PATENT SPECIFICATION

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350,742

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COMPLETE SPECIFICATION.

Improvements in or relating to Friction Lighters.

We, KARL WIEDEN G.M.B.H., a German company, of Scheffelstrasse 26, Solingen-Ohligs (Rhld.), Germany, 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 friction lighters of the kind embodying a pivotally mounted wick-closure cap operating a friction wheel to act upon a flint during its opening movement to effect ignition of the wick, and spring-actuated means associated with the cap for throwing the same open after a suitable manipulation to bring the loaded spring into operative position, and for holding the cap firmly closed under the action of the said spring.

The present invention provides an improved lighter of this kind so constructed as to be capable of cheap manufacture and unlikely to get out of order when in use, characterized by a spring-controlled rocker member coupled by means of a linkage with the closure-cap and adapted, after an initial movement given by the user, to displace the linkage and throw the cap open under the spring action, and, when the cap is closed, to restore the linkage to its normal position to retain the said cap firmly closed.

In order that the invention may be readily understood, reference is directed to the accompanying drawings illustrating a practical construction of lighter in accordance therewith and wherein:—

Figure 1 is a side view of the upper part of the lighter showing the parts in closed position.

Figure 2 is a similar view but partly in section showing the position which the parts assume when the lighter is in use, and

Figures 3 and 4 are diagrammatic views hereinafter referred to explaining the action of the parts, and showing positions thereof in relation to one another at the beginning of the opening motion.

Referring to the drawings, the spindle c, supported in the casing b by a bearing a, carries the closing cap d and the friction wheel e. The motion of the wick-covering cap d is transmitted, in a suitable manner, to the friction wheel e, so that, when the cap opens, the friction wheel rotates with it, and a lighting spark is produced, whilst, on the other hand, when the cap is closed, the wheel remains motionless. The wick-covering cap d is released by the movement of a segment f, which is pivoted at point g in the casing. A double-arm link h connects this segment f with the wick-covering cap d. Whilst one of the ends of the double-armed link h is positively connected with but pivoted on the wick-covering cap at point i, a connecting member k mounted on a spindle p at the other end of said double-link, works in a slotted guide l of the segment f, and compresses or releases, in the course of the motion which it thus performs, a spring m fitted in a cavity. The arrangement is such that in the closed position of the cap d the latter is abutted by the rocker f above the fulcrum, so that the tension of the spring m, which tends to rotate the segment f towards the closing cap d, keeps down said closing cap, with the wick-pipe n resting on a support o, which is preferably the wick-guide.

The general arrangement of the coupled parts is such that in the closed position, the rotary parts f, h, and d have completely, as shown by Figures 1 and 3, performed their motion. If a pressure is then exerted on point q of the segment f, the pivot p, and the connecting member k, are, at first, slightly lifted by the guide-slot, until the position shown by Figure 4 is reached. In the course of this motion, the spring m, already under a tension, is submitted to a greater tension, and, as soon as the latter has been reached, the link h assumes in relation to the pivot c of the closing cap d a position which is such that the point of equilibrium is passed, and the wick-cover d is thrown up with a jerk by the tension of the spring m.

The shape of the slotted guide l is optional; if desired, it could be given an

[Price 1/-]

irregular shape. Care need only be taken in carrying out this invention that the initial rotary motion of the segment *f* lifts the fulcrum *p* sufficiently to result in the link *h* being moved from a position of equilibrium to a position in which its centre line is well above the spindle *c*. When the link *h* is moved from this position of equilibrium, the connecting member *k* and consequently also the pivot *p* are moved back by the spring beyond the position shown by Figure 1, and as far as the extreme end of their stroke. The second part of this motion, comprised between the positions shown by Figures 1 and 2, may, if desired, follow a curve or guide of any shape. The slope of the guide-slot, as well as its shape, is also optional. Its selection allows of the preliminary tension, as well as of the opening resistance, being adjusted as required.

In accordance with this invention, the parts *f* and *d* are designed in such a manner that, in the closed position, their edges come into contact with each other at point *r*. This point of contact must be situated above the two pivots and points of application of power *i* and *p*. Owing to this spring tension, which acts at point *p*, and which, in the position illustrated by Figure 1, tends further to rotate the segment *f* in the direction shown by the arrow, the wick covering cap *d* is kept closed.

In the course of the closing motion, which may be brought about by pressure on the wick-covering cap *d*, the spring *m* must now be put under tension again. As soon, however, as the point *p* is brought above the vertical line *s*—*s*, the wick-covering cap sets tightly by itself, and is kept in the closed position by the pressure exerted on point *r*, as already stated.

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:—

1. A friction lighter of the kind set forth, characterized by a spring-controlled rocker member coupled by means of a linkage with the closure-cap and adapted, after an initial movement given by the user, to displace the linkage and throw the cap open under the spring action, and, when the cap is closed, to restore the linkage to its normal position to retain the said cap firmly closed.

