PATENT SPECIFICATION

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COMPLETE SPECIFICATION

Improvements in or relating to Pyrophoric Lighters

I, IRVING FLORMAN, a citizen of the United States of America, of 800, Riverside Drive, New York City, New York, United States of America, 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:—

This invention relates to cigarette lighters and particularly to pocket pyrophoric lighters of the kind including a pair of relatively movable parts, the movement of which automatically actuates the ignition mechanism.

The principal object of this invention is to provide an improved pyrophoric lighter of this type which is of simple construction and efficient in operation.

It has already been proposed to provide a cigarette lighter having a fuel reservoir which telescopes into an outer casing carrying ignition mechanism and having a hinged cover which is opened on, and the wick ignited on, the reservoir being pushed into the outer casing.

According to this invention I provide a pyrophoric lighter of the kind referred to wherein a pair of relatively slidable sections, one section carrying the ignition mechanism and the other section carrying the fuel chamber and wick, which latter projects outside the said section, form, in the normal position thereof, a substantially closed casing, the section carrying the ignition mechanism covering the projecting wick portion, and are slidable apart for the purpose of exposing the wick therebetween and automatically actuating the ignition mechanism, means being provided for limiting the relative separating movement of the sections. The means for limiting the relative movement of the sections advantageously includes a recess or recsses formed in one of the sections and a pin carried by the other section which engages the said recess or recesses.

The ignition mechanism preferably includes resilient means which resist relative movement between the said sections and form the only resilient resistance to movement therebetween. These means may comprise an operating member including a pawl having a one-way connection with a flint wheel and operable through the medium of a spring, so that, on relative movement of the said sections, the member is first moved to tension the spring and is then released, whereby the said member is caused to actuate the flint wheel. A tongue carried by the section carrying the fuel chamber advantageously co-operates with the said operating member, for example with a hook formed thereon, during the relative movement of the sections.

The fuel chamber is preferably formed by an open-bottomed shell having a closing cap or cover on the open end thereof, the upper part of the shell carrying at one side a wick which extends into the fuel chamber, the shell extending, however, beyond the limits of the applied cap or cover so as to form a guide on which the section carrying the ignition mechanism is slidable; the said upwardly extending portion of the shell being made partly open at the sides so as to enable, when the two sections are slid apart, access to be had to the wick. The upper or slidable section is preferably formed with a depending tube on the lower end of which is carried a frame housing the ignition mechanism, the two sections being so constructed that when the lighter is in the closed position a substantially closed casing is formed having no projecting parts.

In order that the invention may be fully understood, I shall now describe one embodiment thereof, by way of example, by reference to the accompanying drawings, in which:—

Fig. 1 is a side elevation showing a lighter according to the invention in open operative position.

Fig. 2 is a cross section thereof in closed position, and

Fig. 3 is a cross section on the line 3—3 of Fig. 2.

The lighter comprises two sections A and B. The lower section B or body of the lighter comprises a shell 2 which is open at the bottom and is closed by a cap or cover 4. The inside of the shell 2 thus forms a fuel chamber 6. The cover 4 may

be secured on the shell 2 by means of a screw 8. The said shell 2 is formed with a part 10 carrying in its top a tube 12 in which is arranged a wick 14, preferably formed of a rigid, porous material, such as meerschaum. The said wick 14 thus extends into and receives fuel from the fuel chamber. The shell 2 extends upwardly at 16 at its other side beyond the cover 4 and the wick 14 and includes a yoke or ring-like portion 18 leaving a space 20 between the said portion 18 and the part 10 to permit access of air to the wick and to allow the user to bring his cigarette up to the wick to be lighted.

The upper section A includes a cover or a shell 24 adapted to slide over the upper part of the shell 2 until it engages the upper edge of the cover 4. The arrangement then presents the appearance of a closed casing. Inside of this shell 24 is mounted a snuffer tube 26 which, when the cover or shell 24 slides downwardly, covers the wick so as to extinguish the flame and prevent the evaporation of fuel from the wick.

