

[54] VENTILATED LAMP GUARD

[75] Inventor: Tony Trevithick, Gurnee, Ill.

[73] Assignee: Daniel Woodhead Inc., Northbrook, Ill.

[22] Filed: Oct. 12, 1972

[21] Appl. No.: 296,805

[52] U.S. Cl. .... 240/102 R

[51] Int. Cl. .... B02c 17/20

[58] Field of Search .... 240/92, 102 R, 153,  
240/102 A, 102 B

[56] References Cited

UNITED STATES PATENTS

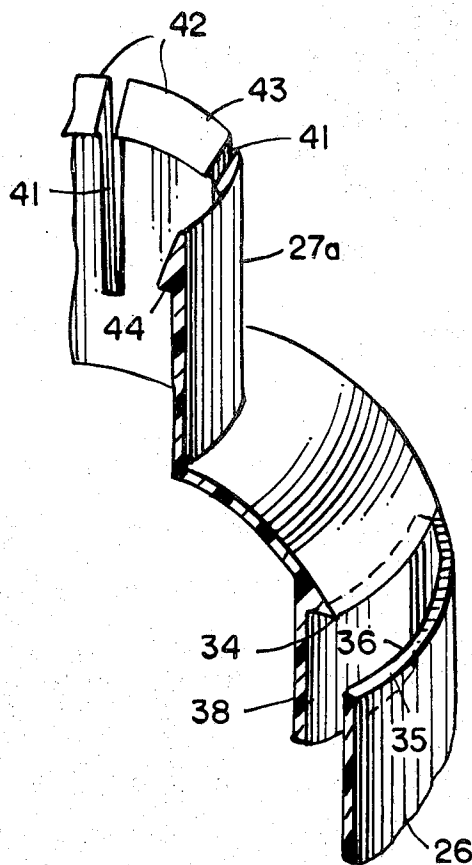
|           |        |                     |           |
|-----------|--------|---------------------|-----------|
| 1,726,550 | 9/1929 | Finkbeiner .....    | 240/102 X |
| 3,609,348 | 9/1971 | Marasco et al. .... | 240/102   |

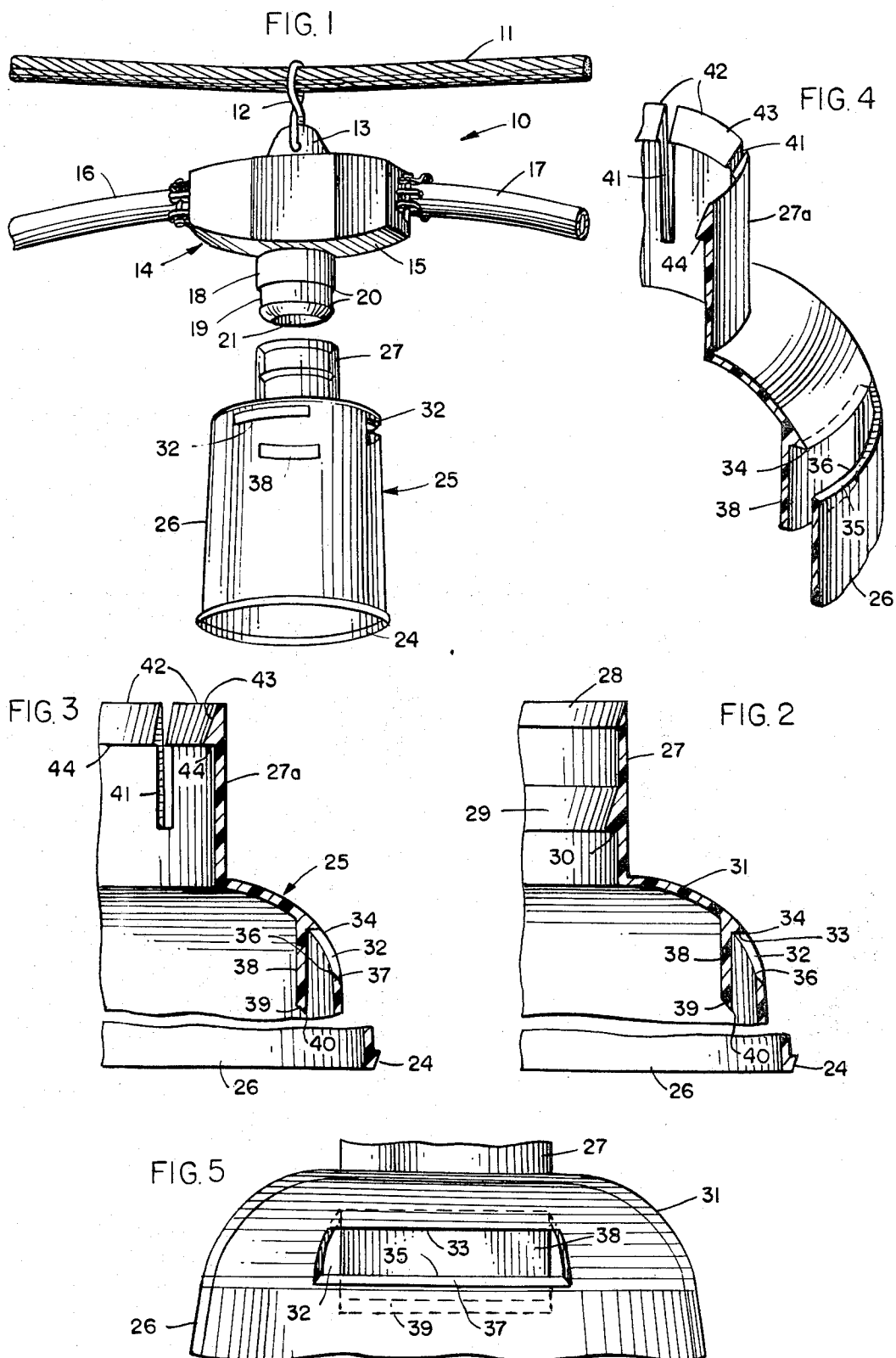
Primary Examiner—Samuel S. Matthews  
Assistant Examiner—Michael L. Gellner  
Attorney—Johnston, Root, O'Keeffe, Keil, Thompson  
& Shurtleff

