

# United States Patent

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[54] **GUARD FOR ELECTRIC LIGHT BULBS**  
1 Claim, 3 Drawing Figs.

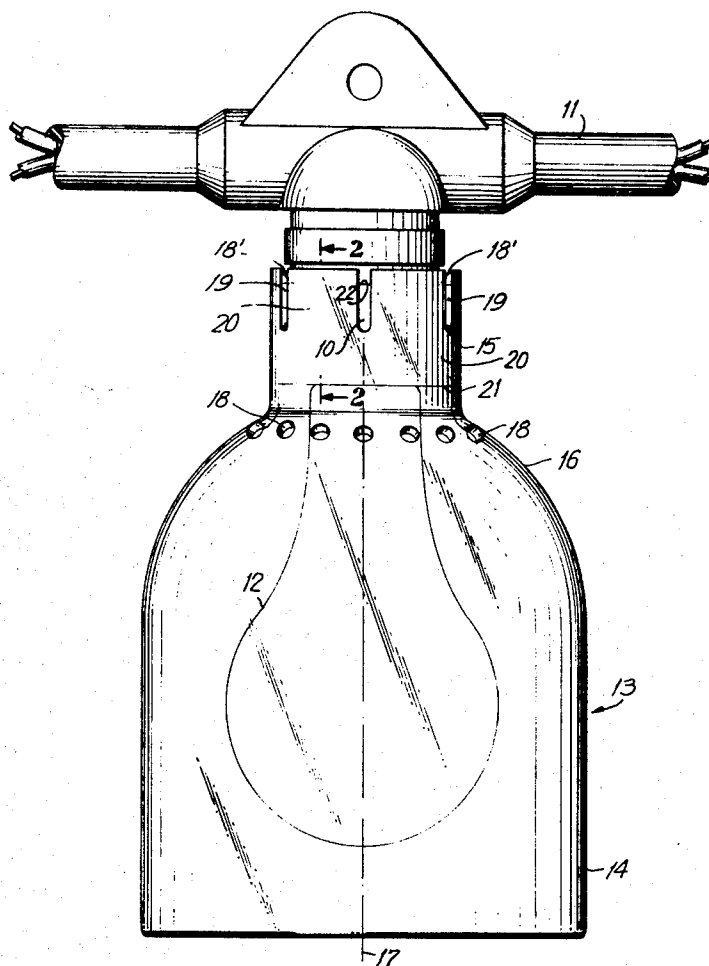
[52] U.S. Cl. .... 240/102 R,  
240/47, 240/108 R  
[51] Int. Cl. .... F21v 15/00  
[50] Field of Search ..... 240/102,  
100, 108, 47

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**ABSTRACT:** A lamp guard made of transparent or translucent rigid resin, and is continuous in form, is made capable of being snapped over a socket to enable an inwardly extending bead to pass behind an edge of the socket, by being open slotted at a number of points in its circumference at its reduced socket-engaging end, the guard being approximately bell shaped with the socket-engaging portion connected by a flaring section with a cylindrical portion of larger diameter, the flaring portion being provided with ventilating slots whose upper edges overhang their lower edges to prevent entry of rain water.



