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PATENT SPECIFICATION

Application Date: July 4, 1941. No. 8445/41.

„ „ Dec. 5, 1941. No. 15743/41.

544,329

One Complete Specification Left: Dec. 12, 1941.

(Under Section 16 of the Patents and Designs Acts, 1907 to 1939).

Specification Accepted: April 8, 1942.



PROVISIONAL SPECIFICATION

No. 8445 A.D. 1941.

Improvements in the Manufacture and Design of Mechanical Lighters

We, DIANA BERRY and WILLIAM HIBBERT BERRY, "Maycote", Bundy's Way, Chertsey Lane, Staines, Middlesex, both British subjects, do hereby declare the nature of this invention to be as follows:—

In mechanical lighters it is desirable that the various component parts should be of such construction and design that they may readily be replaced. After a period of use the packing material in the body of a lighter, which is commonly of cotton-wool, loses its absorbent properties, and in consequence calls for fuel replenishment at increasingly shorter intervals. It is desirable, then, to provide an easy means of withdrawing and renewing such packing. In lighters constructed of metal it is not uncommon to find components of vital importance to continued functioning permanently covered in by brazing or soldering, hence renewals and or repairs call for the use of special equipment and skilled workmanship, and are beyond the scope of the average user of lighters. As the direct result of this form of construction, the cost of repair and renewal of parts is disproportionately high, and lighters are discarded in consequence. It is clear, then, that if a lighter is to give satisfactory service over long periods of use, its main construction should be simple, the component parts must be such as to be readily removed and replaced without calling for professional skill and, more particularly, the replacement parts themselves must be available at a cost not out of proportion to that of the lighter itself.

In our construction the body of the

lighter is machined from solid plastic or similar material which, on the outside, may be moulded to shape. This material must be non-inflammable, and impervious to shrinking and the action of petrol. All component parts are machined to fine limits to screw or slide into the body of the lighter. The reservoir for the packing is cylindrical and of the same diameter throughout its length, the base being stopped by a full-sized, gas-proof, screwed plug. This construction makes it simple to withdraw and replace the packing when necessary.

The flint is held against the flint-wheel either by the usual type of coil-spring whereon the necessary tension is regulated by a grub-screw in the base of the body or, for cheapness and convenience, a section of elastic material, such as rubber suitably vulcanized for such a purpose, may be used in place of the spring, the tension being regulated in the same manner by a grub-screw.

In the production of the component parts modern repetition machining methods are employed, so that standardized replacements can be made available at low cost. A further economy from this method of construction is that the use of metal is reduced to the minimum, the complete lighter, with the exception of the flint-wheel and the wick-holder being of plastic material.

This construction may be varied or modified in detail for convenience or economy in manufacture.

Dated the Fourth day of July, 1941.

DIANA BERRY.

WILLIAM HIBBERT BERRY.

PROVISIONAL SPECIFICATION

No. 15743 A.D. 1941.

Improvements in the Manufacture and Design of Mechanical Lighters

We, DIANA BERRY and WILLIAM HIBBERT BERRY, both of "Maycote", Bundy's Way, Chertsey Lane, Staines, 80 Middlesex, both British subjects, do here-

[Price 1/-]

Price 4s 6d

by declare the nature of this invention to be as follows:—

This invention is for improvements in on relating to the manufacture and design of mechanical lighters and has for an object to achieve a saving in the cost of manufacture and also in the utilisation of metal.

It is desirable that the various component parts of a mechanical lighter should be of such construction and design that they may be readily removed and replaced without the use of special tools or equipment and consequently the brazing or soldering together of component parts of a mechanical lighter is undesirable.

An object of the invention, therefore, is to provide a design of mechanical lighter and a method of manufacturing it whereby the several component parts may be standardised and may be simply and easily fitted or re-fitted by a simple operation such as pressing into a counter-sunk hole in the lighter body and screwing into a screw-threaded hole in the lighter body or screwing on to another component part of the lighter.

According to the present invention, therefore, a method of manufacturing a mechanical lighter comprises the step of forming the body blank from a synthetic plastic material with a passage or chamber extending therethrough for housing absorbent material and for receiving a closure plug at one end and a wick-holder at the other end and with a second passage or chamber for housing the flint and its associated tensioning means.

The body blank may be formed from a thermo-plastic synthetic material by extruding said material as a bar of the required cross section and thereafter subdividing the bar into blanks; it will be appreciated that the body blank may be formed of a solid block of the required cross section and thereafter drilled to form the said passages or chambers.

