit 10.)

Mr. SMART: It has jammed again. It was injured in transit, I am afraid we will not be able to operate it. It was in an open crate, and apparently someone was trying to operate it in transit.

Mr. MCCARTHY: Can we put in the tape that has been turned out?

Mr. SMART: Yes.

EXHIBIT V. Portion of the tape from machine Exhibit 10.

No. 20.

Further Evidence of C. Grover.

CHARLES GROVER, CROSS-EXAMINED by Mr. BIGGAR:—

Q. Mr. Grover, His Lordship asked you this morning whether the Major, Stover or Brainard patent was the nearest to the Sundback machine. Can you tell me?—*A.* I make the same answer I made this morning, that I think the Major, Stover and Brainard the three nearest.

Q. They are all equally near?—*A.* No.

Q. My question was, which is the nearest? If they are not equally near one must be nearer than another. Which is the nearest?—*A.* Well they differ. One might be nearer in one respect and another in another.

Q. You say they are not equally near, that means one must be nearer than another. Which is the nearest?—*A.* I do not want to attempt to say that on the whole any one is more close than another.

In the Exchequer Court of Canada.

Defendants' Evidence.

No. 20.
C. Grover.
Cross-examination—*continued.*

Q. Thank you. Now referring to Exhibit Q, am I right in understanding that the slide farthest from the pincers is operated by the machine?—*A.* Yes.

Q. And goes forward and backward under the influence of the power applied to the machine?—*A.* That is right.

Q. And goes back as far as the nut that is presently against its outside back edge?—*A.* Whether it goes against the stop at the rear I think is unimportant.

Q. Well does it in fact?—*A.* I don't know.

Q. How far forward does it go?—*A.* It goes forward as far as it is pushed by the machine.

Q. Exactly. So that in its final position when one pushes it like that——?—*A.* Oh no. The pusher never engages the pincers.

Q. Then how is its length of movement determined?—*A.* By the mechanical device that moves it back and forth.

Q. How far forward does it go in fact?—*A.* It goes until the fastener unit which it pushes engages the pincers and swings them forward slightly.

Q. And it might readily go forward as far as the pincers will allow it?—*A.* No, because there is——

Q. It may be adjusted to do so?—*A.* It could be I think.

Q. It could be adjusted so that the pincers and the slide are in the relative position in which I am now holding them?—*A.* No, it could never get to that position, because the unit would always be between the pincers and the pusher.

Q. What is the recess in that end of the slide for?—*A.* To take the rear end of the unit.

Q. How much of the unit lies between the outside edges of the slide and the inside edges of the pincer elements?—*A.* Will you re-state that?

Q. How much of the element lies between the outside edge of the slide and the inside edges of the pincer elements?—*A.* What do you mean by the outside end of the slide, the forward end?

Q. Exactly, the forward end of the slide?—*A.* And the inside edges of the pincers?

Q. Not the outside edges—*A.* You mean the sides from which the pusher approaches?

Q. Yes?—*A.* The question is, how much of the unit is between those two surfaces?

Q. Exactly?—*A.* The forward ends of the jaws.

Q. Oh no, the forward ends of the jaws are in between these two pincers?—*A.* That is true.

Q. And the head of the unit is in this slot in the edge of the slide?—*A.* That is true.

Q. So that there is no reason why that slide should not go forward as I have pushed it now to the limit of the possible movement?—*A.* Oh yes, the space between the pincers is sufficient to keep the slide from engaging the pincers.

Q. I say the space between is filled up by the two jaws closed together, isn't it?—*A.* Of course the jaws never swing into alignment as you have them now. They are only pushed forward a slight amount.

Q. I say they could be pushed so that they would completely fill the gap between the pincers?—*A.* I would not attempt to answer that without trying it. I know as a matter of fact they do not. Whether it is possible, I would want to try it out on the machine.

Q. Now you are on your oath as a witness?—*A.* Yes sir.

Q. What, if any, is the necessary interval between the pincers when they are in their closed position? How closely can they be set together?—*A.* How closely can the pincers be set together?

Q. Yes?—*A.* I don't know what you mean.

Q. What is the necessary interval between those two nearest ends of those two pincers?—*A.* Necessary interval?

Q. What is the least necessary interval?—*A.* Do you mean how close could a mechanic adjust these together without touching?

Q. Exactly?—*A.* I suppose he could bring it down to a fraction of a thousandth of an inch.

Q. And from that upward, couldn't he?—*A.* Yes.

Q. So that he could easily adjust them so that they would not only close the jaws of the element completely, but would pinch them and deform them?—*A.* I have no doubt he could.

Q. And this slide would then have the effect of doing just that to the element?—*A.* I don't know what effect it would have.

Q. You don't know?—*A.* I don't know what you have in mind.

Q. Are you seriously telling me you do not know what effect the movement forward of that slide would have if the two ends of the pincers were set close enough together not only to make the jaws of the element grip, but to deform them?—*A.* I am seriously telling you I know what takes place in the machine, but I do not know what would take place under the condition you have in your mind.

Q. You cannot tell me as an expert mechanical engineer what would happen if you shoved that slide forward against those pincers, and the pincers were set so close together as not only to close the jaws but to deform them?—*A.* Oh I can answer that question.

Q. That is the same question?—*A.* If the slide is pushed forward until it engages the pincers, and if the pincers are set close enough together so that they deform the unit, of course the unit would be deformed.

Q. So that in the result you could set that slide and those pincers so as to close the jaws of the element just as tightly as you like on the tape?—*A.* I think so.

Q. Now coming to the next point, you were telling us something about the difference in shape of the elements of the Sundback fasteners and of the Prentice fasteners. You remember referring to that?—*A.* Yes.

Q. You told us that the Sundback elements, as I understood you, could not be made on a Prentice machine?—*A.* I did.

In the Exchequer Court of Canada.

Defendants' Evidence.

No. 20.
C. Grover.
Cross-examination—*continued.*

Q. What you mean by that is that they could not be made on the Prentice machine as it is now equipped, isn't it?—*A.* No. As I stated I go much further than that and say that the machine could not be adapted to make them. You would have to use a different kind of machine. It is not a mere question of changing the tools.

Q. Or putting in a new tool?—*A.* Or putting in a new tool.

Q. That would not suffice?—*A.* Oh no.

Q. What was the reason that you said that the Prentice machine could not make the Sundback fastener? Wasn't it that the Prentice machine could not get hold of the edge of the element in the forming process, because the formation was done while it remained in the strip and before pushing out?—*A.* I think you have stated my reason reasonably fairly.

Q. Now suppose that, before forming, a small slot was made in the strip of metal so as to expose what would be the edge of the element when formed, could not the forming then extend not only to the surface of the element but also to its end opposite the jaws?—*A.* Yes, if you cut out the blank before it is shaped.

Q. I did not ask that?—*A.* Or partially cut it out.

Q. That is if you made the slot I have described you could form it?—*A.* Yes, if you cut out a certain part of the blank, that is the part which is to be shaped down to a thin edge before it is shaped, then it is possible.

Q. That is what we call the head of the element as distinguished from the jaws or tail end?—*A.* Yes.

Q. If you made a little slot there previous to the formation of the element, then the element could be made of the Sundback type by the forming process as it is now operable on the Prentice machine?—*A.* I would not say it would be sufficient to make a little slot. I think you would substantially have to cut the metal in two.

Q. Why do you say that?—*A.* Because it is shaped all the way through.

Q. I am speaking about that front end?—*A.* Yes.

Q. Now suppose you had your slot at that front end, could not that continuous inclined surface be made in the formation of the element?—*A.* If the stock is cut all the way through, yes.

Q. What do you mean by all the way through?—*A.* If the ribbon is cut all the way through.

Q. The slot would not suffice?—*A.* If by slot you mean a cut all the way through the ribbon.

Q. You mean from the top of the ribbon to the bottom?—*A.* Yes.

Q. Oh yes, a slot does go through, doesn't it?—*A.* Ordinarily.

Q. I thought a slot and a depression were two different things?—*A.* Yes, I would say they are.

Q. So that if you made a slot at the head of the element there would be no difficulty in forming the Sundback element on the Prentice machine?—*A.* Oh I think there would be serious difficulty.

Q. It could be done?—*A.* Not practically, no.

Q. You swear that that is your view, that it could not be practically done?—*A.* Without any hesitation.

Q. Will you explain why? Because I think we shall have to contradict you on this point by evidence?—*A.* For the reason that the shape of the Sundback fastener is of such nature that to form it accurately it has got to be held firmly in position during the various cutting operations, forming operations, as stated in the Sundback patent. Now in the Prentice machine there are no facilities whatever for holding the ribbon in place. That is, after the blank is cut out in the Prentice machine it drops out into the carrier——

Q. Well we know what happens——

Mr. McCarthy: Do not interrupt.

Mr. Biggar: I do not want to interrupt, but I want an explanation, not a repetition. Now if you will make your explanation and confine it to an explanation?—*A.* Do you want me to repeat what I have just said?

Q. If that is the explanation you are making, yes?—*A.* That is the explanation.

Q. Now is that quite fair? Have you really thought what that means? You say for example that in Prentice there is no holding of the material during these processes?—*A.* There is no squeeze either up and down or sideways. The metal ribbon has an easy fit through the channel where it is shaped and cut off.

Q. If you had a proper fit there, a close fit, then the successive operations could be done, couldn't they?—*A.* I do not think you could have a close fit, because you could not get the lug after it is once formed up out of the die to pass the ribbon on. In the Sundback there is a little yielding pressure on top, which permits the lug after it is shaped, after it is squeezed down into the die and shaped, it permits the unit then to lift up right out of the recess in the die, for further advance of the ribbon. So that the Prentice machine would not work if the ribbon were tightly compressed.

Q. As a matter of fact in the Prentice machine, until the element completely finished is separated from the strip it remains continuously in the strip itself?—*A.* Yes, the moment it is cut out it stays out.

Q. And the strip itself goes under the rollers and comes out of the machine a complete strip with only apertures in it where the elements have been punched out?—*A.* Exactly.

Q. Whereas in the Sundback machine you have cut your strip into two parts, so that it is a pair of small pieces as it leaves the machine?—*A.* That is right.

Q. Do you say that the presence of the elements in the strip does not sufficiently hold it to secure accuracy in the Prentice machine?—*A.* I say that the Prentice fastener, being of the Kuhn-Moos type, does not require accuracy. A simple round pin in a round hole, the simplest thing in the world is to make a round die and in the bottom of the die-plate make a round hole. I say that is so simple in construction that it is A, B, C work as far as accuracy is concerned.

Q. Do you say inaccuracy is immaterial in relation of the projection and depression to the rest of the element in the Prentice machine?—*A.* Within limits I think it is, yes.

In the Exchequer Court of Canada.

Defendants' Evidence.

No. 20. C. Grover. Cross-examination—*continued.*

Q. Within what limits?—*A.* Within much wider limits than Sundback.

Q. Within what limits?—*A.* I would not attempt to fix any definite limits, but within a good deal wider than the Sundback shape.

Q. We have been told what the limits are in the Sundback machine. Give us an idea what is in your mind with regard to the Prentice?—*A.* The Sundback patent says with the utmost accuracy.

Q. I am not asking that, I am asking with regard to the Prentice?—*A.* It would not require such great or extreme accuracy.

Q. I am asking what limits of accuracy?—*A.* Three or four times as much leeway as in the Sundback.

Q. Do you mean three or four thousandths of an inch?—*A.* You are speaking about the location of the pin on the fastener?

Q. The projection and the recess in relation to the rest of the element?—*A.* I question whether it would stand that much variation.

Q. So do I. How much less do you think it would stand?—*A.* I would not attempt to put any limit.

Q. Well you say it does not require the same accuracy. Give me an idea what you are talking about in the way of accuracy?—*A.* I think three or four times as much leeway.

Q. I am asking whether that means three or four thousandths of an inch or not?—*A.* I should think one-thousandth or one and a half.

Q. By the way, you have no information, have you, with regard to the patents that you have been speaking about except what is contained in the documents?—*A.* No.

Q. One explanation then in regard to them. In the patent to Aaronson there is special provision I understand for moving the tape downward into the jaws of the elements that are waiting for its arrival as it were in the magazine?—*A.* Yes.

Q. And that is combined with an arrangement whereby at the time it is so moved down the tape is pinched in the elements that hold it and move it down, and then released in order to permit it to move afterward?—*A.* Yes.

Q. That is all described in the patent?—*A.* Yes.

Q. One other question with regard to your knowledge. When you said the pincers of that Exhibit Q were in practical use in a particular way, have you seen all the Prentice machines that have ever been built?—*A.* Not all, but I have seen a number of them in actual operation, that is walking through the factory.

Q. So that you can only speak with regard to the machines you have seen?—*A.* Yes.

Q. In Canada or the United States?—*A.* The United States.

Q. Only?—*A.* Except the machine down here.

Q. That is the only Canadian machine you ever saw?—*A.* Yes.

Mr. McCarthy: My lord, we had photographs taken yesterday of the defendant's machine. Would it assist the Court to have them in?

HIS LORDSHIP : I suppose it would not do any harm to have them in, as the machine is not here.

EXHIBIT W. Photograph of defendant's punch press alone without the appliance on in front.

The other is the punch press with the appliances on as your Lordship saw them yesterday.

Mr. BIGGAR : I would object to photographs going in of the machine in any condition other than the condition in which we saw it. My friend said one showed something with attachments or something.

Mr. MCCARTHY : With the attachments we saw yesterday. We took them off to show you.

Mr. BIGGAR : Just the attachments you took off to show ?

Mr. SMART : It was not taken off.

Mr. MCCARTHY : Well that is as it is now.

Mr. SMART : One with certain parts taken off to show more clearly the interior.

EXHIBIT X. Photograph of defendant's machine with attachments on.

Mr. MCCARTHY : That is the case for the Defence, my lord.

No. 21.

Evidence of F. Ray.

REPLY.

FREDERICK RAY, recalled. EXAMINED by Mr. SMART :—

Q. Mr. Ray, I think you heard the discussion as to the possibility of forming what has been called the Sundback unit or element and the Prentice unit or element. What do you say as to the possibility of forming these on either the Sundback or the Prentice machine ?—*A.* I think it is very simple to form either element on either machine if it is desired. In the case of the Prentice machine it is simply necessary to add another punch, which will come ahead of the ones now used on the machine, and remove a little section of the blank at the side opposite from the jaws, so that the back end or head end of the fastener element will be cut through first, permitting that end to be worked upon by the projection on the lower die, and thus form it to the same angle that the projection is formed by the next die.

That is one method of doing it, probably might be the best method, owing to the narrowness of the metal strip used.

In the Exchequer Court of Canada.

Plaintiff's Evidence in Reply.

No. 21. F. Ray. Examination in reply—*continued.*

If the strip were wider, that same result could be easily obtained by setting a little V-shaped projection rising up above the lower die-plate so that when the strip is pressed down upon that die-plate there will be a little impression made on the bottom side of the strip having the correct angle. Then later on when the projection is formed the angle of the projection will rise up with that angle previously formed, and the surface then will be continuous at that angle from the top of the projection to the other side of the blank.

Q. What do you say as to the possibility of forming the so-called Prentice element on the Sundback?—*A.* That could be easily done, it would merely be a matter of changing the shape of the punch and dies.

Q. As to this question of the firmness with which the elements are clamped on the tape, what is your opinion as to the variation of that?—*A.* It is a mere matter of degree. With the Prentice machine the element can be clamped on just as tightly as desired. They are as far as I have observed clamped on sufficiently tight so that they are maintained in proper space relationship on the tape.

Q. Now Mr. Grover referred to various patents as showing different mechanical movements by which material is fed. Have there been any new mechanical movements in recent years, regarded as mechanical movements?—*A.* Not as far as I know, speaking broadly. At least all of the mechanical movements we are here concerned with are certainly very very old.

Q. Now will you look at the Shipley patent? You heard Mr. Grover describe the feed mechanism for the metal strip in that. Perhaps you will compare it with that of the patent in suit?—*A.* As I remember, Mr. Grover referred to this feed in the Shipley patent as being the same as the feed of the tape in the patent in suit.

Mr. McCarthy: No, in the Prentice machine?—*A.* All right, as Prentice's machine. The same as the tape, whichever machine it was. It is true it has and does show a double ratchet form of feed. In that respect it is the same as in the Prentice machine and substantially the same as in the machine of the patent in suit. The feed in both of these machines depends upon the same general principles, namely a pawl and ratchet feed which gives the short steps, this feed at the same time turning about another ratchet wheel to a certain point where another pawl takes hold of it, and then that other pawl through gearing or through greater movement gives a single large step. They are all based on that same underlying principle.

However, the important point of the feed of the tape in both the machine of the patent in suit and in the Prentice machine is that the tape is wrapped about the feed disc so that there is surface contact over a considerable portion of the outer surface of this disc, so that the tape will be in frictional contact with the whole of this surface, and thereby will be gripped by the surface very strongly and positively, without deforming the tape itself.

In this particular feed which is shown in the Shipley patent, which is for the purpose of feeding a strip of metal, the metal simply passes between two rollers or discs, and therefore there is simply line contact at top and bottom between the discs and the strip of metal.

That is a satisfactory feed for metal, because the metal is strong, and very considerable pressure can be exerted by the feed discs upon the metal without deforming it. But in the case of a tape, which is soft and easily deformable, any considerable pressure exerted on the tape flattens the tape down, thereby elongating the tape in that particular portion that is flattened down, and thereby changing the rate of feed of the tape, depending upon the pressure between those rolls. As the pressure is increased the tape as a whole would be fed slower and slower, although the feed discs move at the same speed.

So that for feeding the tape in this machine such method of controlling the tape would be entirely unsatisfactory.

Q. In the Major patent, No. 525,914, without going into detail, is that a line contact feed there?—*A.* That is also a line contact feed.

Q. And in the Aaronson Canadian patent referred to?—*A.* That is likewise true, that is a line contact.

CROSS-EXAMINED by Mr. MCCARTHY.

Cross-examination in reply.

Q. Will you just detail the steps in the Prentice machine of your suggested change?—*A.* Yes, I would add——

Q. Never mind adding, begin at the beginning and tell me what steps you would take.—*A.* The ribbon would first be punched——

Q. No, get it in the rollers first?—*A.* All right, it goes into the guide and passes through the feed rollers and passes further into another guide, and continues on into the die-plate underneath, the stripper plate. The punch would come down, which would cut a little notch on one side, at the backside of the element. That punch in effect cutting at the edge of the element substantially, thus exposing that backside. Then it would pass on another step, and the same punch as now used to form the cup and the projection would be used, and they would be formed in the same manner except that the die underneath would be modified somewhat, bringing up a projection from the bottom die D to form a side or back of the element in a diagonal place, which would line up with the side of the projection.

The strip would then be fed forward and would naturally lift up somewhat, as it has to do at the present time to get the projection out of the die, and at the next step the element would be blanked out of the strip and would be forced down through the die-plate into the slide below and conveyed to the tape and pressed upon the tape.

Q. Then you would eliminate all the operations that appear in the plaintiff's patent after the modelling of the unit?—*A.* No, I don't eliminate any of the operations.

Q. But you would not carry it on, you would drop it down on the table, you said?—*A.* I didn't say I would drop it, I would carry it downward by the blanking die.

In the Exchequer Court of Canada.

Plaintiff's Evidence in Reply.

No. 21.
F. Ray.
Cross-examination in reply—*continued.*

Q. And how would it get to the tape?—*A.* It would then be carried to the tape by a horizontal slide.

Q. In the same way as the Prentice?—*A.* Yes, it is the Prentice I am describing.

Q. That is what I say, that after you had punched it it would go down on the table as the Prentice unit does and be carried as the Prentice unit carries it to the tape?—*A.* I am describing the Prentice machine.

Q. Is that right what I am saying?—*A.* You are not expressing it correctly.

Q. Well all right, say you cannot answer. Do I understand you to say that after you had punched it you would drop it on to the table and carry it by the horizontal pusher or slide on to the tape?—*A.* No, I distinctly said I would not drop it on the table.

Q. Where would you drop it?—*A.* I would not drop it.

Q. What would you do?—*A.* I would press it through the die.

Q. As the Prentice machine does?—*A.* Yes.

Q. And then——?—*A.* It would come down on the horizontal slide and then be carried forward to the tape.

Q. Then you would not need to carry out the subsequent operations as appear in the Sundback patent, that is carrying it along with the stringers until you reach the tape at the further end?—*A.* I say I would carry out these operations, I would carry them out in a different way. But I say they are the operations, as I previously said.

Q. Then you said another way could be by changing the shape of the dies——

Mr. BIGGAR: That is in the plaintiff's machine?

Mr. MCCARTHY: Yes.

A. To make the Prentice fastener?

Q. Yes?—*A.* Yes, I would change the shape of the dies.

Q. At what stage would you do that?—*A.* That would be the punch and the die which make the projection and the depression.

Q. At what stage of the operation would you do that?—*A.* That is the stage immediately succeeding the blanking stage.

Q. Would you carry on the Sundback operation until you got to the stage of blanking?—*A.* I would carry on all the operations just the same.

Q. Oh just the same?—*A.* Except I would change the shape of the punch.

Q. And in doing that you say you would produce the Prentice unit, would you?—*A.* Yes. The die also at the bottom would be changed, the punch and the die at that point.

Q. So all these things appear to be merely a change of mechanical arrangement, do they?—*A.* Yes, changing those details is a mere matter of change in the details of the machine itself.

Q. As you have told us, the other operations are all as old as the hills? The punching operation——?—*A.* The separate steps.

In the Exchequer Court of Canada.

Plaintiff's Evidence in Reply.

No. 21.
F. Ray.
Cross-examination in reply—*continued.*

Q. Are old, extremely old?—*A.* I think so.

Q. It is a simple matter of changing mechanical details?—*A.* Well, I think taking them as individual operations I rather imagine everyone of them is old. It is combining them in a certain definite relationship.

Q. You could change them about, according to you, in any way you please?—*A.* Oh no. They can be changed within certain limits, as long as the proper results are obtained.

Q. Changed within certain limits as long as the proper results are obtained.

All right, thank you.

No. 22.
Formal Judgment, 4th April 1932.

No. 22.

Formal Judgment.

IN THE EXCHEQUER COURT OF CANADA.

Monday, the 4th day of April, A.D. 1932.

Present: The Honourable the President.

BETWEEN

LIGHTNING FASTENER COMPANY, LIMITED - - *Plaintiff*

AND

COLONIAL FASTENER COMPANY, LIMITED AND G. E. PRENTICE MANUFACTURING COMPANY - *Defendants.*

This action having come on to be heard before this Court at the City of Ottawa on the 3rd, 4th and 5th days of February, 1932, in the presence of counsel for both parties, upon hearing read the pleadings herein and upon hearing the evidence adduced at the trial and what was alleged by counsel aforesaid, this Court was pleased to direct that this action should stand over for judgment, and the same coming on this day for judgment.

THIS COURT DOTH ORDER AND ADJUDGE that as between the parties hereto, the Letters Patent of the plaintiff No. 210,202, dated April 5th, 1921, for Machines and Methods for Producing Straight and Curved Fastener Stringers, are valid and infringed by the defendants;

AND THIS COURT DOTH FURTHER ORDER AND ADJUDGE that the defendants, their officers, workmen, servants and agents be, and they are hereby restrained from infringing the plaintiff's said patent, No. 210,202, and from making, constructing, using and vending to others to be used, in the Dominion of Canada, the said invention as described

In the Exchequer Court of Canada.

No. 22. Formal Judgment, 4th April 1932—*continued.*

in the specification attached to the said patent during the continuance of the said Letters Patent;

AND THIS COURT DOTH FURTHER ORDER AND ADJUDGE that the defendants do forthwith deliver up to the plaintiff, all machines or devices in the possession or control of the defendants which infringe the said Letters Patent, to be by it destroyed;

AND THIS COURT DOTH FURTHER ORDER AND ADJUDGE that the defendants do pay to the plaintiff such damages as it may have suffered or be entitled to by reason of the infringements complained of, or that the defendants do furnish to the plaintiff an account of profits made by the defendants by reason of such infringements;

AND THIS COURT DOTH FURTHER ORDER AND ADJUDGE that there be a reference to the Registrar of this Court to enquire into and report as to the damages the plaintiffs may have suffered or are entitled to recover from the defendants herein by reason of the infringements complained of, or as to the profits made by the defendants by reason of such infringements, as the plaintiff may elect before the said Registrar;

AND THIS COURT DOTH FURTHER ORDER AND ADJUDGE that the defendants do pay to the plaintiff its costs of this action forthwith after taxation thereof.

By the Court.

(Sgd.) ARNOLD W. DUCLOS,
Registrar.

No. 23. Reasons for Judgment. Maclean J., 4th April 1932.

No. 23.

Reasons for Judgment.

MACLEAN, J.

Judgment rendered 4th April, 1932.

The plaintiff, by assignment, is the owner of Canadian patent no. 210,202, which issued in April, 1921, upon an application filed in 1918, the patentee being one Gideon Sundback of Meadville, Penn., U.S.A.; the patentee filed an application for a patent in the United States, covering the same subject matter, in 1916. The plaintiff claims that the defendants have infringed its patent, and the defendants plead the defences usual in infringement actions.

The invention, it is stated in the specification, relates to new and useful improvements in a machine and method of producing straight and curved fastener stringers. It will not be necessary to distinguish between straight and curved fastener stringers; it will be sufficient, I think, for the purposes of the case to have in mind only the straight fastener stringer, and I shall directly explain what that is. Before attempting to explain in detail the construction and operation of the patentee's machine, and the alleged infringing machine, it might be convenient first to state in

general terms the purpose of the Sundback machine, and just what it does in actual practice. From a thin flat strip of metal which is fed into the machine, there is automatically formed these small interlocking elements which we see used for closing apertures in articles of footwear, clothing, etc., frequently referred to as sliding fasteners, and which are made to interlock and unlock by means of a sliding element. I shall hereafter refer to the individual interlocking element as a " unit." The units are, one by one, after being punched out of the metal strip, automatically fastened upon a corded tape, a strip of fabric, which is automatically fed into the machine from a tape supply roll or spool. When a given section of tape is fitted with the required number of units, it can be cut apart to provide stringers of the desired length, according to the purpose for which it was intended, and this completed and separated section of the tape I shall hereafter refer to as a " stringer " to distinguish it from the " tape " while passing through the machine and being fitted with the units. The unit when punched from the metal strip is of U shape, the sides of which I will refer to as " jaws " because they are eventually compressed around the corded tape; the rounded section of the unit, where is located the locking means of the unit, has on one side a small socket or depression, and on the other side a projection or pin, both formed by an operation of the machine prior to the units being attached to the tape. In the result, the machine produces a stringer with identical units attached thereto in predetermined space relation the one to the other, and in predetermined groups, so that the units of one stringer will cooperate with corresponding units in an opposing stringer. A sliding fastener is necessary to put the units in and out of engagement, but with that we are not concerned in this case. The stringers are of course intended to be incorporated one on each side of the aperture in any article to which this method of opening and closing is adaptable. The alleged invention described in the patent in question therefore had for its object, the formation of the unit, its compression on the corded tape, and the production of stringers, by one automatic machine; a further object of the alleged invention was to enable the machine to set the units on the corded tape in predetermined numbers and spacing, and in spaced groups.

I shall now attempt to explain more particularly the construction and operation of the plaintiff's machine, but without attempting to describe all its mechanical details. The machine is of course power driven. A flat metal strip is fed from a roll or coil at the back of the machine, first into a guide and then through a pair of feed rollers which are brought together under spring pressure. The metal strip is then advanced, step by step, by means of operating mechanisms, until it comes to the front of the machine where, mounted on a shaft, is a die head to which punches are attached. There the unit is first punched out of the metal strip and pressed down into the die plate where there is a hold the shape of the unit. Then a spring pressed punch, located beneath the hold in the die plate, forces the unit upwards and back into the strip from which it was punched out, and wherein now it is securely held during further operations. The metal strip with the restored unit is then advanced until it comes

In the Exchequer Court of Canada.

No. 23. Reasons for Judgment. Maclean, J., 4th April 1932—*continued.*

under another punch which stamps out the small loose piece between the jaws of the unit, and this passes out through a hole in the die plate as scrap. The metal strip is then further advanced a step or two when a third punch comes down and forms a small depression or socket on the top of the unit at the rounded portion; just below that point there is a depression in the die plate, and when the punch forms the socket on the top of the unit it forces the metal down into the depression on the lower plate, thus forming a projection or pin on the other side of the unit. It is this socket and pin which forms the meshing means in a pair of stringers. The unit is then complete but is still firmly held between the edges of the original metal strip. The metal strip is then advanced to a position opposite the tape so that the jaws of the unit encircle the edge of the tape, the tape being fed in the path of the jaws of the unit, under tension, from a roll below. When the jaws of the unit, which diverge at quite an angle, straddle the tape, they are then firmly set on the tape by side pressing tools or pressure members, which are brought into action by means of cranks, etc.; the edges of the side tools contact with the sides of the metal strip with the result that the jaws are securely pressed around the edge of the tape without coming in direct contact with the side tools, thus avoiding it is claimed any tool injury to this portion of the unit. In the same manner other units are formed and attached to the tape. After the jaws are affixed to the tape, the residue of the metal strip is fed out in one place, and the tape with the units in another place. The tape when fitted with units may be cut off in the pre-determined lengths, as I have already explained. I perhaps should add that the tape is fed upwards from a roll at the side of the machine by mechanical devices, into position between the jaws of the unit as already stated. The tape feed wheel is corrugated or of knurled surface, to give friction contact with the tape. By operating mechanisms the movements of the tape, and of the metal strip are made to synchronize; other mechanisms provide for the spacing of the units and the grouping of the units, but all this, I think, does not call for any description in detail.

The defendants' machine, alleged to infringe Sundback, which I shall hereinafter refer to as Prentice, is in its general make up, similar to Sundback. Prentice employs the ordinary commercial power press into which is built special tools and mechanical movements. The metal strip is fed from a roll into the machine at the left hand side and then passes across the front of the machine, instead of feeding from the back to the front, as in Sundback. In Prentice, the socket and pin, the interlocking means, are first formed in the metal strip before the unit is punched out of the strip, the reverse of the operation in Sundback. The metal strip is then stepped forward the necessary distance when the unit is cut out of the metal strip by a cutting punch, and is pressed right through the die plate to a lower level, into a small cavity in a transverse slide moving from the back to the front of the machine. The means employed in this operation, and the next mentioned, are claimed by the defendants to differentiate Prentice from Sundback so greatly as to eliminate the question of infringement, but this will be discussed later. The unit now being out of the

metal strip and held in the transverse slide or platform below, it is pushed by an auxiliary slide, transversely to the path of the metal strip, and thus advanced to the point where it may be attached to the tape. The sliding carrier is advanced until the jaws encircle the edge of the tape, bending the tape outwards somewhat in the advancement. The compressing or fastening of the units on the tape is a somewhat different operation in Prentice from that employed in Sundback. The side tools used to press the jaws about the tape are mounted on vertical axes, one on each side of the tape, and they do not move in and out as in Sundback, but rotate in a horizontal plane about their vertical axes, and are so set that their working ends slope in towards the machine where they are held by small springs. They are so spaced apart that, when in their normal position, the working or front edges just come in contact with the outer end of the transverse slide, then, as the unit is moved forward on the slide, the ends of the side tools in effect come together due to their rotation upon their axes and this presses the jaws around the edge of the tape, but lightly it is said. In other words, the transverse sliding member holding the unit, in its forward movement, pushes outwards the side tools until they come in contact with the jaws of the unit, and presses them upon the tape; how firmly the units are attached to the tape I think is not of importance. The method of feeding the tape, generally speaking, is not materially different from that employed in Sundback; by operating mechanisms much as in Sundback, the tape is automatically fed into the desired position from a roll in the front of the machine. Prentice also provides for spacing between the units, and groups of units, but this need not be enlarged upon. After the stringer is removed from Prentice, it is claimed that a further operation takes place in another machine, sizing and aligning the units, but I do not think this is of importance in the controversy. Some further operation is also performed upon the Sundback stringer after it leaves the machine.

The utility of the plaintiff's machine is not susceptible of serious questioning. The machine functions automatically, with great speed yet with accuracy, and its daily capacity and production costs appear to have proven satisfactory. In the result, the machine has been eminently successful in the practical and commercial sense, and as many as 40,000,000 matched pieces of stringers were sold throughout the world, in one year. The machine is an extremely useful one for its purpose. The utility of Sundback was not, I think, questioned during the trial but its alleged novelty was attacked.

It will be convenient at this stage to refer to the defence of anticipation. In point of time, Sundback is undoubtedly prior to Prentice. Now was Sundback anticipated by the published prior art, or by any prior user? I think not. I find nothing in the prior art relied upon by the defendants that is at all relevant to the controversy here on the point of anticipation. Subject to what I shall say regarding the Aronson patent, the cited prior art relates to alleged inventions, the object of which was to produce results totally unlike that intended to be produced by Sundback. One can hardly read the cited prior art and conclude that any of them would assist in

In the Exchequer Court of Canada.

No. 23. Reasons for Judgment. Maclean, J., 4th April 1932—*continued.*

producing Sundback. The proper principle to be applied in testing anticipation is, that the specification which is relied upon as the anticipation of an invention must give the same knowledge as the specification of the invention itself. *Pope Appliance Corporation* v. *Spanish River Pulp and Paper Co.* (1929 A.C. 275-276). No one confronted with the problem of producing ~~a machine like~~ Sundback could turn to the prior art cited in this case, and there find its solution. And that is the test. The prior art relied upon has to do with machines for the making of carding hooks and eyes, metallic strip fencing, barbed wire, etc. To take something from one patent and then something from other patents, and say "there is Sundback," is to make a mosaic which is not legitimate in law. I feel quite satisfied that no anticipation of Sundback is disclosed in the published art put in evidence by the defendants, unless it be in Aronson. Machines were constructed in conformity with the specification of the Aronson patent (1907) and they were in use prior to Sundback. The object of Aronson was to set channels (units), of the hook and eye type, on tape, but the units were fed into the machine by means of a special carrier, or magazine, where they had been placed and spaced manually, having been separately formed in another machine, or by special tools, or both. The hooks were placed in one magazine, and the eyes in another. After the units were lightly attached to the stringer in the machine, considerable manual work was necessary to finish the stringer which was costly, and the daily production of the machine was small. Aronson was a machine intended only to fasten the units on the tape, and it is said not to have been very successful; it has since, I think, gone out of use altogether. It seems quite clear to me that Aronson does not in any sense constitute anticipation or a prior user of Sundback which automatically performed all the operations I have described, the one machine producing automatically the finished stringer from beginning to end, from the metal strip and tape material.

The next question for determination is whether or not there was invention in Sundback at the date of the patent. The merit of a new combination much depends on the result produced. If a slight alteration turns that which was practically useless into what is useful and important, the Courts consider that, though the invention was small yet the result being the difference between success and failure, it is proper subject matter. The art of combining two or more parts, whether they be new or old, or partly new and partly old, so as to obtain a new result, or a known result in a better, cheaper, or more expeditious manner, is valid subject matter, if it is presumable that invention in the sense of thought, design, or skilful ingenuity was necessary to make the combination. This has time and again been held as sufficient to uphold a patent. Many of the most important inventions are inventions which are merely the combination in a new way, of new or old, or partly new or partly old, parts. In this case, some parts of the combination may be old, some, I think, are new, but if they were all old, yet it was a novel combination which produced a new and useful result, and substantial skilful ingenuity was required to

produce the combination. I have been using the language of text writers, and the Courts, in discussing combination patents. To describe, as I have done, the result which Sundback produces, and the method by which that result is produced, is alone sufficient in my opinion to hold that there was invention in Sundback and that the patent should be upheld. There is not disclosed in the prior art, as I have already stated, any anticipation of Sundback. It was the first machine to produce the same or similar results, by the method and means described in the specification. I have no difficulty whatever in reaching this conclusion.

