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2,307,301

SPOT LAMP

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3 Sheets-Sheet 3

FIG. 3.

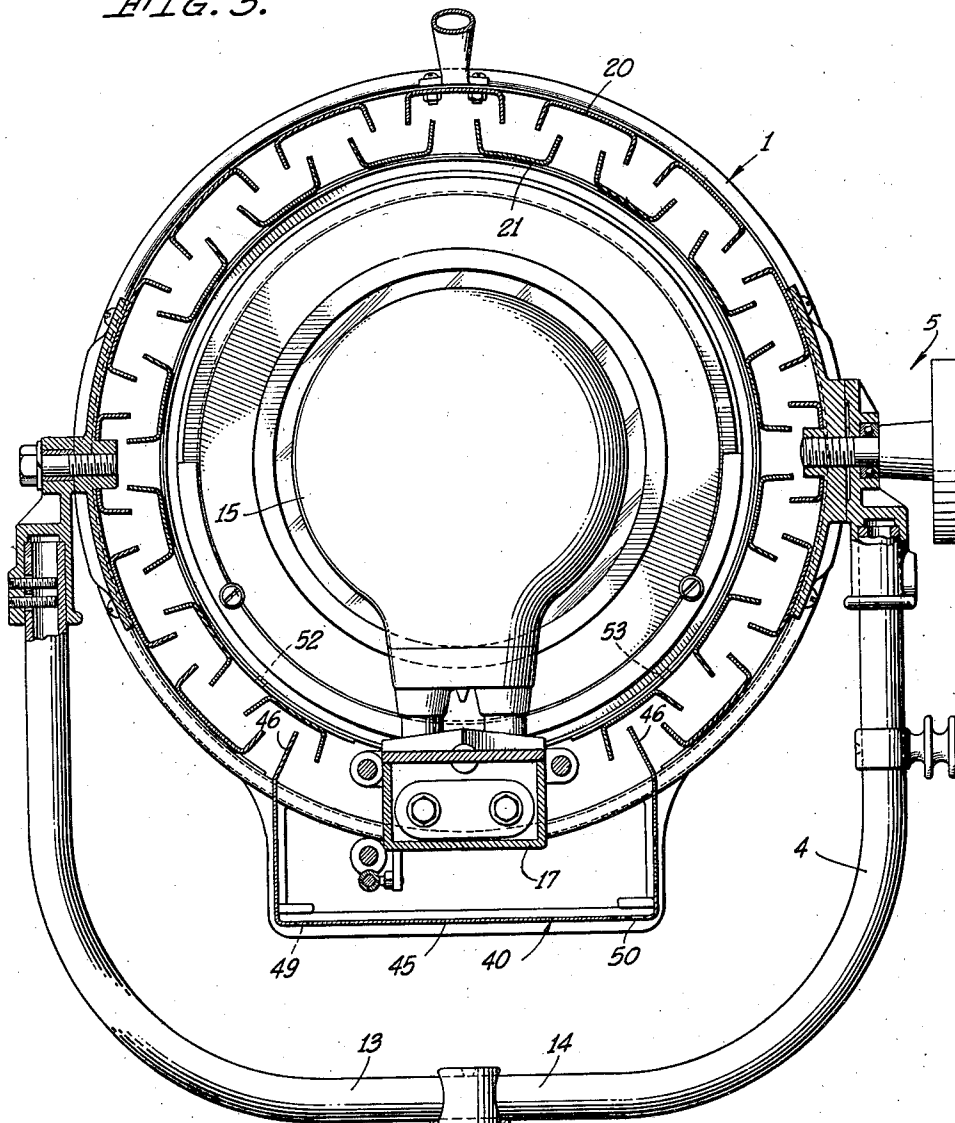
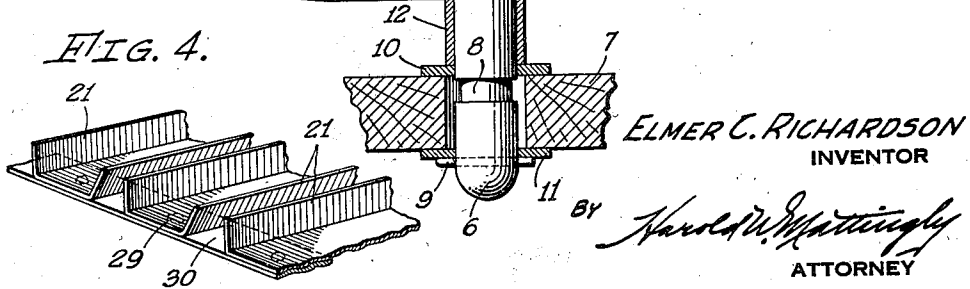


FIG. 4.



