PATENT SPECIFICATION

566,560

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COMPLETE SPECIFICATION

Pocket Lighter

We, JOHN LEMON BURTON and ALWIN EDGAR PERKINS, both of 55, Netherwood Street, Kilburn, London, N.W.6, and 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:—

This invention relates to pocket lighters of the known type in which a wick is ignited by sparks produced by the rotation of a friction wheel the peripheral surface of which contacts with a spring urged pyrophoric material, the lighter comprising a container adapted to hold cotton wool impregnated with petrol or other fuel to be supplied to the wick. According to the present invention spring-controlled and slidably mounted plunger is provided with a tooth co-acting with a helical groove on a spindle carrying the friction wheel whereby reciprocal movement of the plunger is converted into rotary movement of the spindle to effect rotation of the friction wheel. The plunger and operating spindle may be housed within a tube mounted within the container and the flint tube carried on the top of the container or the plunger and operating spindle may be housed within a tube carried on the top of the container and the flint tube mounted within the container.

But in order that the invention may be clearly understood and readily carried into practice reference is now made to the embodiments thereof illustrated by way of example in the accompanying drawings in which similar reference characters relate to like parts in all the Figures and in which:—

Figure 1 is a sectional elevation, and

Figure 2 a plan view of one form of construction, and

Figures 3 and 4 are similar views showing an alternative arrangement of the plunger and operating spindle with respect to the flint tube.

Figures 5 and 6 are fragmentary views, in respective sectional and outside elevations, showing a modification in the construction whereby the friction wheel is positively rotated in one direction only.

The drawings illustrate a pocket lighter comprising a container *a* of more or less conventional form with flat sides, top and bottom and rounded ends. In the construction shown in Figures 1 and 2, a vertical tube *b* is mounted within the container *a* to provide a housing for a tubular plunger *c* and an operating spindle *d*. The plunger *c* is slidably fitted within the lower part of the tube *b* and its lower end normally extends through the tube and through the bottom of the container *a* and is provided with a flange that constitutes a thumb piece *e*. The bore *f* of the plunger *c* is reduced in diameter to receive the lower part of the spindle *d* rotatably mounted therein and secured by the nut *g* that bears against the shoulder *h* formed by the reduction of the bore *f*. The spindle *d* passes up through the tube *b* and is formed with an enlargement *k* adjacent to its upper end which bears against the undersurface of the top of the container *a*. Above the enlargement *k* the spindle *d* passes through the top of the container to carry the friction wheel *m* which is mounted thereon to be rotated by the rotation of the spindle *d* between the upper and lower lugs *n*, *n*¹ on the flint tube *o* carried on the top of the container *a* below the cover plate *p*, the flint *q* being held against the periphery of the wheel *m* by the flint spring *r*. The upper reduced end of the spindle *d* is secured by the nut *s* that bears on the upper lug *n*.

A tooth *t* projecting from the inner surface of the wall of the plunger *c* co-acts with a helical groove *u* cut in the surface of the spindle *d* and a spring *v* encircling the spindle *d* is interposed between the undersurface of the top of the container *a* and the upper end of the plunger *c*. The wick tube is indicated by the reference letter *w* in Figure 2.

With the parts constructed as described it will be clear that when the plunger *c* is pressed inwardly against the action of the spring *v* by pressure of the thumb of the user on the thumb piece *e*, the friction wheel *m* will be rotated by the rotation of the spindle *d* caused by the travel of the tooth *t* in the helical groove *u* and the rotation of the wheel *m* in rubbing con-

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tact with the flint *q* produces sparks in the usual manner for ignition of the wick in the wick tube *w*. The plunger *c* is returned after each inward stroke or impulse, the extent of which is limited by the contact of the thumb piece with the bottom of the container *a*, by the action of the spring *v*.

In the alternative arrangement shown in Figures 3 and 4 the positions of the tube housing, the plunger and operating spindle, and of the flint tube are interchanged but the operation of the parts is similar to that previously described. The tube *b* is mounted on the top of the container with the rear end supported by one limb *x* of a U-shaped bracket and the front end carried on a cradle x^1. The friction wheel *m* is mounted on the operating spindle *d* between the limbs *x* and *y* in rubbing contact with the flint *q* which projects through the top of the container and the base *z* of the U-shaped bracket. The rear reduced end of the spindle *d* is secured by the nut *s* that bears against the limb *y*.

Figures 5 and 6 illustrate a modification in the construction shown in these Figures applied to the arrangement illustrated in Figure 1 but equally applicable to that of Figure 3, whereby the friction wheel is positively rotated in one direction only. The friction wheel *m* in this modification is loosely mounted on the spindle *f* and is formed with ratchet teeth 1 on its lower surface which are normally held in engagement by a light spring 2 with the teeth 3 of a ratchet wheel 4 that is mounted on a squared portion of the spindle *f* so that it slides thereon but is rotated on rotation of the spindle. A feather key 5 fitted on the inner surface of the tube *b* is in alignment with a key way 6 cut in the outer surface of the plunger *c*.