In determining the question of infringement it is necessary to distinguish between the case where an invention is for a mere improvement of an old machine which has been in use for producing a certain result and where the only novelty which could be claimed in the improvement, was in the use of certain mechanical means in order to produce in a known machine the same result which in that machine had been produced by other mechanical means, and the case, where there is novelty in the machine, and novely in the effect and result to be produced by that machine. The invention in question here, in my opinion falls within the last type of cases. *See Cotton, L.J. in Proctor* v. *Bennis* (4 R.P.C., p. 354). Sundback was a new and useful machine producing automatically a finished stringer, and nothing of the kind had been done before. In such a case the doctrine of infringement by the substitution of equivalents applies, and as it has often been said, one looks very narrowly upon any other machine for effecting the same object, to see whether or not they are merely colourable contrivances for evading that which has been done before, while in the other case the patentee is substantially tied down to the invention which he claims, and the mode of effecting the improvement which he describes is his invention, and there, one cannot largely extend the interpretation of the means adopted for carrying the invention into effect. Further, the state of public knowledge at the date of the invention of Sundback is also to be considered when dealing with the question of infringement, or in construing the specification and claims. I think I may safely say that the state of public knowledge at the date of Sundback's invention, in respect of an automatic machine for producing stringers, was such, that it required substantial invention to make the step to Sundback. Upon a fair construction of the specification and claims, the monopoly claimed is, I think, for the attainment of a new result, and it was a novel achievement, and the claim therefore covers mechanical equivalents for the mechanism described. The specification states that " the broad principles of the invention can be carried out otherwise than as herein shown and the invention is not to be limited except as required by the scope of the claims." In the claims relied upon by the plaintiff, I do not think the patentee limits himself to the precise mechanism described; it is in the principle or method of construction and operation, in the broad idea of the utilization and arrangement of means substantially as described which automatically produce a finished stringer, wherein lies the essence of the invention, the claim to monopoly, and not in the precise operating mechanisms or means that are described.

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No. 23. Reasons for Judgment. Maclean, J., 4th April 1932—*continued.*

In each case the substance, or principle, of the invention and not the mere form is to be looked to. It has been stated in many cases that if an infringer takes the principle and alters the details, and yet it is obvious he has taken the substance of the idea which is the subject matter of the invention, and has simply altered the details, the Court is justified in looking through the variation of details and see that the substance of the invention has been infringed and consequently can protect the inventor. And the question is not whether the substantial part of the machine or method has been taken from the specification, but the very different one, whether what is done by the alleged infringer takes from the patentee the substance of his invention.

Prentice, it seems to me, is Sundback with some variations, substantially they are the same though not exactly the same. In construction and operation they seem to be in principle substantially the same. I do not think Prentice can be said to be in principle, a new or another combination. Prentice feeds the metal strip into the machine from the left side of the machine instead of from the back to the front, as does Sundback, but that is merely a matter of choice and is unimportant; but having once decided to locate the metal strip feed at the side of the machine and the tape feed in the front of the machine, it became necessary to drop the fastening element when punched out of the metal strip to a lower level, and carry it forward transversely to the path of the metal strip, to the point where it might be attached to the tape. There was nothing to prevent Prentice from feeding the unit to the tape along the plane the metal strip was moving by changing the position of the die plate, or by feeding the metal strip from the back to the front of the machine, but that would be to do exactly what Sundback did, and the two machines would then be practically alike in form. Prentice, having positioned his metal strip feed and tape feed means in the way he did, was obliged to drop the unit when cut out, down to a lower level; that I think is obvious, and it involved no practical difficulty whatever. Therefore in Prentice the unit is pressed through the die plate upon a movable slide or platform below, and thereon it is automatically fed to the tape. Prentice carries the unit to the tape on the sliding element, while Sundback carries the unit to the tape within the moving metal strip; the former, I think, is but the mechanical equivalent of the latter; even if it was an improvement that would not negative infringement. Other points incidental to the structure of the different parts of Prentice were pointed out differentiating it from Sundback. It was urged that in Prentice, the jaws are lightly attached to the tape, while in Sundback they are firmly attached; and that in Prentice the pin and socket is first formed and then punched out, the reverse order of Sundback. It seems to me that these points of distinction are not of substance and do not call for any discussion. Then it was pointed out that in Prentice the units are cut out of the metal strip with the jaws extending transversely on the metal strip, whereas in Sundback they are lengthwise of the strip; there is no substance in this contention either. Prentice could not do otherwise on account of the direction of the metal

strip, feed, and the position of the tape feed. In Prentice, what is called the side tools, that is the means for pressing the jaws of the units around the corded edge of the tape, differ somewhat from Sundback; the latter employs what was described by one of the defendants' witnesses as punchers or plungers, which press on either side of the metal strip after the unit encircles the tape, thus in effect pressing against the jaws of the unit, while the former employs what was described by the same witness as swinging pinchers, and which I have already described. They are different arrangements of course, but they each serve the purpose of pressing the jaws of the unit around the tape by a side pressure, directly or indirectly applied to the jaws of the unit. This arrangement of Prentice is plainly, I think, the mechanical equivalent of Sundback; and again I say that even if the arrangement of Prentice possessed advantages over that of Sundback, that would not negative infringement if the substance of Sundback has been taken. It is very easy to alter the details of a machine when once its general construction and purpose is known and understood. Other distinctions between the structures of the two machines were pointed out, but any discussion of them is, I think, unnecessary.

The law protects a patented combination machine even if the infringing machine possesses improvements, patentable improvements; that is immaterial, because if one has taken the substance of the invention, or if the essence or substance of the plaintiff's invention is present in the defendants' combination, there is infringement. It is stated by a text writer on the law of patents that it is a very common delusion of infringers that because the infringing article presents some advantages or improvements over the patented article, and is perhaps itself the subject of a patent, this fact negatives infringement; but that is not so. The question still remains, does the alleged infringing article embody the substance of the invention claimed by the plaintiff? The emphasis laid upon the variations in Prentice really strengthens my conviction that they are the mechanical equivalents of Sundback. In substance the two machines are the same, every step in the operation of Prentice is substantially the same as in Sundback and is made for the same purpose. It seems to me that the whole principle, method and arrangement of Sundback is plainly evident in Prentice, and while the machines are not exactly alike, yet they are in substance alike; they are designed to produce the same result, and substantially by the same means or method. Prentice, in my opinion, cannot be said to be a new combination. If I am correct in this, then it follows, and it is my opinion, that the means employed in the combination of Prentice are the mechanical equivalents of those used in the Sundback combination, and there has been infringement.

I am of the opinion therefore that infringement of the plaintiff's patent by the defendants has been established; the plaintiff therefore succeeds and will have its costs of the action.

Law Stamps
$3.75

In the Exchequer Court of Canada.

No. 24. Notice of intention to appeal, 11th April 1932.

No. 24.

Notice of intention to appeal.

TAKE NOTICE that the Defendants Colonial Fastener Company Limited, and G. E. Prentice Manufacturing Company, intend to appeal, and do hereby appeal from the judgment of the Honourable the President of this Court herein delivered on the 4th day of April, A.D. 1932.

DATED at Toronto, this 11th day of April, A.D. 1932.

McCARTHY & McCARTHY,
Solicitors for the Defendants.

To: The Registrar of the Exchequer Court of Canada,
And to: Smart & Biggar, Ottawa Agents for the Solicitor for the Plaintiff.

No. 25. Order allowing security, 11th April 1932.

No. 25.

Order allowing security.

IN THE EXCHEQUER COURT OF CANADA

Before The Honourable, the President in Chambers: } MONDAY, the 11th day of April, A.D. 1932.

BETWEEN:

LIGHTNING FASTENER COMPANY, LIMITED - *Plaintiff*

AND

COLONIAL FASTENER COMPANY, LIMITED, AND G. E. PRENTICE MANUFACTURING COMPANY - *Defendants.*

Law Stamps ($1.00)

UPON MOTION made this day by Counsel on behalf of the Defendants in the presence of Counsel for the Plaintiff, for an order staying all proceedings in this action under judgment of this Honourable Court pronounced the 4th day of April, 1932, pending the disposition of the appeal taken by the defendants herein to the Supreme Court of Canada upon hearing read the Notice of Motion, and the affidavit of Salter A. Hayden filed, and upon hearing Counsel aforesaid:

1. It is ordered that all proceedings under the judgment of this Court in this action pronounced on the 4th day of April, A.D. 1932, except the taxation of the costs of the action be and they are hereby stayed pending the disposition of the appeal by the defendants from the said judgment to the Supreme Court of Canada.

In the Exchequer Court of Canada.

No. 25. Order allowing security, 11th April 1932—*continued.*

2. AND IT IS FURTHER ORDERED that the defendants do forthwith give to the plaintiff security for the costs of the action in the sum of $3,000.00.

3. AND IT IS FURTHER ORDERED that the costs of this application be costs in the cause.

ARNOLD W. DUCLOS,
Registrar.

No. 26.

Order affirming jurisdiction.

In the Supreme Court of Canada.

No. 26. Order affirming jurisdiction, 21st April 1932.

IN THE SUPREME COURT OF CANADA.

BEFORE THE REGISTRAR IN CHAMBERS. } Thursday, the 21st day of April, A.D. 1932.

BETWEEN :

COLONIAL FASTENER COMPANY, LIMITED, AND G. E. PRENTICE MANUFACTURING COMPANY,
(*Defendants*) *Appellants*

AND

LIGHTNING FASTENER COMPANY, LIMITED,
(*Plaintiff*) *Respondent.*

Law Stamps ($2.00)

UPON the application of the above named appellants and upon hearing read the Notice of Motion and the affidavit of William Roberts Willetts and upon hearing what was alleged by Counsel for all parties

1. IT IS ORDERED, ADJUDGED AND DECLARED that the Supreme Court of Canada has jurisdiction to hear and determine the appeal of the above named appellants from the judgment of the Exchequer Court of Canada bearing date the 4th day of April, A.D. 1932, in a certain cause numbered suit No. 13145 in which Lightning Fastener Company Limited was plaintiff and Colonial Fastener Company Limited and G. E. Prentice Manufacturing Company were defendants.

2. AND IT IS FURTHER ORDERED that the costs of this application fixed at $25.00 and disbursements be costs in the appeal.

Ent'd Fol. 254
O. B. No. 7
G.A.D.

J. F. SMELLIE,
Registrar.

Approved :
SMART & BIGGAR,
Solicitors for Respondent.

In the Supreme Court of Canada.

No. 27. Consent as to Case, 27th June 1932.

No. 27.

Consent as to Case.

The parties hereto consent that the case on appeal to the Supreme Court of Canada shall comprise the following documents, to wit :—

1. Statement of case.
2. Pleadings and notices of motion to amend objections.
3. Exhibits produced and filed at the trial.
4. Evidence.
4*a*. Notice of appeal.
5. Order of the Supreme Court of Canada dispensing with the printing of certain exhibits.
6. Order affirming jurisdiction.
6*a*. Order allowing security on stay of proceedings.
7. Formal judgment of the Exchequer Court.
8. Reasons for judgment of the Exchequer Court.
9. Certificate of Registrar of the Exchequer Court.
10. Solicitors' certificate.

Dated this 27th day of June, A.D. 1932.

SMART & BIGGAR,
Solicitors for the Plaintiff.

McCARTHY & McCARTHY,
Solicitors for the Defendants.

No. 28.

Order dispensing with Printing of certain Exhibits.

In the Supreme Court of Canada.

No. 28. Order dispensing with printing of certain Exhibits, 30th June 1932.

IN THE SUPREME COURT OF CANADA.

BEFORE THE REGISTRAR IN CHAMBERS } Thursday, the 30th day of June, A.D. 1932.

BETWEEN :

COLONIAL FASTENER COMPANY, LIMITED, AND G. E. PRENTICE' MANUFACTURING COMPANY,

(*Defendants*) *Appellants*

AND

LIGHTNING FASTENER COMPANY, LIMITED,

(*Plaintiff*) *Respondent.*

Law Stamps ($2.00)

UPON the application of the appellants, and upon hearing read the affidavit of George Frederick Macdonnell filed and the exhibit thereto and the consent of the respondent and upon hearing what was alleged by Counsel for both parties

1. IT IS ORDERED that the printing of exhibits Nos. 2, 3, 9, 11,A, 15, 16, 17, 18, 19, 20, 24, J, P, R, and U in the case herein be dispensed with, provided that the appellant shall furnish Seven copies of Exhibits Nos. 9, J, R, and U for the use of the Court, and two copies of the said exhibits 9, J, R, and U for the use of Counsel.

2. AND IT IS FURTHER ORDERED that the costs of this application, fixed at $15.00 and disbursements be costs in the appeal.

Ent'd Fol. 264.
O.B. No. 7.
G.A.D.

J. F. SMELLIE,
Registrar.

In the Supreme Court of Canada.

No. 29. Factum of Colonial Fastener Co., Ltd., and G. E. Prentice Manufacturing Co.

No. 29.

Factum of Colonial Fastener Company, Limited, and G. E. Prentice Manufacturing Company.

PART I.

STATEMENT OF FACTS.

1. This is an appeal by the (defendants) Appellants Colonial Fastener Company, Limited and G. E. Prentice Manufacturing Company, from the judgment of the President of the Exchequer Court (Record, p. 143) dated the 4th day of April, 1932, in an action wherein Lightning Fastener Company, Limited, the Respondent, was the Plaintiff.

2. The action was instituted by Statement of Claim (Record, p. 1) and Particulars of Breaches (Record p. 4) dated the 17th day of April, 1931, and was tried at Ottawa on the 3rd, 4th and 5th days of February, 1932.

3. The action was brought for alleged infringement of Letters Patent of Canada No. 210202 (Ex. 1, Record p. 215) dated the 5th day of April, 1921, the claims alleged to be infringed being all of the claims in the patent numbered 1 to 20, but the Respondent at the trial chose to rest its case on claims 1, 2, 3, 7, 8, 10 and 19 only. (Record p. 18, l. 46.)

4. The defences (Record pp. 5 and 6) relied on were :

(1) Want of novelty.

(2) Want of subject matter—

(a) Lack of invention,

(b) Aggregation.

(3) Non-infringement.

5. The Respondent Company engaged since about 1924 in the manufacture of fasteners of the slider control interlocking type commonly known as " zippers " (Record p. 78, ll. 28–32).

6. The Appellant the Colonial Fastener Company, Limited, engaged in Montreal since about 1929 in the manufacture of zipper fasteners on machines leased to it under license arrangement by the Appellant The G. E. Prentice Manufacturing Company, a Connecticut Corporation. (Record p. 55, ll. 25–42; p. 56, ll. 1–7).

7. The slide fastener known as a " zipper " is used to close a longitudinal opening or slit and consists of two lengths of cloth tape disposed on opposite edges of the opening to be fastened, each tape edge next the opening bearing a series of spaced metal units, and the units on one tape being staggered in position with respect to the units on the other tape, all the units being so shaped as to interlock, the series on one length with the series on the opposed length of tape when brought together by a slider which envelops the two interlocking edges and is manually movable

thereon. Specimens of fasteners as made by both parties, are in evidence, see Exhibits E and F (Physical Exhibits) for Respondent's fasteners, Exhibits 21 and 22 (Physical Exhibits) for Appellants' fasteners.

8. In these fasteners each individual interlocking unit has jaws at one end to straddle and be compressed on the edge of the tape, which edge is beaded or corded to afford a strong seat for the unit. The projecting interlocking end of each unit is formed with a projection on one side and a recess or socket in the opposite side. The opposing series of units are interlocked through the action of the slider by nesting the projection of each unit of one series in the socket of the adjacent unit of the other series.

9. Everything in common in the structure of the Respondent's and Appellants' completed fasteners is the subject matter of a British Patent No. 14358 of 1912, Appellants' Exhibit "U" (Book of Patents p. 69) (Physical Exhibits M and N) issued to Katharina Kuhn-Moos prior to either party's entry into the present field. Kuhn-Moos did not take out similar patents in Canada or the United States. (Record p. 92, ll. 21–30.)

10. The present suit is not for any alleged infringement of the fasteners themselves, but is for alleged infringement of a machine for making the "stringers" (tapes with attached fastener units) used in making the fasteners.

11. The patent in suit is Canadian Patent No. 210,202 (Ex. 1, Record p. 215) dated April 5, 1921, for "Machines and Methods for Producing Straight and Curved Fastener Stringers," corresponding in subject matter (Record p. 31, ll. 1–3) to United States Patent No. 1,331,884 Respondent's Exhibit 9 (Book of Patents p. 84) applied for March 16, 1916. Its alleged object is to produce stringers for zipper fasteners of the form shown in United States patent No. 1,219,881 Exhibit R (Book of Patents p. 78) applied for August 27, 1914, (Record p. 98, ll. 17–27). The evidence is that the date of the Respondent's invention of the machine and its particular form of fastener unit was the middle of 1914 (Record p. 30, ll. 28–32) a year or two subsequent to the granting of the British Kuhn-Moos patent No. 14,358 of 1912 (Exhibit U. Book of Patents p. 69).

12. The machine of the patent in suit comprises a punch press for receiving a long strip of metal stock from which are stamped the metal interlocking units. Since a punch press can cut out only pieces having vertical edges while each unit made by this machine has at the locking end a slanting edge, the unit is cut out before the locking end is pressed into form (Record p. 120, ll. 15–27). To carry the unit from the point where it is cut out to the point where it is pressed into form, and subsequently to the point where its open-jawed end is set astride the tape, the machine replaces the cut-out unit in the blank from which it has been cut (Record p. 115, ll. 44 to p. 116, l. 5; Ex. 1, p. 217, ll. 18 and 19). The blank then carries the unit along through the machine, and at the same time protects it from distortion at several points. One is where the unit is pressed into form, and the edges of the blank are tightly gripped by guide plates at each side. Another is where the jaws of the unit are clamped together (to hold the

unit) on the tape (Record p. 116, l. 12—p. 117, l. 26); this is done by positively actuated side punches striking the blank and through it, bending the jaws over the beaded edge of the tape. (Record p. 113, ll. 38–42).

13. The tape is fed into the machine in long lengths by feed mechanism which feeds the tape along step-by-step for a number of short distances, one unit being affixed at each step. When the desired number of units for one stringer has been affixed, the tape is fed or advanced a longer step so as to provide a gap or space between groups of units (Record p. 63, ll. 9–22).

14. Elsewhere and thereafter the tape as it comes off the machine is cut apart between successive groups of units so as to provide a number of separate stringers, each stringer having a single series or group of closely spaced units. All the metal units and all the stringers being substantially identical, any two stringers having the same number of units, can subsequently be manually assembled together with slider and stops to constitute one complete fastener.

15. The Appellants' machine makes a unit all the edges of which are vertical, (Physical Exhibits 21 and O). The interlocking features, being the projection and socket, are stamped upon the blank before the unit is cut out (Record p. 116, ll. 4–9, p. 120, ll. 10–12). When the unit has been cut out, it is ready to be set astride the tape. It is not replaced in the blank after being punched out, but is instantly pushed forward by a small slider (Record p. 105, l. 46—p. 106, l. 9) and as it reaches the tape its jaws are pinched together between the ends of two swinging pincers against which it is pushed, causing them to turn toward each other on their axes (Record p. 97, ll. 10–31; p. 114, l. 26—p. 115, ll. 1–5.)

16. The Appellants' machine also includes means for feeding the metal strip and the tape.

17. Only two of the claims in suit, 2 and 10, (Ex. 1, Record p. 224 and p. 225) are directed to a machine which cuts and form the metal units and also attaches them to the tape, all in a single machine.

18. Claims 1, 3, 7 and 8 (Ex. 1, Record p. 224 and p. 225) purport to cover merely a machine for attaching the units to the tape, including feeding the tape. The cutting and forming mechanisms for making the units are no part of the alleged invention of these claims. So far as these claims are concerned the metal units might be made in a separate machine or separate factory and placed in the attaching machine by hand or in any desired way.

19. Claim 19 (Ex. 1, Record p. 226) is for a method independent of any machine.

20. All of the Claims in suit after claim 1 (excepting claim 19) are so-called " dependent claims " and relate back to claim 1.

21. Claims for affixing the members to the tape.

Claim 1 covers means for feeding the tape step-by-step, means for feeding fastener members to the tape and means for compressing the members on the tape.

Claim 3 further specifies side punches as the compressing means.

Claim 7 further includes a tape tension device, consisting of frictional tension means at one side of the fastener setting devices and a grooved, roughened, ratchet driven feed roll at the other side.

Claim 8 further includes the long step feed of the tape after a series of the shorter steps.

22. Claims for both cutting and attaching.

Claim 2 adds to claim 1 means for feeding a blank strip, means for cutting the members therefrom, and means for forming the members preparatory to feeding them into setting position.

Claim 10 further specifies that the forming means forms attaching jaws at one end of the member and a socket and projection on the other end.

23. Method Claim.

Claim 19 is for a *method* of making fasteners consisting in affixing the members in spaced groups on a continuous stringer and then cutting the stringers apart, so that pairs of the groups can be made into a fastener.

24. The ultimate product, a fastener of the Kuhn-Moos type, which Sundback's machine was designed to produce, was old. This Kuhn-Moos patent, Exhibit U (Book of patents p. 69) shows interlocking units, identical and inter-changeable on either side of the fastener, each unit having a projection on one side and a depression on the other to permit the nesting interlock hereinbefore described. The ends of each unit attached to the tape are jaw-shaped and Kuhn-Moos (Book of patents p. 70, ll. 6–14) specifically discloses their clamping on the edge of the tape in spaced relation.

25. The problem confronting the Respondent's inventor, Sundback, was that of the selection of devices for making the metal units and for affixing them to the tape in proper spacing, (Record p. 58, ll. 12–22), and the art to which this problem relates is that of making numerous like metal elements, commonly in punch presses, and affixing them to a carrier-strand. This is specifically stated in United States patent No. 1,331,884, Respondent's Exhibit 9 (Book of Patents p. 84), which, according to the evidence (Record p. 30, l. 40, p. 31, ll. 1–3), is the United States patent corresponding to the Canadian patent in suit, as follows: " This invention relates to a machine for forming and setting metal punchings and has particular reference to a special form of power press with automatic blank feeding means whereby punchings are formed from a strip and blank and set on a carrying element " (Ex. J. Book of Patents p. 105 ll. 10–16); " The present invention . . . . . is of general application wherever it is desired to automatically and cheaply form large numbers of like parts and to set them on a suitable carrier element." (Ex. J. Book of Patents p. 105 ll. 36–43).

26. The prior art put in evidence shows that as early as 1880 machines for automatically making barbed wire were highly developed, employing a punch press for cutting and shaping the individual barbs (the units) from

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a strip of metal, each unit being formed with a pair of jaws for clamping the unit on the wire strand (the tape), feeding the units successively with the jaws astride the strand and clamping the jaws on the strand to attach the units in spaced relation on the strand. Illustrative examples of such machines are in evidence as follows:

27. The Brainard United States Patent No. 292,467, dated January 29, 1884. (Ex. J. Book of Patents P. 44).

The Brainard patent described a "machine for forming flat metal barbs and attaching them to a strand wire." The machine "is of that class that forms the barbs from a strip of flat metal with prongs or tongues punched from their central or body portion between their sides, and then attaches them by compression to the strand wire, so as to cause the tongues thus formed to clasp the strand wire or wires to hold it on." (Ex. J. Book of Patents, p. 49, ll. 32–38).

28. A flat strip of metal from which the punchings are made is fed step-by-step by a ratchet and pawl feed into a punch press; the metal strip passes through a guideway consisting of a channel in the bed plate and a cover plate over the channel, thus confining and positioning the strip against displacement either sideways or vertically—"to guide and hold it properly under all the punches"; the punch press is equipped with three punching tools, two for performing a shaping and forming operation by which the two tongues are struck up, and one for cutting the unit from the strip; the forming tools perform their shaping operation in the metal strip itself before the unit is cut off and then the cutting punch cuts the unit of the desired shape and along lines to include the pre-formed tongues, the face of the third tool at the same time performing a shaping operation by forming a shoulder across the unit; the unit is then pushed down with the tongues or jaws astride the strand wire, which is fed through the machine transversely to the metal tape and at a lower level, and the jaws are clinched on to the strand wire by the inclined surfaces of a clamping die. The strand wire is then fed along far enough for the desired spacing between units, another unit is attached in the same manner, and so on. (Record, p. 108, ll. 23–47).

29. Thus we find in the Brainard machine every essential operation of the Prentice machine with the exception of the long step of the strand at intervals to leave a long gap between groups of more closely placed units. Obviously, there was no necessity for such grouping of the units in the manufacture of barbed wire; but if that feature had been desired the mechanism for it was ready at hand.

30. The Shipley United States Patent No. 85,249, dated December 22, 1868. (Ex. J. Book of Patents, p. 65).

This is a patent for a feed motion. The feed motion was applied to a punch press (used for punching combs from a continuous strip of metal), and its object was to feed a strip through the punch press step-by-step for the desired number of closely spaced steps (comb teeth) in a group, and then to impart to the strip a long step or jump feed to leave a space

or gap between successive groups of closely placed steps. The strip was then cut apart through the gaps to form individual lengths of strips each containing a group of the closely spaced teeth.

31. The strip is fed through the press by a pair of feed rollers geared together. These rollers are driven by two ratchet wheels fixed to the shaft on one of the rollers, each ratchet wheel being operated by a separate pawl. One ratchet wheel has a larger number of teeth close together, and its pawl (operated from a crank shaft above) moves the ratchet wheel, and consequently the feed rollers, one short step corresponding to the spacing of the teeth at each revolution of the crank shaft. The other ratchet wheel has only two teeth. After the strip has been fed forward step-by-step for the desired number of short steps by the first ratchet wheel, the pawl of the two-toothed ratchet wheel engages one of its teeth and feeds the strip a long step, thus separating a series of groups of short steps by a relatively long space or gap at intervals. The punch press is described as an ordinary press and is provided with a cutting tool for cutting the teeth of the combs from the metal strip. The comb sections are cut apart through the long space between groups produced by the long step. The patentee recognized that " to operate a pair of feed rollers by means of a crank or eccentric through the medium of a connecting rod, ratchet and pawl is not new," but claims " with the aforesaid combination of devices, an auxiliary set of devices, for imparting, at intervals, a feed movement of accelerated velocity, and of greater extent than that imparted by the aforesaid combination." (Ex. J., Book of Patents, p. 65.)

32. The stroke of the long step pawl is adjustable, in precisely the same way as in the Prentice machine. The feed mechanism in the Prentice machine for feeding the tape a series of short steps to arrange a number of units in a closely spaced group, and then at intervals feeding the tape a long step to provide a space between groups, through which the successive groups may be cut apart, consists of two ratchets and two pawls, one for feeding the tape a series of short steps and the other for feeding the tape a long step at intervals (Record, p. 140, ll. 30–39) precisely similar, even to its adjustability, to the Shipley feed motion. This feed motion has been free to the public since the Shipley patent expired in 1885.

33. The Stover United States Patent No. 240,477, dated April 19, 1881. (Ex. J. Book of Patents, p. 28.)

This patent is substantially similar to the Brainard patent excepting that the barb units are of different shape, the barb units are applied to a flat metal tape instead of to a round wire, and the jaws of the barb units are clamped on the strand (tape) by means of sliding reciprocating folder tools instead of by forcing the jaws against the inclined planes of a clamping die. The flat metal strip from which the units are punched out is fed into the punch press step-by-step to the forming and punching tools, which first perform a shaping or forming operation in the metal strip before the units are cut out, and then cut out the individual units. The units are then fed with the attaching jaws forward to straddle the strand which is fed

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step-by-step through the machine transversely to the strip from which the units are punched, and the reciprocating folding tools then come into action and clamp the jaws of the unit upon the strand.

34. The mechanism for clamping the jaws upon the strand is more like the Sundback machine than like the Prentice machine in that it employs positively operated reciprocating tools to clamp the jaws on the carrier, whereas Prentice used, in his original machine, inclined planes for performing this function as in the Brainard patent, and in his later machine rocking pincers which function like the inclined planes, but avoid undesirable wear on the pinching surfaces (Record, p. 97, ll. 12–31).

35. The patentee summarizes his invention in the following words :—

> " My invention consists in so arranging and constructing a machine that barbed fencing may be manufactured by said machine from flat strips of metal, the whole operation of feeding the main strip longitudinally through the machine feeding in the strip from which the barbs are cut at right angles to the main strip, cutting the barbs from the latter, and securing the same to the main strip being performed by a continuous rotation of the main shaft and automatic operation, as will be hereinafter more fully explained." (Ex. J. Book of Patents, p. 39, ll. 64–75.)

But the early art of cutting and forming small metal units from a metal strip advanced step-by-step in a punch press, and attaching the units in spaced relation on a strand or tape, which is also fed step-by-step, by clamping the jaws upon the strand, was not confined to machines for making barbed wire.

36. The Major United States Patent No. 525,914, dated September 11, 1894. (Ex. J. Book of Patents, p. 2.)

The Major machine is designed for automatically making hooks and eyes and attaching them in spaced relation in groups, with gaps between the groups to a paper strip or tape by means of U-shaped staples which are also formed and cut in the machine. The Major machine is far more elaborate than the machines involved in this case in that it automatically handles five separate strands instead of two, one being the wire from which the hooks are formed, one the wire from which the eyes are formed, one the wire from which the staples for attaching the hooks are formed, one the wire from which the staples for attaching the eyes are formed, and one the paper strip to which the units are attached.

37. The mechanism for forming the hooks and the mechanism for forming the eyes do not particularly concern us in this case. The instrumentalities which do have a direct bearing on this case are those which form and cut the staples, attach the staples to the paper strip, feed the paper strip step-by-step for the desired number of short steps and then impart to the paper strip a long step to arrange the units in groups separated by a gap through which the strip is cut apart in the machine.

38. There are two identical staple-forming and applying mechanisms, one for attaching the row of hooks to the paper strip and the other for attaching the row of eyes to the paper strip. It will therefore be sufficient to describe one of these stapling devices, for example, that for attaching the eyes. The eyes are formed on a turntable and are brought successively into position to be attached to the paper tape which passes through the machine just above the turntable and directly over the eyes to be attached. Immediately above the paper strip is the stapling device, which the patentee describes as an " ordinary wire stapling device," in suitable position to fasten the eye in the position described above, to the card by the ordinary mode of stapling with wire." (Ex. J. Book of Patents, p. 22, ll. 37–41.) A like stapling device is provided for stapling the hooks to the paper strip. The stapling device is supplied with suitable stapling wire from a spool (patent Fig. 1 Book of Patents p. 18). The stapling device cuts and forms U-shaped staples from the wire and pushes them down through the paper strip, through the loops of the eyes, and clinches the jaws underneath.

39. After each staple is attached the paper strip is fed forward one step by feed rollers, which are actuated by a ratchet and pawl mechanism (best shown in Fig. 10) to feed the paper strip the desired number of short steps (eleven short steps as illustrated), and then a long step to leave a space or gap between the groups of twelve closely spaced units. A cutting mechanism (Fig. 12) is operated in timed relation to the strip feed so as to cut off the strip through the gaps in lengths to include one group of a dozen units on each piece, with a blank length of paper at each end of the piece.

40. The ratchet and pawl mechanism for accomplishing this feeding operation of the paper strip consists of a ratchet wheel and two pawls (Fig. 10). These pawls are mounted side by side on a reciprocating bar so that each time the bar reciprocates the pawls are moved back and forth. At each reciprocation of the bar the first pawl engages one tooth of the ratchet wheel and advances the paper strip one short step, that is, a distance equal to the spacing between the units of a group. After the feed roll has been given the predetermined number of short steps the second pawl engages a pin on the side of the ratchet wheel. As the pin is much closer than the ratchet teeth to the axis of the ratchet, the second pawl gives the feed roll a long step. Thereafter the first pawl resumes its short step operation until the pin again comes around in position to be engaged by the long step pawl.

41. Thus, the Major machine performs all the essential functions of the Prentice machine. It forms and cuts the U-shaped or jaw-shaped metal units and feeds and staples them one by one to the tape, astride the hook or eye. The tape is advanced step-by-step for a series of short steps to receive the metal units in closely spaced relation, and is then given a long step to group the closely spaced units with a gap between groups, through which the tape is cut apart into individual lengths each containing one group of attached units.

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The Aronson Canadian Patent No. 107,456 dated September 17, 1907. (Ex. B. Record p. 200.)

42. This patent is for a machine for producing the fastener stringers used for making interlocking slide fasteners of the kind shown in Respondent's Exhibits 4 and 6 (Physical Exhibits), which were on the market some twenty-five years ago under the names " C-curity " and " Plako." Machines such as these described in the Aronson patent were operated commercially by the Automatic Hook & Eye Company of Hoboken, New Jersey, a predecessor of the United States Company which is the parent of the Respondent Company, from 1906 to 1913 or 1914, for the manufacture and sale on a commercial scale of the " C-curity " and " Plako " slide fasteners. Sundback, the inventor in the patent in suit, and consulting engineer for the Respondent, was connected with said Automatic Hook & Eye Company during the whole of the period in question (Record p. 22, l. 40 to p. 23, l. 2; p. 22, l. 33) and was in close touch with the Aronson machines. He identified (Record p. 39, l. 46 to p. 40, l. 4,) the Aronson machines commercially used by the Automatic Hook & Eye Company at Hoboken as similar to that described in the expired Aronson Canadian Patent, Appellants' Exhibit B. (Record p. 200.)

43. The fastener stringers produced by the Aronson machine were made from a piece of tape of indefinite length, having a corded edge, the metal fastener elements being attached by their clamping to the corded edge in closely spaced relation in groups of a certain length, each group being separated from the next group by a long space or gap. The stringer thus formed was cut to form individual lengths which were assembled into the complete slide fasteners (Record pp. 38 and 39). The stringers thus formed are illustrated in Figs. 15, 16 and 17 (Record p. 213), of the patent and the complete slide fastener made up from such stringers is shown in the " C-curity " and " Plako " fasteners. (Exhibits 4 and 6, Physical Exhibits.)

44. The individual fastener units were previously formed in a separate machine, and each was made with a pair of jaws to be clamped on the corded edge of the tape. The units were fed into the machine from magazines, each consisting of a metal bar (Plaintiff's Exhibit 5, Physical Exhibit), provided with recesses or pockets on its top side. The units were manually placed in these pockets with the jaws facing upward so that when they came under the tape the jaws could be clamped on to the corded edge of the tape. A series of such magazines was fed through the machine by hooking them together, each one pulling the next along like a train of cars. The train of magazines was advanced step-by-step through the machine by feed rollers. The magazines are shown at 4 in Fig. 1 (Record p. 209) of the patent. They are fed from left to right, as viewed in Fig. 1, by the feed rollers 76 at the right of Fig. 1. Fig. 2 (Record p. 210) is a top plan view of the machine, in which view the magazines are fed from the bottom to the top through the center of the figure.

45. The tape was fed in at the lower right-hand corner of Fig. 2. It passed through a tension device 28, consisting of two spring-pressed plates engaging the tape on opposite sides (precisely like the tension device used by Prentice and Sundback), thence around roller 29, and thence across the machine over the path of the magazines. The tape was advanced step-by-step by feed rollers best shown at 30 and 31 in Fig. 10 (Record p. 213). The feed rollers were made with grooves to accommodate the corded edge of the tape with the attached units. The tape was fed between the two rollers and the rollers were advanced step-by-step by a ratchet wheel 36 and a pawl which engaged the teeth of the ratchet wheel. The pawl was driven by a crank arm 40 leading up to a crank or eccentric (top of Figs. 8 and 9, Record p. 213).

46. At each step of the tape a pair of pincers 52 (Figs. 5 and 7, Record p. 212) located just above the magazine near the center in Fig. 2, pushed the corded edge of the tape downward between the jaws of the unit immediately underneath it in the magazine. Then the jaws of the units were bent and clamped upon the corded edge of the tape by means of two reciprocating plungers 20, 20, as shown in Figs. 1 and 13 (Record p. 214). After the jaws were clamped over the corded edge of the tape, the pincers 52 released the tape so that the tape could again be stepped along the distance of one unit, and at the same time the magazine was fed along to bring the next unit opposite the tape.

47. These units were applied to the tape in groups with spaces between groups. In this machine the grouping was produced by omitting units from the feeding magazine for a distance corresponding to the desired spacing, so that for a given number of steps of the tape feed no units would be attached. This produced the same grouping effect as was produced by Shipley and Major by means of a jump feed of the strip at intervals.

Turning now to prior art machines which are not the subject of patents :

48. Punch Presses.

Punch presses were in common use years before either of the parties applied them to making stringers for slide fasteners. The witnesses on both sides agree to the common and ancient use of punch presses. (Ray, Record p. 58, ll. 44–46; Prentice, p. 95, ll. 1–14). An example of the old punch presses will be found in the Manville press used by Prentice in the Prentice machine, shown in the 1908 catalogue of the E. J. Manville Machine Company of Waterbury, Connecticut (Exhibit P, not printed).