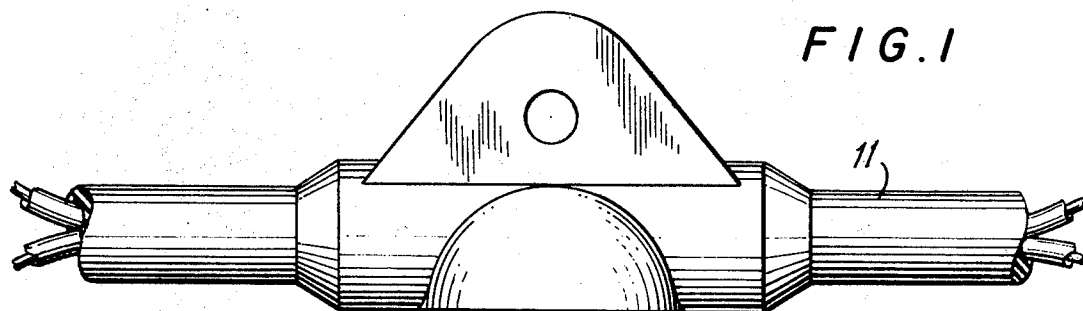


FIG. 1

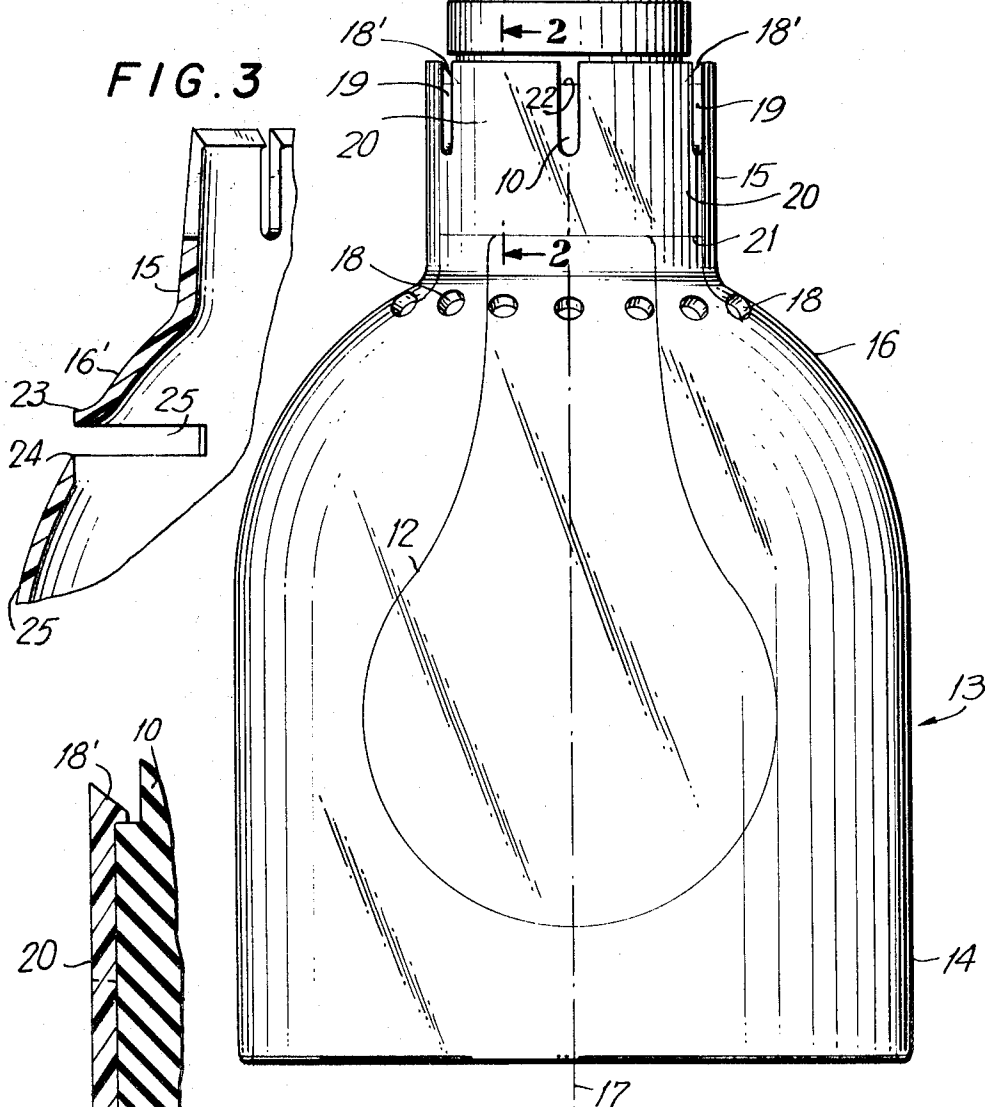


FIG. 3

FIG. 2

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### GUARD FOR ELECTRIC LIGHT BULBS

The present invention relates to guards for electric light bulbs and particularly for the light bulbs of portable lighting systems.

The usual guards for portable electric light bulbs are in the form of wire cages which are secured to the sockets, the light from the electric bulb passing through the open spaces between the wires. While these wire cages protect the lamps to a certain extent against impact and lamp bulb crushing pressures, they fail to protect lamps when they are subjected to heavy crushing pressures as when stepped on by workmen, it being the usual habit of workmen to leave the lighting system, consisting of the electrical supply cable and a plurality of sockets with their lamps and guards, on the floor or ground, especially when not in use. In such condition, also, heavy objects frequently fall or are accidentally placed on them, so that the lamps are broken, with possible resultant damage to the lighting system and injury to workmen, aside from the cost and work delay of replacement.

