July 19, 1949. L. G. LEIGHTON 2,476,671

ELECTRIC PROJECTION LAMP

Filed Sept. 28, 1945

FIG. 1

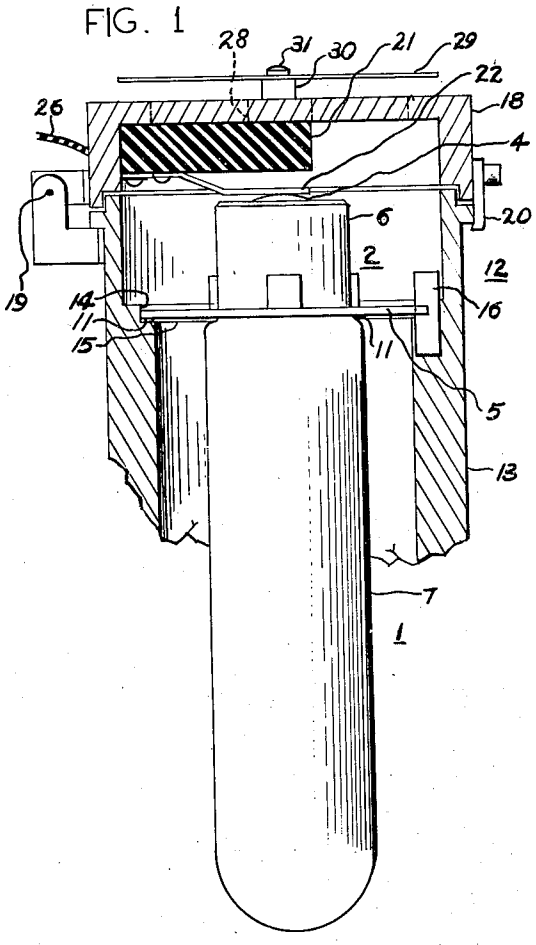


FIG. 3

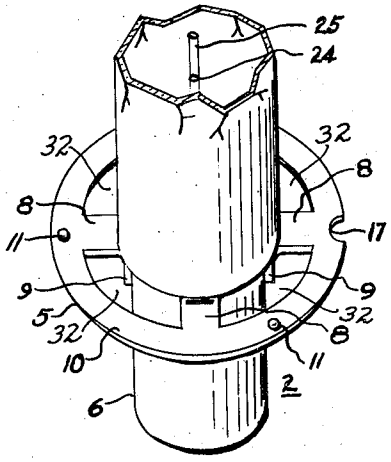


FIG. 4

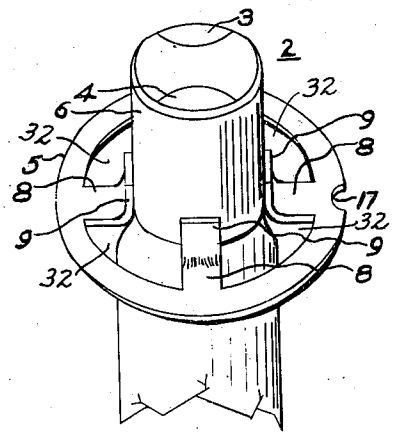
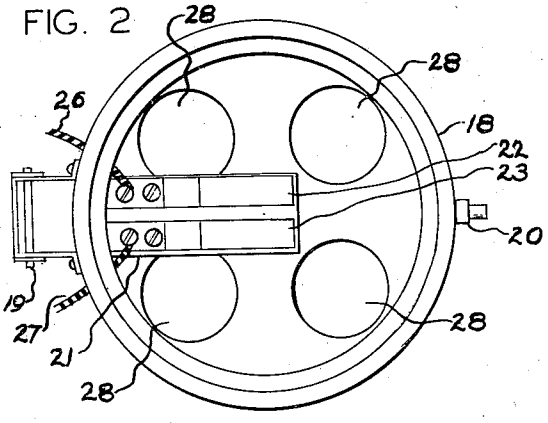


FIG. 2



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ELECTRIC PROJECTION LAMP

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4 Claims. (Cl. 240—41)

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My invention relates to electric lamps and more particularly to such lamps having a prefocus base for use in picture projection apparatus.