The mechanical lighter of the present invention comprises a body formed in the manner above described provided with a flint wheel mounting of a synthetic plastic material secured to said body, a wick-holder secured to said body, a cap for the wick formed of a synthetic plastic material and a closure plug also of a synthetic plastic material for the open end of the chamber for the absorbent material. The flint wheel mounting is formed of a saddle-like form and the flint wheel is secured in position between the two prongs of the saddle by means of a pin engaging with

the two prongs of the saddle and passing through the hole in the centre of the flint wheel; it will be appreciated that the pin may if desired be formed from a synthetic plastic material.

The cap for the wick-holder may either be in the form of a simple cap internally screw-threaded to engage with a corresponding screw-thread formed on the projecting part of the wick-holder or it may be in the form of a larger cap member mounted on a saddle-mounting at one end and pivotally connected to that saddle-mounting so as to be movable into a position in which it lies on top of the lighter body with the flint wheel and the wick-holder engaging with holes appropriately dimensioned and positioned in the cap.

The expression "synthetic plastic material" is used in this specification to indicate synthetic or artificial materials capable of being formed into solid shaped articles and includes cellulose ethers and esters, the urea-formaldehyde type of resins, the phenol-urea resins, the polyhydric alcohol-polybasic acid type resins and also compositions such as compressed fibre, such as is commonly used for the manufacture of small washers and other small articles, all of which materials and compositions must be immune from cracking or shrinking, non-inflammable and impervious to the action of the fuel.

The expression "thermo-plastic synthetic material" as used in this specification is intended to cover such of the synthetic plastic materials as are extrudable or mouldable when hot but which set to a hard solid mass in the cold; a suitable material is that sold under the Registered Trade Mark "Catalin".

It will be appreciated that the tensioning means for the flint may be formed of a plug or small cylinder of resilient material such as rubber which, in view of the fact that it is entirely isolated from the fuel chamber of the lighter, is not subject to deterioration and therefore by eliminating the use of a metal compression spring a further saving in metal is achieved.

Dated this 5th day of December, 1941.
For DIANA BERRY and WILLIAM
HIBBERT BERRY:
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COMPLETE SPECIFICATION

Improvements in the Manufacture and Design of Mechanical Lighters

We, DIANA BERRY and WILLIAM HIBBERT BERRY, both of "Maycote", Bundy's Way, Chertsey Lane, Staines, Middlesex, both British subjects, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

10 This invention is for improvements in or relating to the manufacture and design of mechanical lighters and has for an object to achieve a saving in the cost of manufacture and also in the utilisation of metal.

15 It is desirable that the various component parts of a mechanical lighter should be of such construction and design that they may be readily removed and replaced without the use of special tools or equipment and consequently the brazing or soldering together of the component parts of a mechanical lighter is undesirable.

20 An object of the invention, therefore, is to provide a design of mechanical lighter and a method of manufacturing it whereby the several component parts may be standardised and may be simply and easily fitted or re-fitted by a simple operation such as pressing into a counter-sunk hole in the lighter body and screwing into a screw-threaded hole in the lighter body or screwing onto another component part of the lighter.

35 According to the present invention, therefore, a method of manufacturing a mechanical lighter comprises the step of extruding, moulding and/or machining the body from a synthetic plastic material with a passage or chamber extending therethrough for housing absorbent material and for receiving a closure plug at one end and a wick-holder at the other end and with a second passage or chamber for housing the flint and its associated tensioning means.

40 The body may be formed from a thermo-plastic synthetic material by extruding said material as a bar of the required cross-section and thereafter subdividing the bar into the required lengths; it will be appreciated that the body may be formed of a solid blank of the required cross-section and thereafter drilled to form the said passages or chambers, for example the solid block may, on the outside, be moulded to shape.

55 The following is a description by way of example of two designs of mechanical

lighter in accordance with the present invention described with reference to the accompanying drawings in which:

Figure 1 shows a side elevation partly in section of a simple form of lighter,

Figure 2 shows a plan view of the lighter shown in Figure 1,

Figure 3 shows a side elevation partly in section of a more elaborate form of lighter and

Figure 4 shows a plan view of the lighter shown in Figure 3.

Referring to Figures 1 and 2 of the drawings, the body blank 10 is formed by extruding a thermo-plastic synthetic material sold under the Registered Trade Mark "Catalin" as a bar having the general cross-section shown in Figure 2. The bar is subdivided into blanks of an appropriate length such for example as is shown in Figure 1 and the blank is then drilled to form a passage or chamber 11 extending therethrough for housing absorbent material. The passage or chamber 11 does not extend completely through the body and a screw-threaded hole 12 is formed in the end wall whilst at the other end of the passage or chamber 11 a screw-thread 13 is formed for receiving the closure plug 14.

