Jan. 18, 1949. D. J. KIRSCHNER 2,459,656

POCKET AUTOMATIC ELECTRIC LIGHTER

Filed Aug. 19, 1946

2 Sheets-Sheet 1

Fig. 1.

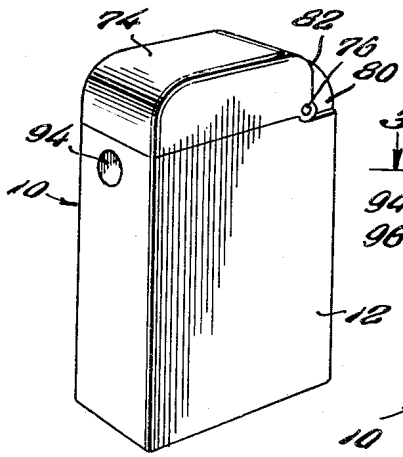


Fig. 2.

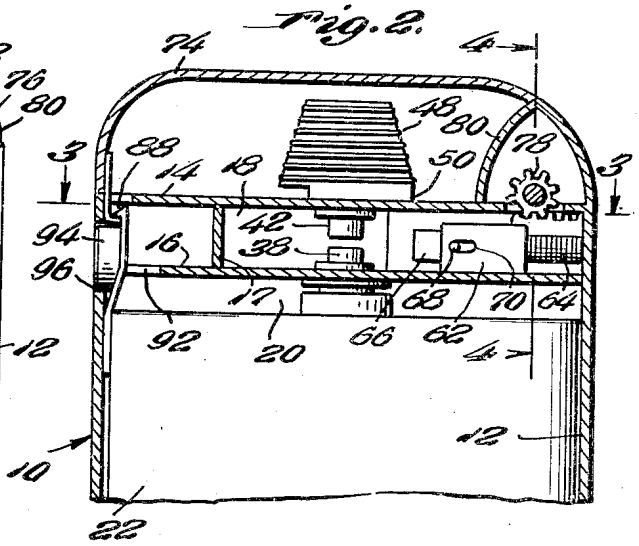
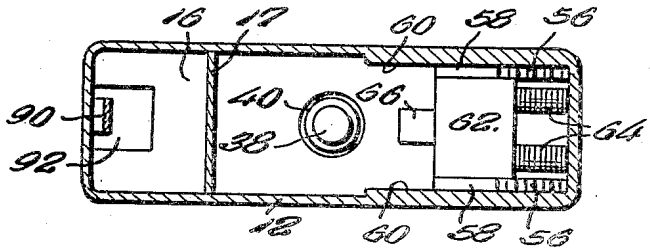


Fig. 3.



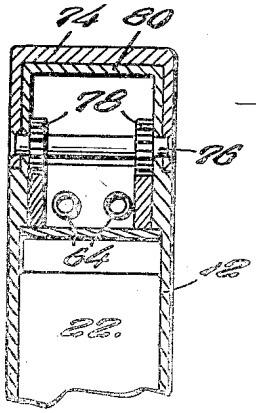


Fig. 4.

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Fig. 5.

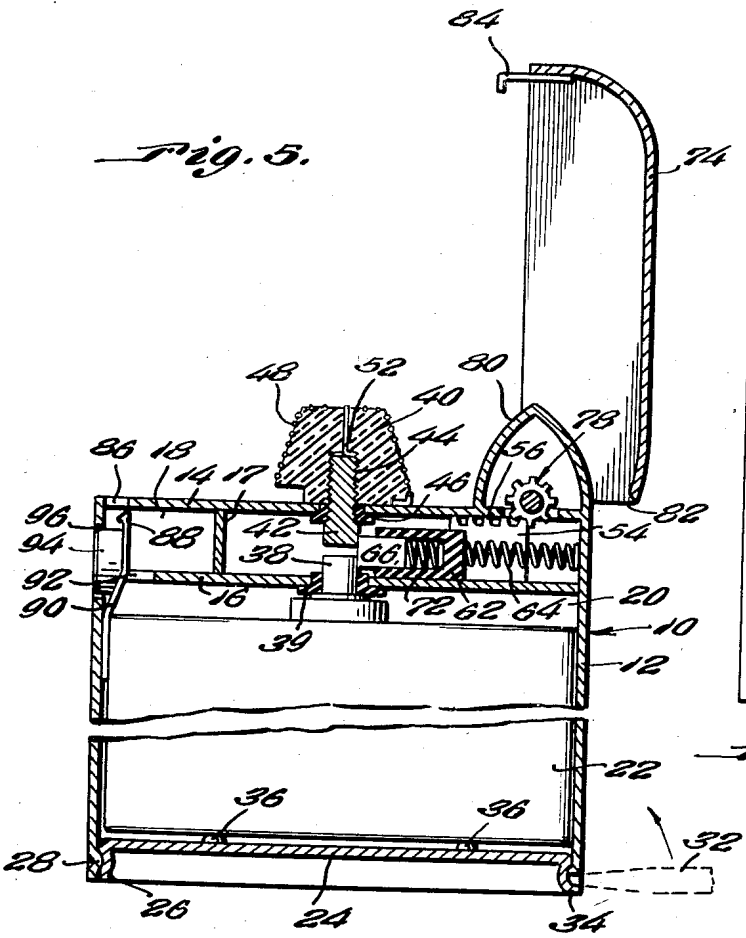
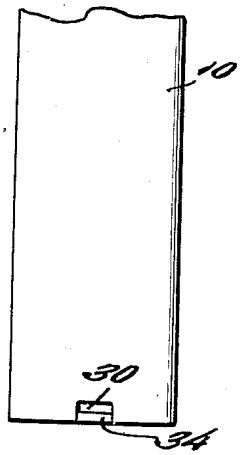


