March 4, 1958 KWAN SHU MIN 2,825,797

ELECTRIC FLASHLIGHTS

Filed May 27, 1957

FIG. 1.

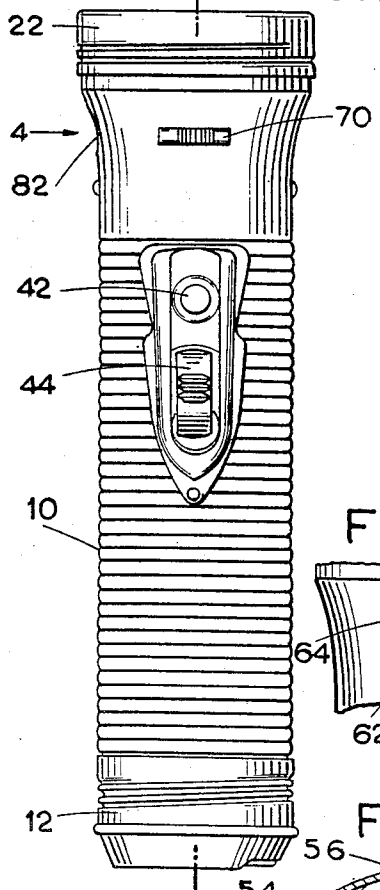


FIG. 2.

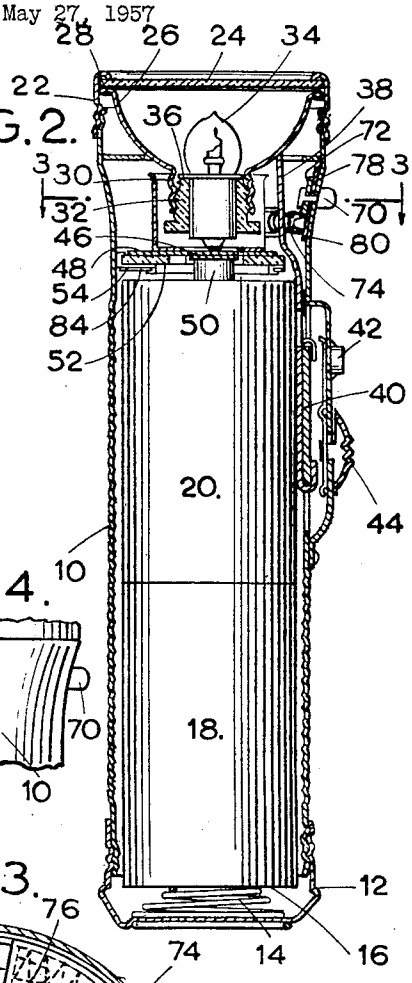


FIG. 4.

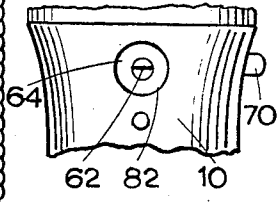
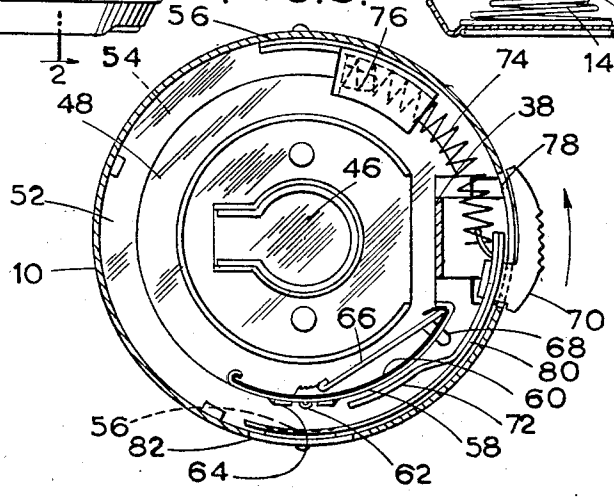


FIG. 3.



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ELECTRIC FLASHLIGHTS

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1 Claim. (Cl. 240—6.4)

This invention relates to electric flashlights using dry batteries, of the kind in which one pole of the battery is electrically connected to one contact of the bulb and the other pole of the battery to the casing, which can be electrically connected to the other contact of the bulb by means of a switch.

An object of this invention is to combine with an electric flashlight of the kind above-described a cigarette lighter.

Such cigarette lighter is preferably constituted by an electrical resistance element of which one end is connected to a conductive member insulated from the casing and electrically connected to that pole of the battery which is not electrically connected to the casing, the other end of said element being electrically connectible to the casing through a second, spring-loaded switch, whose operating button carries a shield, which normally covers a hole in the casing, but exposes said hole when the button is moved, against the effort of the said spring-loading, to complete the circuit through the resistance element, which is accessible through said hole.

The above-mentioned hole is preferably circular and of a diameter just large enough to admit the end of a cigarette.

How the above mentioned object and such others as may hereinafter appear are attained will be better understood from the following description, having reference to the accompanying drawings, of an embodiment of the invention, given by way of example only and without implied limitation of the scope of the invention, which is defined in the hereto appended claim.