Screwed into the screw-threaded hole 12 is a wick-holder 15 which is provided with a head, conveniently cut with a slot to enable it to be screwed into position by means of a screw-driver, and having a hole drilled therethrough for receiving the wick 17.

A cap 16 internally screw-threaded screws down over the wick-holder 15 into engagement with the top of the body 10 and thereby seals the wick and prevents evaporation of the fuel into the atmosphere. The passage or chamber 11 is filled with cotton-wool or other suitable absorbent material 18 for absorbing and retaining the fuel for the lighter.

At the top end of the body blank there is drilled a hole 19 extending right through the body and a spring or rubber cylinder 20 is housed in this hole, the tension thereof being adjusted by means of a grub screw 34.

The end of the hole 19 is countersunk at 38 to receive a saddle 21 (which is a tight push-fit in the hole 38) for the flint wheel 22 which is mounted in position the saddle by means of the pin 23; the flint 24 is, of course, housed in the hole 19 between the spring or rubber column

and the underside of the flint wheel.

The wick-holder, it will be appreciated, may be made either of metal or of any suitable synthetic or artificial material, 5 e.g. a hard compressed fibre of the kind that is used for the manufacture, for instance, of washers and other small articles.

In Figures 3 and 4 there is illustrated a more elaborate form of lighter in which 10 the body 25 is formed with a passage or chamber 26 for receiving absorbent material formed in the same way as the passage or chamber 11 of Figure 1. The passage or chamber is formed substantially 15 in the centre of the body blank and to one side of the body blank there is formed a hole 27 for housing the flint and its associated tensioning means, whilst on the other side of the body there is a hole 20 28 for receiving a saddle 29 in which, by means of the saddle pin 30, a cap 31 is secured. The cap 31 may be spring-pressed in any conventional manner so as to retain it either in the closed or open 25 position at will.

The hole 28 is countersunk at 37 in order to receive the saddle 29. In a similar manner the hole 27 is countersunk at 38 to receive the saddle 32 for carrying 30 the flint wheel, and the flint is located at 24 and the tensioning means 33 is adjusted by means of the grub screw 34.

The cap 31 is shaped so as to have the same cross section as the body blank 25 35 except for the end at which it is secured in the saddle, and there is formed a hole in the cap with a conical face 35 for engaging with a conical face of the wick-holder 15, a hole 36 in the cap being 40 formed to accommodate the wick.

It will be appreciated that in both lighters all the parts are readily replaceable by the user and it is possible to manufacture spare parts so as to be universally 45 usable with either form of lighter.

In the specification the expression "synthetic plastic material" means synthetic or artificial materials capable of being formed into solid shaped articles 50 and includes cellulose ethers and esters, the urea-formaldehyde type of resins, the phenol urea resins, the polyhydric alcohol-polybasic acid type resins and also compositions such as compressed fibre, 55 such as is commonly used for the manufacture of small washers and other small articles, all of which materials and compositions must be immune from cracking or shrinking, non-inflammable and impervious to the action of the fuel. 60

The expression "thermo-plastic synthetic material" as used in this specification is intended to cover such of the synthetic plastic materials as are extrud- 65 able or mouldable when hot but which set

to a hard solid mass in the cold; a suitable material is that sold under the Registered Trade Mark "Catalin".

Having now particularly described and ascertained the nature of our said inven- 70 tion and in what manner the same is to be performed, we declare that what we claim is:—

1. A method of manufacturing a mechanical lighter which comprises the step 75 of extruding, moulding and/or machining the body from a synthetic plastic material with a passage or chamber extending therethrough for housing absorbent material and for receiving a closure-plug at 80 one end a wick-holder at the other end and with a second passage or chamber for housing the flint and its associated tensioning means.

2. A method of manufacturing a mech- 85 anical lighter according to Claim 1 which comprises forming the body from a thermoplastic synthetic material by extruding said material as a bar of the required cross-section and subdividing the bar into 90 the required lengths.

3. A method according to Claim 1 or Claim 2 wherein the body is formed as a solid blank of the required cross-section and is thereafter drilled to form the said 95 passages or chambers.

4. A method according to any of the preceding Claims wherein the passage or chamber for the flint and its associated 100 tensioning means is, at that end of the body where the wick-holder is to be located, counter-sunk to receive a mounting for a flint-wheel.

5. A method according to any of the preceding Claims wherein the passage or 105 chamber for housing the absorbent material is machined with a screw-thread at each end to receive said closure-plug and wick-holder respectively.