The principal object of my invention is to provide an electric projection lamp having a prefocus base which positions the lamp more accurately than present bases and in which the electrical connections to the lamp terminals may be made independently of the prefocusing means on the base to simplify the structure of the socket for the lamp. Another object of my invention is to provide a prefocus base for an electric lamp which facilitates cooling of the lamp by the ventilating system for the lamp house of a projection apparatus. A further object of my invention is to provide an electric lamp having a prefocus base and a socket therefor of simple structure and which socket may be made integral with the lamp house of a picture projection apparatus. Further objects and advantages of the invention will appear from the following detailed description of a species thereof and from the appended claims.

In the drawing accompanying and forming part of this specification an embodiment of my invention is shown in which Fig. 1 is a side-elevational, fragmentary, partly sectional view of a lamp chamber and showing in side elevation the lamp mounted therein; Fig. 2 is a bottom plan view of the cover of the chamber shown in Fig. 1; Fig. 3 is a perspective view of the base-end of the lamp shown in Fig. 1 as seen from below, and Fig. 4 is a similar view of the base end of the lamp as seen from above.

The lamp 1 shown in Figs. 1, 3 and 4 is the same as the incandescent projection lamps for base-up mounting well known in commerce except for the construction of the prefocus base 2 which has two metal contact terminals 3 and 4 on its exposed end (Fig. 4) and a flange comprising a ring 5 attached to the outer metal shell 6 of the base 2 which shell is electrically insulated from contacts 3 and 4. The ring 5 is substantially larger in diameter than the tubular bulb 7 of the lamp 1 and is attached to the lamp base 2 by inwardly extending arms 8 the inner ends 9 of which are turned toward the terminal end of the base 2 and soldered, welded or brazed to the metal shell 6 of the base 2. The ring 5, arms 8 and base 2 thus define vent openings 32 which extend radially inward of the prefocusing flange to a point within the projected confines of that portion of the bulb wall adjacent the base 2. The surface 10 of the ring 5 facing away from the base end of the lamp 1 has three bosses

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11 spaced approximately 120 degrees apart and adjacent its outer edge. The bosses 11 provide a three point support for the lamp 1 and may be accurately shaped and dimensioned to hold the lamp filament (not shown) in proper position at focus of the optical system of the projection apparatus when the lamp 1 is mounted in the chamber shown in Fig. 1. The ring 5 may of course be omitted and the ends of arms 8 provided with bosses 11 or spaced lugs or wings may be used on the base to constitute a transversely extending projection to serve the same purpose as the flange.

The lamp chamber 12 of Fig. 1 comprises a tubular metal casing 13 the inner surface of which is formed with a circular recess 14 which fits the ring 5 and provides an annular shoulder 15 for supporting the ring 5 and the lamp 1. A cylindrical pin 16 is mounted in a cavity in the wall of the housing 13 and extends into the recess 14 to engage the semi-circular slot 17 in the ring 5 to hold the ring 5 and the lamp 1 against rotation in the casing 13. The slot 17 is accurately located with respect to the lamp filament.

The lamp chamber also has a top 18 which is hinged at 19 to the casing 13 and provided with a catch 20 for releasably locking it with the casing 13. The top 18 may be made of metal and has secured thereto a block 21 of insulating material carrying a pair of spaced spring contacts 22 and 23 for engaging the contacts 3 and 4 of the lamp 1. When the cover 18 is closed the spring contacts 22 and 23 press the ring 5 firmly against the shoulder 15 to hold the lamp filament, which is supported adjacent the lower end of the envelope 7 by wires 24 and 25 electrically connected to base contacts 3 and 4, in proper position at the focus of the apparatus. The contacts 22 and 23 are provided with insulated current leading-in wires 26 and 27 which pass through openings in the wall of the cover 18 for connection to an electric power source for the lamp 1. Conventional enclosed switch means (not shown) actuated by the cover 18 may be provided as a safety measure to break automatically the circuit including wires 26 and 27 while the cover is in its opened position.