2. A friction lighter as claimed in Claim 1, wherein the rocker is coupled to the closure cap by linkage having a pivot connection to the cap and a sliding connection with the rocker so disposed that said connections are brought substantially into line with the friction wheel axis when the cap is closed and therefore into a state of equilibrium, the sliding connection of the linkage with the rocker permitting said linkage to be thrown out of such position of equilibrium, the spring bearing at its one end upon the said sliding connection of the linkage to impart opening movement to the cap when said sliding connection is displaced, and bearing at its other end upon a part of the rocker disposed towards the closure cap when the latter is closed so as to cause the rocker to press on the closure cap at a position above the pivot points of the linkage to firmly retain it in closed position.

3. A friction lighter according to Claim 2, wherein the rocker is coupled by a double-arm linkage to the closure cap and is formed with a cavity housing a compression spring and is slotted in alignment with said cavity to allow passage of a member which connects the arms of the linkage and upon which the spring bears, for the purpose set forth.

4. A friction lighter constructed and operating substantially as herein described.

Dated this 23rd day of June, 1930.

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Fig. 1.

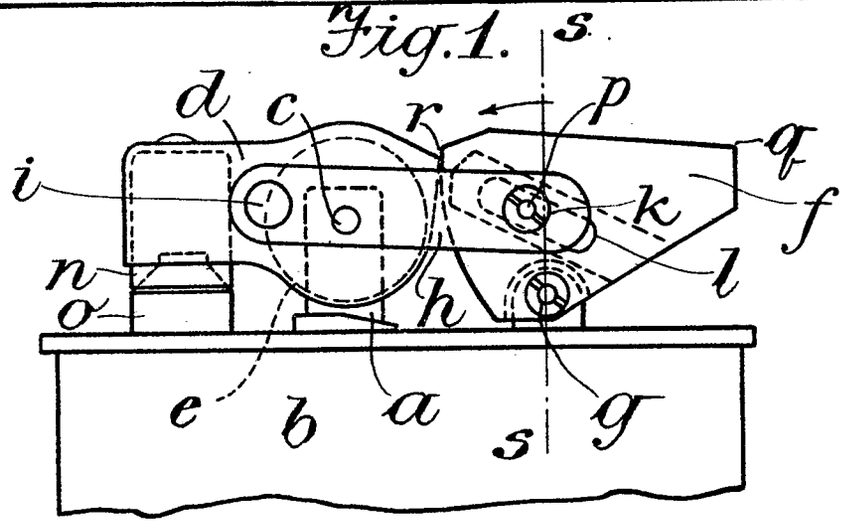
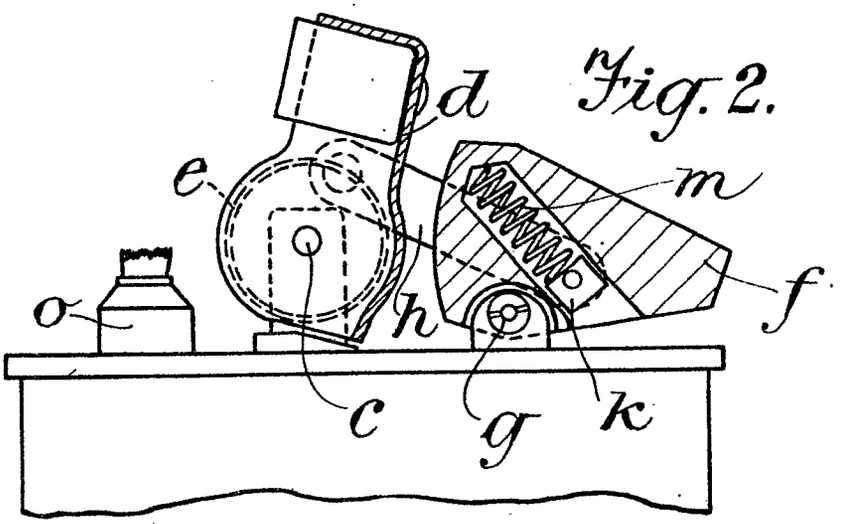


Fig. 2.



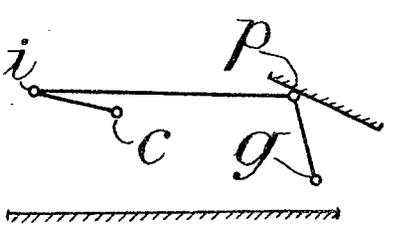


Fig. 3.

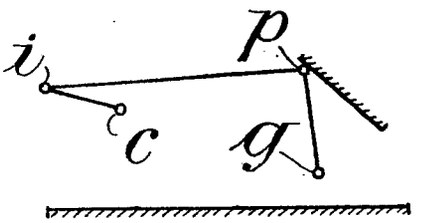


Fig. 4.

Charles & Read Ltd. Photo Litho.