[57] ABSTRACT

A lamp guard with a substantially cylindrical, hollow body including a flaring, e.g., dome-like, upper portion; a hollow, substantially cylindrical coaxial neck on the domed portion; elongated, horizontal, circumferentially spaced, ventilating slots in the upper portion of the body; and longitudinally arcuate, curtain walls depending from the flaring portion radially inwardly of the respective slots and extending approximately the length of the respective slots and below the lower edges thereof.

8 Claims, 5 Drawing Figures





## VENTILATED LAMP GUARD

The invention herein pertains to improvements in lamp guards preferably molded from a transparent or translucent, moldable, heat resistant, synthetic polymer. A number of different types of lamp guards are known in the art. For example, in U.S. Pat. No. 1,695,468 the guard is made of an elastic insulating material having a rear portion which expands over and elastically clamps upon a socket for the lamp bulb. The body portion of the lamp guard embodies longitudinally extending openings separated by integral strips. Further well known types of lamp guard utilize metal wire cages of various shapes in which the lamp bulb is protectively nested. Another type of lamp guard, as shown in U.S. Pat. No. 2,236,940, is made of a dielectric thermoplastic polymer and comprises a series of spaced narrow strips forming an annular wall which protectively surrounds the lamp bulb. Still another type of lamp guard is described in U.S. Pat. No. 3,609,348. The guard is made of a strong, rigid, preferably translucent or transparent polymer having a bell-like shape with a lamp-socket-receiving, cylindrical, coaxial neck. The upper portion of the guard is provided with heat ventilating holes or slots, the latter having upper edge portions which extend outwardly in a radial direction so as to overhang the bottom, outer edges of the slots. This arrangement of the slot edges is for the purpose of blocking entry of rain water into the slots when the lamp guard is in the upright position.

## THE INVENTION HEREIN

The invention herein concerns improvements in lamp bulb guards of the type particularly adapted to be mounted and surround the lamps of a light string consisting of a series of lamp sockets which are electrically interconnected by electric wires or cables. These light strings have a number of industrial, commercial or domestic uses — either as a temporary source of illumination or a relatively permanent source. Each lamp socket and its electrical connections are housed in an electrically insulating housing which may be supported on a separate line or cable or may be supported by the electrical wires or cables themselves. The housing for purposes of the subject invention preferably has a downwardly extending, cylindrical neck surrounding the lamp bulb socket.

The lamp guards herein are characterized by a substantially cylindrical, hollow, preferably translucent or transparent body having a flaring, preferably dome-like upper portion. A hollow, substantially cylindrical, coaxial neck projects upwardly from the upper portion of the flaring or dome-like portion. The hollow body is adapted to fit about a lamp bulb. The hollow neck is adapted to fit about the downwardly projecting neck of the lamp bulb socket housing in a manner firmly but removably holding the lamp bulb guard on the neck.

In order to ventilate the lamp bulb guard and prevent a build up of lamp-generated heat within such guard, the upper portion thereof is provided with heat-ventilating openings. These openings are preferably in the form of a plurality of elongated, horizontal, circumferentially spaced, ventilating slots. Such slots respectively have near to, but radially inward thereof, a longitudinally arcuate, curtain wall depending from the upper portion of the lamp guard, e.g., the flaring or dome-like portion. The curtain walls respectively extend approximately the length of the slot and desirably

extend below the bottom edge of the slot. This arrangement and orientation of the curtain wall provides the most advantageous heat ventilation for the lamp guard while at the same time preventing rain, particularly wind driven rain, from entering the slots and coming into contact with the thin, hot, glass envelope of the lamp bulb, which might then shatter or crack.