It is an old and common practice, to provide punch presses with one or more shaping and cutting tools and dies according to the required shape of the article to be made. Prentice's application to his punch press of a die for forming the pin and socket and the punch for cutting out the unit is in its general aspect a very very old process. (Record p. 95, ll. 12–14.)

49. The " Securo " Tape Machine.

About 1900 the Traut & Hine Manufacturing Company of New Britain, Connecticut, were manufacturing snap fasteners under the trade name

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" Securo." (Record p. 86, ll. 43-46; p. 87, ll. 1-5.) At first these " Securo " fasteners were mounted and sold on cards, to be attached individually to garments by the users. (Record p. 87, ll. 12-14.) In a year or so the Traut & Hine Manufacturing Company began making and selling the " Securo " fasteners applied to tapes to be sewed as an assembled article to the plackets of skirts and similar openings. (Record p. 87, ll. 19-20.) The " Securo " tape fastener consisted of two lengths of tape several inches long, one having a group of six or eight spaced stud members of the snap fasteners, and the other having a correspondingly spaced group of socket members. (Record p. 87, ll. 25-29.) These " Securo " tape fasteners were used principally to close the plackets of women's skirts, one tape being sewed on to one side of the placket and the other tape on to the other side.

50. The witness Prentice was at that time superintendent of said Traut & Hine Company and fully conversant with the " Securo " developments. The " Securo " tape fastener was made on a machine which automatically attached the individual snap fastener members to tape in the desired spacing. The snap fastener members themselves were made in a separate machine and fed from a hopper into an affixing machine one at a time down a chute under a punch press which pressed their fastening prongs through the tape and clinched them there. The tape was fed through the machine under the affixing press by a ratchet feed device, step-by-step, for the several uniformly spaced members of a group, and then by means of a longer tooth on the ratchet wheel, the tape was fed a longer distance to provide the gap between groups. (Record p. 87, ll. 32-38.)

51. Male fastener members were fixed to one long length of tape; female fastener members were fixed to another long length of tape, each tape was then cut up by hand between groups of fasteners, and the respective lengths assembled to make the completed fasteners. The machine for making these fasteners was used by Prentice's then company in regular commercial production along about 1902 and 1903. (Record p. 87, ll. 19-20.)

52. In this " Securo " tape machine we find within Mr. Prentice's personal experience as superintendent of the Traut & Hine Manufacturing Company the prototype of his mechanism for automatically feeding fastener units to a tape, attaching them to the tape one by one in a punch press, advancing the tape step-by-step to attach a group of units in spaced relation on the tape, and then giving the tape a long step or jump feed to separate the groups by a long space or gap. The purpose of the machine was the same in both cases, namely, to apply fastener members on tapes in groups of predetermined length separated by a longer space so that the stringers so formed could be cut apart through the gap and the individual lengths assembled in pairs to be sewed to the opening in a garment or the like. The differences in the two machines comprised only the mechanical changes dictated by the differences in the units themselves.

PART II.

The Appellants submit that the learned President of the Exchequer Court in his judgment (Record p. 143) dated the 4th April, 1932, erred in the following respects :—

1. In holding that the patent in suit is a master patent, covering broadly all mechanical equivalents of the elements of the combinations claimed. (Record p. 149, ll. 32–38.)

2. In holding that the elements of the Appellants' machine are the mechanical equivalents of the elements disclosed in the patent in suit. (Record p. 151, ll. 11–12.)

3. In finding that nothing in the prior art relied upon by the Appellants establishes anticipation. (Record p. 148, ll. 11–13; ll. 25–27).

4. In failing to consider individually the particular claims in suit, and to test validity and infringement by the terms of the claims.

5. In failing to differentiate between claims 1, 3, 7, 8 and 19 (Ex. 1, Record pp. 224–226) which purport to cover a machine for attaching units to tape and/or feeding the tape but not for making the units in the same machine, and claims 2 and 10 (Ex. 1, Record pp. 224–225) which are the only claims including the making of the units, as well as attaching them, in the same machine.

6. In failing to hold that the claims in suit and each of them, are anticipated by or define no patentable invention over the prior art.

7. In failing to hold that claims 1, 3, 7 and 19 (Ex. 1, Record pp. 224–226), are completely and literally anticipated by the Aronson Canadian patent of 1907.

8. In failing to hold that claim 8 (Ex. 1, Record p. 225) is anticipated by, or contains no invention over the Shipley patent, the Major patent or the " Securo " machine, especially in view of Aronson.

9. In failing to hold that claims 2 and 10 (Ex. 1, Record pp. 224 and 225) are anticipated by or contain no invention over the Brainard patent (Ex. J, Book of Patents, p. 44), the Major patent (Ex. J, Book of Patents p. 2) or the Stover patent (Ex. J, Book of Patents p. 28).

10. In failing to hold that claims 2 and 10 (Ex. 1, Record pp. 224 and 225) will cover only an unpatentable aggregation and not a patentable combination.

11. In holding that a claim for a combination of " means " for automatically making an old product necessarily includes any and every such means for accomplishing that result; and in failing to hold that the patentee is restricted to his particular means disclosed. (Record p. 149, ll. 19–27; ll. 32–35).

12. In holding that the pertinent prior art is confined to machines for making interlocking slide fasteners or " zippers," and does not extend to analogous machines used for making large numbers of jaw-shaped metal

units for other purposes and attaching them step-by-step in spaced position on a continuous strand. (Record p. 147, ll. 42 to p. 148, l. 1.)

13. In holding that the patent in suit is not limited to the precise mechanism disclosed, so as to exclude infringement as alleged. (Record p. 149, ll. 35–38.)

14. In holding that the Appellants infringe. (Record p. 151, ll. 42–44.)

15. In failing to hold that whatever the Appellants' machine contains in common with the patent is also common to the prior art.

PART III.

ARGUMENT.

The findings of the learned trial judge are based upon the view that the patent in suit is a master or pioneer patent of a combination, so that it covers any combination of the mechanical equivalents of its various elements.

A machine to be the subject of a master patent, is one which accomplishes a new result, or utilizes a new principle or system. (*Proctor* v. *Bennis* 4 R.P.C. 333, *Curtis* v. *Platt*, L.R. 3 Ch.D. 136n; *Canadian Radio* v. *Hobbs* 1929 Ex. C.R. @ p. 246 and 247). The result means what the machine does, not what it makes, that is, it refers to function not product.

The only new result attributed by the learned trial judge to the Respondent's machine is that it makes stringers automatically. (Record p. 148, ll. 26–30.)

To say that a machine is automatic does not, however, ascribe to it any mechanical function, principal or system. If it did, the first inventor of an automatic machine for making any product would have a virtual monopoly of its manufacture, although his contribution to mechanical art might be very small, especially in a case, such as the present one, when the product itself had been known only a short time. (*Williams* v. *Nye*, 7 R.P.C. p. 62, *Varey* v. *Mitchell Walker Co.* 16 R.P.C. 596.)

Unless, therefore, the Respondent's machine exhibits a new function, principle or system, the patent in suit is not a master patent.

Given the Kuhn-Moos stringer, the utility of a machine which would make it automatically from a strip of metal and a beaded tape must have been obvious. The idea of making such a machine is not patentable. (*Varey* v. *Mitchell Walker Co.* 16 R.P.C. p. 605 at l. 13). It must have been equally obvious to any person of ordinary mechanical skill that any such machine would almost certainly perform the following operations :—

1. Feed the metal strip into a punch press.
2. Make from the strip the metal element of the fastener.
3. Hold the tape in position to receive the element.
4. Carry the element to a point where its jaws would embrace the beaded tape.
5. Clinch the jaws of the element on to the tape.
6. Move the tape into position to receive another element.

There is nothing new in any of these mechanical operations. They had all been performed in the manufacture of fasteners, the first two by one machine, the remainder by a second machine. (Record pp. 33–36). They had all been performed by a single machine in the manufacture of analogous products wherein elements cut and formed from one continuous strand were fastened at intervals to another. (Ex. J, Book of Patents pp. 2; 28; 44.)

The mere combination of these operations in one machine for the manufacture of stringers is not in itself an invention at all, but an analogous use of well known devices and combinations. Much less can such an aggregation be the subject of a master or pioneer patent. (*Terrell* "*Patents*" 6th Ed. p. 53, *Williams* v. *Nye* 7 R.P.C. 62, *Hunter* v. *Carrick* 11 S.C.R. @ p. 300, *Durable* v. *Renfrew* 59 O.L.R. 527.)

In the Sundback machine the punch press, the forming and cutting punches, the die (Record p. 95, ll. 4–10), and the step-by-step feed motion for feeding the metal strip from which the punchings are made (Shipley Patent Ex. J, Book of Patents p. 65), the method of cutting and forming the individual units from a metal strip in a punch press and attaching the units one by one by clamping the jaws astride of a stringer, which is fed step-by-step through the machine in a direction transverse to the feed of the metal units. (Brainard Patent Ex. J, Book of Patents p. 44, Aronson Patent Ex. B, Record p. 200, Stover Patent Ex. J, Book of Patents p. 28; Record p. 123, l. 10; p. 124, l. 16; p. 103, l. 40—p. 109, l. 10) and the ratchet and pawl feed motion for the stringer to feed it a series of short steps and at intervals give it a long step or jump feed (Record p. 140, ll. 30–39) are all old (Record p. 140, ll. 21–23).

Sundback's departure from established practice consists in replacing the punching in the aperture of the metal strip from which it was cut (Record p. 61, ll. 33–43; p. 99, ll. 31–36; p. 115, ll. 44—p. 116, ll. 1–5) so as to use the blank of the metal strip (*a*) as a magazine or conveyor for the punchings from the time the punchings are cut out until they are finally clamped on the tape, (*b*) for accurately positioning and holding the little punchings for the subsequent shaping and setting operations (Record p. 62, ll. 4–13), and (*c*) to protect the jaws of the punching against tool marks when the jaws of the unit are clinched on the tape by the side plungers. To do so, it was necessary to provide the moving side guide plates 11, 11, which are positively actuated during each punching stroke of the punch press to clamp the side edges of the blank metal strip and so position and hold the blank and the units during the punching operations. After each stroke of the press these clamping guides are released to permit the strip to be fed forward another step. (Record p. 116, ll. 12–31).

As the inventor himself declares, the subject-matter just mentioned is the essential feature of the Sundback patent.

> " The function of the guide plates 11 is of vital importance. At the time of punching, the two plates hold the material firmly against spreading and distortion either of the punching or of the blank.

This enables the subsequent operations on the punching to be controlled through the blank, and ensures such perfect shape of the finished punchings and correct positioning thereof in the dies, as to produce a highly uniform and symmetrical fastener member and product. When the guide plates 11 draw tight around the blank 1, they not only bring the blank into a central position over the dies, but force the punchings, if they should happen to get out of place, into correct position lengthwise of the blank. The guide plates spread apart during the feed and allow an easy and free movement of the blank." (Ex. 1 Record p. 219, ll. 5–15;) See also the evidence of Respondent's Expert, Ray. (Record p. 68, ll. 39–42).

That this is the substance of Sundback's invention is further emphasized in the preamble of the patent. After stating the general purpose of his machine, which is equally applicable to the Aronson patent, the inventor proceeds to point out (Ex. 1, Record p. 217) the novel features of the invention, in effect, as follows:

1. Replacing the punching in the blank strip, by which it is fed for the subsequent operation of shaping and setting. (Ex. 1, Record p. 217, ll. 18–19).

2. Applying pressure to the punching through the blank (this is done by the clamping guides 11, 11) to hold the punchings firmly during the shaping operation. (Ex. 1, Record p. 217, ll. 24–27).

3. Performing the side-punching operation through the blank to set the jaws on the carrier without leaving tool marks. (Ex 1, Record p. 217, ll. 27–31).

This method is essential to Sundback's procedure because he cuts out the punching before forming the projection and socket, and this presents a real problem of feeding, positioning, and holding the very small light punchings while the forming or shaping operation is being performed.

No such problem arises in the Prentice procedure, as he first does the forming operation in the metal ribbon and then stamps out the punching to include the formed area. (Record p. 116, ll. 4–6).

Sundback could not follow the latter method, because the avowed purpose (Ex. 1, Record p. 216, ll. 35–37) of his machine is to make the special form of fastener of his United States Patent No. 1,219,881, Exhibit R (Book of Patents p. 78). In order to make the peculiar pyramid-shaped or tapered projection and socket of that patent he must punch out the blank before it is shaped, because the end of the unit slants from the top of the projection to the opposite face of the unit. (Record p. 119, ll. 13–16, 19–21). A cutting-out punch cuts the edge of the unit perpendicular to the face, and if the projection and socket were first formed in the metal strip and then punched out, the unit would have a vertical end instead of a slanting end. Hence Sundback's problem, and the necessity of replacing the unformed punching in the metal strip and using the strip not only as a carrier to bring the unit to the assembly mechanism,

but to hold the unit against displacement and distortion during the subsequent forming operation. (Record p. 119, ll. 8–16, ll. 26–29; p. 120, ll. 7–27).

It is suggested in the evidence that the Sundback unit could be made by a method analogous to that of the Prentice machine, by first cutting out one end only of the unit, and cutting out the remainder after the end had been formed. (Record p. 139, ll. 25–34). If practical, this would have been an entirely different solution of the problem, in no way covered by the description or claims of the patent in suit.

In reference to the system of the Respondent's machine, control of the units was constantly emphasized on behalf of the Respondent at the trial. (Record p. 58, ll. 12–22; p. 116, l. 15 to p. 117, l. 24; p. 137, ll. 2–5; The appellants have no control of the unit for the forming operation, feeding operation, and attaching operation without tool marks, in any way resembling the Sundback contrivance either in the means employed or in the result obtained. (Record p. 118, ll. 1–15, ll. 26–36; p. 137, ll. 16–19).

Respecting the practical position in the art of the Sundback machine the Respondent attempts to attribute to it the present day commercial success of Sundback's licensees in their 1931 production of some forty million fasteners. (Record p. 32, ll. 21–34). Such production is not however on the machine of the patent in suit, but on a modified machine, structure undisclosed, which embodies the subject matter of various improvements. (Record p. 47, ll. 15–36).

For the general commercial success of zipper fasteners to have any relevancy to the machine of the patent in suit such commercial success must be proved to be attributable thereto. No such proof exists nor could it have been produced. So far as "zipper" success is due to any one invention more than another, it is due to the Kuhn-Moos invention (Ex. U, Book of Patents p. 69) of the projection and socket type of fastener units alike on both stringers. It was this type of fastener unit which gave a renewed impetus to slide fasteners, which supplanted the Hookless Company's more complicated and cumbersome "Plako" and "C-curity" fastener like Exhibits 4, 6 and 7 (Physical Exhibits) and which has been adopted by practically all manufacturers of slide fasteners.

Whatever is common to the Sundback and Prentice Machines is also common to the Prior Art. The features which distinguish Sundback from the prior art are not used by Prentice.

It was in November, 1925, that Mr. Prentice began the construction of a machine for making stringers of the Kuhn-Moos type on a commercial scale. The machine was completely laid out and in course of construction in December, 1925, (Record p. 94, l. 40,) was completed in January, 1926, and its operation in regular commercial production was begun in February, 1926. (Record p. 98, ll. 4–7). The short length of time taken for its development, with other circumstances—including the utilization of a standard form of punch press by Mr. Prentice, (Record p. 94, ll. 37–41; p. 95, ll. 1–7, and the well known use of many forms of punch presses in

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machines for making and attaching units to stringers of various kinds —is corroborative of the Appellants' contention that mechanical skill only was involved in the development of the Prentice machine. (Record p. 105, ll. 24–26, ll. 41–45).

The first Prentice machine was identical with the Prentice machine brought before the Court, with the exception of one point. In the original Prentice machine the device for pinching the jaws of the units upon the corded edge of the tape consisted of stationary inclined planes which acted as an ordinary clinching die to bend and press the jaws upon the tape. (Record p. 97, ll. 10–14.) This is the same action which occurs in staple-setting or eyelet-setting devices, where the prongs or jaws are forced against the inclined surface of a die to clinch them upon the material to which the article is to be attached. (Record p. 124, ll. 6–9). It was the method used by Brainard, U.S. No. 292,467, (Ex. J. Book of Patents p. 44) and Major, U.S. No. 525,914 (Ex. J, Book of Patents p. 2). Mr. Prentice found that the stationary inclined clamping surfaces were subject to undesirable wear, resulting from the continual friction of the jaws against them, and to avoid such wear he substituted the rocking pincers now used (Record p. 97, ll. 16–18) and shown in the detached mechanism, Exhibit Q, (Physical exhibit). These function in the same way as the inclined planes, pinching the jaws upon the tape, but since they move with the jaw-shaped unit during the pinching action instead of permitting the jaws to slide on the surfaces, there is less wear on their working surfaces than on stationary planes. (Record p. 97, ll. 20–42).

In putting together his machine Mr. Prentice took an old Manville punch press, of which he had a number in the factory (Record p. 95, ll. 19–22). This punch press was mechanically identical with the Manville press shown on page 3 of the Manville catalogue, Exhibit P, (not printed) and like nearly all punch presses, had a step-by-step ratchet and pawl feed for the metal strip from which the punchings are formed. Mr. Prentice made dies and punches suitable for the turning out of a unit of the desired shape. (Record p. 95, ll. 1–3). Such an alteration is customary in all punch press work—for each shape of punching to be turned out. The forming and punching mechanisms involved nothing but standard, routine, punch press practice, one punch contacting the metal strip on the first down stroke of the press to form the pin and socket, while on the second down stroke a second punch cut out the unit around the previously formed pin and socket. (Record p. 99, ll. 19–22; p. 64, ll. 29–36).

In order to attach the punched-out unit to the tape Mr. Prentice placed behind it at its own level, a reciprocating slide or plunger, moved by the punch head. (Record p. 97, ll. 10–13; p. 113, ll. 11–13). This slide mechanism is in structure and mode of operation, entirely different from Sundback's expedient of placing the unit in the metal strip for the forming, feeding and affixing operations. On the upstroke of the press the Prentice slide moves forward with the unit in front of it, pushing the jaws of the unit astride the cord of the tape and against the pincers which bend them together. (Record p. 97, ll. 16–31).

In order to feed the tape step-by-step to receive successive punchings Mr. Prentice duplicated the ratchet and pawl feed used for feeding the metal strip. (Record p. 106, ll. 33–36; p. 99, ll. 6–8). In feeding the tape, to get a better friction grip on the tape than by merely passing it between the nip of two rollers, as can be satisfactorily done in feeding metal, he adopted the common expedient of "snubbing" the tape, or wrapping it part way over the feed roller, to secure it against slipping. (Record p. 106, ll. 37–45). His rollers are knurled or roughened, but this is an old common expedient in feeding fabric. (Record p. 101, ll. 8–18).

The regular ratchet and pawl feed mechanism gave the tape a uniform step-by-step feed. In order to get a long step after a series of uniform short steps, to group the fasteners, he adopted a secondary ratchet and pawl feed mechanism (Record p. 113, ll. 26–28) precisely like the feed motion shown in the Shipley patent No. 85,249. (Ex. J, Book of Patents p. 65). In this feed motion the first ratchet and pawl mechanism advances the strips uniformly step-by-step for the desired number of steps, and the secondary ratchet and pawl comes into action at intervals, due to the long interval between the teeth of its ratchet, and gives the strip a jump feed. This Shipley feed motion was common mechanical knowledge and free to public use half a century before Mr. Prentice adopted it.

Thus, every feature and every action of the Prentice machine is common, and of standard practice, known to every one acquainted with the small metal working arts, with the possible exception of the rocking pincers which clamp the jaws on to the tape. Stationary inclined surfaces, such as Prentice originally had for clamping the jaws on the tape, were old in all sorts of machinery, such as staple-clinching machines, eyelet-clinching machines, barb-clinching machines, (Record p. 124, ll. 3–9) etc. Reciprocating side punches for bending up the jaws on to the carrier, such as are used in the Sundback machines, were also commonly known and commonly used in the art [for example, in the Aronson machine (Ex. B. Record, p. 200; p. 123, ll. 23–29) for making slide-fastener stringers, barbing machines, etc.], but the Prentice pincers correspond in function to the stationary surfaces.

To the mechanic versed in the manufacture of small metal articles the problem of forming and punching a little metal unit with a pair of jaws, and attaching such units in spaced relation on a continuous strand by clamping the jaws on such strand, is the same, whether the product is ultimately used for slide fasteners, fencing or some other purpose. Mr. Prentice's view is wholly corroborated by the inventor himself, who declared in his corresponding United States Patent No. 1,331,884, Exhibit 9, (Book of Patents, p. 84, at p. 105 ll. 36–43) that his invention is not limited to the production of fasteners, or to setting fastener members on tapes, but is applicable generally to forming large numbers of like parts and setting them on a carrier element.

The association in appellants' machine of well-known instrumentalities of the prior art, functioning in their regular and obvious manner, to produce their obvious result, clearly involves nothing more than the expected

knowledge of a person ordinarily skilled in the art (Record p. 105, ll. 41–45) and as such represents only what any member of the public has the right to do. "The idea as apart from the principle of cutting both grooves and ends at the same time, must be patent to everybody. The desire to do in one operation what otherwise would require two is what every mechanician would be anxious to find means of gratifying; therefore where you have had many machines used for cutting fallers by the two operations, it seems manifest to me that there may be many means of carrying out the operation desired, and if the patentees find out one combination by which that object can be obtained, it is quite possible another person may find out another combination or other means by which the same object may be obtained." (Judgment Grantham J. *Varey* v. *Walker Mitchell Co.* 16 R.P.C. at p. 605 l. 12). It consequently follows that the patent in suit must be invalid if interpreted in such breadth as to be infringed. "They are claiming for their own patent any principle, any system of attachment, by which the ends of the said bars may be cut to the angle required, and at the same time groove the sides of the spring guides. They do not therefore, as far as I can read it specify at all in detail what is the method of bringing the cutter for the spring grooves into position, but it is a general claim for any attachment which will grip the faller bar in such a manner that the spring grooves may be cut at the same time as the end. That claim would be in my judgment too wide." (Judgment Grantham J. *Varey* v. *Walker Mitchell Co.* 16 R.P.C. at p. 606 l. 15).

Furthermore, the appellants' machine requires but three steps from first operation upon the strip to final application of the finished unit to the tape, whereas Sundback requires seven. Of course it is not the number of steps alone that is significant so much as the fact that they characterize the differences in the construction and principles of operation of the two machines.

THE CLAIMS IN SUIT.

The respondent at trial, and the learned trial Judge in his reasons for judgment did not go into the claims of the patent in suit and relied solely on general similarities of the respective machines, particularly the similarity in result or product. (Record, p. 150 ll. 12–47; p. 151 ll. 1–18). However, the claims can not be so ignored, the Canadian Patent Act of 1923, Section 14 (1) specifically providing :—

> "It (the specification) shall end with a claim or claims, stating distinctly the things or combinations which the applicant regards as new and in which he claims an exclusive property and privilege."

So also the Canadian Patent Act of 1906 under which the patent in suit was granted, Section 13. ss. 1 :

> "The specification . . . . shall state clearly and distinctly the contrivances and things which he (the applicant) claims as new and for the use of which he claims an exclusive property and privilege."

As previously stated, only two of the claims in suit, 2 and 10, (Ex. 1 Record pp. 224–225) are directed to the automatic machine for both making the metal units and affixing them to a tape in a single machine. Of the remaining claims in suit, 1, 3, 7 and 8 (Ex. 1 Record pp. 224–225) go only to the affixing of the elements and/or the tape feed, while method claim 19 (Ex. 1 Record p. 226) is entirely independent of any machine and covers hand operations as well as machine operations.

CLAIMS FOR ATTACHING THE UNITS TO TAPE WITHOUT MAKING THE UNITS IN THE SAME MACHINE.

Claim 1 (Ex. 1 Record p. 224 ll. 32–35) is the claim upon which are predicated all the other machine claims in suit, and, as previously stated, does not include the making of the units in the claimed machine. Claim 1 reads :

A machine for making fasteners having :

(*a*) Means for feeding a tape step by step.

(*b*) Means for feeding fastener members into position to be compressed on to said tape, and

(*c*) Means for compressing the fastener members thereon.

This claim is entirely anticipated by the Aronson Canadian patent of 1907 (Ex. B. Record p. 200) which is admittedly a machine for making the " Plako " and " C-curity " zipper fasteners, Exhibits 4, 6, C. and D. (physical exhibits) (Record p. 39, ll. 41–46 and p. 40, ll. 1–4).

The Aronson machine, as described in the Aronson Canadian patent No. 107,456 Sept. 17, 1907, was in commercial use many years before the alleged Sundback invention. (Record pp. 22–24; p. 40 ll. 13–15). The Aronson machine was a " machine for making fasteners " and contained—

" means for feeding a tape step-by-step,"

(Aronson's feed rollers 30 and 31, driven by the ratchet wheel 36 and a pawl actuated by the crank rod 40 leading up to a crank or eccentric.)

" means for feeding fastener members into position to be compressed on to said tape "

(Aronson's magazines 4 for feeding the units into position to be compressed on to the tape.)

" and means for compressing the fastener members thereon."

(Aronson's side plungers 20, 20, which compress the units on to the corded edge of the tape.)

Thus claim 1 exactly describes the Aronson machine and since the Aronson machine is prior art the claim is invalid. The learned trial judge held (Record p. 148 ll. 23–30) that Aronson does not anticipate Sundback because Aronson does not make the metal unit in the same machine, but only attaches the units (previously made elsewhere) to the tape; but the supposed invention claimed in claim 1 does not include the making of the units in the machine but only attaching them. The same is true of

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claims 3, 7 and 8, which do not include the making of the units as a part of the claimed machine.

It is noted further that the claim omits any reference to means for precision or control and is unlimited with respect to the firmness with which the fastener members are compressed on the tape. The plaintiff attempts to avoid Aronson because the Aronson machine clamped the members only lightly on the tape (Record p. 38, ll. 46–47) and required. further operations to complete the compression. (Record p. 38, ll. 27–32) It should be noted however, that the Appellants' machine, the alleged infringement, only lightly closes the members on the tape, (Record p. 97 ll. 38–40; p. 103 ll. 1–5), the clamping being so light that the units can be moved along the tape with a finger nail, and that Appellants do their final compression in a second machine entirely independent of the alleged infringement, (Record p. 130 ll. 15–21) in which second independent machine the Appellants also secure their precision in locating the fasteners. (Record p. 101, l. 21.)

The Aronson machine would infringe claim 1 of the patent in suit, and consequently, with its ten years priority anticipates and invalidates claim 1.

Claim 3 (Ex. 1, Record p. 224, ll. 39–41) reads:

> In a machine as described in claim 1
>
> means for feeding a jaw member into position to be set on the edge of a tape and
>
> sidepunches for compressing the jaws thereon.

This differs from claim 1 only in defining the fastener member as a jaw member, and in limiting the compressing means to side punches.

In the old Aronson machine the fastener members had jaws which were compressed on to the corded edge of the tape. (Record p. 110, ll. 1–3) and the compressing means consisted of positively actuated side punches, (Ex. B. Record p. 203, ll. 11–18) fully infringing the claim and consequently anticipating it.

Claim 3 must be strictly and literally limited to side punches for compressing the jaws, otherwise, if the claim be construed to include compressing means generally, claim 3 becomes identical with claim 1. In the natural use of language "side punches" means—endwise reciprocating plungers or punches at the sides of the unit. Appellants do not use side punches but a pair of swinging pincers which squeeze the ends of the jaws together in the same way as a pair of closing swinging doors will pinch whatever is between them. (Record p. 97, ll. 17–31). Appellants do not infringe claim 3 when properly construed and restricted in view of claim 1.

Claim 7 (Ex. 1, Record p. 225, ll. 11–14) reads:

> In a machine as described in claim 1 controlling means for a corded edge tape comprising
>
> frictional tension means engaging the tape at one side of the fastener setting devices, and
>
> a grooved roughened ratchet driven feed roll at the other side.

As far as the means of claim 1 are incorporated by reference, they are fully met, as earlier pointed out, by the Aronson machine. The Aronson machine further has the particular tape controlling means called for in claim 7. (Record p. 110, ll. 3–11). Aronson, Fig. 2 (Ex. B, Record p. 210) shows at 28 the adjustable tension device, described bottom page 4 of the specification (Ex. B, p. 203, ll. 29 et seq.), through which the corded edged tape passes on its entry into the machine. The tape then passes through the fastener setting devices, after which it engages the grooved ratchet driven feed rolls 30 and 31 shown in Fig. 10 (Ex. B, Record p. 213) of the Aronson patent. The Aronson patent does not state whether or not the surface of the grooved feed rolls is roughened, but the drawing, Fig. 10, indicates that they are roughened. In any event, the art had long known that feed rolls for cloth are preferably roughened, (Record p. 101, ll. 10–18). Any person skilled in the art would read the Aronson patent as contemplating the use of roughened rolls if desired. (Record p. 110, ll. 37–39). That no novelty resides in this roughened roll, or in the more than line contact of the tape on the roughened roll, so stressed by respondent at trial but not called for by the claim, is admitted by respondent's expert Mr. Ray where he says (Record p. 140, ll. 21–23) with respect to the feeding mechanism :

> " At least all of the mechanical movements we are here concerned with are certainly very, very old "

and (Record p. 143, ll. 2–4)

> " I think taking them (the separate steps) as individual operations, I rather imagine every one of them is old."

The Olm Patent No. 1,114,177 (Ex. J. Book of Patents, p. 54) distinctly mentions roughened feed rolls as pointed out by Grover (Record p. 110, ll. 31–36).

The Aronson machine constitutes clearly an infringement of claim 7 in suit, and hence with its ten years priority anticipates and invalidates the claim.

Should anticipation be avoided by construing the claim as calling for a single ratchet wheel feed roll as distinct from Aronson's two contacting feed rolls, then appellants, with their two contacting feed rolls do not infringe.

Claim 8 (Ex. 1, Record p. 225, ll. 15–17) reads :—

> In a machine as described in claim 7, controlling means for feeding the tape step-by-step for a predetermined number of operations and then feeding the tape an increased distance to complete one cycle.

Aronson had a constant step by step feed of the tape, the blank space on the stringer between groups of fastener units resulting from omitting to present fastener elements to the tape during the desired number of steps. (Record p. 39, ll. 1–9, ll. 23–34). This produced exactly the same

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result of leaving a gap between groups of units, as to give an occasional long step to the tape feed and affix a unit at each step. The long step or "jump feed" method of spacing had however been in the possession of the public for some half a century, since the Shipley patent U.S. No. 85,249 of 1868 (Exhibit J., Book of Patents, p. 65) the title and claim of which is solely for a feed motion, and is the particular feed motion used by appellants for their step-by-step and occasional long step tape feed. (Record p. 140, ll. 24–39).

Sundback's claim 8 (Ex. 1, Record p. 225, ll. 15–17) is addressed solely to the feed motion for the tape, which consists in means for feeding the tape step by step for a predetermined number of operations, and then feeding the tape an increased distance. That is the identical invention patented by Shipley in 1868. Shipley says in his patent :—

> "I am aware that to operate a pair of feed-rollers by means of a crank or eccentric, through the medium of a connecting rod, ratchet, and pawl, is not new, and I do not claim these devices, nor their combination; but
>
> "What I do claim as of my invention is—
>
> "Combining, with the aforesaid combination of devices, an auxiliary set of devices (a secondary ratchet and pawl like appellants), for imparting at intervals, a feed-movement of accelerated velocity, and of greater extent than that imparted by the aforesaid combination."

(Ex. J., Book of Patents, p. 65)

It is no answer to say that Shipley's feed motion was not applied to a machine for feeding tapes to be eventually manufactured into slide fasteners, since the mechanical factors on which claim 8 rests are means for feeding a strip a series of short steps and then feeding it an increased distance and it is entirely immaterial to these factors what is ultimately to be done with the strip. The problem of the feed motion is identical and was solved by Shipley more than 60 years ago.

Furthermore, the Major patent U.S. No. 525,914, (Ex. J., Book of Patents, p. 2) of 1894 fully anticipates the supposed invention of claim 8. The Major patent shows the ratchet and double pawl mechanism (Fig. 10) (Ex. J., Book of Patents, p. 6), entirely similar to Sundback's, for feeding a paper tape step by step for a predetermined number of steps by means of the ratchet q6, and then feeding the tape a long step by the operation of the secondary pawl R' upon its engagement with the side pin or tooth q7 on ratchet wheel q6. At each step a staple is cut off and formed with two jaws and this jaw-shaped unit is attached to the tape. Thus the Major machine is a fully automatic machine, and contains every instrumentality found in Sundback's machine of cutting and forming the jaw-shaped units, feeding them and attaching them one by one to the tape, feeding the tape a series of short uniform steps, and then feeding the tape an increased distance to form a space between successive groups of the attached units.

Method claim 19 (Ex. 1, Record p. 226, ll. 20–23) reads :—

> The method of making fasteners consisting in
>
> affixing jaw members in spaced groups on a continuous stringer in predetermined number and spacing, and
>
> cutting the stringer so that pairs of said groups cooperate in forming a fastener.

The claim for method is independent of any and all machine instrumentalities and would be infringed whether the affixing was done by machine or by hand. Sundback cuts the stringer after it leaves his machine, and presumably by hand. The procedure defined by claim 19 is precisely that followed in connection with the Aronson machine disclosed in the Aronson Canadian patent (1907) (Ex. B., Record p. 200) and commercially used for several years by Automatic Hook and Eye Company at Hoboken, New Jersey, as early as 1907 (Record p. 40, ll. 12–15), for making the " Plako " and " C-curity " zipper fasteners, Exhibits 4, 6, C, and D. (Physical Exhibits).

This Aronson machine fed a continuous tape through the machine to receive a plurality of spaced groups of jaw members. Each magazine supplied a single group of fastener members and the spaces between groups were occasioned by omitting to present fastener members during the desired number of steps of the tape feed at the end and beginning of each magazine as they were successively drawn through the machine (Record p. 39, ll. 6–32). As appears from said " Plako " and " C-curity " exhibits (Physical Exhibits 4, 6), the long stringers were sometimes cut between individual groups and the two cut sections then assembled to make a single complete zipper fastener (Record p. 39, ll. 35–36), while at other times the stringer was cut between pairs of groups and the blank length of tape between the groups folded to constitute the bottom of the zipper fastener, the pair of groups so cut and folded forming a single complete fastener. (Record p. 36, ll. 10–23).

The operation of the Aronson machine and the cutting apart of the groups as testified to by Sundback constitute clear infringement of this method claim 19, and being ten years prior to Sundback's alleged invention of claim 19 (Record p. 30, ll. 28–32) anticipate and invalidate the claim.

The same method of attaching fasteners to tapes in spaced groups and then cutting the groups apart through the spaces, was used in making the Traut & Hine " Securo " fasteners about thirty years ago (Record p. 87, ll. 25–29 and ll. 39–45, p. 88, ll. 1–7); and also in the Major machine, where the cutting off between groups was automatically done in the machine itself. (Ex. J., Book of Patents, p. 23, ll. 105–111; ll. 126–130).

Claims for making the Units and attaching them to the Tape in the same Machine.

None of the foregoing claims 1, 3, 7, 8 and 19, just discussed, covers Sundback's machine in its fully automatic aspect of both making the units and attaching them to the tape in the same machine. It was this fully

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automatic feature which formed the basis of the Exchequer Court's decision with its broad holding of validity (Record p. 148, ll. 11–13, ll. 25–30) and infringement (Record p. 149, ll. 19–25) without consideration of specific claims in suit. It is only the remaining claims Nos. 2 and 10 (Ex. 1, Record pp. 224 and 225) which claim both making the units and attaching them.

Claim 2 (Ex. 1, Record p. 224) reads :—

> In a machine as described in Claim 1,
> means for feeding a blank strip,
> means for cutting the members therefrom, and
> means for forming said members preparatory to feeding them into setting position.

Sundback, in the machine of the patent in suit, disclosed means for first cutting the members from the blank strip, and means operating *thereafter* for forming said members. (Record p. 61, ll. 33–46; p. 62, ll. 1–7, p. 116, ll. 1–2; Ex. 1, Record p. 217, ll. 16–19).

Appellants first perform their forming operation by making the pin and socket *in the blank strip itself*, on the first down stroke of the punch, and thereafter on the second down stroke of the punch cut out the units from the metal strip to include the formed area. (Record p. 99, ll. 19–22, ll. 30–33, p. 116, ll. 4–6).