There is also provided on the cover an inwardly extending tube 28. This tube is closed at its upper end by a screw threaded plug 30 and encloses a coil spring 32. The tube 28 acts both as a flint holding tube and as a support for the igniting mechanism. At the lower end of the tube 28 is arranged a frame 34 which supports a shaft 36 on which is mounted a flint wheel 38 in engagement with a flint 40 arranged in the bottom of the tube 28. Likewise mounted on the shaft 36 is an operating pawl member 42 having a tongue 44 adapted to engage with ratchet teeth 46 on the side face of the flint wheel 38. It is evident that, when this member turns in one direction (counter-clockwise, Fig. 2), it will impart motion to the flint wheel whilst, upon turning in the other direction, it will move freely with respect thereto. A spring, such as a coil spring 48, is arranged with one end 50 resting against a fixed part of the frame 34 while the other end 52 rests against a hooked portion 54 of the member 42. This spring therefore tends to turn the flint wheel in a counter-clockwise direction (Figs. 1 and 2).

Mounted on the part 16 of the shell 2 is a tongue 56 of resilient material which extends downwardly and lies in the path of the hook 54 of the member 42. This tongue is so arranged that, upon upward movement of the shell 24, it will engage the hook 54 and cause the member 42 to turn in a clockwise direction against the action of the spring 48. When the cover or shell 24 reaches a certain point in its travel, the inclination of the surface of the hook 54 will cause it to slide over and displace the end of the resilient member 56, and then the member 42 will turn rapidly under the action of the spring 48, thereby rotating the flint wheel to throw sparks on to the wick.

When the upper section A is moving backward towards closed position the element 42 slides easily over the resilient member 56 back to the position shown in Fig. 2.

In order to limit relative sliding movement between the two sections of the lighter, I provide a pin 60 which is secured in the opposed side walls of the shell 24, and engages recesses 22 formed in the parts 16 and 18 at the upper and lower sides of the hole 20. It is evident that this pin will limit the relative movement of the two parts of the lighter between the positions shown in Fig. 1 and in Fig. 2. Such an arrangement has the advantage that, when the sections have been pulled apart a certain distance, no further motion is possible, whereas, where the parts are freely separable, they are likely to be pulled apart so rapidly, in imparting the motion necessary to cause the ignition mechanism to operate, that any flame, which is formed, will be extinguished by the motion of the lighter through the air.

In order to fill the lighter, I provide a screw 62 arranged in the part 10 of the shell 2, in an aperture which communicates with the fuel chamber at a point near the wick. This screw is so located that, when the lighter is in closed position, it is covered by the upper portion 24.

If the cotton which fills the fuel chamber 6 is to be removed for any reason, it is only necessary to take out the screw 8 and the cover 4 may then be slid off the shell 2.

It will be noted that there is no mechanism biasing the lighter either to closed or open position, so that the motion is entirely controlled by the user. However, when the lighter is in the closed position as shown in Fig. 2, the ignition mechanism itself holds the lighter against accidental opening since such opening involves a compression of the spring 48.

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

1. A pyrophoric lighter of the kind referred to wherein a pair of relatively slidable sections, one section carrying the ignition mechanism and the other section carrying the fuel chamber and wick,

which latter projects outside the said section, form, in the normal position thereof, a substantially closed casing, the section carrying the ignition mechanism covering the projecting wick portion, and are slidable apart for the purpose of exposing the wick therebetween and automatically actuating the ignition mechanism, means being provided for limiting the relative separating movement of the sections.

2. A pyrophoric lighter as claimed in claim 1, wherein the means for limiting the relative movement between the sections includes a recess or recesses formed in one section and a pin carried by the other section engageable with said recess or recesses.

3. A pyrophoric lighter as claimed in either of the preceding claims, wherein the ignition mechanism includes resilient means resisting relative movement between the said sections.

4. A pyrophoric lighter as claimed in claim 3, wherein the said means forms the only resilient resistance to movement between the sections.

5. A pyrophoric lighter as claimed in claim 3 or 4, wherein the said means comprises an operating member having a one-way connection with a flint wheel and which is operable through the medium of a spring, the said member on relative movement between the said sections being first moved to tension the said spring and then released, whereby the said operating member is caused to actuate the said flint wheel to ignite the wick.

6. A pyrophoric lighter as claimed in claim 5, wherein the section carrying the fuel chamber also carries a depending tongue with which the said operating member momentarily engages during relative movement of the said sections.

7. A pyrophoric lighter as claimed in claims 5 and 6, wherein the operating member includes a pawl and a hook, engaging said spring, the said member, on movement of the said sliding section, contacting the said tongue and being displaced thereby to tension the said spring.

8. A pyrophoric lighter as claimed in any of the preceding claims, wherein one section comprises an open-bottomed shell having a closing cap or cover on the open end thereof and forming the fuel chamber, the said shell carrying a wick extending into the so-formed fuel chamber, and the said shell also extending beyond the limits of the said closing cover when the latter is applied thereto so as to form a guide on which the other ignition-mechanism-carrying section is slidable.

