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H. FAULKNER
AUTOMATIC LIGHTER

2,656,492

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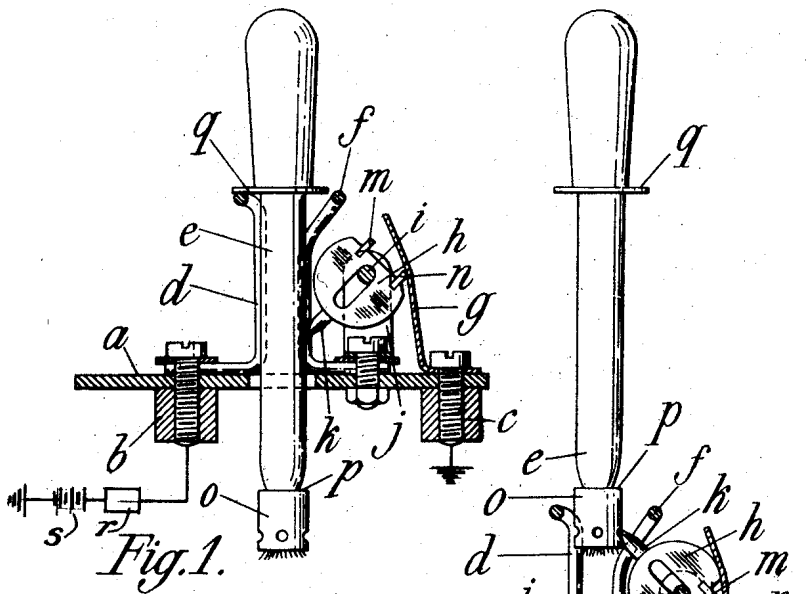


Fig. 1.

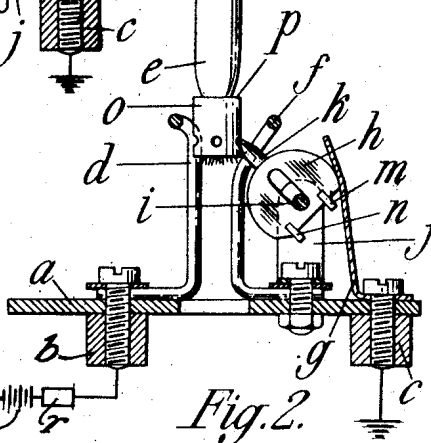


Fig. 2.

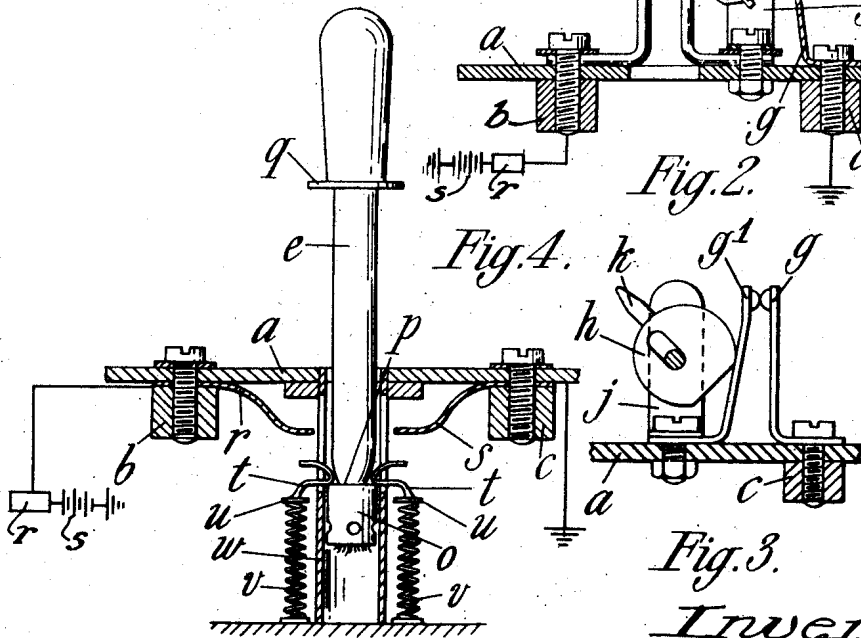


Fig. 4.

Fig. 3.

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AUTOMATIC LIGHTER

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5 Claims. (Cl. 317-89)

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This invention relates to lighters, such as lighters for use by smokers, and has for its object to provide a simple and reliable device in which ignition is effected electrically.

According to the invention, I provide a plunger having a wick projecting from one end, at least the said end part being of conducting material, an electric circuit adapted to generate a spark when interrupted and contacts in the circuit adapted to be engaged and electrically connected together by the conducting end part of the plunger to complete the circuit and to be disconnected on withdrawal of the plunger with formation of a spark adjacent to the wick.

Preferably, at least one end of the contacts is normally disconnected from the circuit and is adapted to be moved to make connection with the circuit when engaged by the end part of the plunger.

Referring to the accompanying explanatory drawing:

Figures 1 and 2 show one form of the device in accordance with the invention in section, in two positions.

Figure 3 shows a modification of the contact arrangement.

Figure 4 is a section of a modified form of the device.

Referring to Figures 1 and 2, a base *a* carries two electrical terminals *b*, *c*. One terminal *b* is attached to a guide *d* and a plunger *e* slides between the guide *d* and a similar guide *f* which however is bent outwards at the top at a lower level. The other terminal *c* is attached to a spring blade *g* which bears on a metal disc *h* mounted on a pin *i* in uprights *j* secured to the base *a*. The disc *h* has a slot through which the pin *i* passes and carries a metal pin *k* bearing on the plunger *e*. Opposite the pin *k* the disc has a flat in which are mounted two insulating lugs *m*, *n*, of which *n* is nearer to one end of the flat than *m* is to the other end. At the end of the plunger *e* is a metal wick holder *o* with a shoulder *p* at the top, and the base *a* is mounted on a container, not shown, for absorbent material soaked with fuel, from which the wick in the holder *o* takes up fuel. A collar *q* at the handle end prevents the plunger being pushed in too far.

