



Neutral Citation Number: [2021] EWCA Crim 1215

Case No: 202100653 B2

**IN THE COURT OF APPEAL (CRIMINAL DIVISION)**  
**ON APPEAL FROM KINGSTON UPON THAMES CROWN COURT**  
**His Honour Judge Barklem**

Royal Courts of Justice  
Strand, London, WC2A 2LL

Date: 04/08/2021

**Before:**

**LORD JUSTICE MALES**  
**MR JUSTICE GOOSE**  
and  
**MRS JUSTICE CUTTS**

-----  
**Between:**

**R**  
**- and -**  
**OVIDIJUS MARGELIS**

**Appellant**

**Respondent**

-----  
**Tom Wainwright** (instructed by **Hesham Puri (MK Law)**) for the **Appellant**  
**Dominic Hockley** (instructed by the **Crown Prosecution Service**) for the **Respondent**

Hearing date: 28<sup>th</sup> July 2021  
-----

**Approved Judgment**

Covid-19 Protocol: This judgment was handed down remotely by circulation to the parties' representatives by email, release to BAILII and publication on the Courts and Tribunals Judiciary website. The date and time for hand-down is deemed to be at 10 o'clock on 4<sup>th</sup> August 2021

### Lord Justice Males:

1. On 15<sup>th</sup> February 2021, in the Crown Court at Kingston upon Thames, the appellant Ovidijus Margelis changed his plea to guilty on a count of making explosive substances, contrary to section 4(1) of the Explosive Substances Act 1883. He did so following a ruling by His Honour Judge Barklem that a device concealed in a parcel sent through the post which would ignite and cause a fire was an “explosive substance” within the meaning of the Explosive Substances Act 1883.
2. The ruling was made on an application to dismiss the week before the trial was due to take place and the judge applied the principles in the well-known case of *Galbraith (R v Galbraith)* [1981] 1 WLR 1039). Applying those principles, the judge held that the device was an explosive substance and that, if he were to be the trial judge (which was the intention, although uncertainties due to the pandemic meant that the trial would not necessarily take place as planned) he would direct the jury accordingly if the expert evidence remained unchanged by the end of the trial. In the event the trial was listed for 15<sup>th</sup> February 2021 and HHJ Barklem was the trial judge. He was invited to and did confirm that his ruling remained unchanged, whereupon the appellant changed his plea to guilty. He pleaded guilty also to counts of fraud and possession of articles for use in frauds.
3. The sentences imposed were concurrent, 21 months’ imprisonment for making an explosive substance and 17 months for fraud. There was no separate penalty for possession of articles for use in frauds.
4. The appellant now appeals, with the permission of the full court, contending that the judge’s ruling was wrong in law and that, as a result, the conviction is unsafe.
5. There are two grounds of appeal. The first is that the judge was wrong to rule that the devices in question *were* explosive substances within the meaning of the 1883 Act. It is common ground that, on the facts here, this depends upon whether they were “used or manufactured with a view to produce ... a pyrotechnic effect”, an expression taken from the Explosives Act 1875.
6. The second ground of appeal is that the judge ought to have limited his ruling to a decision that the devices were *capable* of producing a pyrotechnic effect, leaving it to the jury to determine whether they did so as a matter of fact.

### The Explosive Substances Act 1883

7. The appellant was charged on count 1 of the indictment with making explosive substances, contrary to section 4(1) of the Explosive Substances Act 1883. This provides:

“Any person who makes or knowingly has in his possession or under his control any explosive substance, under such circumstances as to give rise to a reasonable suspicion that he is not making it or does not have it in his possession or under his control for a lawful object, shall, unless he can show that he made it or had it in his possession or under his control for a lawful object, be guilty of an offence.”