UNITED STATES PATENT OFFICE

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SPOT LAMP

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5 Claims. (Cl. 240-47)

My invention relates to an incandescent spot lamp and has particular reference to an improved lamp construction having the desirable characteristics of being light in weight, well ventilated and water-proof.

In the motion picture producing industry spot and flood lights employing incandescent lamps are used for the purpose of lighting the set which is to be photographed. These lamps are employed for such lighting purposes both indoors and in outdoor locations where it is necessary to supplement the natural light of day. Such lamps are accordingly subjected to frequent shipping from place to place and to outdoor use in inclement weather. It is, therefore, desirable that such lamps be so constructed as to be entirely weather-proof to prevent water which falls on the exterior surfaces of the lamp housing from entering into the housing and coming into contact with the electrical connections and other mechanism enclosed therein. The mere enclosure of the mechanism is not sufficient, however, for the reason that the interior of the housing must be extremely well ventilated, lamps dissipating as much as ten kilowatts being employed within these housings. The housing must be so constructed as to keep out water, permit adequate ventilation through the housing, and at the same time prevent any stray light from leaking past whatever ventilating orifices are provided in the housing. Since these lamps are subjected to considerable shipment from place to place, it is desirable that they be light in weight and of strong and sturdy construction so as to permit normal handling thereof without incurring the danger of damaging either the lamp housing or the mechanism enclosed therein.

There is not now available a lamp construction which will meet all of the above noted requirements and it is, therefore, an object of my invention to provide an incandescent spot lamp construction including a skeleton housing formed of a plurality of light weight channel defining members disposed in spaced overlapping relation to each other whereby free circulation of air is permitted, light is prevented from escaping, and water passing between the outer channels is conveyed by the inner channels to a point remote from mechanism enclosed by said housing.

It is a further object of my invention to provide a lamp construction of the character set forth in the preceding paragraph in which the channels of the outer group are disposed with their legs extending inwardly and the channels of the inner group are disposed with their legs

extending outwardly, and in which the channels are so spaced that the adjacent legs of adjacent channels in one group are disposed between the legs of channels of the other group.

It is an additional object of my invention to provide an incandescent spot lamp construction of the character set forth in the preceding paragraphs in which a means for conducting water to the exterior of the housing is interconnected between the ends of all of the channels of the inner group.

Other objects and advantages of my invention, such as the novel features of construction which permit the ready and inexpensive manufacture of my incandescent spot lamp, will be apparent from a study of the following specifications, read in connection with the accompanying drawings, wherein:

Fig. 1 is a perspective view illustrating the appearance of one form of incandescent spot lamp constructed in accordance with my invention;

Fig. 2 is a longitudinal vertical section taken substantially along the line II—II of Fig. 1 illustrating details of construction of a lamp housing illustrated in Fig. 1 and certain of the mechanism enclosed within the housing;

Fig. 3 is a cross sectional view taken along the line III—III of Fig. 2 and illustrating additional details of construction of the lamp housing; and

Fig. 4 is a fragmentary perspective view illustrating one step in the method of manufacture of the housing illustrated in the three preceding figures.

Referring to the drawings, I have illustrated in Fig. 1 the preferred embodiment of my invention as including a lamp housing 1 which is preferably cylindrical in shape having one end closed by means of a rear end closure 2 and the front fitted with a projection lens which is supported by means of a lens mount 3. The lamp housing 1 is preferably mounted for rotation about both a horizontal and a vertical axis as by means of a yoke 4 pivotally connected as indicated at 5 to opposite sides of the housing 1 and including a downwardly extending pivot portion 6 adapted to either be received in the upper end of a conventional lamp standard (not shown) or secured to a horizontally extending hand rail 7 or other available structure. The pivot portion 6 preferably includes an annular groove 8 (see Fig. 2) which may receive a set screw provided in the conventional lamp standard and preferably also includes a transversely extending hole

9 permitting the insertion of a pin or cotter key when the pivot 6 is mounted on the rail 7. Free pivotal movement of the yoke 4 about the pivot 6 when it is mounted on the rail 7 may be obtained by placing washers 10 and 11 on the upper and lower sides of the rail 7 and by interposing a bearing sleeve 12 between the upper washer 10 and outwardly extending arms 13 and 14 of the yoke.

