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FLASHLIGHT

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4 Claims. (Cl. 240—10.68)

The present invention relates to improvements in flashlights and has reference more particularly to a flashlight that can be manufactured and sold at a very low cost.

One of the important objects of the present invention is to provide a flashlight that consists of relatively few parts and wherein the use of critical materials is eliminated.

Another important object is to provide a flashlight wherein the use of the conventional metal casing, reflector and lens units are eliminated.

A still further object resides in the provision of a flashlight that is adapted to be constructed so cheaply that when the dry cell batteries are exhausted, it is only necessary to remove the flashlight bulb and discard the rest of the flashlight and the bulb used again in conjunction with a new flashlight unit consisting of a casing, dry cell batteries and a switch.

Another important object is to provide a flashlight wherein a novel switch structure is employed for closing the circuit to the bulb, means being provided for locking the switch in its circuit-closing position, said switch including means for automatically and normally holding the same in an "off" position.

A further object is to provide a flashlight that will be waterproof, coldproof and otherwise well adapted for the purposes for which it has been designed.

Other objects and advantages will become apparent from the following description when taken in connection with the accompanying drawing.

In the drawing, forming a part of this specification, and wherein like reference characters designate corresponding parts throughout the several views,

Figure 1 is a perspective view of my improved flashlight;

Figure 2 is a vertical sectional view thereof;

Figure 3 is a transverse sectional view taken approximately on the line 3—3 of Figure 2, looking downwardly;

Figure 4 is a detailed perspective view of the switch unit;

Figure 5 is a fragmentary side elevation showing the slotted casing and the switch element protruding therethrough;

Figure 6 is an inside view of the slotted portion of the casing showing the slotted felt covering disposed over the slot in the casing;

Figure 7 is a fragmentary sectional view similar to Figure 2 showing a modification of the switch unit, and

Figure 8 is a detailed perspective view of the switch unit shown in Figure 7.

In the drawing, with reference more particularly to Figures 1 to 6, wherein there is shown the preferred embodiment of my invention, the numeral 1 designates generally my improved flashlight.

This flashlight comprises a cylindrical casing 2 that is preferably formed of plastic material, although any other suitable non-conducting material such as fiber or the like may be employed. The lower end of the casing is open to permit the insertion of the conventional dry cell batteries.

The upper end of the casing is constructed to provide an inwardly disposed conical socket portion 3. This conical socket portion has its inner smaller end formed with an internally threaded neck 4 through which the base 5 of a flashlight bulb 6 is adapted to extend.

The flashlight bulb is preferably of the type that includes a silvered reflector built into the bulb, in the manner well known in the art. The bulb is seated within the conical socket 3 with its base threaded through the open neck 4 and a suitable washer 7 of insulating material is interposed between the bulb 6 and the adjacent part of the conical socket 3, in the manner as clearly shown in Figure 2 of the drawing. The washer serves to more firmly secure the bulb in position in the socket.

A pair of dry cell batteries of the conventional construction are placed within the casing 2 through its open lower end, these batteries being denoted by the numerals 8 and 9, respectively. A cap 10 of the same material as the casing is secured on the lower end of the casing in any suitable manner and is adapted to retain the batteries within the casing.

The batteries are arranged in end to end abutting relation with one another and the central electrode 11 of the upper battery is adapted to be contacted by the terminal end of the base 5 of the bulb 6.

An insulating sleeve 12 is arranged within the casing 2 and completely surrounds the batteries. This sleeve not only prevents any cold air from penetrating to the batteries from outside the casing, but also precludes any leakage of the electrolyte from the batteries through the casing.

Forming a salient part of the present invention is the novel switch structure shown generally at 13 in Figure 4. This switch unit is formed from a single strand of wire and includes an elongated leg portion 14 that terminates at its lower end in a laterally disposed spring-like foot portion 15. The

upper end of the leg portion terminates in a spring coil 16, from which extends laterally the switch arm 17. An actuating knob 18 is provided on the outer end of the arm 17.

The switch unit is mounted in the casing so that the leg portion 15 extends vertically within a groove 19 formed in the inner wall of the casing. This leg portion will be interposed between the casing 2 and the insulating sleeve 12. The foot portion 15 underlies the bottom of the lower dry cell battery 9 and urges the same upwardly so that the central contact of the lower battery is held against the bottom of the upper battery.

The arm 17 of the switch unit, as well as the spring coil 16, are disposed transversely above the top of the upper battery in the manner as clearly shown in Figure 2, so that the switch arm is adapted to engage with the exposed threaded portion of the bulb 6, in the manner to be presently described. The free end portion of the switch arm extends through a bayonet slot 20 formed in the side of the casing. A felt covering 21 is affixed to the inside of the casing over the slot 20 and this felt covering is formed with a slot 22 through which the switch arm 17 extends.