In the position shown in Figure 1, the contact *g* is held clear of the metal disc *h* by the lug *n* near the end of the flat on the disc, so that the circuit is broken. As the plunger *e* is withdrawn, the shoulder *p* contacts the pin *k* and turns the disc *h*, until the pressure of the contact *g* is taken by both lugs, *m*, *n* and then by

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lug *m* only, the disc *h* being displaced on the pin *i*. Then on further rotation the disc *h* itself touches the contact *g*, completing the circuit. The plunger can then be withdrawn to the position shown in Figure 2, in which current passes from the contact *g* through disc *h*, pin *k* and holder *o*, the holder *o* being clear of the guide *f*, and on further movement the pin *k* leaves the holder *o* and produces a spark which ignites the fuel absorbed by the wick. The disc *h*, due to the pressure of the blade *g*, then returns to a position with the two insulators *m* and *n* pressing against the blade *g*, and the plunger can be reinserted.

In the modification shown in Figure 3, the disc *h* bears against a second spring blade *g*¹, and causes a contact thereon to meet a corresponding contact on the blade *g*.

The device will usually be enclosed in a convenient receptacle, with an aperture through which the plunger may be withdrawn. It may be installed behind the dash-board of a motor car.

Another form of the device according to the invention is shown diagrammatically in Figure 4. In this case the base *a* carries terminals *b*, *c*, to which are connected spring contacts *r*, *s*. The shoulder *p* on the plunger *e*, when the latter is withdrawn, engages springs *t* carried on a disc *u* supported by light coil springs *v*, and draws them up until they touch the spring contacts *r*, *s* and complete the circuit through the holder *o*. When the plunger is drawn out sparks are formed as it breaks contact with the springs *t* and the fuel in the wick is ignited. The springs *v* then draw the disc *u* back. The disc *u* is of insulating material, or is insulated from the springs *t*. The plunger moves in a tube *w* having longitudinal slots for the springs *t* to pass through.

The electric circuit includes a current source and a suitable coil to enable satisfactory sparks to be obtained.

The electric circuit comprises a battery indicated conventionally at *s* and a spark coil or other high tension producing device *r*, connected in series between one contact and earth, the other contact being connected directly to earth.

What I claim is:

1. In a lighter comprising a withdrawable plunger with a wick projecting from one end, at least the said end part of the plunger being of conducting material, and an electrical circuit for lighting the wick upon withdrawal of the plunger: the arrangement which comprises a live contact connected to the electrical circuit, an

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earthed contact, at least one movable electrode projecting into the path of the conducting end of the plunger, means connecting the end of the plunger with one of the contacts as the plunger is withdrawn, and means connecting the electrode with the other contact when displaced by the end of the plunger as the latter is withdrawn, a spark being formed adjacent the wick as the end of the plunger leaves the electrode.

2. In a lighter comprising a withdrawable plunger with a wick projecting from one end, at least the said end part of the plunger being of conducting material, and an electrical circuit for lighting the wick upon withdrawal of the plunger: the arrangement which comprises a pair of guides for the plunger, one of which is connected to the electrical circuit, a rotatable electrode projecting into the path of the conducting end of the plunger, a terminal connected to the electrical circuit, and spring means bearing on the electrode to hold its projecting end against the plunger when the latter is inserted and connecting it to the terminal when it is rotated as the plunger is withdrawn, a spark being formed adjacent the wick as the end of the plunger leaves the electrode.

3. In a lighter comprising a withdrawable plunger with a wick projecting from one end, at least the said end part of the plunger being of conducting material, and an electrical circuit for lighting the wick upon withdrawal of the plunger: the arrangement which comprises a pair of guides for the plunger, one of which is connected to the electrical circuit, a rotatable electrode projecting into the path of the conducting end of the plunger, at least one non-conducting lug on said electrode, a terminal connected to the electrical circuit, and a conducting spring connected to said terminal and bearing on the lug on the electrode while the plunger is fully inserted to hold its projecting part against the plunger and when the electrode is rotated as the plunger is being withdrawn bearing against the electrode to connect it to the terminal, a spark being formed adjacent the wick as the end of the plunger leaves the electrode.

4. In a lighter comprising a withdrawable

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plunger with a wick projecting from one end, at least the said end part of the plunger being of conducting material, and an electrical circuit for lighting the wick upon withdrawal of the plunger: the arrangement which comprises a pair of guides for the plunger, one of which is connected to the electrical circuit, a rotatable electrode projecting into the path of the conducting end of the plunger, a terminal connected to the electrical circuit, a contact blade connected to the terminal, and a conducting spring bearing on the electrode to hold its projecting part against the plunger, and adapted to be deflected by the electrode, when the latter is rotated as the plunger is being withdrawn, so as to make contact with the contact blade and connect the electrode to the terminal, a spark being formed adjacent the wick as the end of the plunger leaves the electrode.

5. In a lighter comprising a withdrawable plunger with a wick projecting from one end, at least the said end part of the plunger being of conducting material, and an electrical circuit for lighting the wick upon withdrawal of the plunger: the arrangement which comprises two contacts connected in the electric circuit, and two sparking electrodes movably and resiliently mounted and each projecting into the path of the conducting end of the plunger, and replaceable by said conducting end as the plunger is withdrawn to bridge over said contacts and complete the electric circuit through the end of the plunger, a spark being formed adjacent the wick as the end of the plunger leaves the electrodes.

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