

Jan. 13, 1948.

A. E. PERKINS

2,434,515

POCKET LIGHTER

Filed July 18, 1944

2 Sheets-Sheet 1

FIG. 1.

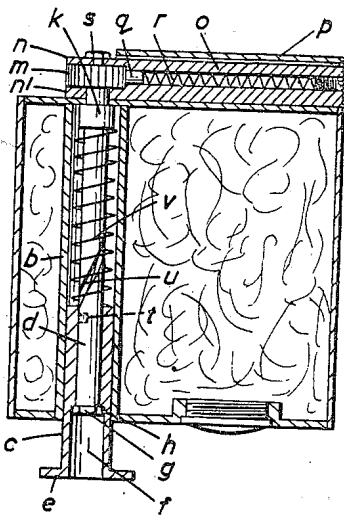


FIG. 3.

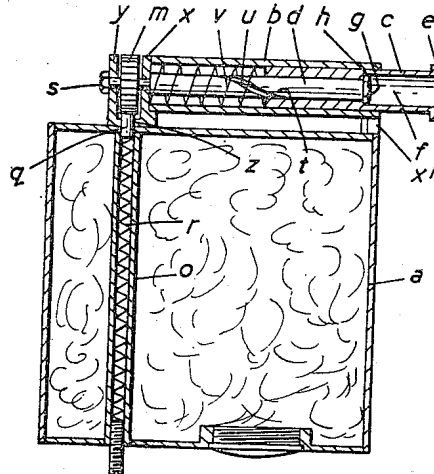


FIG. 2.

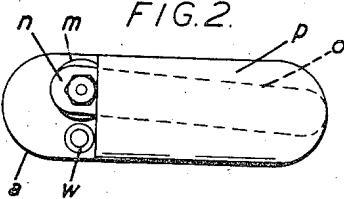


FIG. 4.

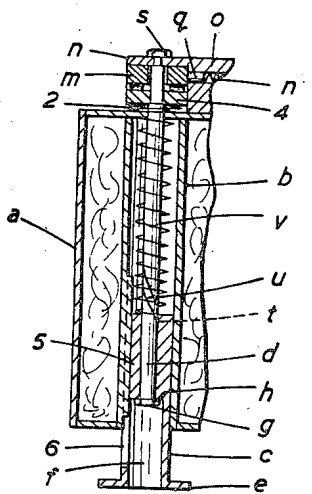
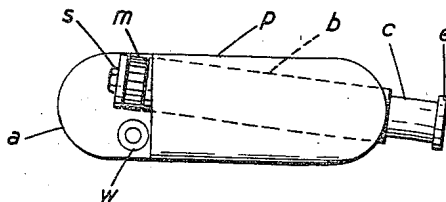


FIG. 6.

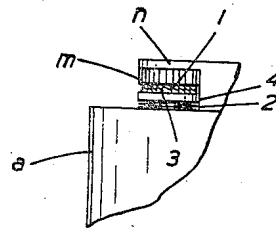


FIG. 5.

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FIG. 7.

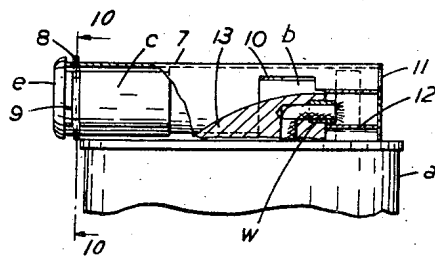


FIG. 8.

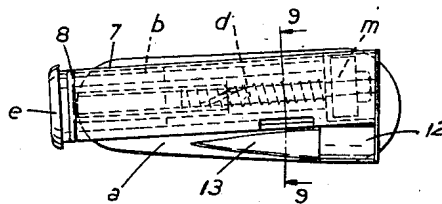


FIG. 9.

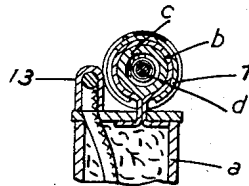
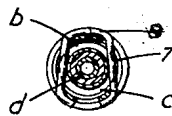


FIG. 10.