8. An offence under this section now carries a maximum sentence of life imprisonment (increased from 14 years by the Criminal Justice and Courts Act 2015).
9. The meaning of the expression “explosive substance” is expanded (“shall be deemed to include”) in section 9 of the Act:

“The expression ‘explosive substance’ shall be deemed to include any materials for making any explosive substance; also any apparatus, machine, implement, or materials used, or intended to be used, or adapted for causing, or aiding in causing, any explosion in or with any explosive substance; also any part of such apparatus, machine or implement.”
10. This section ensures that the expression “explosive substance” extends to materials for making an explosive substance or apparatus, etc, for causing an explosion, but does not help to define what an explosive substance or explosion actually is for the purpose of the Act.

### **The Explosives Act 1875**

11. However, it was held in *R v Wheatley* (1979) 68 Cr App R 287 that the 1883 Act should be interpreted in the light of the definition of “explosive” in the Explosives Act 1875:

“Looking at the two statutes, at the nature of the provisions which they both contain and in particular at the short and long titles of both statutes, it appears to this Court that clearly they are *in pari materia*, and that conclusion alone would seem to us to be sufficient to justify the conclusion which the learned judge reached that the definition of the word ‘explosive’ found in the Act of 1875 is available to be adopted and applied under the provisions of the Act of 1883.

But if that conclusion were anyway in doubt, it is, in our judgment, put beyond doubt by the express provisions of section 8 of the Act of 1883, which is in these terms:

‘Sections seventy-three, seventy-four, seventy-five, eighty-nine, and ninety-six of the Explosives Act 1875, (which sections relate to the search for, seizure and detention of explosive substances, and the forfeiture thereof, and the disposal explosive substances seized or forfeited), shall apply in like manner as if a crime or forfeiture under this Act were an offence or forfeiture under the Explosives Act 1875 ...’

Here is Parliament in terms providing that certain powers in relation to explosive substances under the Act of 1875 shall be applied for the purposes of the Act of 1883. That, as it seems to us, shows Parliament assuming of necessity that what is an explosive substance essentially under the one Act will be the same as under the other.”

12. The definition of “explosive” in section 3 of the Explosives Act 1875 is as follows:
- “This Act shall apply to gunpowder and other explosives as defined by this section. The term ‘explosive’ in this Act –
- (1) Means gunpowder, nitro-glycerine, dynamite, gun-cotton, blasting powders, fulminate of mercury or of other metals, coloured fires, and every other substance, whether similar to those above mentioned or not, used or manufactured with a view to produce a practical effect by explosion or a pyrotechnic effect; and
  - (2) Includes fog-signals, fireworks, fuzes, rockets, percussion caps, detonators, or cartridges, ammunition of all descriptions, and every adaptation or preparation of an explosive as above defined.”
13. The definition gives examples of substances which are to be regarded as explosive (gunpowder, nitro-glycerine, etc) and in addition extends to substances which are used or manufactured with a view to producing “a practical effect by explosion or a pyrotechnic effect”.
14. We should also refer to section 104 of the 1875 Act. This provides that:
- “any substance which appears to Her Majesty to be especially dangerous to life or property by reason either of its explosive properties, or of any process in the manufacture thereof being liable to explosion, shall be deemed to be an explosive within the meaning of this Act.”
15. Accordingly there are three possible routes by which a substance may be categorised as explosive for the purpose of the 1875 Act and therefore the 1883 Act. First, it may be one of those expressly listed in section 3 of the 1875 Act. Second, it may be the subject of an order under section 104 of the Act.<sup>1</sup> Third, it may be a substance which, although not specifically listed as an explosive, was used or manufactured with a view to producing one of the stated effects, either “a practical effect by explosion” or “a pyrotechnic effect”.
16. In the present case it was common ground by the conclusion of the submissions before the judge that the device in question was not (or did not contain) any of the listed explosive substances, was not the subject of an order under section 104, and was not manufactured with a view to producing a practical effect by explosion. Rather, the prosecution case was that it amounted to an explosive substance for the purpose of the 1883 Act because it was “a substance ... used or manufactured with a view to produce ... a pyrotechnic effect”. Whether it did, or was capable of doing so, is the critical question in this appeal.

