

PATENT SPECIFICATION



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PROVISIONAL SPECIFICATION

Improvements in and relating to Pyrophoric Lighters

We, ALFRED DUNHILL LIMITED, a British Company, of 30, Duke Street, St. James', London, S.W.1, and VERNON DUNHILL, a British Subject, of the same address, do hereby declare the nature of this invention to be as follows:—

This invention relates to pyrophoric lighters of the type wherein the spark is produced by relative movement between abrasive means such as a friction wheel and a flint or other pyrophoric material arranged in contact with the abrasive means. The object of the invention is to provide improved operating means for a lighter of this type.

According to the invention the operating mechanism comprises a reciprocating plunger or the like which is actuated to oscillate an arm with which it is connected by link mechanism. The arm is provided with means for engaging with and imparting its movement to a slider until the slider and arm are separated by trip mechanism, whereupon the slider is returned by a spring, the friction wheel of the lighter being engaged and rotated by the slider during its return movement.

The reciprocating arm and the slider may be provided with cooperating abutments one of which is adapted to be progressively retracted by a stop as the arm and slider move forward together.

In one construction according to the invention a reciprocating plunger or the like is provided with a bifurcated arm which engages with a bell crank lever pivotally connected with a reciprocating arm. Adjacent this arm is mounted a slider having an extension which is adapted to engage with a ratchet wheel fast with the friction wheel. The slider is guided so as to slide on a spindle on which is threaded a spring the ends of which abut respectively against the slider and a fixed stop which forms a bearing for the spindle. A side of the slider is provided with a resilient projection which is preferably formed by cutting and bending outwardly part of the metal side of the slider. Adjacent the resilient projection a fixed stop is provided on the

lighter and so arranged that as the slider is moved forward the stop will bear against and retract the resilient projection towards the face of the slider.

The resilient projection is adapted to be engaged by an abutment on the reciprocating arm when it is actuated by the plunger.

In operation the plunger is manually actuated to rotate the bell crank lever and move the arm whereupon the abutment engages with the resilient projection on the slider and the movement of the arm is thereby imparted to the slider. As the slider moves its spring is tensioned until the position is reached when the resilient projection of the slider is retracted by the stop out of engagement with the abutment on the arm, whereupon the slider is sharply returned by its spring and the friction wheel rotated. Springs may be provided for returning the plunger and arm to their original position after each operation of the plunger.

The invention is particularly applicable for use in table lighters and in one construction it is embodied in a table lighter designed as an antique oil lamp. In this case the plunger projects vertically from the top of the lighter and the arm and slider are arranged horizontally side by side the friction wheel also being horizontal. The wick holder and friction wheel may be mounted in the front portion of the bowl of the lamp and covered by a hinged lid which is connected to the reciprocating arm of the mechanism so that on operating the plunger the lid is open and the spark produced. The plunger may be hollow and adapted to hold a detachable torch which may be removed and lit as required from the wick which is adjacent to and ignited by the flint.

Dated this 30th day of January, 1937.

ABEL & IMRAY,
30, Southampton Buildings,
London, W.C.2,
Agents for the Applicants.

