May 15, 1951 L. HUTCHINSON ET AL 2,552,718

LIGHTER

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Fig. 3.

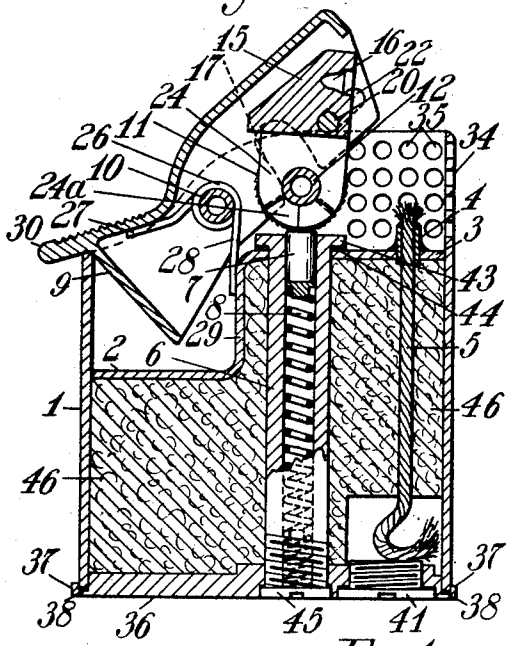


Fig. 4.

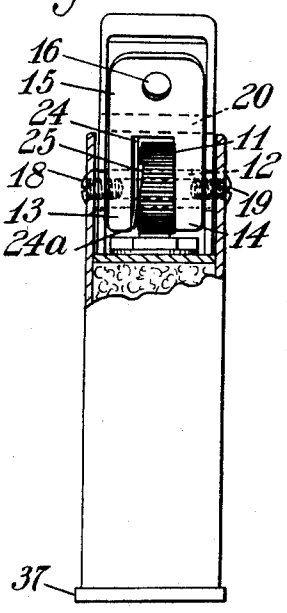


Fig. 1.

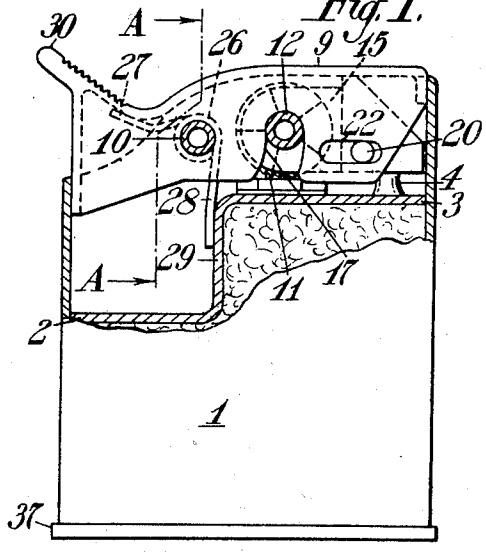
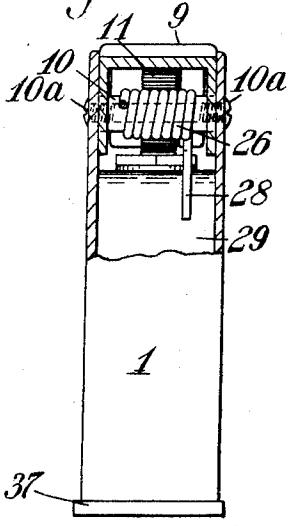


Fig. 2.



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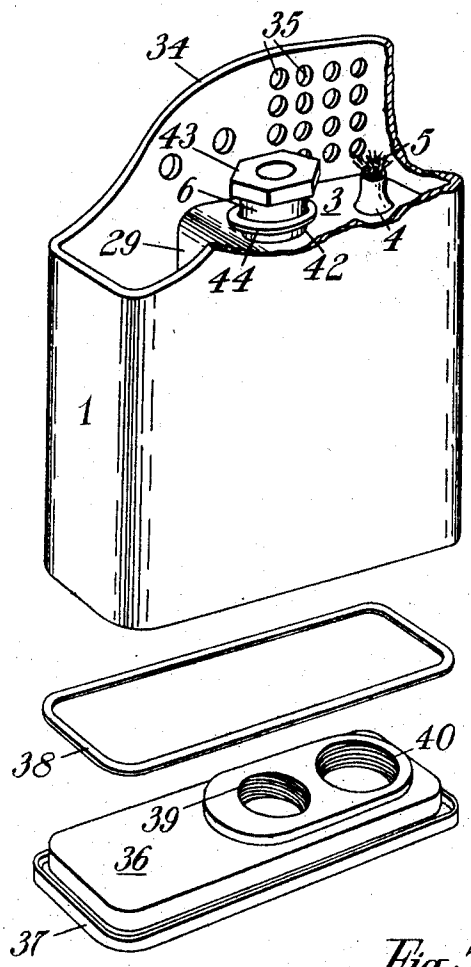


Fig. 5.

