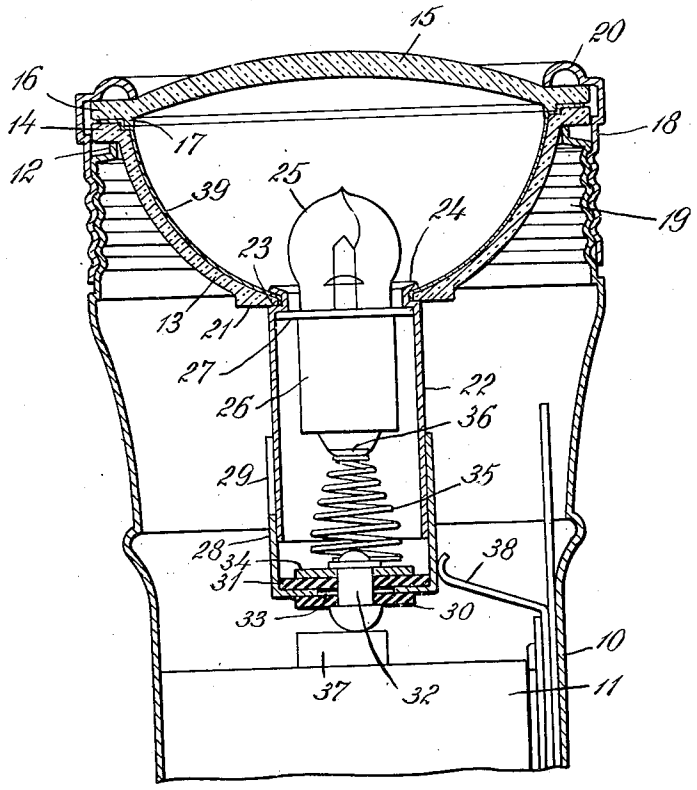
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HAND LAMP

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HAND LAMP

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1 Claim. (Cl. 240—10.6)

This invention relates to hand lamps and more particularly to an improved reflector construction and lamp mounting for hand lamps.

In the ordinary hand lamp construction, the lamp bulb is provided with a threaded stem and is mounted in a threaded socket carried by a metal reflector. A later development in hand lamps is the use of prefocused lamps. The stem of the prefocused lamp bulb is provided with a flange which engages a shoulder on the reflector to hold the lamp in place. Whereas the prior type of lamp bulb was inserted from the front of the reflector, necessitating the use of a removable lens, the prefocused lamps are inserted from the back of the reflector permitting the use of an integral or permanently assembled reflector and lens. However, the metal reflectors now used are not capable of being permanently connected to the glass lens and the usual construction of removable lens is still employed with the prefocused bulbs.

In the present invention I provide a reflector made of glass or other moldable, non-conducting material and the lens may be connected to the front of the reflector, preferably by fusing, to form an integral unit. This provides a construction which is a decided improvement over prior constructions employing metal reflectors. The provision of an integral lens and reflector produces a dust-proof and moisture-proof hand lamp overcoming several of the most important objections to hand lamps as now constructed.

A further advantage of the use of a reflector formed of glass or other insulating material is the better insulation which it provides. A metal reflector in engagement with the outer terminal of the lamp must be insulated from the casing, when a metallic casing is employed, and this is generally accomplished by arranging washers of insulating material around the edge of the reflector where it engages the casing and the end ring. Leakage of moisture around the end ring destroys the insulating capacity of these washers and frequently permits short circuiting of the lamp.

In my construction wherein the reflector is made of insulating material the outer terminal of the lamp is thus insulated from the casing by the entire body of the reflector and short circuiting of the lamp is thereby prevented.

The invention further comprises a novel means of supporting the prefocused bulb in the reflector and providing means for taking up end-thrust or shocks or jars caused by movement of the cells in the hand lamp casing without transmitting such thrust or shocks to the bulb.

In the accompanying drawing I have shown one form of the invention. In this showing the figure is a longitudinal sectional view of a hand lamp showing the invention applied.

Referring to the drawing the reference numeral 10 designates the front portion of a hand lamp casing which houses the usual battery unit consisting of one or more cells, the upper end of one of which is shown at 11. The casing may be provided with the usual end cap (not shown) which is generally screwed on the rear end of the casing and which electrically connects one terminal of the battery to the casing. The casing may be of any suitable form. As shown it is provided with an enlarged head having an inwardly projecting peripheral flange 12 at its outer end. The reflector 13 is preferably of parabolic form and is made of glass or other insulating material which can be molded or stamped into shape. Various synthetic resin compositions may be employed. The reflector is provided with a peripheral flange 14 which rests upon the flange 12 of the casing when the parts are assembled and receives the usual glass lens 15. The lens is likewise provided with a flange 16 which rests upon the flange 14 of the reflector. A rib 17 may be formed on one of these flanges to be received in a corresponding groove of the other flange to properly position the lens and reflector. As stated, the lens and reflector may be permanently secured to each other by fusing or melting the meeting surfaces. The reflector may be formed of any insulating material which is capable of being molded or stamped into the desired shape. I preferably employ glass and may use Pyrex glass. The reflector and lens may be united to each other by means of a blow torch. By constructing the reflector and lens as an integral unit permanently secured to each other I thus provide a dust-proof and moisture-proof construction.