COMPLETE SPECIFICATION

Improvements in and relating to Pyrophoric Lighters

- We, ALFRED DUNHILL LIMITED, a British Company, of 30, Duke Street, St. James', London, S.W.1, and VERNON DUNHILL, a British Subject, of the same address, 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 relates to pyrophoric lighters of the type wherein the spark is produced by relative movement between abrasive means such as a friction wheel and a flint or other pyrophoric material arranged in contact with the abrasive means. The object of the invention is to provide improved operating means for a lighter of this type.
- 20 According to the invention the operating mechanism comprises a reciprocating plunger or the like which is actuated to displace an arm with which it is connected as for example by link mechanism. The arm is provided with means for engaging with and imparting its movement to a slider until the slider and arm are separated by trip mechanism, whereupon the slider is returned by a spring, the friction wheel of the lighter being engaged and rotated by the slider during its return movement.
- 30 The arm and the slider may be provided with cooperating abutments one of which is adapted to be progressively retracted by a stop as the arm and slider move forward together.
- To enable the invention to be fully understood it will now be described with reference to the accompanying drawings in which:—
- 40 Fig. 1 is a part sectional elevation of a table lighter embodying the present invention and
- 45 Fig. 2 is a plan view of the operating mechanism of the lighter shewn in Fig. 1.
- In the accompanying drawings the table lighter takes the form of an antique oil lamp and comprises a body 1 having a removable cover 2. A horizontal cover plate 3 is secured within the body 1 forming a fuel container 3a which may be filled with the usual absorbent material. A hollow vertical shaft 4 is mounted on the plate 3 surrounding an aperture formed in the cover plate 3 and is screw-threaded at its upper end to receive a nut 4a for securing the cover 2 to the body. A hollow plunger 5 is slidably mounted in the shaft 4, the plunger having a lug 6 which is guided in a vertical slot in the wall of the shaft. A friction wheel 7, flint tube 8 and wick 9 are provided at one end of the cover plate 3. Brackets 10 are secured to the plate 3 and form journal bearings for the pivot 11 of a bell crank lever 12. One arm of the bell crank lever carries a stud 13 and the other arm is pivoted to one end of an arm 14. The other end of the arm 14 is pivoted to a link 15 attached to a hinged portion 16 of the cover 2 which covers the wick and lighter parts. The arm 14 is normally held in the neutral position shewn in Fig. 2 by the spring 17.
- 65 At the side of the arm 14 is a slider 18 which consists of a U-shaped strip of metal which slides on a spindle 19 on which is threaded a spring 20 the ends of which respectively abut against the slider and a fixed block 21 secured to the base plate 3. Pins 22 and 22a are provided at either side of the slider and guide it during its travel.
- 80 One arm of the slider is extended to form a pawl 23 which is urged into engagement with a ratchet wheel 24 connected with the friction wheel 7. The other arm of the slider has a resilient tongue 25 which is formed by cutting and bending part of the metal of the arm so as to lie in the path of a shoulder 26 on the arm 14.
- 85 In operation the plunger 5 is depressed to bring the lug 6 into engagement with the stud 13 and rotate the bell crank lever 12. The bell crank lever imparts movement to the arm 14 and as the said arm advances, the shoulder 26 engages with the tongue 25 on the slider which is thereby carried along with the arm 14, the springs 17, 20 being tensioned and the pawl 23 riding over the teeth of the ratchet wheel 24. As the slider is advanced the tongue 25 is progressively retracted out of engagement with the shoulder 26 by the pin 22. Immediately the tongue and shoulder are completely disengaged the slider is sharply returned by its spring 20 and the ratchet wheel rotated by the pawl 23 and the friction wheel 7, thereby rotated in contact with the flint to ignite the wick 9 and simultaneously as the arm 14 is advanced the hinged portion 16 is raised into the position shewn in chain lines in Fig. 1 to uncover the flame. The link 15 is so arranged that the lid is held in the raised position after the plunger 5 is
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released and until positively closed by hand, whereupon the mechanism is automatically reset.

5 In the hollow plunger 5 is arranged a torch device consisting of a stem 27 carrying a wick 28 and extending down into the fuel container 3a, the torch being adapted to be withdrawn and lit from the ignited wick 9 when desired.

10 It will be understood that the operating mechanism described above may be embodied in other forms of lighters and that the invention is not restricted to so-called table lighters.

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

20 1. A pyrophoric lighter having operating mechanism which includes a reciprocating plunger or the like which is actuated to displace an arm having means for imparting its movement to a slider against the action of a spring until the slider is released by trip mechanism to return under the action of the spring and effect the rotation of the friction wheel of the lighter.

30 2. A lighter according to claim 1 wherein the arm is connected to a bell crank lever operated by the plunger or the like and both the arm and the slider are provided with cooperating abutments which are engaged as the arm is displaced by the bell crank lever, the abutments being disengaged subsequently to allow the slider to return under the action of its spring.