Normally, the spring coil 16 holds the switch arm 17 out of engagement with the threaded base of the flashlight bulb so that the circuit is open and the light does not burn. By grasping the knob 18 and swinging the switch arm to the opposite end of the slot 20, the switch arm 17 will be flexed and brought into engagement with one side of the base of the bulb, as illustrated in the dotted lines in Figure 3, thereby closing the circuit to light the flashlight bulb. The switch arm may be locked in its "on" position by lifting the arm up slightly to engage in the offset portion of the bayonet slot 20.

A flashlight of the above described construction eliminates the use of the conventional metal casing, reflector and lens as well as the lens retaining ring.

When the dry cell batteries have become exhausted, the bulb may be removed from the socket and the rest of the flashlight may be discarded, as the parts comprising the discardable unit are very inexpensive and it is only necessary to insert the bulb in another fresh unit to render the flashlight again serviceable.

By constructing a flashlight in the manner shown and described, the use of critical materials is eliminated and my improved flashlight will at all times be positive and efficient in its operation.

In Figures 7 and 8 there is shown a modification of the flashlight, wherein a slightly different form of switch structure is employed. In this modification, the switch structure shown generally at 23, comprises a piece of wire that is bent to form an elongated leg portion 24 that extends in a groove in the inside of the plastic casing 25 against the insulating sleeve 26 that surrounds the dry cell batteries 27 and 28. A spring-like foot 29 extends laterally from the lower end of the leg portion 24 and is disposed between a cap that is removably secured on the lower end of the casing 25 and the bottom of the lower battery 28 for urging the batteries upwardly in the casing.

Spring element 31 is interposed between the central electrode of the bottom battery 28 and the bottom of the top battery 27. A similar spring element 32 is attached to the upper end of the central electrode of the upper battery and contacts the bottom or terminal end of the base 5 of the flashlight bulb 6. The casing 25 is formed

with a conical socket 33 similar to the conical socket 3, for the reception of the bulb.

The upper end of the leg portion 24 is connected to the laterally disposed switch arm 34 by the offset spring portion 35. This offset portion 35 is passed through one side of the casing and the outer end of the switch arm extends through a bayonet slot 36 formed in the opposite side of the casing. An actuating knob 37 is carried by the outer end of the switch arm and a felt strip similar to the felt strip 21 covers the inside of the bayonet slot 36.

As will be clearly understood from the foregoing description and the construction shown in the drawing, the offset spring portion 35 normally holds the switch arm 34 away from and out of engagement with the base of the bulb so that the bulb is not illuminated. By grasping the knob 37 and swinging the switch arm in one direction, the arm will be brought into engagement with the threaded base of the bulb and thereby close the circuit to the bulb.

A flashlight of the above mentioned character can be manufactured and sold at a very low cost and due to its simplicity, whenever the batteries have become exhausted, it is only necessary to remove the bulb and discard the rest of the flashlight and to replace the discarded unit with a new unit at a much cheaper cost than would be the case with the flashlights now generally in use. Further, due to its simplicity there are no working parts to get out of order easily.

By providing the inwardly directed socket member, the flashlight bulb will be entirely confined therein and thereby protected against breakage, as could occur if the bulb protruded beyond the upper open end of the socket member. Further, this particular construction of the socket member permits ready and easy access to the flashlight bulb for inserting or removing the same.

While I have shown the preferred embodiment of my invention, it is to be understood that various changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention and the scope of the appended claims.

Having thus described the invention, what I claim is:

1. In a flashlight, a cylindrical non-conducting casing, a cylindrical dry battery having a central terminal and a shell terminal received within said casing, an incandescent lamp comprising a base having a central terminal and a peripheral terminal, said casing being provided at one end thereof with a re-entrant frusto-conical recess portion adapted to receive said incandescent lamp, the vertex of said portion being provided with socket means for retaining the base of said incandescent lamp with both electrical terminals of the base of said lamp extending through said socket means to the interior of said casing, said battery and lamp and socket means being so constructed and arranged that said central terminals are in electrical conducting relation with each other, a resilient filamentary metallic switch element having a median portion mounted between said casing and said battery in electrical insulating relation thereto, said element having a bent foot portion at one end of said median portion adapted to electrically engage the base of said battery, said element further having at its other end an actuating bent portion and being provided with a resilient connec-

tion between its said median portion and actuating portion, said element being so constructed and mounted that when unactuated it is positioned adjacent to but spaced from the peripheral terminal of the base of said lamp but may be actuated for displacement into electrical engagement with said peripheral terminal. 5

2. A flashlight as set forth in claim 1, said casing being provided near its recessed end with a first peripheral slot, and said actuating portion 10 of said switch element being extended through said first slot for manual operation.

3. A flashlight as set forth in claim 1, said resilient connection being a spring coil.

4. A flashlight as set forth in claim 1, said resilient connection being a backwardly offset bent portion extending in the direction opposite the free end of the actuating portion, said casing being provided with a second slot, and said switch element being mounted with said offset bent portion extending through said second slot to the exterior of said casing and being retained in said second slot.

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