The lens and reflector may be held in position on the casing by means of a metal sleeve or end ring 18 which is internally threaded as shown and is adapted to engage external threads 19 formed on the end of the casing. This end ring is provided with a flange 20 of the usual construction to engage the outside of the lens and secure the parts in position.

As stated, I employ a prefocused bulb which is inserted in the reflector from the rear. The reflector is provided with a central opening and surrounding the opening I provide an accurately

ground or otherwise formed surface 21 to properly position the lamp bulb. A metal sleeve 22 is arranged in the opening and is adapted to engage the seat 21. As shown, the sleeve is offset inwardly adjacent its upper end forming a shoulder 23 which engages the seat 21 and the portion of the sleeve beyond this shoulder is adapted to be spun over the inside of the reflector as at 24. This sleeve is of a proper diameter to receive a prefocused lamp comprising a bulb portion 25 which is adapted to be arranged within the reflector and a stem portion 26 which projects rearwardly from the reflector. The prefocused bulb is provided with the usual retaining flange 27 and this flange engages the inner face of the shoulder 23. By properly positioning the surface 21 and retaining the flange 27 of the lamp against the shoulder 23, the bulb 25 may be properly positioned within the reflector.

To retain the lamp against the seat I provide a second cylindrical member 28 which is closed at its lower end forming a cup. This member snugly fits the cylindrical member 22 and is provided with an elongated slot 29 extending downwardly from its upper edge so as to permit a tight fit and to permit the resiliency of the metal to retain the cup in position. An insulating washer 30 is arranged on the bottom of the cup and a similar washer 31 is arranged within the bottom of the cup. A rivet 32 passes through an enlarged opening 33 in the bottom of the cup and is thus insulated from the cup by the washers 30 and 31. A metal plate 34 is arranged over the washer 31 and connected to the rivet. A coil spring 35 is connected with this plate, the spring being preferably in the form of a spiral and being so arranged that its upper end contacts with the central terminal 36 of the lamp bulb. The rivet 32 is adapted to contact with the central terminal 37 of the upper cell of the battery thus connecting one terminal of the lamp to the battery. Flow of current to the lamp may be controlled by a suitable switch mounted on the casing (not shown) and controlling a contact arm 38 which may be moved into and out of engagement with the cup 28 or the sleeve 22. When the arm 38 is in engagement with the cup or sleeve, the circuit from the outer terminal is completed through the sleeve 22 and flange 27 to the outer terminal of the lamp bulb.

The construction heretofore described not only provides a dust-proof and moisture-proof hand lamp but also provides better insulation between the outer terminal of the lamp and the casing. In the usual construction of hand lamps employing a metal reflector, insulation between the flange 14 of the reflector and the end flange 12 of the metal casing is necessary and it is customary to provide insulation surrounding the peripheral edge of the lens. If this insulation becomes wet through leakage of water around the end cap a short circuit may be created, permitting the current to flow through the reflector to the outer terminal of the lamp bulb and thus energize it even when the contact arm 38 is in inoperative position. The present construction not only eliminates such insulation but provides much better separation of the outer terminal and the casing due to the fact that the entire reflector is made of insulating material.

The cup 28 snugly fits the sleeve 22 and is movable longitudinally thereon but its downward movement is limited by the presence of the cell 11 so that it canot move downwardly a sufficient distance to become disengaged from the sleeve. When a thrust is exerted on the cup by movement of the cells in the hand lamp casing, as frequently occurs, the upward movement of the cup toward the lamp compresses the spring 35 and thus takes up the shock without transmitting the force of the blow or shock to the lamp bulb.

The inner surface of the reflector may be provided with a coating 39 of aluminum or other bright metal. While this coating may be applied in various ways, it is preferably deposited on the surface of the reflector in vapor form. One way of accomplishing this is to close the ends of the reflector, vaporize aluminum in a vacuum within the reflector and permit it to deposit on the surface.

I claim:

A hand lamp comprising a casing having a head, a reflector of insulating material mounted in the head, a lens permanently mounted on the reflector, the reflector being provided with a central opening, the rear face of the reflector adjacent the opening being shaped to form a seat normal to the axis of the hand lamp to properly position a lamp supporting member, a sleeve-like lamp supporting member having its forward end spun over the reflector around the central opening to secure it to the reflector, the sleeve-like member having an interior shoulder, a lamp mounted in the sleeve-like member with the bulb projecting through the central opening of the reflector, the stem of the lamp being provided with means cooperating with the shoulder in the sleeve-like member to limit the forward movement of the lamp, a slotted, cup-shaped member snugly and slidably fitting the rear end of the sleeve-like member, a spring mounted in the cup-shaped member and engaging the lamp bulb, to urge it forwardly in the sleeve-like member, and a contact member mounted in the bottom of the cup-shaped member and insulated therefrom, the contact member being adapted to engage the upper terminal of the battery to electrically connect the base of the lamp bulb to the battery terminal and to limit the rearward sliding movement of the cup-shaped member.

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