40 3. A lighter according to claim 1 or 2 wherein the arm is formed with a projection shoulder which engages with a resilient tongue on the slider which

tongue is progressively retracted out of engagement with the lug as the slider is 45 advanced by the arm.

4. A lighter according to any one of the preceding claims wherein the slider is provided with a pawl or the like which engages with teeth or like projections on 50 a member connected with the friction wheel to rotate the said wheel during the return movement of the slider.

5. A lighter according to any one of claims 2 to 4 wherein the plunger carries 55 a projection which engages with and rotates the bell crank lever pivotally connected with the arm.

6. A lighter according to any one of the preceding claims wherein the arm is 60 connected with a hinged lid in such a manner that on actuation of the plunger to operate the friction wheel the lid is raised to uncover the wick and remains in that position after the release of the 65 plunger.

7. A lighter according to any one of the preceding claims wherein the plunger is hollow and has a detachable torch 70 device arranged within it.

8. A lighter according to any one of the preceding claims designed as a lamp of the kind described and shown in the 75 accompanying drawings, wherein the plunger is vertically disposed and the arm and slider are arranged side by side on a horizontal plate.

9. A pyrophoric lighter having operating mechanism constructed and operating 80 substantially as described with reference to the accompanying drawings.

Dated this 7th day of December, 1937.

ABEL & IMRAY,
30, Southampton Buildings,
London, W.C.2,
Agents for the Applicants.