Preferably, the entire lamp guard, including its body, neck and curtain walls, is made in the form of an integrally molded, light-transmitting polymer, e.g., Lexan (trademark), an irradiation-stabilized, non-flammable, heat resistant polycarbonate resin or polymer. The respective curtain walls are preferably slightly shorter than, but wider than, the respective lengths and widths of their slots. The lower edges of the curtain walls are bevelled to a relatively sharp edge. Such sharp edge has the advantage of not accumulating water in the form of droplets along the edge, which might be blown off the edge and into contact with the hot lamp bulb envelope.

The upper edges of the respective ventilating slots preferably are located partly or entirely in the flaring or dome-like portion in order to make these slots as high as possible in the lamp guard for most efficient heat ventilation. In such arrangement, the upper edges of the respective slots have radially outer edge portions slightly radially inwardly of the radially inward edge portions of the bottom edges of the respective slots. The bottom edges preferably are bevelled edges sloping downwardly and radially outwardly from a relatively sharp, radially inward edge.

## THE DRAWINGS

Preferred embodiments of the invention are illustrated in the drawings wherein:

FIG. 1 is an exploded, perspective, fragmentary view of a light string with a lamp guard of the subject invention in exploded position relative to the electrical and lamp bulb socket housing;

FIG. 2 is a fragmentary, enlarged, diametric section view of the lamp guard of FIG. 1;

FIG. 3 is a view similar to FIG. 2 of the second embodiment of a lamp guard of the invention;

FIG. 4 is a perspective, fragmentary, section view of the lamp guard of FIGS. 1 and 2; and

FIG. 5 is a fragmentary, side elevation of the lamp guard.

## THE ILLUSTRATED EMBODIMENTS

Referring to the drawings, FIG. 1 illustrates one lighting unit in a series of lighting units making up the light string 10. A separate cable, wire or rope 11 is used to suspend the light string. Each lamp unit is suspended by means of a link or clip 12 slidably or non-slidably positioned over the cable, wire or rope 11 and through a hole in the ear 13 of the lamp socket housing 14. The lamp socket housing may have any external configuration. In the illustrated embodiment, it is a box-like structure made of or covered by a dielectric, insulating material. Electrical cables or wires 16 and 17 extend into opposite ends of the housing 14, inside of which they are connected electrically (not shown) to the threaded socket 21 for the lamp.

The threaded socket 21 is housed in a cylindrical projection 18 depending downwardly from the housing 15. This projection 18 may be integral with the box 15 and preferably comprises a dielectric, insulating sheath about the threaded socket 21. For purposes hereinafter

described, the cylindrical projection 18 is provided with a ring recess 19 providing opposing ring lips 20.

The lamp bulb guard 25 is composed of a substantially cylindrical body 26 having at its lower edge a reinforcing, ring rib 24. The upper portion of the lamp guard has a hollow, substantially cylindrical, coaxial neck 27, the upper edge 28 of which is bevelled to facilitate sliding of the neck portion 27 over the cylindrical projection 18. Intermediate the ends thereof, the neck portion 27 has a tapered ring 29 providing a downwardly facing, circumferential, ring lip 30. When mounted on the cylindrical projection 18, the tapered ring 29 and its lip 30 are positioned within the ring recess 19. This lip 30 may abut against the lowermost of the two ring lips 20 of the cylindrical projection 18, thereby preventing the lamp guard from accidentally slipping off of the socket housing 14. It is preferred that at least one of the tapered ring 29 and its lip 30 or the projection 18 and its lower lip 20 be made of yieldable, resilient material. In the illustrated embodiment of FIGS. 1, 2 and 4, the housing 15 and its projection 18 are made of an elastomer whereby lower lip 20 will yield sufficiently to allow the neck 27 and its tapered ring 29 to slide over the lower lip 20 in either direction upon application of sufficient manual pressure for the mounting and removal of the lamp guard 25 onto and from the lamp socket housing 14.

The upper portion 31 of the lamp guard housing between the neck portion 27 and the substantially cylindrical body 26 has a flared configuration, which may take the form of a frusto cone or a dome-like shape. In the illustrated embodiment, the upper portion 31 has a dome-like configuration which provides a transversely rounded shape at least adjacent the peripheral edge of the upper portion 31.

The upper portion 31 and/or the upper part of the substantially cylindrical body 26 is provided with a plurality of circumferentially spaced ventilating slots 32. For optimum ventilation, these slots are longitudinally horizontal slots having an upper, longitudinal edge 33 near the periphery of the dome-like upper portion 31 and a lower, longitudinal edge 35 either in the dome-like portion 31 or in the upper part cylindrical body 26.