---

<sup>1</sup> We are grateful to Mr Rudi Fortson QC for pointing out that section 104 has been repealed by the Acetylene Safety (England and Wales and Scotland) Regulations 2014 (S.I. 2014 No.1639). Accordingly the second route is no longer available.

17. The expression “pyrotechnic effect” is not defined in either the 1875 or the 1883 Act, but the expression “pyrotechnic article” has been defined in the Pyrotechnic Articles (Safety) Regulations 2015 (“the 2015 Regulations”). These Regulations were made pursuant to European Union legislation.
18. Section 30 of the 1875 Act, read with section 39, makes it an offence to sell an item falling within the definition of “explosive” in section 3 in a public place, while section 31 makes it an offence to sell such items to any child apparently under the age of 16 years. Section 31 was amended in 2010 and again in 2015 to exclude certain “pyrotechnic articles” from this provision, while making different express provision in the 2015 Regulations to prohibit making such articles available to children and young people. The current version of section 31 excludes “pyrotechnic articles within the meaning set out in Regulation 3 of the Pyrotechnic Articles (Safety) Regulations 2015” as well as percussion caps intended for toys.
19. It is therefore legitimate to have regard to the 2015 Regulations when considering the meaning of “pyrotechnic” as used in the 1875 Act.

### **The Pyrotechnic Articles (Safety) Regulations 2015**

20. Regulation 3 of the 2015 Regulations states that:

“(1) In these Regulations, a ‘pyrotechnic article’ is an article which—

(a) contains explosive substances or an explosive mixture of substances designed to produce heat, light, sound, gas or smoke or a combination of such effects through self-sustained exothermic chemical reactions; and

(b) is not excluded by paragraph (2).”

21. To some extent these definitions are circular. Thus section 3 of the 1875 Act provides that a substance will be an explosive if it is used or manufactured with a view to produce a pyrotechnic effect, while Regulation 3 of the 2015 Regulations provides that a pyrotechnic article is one which contains explosive substances. Nevertheless the central feature of the modern definition is that the substance should be designed to produce heat, light, sound, gas or smoke or a combination of such effects through a self-sustained exothermic chemical reaction.
22. In most cases where these provisions have to be applied, there will be no difficulty in determining whether a substance is explosive or an explosion has taken place. Like the proverbial elephant, an explosive substance will generally be easy to recognise, even if not to define. In the present case, however, the position was more complex.

### **The facts**

23. The appellant, who was aged 26 and was a student at Anglia Ruskin University, devised a scheme for making fraudulent claims that expensive items had been lost in the post.

He did so by pretending to send such items in the post when in fact what was posted was a device which would set fire to the address label on the package so that it could not be delivered. His devices consisted of composite material shaved from the heads of safety matches, which were connected to a circuit on a timer and a battery. When the timer went off, the circuit would complete and heat up, causing the composite match-head material to ignite. This would then set fire to the address label on the package, so that it could not be delivered, which would enable the appellant to claim the supposed value of the item in question.

24. The device was sealed within a plastic container. The appellant may well have intended that although the package itself would be damaged, the resulting fire would not cause injury or damage to anyone or anything beyond the package itself. While he may have judged correctly the amount of safety match composite to ensure this in most cases, there could of course be no guarantee that the fire would be contained in this way.
25. The appellant sent these devices through the postal system on various days between 30<sup>th</sup> June and 13<sup>th</sup> September 2020. Their discovery and tracing caused considerable disruption in parcel offices and warehouses across the country. It is the prosecution case that many thousands of pounds' worth of economic loss was suffered by businesses, while significant costs were incurred by law enforcement agencies.
26. The first device to be discovered was at the Amazon warehouse in Dunfermline. The device had functioned. It was examined by an expert, Ms Lorna Hills, a principal case officer in the Forensics Explosives Laboratory, who noted that "a small quantity of chlorate-based explosive composition (such as match-head composition) had been ignited within the box in close proximity to the lid". A second device was also discovered at Dunfermline.
27. The expert described the effect caused by the activation of these devices in the following terms:

