April 24, 1951 J. J. DUNCAN 2,550,234

COMBINATION FLASHLIGHT AND CIRCUIT TESTER

Filed Dec. 9, 1948

Fig. 1.

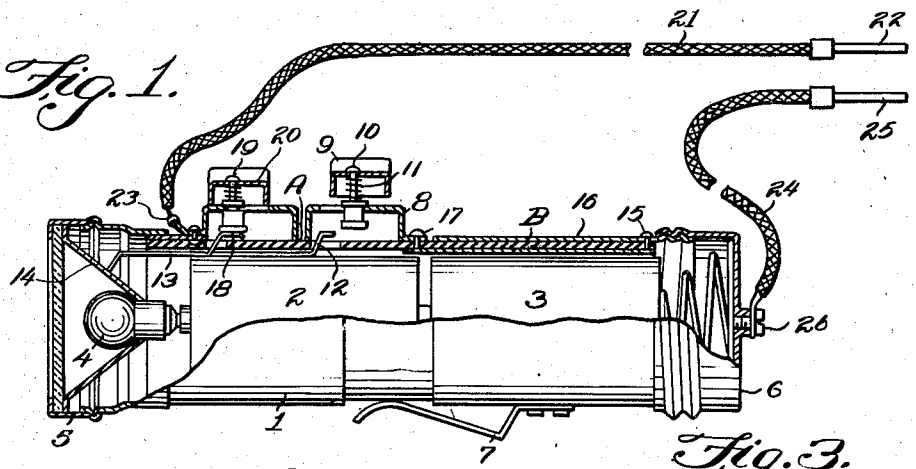


Fig. 2.

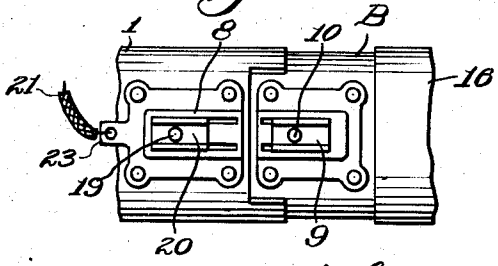


Fig. 3.

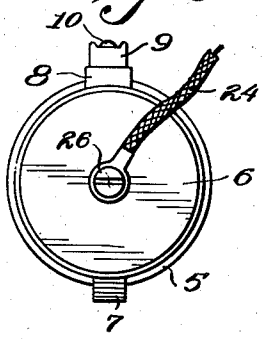


Fig. 4.

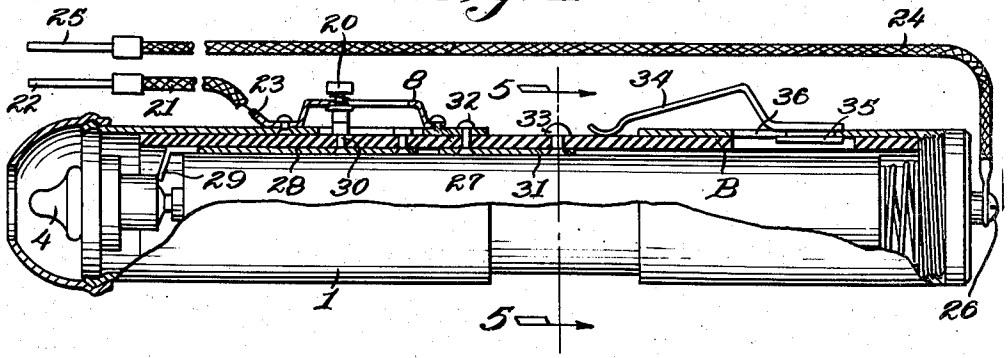
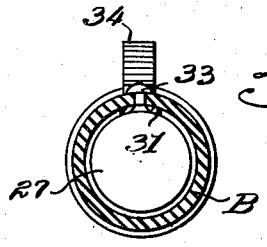


Fig. 5.



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Patented Apr. 24, 1951 2,550,234

UNITED STATES PATENT OFFICE

2,550,234

COMBINATION FLASHLIGHT AND CIRCUIT TESTER

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Application December 9, 1948, Serial No. 64,398

1 Claim. (Cl. 175—183)

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The present invention relates to the general class of electrical illumination, including portable self contained electric lamps of the battery supported type wherein the cells are arranged in the casing in direct contact with a lamp, and more specifically to a combination flashlight and circuit tester which while adapted for various purposes and uses, is especially designed, in addition to the performance of its functions as a flashlight, is also equipped for testing the circuits of various electric equipments.

The combination structure includes a minimum number of parts that may with facility be manufactured at low cost of production, and the parts may be assembled with convenience to insure a compactly arranged appliance of this nature that is simple in construction and operation, durable, and reliable in the performance of its various functions.

The invention consists in certain novel features of construction and combinations and arrangements of parts as will hereinafter be described in detail and more particularly pointed out in the appended claim.

In the accompanying drawings I have illustrated two physical embodiments of my invention in which the parts are combined and arranged in accord with modes I have devised for the practical application of the principles of my invention.

It will however be understood that changes and alterations are contemplated and may be made in these exemplifying drawings and electrical and mechanical structures, within the scope of my claim without departing from the principles of the invention.