Fig. 7.



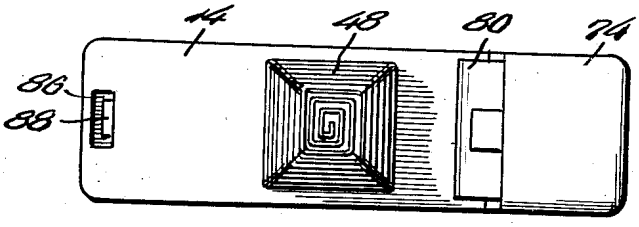


Fig. 6.

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POCKET AUTOMATIC ELECTRIC LIGHTER

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Application August 19, 1946, Serial No. 691,548

5 Claims. (Cl. 219—32)

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This invention consists of novel and advantageous improvements in a pocket automatic electric lighter and more explicitly pertains to an electric battery type of lighter having improved switch means automatically operable in an improved manner to activate the heating element.

The principal objects of this invention are to provide a light which is extremely adaptable in its use by smokers; which shall be extremely compact and neat in appearance; which is provided with novel and highly efficient switch means for energizing the incandescent element; wherein the switch means is automatically operated by the opening of the cover; wherein the electrical contacts are securely housed in the device; wherein the automatic operating means is additionally shielded from dirt by a casing; and wherein a positive and dependable switch action is obtained.

These, together with various auxiliary objects, which will be later apparent as the following description proceeds, are realized by my invention, one embodiment of which has been illustrated by way of example only, in the annexed drawings wherein:

Figure 1 is a perspective view of the lighter in the closed position;

Figure 2 is a partial vertical sectional view of Figure 1;

Figure 3 is a horizontal sectional view, taken substantially upon the line 3—3 of Figure 2;

Figure 4 is a detail in vertical section, taken substantially upon the line 4—4 of Figure 2;

Figure 5 is a vertical sectional view through the lighter, shown in the open and operative position;

Figure 6 is a top plan view of Figure 5; and,

Figure 7 is a fragmentary end elevation of Figure 5.

In the attached drawings, wherein like numerals designate similar parts throughout the several views, 10 designates generally my improved lighter which may be formed of any suitable metal and shape, but is particularly adapted for use as a compact pocket type of lighter. The lighter consists of a container or receptacle 12 whose upper end is closed by a wall 14, below which is spaced a lateral partition 16, defining a chamber 18 therebetween. Below the partition 16 is a chamber 20 for receiving a dry cell type of battery 22 of any desired type. The lower end of the casing 12 is closed by a detachable cover 24 having depending edges 26, notched to detachably engage a retaining rib 28 upon the inner surface of the casing 12. A notch or slot 30 in the lower surface of an end wall of the casing 12 is

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adapted to receive the blade of a tool, indicated in dotted lines at 32 in Figure 5, which engages a lug 34 upon the cover 24, in order to remove the latter.

The battery 22 is preferably grounded to the casing 12 by means of contacts 36 upon the cover 24, and has its axial electrode contact 38 extending through an insulating bushing 39 in the partition 16, into the chamber 18. A pyramidal refractory support 40 is removably and replaceably secured upon the wall 14 as by a contact pin 42 which extends into chamber 18 and is axially aligned with but spaced from the contact 38, the contact and support being united as by screw threads 44 and insulating bushing 46. An electrical resistance wire 48 has one end grounded to the wall 14 as at 50 and has its other end 52 extending through an axial bore in the support 40 into engagement with the contact pin 42. The heating element is so shaped as to light not only cigarettes and cigars but also tobacco in pipe bowls, and the like.

In order to energize the heating element a switch element is provided in the chamber 18. This element includes a slide 54 having rack teeth 56 upon the upper surface of metallic strips 58, and is guided between guide surfaces 60 on the walls of compartment 18. At its forward end, slide 54 carries a hollow switch holder 62 of insulation, while a pair of coil springs 64 are seated between the rear surface of the holder 62 and the end wall of compartment 18 to urge the holder towards the contacts 38, 42. A contact member 66 is socketed in the hollow recess of holder 62 and is slidably retained therein by a pin 68 and slot 70, while a spring 72 yieldingly biases the switch element outwardly of the recess. The switch is so placed that upon actuation of the racks 56 by a means to be now described, the contact 66 is selectively advanced into electrical engagement with contacts 38 and 42, thereby activating element 44, or subsequently retracting them to de-energize the heater. It will be noted that the contacts 38, 42 and the switch mechanism are all protectively housed in compartment 18.