Appellants' forming operation is old standard punch press practice (Record p. 112, ll. 35–36, and p. 113, ll. 13–15) as distinguished from the peculiar and complicated treatment by Sundback, which, because of his peculiarly shaped fastener unit with one slanting as distinct from a vertical edge, radically departed from standard punch press work (Record p. 120, ll. 15–27) and which may in specific detail, possibly involve invention (Record p. 122, ll. 41–45); but that invention is not the subject of any claim sued upon.

In view of Sundback's specific disclosure and his claim of means for cutting the members and means for forming said members (not forming the blank strip) claim 2 must be limited to its ordinary meaning and as such is not infringed by Appellants' machine which does not actually form the members at all.

Moulton 1*st Ed.* " *Patents* " at p. 116.
Consolidated Car Heating v. *Came* 1903 A.C. at p. 519 and 520.
Gwynne v. *Drysdale* 3 R.P.C. 65.
Seed v. *Higgins* (1860) 8 H.L. Cas. 550.
Hosiers' v. *Penman* 1925 Ex. C.R. at p. 100.
Electric Protection Co. v. *American Bank Co.* 184 Fed. R. at p. 916–917 and p. 922.

Claim 2 in its broad interpretation urged by Respondent must of necessity cover any means for making a completed unit and affixing it to the tape, and as such is a claim for a result—the making in any manner of a Kuhn-Moos fastener on a single machine. As a claim for a result, claim 2 is clearly invalid."

Bergeon v. *de Kermor* 1927 Ex. C.R. at p. 196.
British United v. *Collier* 26 R.P.C. at p. 50.
Varey v. *Walker Mitchell & Co.* 16 R.P.C. at p. 606 l. 15.
Denning Wire v. *American Steel* 169 Fed. Rep. at 795.

Claim 2 is also anticipated in its entirety by any one of the following patents in *Exhibit J* (Book of Patents); Major Patent U.S. No. 525,914 (Ex. J. Book of Patents p. 2) which cuts and thereafter forms staple members and affixes them to the paper tape fed step-by-step through the machine; Brainard barb wire machine patent U.S. No. 292,467 (Ex. J. Book of Patents p. 44), which cuts and thereafter forms a metal barb and affixes it to a strand of wire fed step-by-step through the machine; Stover barb wire machine patent U.S. No. 240,477 (Ex. J. Book of Patents p. 28) which cuts and thereafter forms a different shaped barb and affixes it to a flat metal tape or strand wire fed step by step through the machine.

If infringed by Appellants claim 2 is clearly anticipated and invalid.

Claim 10 (Ex. 1. Record p. 225) reads :—

> In a machine as described in claim 1 means for forming, attacking jaws on one end of the fastener member and a socket and projection on the other end.

The Prentice machine does not form a socket and projection on the fastener member, but on the metal strip before the fastener member is cut out. (Record p. 99, ll. 30–31; p. 116, ll. 4–6.)

In the light of the specification and Sundback's contribution to the art this claim should properly be limited to Sundback's order of first cutting and then forming and as such is not infringed, as is more fully pointed out under claim 2 *supra*. (See cases there cited.)

Claim 10 is invalid for the same reasons as claim 2. It appears to have been drawn with a view to claiming a monopoly of the form of unit invented by Kuhn-Moos, but actually contains no patentable feature which would not fall within claim 2 if valid.

Moreover, claims 2 and 10 are an attempt to make a combination of a machine for attaching the fastener members to tape (claim 1) and a machine for making the fastener members (the punch press). This is not a patentable combination but a mere aggregation and is therefore invalid.

It is not sufficient to make a patentable combination, as distinguished from an unpatentable aggregation, that the two machines, the punch press and the assembling machine, are physically connected on the same frame or stand, or that they are both driven from a common source of power. Mere juxtaposition of two machines each performing its own work, is not a patentable combination. The result is the mere sum or aggregate of the several independent results, not the product of a mutual or conjoint action wherein each contributes to and qualifies the action of the other.

Claims 2 and 10, consequently, are for an aggregation as distinguished from a combination, and as such are unpatentable.

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Hunter v. *Carrick* 11 S.C.R. 300. "A mere aggregation of parts not in themselves patentable, and producing no new result due to the combination itself, was no invention and consequently it could not form the subject of a patent."

Durable v. *Renfrew* 59 Ont. L.R. 527. "Aggregation is not invention; nor is it invention to combine old devices or elements into a new manufacture without producing a new mode of operation or a new result which is not merely analogous to the old result."

Williams v. *Nye*, 7 R.P.C. 62.

Pickering v. *McCullough*, 104 U. S. 310, 317–318.

Grinnell Washing Machine Co. v. *Johnson Co.*, 247 U.S., 426, 434.

Powers-Kennedy Co. v. *Concrete Co.*, 282 U.S. 175, 186.

Claim 10 describes the mechanisms of the Major, Brainard and Stover patents (Exhibit J. Book of Patents) except for the shape of the punching. The mechanical functions of a machine are the same whatever may be the particular shape of the article produced, and a machine combination may not be defined and differentiated from another machine, having the same combination of mechanical factors and the same mode of operation, by the shape of the product. The claim is anticipated in every material respect by said three prior patents.

Concluding Summary of Mechanical Features.

Prior to the construction of the Sundback machine, stringers for slide fasteners were made in two machines. One machine, an ordinary punch press with suitable die and punch, cut and formed the units; a second machine assembled the units on lengths of fabric tape or stringers. The transfer of these units from the punch press to the assembling machine was a manual operation and accomplished by placing the units in magazines and inserting these magazines in the assembly machine. (See Aronson, Exhibit B, Record page 200.)

Sundback in the patent in suit retains both the punch press and the assembly machine. He, however, bridged the gap between these two machines which had formerly been bridged manually, by continuing the unit in the metal blank after it has been cut and formed, and using the blank as a magazine to feed the units to the assembly mechanisms.

In the Prentice machine the unit, after being formed and cut out from the metal strip, drops to a lower plane and is there pushed forward to the tape by means of a slider arrangement and the jaws of the unit are lightly pinched on to the tape by a pair of swinging pincers. It is an essential difference that in the Prentice machine each unit is handled individually, whereas in the Sundback machine the units are all, after being cut out and formed, replaced in the blank and carried forward collectively to the tape.

The method employed by Prentice in bringing the unit to the tape is not the mechanical equivalent of the method employed by Sundback, but is in fact substantially different. It is submitted that the methods employed by Prentice and Sundback respectively are not interchangeable, and that an examination of one machine would not suggest the method of the other machine.

It is therefore submitted that the appeal from the judgment of The Exchequer Court should be allowed with costs.

D. L. McCARTHY,
SALTER A. HAYDEN,
of Counsel for the Appellants.

No. 30.

Factum of Lightning Fastener Company, Limited.

1. This is an appeal from the judgment of the President of the Exchequer Court delivered on April 4th, 1932, following the trial at Ottawa on February 3rd to 5th, and holding the plaintiff's patent No. 210,202 to be valid and to have been infringed by the defendants.

2. The patent was applied for on October 21st, 1918, and was issued on April 5th, 1921. It relates, as stated in the specification, to " a machine and method of producing stringers for slide fasteners." A slide fastener is a device for closing openings in articles of clothing, bags, and a large variety of other articles, taking the place of buttons and button holes, hooks and eyes, straps, buckles, and the like. It consists of two rows of fastener elements attached to opposed strips of fabric tape, each of which is called a " stringer." The outside edges of the stringers are attached to the material of the article to which the fastener is to be applied, so that two rows of fastener elements face one another, each of the individual elements on each stringer being directly opposite an interval between two of the elements on the opposite stringer. A small slider is mounted on both rows of elements in such a way that it may be moved along them and cause the elements on each stringer to interlock with those on the other or to unlock and separate according to the direction in which it is moved.

3. The work which led to the invention of the machine in question was done between 1913 and 1916 by one Gideon Sundback, then an engineer in the employ of the Hookless Fastener Company of Meadville, Pa., of which Colonel Lewis Walker was the president. Sundback's principal duty was the design of slide fasteners adapted for wide use and of machines which would enable them to be manufactured sufficiently cheaply to permit them to compete with the long-standing alternative methods by which openings in articles were closed. The success of the company was

in a large measure founded upon the machine in question (Record p. 72, l. 13 to p. 73, l. 5).

4. Its background as developed in the evidence extends back to 1893, when one Judson was endeavouring to design machinery for making slide fasteners, and succeeded in interesting Colonel Walker, at that time a man of about thirty-eight years of age, in his efforts. The headquarters of Judson's company were at that time in Chicago (Record p. 69, l. 24), but were subsequently moved to Elyria, Ohio (Record p. 70, l. 1), and thence to Catasauqua (Record p. 70, l. 23). Judson's machines, however, never turned out a commercial product (Record p. 70, l. 12), and the work was transferred to Waterbury, Conn., where some $65,000 to $75,000 (Record p. 71, l. 2) was spent through two tool-making establishments (Record p. 70, l. 39) to develop a satisfactory machine, since it was recognized that the development of such a machine was a condition of commercial success (Record p. 71, l. 15). The Waterbury machine, however, failed to meet the condition (Record p. 71, l. 7).

5. A factory was then set up in Hoboken, N.J., under the name of the Automatic Hook & Eye Company (Record p. 73, l. 8), by which Judson continued to be employed (Record p. 71, l. 41). With him, or later, one Aronson and one Lepper were employed as engineers, and Sundback entered the Company's employ as a draughtsman in 1906 (Record p. 22, l. 40; p. 73, ll. 12–29). Fasteners called " Plako " and " C-curity " were manufactured, the latter on a machine developed by one Aronson and covered by United States and Canadian patents (Record p. 33, ll. 36–39). The fasteners were sold through several hundred sales agents or peddlers (Record p. 37, l. 32; p. 50, l. 33), but the Company had no commercial success (Record p. 25, l. 35; p. 36, l. 46), and by 1908 was practically ready for bankruptcy (Record p. 25, l. 26).

6. The staff left, but Sundback was able by undertaking other work to pay off the company's debts and keep it going (Record p. 26, ll. 1–19). Four years later he proposed that it should concentrate on this other work (Record p. 26, ll. 29–32), but Colonel Walker was attracted by a fastener of a new design which Sundback had worked out, and arranged instead to move its headquarters to Meadville (Record p. 26, ll. 35–44; p. 27, ll. 1–3). It was re-organized accordingly under the name of the Hookless Fastener Company, and moved in 1913, the intention being to develop Sundback's new type of fastener, which was called " Hookless No. 1 " (Record p. 26, l. 37; p. 27, l. 15).

7. This fastener was, however, found not to be good enough to be commercially successful, and as the move to Meadville had meant the abandonment of the company's other activities (Record p. 27, l. 23), Sundback was driven to apply himself again to the problem of a satisfactory fastener and a machine to make it. The result was the development of the machine in question. He began to work upon it late in 1913 or early in 1914, and got it into its final form early in 1916 (Record p. 30, ll. 28–39), a United States patent upon it being applied for on March 16th in that year (Record p. 31, l. 1, Ex. 9). He decided that to obtain a fastener with the necessary flexibility the fastening elements must be set very closely together and

must consequently be of very small size (Record p. 27, l. 25), too small to be handled by human fingers (Record p. 28, l. 46). It followed that a machine to make them must handle them automatically from the forming of them out of the raw material to their attachment to the finished stringer (Record p. 28, ll. 36–47 and p. 29, ll. 1–16), that it must work with a very high degree of accuracy (Record p. 29, ll. 31–47, p. 30, ll. 1–23), and also at a very high speed in order that the fasteners might be turned out cheaply enough to compete with buttons, hooks and eyes, lacings, etc. (Record p. 28, ll. 5–13). He experimented with a drop hammer, rolled wire and punches (Record p. 27, l. 35), and after considering and discarding the idea of two separate machines with a hopper between them to handle the elements (Record p. 28, l. 46—p. 29, l. 16), and making some ten to twelve different designs of an automatic machine (Record p. 44, l. 34), finally designed and built the machine in question (Record p. 29, l. 17).

8. This consists of a punch press into which a metal strip about three-eighths of an inch wide is fed forward step by step (Record p. 46, ll. 4–44 to p. 47, ll. 1–2). Out of this strip the tiny fastener element with forwardly projecting jaws is first punched and returned to its place in the metal strip. In this it is moved forward and a piece already cut at its forward end is pressed out from between its horizontally projecting jaws. Going forward again, the rear end is formed so as to have a projection downwards on one side and a corresponding indentation on the other, these being adapted to co-operate with the corresponding indentation and projection of opposing elements in a complete fastener. Moved forward again, it reaches and its jaws embrace the beaded edge of a fabric tape which is moved vertically by little jumps of about one-twenty-fifth of an inch. During the instant at which this is at rest two side tools press the jaws, pinching them and fixing the element in place on the tape.

The result is a continuous series of fastener elements, each about one-twenty-fifth of an inch thick, fixed to the edge of the fabric tape at about the same interval from one another. The exact interval depends upon the exact size of the fastener elements, of which two sizes are used. Of the smaller there are eleven to an inch of stringer, and of the larger ten (Record p. 31, l. 23) The spacing must be exactly accurate (Record p. 32, ll. 5–15), since even the slightest variation would produce a curve in a completed fastener and render it unmarketable (Record p. 32, l. 6). The completed stringer is described by one of the plaintiff's witness as being like " a gear member or rack member " made " out of little metallic teeth mounted on a fabric tape . . . so accurately that any portions . . . would co-operate or co-act with any other portions, so that they could be combined together " to make a fastener (Record p. 58, l. 18).

9. A complete fastener must at each end have a piece of the tape without elements on it to extend beyond the end of the opening in the article on which it is to be used. The machine is accordingly equipped with a special spacing device. It can be set to produce fasteners adapted for use with openings of any given length. If this is for example six inches, the machine is set so that for that distance the tape at each movement

jumps the appropriate tiny distance representing the spacing between the elements. When, however, elements have been set on it over the whole six inches, it is set to make a sudden considerable jump of several inches before the next element is presented, then again moving by tiny jumps while elements are attached for the next six inches (Record p. 63, ll. 9-22.) Completed fasteners are constituted by taking any two lengths of tape on which elements have been fixed, reversing one of these so that the projecting ends of the elements from each face one another, and mounting upon both a Y-shaped slider, the movement of which in the direction of the stem of the Y causes the opposed elements from each side to enter the spaces between two adjacent elements on the other and engage with them. By the movement of the slider in the opposite direction the elements are caused to disengage.

10. The machine operates at a rate of 175 revolutions per minute, one of each of the different operations occurring at each revolution, so that in the result three elements are attached to the tape in just over a second (Record p. 32, l. 3). About three hundred feet of stringer has been produced from one machine daily over a long period, after allowing for oiling, tool replacement, accidents and repairs (Record p. 31, l. 40). Two machines are looked after by a single operator, who thus produces about six hundred feet of stringer a day (Record p. 51, l. 11). To produce a less quantity by the preceding hand-fed Aronson machine required the services of at least seven people (Record p. 24, ll. 33, to p. 25, l. 16). In the year 1931 the number of completed fasteners turned out was more than forty million (Record p. 32, ll, 21–34).

11. The first named defendant, of which one G. E. Prentice is the president (Record p. 55, l. 6), has since 1912 been engaged in the manufacture of what is known as " personal hardware," that is, speaking generally, metal articles for use on clothing. In 1924, as its president, Prentice himself became interested in the manufacture of slide fasteners (Record p. 91, ll. 15–34). The type of fastener he made was one in which the elements consisted of a helical spring (Record p. 91, ll. 28–34) similar in type to those which Sundback had tried sixteen years before (Record p. 28, ll. 20–22). In 1925, however, Prentice obtained a patent upon a fastener element similar to that used by the plaintiff (Record p. 94, ll. 25–29). He then between November, 1925, and February, 1926, developed and put in operation a machine to make a stringer with this form of element, having, in the course of its development, seen the plaintiff's patent in question (Record p. 98, ll. 4–16). A few of these machines (Record p. 56, l. 8) were sent by the first named to the secondly named defendant, which was given an exclusive agency for the manufacture and sale of the fasteners in Canada (Record p. 55, l. 32) and operated the machines under a rental arrangement (Record p. 56, l. 4; p. 57, l. 11). These are the machines upon which the action is based.

12. The action is defended both on the ground that, having regard to the prior art, Sundback's patented machine did not involve invention, and also, perhaps more seriously, on the ground that if it did, Prentice's machine does not constitute an infringement by reason of certain differences

in its mechanism. The first defence is based in part upon the machine designed by Aronson while in the employ of the Automatic Hook & Eye Company, and in part upon automatic machines for various purposes disclosed in some 44 prior patents, the three chiefly relied upon by the defendants' expert witness (Record p. 133, ll. 25-35) being patents of 1881 for making metallic fencing, of 1884 for making barbed wire and of 1894 for making and carding hooks and eyes. The learned trial judge discards all these patents as being without importance and no further reference to them appears to be necessary.

13. On the question of infringement it is common ground that to both the machines in question there is fed a strip of metal, that in both tiny fastener elements of almost identical form are punched out of this strip, and that in both these elements are shaped and attached to a fabric tape so as to produce stringers almost indistinguishable from one another, not only with regard to the character and relative position of the elements, but also with respect to the alternation between lengths of tape having on them a series of closely spaced elements and lengths to which no elements are attached.

The differences between the Prentice machine and that described in the patent upon which the defendants rely are set out summarily at the end of the examination in chief of their expert witness (Record p. 127, l. 29 to p. 128, l. 45). The more important of these are (*a*) that the order of two of the steps differs in the two machines, the projection and indentation in the head of the element being, in the defendants' machine, made before instead of after the element is punched out of the metal strip; (*b*) that in the defendants' machine the element is cut out of the strip crosswise, instead of lengthwise as is suggested by the patent; (*c*) that after the element has been cut out, the defendants' machine does not return it to the hole in the strip from which it came, but provides other means for feeding it forward; and (*d*) that there are mechanical differences in the side tools by which the jaws of the elements are clamped to the head of the fabric tape. The defendants also base a distinction on the ground that in their machine the elements are not finally fixed in position on the tape, but only lightly attached to it, the accuracy of their spacing being secured by a subsequent operation (Record p. 101, l. 19 to p. 103, l. 8).

14. In his judgment the learned trial judge deals at length with the characteristics of the two machines and the differences between them. He remarks that the plaintiff's machine functions automatically and with great speed and accuracy, that its product has been widely used, and that its utility " is not susceptible of serious question " (Record p. 147, ll. 30–38). He then says that he finds " nothing in the prior art relied upon by the defendants that is at all relevant to the controversy here on the point of anticipation " (Record p. 147 l. 42), all the prior patents except Aronson's having been intended " to produce results totally unlike that intended be produced by Sundback " (Record p. 147 l. 45) and Aronson's not being in any sense " an anticipation or prior user " (Record p. 148, l. 25). He has

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" no difficulty whatever in reaching " the conclusion that there was invention in Sundback and that the patent should be upheld (Record p. 149, ll. 4–9), and holds that, since this covers " a new and useful machine producing automatically a finished stringer " and " nothing of the kind had been done before " (Record p. 149, l. 19), the invention lies " in the principle or method of construction and operation " or " in the broad idea of utilization and arrangement of means, substantially as described" (Record p. 149, l. 43).

He therefore concludes that " the doctrine of infringement by the substitution of equivalents " applies (Record p. 149, l. 21) and holds that Prentice's and Sundback's machines " in construction and operation . . . seem to be in principle substantially the same," that two of the particular differences emphasized by the defendants are mechanical equivalents of each other (Record p. 150, l. 36 to p. 151, l. 12), and that the other " points of distinction are not of substance and do not call for any discussion " (Record p. 150, l. 42). The judgment concludes as follows (Record p. 151, ll. 29–41):—

> " The emphasis laid upon the variations in Prentice really strengthens my conviction that they are the mechanical equivalents of Sundback. In substance the two machines are the same, every step in the operation of Prentice is substantially the same as in Sundback and is made for the same purpose. It seems to me that the whole principle, method and arrangement of Sundback is plainly evident in Prentice, and while the machines are not exactly alike, yet they are in substance alike; they are designed to produce the same result and substantially by the same means or method. Prentice, in my opinion, cannot be said to be a new combination. If I am correct in this, then it follows, and it is my opinion, that the means employed in the combination of Prentice are the mechanical equivalents of those used in the Sundback patent and there has been infringement."

PART II.

Points for Argument.

15. The question for consideration on the appeal is whether the judgment of the learned trial judge was right in holding the plaintiff's patent valid and infringed.

PART III.

Argument.

16. *The Patent Act* (Section 7) defines what may be patented as " an art, process, *machine*, manufacture or composition of matter." There are no new mechanical movements; any new machine must incorporate well known mechanisms. The question whether or not such a machine is an invention must therefore depend upon the result obtained by its operation, not upon its individual mechanical parts. The plaintiff does not claim novelty in the individual components of the machine in question, but in

their combination in a definite relationship to obtain a given result (Record p. 142, l. 41 to p. 143, l. 9).

The possible success of slide fasteners depended upon its being possible to design a machine which would make and affix to a stringer interlocking elements of extremely small dimensions, and would do this with so high a degree of accuracy that the teeth on one piece of stringer would co-operate with those on any other like tiny gear members.

Sundback's solution of the problem came at the end of twenty years of continuous effort by a succession of engineers who had devoted themselves to attempts to solve it but had been unsuccessful in meeting the conditions which a solution had to fulfil. Even after recognizing these conditions it took Sundback himself about a year to arrive at his solution, as a result of which the world had placed at its disposal for the first time a cheap and effective alternative to older ways of firmly closing openings. The plaintiff's witness Ray says that the problem was " one which I myself would have thought quite impossible of satisfactory solution " (Record p. 58, l. 40).

In the plaintiff's submission no machine could more obviously present the characteristics of an invention.

17. What Sundback had done was to show that stringers for an efficient slide fastener could be made economically by a machine consisting of a combination of punches, dies, side tools, pawls and ratchets, so arranged as to deal automatically with a strip of metal and a fabric tape, cutting out thousands of pieces of the former, moulding them and finally attaching them to the latter at a high rate of speed and with practically complete accuracy.

The plaintiff submits that if a patent and a machine of this kind, designed and constructed after many years of unsuccessful effort directed to the same goal, were to be held not to cover a similar machine by reason of slight mechanical differences, the apparent benefit conferred by the patent law upon pioneer designers of machines would become a mere illusion.

18. Prentice appears to have been misled into thinking that because he had, as he thought, devised an improved form of fastener element (Record, p. 94, ll. 18–29), he was at liberty to deprive Sundback's assignees of the benefit of the work Sundback had done. He accordingly set out to design a machine to make his elements and attach them to stringers, and during the course of his work he saw Sundback's patent.

He exhibits great confidence in his ability as a mechanic, saying that he has never yet seen anything so perfect that he could not improve it and that when he does he will think he is going backward (Record, p. 105, l. 38). His statement is that when he saw Sundback's patent, his own machine was " *practically* complete " (Record, p. 98, l. 16), but in the plaintiff's submission it is reasonable to assume that it was of assistance to him in working out the details upon which the successful operation of such a machine must

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depend. Between practically completed and fully completed is a very long step in a machine of this kind. The fact is that Prentice obtained a product substantially identical with Sundback's by means of a machine of substantially the same character operated in substantially the same way.

19. Both machines consist in a combination of feeding rolls for feeding of a strip of metal step by step, punches and forming tools adapted to operate on the strip successively to cut out and form tiny Y-shaped fastening elements, further feeding means to hold and move these elements so that their jaws come astride the bead of a tape, a double pawl arrangement for feeding the tape by short steps for the spacing of the elements from one another and by long steps to separate groups of elements, and movable side tools which pinch the jaws of the fastening elements and fix them onto the tape, these various parts being operated from the same source of power and in the appropriate sequence so that the result of their combined operation is to produce a completed stringer without manual intervention.

20. The differences in mechanical detail listed by the defendant's witness Grover as a defence on the issue of infringement are, in the plaintiff's submission, of almost ludicrously small importance and afford no real ground for the defendants' argument.

21. The plaintiff therefore submits that the judgment of the learned trial Judge should be affirmed and the appeal dismissed.

O. M. BIGGAR.

RUSSEL S. SMART.

HAROLD G. FOX.

Of Counsel for Respondent (Plaintiff).

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IN THE SUPREME COURT OF CANADA.

ON APPEAL FROM THE EXCHEQUER COURT OF CANADA.

Tuesday, the 25th day of April, A.D. 1933.

Present :

The Honourable Mr. Justice RINFRET,
The Honourable Mr. Justice LAMONT
The Honourable Mr. Justice SMITH,
The Honourable Mr. Justice CROCKET,
The Honourable Chief Justice LATCHFORD of the Supreme Court of Ontario (*ad hoc*).

Between

COLONIAL FASTENER COMPANY LIMITED and G. E. PRENTICE MANUFACTURING COMPANY (*Defendants*) *Appellants*

and

LIGHTNING FASTENER COMPANY LIMITED (*Plaintiff*) *Respondent.*

(Suit No. 13145)

(Exchequer Court)

The appeal of the above-named Appellants from the judgment of the Honourable the President of the Exchequer Court of Canada rendered in the above cause on the 4th day of April in the year of our Lord One thousand nine hundred and thirty-two, having come on to be heard before this Court on the twelfth, thirteenth and fourteenth days of December in the year of Our Lord One thousand nine hundred and thirty-two in the presence of counsel as well as for the Appellants as the Respondent, whereupon and upon hearing what was alleged by counsel aforesaid, this Court was pleased to direct that the said appeal should stand over for judgment, and the same coming on this day for judgment.

(1) THIS COURT DID ORDER AND ADJUDGE that the said appeal should be and the same was allowed and that the said judgment of The Honourable the President of the Exchequer Court of Canada should be and the same was reversed and set aside, and that the action should be and the same was dismissed.

(2) AND THIS COURT DID FURTHER ORDER AND ADJUDGE that the said respondent should and do pay to the said appellants the costs incurred by the said appellants as well in the Exchequer Court of Canada as in this Court.

(Signed) J. F. SMELLIE,
Registrar.

In the Supreme Court of Canada.

No. 32. Reasons for Judgment, 25th April 1933. Smith, J. (concurred in by Rinfret, Lamont and Crockett, JJ., and Latchford CJ., *ad hoc*).

No. 32.

Reasons for Judgment.

SMITH, J. (Concurred in by RINFRET, LAMONT and CROCKETT, JJ., and LATCHFORD, CJ., *ad hoc*).

The respondent brought this action in the Exchequer Court for infringement by appellants of Letters Patent of Canada No. 210,202, dated 5th April, 1921, and obtained judgment for an injunction with a reference as to damages.

From this judgment the appeal is taken.

The invention covered by respondent's patent relates to a machine and method for producing straight and curved fastener stringers such as shown in Letters Patent of the United States No. 1,219,881, and also the curved stringers shown in application for Letters Patent of Canada, No. 219,986. These fasteners are commonly known as " Zipper " fasteners, and physical exhibits " E " and " F " are specimens of the respondent's fasteners and exhibits 21 and 22 are specimens of appellant's fasteners.

The fastener consists of two lengths of cloth tape disposed on opposite edges of the opening to be fastened, each tape edge next the opening bearing a series of spaced metal units, the units on one tape being staggered in position with respect to the units on the other tape, all the units being so shaped as to interlock the series on one length with the series on the opposed length of tape, when brought together with a slider which envelopes the two interlocking edges, and is manually movable thereon. Each unit has jaws at one end to straddle and be compressed on the corded edge of the tape. The projecting interlocking end of each unit is formed with a projection on one side and socket on the other, so that the opposing series of units are interlocked through the action of the slider by meshing the projection of each unit of one series in the socket of the adjacent unit of the other series.

The completed fastener of both appellants and respondent is the subject matter of a British Patent No. 14,358 of 1912, Exhibit " U " (Book of Patents, p. 69, physical exhibits " M " and " N "), issued to Katharina Kuhn-Moos. The latter did not patent her invention in Canada or in the United States, but the Sundback United States Patent, No. 1,219,881, seems to cover the same subject matter.

We are not, however, here concerned with the fasteners themselves, but with the machine for making them. In this machine we have a punch press for cutting out and forming the units from a flat strip of metal, which was the ordinary method of making the units long before the date of the respondent's patent.

The problem that remained, after these small units had been made by a punch press, was that of getting the jaws astride the corded edge of the tape and compressing them there in succession with the correct space between each unit. A means of placing fastener units on the corded edge

of a tape in succession with equal spaces between units is disclosed in the Aronson Canadian Patent No. 107,456, dated September 17th, 1907 (Ex. B. Record, p. 200). There the units, after being made, are placed by hand in what is called a magazine, which is combined with a machine in such a manner that the jaws of the units are successively placed astride the corded edge of the tape held taut in the machine and moved along, step by step, each unit, as placed astride the edge of the tape, being compressed there by two reciprocating plungers. A method of clamping the units to the tape in succession in regulated spaces after getting the jaws of the units astride the edge of the tape, was therefore not the problem that required to be solved by Sundback. The problem was a means of carrying the units, when formed, automatically to a position where the jaws of each unit would be placed successively astride the corded edge of the tape, to be there automatically compressed, the space between units being regulated by feeding the tape along step by step, as shown in the Aronson Patent.

Methods of cutting units with jaws from flat metal-strips and automatically carrying such units on, so as to place these jaws astride a wire and compress them there with regulated spacing, were disclosed long before the date of respondent's patent, chiefly in connection with the manufacture of barbed wire.

It is at once argued that there is no similarity between the making of barbed wire and the making of these zipper stringers. It is, of course, plain enough that these stringers could not be made on a barbed wire machine without much change or modification of the machine. An examination, however, discloses that the principles involved in the working of the two machines have much in common. This was not overlooked by the inventor of respondent's machine, Sundback. His United States Patent No. 1,331,884, dated February 24th, 1920 (Book of Patents, p. 84), is, as the evidence discloses, for the same invention as the Canadian Patent of respondent in question. In the specification to the United States Patent, he says :

> " The present invention is not limited in its broad aspects to the production of the particular fastener members referred to, nor to the setting of such members on tapes, but is of general application, wherever it is desired to automatically and cheaply form large numbers of like parts and to set them on a suitable carrier element."

The product of the machine, therefore, need not be fasteners at all, the units need not be fastener units, and the carrier need not be a tape, but may be any suitable carrier element.

Looking, then, at Brainard's wire-barbing machine, Patent No. 292,467, dated January 24th, 1884 (Book of Patents, p. 44) we have a suitable strip automatically fed into a punch press, from which the barbs, each with two jaws, are formed and cut out successively. The carrier element, a strand of wire, is automatically fed into the machine from a spool, and passes under the barbs between the jaws, and a punch presses the barb down on

In the Supreme Court of Canada.

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the strand and into the concave sides of a channel, so that the jaws are made to clasp the strand tightly. The strand is automatically fed along step by step, so that a barb is fastened at each step with regulated spacing.

The Stover United States Patent No. 240,477, dated April 19th, 1881 (Book of Patents, p. 28), is practically the same as the Brainard patent, except that the carrier element is a flat metal tape, instead of a round wire. There is also a necessary variation of the mechanism for compressing the jaws on the metal tape.

Speaking generally, therefore, there was nothing new in devising a machine to form automatically and cheaply large numbers of like metal units and to set them on a suitable carrier element with regulated spacing.

The problem remaining to be solved was the devising of a means by which, when the particular fastener units here in question were successively cut and formed from the metal strip, they would be automatically carried on and placed with the jaws astride the corded edge of the tape, to be there compressed on the tape, as disclosed in the Aronson patent, thus avoiding the tedious and expensive manual operation necessary in the Aronson process for placing the jaws of the units astride the edge of the tape.

Sundback solved this problem as shown in respondent's patent by constituting the metal strip the means for carrying the units to the desired position. This object is attained by first punching out in the punch press from the metal strip automatically fed into the machine the piece of metal from which the unit is to be formed, and replacing the piece so cut out automatically back into the space from which it was cut out, and carrying it on, as the metal strip is fed along, for the next operation, where it is firmly held in position by compressing the edges of the metal strip while a punch and die form the unit. Then this unit, still held in position in the metal strip, is carried by that strip, as it is stepped on, to a position where the jaws of the unit are placed astride of the corded edge of the tape, and is there compressed on the tape by plungers, which compress the edges of the metal strip, and thus compress the jaws of the unit on the tape, as shown in the Aronson patent.

The specification of respondent's patent dwells on the novelty whereby the punching for the jaw member is completely severed from the blank metal strip and then immediately replaced therein, so that it can be further fed for the subsequent forming and cutting operations while at the same time being protected from tool marks. By this means it is claimed it is possible to apply pressure to the punching through the blank so as to hold the punching firmly during the shaping operation, and then by a further side punching operation through the blank, to compress the jaws firmly on the carrier element or tape without leaving any tool marks upon the jaw members themselves. This avoidance of tool marks is claimed to be a great advantage, since it cheapens subsequent finishing operation.

The appellants' method of forming and severing the completed units from the flat strip of metal and then carrying these completed units in succession to a position where the jaws are placed astride the corded edge

of the tape, is entirely different from the method employed as disclosed in respondent's patent just described. The appellants in their machine do not first punch from the metal strip a piece subsequently to be formed into a completed unit; but first, by punch and die, form the projection and socket of the unit in the metal strip, and then, by a subsequent punching operation, complete the making of the unit by cutting it out of, and thus severing it from, the metal strip. They do not constitute the metal strip a means of carrying the units successively to the position where the jaws are placed astride of the corded edge of the tape. They do not, by plunger, compress the edges of the metal strip and thus compress the jaws of the unit on the tape, and so prevent tool marks on the unit.

The method in the appellants' machine, in my view, is radically different. The unit is formed in the metal sheet and during the process of formation does not require to be held firmly by the pressure on the edges of the strip as specially provided for in respondent's patent. When completely formed by being cut from the metal strip by the second operation, the completed units are placed successively by the action of the cutting-out punch on a plane or table, where they are at once successively pushed by another operating part of the machine to a position where the jaws are placed astride of the corded edge of the tape. This method, and the form and operation of the machine by which the result is brought about, seem to me to be entirely different from the respondent's method, and from the form and operation of respondent's machine.

The method adopted in appellants' machine resembles less the methods adopted in respondent's machine than the methods disclosed in various other patents, such as the Brainard and Stover patents already referred to, and the Major United States Patent No. 525,914, dated September 11th, 1894. The latter patent has reference to a machine for automatically making hooks and eyes and attaching them in spaced relation in groups, with gaps between groups, to a cardboard strip or tape by U shaped staples. The staples are formed and cut from a wire fed into the machine step by step, and are automatically brought to the proper position in relation to the hook or eye for fastening the latter to the cardboard strip or tape. The hook and eye are also made on the machine, and automatically brought to the proper position on the cardboard strip or tape, to be fastened there by the staples. The staple and hook or eye having thus been brought to the proper position, the staple is pushed through the loops of the eyes and cardboard, and clinched by contact of the staple ends at the other side of the cardboard in the ordinary method of stapling, so well known as not to require description, the patent states. The cardboard strip is fed along step by step until the desired number of hooks and eyes are attached, with regular spacing, and then is fed by a long step, so as to commence a new group.

It will thus be seen that the practice of forming and cutting units from a metal wire or strip fed step by step into the machine, and in the same machine automatically carrying the units successively as formed to a position where they are successively clamped or clinched to a tape or other

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carrying element in spaced relation in groups of predetermined length, was not new at the date of the respondent's patent, and that the most that can be covered by respondent's patent is the particular method and the particular mechanism by which the result is achieved, and cannot cover all methods and all mechanisms by which that result is brought about. *Tweedale* v. *Ashworth*, 9 R.P.C. 126, at 128; *Miller* v. *Clyde Bridge Steel Co.*, 9 R.P.C., 478, at 479.

It is argued for respondent that there is some novelty in respondent's method of clamping the units to the tape by feeding the tape step by step to attach a desired number of units with equal spacing and then, by a long step, to divide the units into groups, with a blank space on the tape between groups. Aronson attained this precise result, not by means of the tape being advanced by the long step, but by leaving blanks in his magazine—that is, spaces without units.

The Shipley United States Patent, No. 85,249 dated December 22nd, 1868, relates to a feed-motion for machines for cutting the teeth of metal combs, and discloses a means of feeding a metal strip into a machine, step by step, so that the desired number of teeth are cut with equal spacing. Then the metal strip is advanced by a long step, so as to form groups of teeth of the desired number, with gaps between the groups. This is secured by means of the co-operation of two ratchet wheels and one pawl.