Also, because of the rigidity of the wire loop at the end of the wire guard designed to embrace the socket, special means must be provided for securing the guard to the socket. To overcome this difficulty, it has been proposed to make the guard of rubber so that the attachment end will be expandable and can be stretched over the socket to cause an inwardly extending bead to engage behind a cooperating external bead of the socket to hold the rubber guard in position on the socket. Such rubber guard is shown in the U.S. Pat. to Reeves, No. 1,695,468.

The rubber guard is, however, opaque and cannot protect the light bulb against heavy crushing pressures.

It will thus be seen that where the guard is made of non-stretchable material, such as more or less heavy wire, the guard itself cannot in simple fashion be snapped over a socket for securing the guard to the latter, but must be provided with separate means, such as a clamp, for attaching such guard to the socket; moreover, the objective of protecting the light bulb against heavy pressure accidentally imposed on it is not realized. On the other hand, where the guard is intrinsically expandable so as to be capable of being sprung over the socket, it is made of a material, such as rubber which interferes with the transmission of light and also fails to protect the bulb. Moreover, such rubber or rubberlike guards, and also wire guards, must be continuous at the attachment end to possess adequate strength and resist displacement and detachment.

In accordance with the present invention, there is provided a guard which combines the features of resistance to otherwise crushing weights and pressures, is integral in character, requiring no additional members to effect securement to a socket, and which, despite its inherent rigidity, can be snapped over a socket and securely held in place thereon. The guard is provided with an inwardly extending bead which snaps behind the edge of the socket to hold the guard against accidental removal while keeping the guard detachable. This is made possible by providing the open-ended rearward portion of the guard, which has an internal diameter substantially equal to the external diameter of the socket, with a plurality of circumferentially spaced, open-ended slots dividing such rearward guard portion into a plurality of spaced fingers, the slots extending for a sufficient distance to impart a limited degree of flexibility to the fingers to enable the bead sections at the free ends of the fingers to ride over the outer surface of the socket under flexure as the guard is forced over the socket, and then snap into locking position over the rear edge of the socket or into a circumferential groove in the socket, the flexibility of the fingers also allowing the guard and socket to be separated despite the inwardly projecting bead sections. In spite of the rigidity of the guard, therefore, it can easily be forced into interlocking, though detachable, assembly with the socket while at the same time such a close fit is provided between the rear portion of the guard and the socket that wobbling is prevented, all without the aid of clamp, screws, straps, and other additional elements for securing the guard to the socket.

A preferred embodiment of the invention is illustrated by way of example in the accompanying drawing wherein:

FIG. 1 is an external view of our improved guard in position on a lamp socket;

FIG. 2 is a vertical section along the line 2—2 of FIG. 1; while

FIG. 3 is a fragmentary vertical section of a modified form of the invention.

Referring to the drawing, the numeral 10 indicates a lamp socket of usual construction and forming part of a portable lighting system in which a plurality of such sockets are connected to electric cable 11.

Mounted on the socket and surrounding the lamp 12 is a guard or shade 13 constructed in accordance with the invention and consisting of a bell-shaped forward portion 14 and a rearward end portion 15, the latter interfitted with the socket 10. The guard 13 is preferably in the form of a continuous body of revolution, i.e., it is formed by rotation of a line, such as indicated at 16, revolving about a central axis 17. However, the shade can be elliptical in cross section or can be given any other shape, as may be desired.

The guard 13 is made of a strong, rigid, preferably translucent or transparent material and for maximum strength is made continuous, i.e., the surface of the bell-shaped forward portion, except for the ventilation openings 18, is of uninterrupted extent. The guard is capable of withstanding weights which would crush a wire guard or a guard made of elastomeric material, such as natural or synthetic rubbers.

While the guard can be made of rigid fiber glass-reinforced resins or other crush-resisting rigid materials, we prefer one that is made of the plastic sold under the name "Lexan," which is a resinous material capable of withstanding heavy blows and pressures without breakage. This material is nearly transparent, but proportionate to its great strength is its rigidity, so that the end portion 15, unlike a guard made of rubber and similarly to a guard made of heavy wire, cannot be stretched or expanded to enable it to be slipped over the socket when a part thereof is of normally smaller internal diameter than the external diameter of the socket.