"[The device] contained approximately 2.2g of match-head composition that was held within rolled paper. This would not provide the required confinement to cause an explosion. Therefore, I would expect the match-head composition to ignite and burn fiercely when the device functioned potentially damaging the box and contents. If this damaged the box sufficiently to allow the flame to escape, it would have the potential to ignite any combustible materials in contact with the device.

The damage and residues present in the two functioned devices ... were consistent with the burning of a small quantity of match-head composition near the underside of the lid. Neither of these devices had resulted in an explosion, although they would have contained explosive composition. However, both had a hole melted in the lid that appeared to have been caused by heat damage. ...

Although the devices in this case did not appear to be designed to explode, they may have resulted in a fire depending on their

location and surroundings when they functioned. As they were sent through the postal delivery service, their exact location at the time of functioning could not be known in advance.”

28. One device did not activate. It arrived at its destination, a residential address in Cricklewood, causing the residents alarm and distress. This package was examined by Ms Hills. It comprised a rectangular shaped section of paper with two filled rolls attached to one side. The paper measured approximately 182mm in length and 22mm in width. One end of the paper was taped with adhesive tape from which one red coloured and one black coloured wire emerged. The expert cut open the brown adhesive tape, which was peeled back to reveal a red coloured solid present underneath. That solid was a finely divided powder and larger particles, with pale coloured wood shavings mixed throughout. This solid material also filled both rolls of paper. In total about 2.2g of this material was present. Chemical and elemental analysis of the red coloured solid along with its burning characteristics showed it to be chlorate-based match-head composition.

29. Ms Hills commented as follows:

“Scientifically an explosive is defined as a substance or material that is capable of undergoing a self-contained and self-sustained exothermic chemical reaction at a rate that is sufficient to produce substantial and nearly instantaneous pressure, thus potentially causing physical damage. There are two different categories of explosives, known as low explosives and high explosives. A low explosive is a substance that will undergo a burning reaction (or deflagration) when initiated. This will burn fiercely when ignited and can be made to explode if ignited whilst under suitable confinement. Examples of low explosives are blackpowder (also known as gunpowder), flash powder and match-head composition. A high explosive is a substance where the reaction occurs in the substance as a shockwave travelling faster than the speed of sound (known as a detonation). This type of explosive will cause an explosion without the need for confinement. Examples of high explosives are trinitrotoluene (TNT) and cyclotrimethylene trinitramine (also known as RDX) which is used within military munitions and explosives.

As stated above match-head (including that found on both ‘safety’ matches and ‘strike anywhere’ matches) is a low explosive; it will burn fiercely when ignited and can be made to explode if ignited whilst under suitable confinement.”

### **Other legislative provisions**

30. We have already referred to the Explosive Substances Act 1883, the Explosives Act 1875 and the Pyrotechnic Articles (Safety) Regulations 2015. Other provisions were also referred to.

### **The Theft Act 1968**

31. Section 10 of the Theft Act provides that:

“(1) A person is guilty of aggravated burglary if he commits any burglary and at the time has with him any firearm, any weapon of offence, or any explosive; and for this purpose ...

(c) ‘explosive’ means any article manufactured for the purpose of producing a practical effect by explosion, or intended by the person having with him for that purpose ...”

32. The expression “producing a practical effect by explosion” echoes the definition in section 3 of the Explosives Act 1875, but interestingly does not include any reference to a pyrotechnic effect.