As is shown in Figs. 2 and 3, an incandescent lamp 15 and a reflector 16 therefor are preferably supported upon a socket 17, the terminals of which are extended into electrical connection with a line switch 18 permitting the lamp 15 to be turned off and on. Power for energizing the lamp 15 may be supplied by means of an extension cable 19.

Reference to Fig. 3 will indicate that the housing 1, in accordance with the preferred embodiment of my invention, comprises a plurality of longitudinally extending channel members 20 and 21 which are arranged in two separate groups, the channels 20 of an outer group being disposed with their legs extended inwardly toward the interior of the housing and the channels 21 of the inner group being disposed with their legs extending outwardly away from the interior of the housing. It will be noted that each of the channels 21 of the inner group are offset circumferentially relative to the channels of the outer group so that adjacent legs of adjacent outer channels 20 are disposed between the legs of the channels 21 of the inner group and so that adjacent legs of adjacent inner channels 21 are disposed between the legs of the outer channels 20.

The channels 20 and 21 may be supported in the described positions by engaging the ends thereof with a front supporting ring 22 and a rear supporting ring 23. The rear supporting ring is preferably circular in shape to conform to the cylindrical contour of the lamp housing 1 and includes a circumferentially extending portion which has a channel-shaped cross section formed by a forwardly extending outer flange 24, a radially extending annular portion 25, and a forwardly extending inner flange portion 26. The web portions of each of the outer channels 20 are preferably secured to the outer flange portion 24 by any suitable means as by spot welding and the channels 21 of the inner group are similarly secured to the inner channel portion 26. A similar construction may be embodied at the front end of the housing by providing an outer flange portion 27 and an inner flange portion 28 on the front supporting ring 22, the outer channels 20 being secured to the flange 27 and the inner channels 21 being secured to the inner flange portion 28 in the manner previously described.

The attachment of the channels 20 and 21 to the supporting rings 22 and 23 may be simplified by employing the manufacturing procedure illustrated in Fig. 4. In accordance with this procedure each end of all of the channels 21 is first secured, as by spot welding 29, to flexible supporting band members 30 and 31 in the same spaced relation to each other as that previously described in connection with the completed construction. Each of the band members 30 and 31 had a width substantially equal to the axial width of the flanges 26 and 28 with which they are associated and a length sufficient to receive all of the channels 21 when they are spaced from each other as described. After the channels 21

have been thus secured to the supporting bands 30 and 31, the bands may be bent around the exterior of the flanges 26 and 28 and spot welded thereto at a number of points spaced about the periphery of the flanges so that by this latter spot welding operation all of the channels 21 may be secured in their required locations. A similar procedure is followed in connection with the outer group of channels 20, supporting bands 32 and 33 being first secured to the backs of each of the channels 20 and then the bands 32 and 33 being later secured to the flanges 24 and 27.

It will be seen that the construction above described permits the free circulation of air between the channels 20 and 21 to afford adequate ventilation for the lamp 15, but that because of the overlapping relationship of the inner and outer groups of channels, there is no aperture provided through which light may pass so that the housing is rendered completely light tight. Transmission of light from the interior to the exterior of the housing by reflection from the various faces of the channel members 20 and 21 may be avoided by coating the inner surfaces of all of the channels with a light absorbing substance such as a velvet black paint.

Additional ventilation may be secured through the rear end closure 2 and the rear supporting ring 23 associated therewith by employing a construction such as that illustrated in Fig. 2. The rear end closure 2 may include a cap member 34 which is dished outwardly, as indicated in Fig. 2, and secured at its outer edge as by spot welding to the radially extending portion 25 of the ring 23. A plurality of ventilating apertures 35 may be provided in the cap member 34 so as to permit the passage of air into the interior of the housing 1 through this member. These openings may be baffled to prevent the transmission of light therethrough as by securing a cone-shaped baffle member 36 to the cap member 34 as by welding or rivets 37, the baffle member 36 preferably having an outside diameter less than the diameter of the inner flanges 26 but sufficient to extend beyond each of the openings 35. Transmission by reflection may be further avoided by forming the rear supporting ring 23 with a radially extending annular portion 38 which extends inwardly to a point nearer the axis of the housing than the outer edge of the baffle member 36. The inner edge of the annular member 38 may be flanged rearwardly a short distance as indicated at 39, if desired.