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UNITED STATES PATENT OFFICE

2,434,515

POCKET LIGHTER

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4 Claims. (Cl. 67—7.1)

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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.

The present invention consists in the provision of improved means for effecting the rotation of the friction wheel whereby such rotation is effected by pressure of the thumb on a spring-controlled plunger. In a preferred embodiment of the invention a 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.

Moreover the friction wheel and wick may be normally concealed by a tubular slider attached to the spring-controlled plunger but exposed to afford access to the ignited wick when the plunger is operated to rotate the friction wheel. The tubular slider carries a wick cap which extinguishes the ignited wick on return of the plunger to its normal position.

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.

Figure 7 is a sectional elevation of the upper part of the lighter to show the tubular slider

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which normally conceals the friction wheel and wick,

Figure 8 a plan view thereof,

Figure 9 a cross-section on the line 9—9 Figure 8, and

Figure 10 a cross-section on the line 10—10 Figure 7.

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 and rotatably 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'* 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 contact with the flint *q* produces sparks in the usual manner for igni-

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tion 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 position 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'*. The friction wheel *m* is mounted on the operating spindle *d* between the limbs *x* and *y* in rubbing contact with the flint *g* 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 *l* 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 will also be rotated in the same direction due to the action of the inter-engaging teeth *l* 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 *l* and *3* are separated and the ratchet wheel *4* is rotated idly in the opposite direction.

As shown in Figures 7 to 10 a tubular slider *7* mounted to slide on the tube *b* is secured to the plunger *c* by the spring wire keeper *8* the arms of which pass through slots *9* in the wall of the slider *7* to engage a circumferential groove on the peripheral surface of the plunger *c*.

The wall of the slider *7* is slotted as shown at *10* and the plate *11* at its inner end carries a wick cap *12* adapted to engage over the wick carried in the wick tube *w* which is supported by the bracket *13* on the upper surface of the container.

Normally the parts are in the position shown in the drawings in which the friction wheel *m* and the wick tube *w* are concealed by the slider *7*. When it is desired to produce sparks for the

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ignition of the wick in the wick tube *w* the plunger *c* is pressed inwardly against the action of its controlling spring by the pressure of the thumb of the user on the thumb piece *e*, whereby as previously described, the friction wheel *m* will be rotated and the rotation of the wheel *m* in rubbing contact with the flint—not shown in the drawings—produces sparks in the usual manner for ignition of the wick, the friction wheel *m* and wick tube *w* being exposed through the slot *10* in the inward position of the slider. When the plunger *e* is returned by the action of its spring the ignited wick is extinguished by the wick cap *12*.

What I claim is:

1. A pocket lighter of the type described, comprising a fuel container, a casing on the outside of the container, a slidably mounted and spring controlled plunger arranged lengthwise in the casing, a spindle within the casing, means between the plunger and spindle to rotate the latter when the plunger is operated, a friction wheel carried by and operated by the spindle, spark producing means engaged by the friction wheel to produce a spark, a fuel carrying wick to be lighted by the spark, and a slidable tube mounted on the casing and connected to the plunger and formed with an opening to expose the lighted end of the wick on appropriate movement of the plunger.

2. A construction as defined in claim 1, wherein the slidable tube carries an extinguisher for the light on the wick in the movement of said slidable tube following release of the plunger.

3. A construction as defined in claim 1, wherein the wick is mounted in a wick tube, the upper end of which is extended parallel to the axis of the slidable tube, and wherein the said slidable tube is formed with an opening to expose the bent end of the wick tube when the plunger is operated.

4. A construction as defined in claim 1, wherein the wick is mounted in a wick tube, the upper end of which is extended parallel to the axis of the slidable tube, and wherein the said slidable tube is formed with an opening to expose the bent end of the wick tube when the plunger is operated, the end of the slidable tube carrying a tubular member to encircle and extinguish the wick following release of the plunger.

ALWIN EDGAR PERKINS.

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