A cover member 74 snugly fits upon the wall 14 and casing 12 and houses the heater element, and is pivoted as at 76 to the casing 12. The pivot pin 76 has a pair of gears 78 rigidly secured thereto and extending through an aperture in wall 14 for continuous meshing engagement with racks 56. A housing 80 extends upwardly from wall 14 to enclose the gears 78 and is faired into a notch 82 at the pivoted end of the cover. A latch 84 is secured to the front end of the cover and is

receivable in a slot 88 in wall 14 for latching engagement with a detent 89 on spring member 90 secured to casing 12, as shown in Figures 2 and 5, the partition 16 is notched at 92 to permit movement of latch member 90, in response to pressure upon button 94 which is secured thereto and extends to the exterior of casing 12 through an opening 96.

The arrangement is such that when button 92 is depressed, releasing latch 38, springs 64 move racks 56 inwardly until switch member 66 completes the circuit through contacts 38, 42 thereby energizing the heater; at the same time, the racks 56 rotate gears 78 and pivot pin 76, thereby opening the cover 74. When the cover 74 is closed the reverse movement takes place, gears 78 causing the retraction of racks 56 and the breaking of the electrical circuit.

At a suitable location in chamber 18, I provide a vertical transverse partition 17 constituting a sealing and closing member to prevent entry of dirt, through the latch opening when the cover is open, into the mechanism.

I claim as my invention:

1. An electric lighter including a container, a battery in said container, an electric ignition element mounted on said container, aligned and axially spaced contacts on said ignition element and said battery, a switch member engageable with both of said spaced contacts, a cover for said ignition element hinged to said container, and direct connecting means between said cover and said switch for positively moving said switch into and out of engagement with said contacts upon movement of said cover, said connecting means including a pivot for said cover, a gear on said pivot and rotatable with said cover, and a rack in mesh with said gear and reciprocable thereby for actuating said switch.

2. An electric lighter including a container, a battery in said container, an electric ignition element mounted on said container, aligned and axially spaced contacts on said ignition element and said battery, a switch member engageable with both of said spaced contacts, a cover for said ignition element hinged to said container, and direct connecting means between said cover and said switch for positively moving said switch into and out of engagement with said contacts upon movement of said cover, and spring means for biasing said switch into engagement with said contacts and simultaneously biasing said cover into open position, said connecting means including a pivot for said cover, a gear on said pivot and rotatable with said cover, and a rack in mesh with said gear and reciprocable thereby for actuating said switch.

3. An electric lighter including a container, a battery in said container, an electric ignition element mounted on said container, aligned and axially spaced contacts on said ignition element and said battery, a switch member engageable with both of said spaced contacts, a cover for said ignition element hinged to said container, and direct connecting means between said cover and said switch for positively moving said switch

into and out of engagement with said contacts upon movement of said cover, a first housing in said container for said battery, a second housing in said container for said switch, said battery contact and said ignition element contact extending into said second housing, said connecting means including a pivot for said cover, a gear on said pivot and rotatable with said cover, and a rack in mesh with said gear and reciprocable thereby for actuating said switch.

4. An electric lighter including a container, a battery in said container, an electric ignition element mounted on said container, aligned and axially spaced contacts on said ignition element and said battery, a switch member engageable with both of said spaced contacts, a cover for said ignition element hinged to said container, and direct connecting means between said cover and said switch for positively moving said switch into and out of engagement with said contacts upon movement of said cover, a first housing in said container for said battery, a second housing in said container for said switch, said battery contact and said ignition element contact extending into said second housing, said connecting means including a pivot for said cover, a gear on said pivot and rotatable with said cover, and a rack in mesh with said gear and reciprocable thereby for actuating said switch, said switch member being resiliently mounted upon said rack.

5. An electric lighter including a container, a battery in said container, an electric ignition element mounted on said container, aligned and axially spaced contacts on said ignition element and said battery, a switch member engageable with both of said spaced contacts, a cover for said ignition element hinged to said container, and direct connecting means between said cover and said switch for positively moving said switch into and out of engagement with said contacts upon movement of said cover, a first housing in said container for said battery, a second housing in said container for said switch, said battery contact and said ignition element contact extending into said second housing, said connecting means including a pivot for said cover, a pair of gears on said pivot and rotatable with said cover, and a rack means continuously in mesh with said gears and reciprocable thereby for actuating said switch, said gears extending into said second housing and a third housing enclosing said gears and merging into said cover when the latter is closed, said switch member being resiliently mounted upon said rack means.

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