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FLASH LAMP

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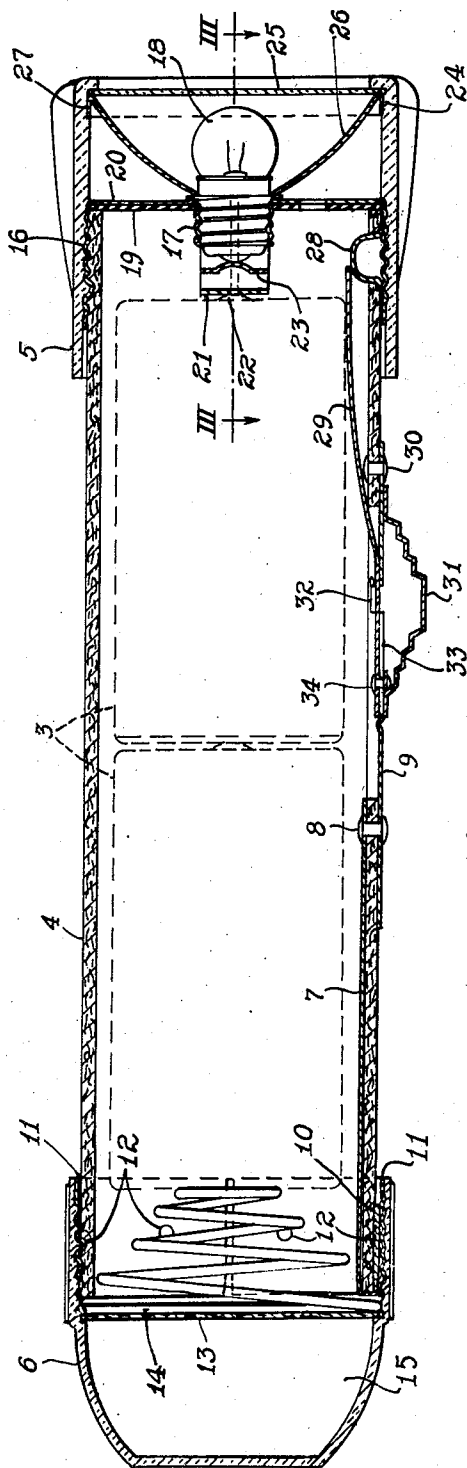


Fig. 2.

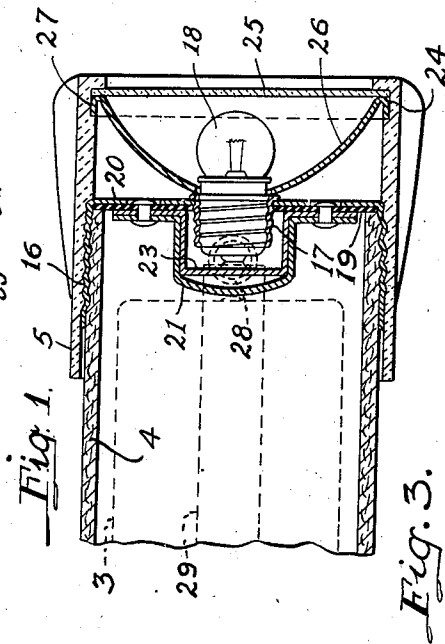


Fig. 3.

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FLASH LAMP

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4 Claims. (Cl. 240—10.66)

Our invention relates to flash lamps of the hand type wherein battery cells are employed for energizing the lamp.

An object of our invention is to provide a lamp of the character referred to, having an improved arrangement of conductor element and switch for making and breaking the lamp circuit.

Another object of our invention is to provide an improved method of mounting a lens and a reflector in the lamp casing.

As shown on the accompanying drawing, Fig. 1 is a longitudinal sectional view through a lamp embodying our invention; Fig. 2 is a perspective view of one of the contact members of Fig. 1, and Fig. 3 is a view taken on the line III—III of Fig. 1.

The lamp casing is adapted to contain battery cells 3 and comprises a body portion 4 of fiber-reinforced or laminated plastic material which is nonconductive of electrical current. Front and rear cap members 5 and 6, respectively, which may be of suitable molded plastic, are provided for the body portion 4 of the case.

A conductor strip 7 is riveted to the inner wall of the case, at 8, and the rivet also serving to hold a switch plate 9 in place and to afford electrical connection between the members 7 and 9. The outer end of the strip 7 is bent backwardly at 10, against the outer surface of the member 4 and has engagement with a threaded metallic sleeve 11 that has snug fit with the body member 4 and is rigidly held in place thereon by a series of indentations 12 that are deformed from the sleeve 11 and embedded in the member 4. The cap 5 has screw-threaded engagement with the sleeve 11 and contains a disc 13 which serves as a seat for a spring 14 that bears against the adjacent battery cell. When the cap is screwed on the sleeve fully, the end turn of the spring will engage the turned-down outer end of the sleeve 11, electrical connection thus being effected through the sleeve 11, with the strip 7. The chamber or space 15 between the end of the cap of the disc 13 can conveniently accommodate spare lamp bulbs.

The cap 5 has threaded engagement with an inner cap 16 of metal that is snugly secured to the forward end of the tube 4 as is the sleeve 11. This inner cap has fastened therein a threaded socket 17 for a lamp bulb 18 and contains a disc 19 of insulating material that is snugly held in place, between the end wall 20 of the cap and the extremity of the tube 4.

The disc 19 has fastened thereto a yoke-shaped member 21 which seats against the foremost terminal 22 of the battery. A terminal member 23 is carried by the yoke 21, in position to be en-

gaged by the central terminal of the lamp 18. Electrical connection is thus had with the lamp through the members 21 and 23, at that end of the battery.