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

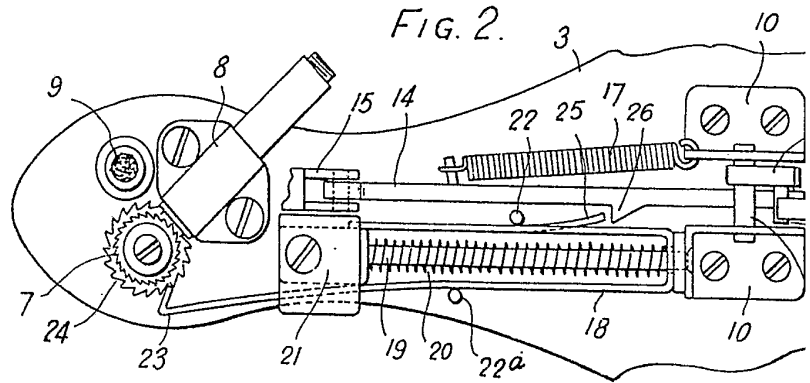
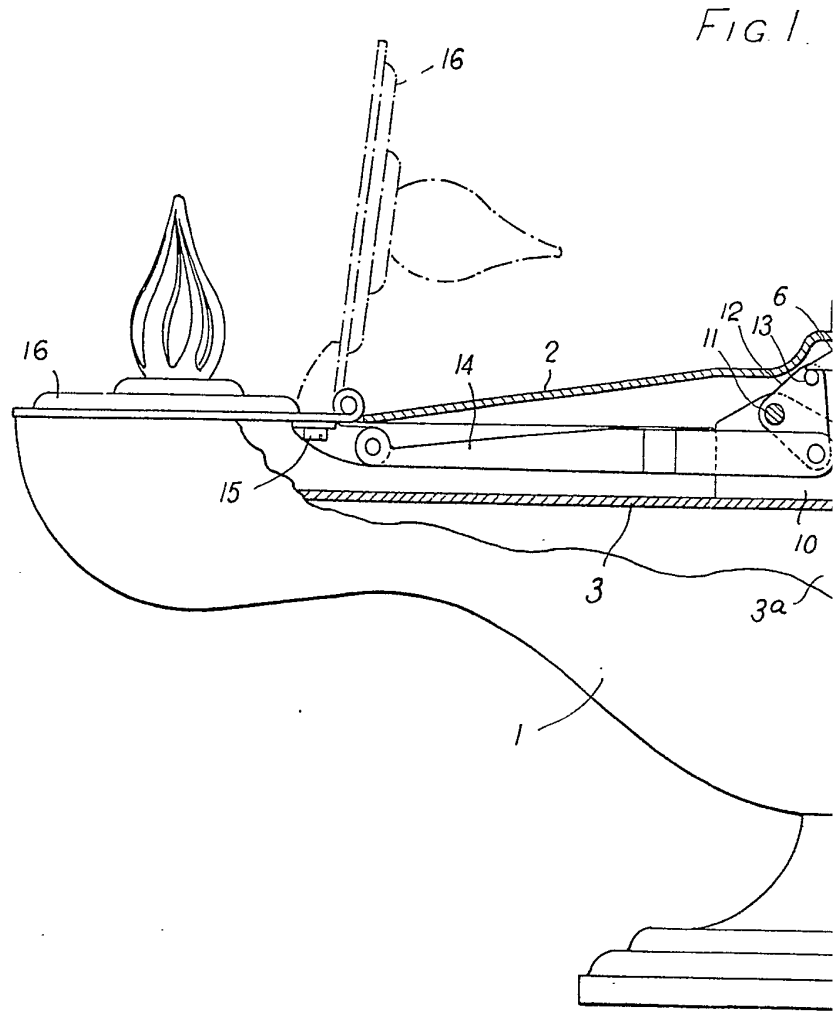
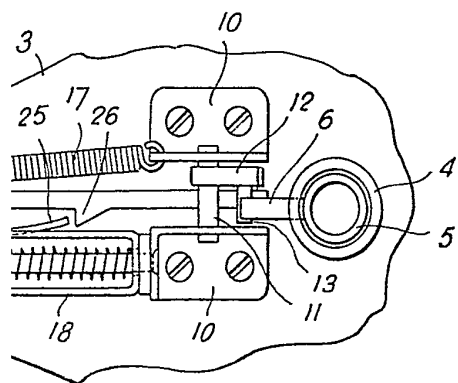
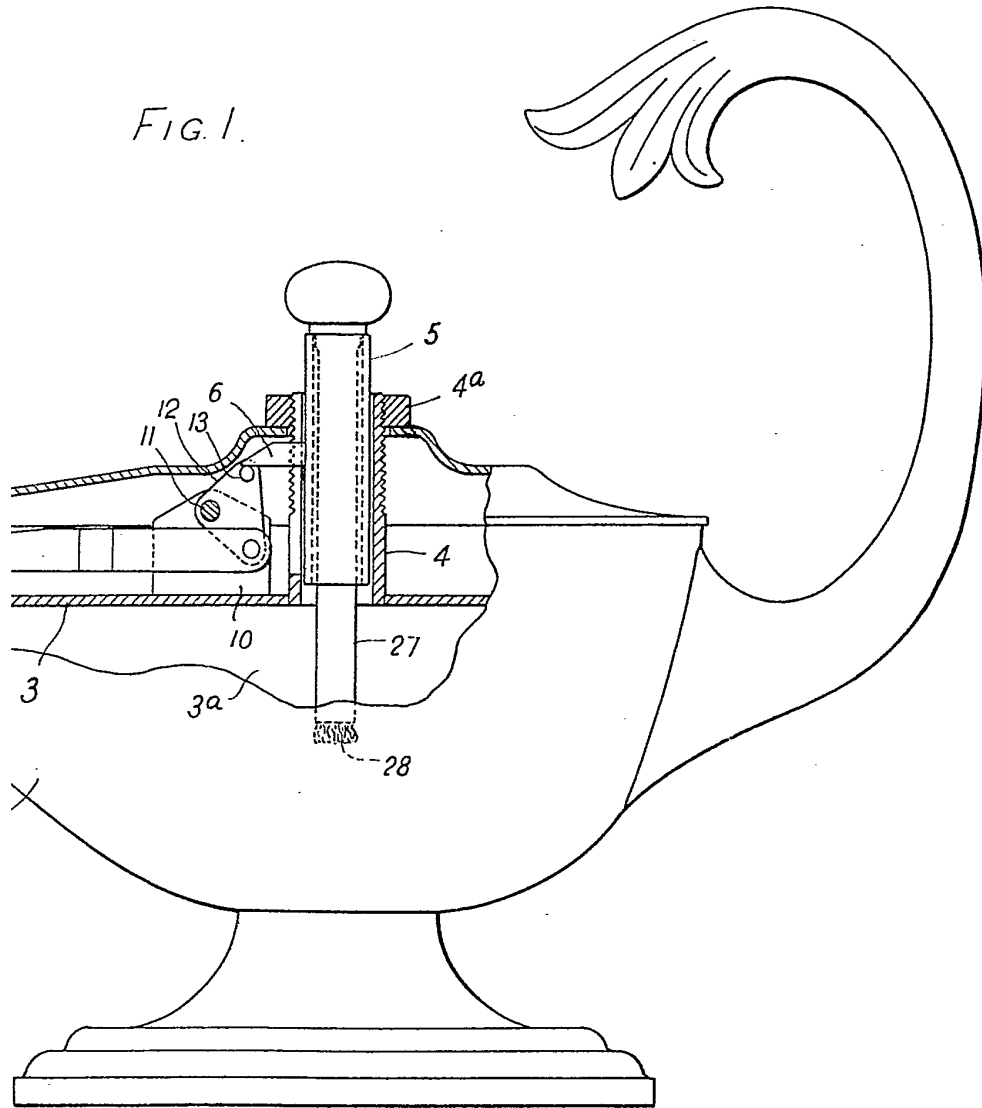