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Patented May 15, 1951

2,552,718

UNITED STATES PATENT OFFICE

2,552,718

LIGHTER

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Application September 8, 1949, Serial No. 114,492
In Great Britain February 23, 1949

2 Claims. (Cl. 67—7.1)

1

This invention relates to lighters and more particularly to automatic lighters of the kind in which the operation thereof causes a spark to be applied to the wick whereby a flame is produced.

In lighters of this character the flint is usually mounted in the end of a tubular passage formed in the body of the lighter, the flint being held in contact with the flint wheel by means of a spring loaded plunger screwed into position within such tubular passage.

An object of the present invention is to provide an automatic lighter which has a more satisfactory form of mounting means for the flint and in which the various component parts may be conveniently assembled to form a robust and efficient mechanical device which is not liable to get out of order and which will perform efficiently the functions for which it is intended.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts as will be exemplified in the structure to be hereinafter described and the scope of the application of which will be indicated in the following claims.

The invention will be more completely understood from the following detailed description which is given in conjunction with the accompanying drawings, in which:

Figure 1 is a side view shown partly in section of an automatic lighter constructed in accordance with the invention and shown in the closed position;

Figure 2 is an end view of the lighter shown partly in section on the line A—A of Figure 1;

Figures 3 and 4 are sectional side and end views respectively of the lighter in the open position; and

Figure 5 is an exploded view of the lighter body in perspective.

Referring now to these drawings, the body of the lighter is constructed in the form of a rectangular based prism 1 and mainly serves in the usual manner as a fuel reservoir. The upper end of the body 1 is closed by a stepped plate, the lower level 2 of which lies within the main casing of the body 1 so as to provide a recess. The upper level 3 of the stepped plate carries a wick nipple 4 through which the wick 5 projects, and this upper level 3 is also provided with an aperture through which a flint tube 6 projects, this tube 6 providing a housing for a flint 7 and pressure spring 8. The interior of the body below the stepped plate serves as a fuel reservoir and is filled with cotton-wool 46 or other suitable absorbent material. Over the recess or cavity formed by the stepped plate there is pivotally supported a member permitting hand operation of the lighter. This member 9 is of channel section and is provided with a hollow spindle or trunnion 10 by means of which the member 9 is pivoted to the body 1, the ends of the trunnion 10 being screw threaded to receive a pair of screws or bolts 10a which are arranged to pass through the apertures in the sides of the body 1 with which the ends of the trunnion 10 register when the member 9 is placed in position. The flint wheel 11 is mounted on a second hollow spindle or trunnion 12 which passes between the arms 13 and 14 of a bifurcated lever 15 which is also provided with a recess 16 which forms a snuffer for engaging with the wick nipple 4 when the lighter is closed. The trunnion 12 passes through a pair of slots 17 in the side flanges of the operating member 9 and is pivotally secured at each end to the sides of the body 1 by a pair of screws or bolts 18 and 19 passing through apertures in the body 1 with which apertures the trunnion 12 registers, the screws or bolts 18 and 19 engaging with the ends of the trunnion 12 which are internally threaded for this purpose. The lever 15 is operatively connected to the member 9 by means of a pin or roller 20 which passes through lever 15 and engages in slots 22 and 23 in the side flanges of the member 9. One side of the flint wheel 11 is cut inwardly to provide a saw-toothed edge, and between this toothed edge and the inner side of one arm 13 of the lever 15 there is provided a leaf spring 24 which is mounted on the trunnion 12, and is split at one side to form a pair of tongues, one of which 24a is bent inwards so as to engage with the teeth 25 formed on the side of the flint wheel 11. This leaf spring 24 together with the teeth 25 thus comprise a pawl and ratchet system for controlling the flint wheel 11, the arrangement being such that when the lever 15 is lifted the flint wheel 11 is effectively rotated to produce a spark, but when the lever 15 is returned to the closed position the flint wheel remains stationary, the dimensions of the teeth 25 being such that when the lever 15 reaches the closed position the tongue 24a makes contact with the next tooth in readiness for the next operation.