In the drawings,

Figure 1 is an elevation of an electric torch with cylindrical casing;

Figure 2 is an axial section thereof;

Figure 3 is a section on the line 3—3 of Figure 2;

Figure 4 is a scrap view in elevation taken in the direction of arrow 4 in Figure 1.

Referring to tthe drawings, the torch-casing comprises a body 10, a screw-on base cap 12 carrying a contact spring 14 making contact with one pole 16 of the battery, which consists of two cells 18, 20, and a top cap 22 securing the glass 24 and a metal reflector 26, the latter being electrically insulated from the casing by an insulating ring 28. The reflector 26 has a screw-threaded neck 30 which receives a screw-threaded, insulating nut 32 retaining a bulb 34 of the concentric contact type, whose outer contact has a flange 36 held by the nut 32 against a complementary flange of the reflector, thus securing the bulb and establishing electrical connection between its outer contact and the reflector. A springy metal tongue 38 making contact with the reflector is attached to the casing body 10 but electrically insulated therefrom by a strip 40 of insulating material. Electrical connection between the casing body 10 and tongue 38 can be established by a conventional thumb switch having a spring-loaded push-button 42 and a sliding button 44.

The central contact of bulb 34 engages a springy tongue

46 formed by stamping in a metal diaphragm 48. Tongue 46 also engages the other pole 50 of the battery. Diaphragm 48 is secured to a disc 52 of electrically insulating material having a central aperture, and disc 52 is secured to an annular metal plate 54 having ears 56 by which it is riveted to the casing body 10. Diaphragm 48 has an upstanding peripheral flange 58 occupying a sector of the circumference and backed by an insulating strip 60. On the outside of flange 58 is secured an electrical resistance element 62 sandwiched between mica discs 64 of which the outer one is apertured to expose the element. One end of element 62 is connected to flange 58 and the other passes through an aperture in flange 58 and through the backing strip 60 and is attached to a conductor strip 66 mounted on the back of strip 60 and terminating in a fixed contact stud 68 extending through the strip 60 and through an aperture in flange 58, which with diaphragm 48 and its spring tongue 46 forms a conductive member providing electrical connection, through the resistance element 62, between the battery pole 50 and the fixed contact stud 68. The latter is connectible to the casing through a second thumb-switch comprising a thumb-button 70 slidable circumferentially on the outside of casing body 10, a movable contact in the form of a springy metal tongue 72 engageable with the fixed contact stud 68 and a compression spring 74 trapped between tongue 72 and an abutment 76 secured to one of the ears 56 of plate 54, tongue 72 being connected to button 70 through a slot 78 in the casing body.

On the inside of the casing is a curved metal shield 80 connected to button 70 and tongue 72. When the button 70 and tongue 72 are in their normal position, in which the effort of spring 74 holds them, tongue 72 does not engage contact stud 68 and shield 80 covers a round hole 82 in the casing body registering with resistance element 62; but when the button 70 is moved against the spring effort to cause tongue 72 to engage contact 68 and complete the circuit of the resistance element 62 through switch 70, 72 and the casing to the battery pole 16, the shield 80 is withdrawn to expose element 62 through hole 82. The latter is large enough to admit the end of a cigarette easily but small enough to center the cigarette end on the resistance element 62.

In the example illustrated shield 80 is constituted by an extension of an annular plate 84 rotatably mounted on the underside of plate 54.

I claim:

An electric flashlight comprising a metal casing adapted to hold a dry battery having a first and a second pole, means electrically connecting said casing with the first pole of said battery, means for securing in said casing a light-bulb having a first and a second contact, said last-named means including means for insulating said bulb from the casing, a first switch means for establishing electrical connection between said first bulb-contact and the casing, an annular metal plate secured in the casing, a disc of insulating material secured to said plate, said disc having a central aperture through which the second pole of said battery extends, a thin metal diaphragm secured to said disc and insulated thereby from said plate, said diaphragm having a central aperture and a springy tongue extending into said aperture and adapted to establish continuous electrical connection between the second pole of said battery and said second bulb-contact, said diaphragm further having an upstanding flange, an electrical resistance element adapted when subjected to the voltage of said cell to serve as a cigarette lighter, insulating means supporting said resistance element on the outside of said flange, one end of said resistance element being electrically connected to said flange, a fixed switch contact mounted on the outside of said flange, a conductive element disposed inside

said flange and connecting the other end of said resistance element with said fixed contact, means insulating said conductive element and said fixed contact from said flange, a movable switch component slidable peripherally of the casing in electrical connection therewith and comprising a springy contact element selectively engageable with said fixed contact, a shank extending through a peripherally disposed slot in the casing, an external control button and a shield inside the casing, spring means biasing said component to the position in which said springy contact is disengaged from said fixed contact, said casing further having a substantially round hole through which said resistance

element is accessible and said shield being positioned to expose said resistance element through said hole when said springy contact engages said fixed contact and to cover said hole when said fixed contact is not so engaged.

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