The cap 5, near its forward end, is of reduced diameter to serve as a seat for a lens 25, and it has an annular channel 24 formed therein to serve as a support for a reflector 26. The lens 25 may be of glass, but preferably is of transparent plastic material and unbreakable. The diameter of the lens is such that it can be dropped into place from the rear end of the cap 5, when the cap is removed from the tube 4.

The reflector 26 is initially formed with a back-turned annular flange 27 that is initially of sufficiently small diameter to permit insertion of the reflector into the cap, from the rear end of the cap. After the lens and the reflector have been inserted, and when the cap 5 is applied to the tube 4, the flange 27 is expanded by a suitable tool into snug engagement with the channel 24. The tool could conveniently be of wedge form, curved about its longitudinal axis and pressed or driven against the flange to expand it. The reflector, except for its polished surface, is of malleable metal so that it will remain "set" in its expanded position. The reflector 26, and hence the lens 25, are thus secured in position against accidental disengagement. The rear-most edge of the reflector has only abutting engagement with the lamp socket 17 or the partition 20 when the cap 5 is screwed on the tube for so far as it will go. By partial unscrewing of the cap 5, focusing of the light rays is possible, since such adjustment will change the position of the reflector relative to the lamp filament.

Electrical connection between the lamp base and the switch plate 9 is had through the lamp socket 17, the cap 16, a switch contact member 28, and a movable switch member 29. The contact member 28 is of cup-shape and has its bowl portion inserted through a hole in the tube 9 into position to be engaged by the switch member 29. The flange on the outer end of the member 28 is overlaid and engaged by the cap 16. This constitutes a convenient and simple switch arrangement wherein the circuit is made and broken through longitudinal movement of the switch member 29.

The forward end of the switch plate 9 is secured to the tube 4 by a rivet 30. A slide member 31, that serves as a push-button, is connected to the strip 29 by ears or lugs 32 that are struck inwardly at each side of the slide and extend through longitudinal slots in the tube 4 and the strip 29, the

inner ends of the lugs being bent to hold the thumb piece 31 in place. The slot in the switch plate 9 is elongated as shown at 33 to permit longitudinal sliding movement of the thumb piece 31 on the plate 9. A rivet 34 extends through the slot 33 and a hole in the strip 28, the ends of the rivet being enlarged to hold the strip snugly against the plate to hold it in close sliding engagement with the plate 9, the rivet having sliding movement along the slot 33 when the thumb piece 31 is pushed to open or close the switch contact 28—29.

We claim as our invention:

1. A flash lamp structure comprising a tubular body for supporting battery cells and screw threaded exteriorly at its forward end, a cap member carrying a lamp socket and having a back-turned tubular portion with threads on its interior wall engageable with the threads on the said body and also having threads on its periphery, an insulating element supported interiorly of the cap member, a conductor on said element in position to engage the central terminals on a cell and a lamp, a cap of generally tubular form threaded near its rear end for connection with the peripheral threads on the said cap member, a lens, a reflector, and means within and adjacent to the forward end of the tubular cap, for supporting the lens and the reflector.

2. A flash lamp structure comprising a tubular body for supporting battery cells and screw threaded exteriorly at its forward end, a cap member carrying a lamp socket and having a back-turned tubular portion with threads on its interior wall engageable with the threads on the said body and also having threads on its periphery, an insulating element supported interiorly of the cap member, a conductor on said element in position to engage the central terminals on a cell and a lamp, a cap of generally tubular form threaded near its rear end for connection with the peripheral threads on the said cap member, a lens, a reflector, and means within and adjacent to the forward end of the tubular cap, for supporting the lens and the reflector, the said means comprising an inturned flange on the forward end of the tubular cap, of less internal diameter than the diameter of the lens, and an annular groove rearwardly of the flange for receiving the forward edge of the reflector, at the rear side of the lens.

3. A flash lamp structure comprising a tubular

body for supporting battery cells and screw threaded exteriorly at its forward end, a cap member carrying a lamp socket and having a back-turned tubular portion with threads on its interior wall engageable with the threads on the said body and also having threads on its periphery, an insulating element supported interiorly of the cap member, a conductor on said element in position to engage the central terminals on a cell and a lamp, a cap of generally tubular form threaded near its rear end for connection with the peripheral threads on the said cap member, a lens, a reflector, and means within and adjacent to the forward end of the tubular cap, for supporting the lens and the reflector, the said means comprising an inturned flange on the forward end of the tubular cap, of less internal diameter than the diameter of the lens, and an annular groove rearwardly of the flange for receiving the forward edge of the reflector, at the rear side of the lens, the lens being of smaller diameter than the said tubular cap, at all points rearwardly of said flange.

4. A flash lamp structure comprising a tubular body for supporting battery cells and screw threaded exteriorly at its forward end, a cap member carrying a lamp socket and having a back-turned tubular portion with threads on its interior wall engageable with the threads on the said body and also having threads on its periphery, an insulating element supported interiorly of the cap member, a conductor on said element in position to engage the central terminals on a cell and a lamp, a cap of generally tubular form threaded near its rear end for connection with the peripheral threads on the said cap member, a lens, a reflector, and means within and adjacent to the forward end of the tubular cap, for supporting the lens and the reflector, the said means comprising an inturned flange on the forward end of the tubular cap, of less internal diameter than the diameter of the lens, and an annular groove rearwardly of the flange for receiving the forward edge of the reflector, at the rear side of the lens, the lens being of smaller diameter than the said tubular cap, at all points rearwardly of said flange and the reflector being of malleable material whereby its forward edge may be expanded into said groove.

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