### **The Policing and Crime Act 2017**

33. Section 134 of the Policing and Crime Act 2017 provides that:

“(1) It is an offence for a person to have a pyrotechnic article in his or her possession at any time when the person is—

(a) at a place where a qualifying musical event is being held, or

(b) at any other place that is being used by a person responsible for the organisation of a qualifying musical event for the purpose of—

(i) regulating entry to, or departure from, the event, or

(ii) providing sleeping or other facilities for those attending the event.

(4) In this section, ‘pyrotechnic article’ means an article that contains explosive substances, or an explosive mixture of substances, designed to produce heat, light, sound, gas or smoke, or a combination of such effects, through self sustained exothermic chemical reactions, other than—

(a) a match, or

(b) an article specified, or of a description specified, in regulations made by statutory instrument by the Secretary of State.”

34. Save for the specific exclusion of a match from the definition of “pyrotechnic article”, an exclusion on which both parties relied, this does not add much if anything to the definition in the 2015 Regulations.

### **The UN Recommendations on the Transport of Dangerous Goods Model Regulations**



35. Reference should also be made to United Nations recommendations which contain definitions of explosive and pyrotechnic substances as follows:

“(a) Explosive substance is a solid or liquid substance (or a mixture of substances) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic substances are included even when they do not involve gases;

(b) Pyrotechnic substance is a substance or a mixture of substances designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative self-sustaining exothermic reactions...”

### **The case law**

36. *Wheatley* was concerned with a pipe bomb, a metal pipe and a tin with fire-dampened sodium chlorate mixed with sugar. The issue was whether this constituted an explosive substance for the purpose of section 4 of the 1883 Act. The trial judge withdrew this issue from the jury ruling that the expression “explosive substance” in the 1883 Act should be construed in the light of the definition of “explosive” in section 3 of the Explosives Act 1875 and that, on any view, the materials in question were explosive substances. On appeal this court held, as we have already explained, that the judge was right to have invoked the 1875 Act.
37. It was held that the judge had also been right to withdraw the issue from the jury. There had been a conflict of expert evidence. The prosecution expert’s view was that the pipe bomb was capable of producing an explosive effect, while the defence expert contended that it would produce no explosive effect, but only a pyrotechnic effect. Lord Justice Bridge acknowledged that, if the phrase “explosive substance” had to be construed without assistance from any statutory definition, there would have been an issue for the jury, but held that once the definition in the 1875 Act was applied, the judge had been right to tell the jury that the substances identified in the indictment were explosive substances. Even on the defence expert’s evidence, the pyrotechnic effect meant that the pipe bomb fell within the statutory definition.
38. In *R v Bouch* (1982) 76 Cr App R 11 the issue was whether a petrol bomb was an explosive substance. The bomb was composed of some petrol in a bottle with a rag rammed into its neck to form a wick which, when lit and thrown, causing the bottle to break, would produce instantaneous ignition resulting in a fireball some 2 to 3 feet in diameter which would spread to 10 to 15 feet in diameter. The trial judge directed the jury that an explosive was something which produced a sudden release of energy or a “blast” in ordinary language, while “pyrotechnic effect” meant “fire produced by the sudden triggering of a device, not a torch. On appeal, the defendant submitted that this was not enough: a pyrotechnic effect required “a visible or audible effect by light, sound or smoke” causing an explosion.
39. This court dismissed the appeal, holding that there were three ways could properly find that the petrol bombs were explosive substances. Lord Lane CJ said:

“First of all, these bombs could and did explode within the meaning of that word in the Act; secondly, these bombs consisted of material for making an explosive substance, that is to say a mixture of petrol and air, within the explosive limits; and thirdly, that they were used, or manufactured, with a view to produce a pyrotechnic effect.”