Major secured the same result by co-operation of a single ratchet wheel and two pawls. In respondent's machine the Major device is used, and in appellants' machine the Shipley device of two ratchets and one pawl is adhered to. (Evidence, pp. 122–123.) Both machines use the Shipley method of feeding the metal strip into the machine step by step, but in that part of the operation no long step is required.

Many years before respondent's patent, Prentice made and used extensively a machine for fastening on tape the "Securo" fastener, in regularly spaced groups with gaps between groups using a single ratchet wheel (Evidence, p. 94).

There seems, therefore, to be nothing new in respondent's ratchet feed of the tape step by step with long gaps at required intervals to form separated groups. Neither is there anything novel in obtaining tension on the tape by wrapping same on a knurled roller, as this was a well known method of obtaining a grip on fabric without pinching the fabric so tightly between rollers as to cause injury. The use of roughened rollers to get a better grip on the tape is disclosed in the Olm patent, No. 1,114,177 (Book of Patents at p. 59, line 87).

There is nothing new in respondent's use of plungers to compress the edges of the metal strip and, through them, the jaws. Aronson used plungers for this purpose, applied directly to the jaws. In any case, the appellants do not use plungers at all for this purpose, but adhere to a common practice disclosed in the patents already referred to, of pressing the jaws between or against inclined planes. These planes, in appellants' latest design, are pivoted at one end in such a way that when the unit is pressed between them, they swing on the pivots and close at the point of contact

with the unit, thus lessening friction. They constitute no infringement of respondent's plunger device, which in itself was not new.

Respondent, at the trial, relied on Claims 1, 2, 3, 7, 8, 10 and 19.

Claim 1 has reference to any machine for making fasteners, regardless of the method by which the machine produces them, which has means of feeding fastener members into position to be compressed on to the tape and means for compressing the fastener members thereon. This makes no claim to any particular mode of making the fasteners in the machine, but purports to cover any and all means in such a machine of feeding the tape step by step, feeding fastener members into position, and compressing these on the tape. Fastening Aronson's machine to any ordinary punch press arranged to form fastener units would infringe this claim. The claim, as already stated, is too wide, and must be limited to the particular means disclosed.

Claim 2 would cover all the machines previously used for making fasteners, unless it is confined to the particular means used for cutting out the material to be used for the unit and replacing it in the place from which it was cut, and then forming it into the unit. This means is not used by appellants, and is not infringed.

Claim 3 also must be confined to the particular means described, and is not infringed by appellants, who use an entirely different means.

Claims 7 and 8, as already stated, cover nothing that was new.

Claim 10 covers an ordinary old-time punch press operation, without novelty.

Claim 19 is exactly covered by the Aronson patent.

There is no new invention in respondent's machine, except the particular mode of carrying the units, after being formed, automatically to the position where the jaws are set astride the corded edge of the tape. Various mechanisms for doing this very thing with metal units are disclosed in the other patent of prior date referred to. The general idea of a machine for making and cutting metal units and automatically placing those in succession where they were attached to a suitable carrying member with regular spacing, in separated groups, was old at the date of the respondent's patent, and the only invention disclosed by respondent's patent is, as already stated, the particular method of carrying the units, after being formed, so as to place the jaws astride the tape; and this method, and the mechanism by which it is accomplished, are not infringed by appellants' machine.

The appeal should be allowed, with costs; and the action dismissed, with costs.

In the Privy Council.

No. 33. Order in Council granting special leave to appeal to His Majesty in Council, 24th July 1933.

No. 33.

Order in Council granting special leave to appeal to His Majesty in Council.

AT THE COURT AT BUCKINGHAM PALACE

The 24th day of July, 1933.

PRESENT,

THE KING'S MOST EXCELLENT MAJESTY

LORD PRESIDENT
Sir BOLTON EYRES-MONSELL
Mr. BENNETT
Mr. FORBES
Sir JOHANNES WESSELS
Sir ERIC DRUMMOND
Sir ERIC PHIPPS

WHEREAS there was this day read at the Board a Report from the Judicial Committee of the Privy Council dated the 10th day of July 1933 in the words following viz. :—

" WHEREAS by virtue of His late Majesty King Edward the Seventh's Order in Council of the 18th day of October 1909 there was referred unto this Committee a humble Petition of the Lightning Fastener Company Limited in the matter of an Appeal from the Supreme Court of Canada between the Petitioners Appellants and the Colonial Fastener Company Limited and the G. E. Prentice Manufacturing Company Respondents setting forth (amongst other matters) that the Petitioners instituted an Action in the Exchequer Court of Canada on the 17th April 1931 for an injunction and other relief in respect of the infringement by the Respondents of a patent of invention No. 210202 issued to one Gideon Sundback on the 5th April 1921 and by him assigned to the Petitioners : that the Respondents denied infringement and alleged that the patent was invalid : that the Exchequer Court on the 4th April 1932 gave judgment declaring that the patent was valid as between the parties and had been infringed by the Respondents a reference being directed to determine the damages the Petitioners had sustained : that the Respondents appealed to the Supreme Court which Court on the 25th April 1933 reversed the Judgment of the Exchequer Court and dismissed the Action on the grounds that the patent lacked subject matter and that the invention as defined in the claims had been anticipated : that the Petitioners contend that the Supreme Court erred in that it neglected to apply the principles of law laid down by both the House of Lords and the Privy Council as to the essential conditions which must be fulfilled by the specification of a prior patent in order to constitute an anticipation of the patent in suit and by the Privy Council as

No. 33. Order in Council granting special leave to appeal to His Majesty in Council, 24th July 1933—*continued.*

to the facts which are to be regarded as relevant in determining the question of subject matter: that the principal judgments of the House of Lords and of the Privy Council to which the Petitioners refer are those given in *British Thomson-Houston* v. *Metropolitan Vickers* (1925) 45 R.P.C. 1, and *Pope* v. *Spanish River Pulp and Paper Mills* (1929) 46 R.P.C. 23: that the patent relates to a machine for making complete "fastener stringers" (commonly known in the United Kingdom as Zipp fasteners) the kind of article so described being defined in the specification by reference to two patents previously granted to the patentee: And humbly praying Your Majesty in Council to order that the Petitioners shall have special leave to appeal from the Judgment of the Supreme Court of the 25th April 1933 or that Your Majesty may be pleased to make such further or other Order as to Your Majesty in Council may appear fit:

"THE LORDS OF THE COMMITTEE in obedience to His late Majesty's said Order in Council have taken the humble Petition into consideration and having heard Counsel in support thereof and in opposition thereto Their Lordships do this day agree humbly to report to Your Majesty as their opinion that leave ought to be granted to the Petitioners to enter and prosecute their Appeal against the Judgment of the Supreme Court of Canada dated the 25th day of April 1933 upon depositing in the Registry of the Privy Council the sum of £400 as security for costs."

"And Their Lordships do further report to Your Majesty that the authenticated copy under seal of the Record produced by the Petitioners upon the hearing of the Petition ought to be accepted (subject to any objection that may be taken thereto by the Respondents) as the Record proper to be laid before Your Majesty on the hearing of the Appeal."

HIS MAJESTY having taken the said Report into consideration was pleased by and with the advice of His Privy Council to approve thereof and to order as it is hereby ordered that the same be punctually observed obeyed and carried into execution.

Whereof the Governor-General or Officer administering the Government of the Dominion of Canada for the time being and all other persons whom it may concern are to take notice and govern themselves accordingly.

M. P. A. HANKEY.

Exhibits.

EXHIBITS.

B. Canadian Patent No. 107,456 —Aronson, 17th September, 1907.

B.—Canadian Patent No. 107,456—Aronson.

DOMINION OF CANADA
PATENT OFFICE

Certified that the annexed is a true copy of a Patent registered in the Patent Office under number (107,456) granted to Automatic Hook and Eye Company, Assignee of Peter A. Aronson,

and bearing date the 17th day of September, 1907, for "Machine for Setting Channels on Tape."

(Application for which was filed February 4, 1907,) with true copies of the specification and drawings remaining on record in this office, duplicate copies of which were attached to the Patent above mentioned

(SEAL) As Witness the seal of the Patent Office hereto affixed at the City of Ottawa in the Dominion of Canada this 31st day of July, in the year of our Lord one thousand nine hundred and thirty-one.

CHAS. C. RICHARD,
Commissioner of Patents.

DOMINION OF CANADA

107456.

To all to whom these presents shall come

Whereas Peter A. Aronson, of Hoboken, New Jersey, U.S.A., has petitioned the Commissioner of Patents, praying for the grant of a Patent for an alleged new and useful Improvement in Machines for Setting Channels on Tape and has assigned to the Automatic Hook and Eye Company, of Hoboken, aforesaid, all his right, title, and interest, in and to the said invention, a description of which invention is contained in the specification, of which a duplicate is hereunto attached, and made an essential part hereof, and has selected his domicile at Ottawa, Ontario, in Canada, and has also complied with the other requirements of The Patent Act, Chap. 69 Revised Statutes of Canada, 1906.

Now therefore the present Patent grants to the said Automatic Hook and Eye Company, its executors, administrators, legal representatives and assigns, for the period of Eighteen Years from the date of these presents, the exclusive right, privilege and liberty of making, constructing and using, and vending to others to be used, in the Dominion of Canada, the said invention, subject nevertheless to adjudication before any Court of competent jurisdiction.

Provided, that the grant hereby made is subject to the conditions contained in the Act aforesaid.

The partial fee required for the term of six years having been paid to the Commissioner of Patents, this Patent shall cease at the end of six years from date, unless before the expiration of the said term, the holder thereof pay the fee required for the further term or terms as provided by law.

In Testimony Whereof, I have hereunto set my hand, and caused the Seal of the Patent Office to be hereunto affixed, at the City of Ottawa, in the Dominion of Canada, this Seventeenth day of September in the year of Our Lord, one thousand, nine hundred and seven.

(L.S.)

(Sgd.) GEO. F. O'HALLORAN,
Deputy Commissioner of Patents.

Patent No. 107456
Dated Sept. 17, 1907
Filed Feb. 4, 1907
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29–7–31
R. E. W.

SPECIFICATION.

TO ALL WHOM IT MAY CONCERN:

Be it known that PETER A. ARONSON, of Hoboken, in the County of Hudson, and State of New Jersey, Mechanical Engineer, having invented certain new and useful improvements in a

"MACHINE FOR SETTING CHANNELS ON TAPE,"

does hereby declare that the following is a full, clear and exact description of the same.

This invention relates to a Machine for Setting Channels on Tape, and more particularly has reference to a machine for assembling the hooks and eyes forming part of the fastener described in an application filed concurrently herewith, and relating to separable fasteners.

This patent relates to a fastening device comprising two strips or chains carrying interlocking hooks and eyes, and the machine made the subject of this invention has particularly to do with the setting of the hooks and eyes on the tape by clamping channel shaped pieces made from sheet metal around the corded edge of the tape. The objects of the invention generally are to obviate the necessity of setting these channels by hand, and at the same time secure absolute uniformity in distance between the channels, to increase the output, and to reduce the cost of manufacture. In the practical manufacture of the fastener aforesaid, it has been found that, in order to secure the most satisfactory results, the

Exhibits.

B. Canadian Patent No. 107,456 —Aronson, 17th September 1907 —*continued.*

distance between the hooks and eyes must be absolutely uniform, and also that each hook or eye must be secured as firmly as possible to the tape to prevent slipping. It has also been found that the tape should be in a condition of tension when the hooks or eyes are applied, to prevent unequal stretching in use, and consequent throwing out of register of the hooks and eyes when brought together. By the use of the machine of this invention these difficulties have been overcome and a product secured of constant uniformity and reliability, wherein the channels are firmly and uniformly set without causing the tape to be cut or injured.

The invention with reference to a preferred form thereof, is shown in the accompanying drawings, wherein

Figure 1 is a transverse section;
Figure 2 is a top plan view;
Figure 3 is a longitudinal elevation;
Figure 4 is a detail view, on an enlarged scale of one of the punches;
Figures 5, 6, and 7, show in details, the tape positioning devices;
Figures 8, 9 and 10, show details of the tape feeding out mechanism;
Figures 11 and 12 show on an enlarged scale, a magazine or carrier for feeding eyes;
Figures 13 and 14 show similar views of a magazine or carrier for feeding hooks;
Figure 15 shows a section of the tape used;
Figure 16 shows a section of the tape with eyes applied thereto, and
Figure 17 shows a section of tape having hooks applied thereto.

The fastener described in the patent aforesaid specifically comprises two strips of corded tape, joined at one end, and carrying clamped thereon a series of interlocking hooks and eyes. These hooks and eyes are formed of sheet metal and are, when ready to be applied to the tape, substantially U-shaped in cross section, it only remaining to set these by closing the ends around the edge of the tape in such manner as to hold firmly without cutting. Inasmuch as these hooks and eyes, or " channels " as I shall hereafter generically call them, are quite small (less than $\frac{1}{4}$ of an inch long, and 3/16 inch wide), a special form of carrier, or " magazine " is provided for feeding them into the machine in such a position that they can be applied to the tape. In general arrangement, the machine comprises feeding device, feeding the channels intermittently in one direction, intermittent tape feeding mechanism running transversely thereto, and channel setting devices or punches, all so arranged and combined as to work automatically as long as tape and channels are supplied.

Referring to Figures 1, 2 and 3, 1 represents the base of the machine having the table 2 on which the operative parts of the machine are mounted. The table 2 has a transverse groove 3 through which the magazines 4 carrying the blank channels intermittently move from one side of the machine to the other. These magazines will be more fully described later on, but at this time it is only necessary to say that each pulls the next one into the machine, and comprises a bar having depressions in

which the channels are placed so as to lie side by side with the opening upward, see Figure 6. Thus the edges of the channels are parallel to the direction of the tape, and normally the tape passes just over the tops of the channels, as seen in Figure 7; Figures 5 and 6 showing the tape when pushed down in the channel preparatory to the actual setting by the punches.

10 is the main shaft, having hand wheel 11, driving pulley 12, and clutch 13 operated by a shaft 14, through connections from a foot lever 15, 16 being a latch to hold the foot lever down and the clutch in, when the machine is running, these parts being of any well known construction.

The setting mechanism comprises two punches 20, carried by inclined brackets 22 secured to the table. It will be seen that the punches incline downwards towards each other, which is to enable the channels to be bent around the corded edge of the tape without flattening, and a better grip on the tape thereby secured, the sides are reciprocated simultaneously towards and away from each other by bell cranks 23, which are operated by cams 24 on shaft 10, and the punches are adjustably mounted in the sides 21 so that they can be set to give the right pressure upon the channels. In this connection, it might be noted that the magazine itself acts as an anvil to receive a portion of the thrust of the punches, otherwise the channels would simply slide from between the punches when they come together.

The tape controlling mechanism will next be described, and lastly the magazine feeding mechanism and the particular construction of the magazines themselves, it being in the meantime understood that the tape and magazines are simultaneously and intermittently moved forward, while the punches are returning, and that during the punching or setting operation, the tape and magazines are positively held against movement. Figure 2 shows the course of the tape in the machine. The tape, entering, passes through an adjustable tension device 28, consisting of a fixed, and a movable spring pressed plate, with a groove to receive the corded edge of the tape, thence around a roll 29, between the punches and across the magazine, to feeding out rolls 30, 31, (see Figs. 8, 9, 10) grooved as at 32 to allow for the extra thickness due to the corded edge and the channels, when clamped on the tape. The rolls 30, 31, are mounted in a bracket, and the roll 31 is yieldingly mounted through an adjustable spring 33. 34 are gears connecting the two roll shafts, so that they will be positively driven from shaft 35, on which latter roll 30 is mounted. At the upper end of shaft 35 is a ratchet wheel 56, which is intermittently rotated by a pawl 37 pivotally mounted on an oscillatory carrier 38. 39 is a spring controlling the pawl, and holding it in engagement with the ratchet. The pawl carrier 38, is connected by a horizontal pitman 40 with an eccentric 41 carried by a short shaft 42 (see Figure 3) which latter is driven by bevel gears 44, 45, from shaft 10. As will be seen from Figure 8, the eccentric is adjustable to vary the tape feed to regulate the distance apart of the channels by moving pin 46 in or out. 48 is a brake shoe on the lower end of shaft 35, and having an arm 49 pivoted on the frame to prevent any

Exhibits.

B. Canadian Patent No. 107,456 —Aronson, 17th September 1907 —*continued.*

back feed by reason of momentum of the parts or drag of the pawl, or of the tape grippers.

As has been before stated, the lower edge of the tape normally passes just above the upper edges of the channels, and the mechanism for depressing the tape into the channel and holding it there under tension while the punches set the channel on the tape, will now be described. This mechanism comprises two pairs of grippers, to grasp the tape at either side of the magazine, (see Figures 6, 7) and push it downwardly while so held into the open channel, and hold it until the punches have closed the channel around the edge of the tape (Figure 7). Referring now to Figures 5, 6, 7, the grippers 52, 53, each comprise a pair of fingers pivoted on a shaft 54 and held normally closed by springs 55; 56 is a vertically moving crosshead, having a fork 57 at one end engaging opposite sides of shaft 10 between cams 24, and at the other sliding in guides in a bracket 58 carried by the machine frame. At the lower end, is a smaller fork 59 forming a guide for the shaft 54 on which the grippers are mounted, as above stated. 60 is a double headed pin carried by the crosshead 56, and acting to open the grippers simultaneously against the spring 55. The crosshead 56 is reciprocated by cam 61 on shaft 10, and bell crank lever 62 controlled by spring 63, engaging a pin 64. Inasmuch as the spring 55 is quite strong, the upper ends of the grippers are held tightly around pins 60 and the fingers move up and down with the crosshead 56 being held against lateral movement by the lower fork 59. In order to open the jaws to release the tape, a forked stop 66 is provided against the under side of which the ends of shaft 54 strike in the upward movement, thus stopping the upward movement of the jaws and compelling the pins 60 to spread the jaws against the tension of springs 55 in the further upward movement of crosshead 56. Coming down, the jaws first close as pins 60 move down and grip the tape, and after being closed move downwardly with the pins, thereby carrying the tape into the channel and holding it under tension as above described. 68 are springs from the ends of shaft 54 to the bracket 58 to cause at all times, an upward pull on the grippers.

The mechanism for feeding out the magazines comprises a pair of positively driven rolls 75, 76 mounted and intermittently driven by ratchet mechanism similarly to the tape feeding rolls before described. These rolls are driven by gears 77, 78 from bevel gears 80, 81 on shaft 82, which latter has a ratchet wheel 83 driven by a pawl 84, pitman 85 and eccentric 86 on shaft 10, thus feeding the magazine a predetermined distance at each revolution. In order to positively prevent any feed of the magazines while the punches are setting the channels, the magazines 4 have a series of holes 88, one for every position, and a reciprocatory slide 89, having a pin 90, is moved forward by lever 91 and cam 92 to engage pin 90 in the holes 88 successively, thereby at every step locking the magazine against any movement until the pin is withdrawn by the further rotation of cam 92.

The magazine for channel eyes, differs slightly from that for channel hooks. Figures 11 and 12 show the arrangement for eyes. 94 are a series

of notches in which the eyes are laid transversely with the sides parallel, and the channels uppermost, and spring plates 95 engage one end of each eye and hold it gently against displacement until pulled out when the tape rises after the punching. With hooks, the notches are shaped differently to receive the projecting hook end, and the spring plates are not ordinarily necessary, so that projecting hook end seems to prevent accidental displacement. The ends of the magazines are formed so as to dovetail or interlock with each other, so that each one pulls the succeeding one in, though it will be obvious that positive feeding devices could be provided if desired.

The mechanism as described with reference to the general features thereof is capable of changes and modifications without departing from the scope of the invention, and it is also to be understood that the machine and the various parts may be applied to other uses and relations than those herein described. It will also be understood that where the term "tape" is used herein, I intend to cover the forms of flexible chains or cords of any desired cross section, whether continuous as is the tape herein illustrated, or made of links or jointed sections capable of having the channels applied thereto.

What I do claim as my invention, and desire to secure by Letters Patent, is,—

1. The combination with means for feeding a continuous chain having an edge thickened, of means for clamping previously formed channels around said thickened edge, substantially as described.

2. The combination with means for intermittently feeding a continuous chain having one edge thickened, of channel feeding means, and means for setting channels on said chain by closing them around the thickened edge, substantially as described.

3. The combination with means for feeding a strip, of means for feeding blanks in a direction transverse to the strip into contact with the edge of said strip, and means for closing the blanks around the edge of said strip, substantially as described.

4. The combination with intermittent means for feeding a continuous strip, or means for feeding blanks into contact with the edge of said strip, and means for closing the blanks around the edge of said strip, substantially as described.

5. The combination with means for feeding a strip, of means for feeding partially formed blanks transversely thereof, and means for completely closing the blanks successively around one edge of the strip, substantially as described.

6. The combination with means for feeding a strip, of means for feeding blanks transversely thereof, means for clamping the blanks successively around the edge of the strip, and means whereby the distance between successive blanks may be varied by varying the feed of the strip and blanks relatively to each other, substantially as described.

Exhibits.

B. Canadian Patent No. 107,456 —Aronson, 17th September 1907 —*continued.*

7. The combination with means for feeding a strip, of means for feeding bent channels across one edge thereof, means for positioning one within the other and means for closing the channels around said edge, substantially as described.

8. The combination with means for feeding a strip, of means for feeding channels across one edge thereof, means for positioning one within the other, means for closing the channels around said edge, and means for varying the distance between the channels by varying the rate of strip feed, substantially as described.

9. The combination with means for feeding a continuous strip, of means for feeding bent channels across one edge thereof, means for causing a relative movement to place the strip within the channel, and means for then closing the channel around the edge of the strip, substantially as described.

10. The combination with means for positioning one edge of a continuous strip between the sides of successive bent blanks, of oppositely disposed means for simultaneously pressing the sides of a blank together around the edge of the strip, substantially as described.

11. The combination with means for positioning one edge of a strip between the sides of a bent channel, and a support for the channel, of oppositely disposed means inclined to each other, for simultaneously pressing the sides of said channel together around said edge of the strip while supported on said support, substantially as described.

12. The combination with means for positioning a cord between the sides of a channel, of supporting means for the channel, and oppositely disposed means acting at an angle greater than a right angle to the support for setting said channel on the cord, substantially as described.

13. The combination with means for feeding channels laid side by side, of means for feeding a strip parallel to the position of the channels, means for causing a relative movement to place the strip within the successive channels, and means moving in a direction transverse to that of the strip for closing the channels around one edge of the strip, substantially as described.

14. The combination with a channel carrier, of means for feeding a strip parallel to the channel, means for positioning the strip within successive channels, and oppositely disposed punches for setting the channels around one edge of the strip, substantially as described.

15. The combination with channel feeding and strip feeding devices, of channel setting devices, means for positioning the strip with the channel comprising grippers disposed at each side of said setting devices, and means for actuating the grippers to carry the strip into the channel, substantially as described.

16. The combination with bodily movable pivoted grippers, of a reciprocating crosshead controlling the movements of said grippers, and

means for limiting the movement of said grippers bodily to open them by pivotal movement, substantially as described.

17. The combination with chain feeding mechanism, of means for grasping said chain and moving it out of the normal line of feed, means for feeding channels into the path of movement of said chain, and means for setting the channels on said chain while so held, substantially as described.

18. The combination with chain feeding mechanism, of a carrier adapted to hold a series of channels, intermittent means for feeding said carrier and said chain, means for moving said chain out of the normal line of feed into a channel, and means for closing the channel around one edge of the chain, substantially as described.

19. The combination with chain feeding mechanism, of a carrier adapted to hold a series of channels, means for feeding said carrier and said chain step by step, means for moving said chain out of the normal line of feed into a channel, and means for setting the channel on the chain, and then restoring the chain to its normal line of feed to remove the set channel from the carrier, substantially as described.

20. The combination with channel feeding and setting mechanism, of chain feeding mechanism including a tension device at the entering side and step by step feeding out mechanism at the other end, substantially as described.

21. The combination with channel feeding and setting mechanism, of chain feeding mechanism, including a tension device at the entering side and step by step feeding out mechanism at the other end, and means preventing back feed, substantially as described.

22. The combination with channel feeding and setting mechanism of chain feeding mechanism, and means for moving the chain out of the normal line of feed into the channel, substantially as described.

23. The combination with an intermittently movable channel carrier, of means comprising a reciprocating slide for locking said carrier between each movement, substantially as described.

24. The combination with an intermittently movable channel carrier, of means for locking said carrier between each movement, and channel setting devices adapted to operate while said carrier is locked, substantially as described.

25. A feeding magazine for channels, comprising a bar having sockets in one face extending from side to side thereof adapted to receive the channels lengthwise, substantially as described.

26. A feeding magazine for channels, comprising a bar having sockets in one side thereof adapted to receive the channels, and spring pressed means for retaining the channels in said sockets, substantially as described.

Exhibits.

B. Canadian Patent No. 107,456 —Aronson, 17th September 1907 —*continued.*

27. A feeding magazine for channels, comprising a bar having sockets, and means for engaging successive magazines whereby one pulls the next into the machine, substantially as described.

28. A feeding magazine for channels, comprising a bar having sockets in one side thereof adapted to receive the channels, and having locking sockets in another side thereof, substantially as described.

(Sgd.) PETER A. ARONSON.

New York, N.Y., January 23, 1907.

Signed in the presence of
T. H. RUSSELL.
JULIAN S. WOORSTER.

EXHIBIT B - FIG 1

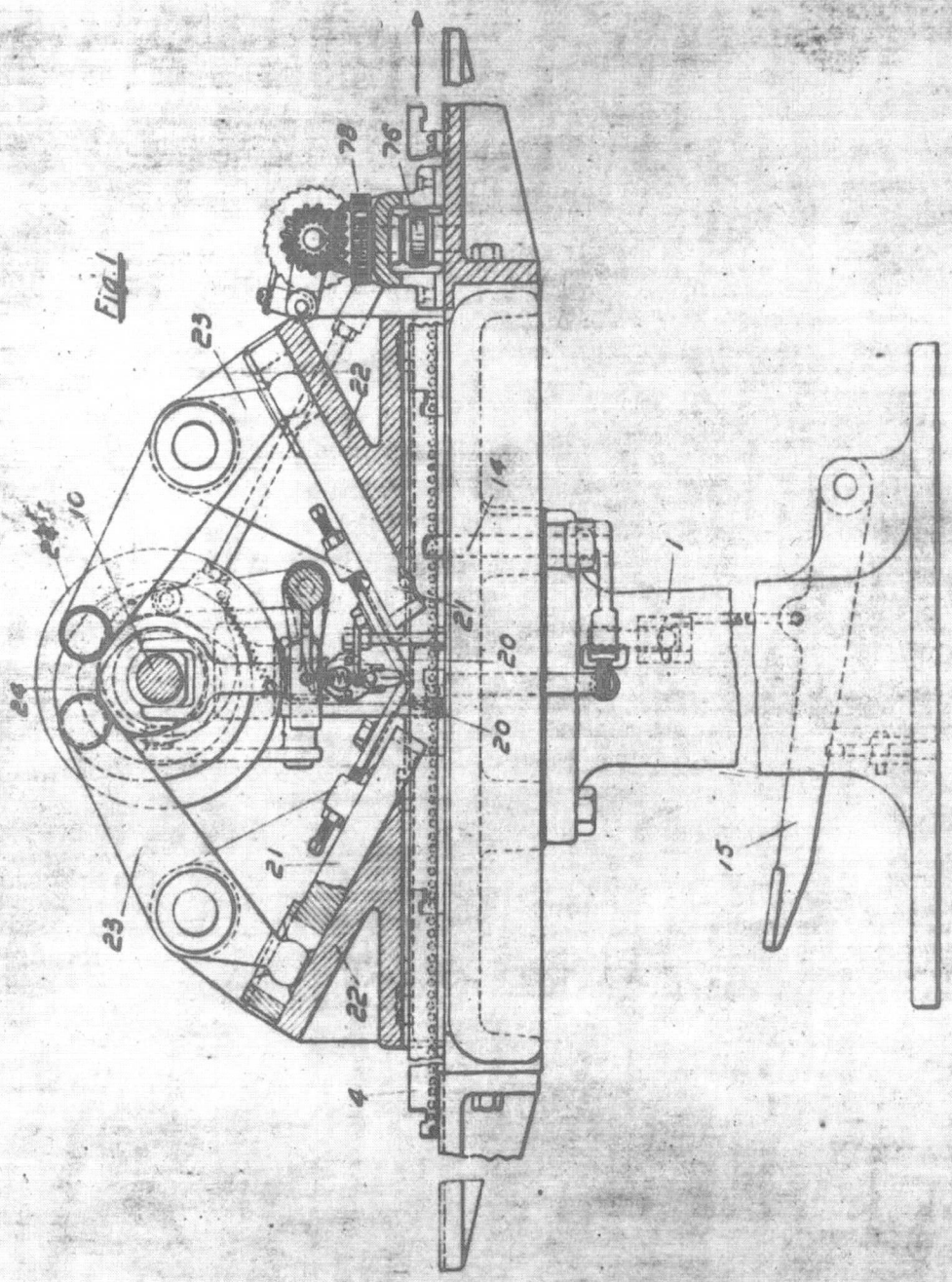
107456

6 1

Exhibits.

B.
Canadian
Patent
No. 107,456
—Aronson,
17th Sept-
ember 1907
—*continued.*

Machine for Setting Channels.



Witnesses:
Edmund Duboccq.
Isaac N. Kerr.

Certified to be the drawing referred to in the specification hereunto annexed.
New York, N.Y. Jan 23 1907

Peter A. Aronson,
by Edwards, Sager & Wooster.
Attorneys.

EXHIBIT B - FIG 2'

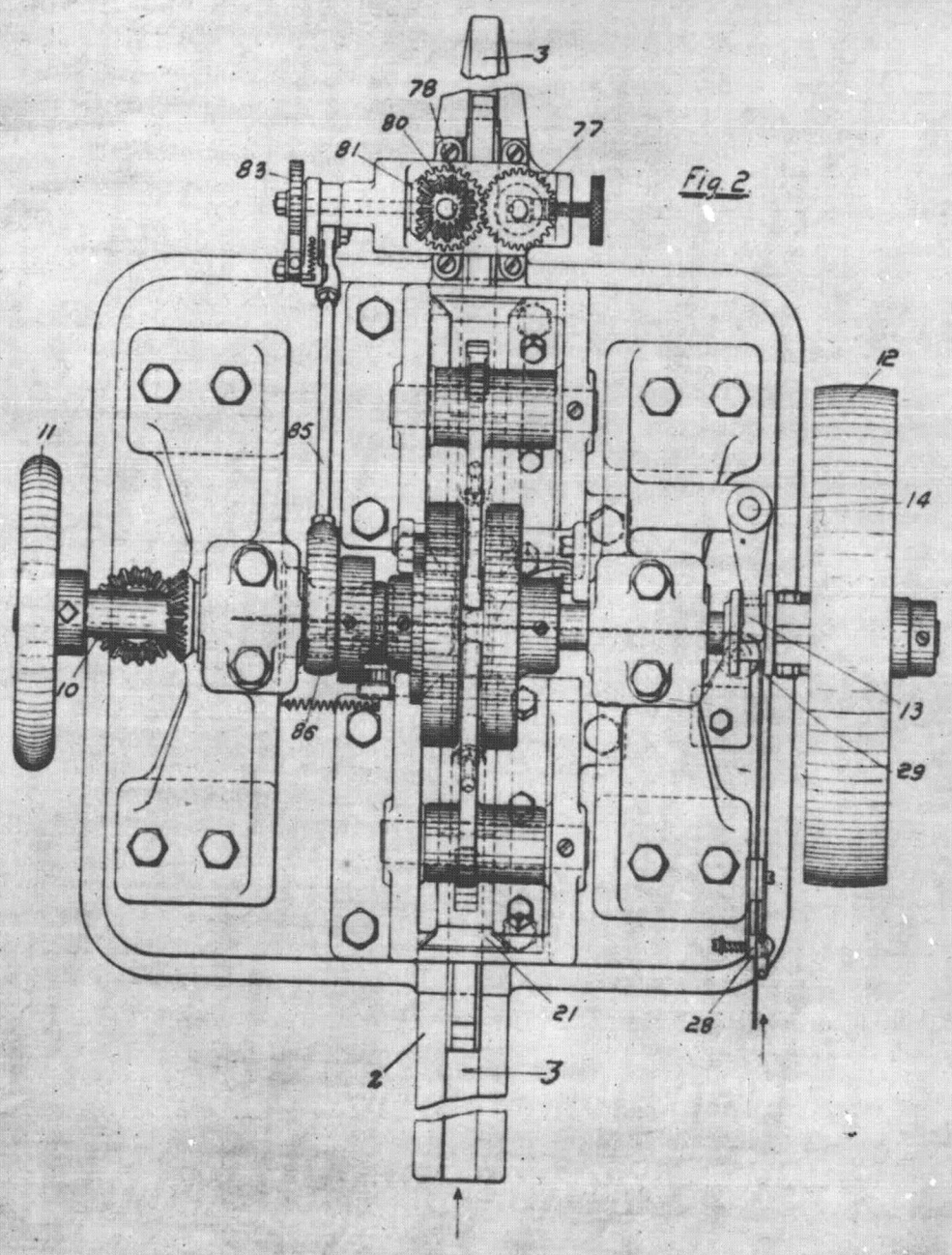
107456

Exhibits.

B.
Canadian
Patent
No. 107,456
—Aronson,
17th Sept-
ember 1907
—*continued.*

Machine for Setting Channels.

Fig 2.



Witnesses:
Edmund Dubocq
Geo. N. Kerr.

Certified to be the drawings referred to in the specification hereunto annexed.
New York, N. Y. Jan 23 1907

Peter A. Aronson
by Edwards, Sager & Wooster.
Attorneys.

EXHIBIT B - FIG. 3

107456

Exhibits.

B. Canadian Patent No. 107,456 —Aronson, 17th September 1907 —*continued.*

Machine for Setting Channels.

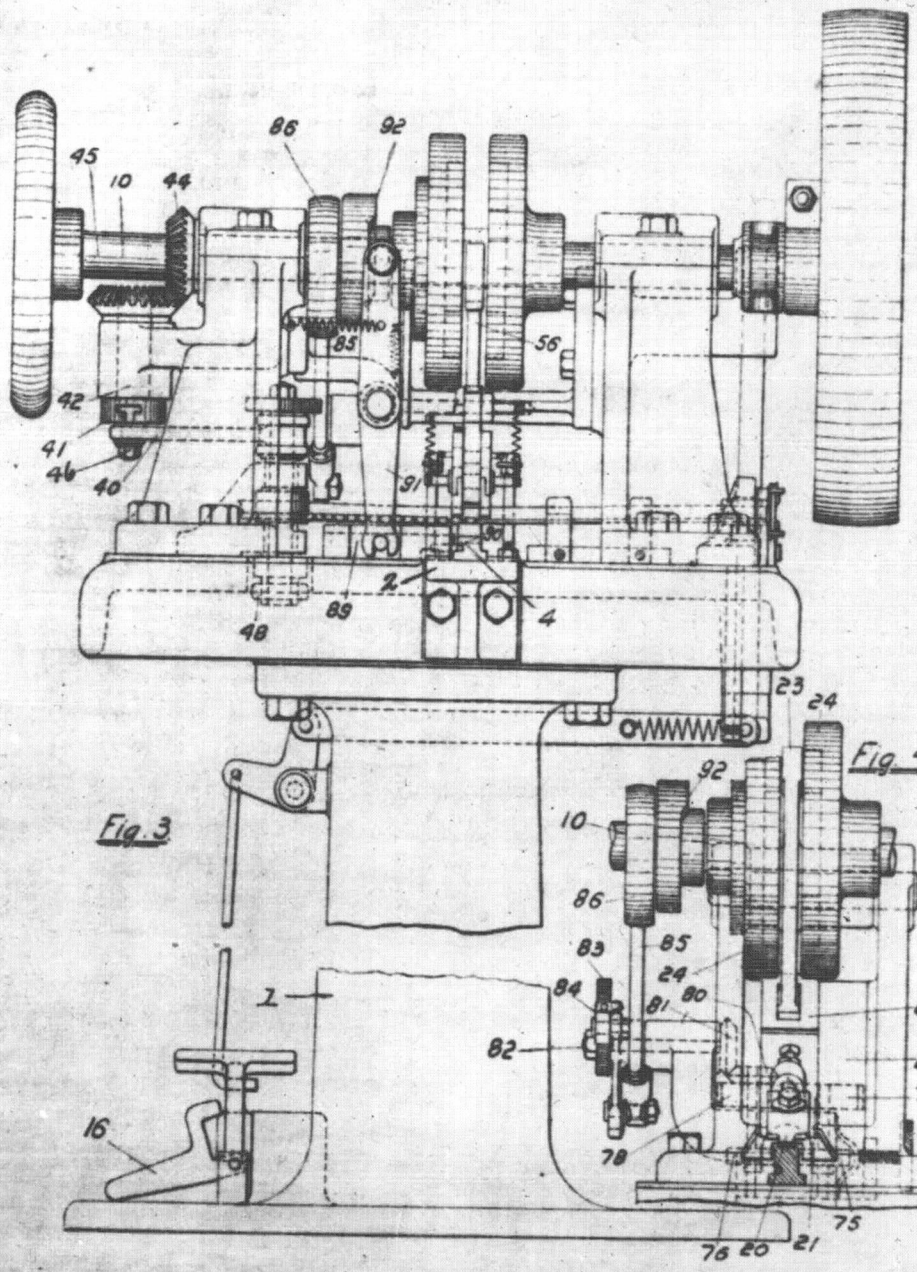


Fig. 3

Fig. 4

Witnesses:
Edmund Duborcq.
Geo. H. Kerr.