Figure 1 is a view of a standard type of flashlight, partly in section, and equipped with the electrical testing apparatus. Figure 2 is a top plan view of a portion of the appliance in Fig. 1 showing the dual switch housing and switches; and Figure 3 is a view at the right end of Fig. 1.

Figure 4 is a broken sectional view of a pencil or pocket type of flash lamp in which my invention is embodied; and

Figure 5 is a transverse sectional view at line 5—5 of Fig. 4.

In the form of the invention illustrated in Figs. 1, 2, 3, the tubular casing 1 is equipped with two standard cells 2, and 3 for energizing the lamp bulb 4 that is confined in the front reflector cap 5, and the usual, spring pressed rear cap 6 holds the cells in contact, while a spring supporting clip or hanger for the flashlight is indicated at 7 as mounted upon the exterior of the tubular or cylindrical casing.

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On the exterior of the casing or barrel 1 a metallic housing 8 is mounted, and provided with two separated compartments insulated at A and B, in which a lamp switch and a test switch are manipulated to control the lamp circuit alone, or jointly both the lamp circuit and the testing circuit.

For the lamp circuit a slidable and resiliently depressible switch is secured to the fiber insulating jacket B located within the casing, and an exterior spring supported push button or cap 9 is provided with a screw 10 that fastens the cap to a movable contact head 11 within the housing, and the movable contact coacts with a stationary contact of the switch which is formed by the rear angular free head 12 of a forked conductor strip 13. The strip is located within the insulating jacket B, and the stationary contact projects through a slot in the jacket, while the front end of the strip 13 is grounded on the reflector 14 for the bulb or lamp 4.

The lamp circuit is completed through the usual grounded connections from the lamp assembly to the battery, cap 6 and thence through a rivet 15 that fastens the insulator jacket B and a conductor plate 16 within the casing 1, to a second rivet 17, which electrically connects the plate 16 with the housing 8.

The testing switch is secured to the metallic part of the casing, and to provide the stationary contact for this switch the conductor strip 13 is fashioned with another and spaced angular head 18 that projects through a slot in the jacket B into the insulated testing compartment of the housing 8.

The testing switch is similar in construction and operation to the lamp switch, and the movable contact head 18 slidably mounted in the housing, is provided with a screw 19 upon which a spring supported and depressible cap or button 20 is mounted exterior of the housing. For testing purposes an insulated wire or cord 21, having a bare end 22, adapted for use as a connector, is detachably attached by terminal 23 to the testing switch compartment of the housing; and a second insulated wire 24 having a bare end 25 is detachably connected by screw 26 to the casing cap 6, for completing the testing circuit in series with the lamp circuit.

In the modified form of the invention shown in Figs. 4 and 5, where a pencil type of flashlight is disclosed with a battery 27 and a lamp bulb assembly 4, a conductor blade 28, having a flange

29 grounded on the lamp assembly, is fastened against the inner side of the insulating jacket B and provided with a headed rivet 30 which extends through the wall of the casing and into the interior of the housing 8 to form a fixed contact for coaction with the movable contact 16 of the testing switch 20, which is resiliently supported and slidable to on and off position within the housing 8.

A second conductor strip 31 grounded by rivet 32 on the insulated housing of the test circuit, is also provided with a rivet 33 having its exterior head forming the fixed contact point of the lamp switch, and the movable contact member of the lamp switch includes a spring blade 34 mounted exterior of the casing and adapted to slide into contact with the head 33.

The spring blade 34 is provided with a grooved slide head 35 adapted to be guided in the side walls of a slot 36 in the casing, and it also performs the functions of a clip or holder for securing the flashlight pencil in a pocket. As the flashlight pencil is slipped into the pocket the clip 34 engages over the edge of the wall of the pocket thereby separating the movable contact from accidental contact with the stationary contact of the lamp switch.

When the testing switch is closed or on, the lamp circuit and the testing circuit are in series with the lamp switch closed, and by contacting the bare ends 22 and 25 of the testing wires into a circuit to be tested, if the connections are correct and completed the lamp will remain illumined. If the equipment being tested is not in operating condition, the lamp circuit will be interrupted and consequently the lamp will be extinguished, to indicate the unsatisfactory condition of the electrical equipment being tested.

If desired the two cords or testing wires may readily be detached from the flashlight for sole use of the latter, and with equal facility the cords may be attached when desired, for testing purposes.

Having thus fully described my invention, what

I claim as new and desire to secure by Letters Patent is:

In a combined flashlight and electrical testing appliance the combination with a metal casing and its inner insulating jacket and a light bulb socket mounted in one end of the casing, batteries positioned in the casing with a central terminal of one of the batteries positioned in the casing for engagement with the terminal of a light bulb in the socket, of a metallic housing divided into two compartments mounted on the casing and inner insulating jacket, a lamp circuit switch mounted in one compartment on said insulating jacket and having a movable contact therein, a conductor strip fixed to the light bulb socket and having a contact thereon extending into said last compartment for engagement with the movable contact therein, a testing circuit switch in the second compartment fixed to the casing and having a movable contact therein, a second contact on said conductor strip extending into said second compartment for engagement with the movable contact therein, a testing cord connected to the second compartment, a second testing cord connected to said casing so that when said testing cords are applied to a circuit said light bulb will be energized upon movement of said movable circuit to indicate a closed circuit or remain deenergized to indicate an open circuit.

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