With this construction when the plunger *c* is pressed inwardly by pressure of the thumb on the thumb piece *e* the consequent rotation of the spindle *d*, caused by the co-action of the tooth *t* and groove *u*, will rotate the ratchet wheel 4 so that the friction wheel *m* will also be rotated in the same direction due to the action of the inter-engaging teeth 1 and 3. The plunger is returned after each inward stroke or impulse by the action of the spring *v* and is held from rotation by the feather key 5 but on the return stroke the friction wheel *m* does not rotate, the spring *v* overcoming the light spring 2 so that the teeth 1 and 3 are separated and the ratchet wheel 4 rotates idly in the opposite direction.

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 pocket lighter of the type hereinbefore referred to comprising a slidably mounted and spring-controlled plunger provided with a tooth co-acting with a helical groove on a spindle carrying the friction wheel whereby reciprocal movement of the plunger is converted into rotary movement of the spindle to effect rotation of the friction wheel.

2. A pocket lighter as claimed in claim 1 in which the plunger and operating spindle are housed within a tube mounted within the container and the flint tube is carried on the top of the container.

3. A pocket lighter as claimed in claim 1 in which the plunger and operating spindle are housed within a tube carried on the top of the container and the flint tube is mounted within the container.

4. A pocket lighter as claimed in claim 1 in which the friction wheel is loosely mounted on the operating spindle and is positively rotated in one direction only by means of a ratchet wheel slidably mounted on the spindle and provided with teeth adapted to engage ratchet teeth on the friction wheel substantially as described with reference to Figures 5 and 6 of the accompanying drawings.

5. A pocket lighter constructed and having its parts arranged and adapted to operate substantially as hereinbefore described and illustrated in Figures 1 and 2 or Figures 3 and 4 of the accompanying drawings.

Dated this 9th day of September, 1943.

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

FIG.1.

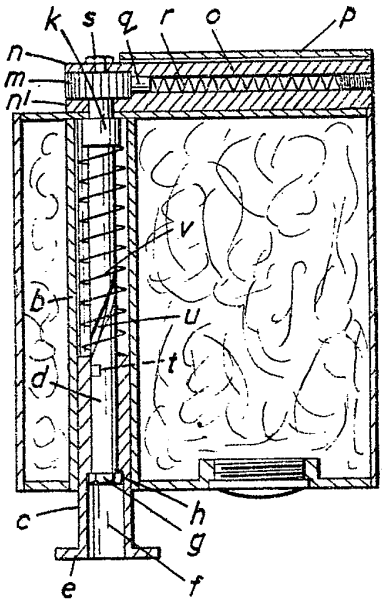


FIG.3.

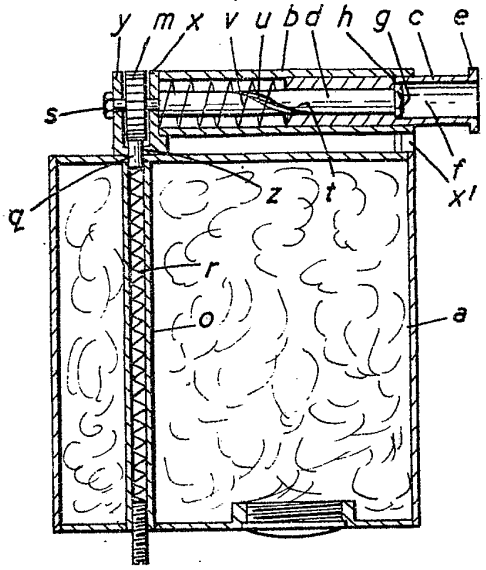


FIG.2.

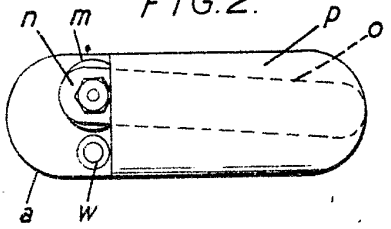
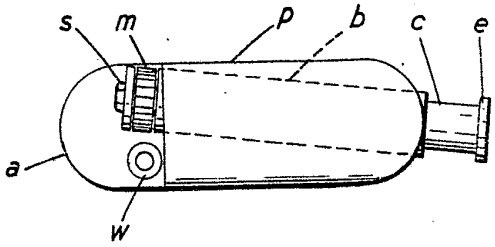


FIG.4.



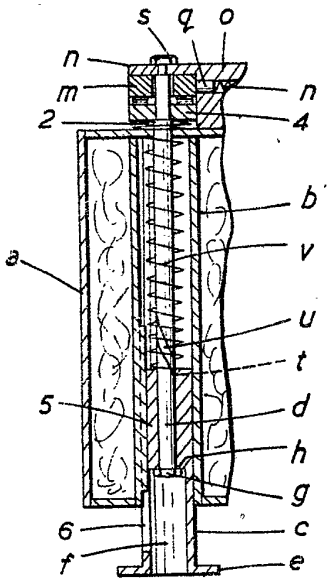
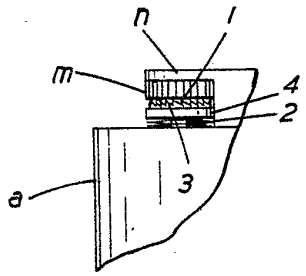


FIG.5.

FIG.6.



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