40. Lord Lane noted the definition of explosion in the 1879 Edition of the Encyclopaedia Britannica, only four years after the passing of the 1875 Act, which it did not think could be improved upon:

“... ‘explosion’ may for our purpose be defined as the sudden or extremely rapid conversion of a solid or liquid body of small bulk into gas or vapour, occupying very many times the volume of the original substance, and, in addition, highly expanded by the heat generated during the transformation. This sudden or very rapid expansion of volume is attended by an exhibition of force, more or less violent according to the constitution of the original substance and the circumstances of explosion. Any substance capable of undergoing such a change upon the application of heat, or other disturbing cause, is called ‘explosive’.”

41. Lord Lane dealt with the question of “pyrotechnic effect” in the following terms:

“What is pyrotechnic effect? At one stage we thought that perhaps Mr Fricker [counsel for the appellant] was confining pyrotechnic effect to fireworks pure and simple. But he concedes that the words must go beyond that.

We have been referred to numerous dictionary definitions in the late eighteenth century to which we do not propose to make reference, but by the early nineteenth century it was not confined to the narrow definition; it was certainly not confined to something which could merely amuse or entertain. For support for that one can turn to the *Oxford English Dictionary*, 1933, meaning ‘2. Of or pertaining to fireworks, or the act of making or managing them; of the nature of a firework’. A note under that reads: ‘1873 Board of Trade Notice in Bedford Sailor’s Pocket Book, iii (1875) 68 The Pyrotechnic Light, commonly known as Blue Light, every 15 minutes.’

It may be convenient at this stage to make reference to a decision in 1891, *The Orion* [1891] PD 307. The headnote reads:

‘By regulations for Preventing Collisions at Sea, article 10, Schedule, Part II ... a British sailing trawler in the North Sea, having her trawl in the water and carrying the prescribed white light, is to be supplied with red pyrotechnic lights and shall show one of the red pyrotechnic lights on being

approached by another vessel in sufficient time to prevent collision. ...’

So an object which might perhaps be described as the flare, is quite plainly, at the end of the nineteenth century being used under the heading ‘pyrotechnic’, and indeed Mr Fricker conceded, properly, that a flare is a pyrotechnic device. He goes on, as already indicated, to insist that it would be quite improper to describe as pyrotechnic, in the terms of either of those two cases, anything which did not, at the same time as being pyrotechnic, explode. For the reasons already stated we reject that contention.

It seems to us that what emerges from the petrol bomb, namely the fireball already described, comes within the definition of pyrotechnic effect. It is not dissimilar indeed to a flare, albeit a flare burning very quickly. On this basis too we think that the learned judge was correct and that this direction to the jury is not to be faulted.”

42. We do not read this judgment as depending on the size of the fireball created by the petrol bomb.
43. *R v Harvey* [2018] EWCA Crim, [2019] 1 Cr App R (S) was an appeal against sentence, but it is interesting that the device in question consisted of a small metal cube containing 6 g of ground match heads and a flashbulb. The cube was then tightly taped, with two long wires from the flashbulb emerging from it. The expert evidence was that if an electric current was passed along the wires, the flashbulb would operate and cause the match head composition to explode with a loud bang, projecting fast moving fragments of the metal cube away from the explosion. The defendant pleaded guilty to an offence under section 4 of the 1883 Act. We cannot regard this case as shedding any light on the present appeal, in part because it was only an appeal against sentence and in part because, on the facts, the device there plainly was capable of causing an explosion.

### **The judge’s ruling**

44. After reviewing the various legislative provisions and the case law and recording the parties’ submissions, the judge stated his conclusion as follows:

“21. It is not for me to say whether the sale of safety matches in a public place or to children could theoretically amount to an offence, neither is that question relevant to the issue before me. There is presently uncontroverted evidence that match head composition (as distinct from safety matches themselves) is a ‘low explosive’. It appears that this was also the case in *Harvey*, cited above, albeit that because of the enclosure of the composition in a confined box, it would have exploded.