Space for accommodating the socket construction 17 and a suitable focusing mechanism therefor may be provided by means of a lower housing portion 40 which is extended substantially the full length of the housing 1 and disposed at the under side thereof. The housing 40 may also serve as a support for carrying the aforementioned line switch 18. The housing 40 may include front and rear housing brackets 41 and 42 each of which includes an arcuately formed upper surface which is defined by an inwardly extending flange 43 permitting each of the brackets 41 and 42 to be secured to the under surface of the outer flange portions 24 and 27. Each of the brackets 41 and 42 preferably also include inwardly extending flange portions 44 extending about the remaining three sides of the brackets so as to provide a seat against which a sheet metal enclosure 45 may be secured. This enclosure is preferably extended horizontally across the bottom of the housing 40, vertically along the sides

thereof, and inwardly as indicated at 46 in Fig. 3 to a point disposed between the legs of the lowermost channels 21 so as to complete the light baffling associated with these lowermost channels.

It will be noted from an inspection of Figs. 2 and 3 that any water, such as rain and the like, which falls upon the housing 1 and passes between the channels 20 in the outer layer will fall upon the channels 21 in the inner layer between the legs thereof so that these channels may serve as a trough to conduct such water to one or the other of the ends of the housing. In order that water thus conveyed to the ends of the housing may be suitably discharged from the lower portion of the housing, I prefer to make the channels 20 and 21 of a length somewhat less than the interior distance between the annular portions 25 of the supporting rings 22 and 23 so as to define spaces 47 and 48 lying between the ends of these channels and the interior surface of the annular portions. Water which is conducted by the channels 21 to these spaces may then flow around the inner flange portions 26 and 28 until they pass the horizontal diameter of the housing, at which time they may fall to the inner surface of the outer flange portions 24 and 27. If the axis of the housing 1 is so inclined, for example, as to dispose the forward end of the housing at a level lower than that occupied by the rear end of the housing, the water which is conducted to the forward supporting ring 22 will collect in the pocket formed by the lowermost portion of this ring until such pocket is filled to overflowing, at which time the water will then fall into the socket housing 40.

In order that the water may be discharged from the socket housing 40 and prevented from coming into contact with the socket or other mechanism enclosed within this housing, I provide a pair of drain holes 49 and 50 through the sheet metal housing 45 at the forward corners of the bottom of this housing. Light leaks through these drain apertures may be prevented by providing on the front casting 42 an overhanging ledge or flange 51 associated with each of these apertures.

Water which enters through the aforementioned ventilating apertures 35 which are provided in the cap member 34 may also be discharged through these drain openings 49 and 50 by providing in the lower portion of the inner flange 26 a pair of drain openings 52 and 53 which are so disposed as to lie above the lowermost ones of the channel members 20 so that water which collects between the cap member 34 and the annular portion 38 of the rear supporting ring 23 may drain through the openings 52 and 53 and be caught within the lowermost channels 20. These lowermost channels 20 thus serve as conduits to convey water draining through the openings 52 and 53 to the drain spaces 47 or 48, depending upon the direction of inclination of the axis of the housing.

If, as in the example previously assumed, the housing is inclined downwardly toward the forward end of the housing, water draining through the openings 52 and 53 will be conducted by the lowermost ones of the channels 20 to the front drainage space 48 to there be conducted into the socket housing 40 and discharged through the drain openings 49 and 50. Provision for draining the housing in case the axis is oppositely inclined may include a similar pair of drain openings 54 disposed at opposite rear corners of the

socket housing 40. Light leak through these drain openings may likewise be prevented by employing small overhanging ledge members 56 secured to the casting 41 in a position to cover these openings.

It will be observed that with the drainage system just described, water tending to enter the housing 1 will be caught and conducted to the ends of the housing and from there into the socket housing 40. This water will be conducted to the lower end of the socket housing 40 irrespective of the direction in which the axis of the housing 1 is inclined so that the water will be discharged from the housing through one or the other of the pair of drain openings disposed at that end of the housing and thus insure against any water coming into contact with the lamp 15, the reflector 16, the socket 17, or any of the other mechanism which is carried by the central part of the socket housing 40.