9. A pyrophoric lighter as claimed in claim 8, wherein the part of the said shell above the fuel chamber is partly open at the sides to enable, when the two sections are slid away from one another, access to be had to the said wick.

10. A pyrophoric lighter as claimed in claim 8 or 9, wherein the ignition mechanism is carried by a frame mounted at the lower end of a tube depending from the slidable section.

11. A pyrophoric lighter as claimed in claim 10, wherein the said slidable section also carries a snuffer for the wick.

12. A pyrophoric lighter as claimed in claim 10 or 11, wherein the ignition mechanism comprises a flint wheel engaging a flint carried in the said tube and formed with ratchet teeth engageable by the said operating member.

13. A pyrophoric lighter comprising a shell having a fuel chamber therein and an upward extension, a wick on the said fuel chamber and communicating with said fuel chamber, a cover member slidably mounted on the upward extension of said shell, a flint tube carried by the said cover member and extending downwardly therefrom, a flint mounted in the said tube, a frame carried by the lower end of said tube, a shaft carried by the said frame, a flint wheel mounted on said shaft, an operating member carried by the shaft and having a one-way connection with the flint wheel, a spring acting on the said operating member in a direction to cause actuation of the flint wheel to ignite the wick, a tongue carried by the said shell, the said tongue lying in the path of a portion of the said operating member, whereby upon upward movement of the said cover member the said tongue pushes the said operating member in a direction to compress the spring and then releases the same so that the operating member is caused to actuate the flint wheel, means being provided for limiting relative sliding movement between the said shell and the cover member comprising a recess in one and a pin secured in the other for engaging in the said recess.

14. The improved pyrophoric lighter constructed and arranged substantially as hereinbefore described and illustrated in the accompanying drawing.

Dated the 29th day of July, 1937.

S. SOKAL,
1, Great James Street, Bedford Row,
London, W.C.1,
Chartered Patent Agent.

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Fig. 1.

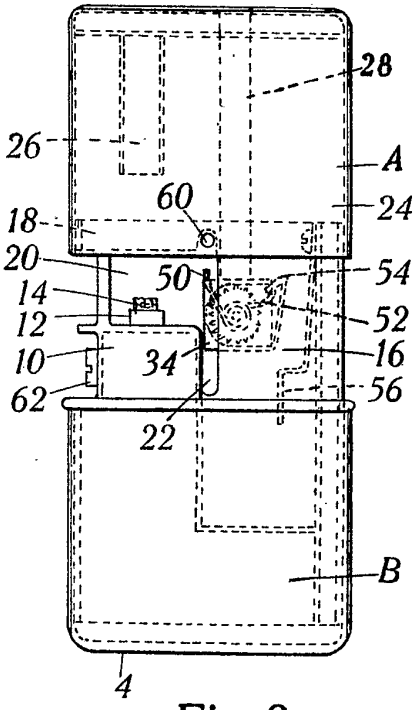


Fig. 2.

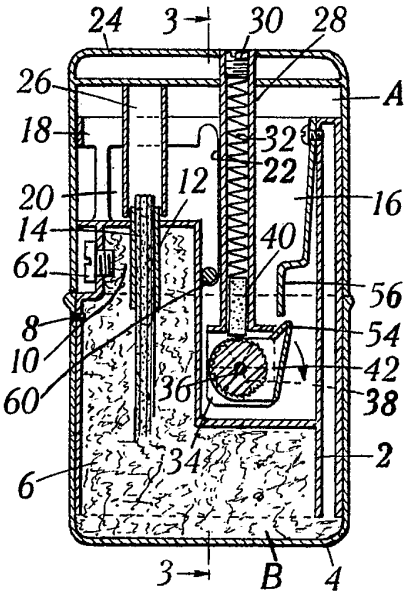
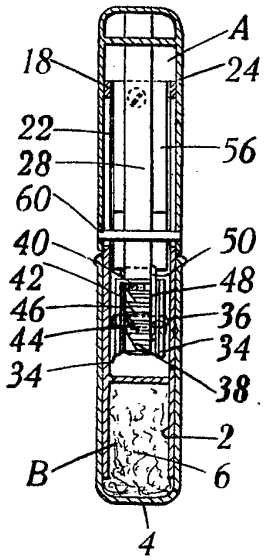


Fig. 3.



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