22. Having regard to the evidence which is before me from Ms Hills, and having regard to the authority cited above, I conclude that a safety match, when struck, creates a pyrotechnic effect. It

creates an intense flame, albeit very small, designed and intended to ignite the matchstick. Match-head composition is therefore ‘manufactured with a view to producing a practical effect by ... pyrotechnic effect’ within the meaning of section 3 of the 1875 Act. I disagree that the size of the fireball was key to the reasoning in *Bouch*.

23. That being the case, the devices constructed in this case, as examined by Dr Hills, comprising a means of igniting the match-head composition by heat after a pre-determined time interval, with the intention of causing a fire are ‘explosive substances’ within the meaning of the 1883 Act, following the reasoning of the Court of Appeal in *Wheatley*.”

45. The judge indicated that, assuming he would be the trial judge, he would direct the jury accordingly.

### **The parties’ submissions**

46. For the appellant Mr Tom Wainwright submitted that a safety match or match-head is not an “explosive” within the meaning of the Explosives Act 1875 and therefore is not an “explosive substance” within the meaning of the Explosive Substances Act 1883. He submitted that the flame produced by a safety match would not be described as a “pyrotechnic” effect as a matter of ordinary language and that to conclude otherwise would lead to absurd results. That was because the 1875 Act prohibits the sale of explosives in a public place or to a person apparently under the age of 16 and it would be absurd if sellers of matches over the last 150 years had unknowingly been committing criminal offences.
47. Mr Wainwright drew attention to other legislative provisions which had referred to explosive substances or pyrotechnic articles, in particular section 134 of the Policing and Crime Act 2017, which we have already set out.
48. He submitted that the expression “pyrotechnic effect” in the 1875 Act, and hence the expression “explosive substance” in the 1883 Act when what is relied on is the use or manufacture of a substance with a view to producing a pyrotechnic effect, must be interpreted in one of three ways. First, he submitted that a pyrotechnic effect requires a significant degree of light or heat, akin to a firework: a simple fire is insufficient; there must be a significant and eye-catching element of flair, display or spectacle as there is in a firework, a flare or a fireball. Second, he submitted that the definition must refer to a substance which is particularly dangerous to life or property. Third, he submitted that the definition in section 134 of the Policing and Crime Act 2017 should apply, with its specific exclusion of safety matches.
49. For the prosecution Mr Dominic Hockley submitted that this case is not about safety matches, but about the device assembled by the appellant which included a significant quantity of match-head composite, a timer and a mechanism to initiate heating. He submitted that this device was manufactured with a view to producing a pyrotechnic effect on any one of three bases. First, it was similar to substances expressly mentioned in the list in section 3 of the 1975 Act such as fuses and flares. Second, fire was produced by the sudden triggering of a device, as in *Bouch*, where the trial judge’s

direction to this effect was approved. Third, there was a pyrotechnic effect in accordance with the modern definitions because, as Ms Hills explained, the device produced a self-sustained exothermic chemical reaction producing heat, light and smoke.