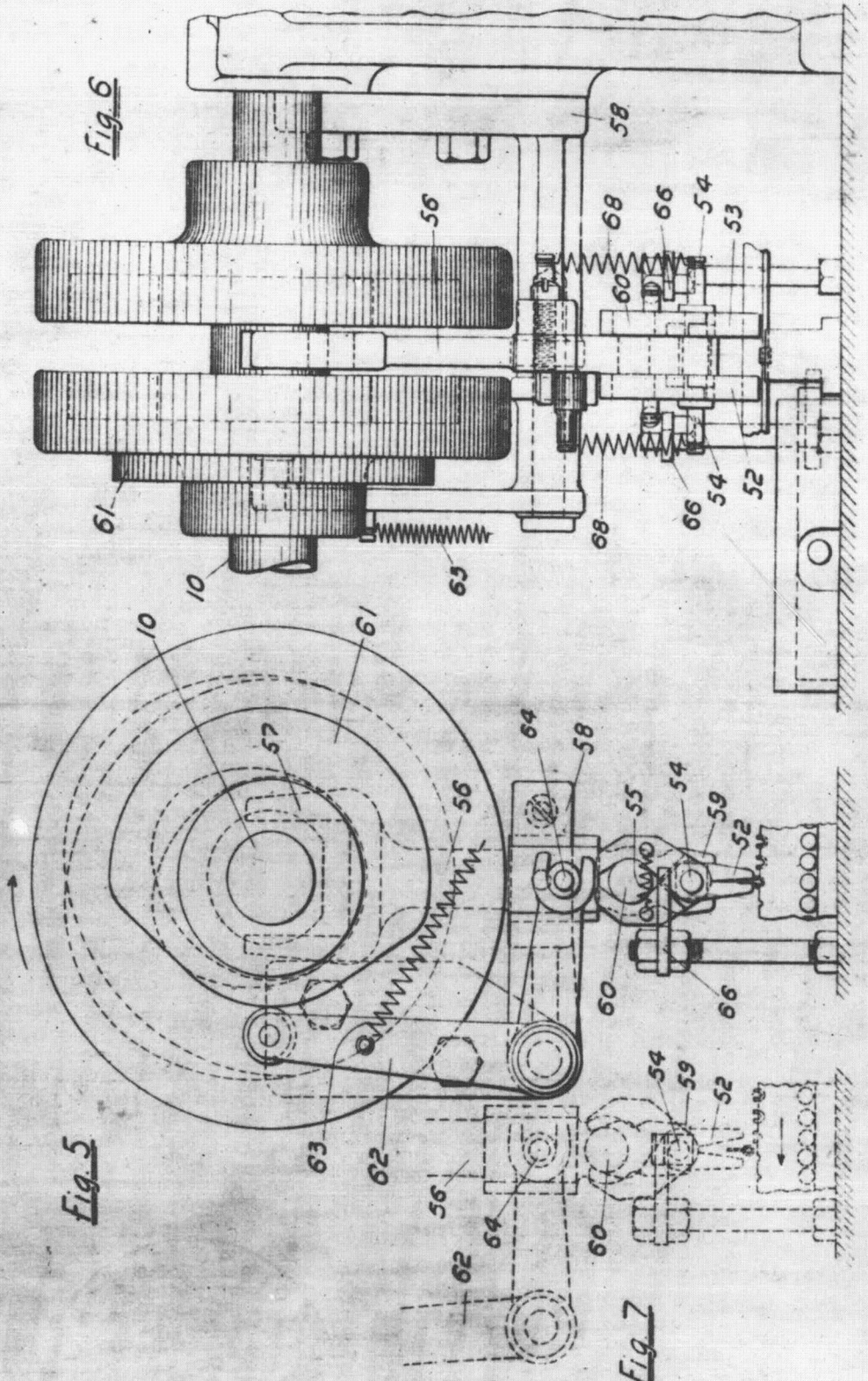
Certified to be the drawing & referred to in the specification hereunto annexed.
New York, N.Y. June 23 1907

Peter A. Aronson,
by Edwards, Sager & Hooster.
Attorneys.

EXHIBIT B - FIG. 4

107456

Machine for Setting Channels.



Witnesses:
Edmond Dubourg.
Geo. N. Kerr

Certified to be the drawings referred to in the specification hereunto annexed.
New York, N. Y. Jan 23 1907

Peter A. Aronson,
by Edwards, Sager & Wooster,
Attorneys.

Exhibits.

B. Canadian Patent No. 107,456 —Aronson, 17th September 1907 —*continued.*

EXHIBIT B - FIG. 5

10745-b

Machine for Setting Channels.

Fig 8

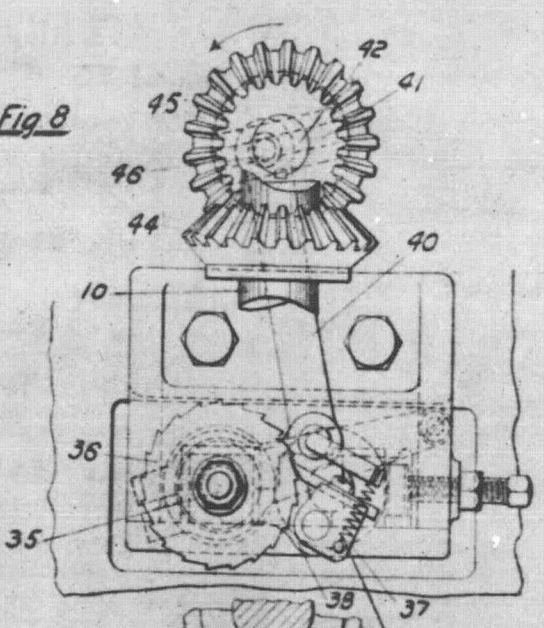


Fig 9

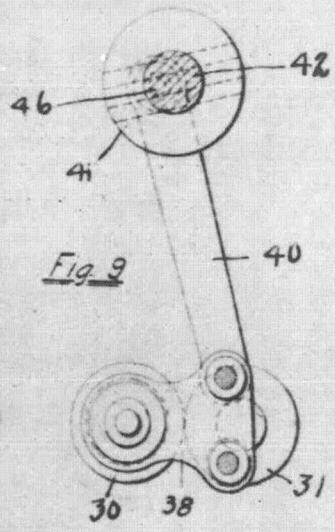


Fig 10

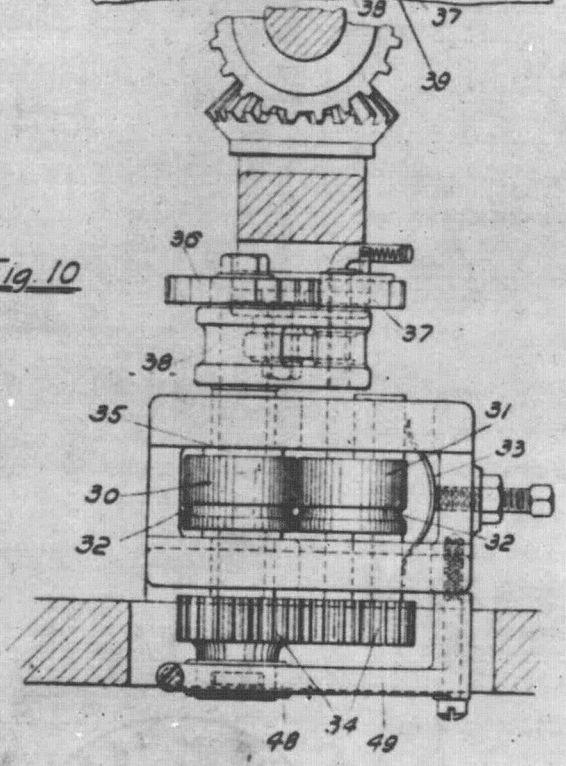


Fig 15

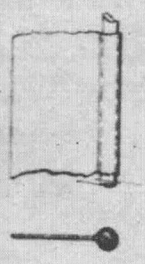


Fig 16

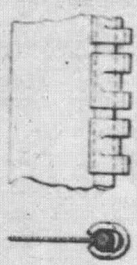
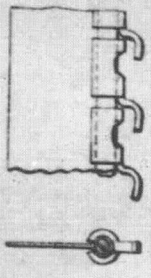


Fig 17



Witnesses:
Edmund Duborgo.
Geo. N. Kerr

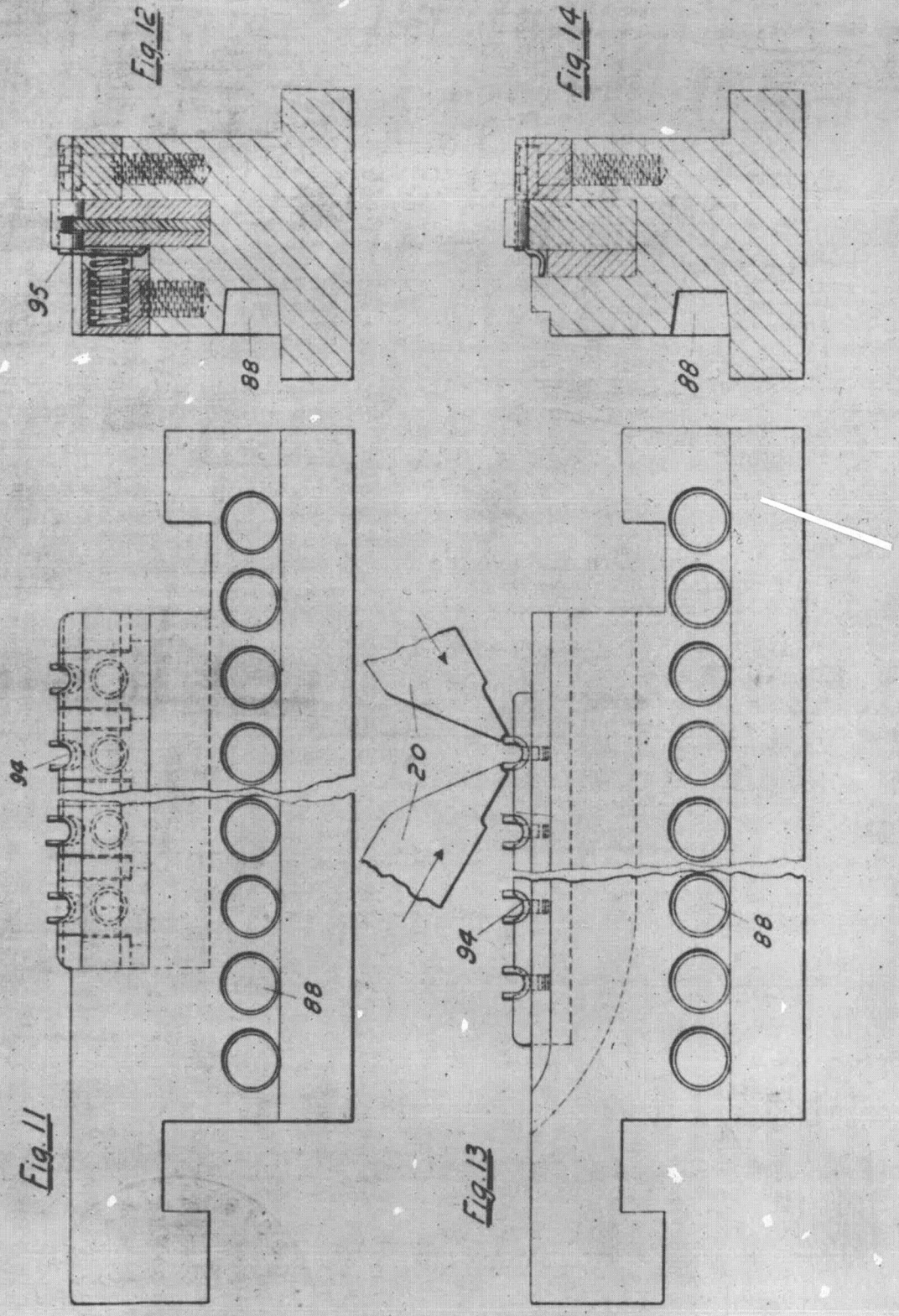
Certified to be the drawing referred to in the specification hereunto annexed.
New York, N.Y. June 23 1907

Peter A. Aronson,
by Edwards, Sager & Brooster.
Attorneys.

EXHIBIT B - FIG. 6

107456

Machine for Setting Channels.



Witnesses:
Edmund Duborg.
Geo. H. Kerr

Certified to be the drawing referred to in the specification hereunto annexed.
New York, N. Y. Jan 23 1907

Peter A. Aronson,
by Edwards, Sager & Wooster,
Attorneys.

1.—Canadian Patent No. 210,202—Gideon Sundback.

Exhibits.

1. Canadian Patent No. 210,202 —Gideon Sundback, 5th April 1921.

DOMINION OF CANADA.

PATENT OFFICE.

Certified that the annexed is a true copy of a Patent registered in the Patent Office under number (210,202) granted to Kynoch Limited, Assignee of Gideon Sundback, and bearing date the 5th day of April, 1921, for "Machines and Methods for Producing Straight and Curved Fastener Stringers."

(Application for which was filed October 21, 1918,) with true copies of the specification and drawings remaining on record in this office, duplicate copies of which were attached to the Patent above mentioned

As Witness the seal of the Patent Office hereto affixed at the City of Ottawa in the Dominion of Canada this 29th day of April, in the year of our Lord one thousand nine hundred and thirty-one.

(SEAL)

Thos. L. Richard
Commissioner of Patents.

DOMINION OF CANADA.

NUMBER 210202.

To all to whom these presents shall come

Whereas Gideon Sundback, of Meadville, Pennsylvania, U.S.A., has petitioned the Commissioner of Patents praying for the grant of a Patent for an alleged new and useful improvement in Machines and Methods for Producing Straight and Curved Fastener Stringers, and has assigned to Kynoch Limited, of Birmingham, England, all his right, title and interest, in and to the said invention,

a description of which invention is contained in the specification of which a duplicate is hereunto attached, and made an essential part hereof, and has elected his domicile at Ottawa, Ontario, in Canada, and has also complied with the other requirements of The Patent Act,

Now Therefore the present Patent grants to the said

Kynoch Limited,

its executors, administrators, legal representatives and assigns, for the period of Eighteen Years from the date of these presents, the exclusive right, privilege and liberty of making, constructing and using, and vending to others to be used, in the Dominion of Canada, the said invention, subject nevertheless to adjudication before any Court of competent jurisdiction.

Provided that the grant hereby made is subject to the conditions contained in the Act aforesaid.

Exhibits.

1. Canadian Patent No. 210,202 —Gideon Sundback, 5th April, 1921—*continued.*

The partial fee required for the term of six years having been paid to the Commissioner of Patents, this Patent shall cease at the end of six years from date, unless before the expiration of the said term, the holder thereof pay the fee required for the further term or terms as provided by law.

(L.S.) In Testimony Whereof I have hereunto set my hand, and caused the Seal of the Patent Office to be hereunto affixed, at the City of Ottawa, in the Dominion of Canada, this Fifth day of April in the year of Our Lord, one thousand nine hundred and twenty-one.

(Sgd.) Geo. F. O'Halloran.
Commissioner of Patents.

Patent No. 210202 having become void through non-payment of the final fee of $15.00 it is ordered under Section 47 of the Patent Act, that said Patent be and the same is hereby restored and revived, said fee having been paid thereon on the 30th day of May, 1927.

(Sgd.) THOS. L. RICHARD,
Acting Commissioner of Patents.

(C.G.B.) Ottawa, Sept. 7th, 1927.
Patent No. 210202
Dated Apr. 5, 1921
Filed Oct. 21, 1918
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4....., 13
28–4–31
I. G.

SPECIFICATION.

To All Whom It May Concern.

Be it known that I, GIDEON SUNDBACK, a resident of the City of Meadville, State of Pennsylvania, United States of America, having invented a certain new and useful improvement in

"MACHINE AND METHOD FOR PRODUCING STRAIGHT AND CURVED FASTENER STRINGERS"

do hereby declare that the following is a full clear and exact description of the same:

This invention relates to a machine and method for producing straight and curved fastener stringers, such as shown in Letters Patent of United States No. 1,219,881 and also the curved stringers shown in application for Letters Patent of Canada No. 219,986.

By the method herein disclosed, fastener stringers are made embodying a predetermined number of interlocking jaw members, either straight or curved, which simply have to be cut apart and assembled, one curved stringer with varying spacing of the interlocking members, combining with a succeeding one to form a complete curved fastener.

A special type of automatic machine forms and sets these fastener members on the tape in separated groups of a predetermined number each, either straight, or wholly or partly curved, so that the tape can be cut apart to provide stringers of desired length and design, according to the purpose for which intended.

The uses of this fastener are very diversified, straight fasteners as shown in said patent being used on corsets, money belts, footwear, clothing, stretchers, tents and other closures of various kinds, while curved fasteners as shown in said application are used for automobile curtains, hand hole closures, etc., where by reason of the curve, a wider or more convenient opening is obtained than with an equal length of straight fastener. In order to produce a curved fastener which will be easy to apply and properly function, the spacing of the members on the outer stringer should vary relatively to the spacing on the inner stringer, while on a straight fastener, the spacing is the same.

A further feature of novelty resides in the construction whereby a punching for the jaw member is completely separated from the blank and is then immediately replaced therein so that it can be further fed for the subsequent forming and setting operations, while at the same time being protected from tool marks. Owing to the necessity of making the fastener members as nearly alike as possible, in order that they will lock and unlock properly when set on the tapes, it is necessary to have the utmost accuracy in the shaping and setting operations subsequently to the punching out from the blank, and by causing the punching to be replaced in the blank and controlled thereby, it is possible to apply pressure to the punching through the blank so as to hold the punching firmly during the shaping operation, and then by a further side punching operation through the blank, the jaws are firmly set on the carrier element or tape without leaving any tool marks upon the jaw members themselves. The avoidance of tool marks on the jaw members is of advantage, since it cheapens the subsequent finishing operations in the assembled fastener or stringer.

In carrying out the invention, various novel combinations and sub-combinations in the controlling, feeding, punching, pressing and setting mechanisms have been secured, all of which will be more fully understood in connection with the description of the accompanying drawings, wherein—

Fig. 1 is a side elevation of a machine;

Fig. 2 is a front elevation;

Fig. 3 is a plan view showing the die and die block;

Fig. 4 is a vertical section on the line 4–4 of Fig. 3;

Figs. 5, 6, 7, 8 and 9 are details of the top or stripper plate, which holds the blank down on the dies;

Fig. 10 is a cross-section on the line 10–10 of Fig. 4 showing the passage-way for the blank;

Figs. 11 and 12 are side and front elevations, respectively, showing the movements by which the punching is pressed back into the blank as the punchers are withdrawn;

Exhibits.

1. Canadian Patent No. 210,202 —Gideon Sundback, 5th April 1921—*continued.*

Fig. 13 is a side view of the tape feeding mechanism;
Fig. 14 is a front view of the tape feeding mechanism;
Fig. 15 is a side elevation showing a further detail of the tape feed;
Fig. 16 is a further detail front view;
Fig. 17 is a plan view of the tape tension;
Fig. 18 is a front view of the variable tape feeding mechanism;
Fig. 19 is a top view;
Fig. 20 is an end view of a double pawl controlling mechanism in neutral position;
Fig. 21 is an end view in acting position;
Fig. 22 is an end view of the tripping mechanism;
Fig. 23 is a front view of Fig. 21;
Figs. 24 and 25 are top views of details;
Fig. 26 is a plan view on an enlarged scale showing the blank and jaw members at different stages;
Figs. 27, 28 and 29, show various forms of stringers produced by different settings of the machine.

1 represents a metal blank, which is preferably in the form of a flat strip, and is fed into the machine from the rear toward the front. The machine is applicable to separate blanks as well as to continuous strip, but in making very small fasteners such as herein shown, which may be as small as one-eighth inch long and one-sixteenth inch wide when fastened and applied to the tape, it is preferable to employ a strip. Referring to Figs. 1 and 4, the blank 1 enters guide 2 and passes through feed rolls 3, 3, then through guide 9 to the die unit 10, and between the side guide plates 11 (see Figs. 3 and 10). The guide plates 11 are controlled by wedges 12 (see Figs. 3 and 10). The wedges 12 are operated through a slide 13 (see Figs. 3 and 4), and cam plates 14 by the punch head 15, held in the slide 16 (see Figs. 11 and 12) and moved up and down through connecting rod 17 and crank 18 on the main shaft 8. The feed rolls 3, 3, are operated by ratchet 4, pawl 5 and connecting rod 6 from eccentric 7 mounted on the main shaft 8 (see Figs. 1 and 2).

22 is the blanking punch which punches out the entire member and the piece 34 into die 23 (see Figs. 3 and 4). As the punch 22 draws out of the die, the plunger 24 carried by plunger holder 25 and sleeve 25, is actuated by spring 27 to press the punchings back into original place in the metal blank 1. The piece 34 (Fig. 26) lies in the blank between the jaws 35 of the punching. This scrap piece 34 is pushed out of the blank 1 by punch 36 (see Fig. 4) into the hole 37 in die unit 10. The next step is to press or form the punching in its final form ready to be clamped on the tape, and this is effected by punch 38 and recess 39 in die unit 10 (Figs. 4 and 5).

On the down stroke of head 15, as the punches are nearing the blank, the cam plates 14 (see Fig. 3) draw the wedges 12 toward the back, pressing the guide plates 11 toward each other with the blank in between, thus holding the blank firmly in place until released by the forward movement of the wedges 12 on the up stroke of head 15. Figs. 3 and 4 show the

position at the moment the clamping movement of the guide plates 11 has been effected. To allow for wear and variation in the width of the blank 1, the space between the guide plates 11 is adjustable by blocks 19 and set screws 20 (see Figs. 3 and 10).

The function of the guide plates 11 is of vital importance. At the time of punching, the two plates hold the material firmly against spreading and distortion either of the punching or of the blank. This enables the subsequent operations on the punching to be controlled through the blank, and ensures such perfect shape of the finished punchings and correct positioning thereof in the dies, as to produce a highly uniform and symmetrical fastener member and product. When the guide plates 11 draw tight around the blank 1, they not only bring the blank into a central position over the dies, but force the punchings, if they should happen to get out of place, into correct position lengthwise of the blank. The guide plates spread apart during the feed and allow an easy and free movement of the blank. It also allows the interlocking or projecting end of the fastener punching to lift up out of the recess 39 (see Fig. 4) in die unit 10 after the impression of punch 38.

At this time the blank strip 1, after reaching die unit 10, is confined between die unit 10 on the bottom and stripper plate 21 on the top (see Fig. 10).

In order to avoid reliance solely upon spring 27 to press the punching back into its original place in the blank as punch 22 withdraws, a positive movement is provided. Rod 28 in addition to spring 27 exerts pressure on sleeve 26 thus forcing the punching into its place in the blank. Rod 28 is acted upon through screw 29 in lever 30 (see Figs. 11 and 12) and connecting links 31, 32 from eccentric 33 on main shaft 8. Upon the return of the punching to its proper place in the blank and with the co-operation of the side guides 11, top of die unit 10 and stripper plate 21, the punching can now be fed forward by the blank feed rolls 3, 3, without any danger of becoming displaced. A displacement at this time would cause much trouble because of the extreme accuracy required in finished fastener members of such small dimensions.

The blank after return of the punching is fed forward as above stated so that the scrap piece 34 can be pushed out of the blank 1 by punch 36, and then the punching is pressed into recess 39 in die unit 10 by punch 38 to form the interlocking recess and projection. At this time, it is necessary to hold the blank and punching down on to the face of the die unit 10 and also to hold it against lateral spreading by contraction of the side guides 11. The stripper plate 21 partly performs this function, but in addition there is provided a yielding presser or floater 40 (see Figs. 5, 6, 8) which is mounted in stripper plate 21 and bears down on the jaws 35 of the punching, and on the blank 1, by means of springs 41 (see Fig. 4) and plunger 42. This plunger 42 is timed and adjusted to commence pressure as soon as the forward movement of the blank stops, and can be adjusted to exert a positive pressure upon the blank and punching by contacting with a lug on punch block 15 when the punches are in their lowest position.

Exhibits.

1. Canadian Patent No. 210,202 —Gideon Sundback, 5th April 1921—*continued.*

Thus the blank and punching are firmly held in position while the transversely elongated recess and projection are formed by the punch 38 and die recess 39.

When the blank 1, still carrying the fastener member, which is now finished and ready to be pressed on the tape, is again fed forward, the floater or presser 40 yields upwardly so as to permit the projection of the fastener member to lift out of the die recess 39 so that it can be carried forward into recess 43 (Figs. 3 and 4) ready to be set. To prevent the fastener member punching from lifting out of the blank 1 altogether, the lift of the yielding presser 40 is limited as shown in Fig. 9. Figs. 6 and 7 show the presser 40 at its lowest position and Figs. 8 and 9 show it at its highest position.

The finished punching is now carried forward by the next motions of the feed rolls 3, 3, until it reaches the position where the jaws 35 straddle the corded edge of the tape 44 (see Fig. 26). The tape 44 is fed intermittently upwards and at right angles to the blank feed through the hole and slot 45 (see Figs. 3 and 4) in die unit 10. In this position, the jaws 35 are clamped around the corded edge of the tape by side tools 46 (see Figs. 3 and 26) which simultaneously press toward each other on the outside of the blank 1, while the formed jaw member is being held between the top of the die unit 10 and the resilient presser 40 (see Figs. 3 and 4). The side tools 46 which set the jaw members on the carrier element, tape or stringer, are held in the slides 47, which are connected at 48 to lever 49, rock shaft 50, arm 51, and link 52 to punch block 15 (see Fig. 2). When the clamping movement is completed, the tape feeds up and lifts the jaw member clamped to its corded edge, out of the residue of the blank 1, the tape and attached jaw member passing through slot 53 in floater 40 (see Fig. 5). There now remains of the blank 1 only the two edges which are fed through the tubes 54 (see Figs. 3 and 4) and cut into small pieces by knives 55 connected to the actuating heads 48 of the side tools, the pieces falling down through chute 56.

In order to prevent slipping of the feed, the blank 1 is maintained clean and dry while engaged by the feed rolls 3, 3, and the necessary lubrication of the blank is done after it has passed the feed. This is accomplished by an ordinary oil pump 57 (see Fig. 1) which drips the lubricant down in tube 58 mounted centrally over the blank 1. Soap and water is preferably used as a lubricant, because it does not leave a stain on a fabric tape.

The tape is wound on spool 59, and leads through guide 60, then up through floating tension 61, through hole 45 in die unit 10, then through hole 62 in the punch holder, then around feed roll 63 having a knurled surface for the tape and a groove 64 for the jaw members, then the tape leads to winding spool 65 driven by belt 66 from the main shaft. The groove 64 serves as a leader and prevents lateral displacement of the tape in passing around feed roll 63. The grip is also assisted by the roughened surface in conjunction with tension 61.

The tension 61, shown in Fig. 17, comprises two tension plates 67 having guiding grooves for the cord, and mounted loosely on the ends of levers 68 which are pivotally connected at 69 and normally pressed apart by spring 70 mounted between screw bushings 71, which can be turned so as to vary the spring pressure at plates 67. The pressure of the jaws is transmitted through screw 72 located at about the centre of plates 67, so that the plates can rock slightly on the ends of the screws and adjust themselves to irregularities in the tape without varying the friction. In order to prevent puckering the plates 67 at the entering side are tapered so as to smooth out the tape before it reaches the setting point of the jaw members. It will thus be seen that the tape is positively controlled by the feed roll 63, and the varying control of roll 63 for varying the spacing between jaw members on a single fastener stringer, and the blank spacing between successive stringers will now be described.

By this feeding mechanism, one adjustment causes it to continuously make straight fastener stringers spaced apart, with the jaw members grouped between blank spaces in predetermined number, both the length of tape carrying this number, and the number of members in a group being variable. Another adjustment causes the machine to automatically increase and then decrease the spacing in any desired portion of each group, so that the wider spaced members will go to form the outside of a curved stringer and the closer spaced members the inside of a curve. Also, the curve can be at the end or intermediate portion of the group with the remainder evenly spaced for a straight fastener, depending upon the timing adjustment of the spacing between groups.

Referring to Figures 18 to 25, this spacing control is obtained by variable movement of feed roll 63, through pawl and ratchet, tripping, and differential driving means. 75 is a shaft carrying a ratchet 76 and a splined sleeve 77. The sleeve 77 has a spiral cam clutch connection 78 with longitudinally fixed sleeve shaft 79 carrying feed roll 63. 80 is a friction brake. The sleeve 77 slides within a drum 81 threaded on the shaft bearing 82, so that the drum revolves and also moves longitudinally. For regular spacing, there is no relative axial movement between sliding sleeve 77 and sleeve shaft 79, while retardation and acceleration of the feed roll 63 is accomplished by sliding sleeve 77 in one or the other direction so as to lose or gain motion of feed roll 63 during a partial rotation. The drum 81 is revolved by double pawl 83 pivoted at 84 on lever 85, and the latter is connected to be reciprocated through pin 86 on the cross head 87 to the positions marked A and B in Figures 20 and 21. If the pawl 83 is in actuating position on one side, the feed roll 63 will be accelerated relatively to ratchet 76 through the spiral clutch 78, and if in the other actuating position the feed roll will be retarded, while if in neutral position there will be a direct drive for ordinary spacing.

The direction of movement of the drum 81 depends on the position of pawl 83 determined by spring plunger 88. In Figures 20 and 21, the plunger 88 back of pawl 83 is pointed to fit into three notches on the rear side of pawl 83, for positioning the latter in one of its three positions. The

Exhibits.

1. Canadian Patent No. 210,202 —Gideon Sundback, 5th April 1921—*continued.*

position of plunger 88 is controlled by screw 89 on plunger rod 90, and screw 91 on plunger rod 92, and also by pin 93 on ring 94, and pin 95 on ring 96, see Figs. 18, 19. The rings 94 and 96 are adjustably fastened to revolve with drum 81. The pins 93 and 95 are set so as to stop movement of drum 81 by pushing on one or the other branch of a double lever 97 which, through shaft 98 and latch spring 99, throws pawl 83 to neutral position, thus stopping the varied spacing. The adjustment of rings 94, 96, thus regulates the length of curve. Fig. 21 shows pin 95 about to actuate spring plunger 88 to throw pawl 83 to neutral position, which is accomplished as soon as the branch of lever 85 connected with pin 86 reaches position B Fig. 21. When the drum is revolved in the opposite direction by pawl 83, the pin 93 likewise throws the pawl to neutral position when lever 85 reaches position A.

To start the drum 81, the pawl 83 is thrown out of neutral position by one or the other of screws 89, 91, on plunger rods 90, 92. The latter slide in bearing 82, and are connected with lever 100 pivoted at 101 on bearing 82. When screw 91 is in neutral position at E, Fig. 23, the screw 89 is in neutral position H. Screw 89 has positions at F and G corresponding to positions C and D of screw 91. Only one of said screws can be in actuating position at once. To move pawl 83 out of neutral position, screw 91 is brought to position C directly above plunger 88, so that when lever 85 moves to position A, the spring plunger 88 is caused by screw 91 to throw the pawl 83 to actuating position, as shown in Fig. 21. To revolve drum 81 in the other direction, screw 89 is similarly brought to position G, Fig. 23, to move spring plunger 88 in the other direction as lever 85 moves toward position B.

The movement of plunger rods 90 and 92 carrying screws 89 and 91 is controlled by the axial movement of drum 81 through collar 103, rod 104, lever 105 and spring 102, Figs. 18, 19, on one hand, and catch 106, dog 107 and trip 108, on the other, Figs. 22, 23. Catch 106 fits slot 109 in plunger 90 and is connected with dog 107 through shaft 110. Catch 106 actuated by spring 111 snaps into slot 109 and holds screws 89, 91, in neutral positions at H and E. Collar 103 slides in slot 112 in drum 81 and moves rod 104 dovetailed thereto axially with drum 81. Rod 104 oscillates lever 105 pivoted at 113, and the other forked end is connected to slide 114 having prongs 115, 116, Figs. 19, 23, 24. The position of spring 102 within plunger rod 92 is controlled by slide 114. Upon axial movement of drum 81, the spring 102 exerts pressure on plunger rod 92 in one direction at point 117, and in the other direction at point 118, Fig. 25, through collar 103, rod 104, lever 105, and prongs 115 or 116. When the catch 106 is lifted out of slot 109 in plunger rod 90, both plunger rods 90 and 92 are free to be actuated by spring 102, placing either screw 89 or 91 into position to engage pawl 83 with the drum to revolve it in one or the other direction, the movement of pawl 83 being effected by plunger rod 88. The release of rod 90 by catch 106 is by trip 108 on dog 107. Trip 108 is slidably mounted on friction ratchet 119.

Ratchet 119 determines the length of a stringer by giving the tape an increased feed to space the groups of jaw members, at predetermined times.

The driving pawl 120 for ratchet 76 automatically feeds ratchet 76 the excess length of tape required for this purpose, through a second pawl 122 (see Figs. 15 and 16) pivoted on pin 123 and held against pin 124 by spring 125. Pawl 122 is mounted on the friction ratchet 119, between ratchet 121 and shield 127 with a bearing fit on shaft 75, (see Figs. 13 and 14) and extends over the teeth of ratchet 76. The friction ratchet 119 is held against accidental rotary movement by brake 128 (see Fig. 16). As the secondary pawl 122 is carried around on the friction ratchet 119, it reaches the position where pawl 120 at the rear end of its stroke rides over it. At the beginning of the forward movement pawl 120 then catches the secondary pawl 122. The spring 125 (see Fig. 15) yields to the pressure of pawl 120 allowing the secondary pawl 122 to swing until its forward edge engages the teeth of ratchet 76. The swinging movement being arrested, continued pressure of pawl 120 carries with it the secondary pawl 122, the two ratchets 119 and 76, the shaft 75 and the tape. The ratchet 119 is moved by ring 130 (see Fig. 15) through rolls 131 and spring 132. Arm 133 which operates ring 130 is operated by the spring 134 and the pin 135 in clamp 136 attached to the connecting rod 6, and operated by eccentric 7. The stroke of arm 133 is adjustable by the micrometer head 137 in bracket 138 (see Fig. 15) attached to the frame of the machine. The adjustment ranges from a maximum length equal to the throw of connecting rod 6 to a very small minimum. Thus the secondary pawl 122, carried around by the friction ratchet 119, is made to complete a single revolution during a predetermined number of operations of the machine according to the setting of micrometer 137. When the secondary pawl 122 is effective, it will be seen that a long throw will be given the tape feed, equal to the full stroke of pawl 120.

If not much variation in the lengths of fasteners is required, the friction ratchet with secondary pawl 122 can be dispensed with. In this case the ratchet 76 is provided with a high tooth 139 (see Fig. 13) which will project up above the surface of shield 127 so as to be caught by pawl 120 during each revolution of ratchet 121. By changing the throw of pawl 120 by adjusting clamp 138, the length of the metal part of the fastener can be varied to a limited extent without changing the over-all length including the tape ends. To materially change the length of the fastener the number of teeth in the ratchet 76 can be varied, and also the diameter of feed roll 63.