6. A mechanical lighter having a body 110 formed by the method claimed in any of the preceding Claims, a flint-wheel mounting of a synthetic plastic material secured to said body, a wick-holder secured to said body, a cap, for the wick, formed of a syn- 115 thetic plastic material and a closure-plug, also of a synthetic plastic material, for the open end of the chamber for the absorbent material.

7. A mechanical lighter according to 120 Claim 6 wherein said cap is internally screw-threaded to engage the projecting screw-threaded end of the wick-holder.

8. A mechanical lighter according to Claim 6 wherein said cap is pivotally con- 125 nected to a saddle-mounting secured to the body, said cap and said saddle-mounting being formed of a synthetic plastic material.

9. A method of manufacturing a mech- 130

anical lighter substantially as described with reference to Figures 1 and 2 or 3 and 4 of the accompanying drawings.

- 5 10. A mechanical lighter whereof the body, cap, flint-wheel mounting and closure-plug are formed of a synthetic plastic material substantially as shown in Figures 1 and 2 of the accompanying drawings.
- 10 11. A mechanical lighter whereof the body, cap, flint-wheel mounting and closure-plug are formed of a synthetic

plastic material substantially as shown in Figures 3 and 4 of the accompanying drawings.

Dated this 5th day of December, 1941.

For DIANA BERRY and WILLIAM

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[This Drawing is a reproduction of the Original on a reduced scale.]

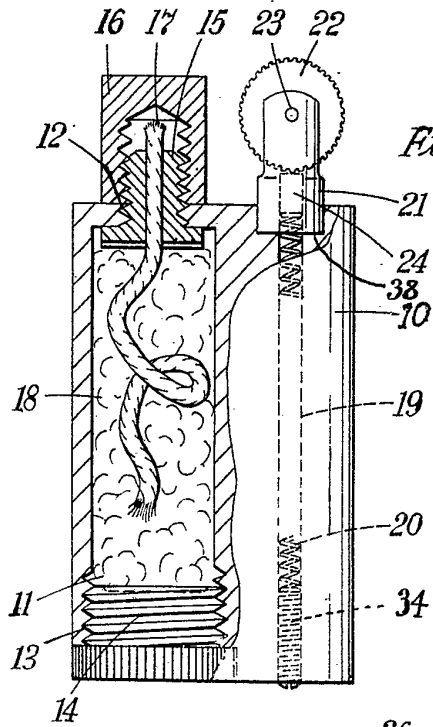


Fig. 1.

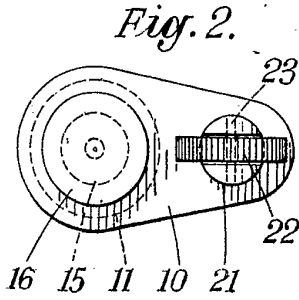


Fig. 2.

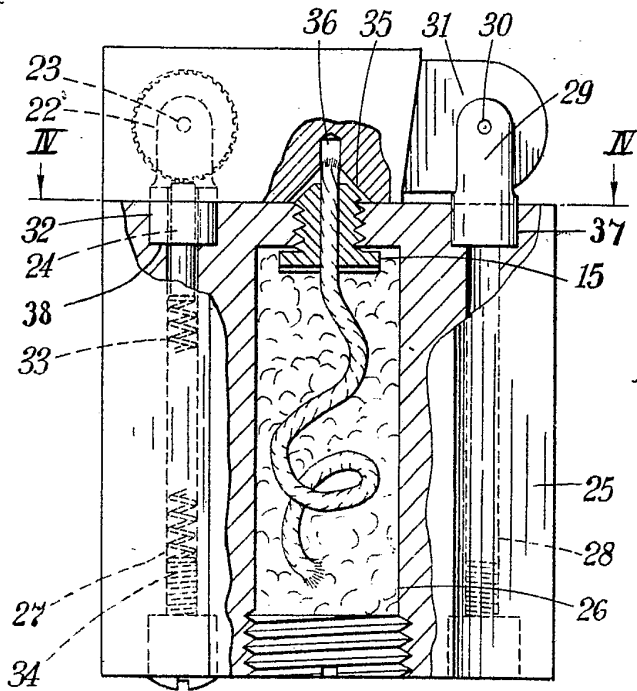


Fig. 3.

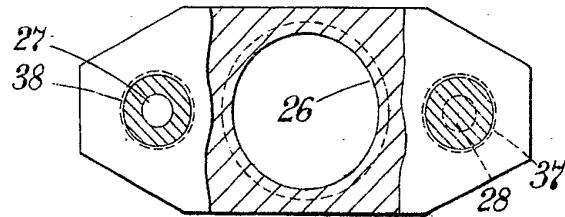


Fig. 4.