## Decision

50. It is necessary to begin by identifying the substance with which we are concerned. We are not concerned with a safety match or matches, but rather with an accumulated quantity of match-head composite forming part of a device intended to cause a fire after a pre-determined time. To that extent Mr Wainwright's submissions as to the absurd consequences which would follow if a safety match were held to be an explosive do not arise.
51. Next we would observe that the expression "pyrotechnic effect" is an expression where a jury would need to be given assistance. It would not be sufficient to say that this is an ordinary English expression on which the jurors could make up their own minds. Mr Wainwright noted that the word "pyrotechnic" is made up of the classical Greek words meaning "fire" and "skill", but not all jurors could be expected to know that and, even if they did, it would not necessarily provide them with an answer to the case.
52. We do not accept either Mr Wainwright's submission that an effect will only qualify as "pyrotechnic" if it involves a significant amount of heat or light, such as is produced by a firework, or that it necessarily requires particular danger to life or property. There appears to us to be no justification for importing these concepts, although we would observe, as the judge commented, that even a single safety match creates an intense flame. The composite match-head material in this case would have created an even more intense flame, sufficient to set fire to the contents of the parcel, while its purpose was to create destruction of property albeit, as the appellant may have hoped, on a small scale.
53. Nor can the appellant derive much assistance from section 134 of the Police and Crime Act 2017. It is at best a two-edged sword. Although Mr Wainwright relied on the exclusion of "a match" from the definition of a "pyrotechnic article", the need for that exclusion would tend to imply that a match would otherwise fall within the definition and, even more so, that the practical reason for excluding matches from the definition would not apply to the composite match-head material with which we are concerned.
54. We turn to the submissions of Mr Hockley for the prosecution, taking them in order.
55. First, as is clear from *Bouch*, a flare is properly to be regarded as a pyrotechnic device. However, we doubt whether it can be said that the device in this case should qualify as producing a pyrotechnic effect on the basis that it is like a flare. That would require identification of the features of a flare which mean that it is appropriate to describe it as pyrotechnic. Those features would appear to include the intensity of the flame and its visibility to others which is the whole purpose of a flare, as well as some degree of duration. The ignition of the match-head composite inside the box was not intended to be visible to anybody and the intense burning would have been of relatively brief duration.

56. There is more force in the second and third ways in which Mr Hockley put the matter. The device in this case was intended to produce a sudden triggering of fire as a result of the timer causing the circuit to be completed and to heat up, and therefore is at least capable of causing a pyrotechnic effect in accordance with the trial judge's direction which was approved by this court in *Bouch*. However, we would regard the most reliable test as being that which is indicated by Regulation 3 of the 2015 Regulations, which were not available when *Bouch* was decided. Nor were the definitions in the UN Recommendations which are to the same effect. Despite the circular nature of the definition in the 2015 Recommendations, it is clear (and is supported by the scientific evidence in this case) that the expression "pyrotechnic" has a recognised scientific meaning and that Parliament had this in mind when it amended the 1875 Act by reference to the meaning set out in the Regulations. Accordingly it can be said that a pyrotechnic effect occurs when, as a result of a sudden triggering event, heat, light, sound, gas smoke or a combination of these effects is produced through a self sustained exothermic (i.e. energy releasing) chemical reaction. No doubt a jury would need to be given assistance, in the form of expert evidence, to explain those concepts, but that should not cause difficulty.
57. Applying this test, we have no doubt that the device in this case was at least capable of constituting an explosive substance.
58. The question then arises whether there was any issue of fact required to be left to the jury. We say at once that, if we were approaching this question having accepted Mr Wainwright's submissions as to the meaning of "pyrotechnic effect", there would clearly be issues for the jury to determine, for example whether the amount of heat or light generated was "significant" or whether there was a "particular danger" to life or property. However, having rejected those submissions, we approach this question in the light of what we have held to be the correct meaning of "pyrotechnic effect". Here it is important to focus on the limited nature of the judge's ruling. This was that "on the assumption that the current state of the expert evidence was unchanged by the end of the trial", the judge would direct the jury that the devices made by the appellant amounted to explosive substances as a matter of law. The expert evidence as it currently stood was as we have indicated. As Ms Hills explained in her report, the sudden triggering of the ignition of the match-head composite produced an exothermic reaction producing (at least) heat and light. The device was not sufficiently confined to produce an explosion (that is to say, the conversion of the composite into gas or vapour accompanied by a sudden and rapid expansion in volume), but it fell within what is scientifically recognised as a "low explosive" effect.
59. There was no report commissioned by the defence to contradict Ms Hills' evidence and the question whether her evidence might have been materially qualified by cross examination did not arise in view of the appellant's plea. In these circumstances we think the judge was right to say that, on the assumption which he made, the devices in question were explosive substances within the meaning of the 1883 Act. Certainly Mr Wainwright has not identified any issue of fact which, on this basis, the jury would have needed to determine.
60. Accordingly we dismiss the appeal.