In accordance with the invention, the guard 13 is constructed to fit snugly over a socket and to be capable of being slid over the socket despite the presence of a bead 18' at its end which has an inner diameter smaller than the outer diameter of the socket. We have found that by providing a circumferential series of spaced open-ended slots 19 in the rear portion 15 of the guard, the resulting spaced fingers 20 have sufficient flexibility such that as the rounded bead sections 18' engage the inner or forward end 21 of the socket, they are flexed outwardly as radial pressure is applied to the guard and right over the outer surface of the socket until they reach the opposite outer end 22 and then snap behind such outer end, thereby locking the guard to the socket. As the bead sections slide over the socket, the fingers remain under flexure, and upon snapping of the bead sections into place behind the socket, such flexure is released and the fingers snugly embrace the socket.

It will be seen from the foregoing that we have provided an extremely simple, one-piece guard of strong, rigid material capable of fully protecting the light bulb against blows and pressures against which wire and rubber guards would be ineffective. Also, because the bell-shaped forward portion of the guard is continuous, it is of particular advantage for portable lighting systems, as these are frequently used in open areas, as in shipyards, where they are exposed to the weather. With wire guards, rain and snow have access to the hot light bulbs, which then suffer cracking and breakage of the glass envelopes, with exposure of the live leads. These may contact the wire guards and cause short circuits and possible injury to personnel. Such accidents are entirely avoided with our new guard, which fully protects the bulb and is electrically nonconducting; and, as stated above, is preferably made of "Lexan," which is an irradiated stabilized, noninflammable, polycarbonate resin, or similar resinous material.

In the modified form of the invention shown in FIG. 3, the upper portion of the guard is constructed in a manner better to prevent access of rain to the lamp bulb, while yet allowing for

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adequate ventilation. In such modified construction, the upper section or neck 15 of the guard is constructed in the same manner as shown in FIG. 1, except that it fits more closely against the socket of the lamp bulb so as to insure against the entry of rain into the interior of the guard.

In further pursuance of this objective, the openings 18 of FIG. 1 are eliminated, and instead the inclined portion 16' of the guard is made imperforate and is bent or flared outwardly, as shown at 23, to deflect rain water away from the outer edge 24 of the lower portion 25 of the guard. This outer edge 24 is spaced from the flared-out portion 23 for a short distance to define a slot 25 in the wall of the guard which serves for ventilating the interior of the latter. This slot can be repeated at the diametrically opposite portion of the guard, and additional such slots can be provided in the guard.

It will be seen that the structure of FIG. 3 provides ventilation for the light bulb and at the same time protects it from contact with rain water, so that no special bulbs able to withstand contact with water while heated are necessary.

We claim:

1. A guard for portable electric lamps wherein an electric light bulb is received in a socket element, said guard consisting of an approximately bell-shaped integral member made of rigid, light-transmitting material, said guard member being a continuous body of revolution and having an enlarged cylindrical forward portion which encompasses a light bulb positioned in the socket element, and including an open-ended

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cylindrical rearward portion of smaller internal diameter than the forward portion, said smaller internal diameter being substantially equal to the external diameter of the socket element, the said rearward portion fitting snugly about the socket element on assembly thereof and being substantially free of wobbling relative to the socket element, the rear edge of the guard member being provided with an inwardly extending bead having an internal diameter less than the external diameter of the socket element, the rearward portion of said guard member being provided with a plurality of open-ended slots forming spaced fingers and extending for a sufficient distance to impart a limited degree of flexibility to such fingers to enable the bead sections at the free ends of the fingers to ride over the outer surface of the socket under flexure and then snap into locking position over the rear edge of the socket element upon assembly of the guard member with the socket element, said guard member flaring outwardly gradually from the smaller to the larger cylindrical portion thereof, such flaring intermediate portion being provided with transverse circumferential through slots serving for ventilation of the interior of the guard member, the upper edge portions defining these slots being extended outwardly in a radial direction so as to overhang the bottom outer edges of the slots to block the entry of rain water to within the slots when the guard member is in the upright position.

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