The trip 108 on ratchet 119 is adjustable to any position, so that the beginning of the retard or acceleration of feed roll 63 can be adjusted to occur at any point of the stringer. When through trip 108 the drum 81 has been set in motion, it continues to move in the same direction until double pawl 83 is thrown to neutral. In the meantime, screws 89, 91, have gradually moved to their neutral positions H and E. At these positions, trip 108 has passed dog 107, and catch 106 snaps into slot 109 and stops rods 90, 92. The drum 81 continues to revolve when once set in motion by trip 108 until stopped by pins 93 or 95 on rings 94 or 96 throwing pawl 83

Exhibits.

1. Canadian Patent No. 210,202 —Gideon Sundback, 5th April 1921—*continued.*

to neutral. While drum 81 is in motion, screws 89, 91, on rods 90, 92, move to their neutral positions H, E. The trip 108 has then passed dog 107 and catch 106 snaps into slot 109 and stops rods 90, 92. While the drum continues to turn, lever 105 continues to press on spring 102 through prong 115 or 116, so that when the drum stops, spring 102 exerts pressure at 117 or 118 on rod 92 in the direction of the last axial movement of drum 81, and is ready to snap rods 90, 92, into position to reverse drum 81 as soon as trip 108 has completed one revolution on friction ratchet 119, and again releases catch 106 from slot 109.

The speed of ratchet 119 determines the length of one stringer, as it makes one revolution for each stringer. The direction of movement of rods 90, 92, alternates so that drum 81 retards the feed to diminish the spacing between members on one stringer, and accelerates the spacing on the next, with the result shown in Figure 28. Two successive stringers 140, 141, therefore combine to make a curved fastener.

The radius of the curve is fixed either by the teeth on drum 81, or by the pitch of the threads on bearing 82 and drum 81, or by the pitch of the spiral cam clutch 78. The length of the curve varies with the travel of drum 81 as regulated by the distance between rings 94, 96. The drum should be stopped before trip 108 has made a complete revolution. The acceleration and retard can be timed to occur at any point of the stringer, thereby permitting S-shaped stringers such as shown in Fig. 29 to be made.

For making straight fasteners with uniform spacing, the trip 108 is removed from friction ratchet 119, so that the double pawl 83 remains in neutral position after having been once brought there by pins 93 or 95 on rings 94 or 96. The variable spacing mechanism is thus rendered entirely inoperative as long as desired.

The broad principles of the invention can be carried out otherwise than as herein specifically shown and the invention is not to be limited except as required by the scope of the appended claims.

What I claim is :—

1. A machine for making fasteners having means for feeding a tape step by step, means for feeding fastener members into position to be compressed on to said tape, and means for compressing the fastener members thereon.

2. In a machine as described in claim 1, means for feeding a blank strip, means for cutting the members therefrom, and means for forming said members preparatory to feeding them into setting position.

3. In a machine as described in claim 1, means for feeding a jaw member into position to be set on the edge of a tape, and side punches for compressing the jaws thereon.

4. In a machine as described in claim 2, means for feeding a blank strip, means for punching the members therefrom and then replacing them in the strip, means for forming the replaced punching in final form

while held in the strip, and means setting the members on the tape and separating the residue of the blank.

5. In a machine as described in claim 4, means for applying edgewise compression to the blank strip during the forming operation to prevent distortion of the punching and for relieving the compression to permit feeding of the blank to the punching means and of the punching to setting position.

6. In a machine as described in claim 3, means for interposing an element between the jaw members and the side punches to protect the jaw member from being marked by the side punches.

7. In a machine as described in claim 1, controlling means for a corded edge tape comprising frictional tension means engaging the tape at one side of the fastener setting devices, and a grooved, roughened, ratchet driven feed roll at the other side.

8. In a machine as described in claim 7, controlling means for feeding the tape step by step for a pre-determined number of operations and then feeding the tape an increased distance to complete one cycle.

9. In a machine as described in claim 8, means for varying the step by step feed of the tape during a cycle to vary the spacing between members of a group.

10. In a machine as described in claim 1 means for forming attaching jaws on one end of the fastener member and a socket and projection on the other end.

11. In a machine as described in claim 1, the arrangement for feeding attachable, jaw members with the jaws forward in combination with means for feeding a tape transversely of the plane of the jaws into position for the jaws to be compressed on the edge thereof and spaced according to the feed of the tape.

12. In a machine as described in claim 2, a die mechanism for forming a socket and projection on the member and having stripping means for lifting the projection out of the die when the forming pressure is relieved.

13. In a machine as described in claim 1, a tape tension, and a ratchet and double pawl mechanism for feeding the tape, one pawl controlling the step by step feed of the tape for spacing the members, and the other pawl controlling the tape feed for spacing groups of members.

14. In a machine as described in claim 1, a ratchet driven tape feed roll having a differential clutch connection with the ratchet to advance or retard the movement of the roll relatively to the movement of the ratchet.

15. In a machine as described in claim 1, a ratchet driven tape feed roll having a differential clutch connection with the ratchet to advance or retard the movement of the roll relatively to the movement of the ratchet, and a limiting mechanism for determining the number of operations during

Exhibits.

1. Canadian Patent No. 210,202 —Gideon Sundback, 5th April 1921—*continued.*

which the feed roll is advanced or retarded relatively to the movement of the ratchet.

16. In a machine as described in claim 1, a feed roll for feeding the tape step by step, and adjustable driving means for said roll for causing it after a pre-determined number of movements to feed an increased length of tape and for independently spacing between groups, causing said roll to be differentially driven to advance or retard the step by step feed for a predetermined less number of operations.

17. In a machine as described in claim 1, a feed roll for feeding the tape step by step, a driving ratchet, a spiral clutch between said ratchet and said feed roll for advancing or retarding the feed roll relatively to the ratchet, and means including a travelling drum and limiting means for adjustably controlling the advance or retard.

18. In a machine as described in claim 1, a feed roll for feeding the tape step by step, a driving ratchet, a device between the ratchet and the feed roll for retarding or advancing the roll relatively to the driving ratchet, and a second ratchet and a three position pawl for determining by its position either an advance or retard or equal movement of the feed roll relatively to the driving ratchet.

19. The method of making fasteners consisting in affixing jaw members in spaced groups on a continuous stringer in predetermined number and spacing, and cutting the stringer so that pairs of said groups cooperate in forming a fastener.

20. The method of making fasteners adapted to a curved closure consisting in affixing jaw members in spaced groups on a continuous stringer in predetermined number while increasing the spacing of the members of one group and decreasing the spacing of the members of a succeeding group, and cutting such continuous stringer so that said groups may respectively conform to the outer and inner sides of the closure and interlock with each other in a line following the mean curve of the closure.

(Sgd.) GIDEON SUNDBACK.

Place and date, October 2, 1918, at New York, N.Y.
Signed in the presence of :—

J. P. WOOSTER
RITA LYNCH

EXHIBIT I - FIG 1

210202
1 (13)

Machine and Method for Producing Straight and Curved Fastener Stringers.

Exhibits.

1.
Canadian Patent No. 210,202 —Gideon Sundback, 5th April 1921—*continued.*

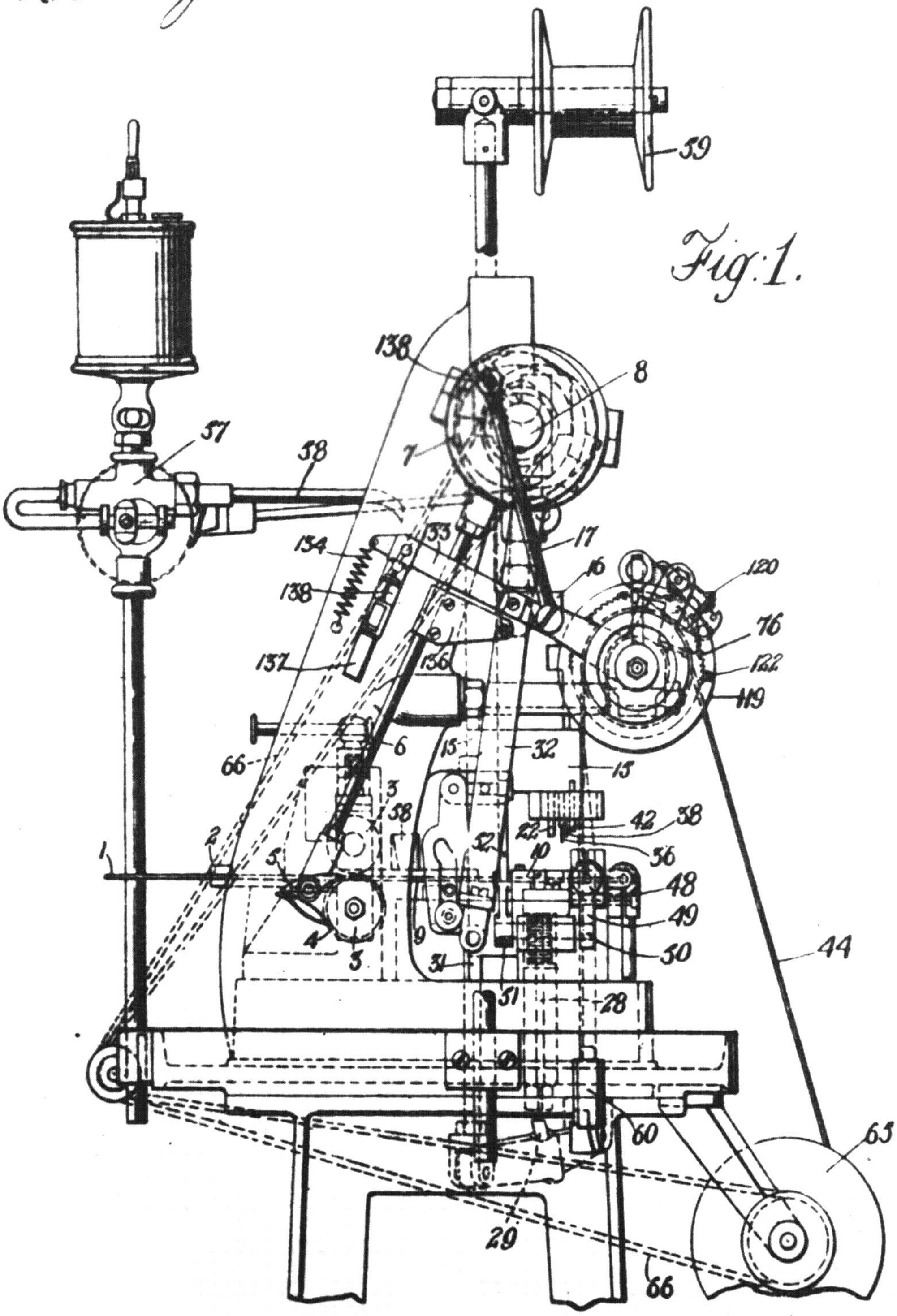

Fig:1.

WITNESSES

S. L. Whitman
Teresa Lynch

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New York October 17 191

INVENTOR

Gideon Sundback

ATTORNEY

EXHIBIT 1 - FIG. 2

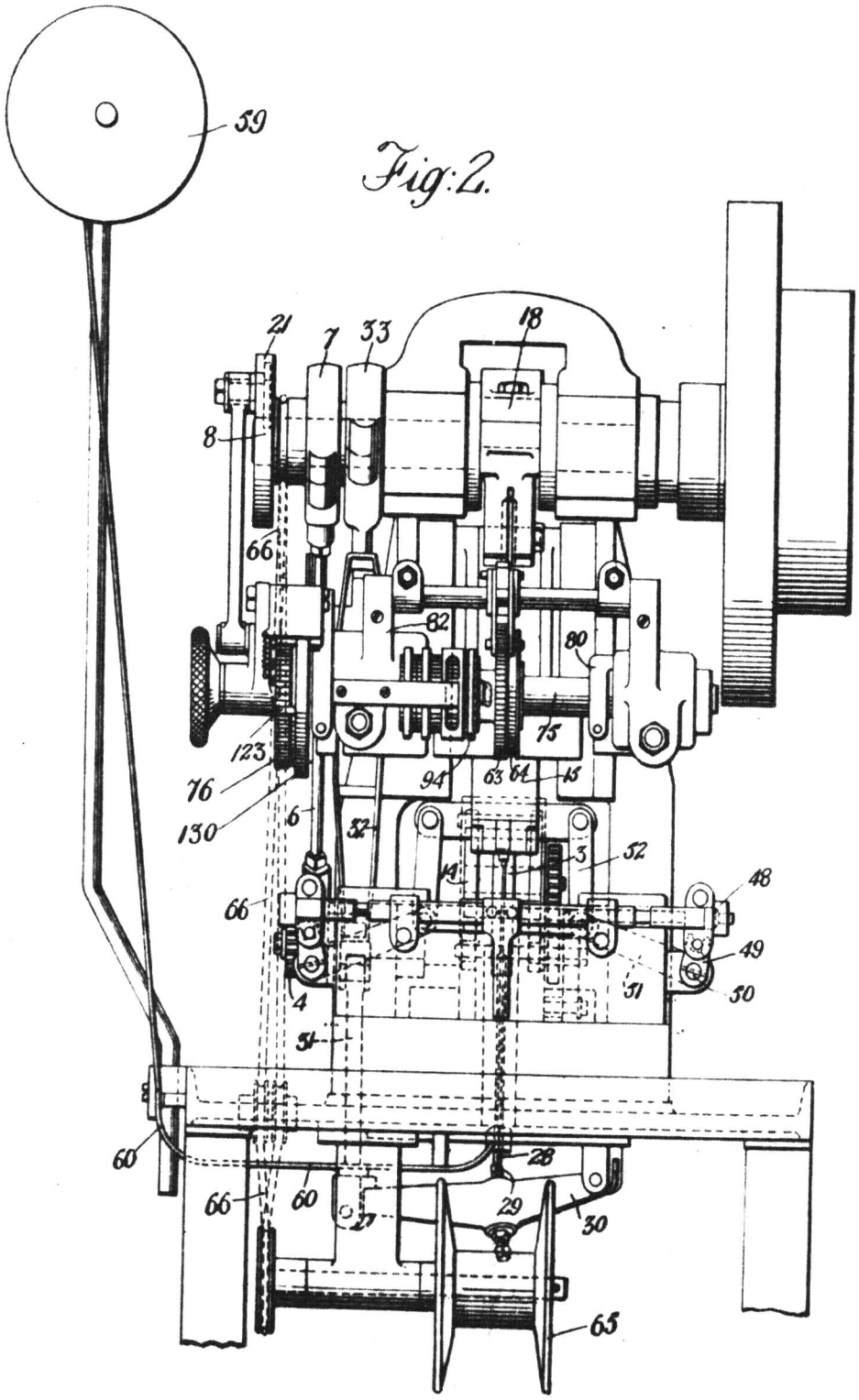
210202

(13)

Exhibits.

1. Canadian Patent No. 210,202 —Gideon Sundback, 5th April 1921—*continued.*

Fig: 2.



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New York October 17th 191 8

INVENTOR

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Exhibits.

1. Canadian Patent No. 210,202 —Gideon Sundback, 5th April 1921—*continued.*

Fig: 5.

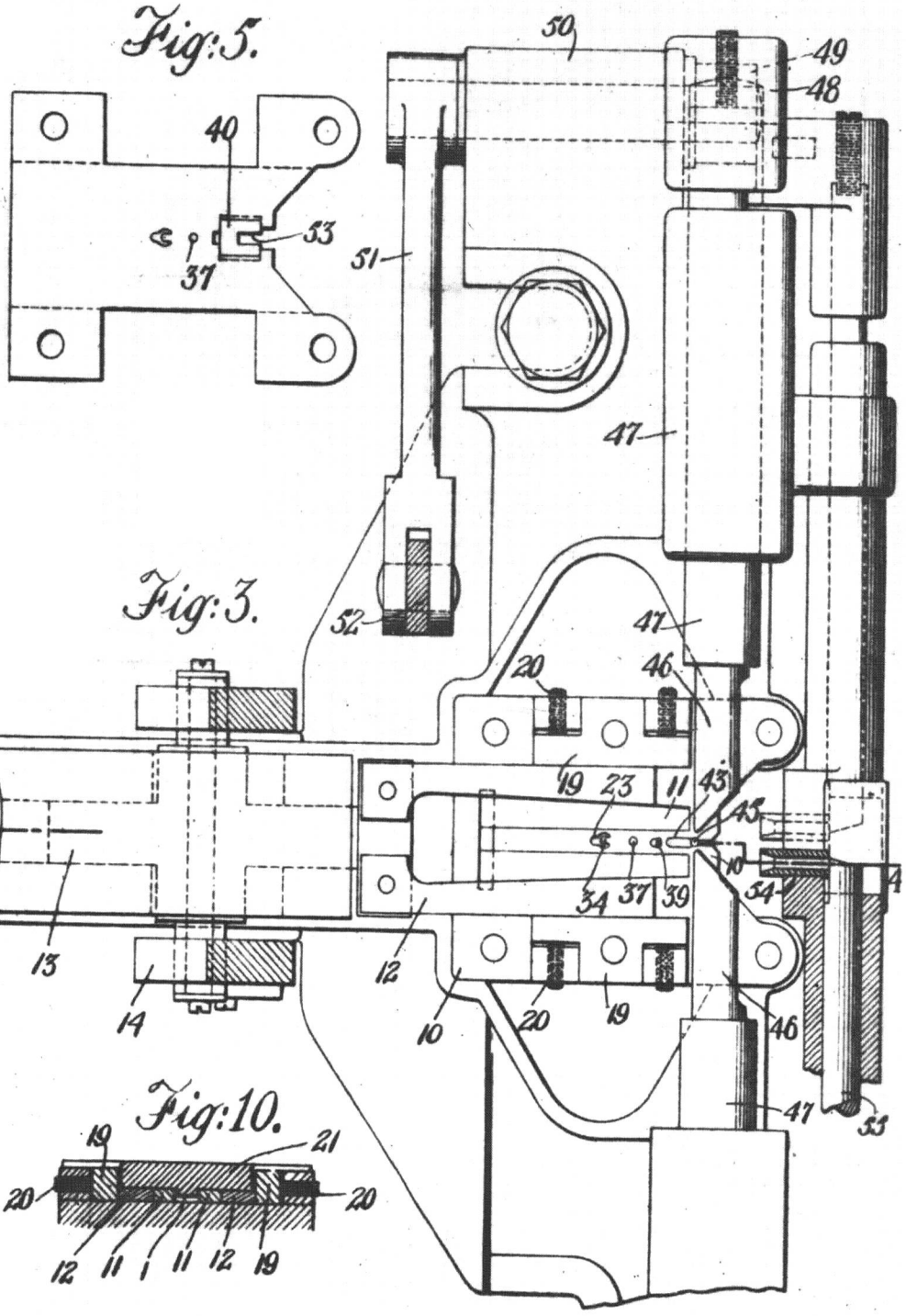

Fig: 3.

Fig: 10.

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this 17th day of October 191

INVENTOR

ATTORNEY

EXHIBIT I - FIG.4

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Fig:4

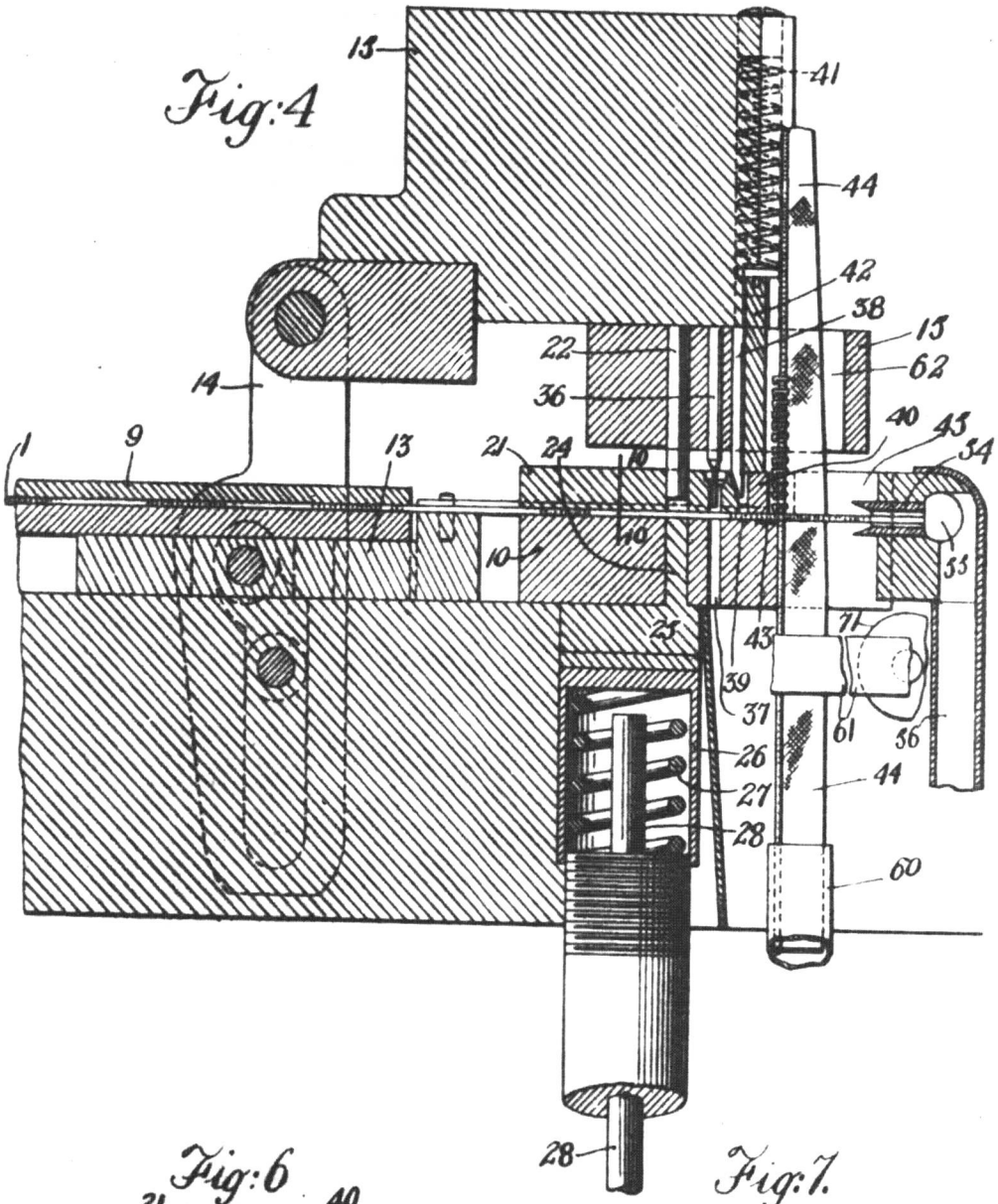

Fig:6

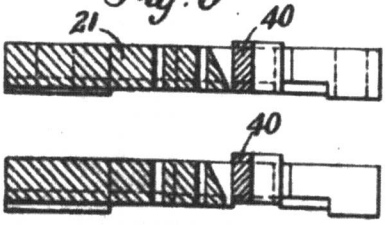

Fig:8.

Fig:7.

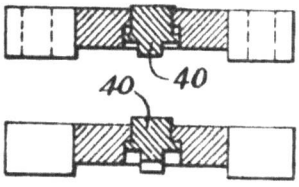

Fig:9.

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October 17th 191

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EXHIBIT I - FIG. 5

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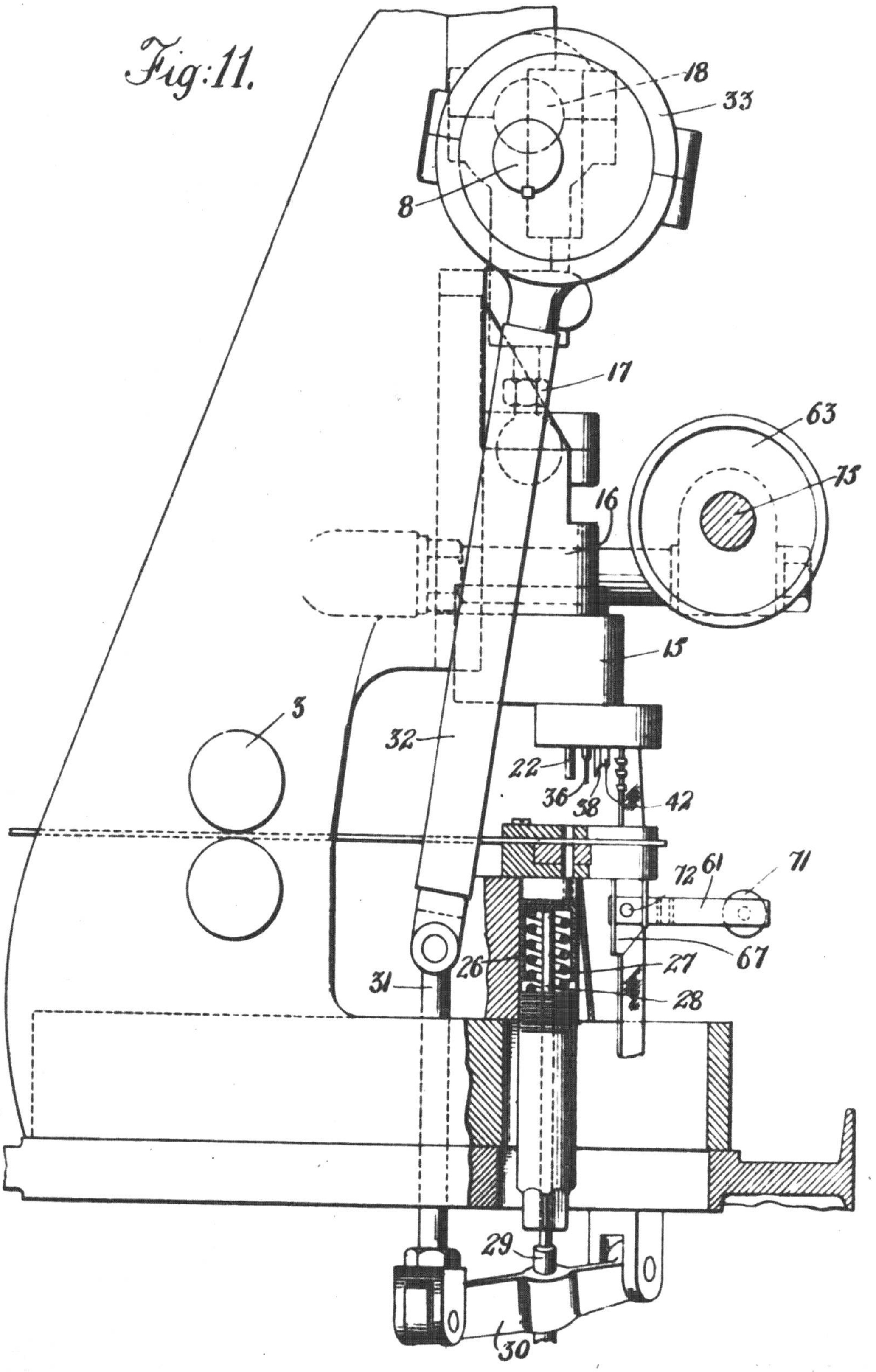
5 (13)

Exhibits.

1. Canadian Patent No. 210,202—Gideon Sundback, 5th April 1921—*continued.*

Fig:11.



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October 17th 191

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ATTORNEY

EXHIBIT I - FIG. 6

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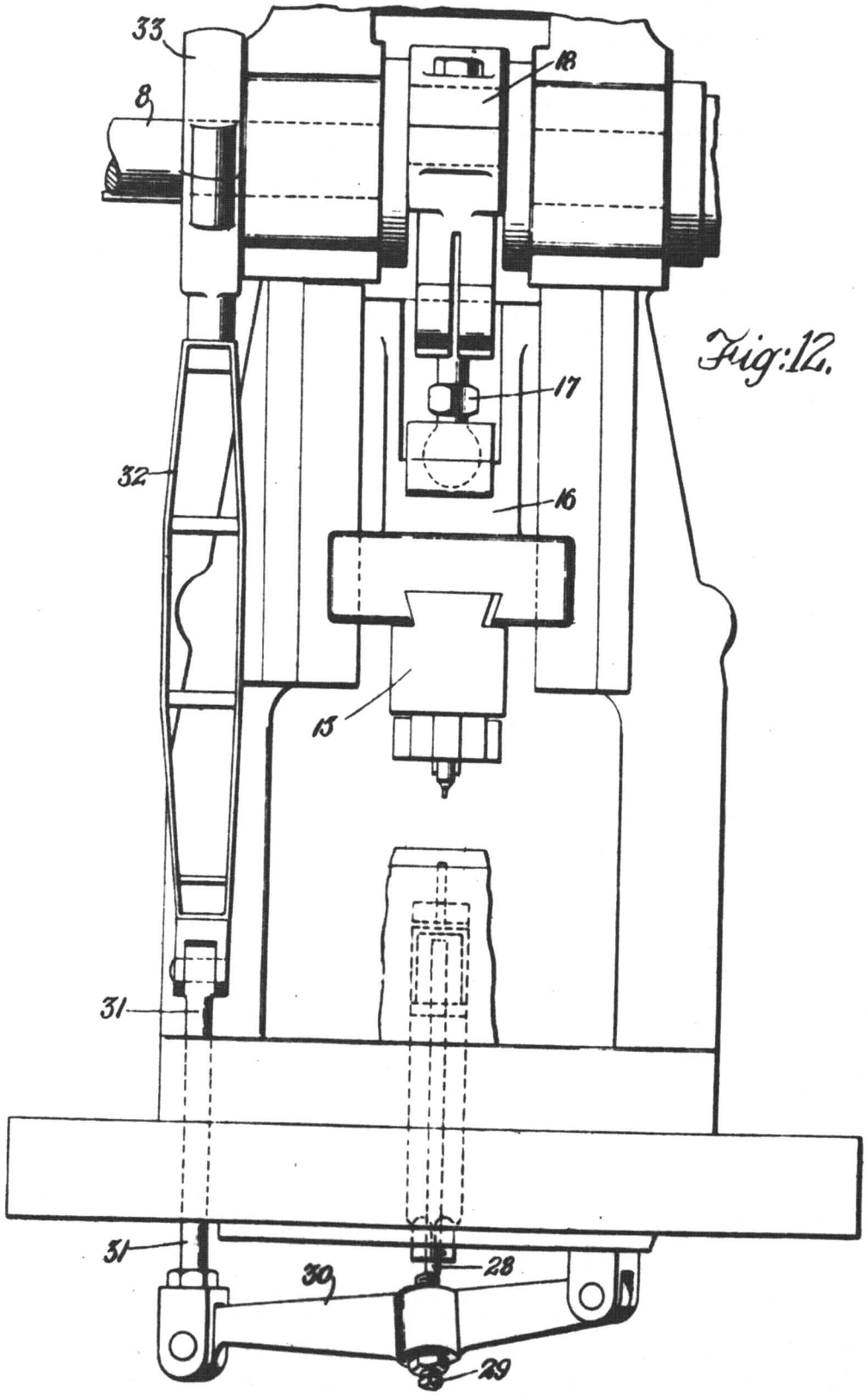

Fig: 12.

WITNESSES

L. L. Whitman

Teresa T. Lynch

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New York October 17th 1916

INVENTON

Gideon Sundback

EXHIBIT 1 - FIG. 7

210202

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Fig: 14.

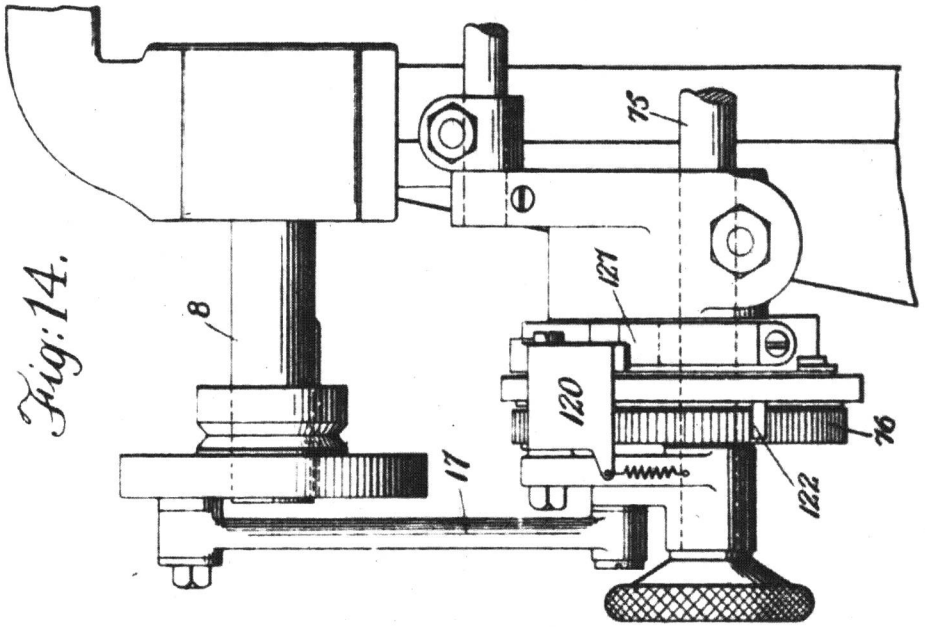

Fig: 13.

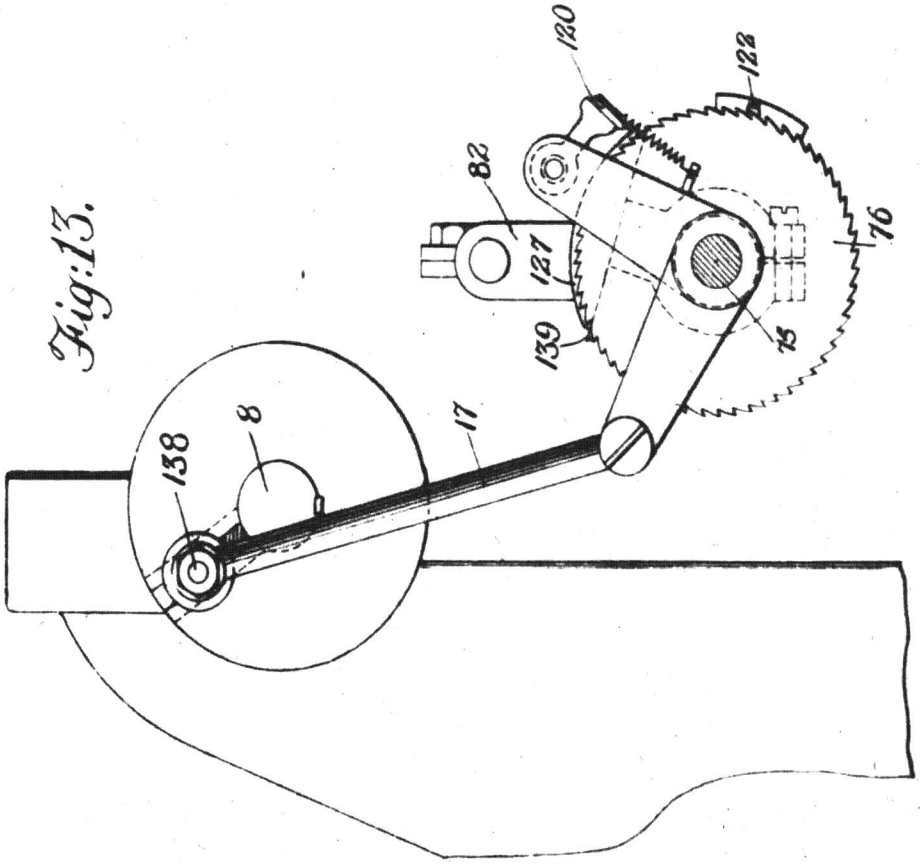

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EXHIBIT 1 - FIG. 8

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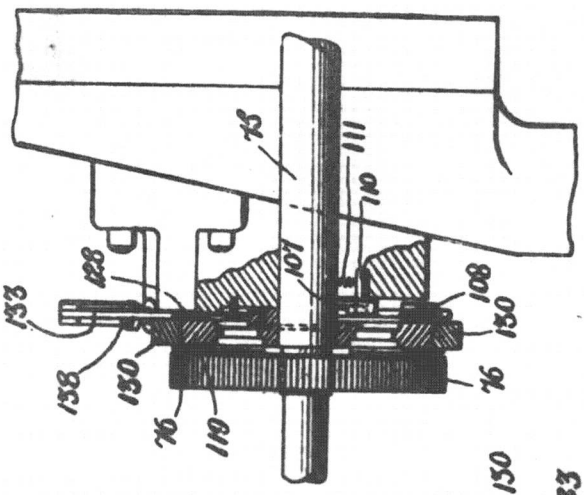
Fig. 16.