A coil spring 26 is provided on the trunnion 10 for holding the lighter in the closed position, this spring having two projecting ends 27 and 28 which are so arranged as to press against the hand operated member 9 and the upright part 29 of the stepped plate respectively.

The upper end of the lighter body casing 1 is extended upwardly beyond the upper level 3 of the stepped plate so that when the operating member 9 is in the inopertive position the sides of the lighter body 1 enclose the operating member 9 with the exception of the end 30 thereof, which must be available for the finger or thumb pressure. The upper extension 34 of the lighter body 1 is formed with perforations or gill slits 35 in the region of the wick nipple 4 so as to provide air for combustion. This arrangement ensures that the wick is guarded against draughts and renders the lighter substantially wind-proof.

The lower end of the lighter body is closed by a detachable plate 36 which forms the base of the lighter and has a recessed flange 37 into which the lower end of the body 1 fits, a rectangular shaped gasket 38 formed of fibre or hard rubber or the like being provided which fits into the recessed flange 37, and forms a fluid-tight seal between the body 1 and the base plate 36. The latter also has two circular apertures 39, 40, one of which receives the lower end of the flint tube 6, while the other serves as a fuel supply opening and is provided with a screw-threaded closure plug 41.

The flint tube 6 is constructed in the form of a detachable unit which is slid into position through an aperture 42 in the upper end of the fuel reservoir 3. The upper end of this flint tube 6 is provided with an enlarged or flanged portion 43 of hexagonal shape which serves as a limiting stop, while the lower end is externally screw-threaded, preferably with a left-hand thread, for engagement with the threaded aperture 39 in the base plate. A rubber or fibre washer 44 is provided on the flint tube 6 which is pressed between the flanged end 43 and the upper surface of the fuel reservoir 3, when the flint tube is screwed into the aperture 39, so that when the flint tube is screwed home, a fluid-tight seal is formed where it passes through the upper end of the fuel reservoir, and the base plate 36 is secured firmly in position. The lower end of the flint tube is also screw-threaded internally to receive a closure plug 45 which engages with the lower end of the spring 8 so as to cause the latter to press the flint 7 against the flint wheel 11.

The operation of the lighter is as follows: When the end 30 of the hand operated member 9 is depressed by the thumb or finger, this member is swung about its trunnion 10 as a pivot causing the end 31 to rise. This action lifts the pin or roller 20, which in turn lifts the lever 15 which swings about its trunnion 12, this action being permitted by the slots 17 which allow the hand operated member 9 to swing away from the trunnion 12, the axis of which remains stationary, the pin or roller 20 rolling down the slots 22 and 23 in the side flanges of the member 9 as the latter rises into the open position. This action causes the cap 16 to swing away from the wick 5 and at the same time the ratchet spring 24 pushes round the flint wheel 11 which is thus effectively turned to produce a spark from the flint 7 to light the wick.

When the pressure on the end 30 of the upright member 9 is released, the latter member swings back under the action of the spring 26 which thus restores the lighter to the closed position in readiness for the next operation, the cap 16 being automatically replaced over the wick so as to extinguish the flame.

The end 30 of the hand operated member 9 is formed with an indented upper surface on which a thumb or finger may be pressed to swing the operating member about its pivot. The limit of movement of operating member 9 is controlled by the pin or roller 20 in lever 15 coming to rest in the end of slots 22 and 23 in member 9.

We claim:

1. Automatic lighter comprising a body part containing a fuel reservoir, a base plate formed as a separate unit detachably arranged in the lower end of said body part so as to form a closure for said fuel reservoir, and a tubular member for housing a flint, said tubular member being slidably mounted in said body part and having a screw threaded portion at its lower end engaging with a screw-threaded aperture in said base plate, and a limiting stop at its upper end engaging with said body part whereby said base plate is detachably secured to said tubular member and firmly held in position against the lower end of said body part.

2. Automatic lighter comprising a body part containing a fuel reservoir, a base plate formed as a separate unit detachably arranged in the lower end of said body part, and having a peripheral recessed flange for receiving the lower end of the body walls, a tubular member for housing a flint slidably arranged in said body part and having a screw-threaded portion at its lower end engaging with a screw-threaded aperture in said base plate, and a limiting stop at its upper end engaging with the upper end of said body part, a resilient washer disposed around said tubular member immediately below said limiting stop and a gasket formed of resilient material disposed within said recessed flange, whereby fluidtight joints are formed both between said tubular member and the lighter body and between said base plate and the body walls when the lower end of said tubular member is screwed into said base plate.

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