In this preferred location for the longitudinally horizontal slots 32, the radially outer edge 34 of the upper longitudinal edge 33 is positioned slightly radially inwardly of the relatively sharp, radially inner edge 36 of the lower longitudinal edge 35 (FIGS. 2 and 3). The lower longitudinal edges 35 preferably are bevelled edges 37 which slope downwardly and radially outwardly from the relatively sharp, radially inward edge 36. In this arrangement, water which drips off the radially outer edge 34 is in part or entirely directed by the bevelled edge 37 onto the outer surface of the substantially cylindrical portion 26.

Each of the longitudinal, horizontal slots 32 has a corresponding curtain wall 38 located near to, but radially inwardly from the respective slot. The curtain walls 38 are longitudinally arcuate walls which depend from the upper portion of the lamp guard, e.g., from the flared or dome-like portion thereof. As can be seen in FIG. 5, the length of the respective curtain walls is approximately the length of their respective slots 32. Such length can be slightly shorter than the length of the slots 32 as shown in FIG. 5 to provide optimum heat ventilation without sacrifice of the rain-protecting function of the curtain walls. Wind driven rain drops

which do not strike directly against a curtain wall 38, but rather passes obliquely and directly through the opening and past the curtain wall at the side edges of the opening do not have any deleterious effect on the heated lamp bulb envelope because such rain drops strike against and run down the interior wall of the lamp guard rather than the lamp bulb envelope.

The bevelled bottom edge 39 of the respective curtain walls 38 provides a relatively sharp edge 40 along the bottom of curtain walls, on which rain droplets will not accumulate. With a more blunt edge, rain striking against and flowing down the radially outer face of the curtain walls can accumulate as droplets along the blunt edge. Such droplets can subsequently either be blown against or fall upon the hot lamp envelope.

The embodiment of FIG. 3 differs from the previously described embodiment in the structure of its neck portion. Here the neck portion 27a is provided with a plurality of vertically extending slits 41 which subdivide the upper part of the neck portion 27a into a plurality of vertically extending fingers 42. The fingers 42 are radially flexible. The upper edges thereof are composed of tapered ring segments 43, each providing a downwardly facing lip 44. The latter are adapted to snap-interlock with a lip like the lower lip 20 of FIG. 1, which is usually provided at a higher position on a lamp socket housing like the lamp socket housing 18. See, for example, U.S. Pat. No. 3,609,348. The radially flexible fingers permit the lamp guard of FIG. 3 to be mounted on lamp bulb socket housings which are relatively rigid and not necessarily made of a yieldable, resilient material as is the projection 18 of FIG. 1.

It is thought that the invention and its numerous attendant advantages will be fully understood from the foregoing description, and it is obvious that numerous changes may be made in the form, construction and arrangement of the several parts without departing from the spirit or scope of the invention, or sacrificing any of its attendant advantages, the forms herein disclosed being preferred embodiments for the purpose of illustrating the invention.

The invention is hereby claimed as follows:

1. A lamp bulb guard comprising a substantially cylindrical, hollow body adapted to house the lamp bulb therein and including a flared upper portion; elongated, horizontal, circumferentially spaced, ventilating slots in the upper part of said body; and longitudinally arcuate, curtain walls depending from the flared portion near but radially inwardly of respective slots and extending approximately the length of the respective slots.

2. A lamp bulb guard as claimed in claim 1, said body, its flared upper portion, and the curtain walls being an integral molding of a light-transmitting, synthetic polymer.

3. A lamp bulb guard as claimed in claim 1, said curtain walls respectively being slightly shorter than and wider than the respective lengths and widths of said slots.

4. A lamp bulb guard as claimed in claim 3, the lower edge portions of said curtain walls being bevelled to a relatively sharp lower edge.

5. A lamp bulb guard as claimed in claim 1, the lower edge portions of said curtain walls being bevelled to a relatively sharp lower edge.

6. A lamp bulb guard as claimed in claim 1, the upper edges of respective slots being in the periphery of the flared upper portion and having radially outer edge

5

portions located radially inwardly of the radially inner edge portions of the bottom edge portions of respective slots.

7. A lamp bulb guard as claimed in claim 6, said bottom edge portions being bevelled edges sloping downwardly and radially outwardly from a relatively sharp, radially inward edge.

8. A light string embodying electrical cable or wire

6

means having a plurality of downwardly facing, lamp bulb sockets at spaced intervals thereon, said sockets being in respective dielectric housings, and a lamp bulb guard as claimed in claim 1 depending from each housing in protective, surrounding relationship to lamp bulbs mounted in their respective sockets.

\* \* \* \* \*

10

15

20

25

30

35

40

45

50

55

60

65