FIG. 1.



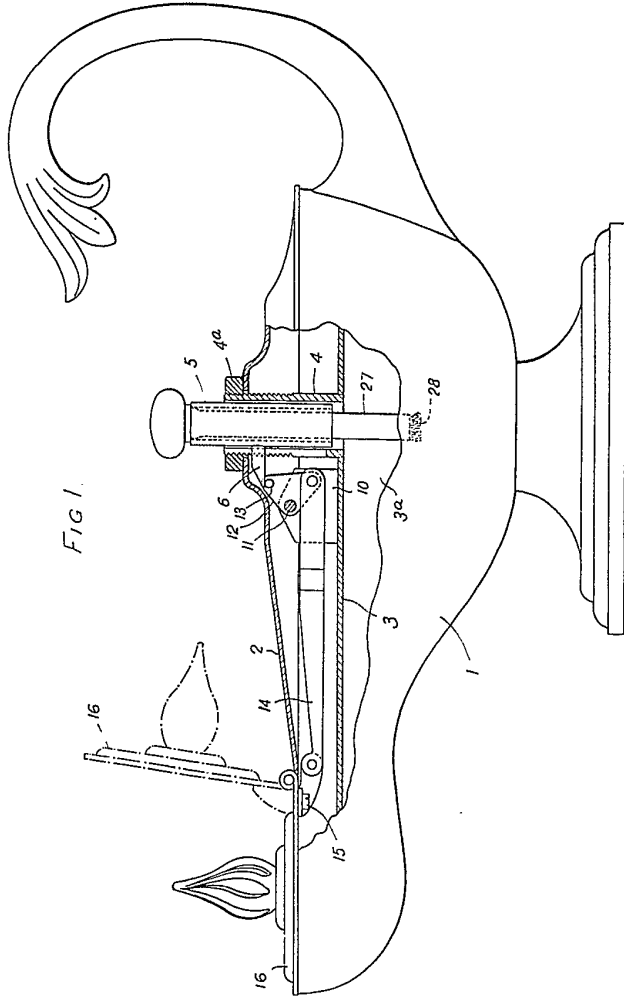


FIG. 1.

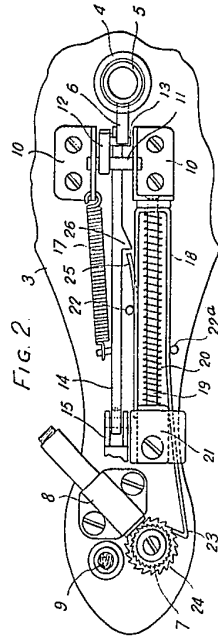


FIG. 2.

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