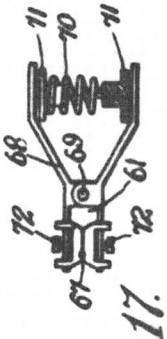


Fig. 17.

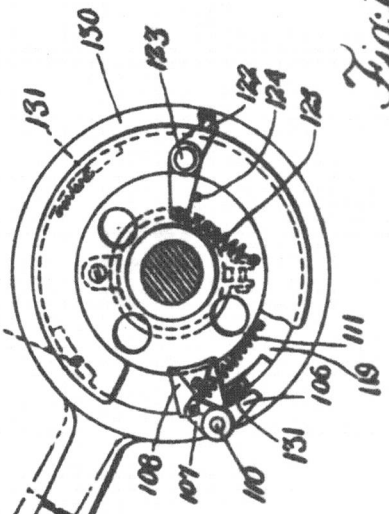
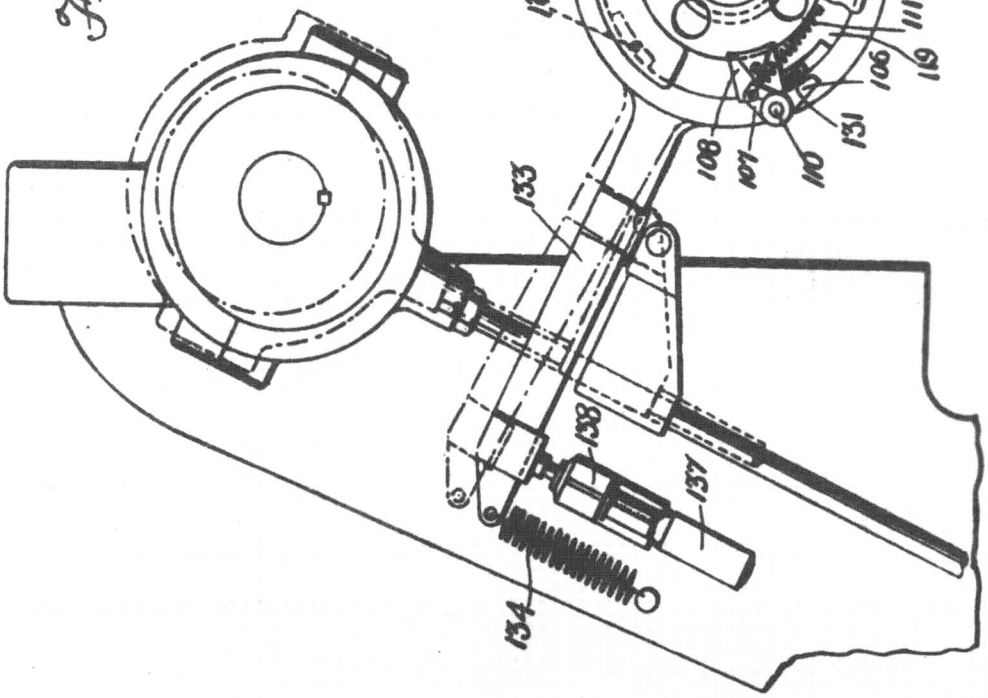


Fig. 15.



WITNESSES

A. D. Robertson

Teresa V. Lynch

Certified to be the drawing referred to in the specification hereunto annexed.

Kingston October 17th 1918

INVENTOR

Frank D. Gilroy

ATTORNEY

210202

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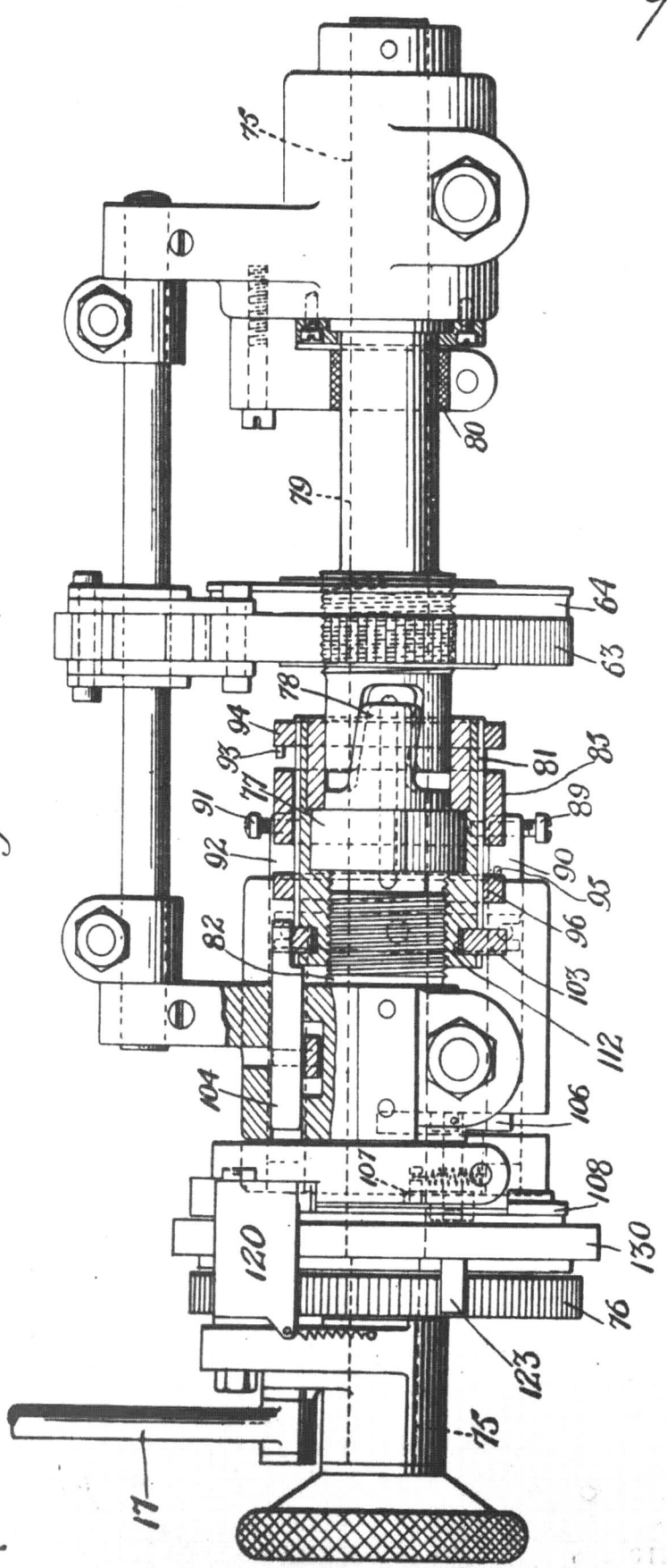
Fig. 18.



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October 15th 191

INVENTOR

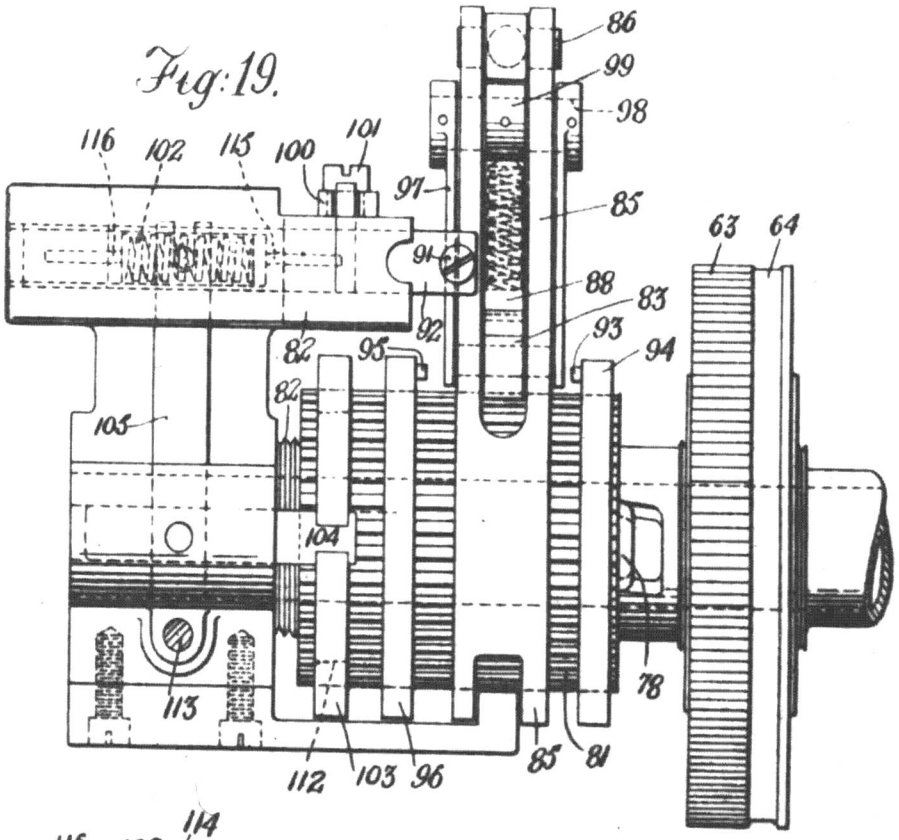
ATTORNEY

EXHIBIT I - FIG. 10

210202

10 (13)

Fig:19.



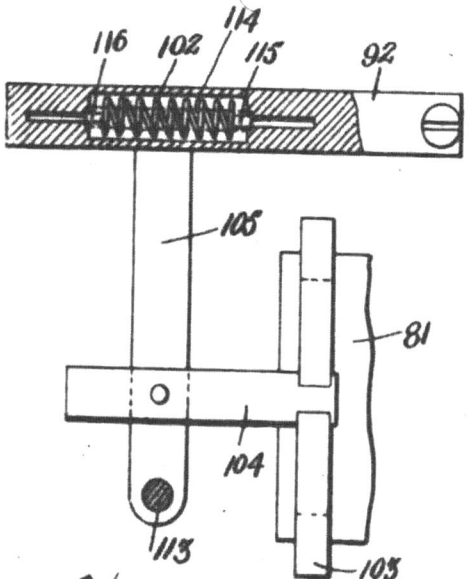


Fig:24.

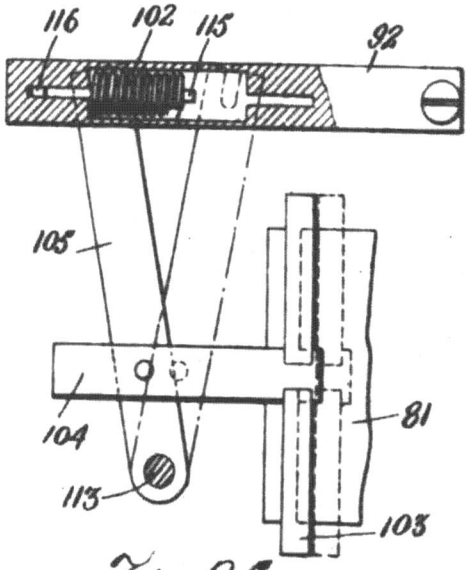


Fig:25.

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EXHIBIT I - FIG. 11

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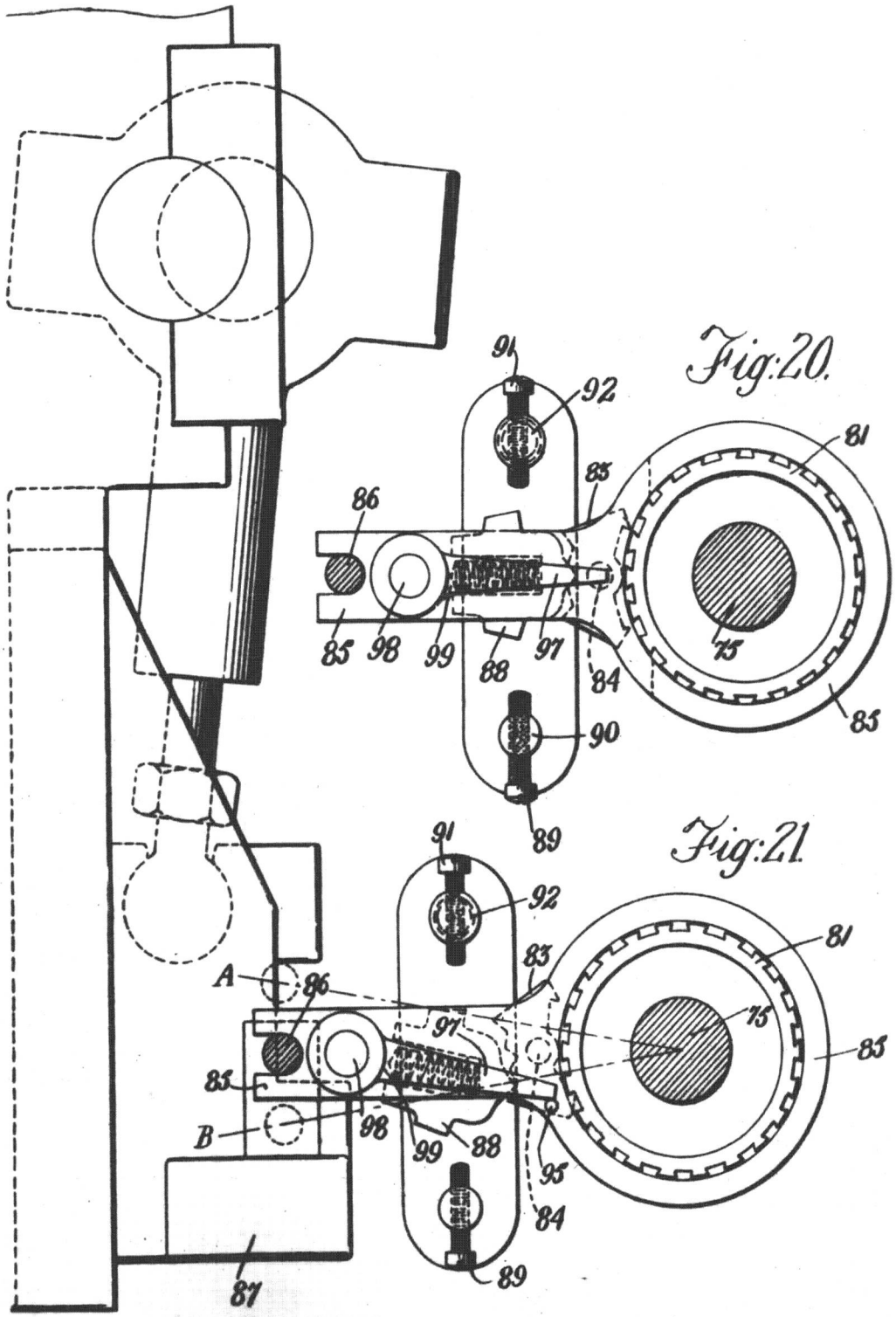

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this 27th day of October 191

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EXHIBIT I - FIG. 12

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12 (13)

Fig. 23.

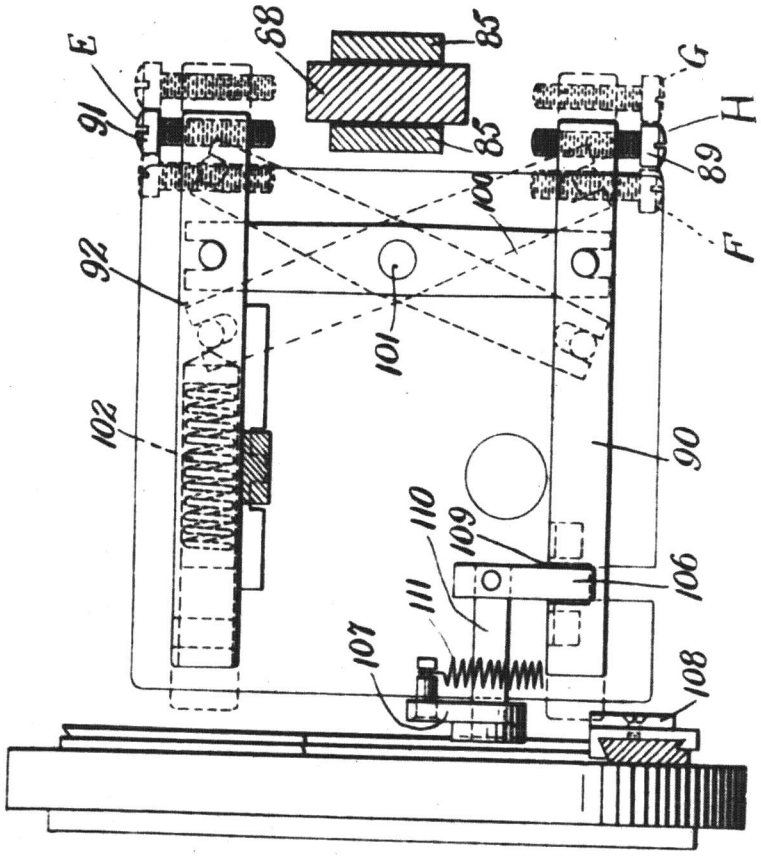
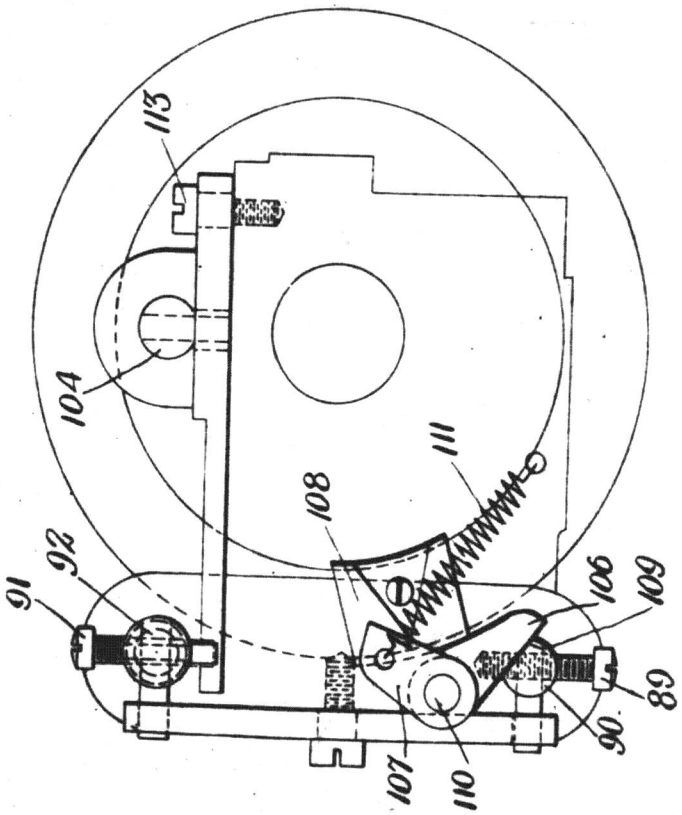


Fig. 22.



WITNESSES

Certified to be the drawing referred to in the specification hereunto annexed.

October 191

INVENTOR

EXHIBIT I - FIG. 13

210202
13 (13)

Fig: 27.

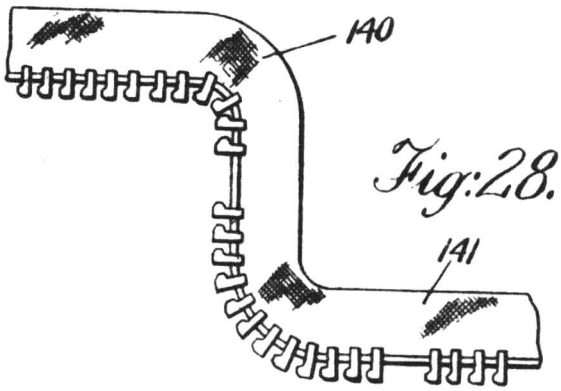


Fig: 28.

Fig: 26.

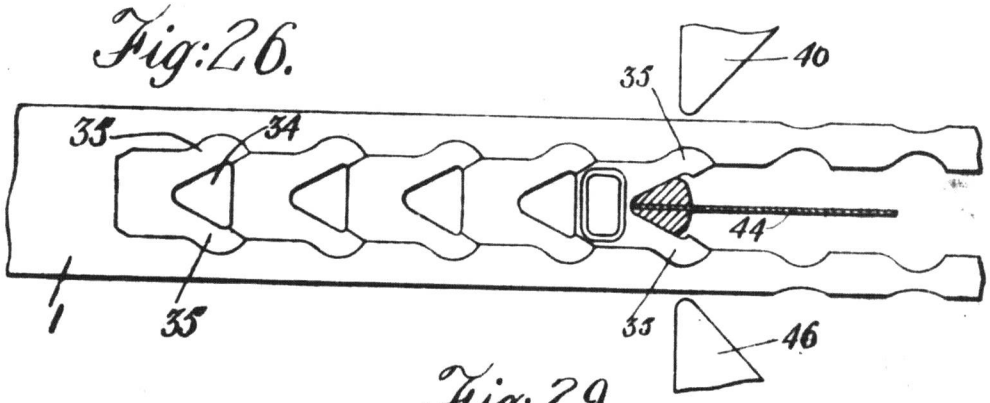
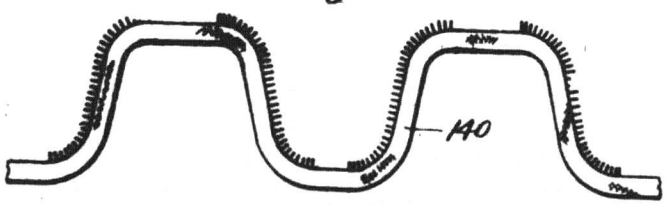


Fig: 29.



WITNESSES

Certified to be the drawing referred to in the specification hereunto annexed

Toronto, October 17th 1918

INVENTOR

H.—Stipulation.

Exhibits.

H. Stipulation, 8th December 1931.

IN THE EXCHEQUER COURT OF CANADA.

BETWEEN :

LIGHTNING FASTENER COMPANY, LIMITED - *Plaintiff*

AND

COLONIAL FASTENER COMPANY, LIMITED, and G. E. PRENTICE MANUFACTURING COMPANY *Defendants.*

STIPULATION

Applicable in Court Actions Nos. 13145, 13183, 13298, 13633, 13674 and 13702.

(1) Subject to all proper objections to the admissibility in evidence of the original documents or of the facts, (including all objections based on the failure of the plaintiff to give particulars,) it is agreed for the purposes of the trials that prima facie and subject always to correction and proof to the contrary :

(*a*) Any patent may be proved by a printed copy of the same or of the specifications and drawings thereof purporting to be issued by or under the authority of the office of issue or by a photostatic copy of such printed copy.

(*b*) All dates of application and leaving and acceptance of specifications and of granting, sealing and issue and all other dates relating to any patent or to steps in connection with any patent shall be taken in each case to be as shown on any patent or specification or copy of patent or specification admissible hereunder.

(*c*) Proceedings taken on application for any patent may be proved by a certificate duly issued by the Patent Office in which the proceedings were taken provided that the defendant furnishes a copy of any certificate to be put in evidence before the day of January, 1932.

(*d*) Any translation of a patent in any language except English or French which is submitted by the party proposing to use the same to the opposite party at least fifteen days before the trial shall be admissible with the patent, unless objected to by the opposite party at least five days before the trial.

(*e*) Any catalogues or other documents in the pleadings mentioned as evidence that the invention alleged to have been invented had been described in printed publications more than two years prior to the date of the application for the Letters Patent were published on the dates pleaded.

Dated this 8th day of December, A.D. 1931.

HAROLD G. FOX,
Solicitor for the Plaintiff.

McCARTHY & McCARTHY,
Solicitors for the Defendants.

13145

Ex. T

Exhibits.

T.
Sketch.

T.—Sketch.

Fig A

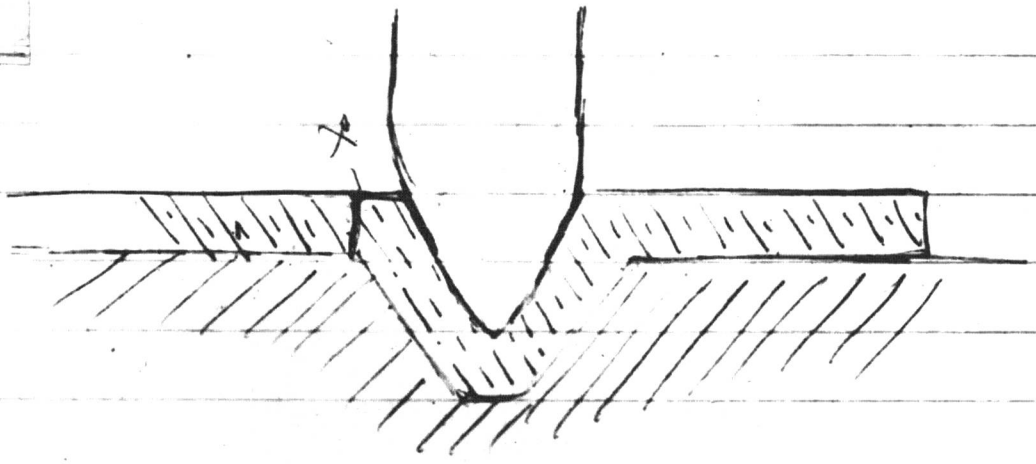


Fig B

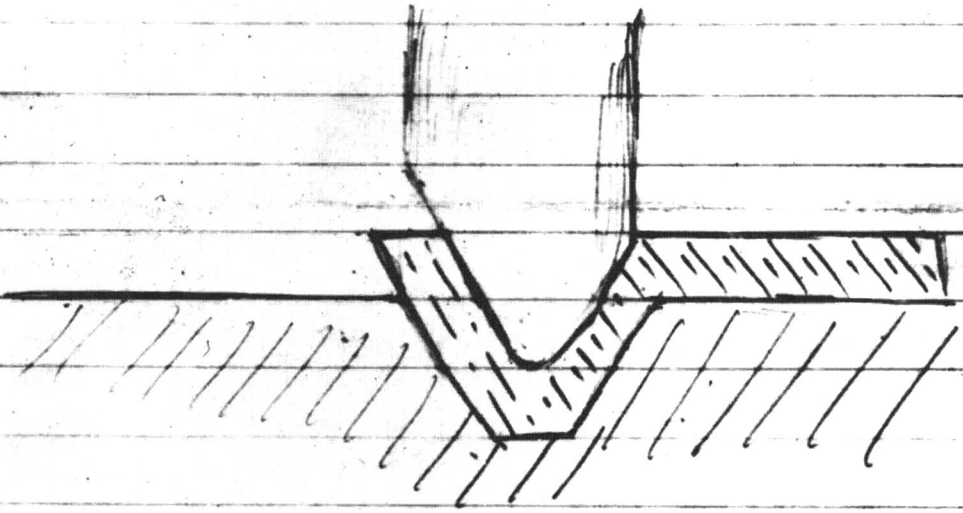
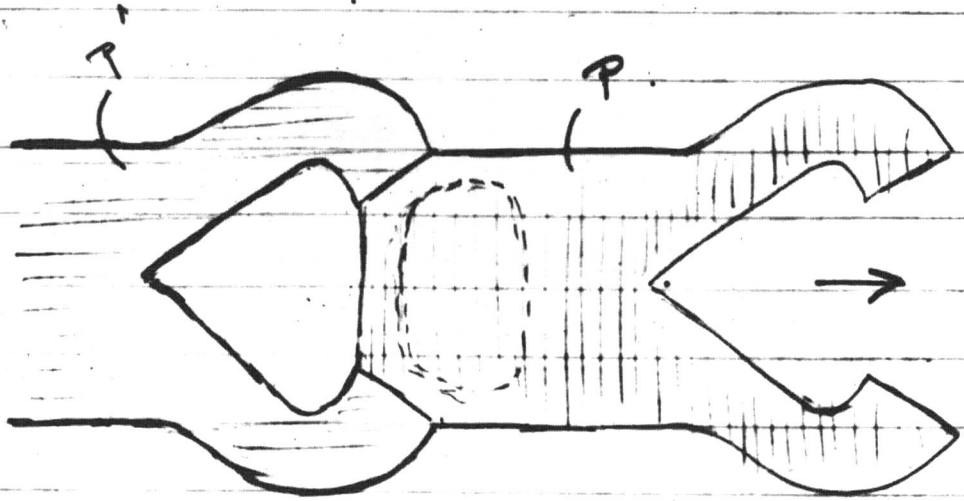
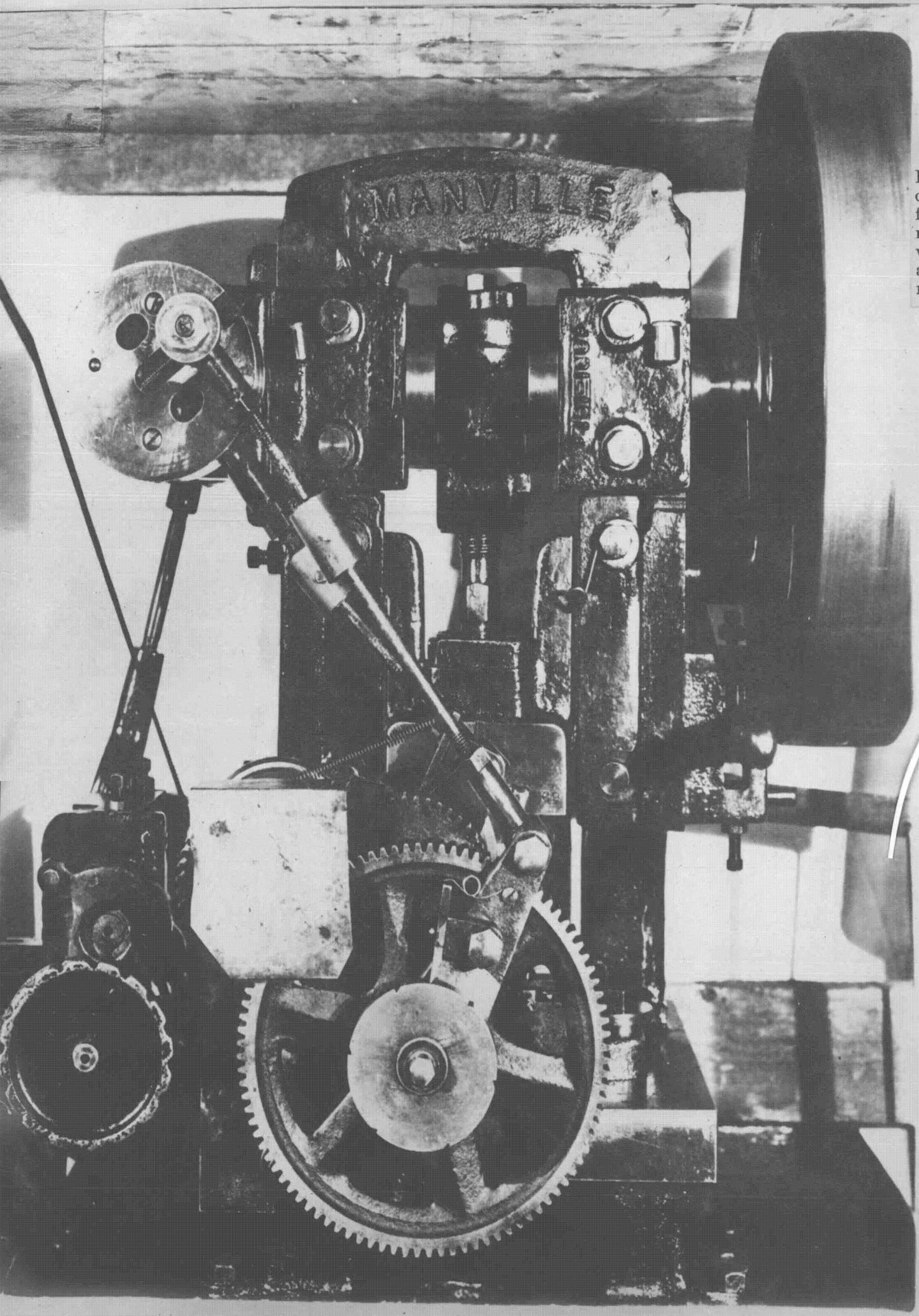


Fig C



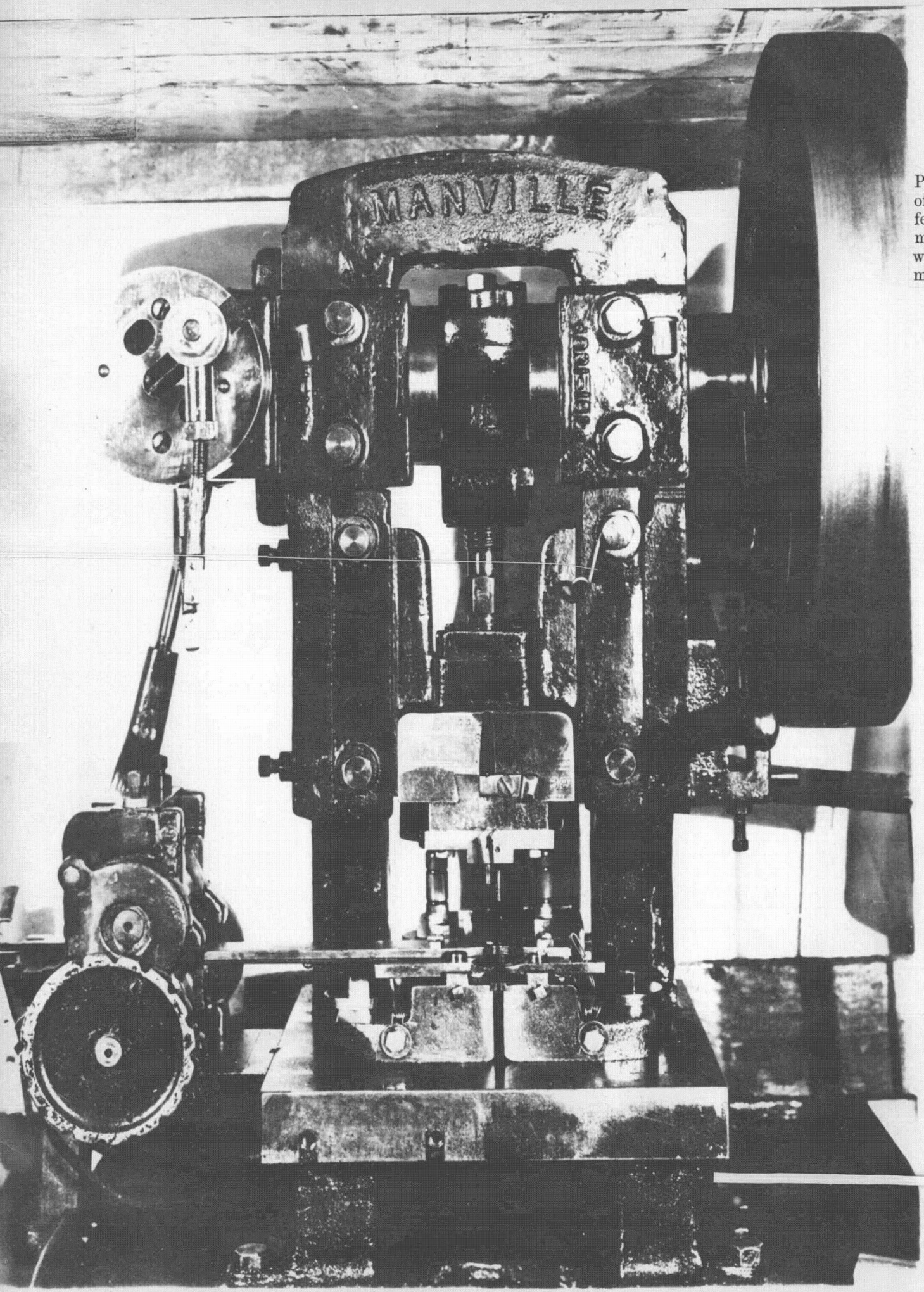
W.—Photograph of Defendants' Punch Press without Attachments.



Exhibits.

W. Photograph of Defendants' machine without attachments.

X.—Photograph of Defendants' Machine with Attachments.



Exhibits.

X. Photograph of Defendants' machine with attachments.

In the Privy Council.

No. 63 of 1933

ON APPEAL FROM THE SUPREME COU
OF CANADA.

BETWEEN

LIGHTNING FASTENER COMPANY, LIMITED - - - (*Plaintiff*) *Appell*

AND

COLONIAL FASTENER COMPANY, LIMITE
AND G. E. PRENTICE MANUFACTURI
COMPANY - - (*Defendants*) *Responde*

RECORD OF PROCEEDINGS.

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