From the foregoing it will be observed that I have provided an incandescent spot lamp construction which may be readily and inexpensively manufactured and which includes the desirable characteristics of being light in weight, well ventilated, and water-proof.

Attention is called to the fact that the construction hereinbefore described operates to prevent any moisture from reaching those parts of the lamp equipment which should be maintained free of moisture and that such water-proofing is obtained irrespective of the position in which the lamp is placed.

While I have shown and described the preferred embodiment of my invention, I do not desire to be limited to any of the details of construction shown or described herein, except as defined in the appended claims.

I claim:

1. In a spot light housing, the combination of: a pair of annular supporting rings disposed in axial spaced parallel relation to each other, each of said rings including an inner and an outer longitudinally extending flange; an outer group of channel members extended between said supporting rings and disposed with their leg portions extended inwardly; means securing the backs of each of said channel members to the outer flange of each of said supporting rings; an inner group of channel members extended between said supporting rings and disposed with their legs extended outwardly; and means securing the backs of each of the channel members of said inner group to the inner flange of each of said supporting rings in such position that adjacent legs of adjacent channels in said outer group are disposed between the legs of a channel in said inner group, whereby free passage of air is permitted and the passage of light is prevented.

2. In a spot light housing, the combination of: a pair of annular supporting rings disposed in axial spaced parallel relation to each other, each of said rings including an annular portion carrying an inner and an outer longitudinally extending flange; an outer group of channel members extended between said supporting rings and disposed with their leg portions extended inwardly; means securing the backs of each of said channel members to the outer flange of each of said supporting rings; an inner group of channel members extended between said supporting rings and disposed with their legs extended outwardly; and means securing the backs of each of the channel members of said inner group to the inner flange of each of said supporting rings in such

position that adjacent legs of adjacent channels in said outer group are disposed between the legs of a channel in said inner group, all of said channels being spaced from the annular portions of said supporting rings, whereby water collecting in the upwardly directed ones of said channel members will flow downwardly to the ends of such members and then be conducted around the lowermost supporting ring in the space between the ends of said channel members and said annular portions.

3. In a spot light housing, the combination of: a pair of annular supporting rings disposed in axial spaced parallel relation to each other, each of said rings including an annular portion carrying an inner and an outer longitudinally extending flange; an outer group of channel members extended between said supporting rings and disposed with their leg portions extended inwardly; means securing the backs of each of said channel members to the outer flange of each of said supporting rings; an inner group of channel members extended between said supporting rings and disposed with their legs extended outwardly; means securing the backs of each of the channel members of said inner group to the inner flange of each of said supporting rings in such position that adjacent legs of adjacent channels in said outer group are disposed between the legs of a channel in said inner group; a perforated end closure member extended across the opening in one of said annular supporting rings; and light baffling means for said perforations including an inwardly directed annular flange secured to said inner longitudinally extending flange, said inner flange having an opening therein disposed in a position to communicate with the lowermost ones of said channels in said outer group, whereby water entering said housing through said per-

forations and being trapped by said inwardly extending annular flange is conducted through said openings and on to said lowermost channels to be conducted thereby to the lowermost end of said housing when angularly disposed.

4. In a spot light housing, the combination of: a pair of annular supporting rings disposed in axial spaced relation to each other; an outer group of channel members extended between said supporting rings and disposed with their leg portions extended inwardly; means securing said channel members to said supporting rings; an inner group of channel members extended between said supporting rings and disposed with their legs extended outwardly; and means securing the channel members of said inner group to said supporting rings in such position that adjacent legs of adjacent channels in said outer group are disposed between the legs of a channel in said inner group, whereby free passage of air is permitted and the passage of light is prevented.

5. In a spot light housing, the combination of: a pair of annular supporting rings disposed in axial spaced relation to each other, each of said rings including an inner and an outer axially extending flange; and a plurality of longitudinal members spaced circumferentially from each other and extended between said supporting rings and having their ends received between the inner and outer axial flanges of said rings, said members defining inwardly positioned channel shapes having their legs extended outwardly and defining also alternately disposed outwardly positioned channel shapes having their legs extended inwardly, each of said channel shapes being extended across a circumferential gap between adjacent members to prevent the passage of light therebetween and permit the free passage of air.

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