The cover has vents 28 at its top through which may pass cooling air forced through the lamp house of the projector by the usual fan arrangement (not shown). The cooling air may flow upward in casing 13 past the lamp 1, through the vents defined by the arms 8, the ring 5 and the base 6 and thence out of the vents 28 in the cover 18 to the outer atmosphere. An opaque

disc 29 for intercepting stray light is supported over the vents 28 by a stud 30 and bolt 31 as shown in Fig. 1.

The extension of the flange vent openings 32 radially inward of the flange to a point at least approximately within the projected confines of that portion of the bulb wall adjacent the base eliminates any possibility of dead air spaces or pockets of trapped heated air forming at the upper end of the glass bulb in the corner that otherwise would be formed between the prefocusing flange and the bulb wall. This then assures the glass bulb being intimately contacted and scrubbed or "washed" by the cooling air throughout its entire length and most important at its upper or based end where the glass gets the hottest during the operation of the lamp.

In placing a lamp 1 in the lamp house the catch 20 is released and the cover 18 turned 180 degrees on its hinge 19 to give access to the interior of the casing 13. The lamp 1 is then inserted base end up in the casing 13 with the slot 17 in the ring 5 properly indexed with the pin 16 and the bosses 11 resting against the shoulder 15 to hold the lamp filament in proper position at the focus of the light projecting device on which the chamber 12 is mounted. The cover 18 is then returned to and latched in its closed position with its contacts 22 and 23 engaging base contacts 4 and 3, respectively, and the lamp 1 may then be energized. Lamp replacement may be readily and speedily accomplished in the same manner.

Since the casing 13 and its cover 18 are at ground potential the socket 12 may be made integral with the lamp housing which is usually made of metal. This is not possible with the usual prefocus bases in which the base shell conducts power. The metal ring 5, which acts solely as a support for properly positioning the lamp 1 and is not included in the lamp circuit, being substantially larger in diameter than similar members used heretofore minimizes the effect of inequalities on the shoulder 15 on the position of the lamp filament. I prefer to use a ring of approximately 2¼ inches in diameter with a tubular lamp bulb of approximately 1¼ to 1½ inches in diameter.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. The combination of a lamp comprising a bulb having a light source therein and a base having insulated contacts on its bottom and a flange comprising a ring substantially larger in diameter than said bulb and secured to said base in predetermined relation to said source by spaced arms, and a chamber enclosing said lamp and having a shoulder for engaging said ring to support said lamp in base-up position with the bulb in spaced relation to the inner wall of the chamber, said ring defining with said arms and said base openings through the flange providing vents for the passage of cooling air through the chamber past the lamp, said chamber having a cover provided with electric spring contacts for engaging said base contacts and vents for the passage of cooling air out from the chamber.

2. An electric projection lamp comprising a bulb having a base attached thereto and containing a light source, and a transversely extending annular flange surrounding and accurately located and secured on said base with respect to said source and the outermost portion of which is adapted to engage with a socket, said flange

being of appreciably larger diameter than said bulb and comprising an outer continuous ring portion spaced from the base beyond the projected confines of that portion of the bulb outer wall surface adjacent the base by an openwork inner portion extending radially inward of the flange to a point at least approximately within the projected confines of that portion of the bulb outer wall surface adjacent the base, the openings of the said openwork inner portion of the flange constituting the greater part of the said inner portion of the flange to thereby serve as vents for passage of cooling air therethrough longitudinally of the lamp and in intimate contact with the full length of the bulb.

3. An electric projection lamp comprising a bulb having a base attached thereto and containing a light source, and a transversely extending flange surrounding and accurately located on said base with respect to said source, said flange comprising an outer ring portion secured to said base by inwardly extending spaced arms defining with said ring and said base openings constituting the greater part of the inner portion of the flange and extending radially inward of the flange to a point at least approximately within the projected confines of that portion of the bulb outer wall surface adjacent the base to thereby serve as vents for passage of cooling air therethrough longitudinally of the lamp and in intimate contact with the full length of the bulb, said ring being substantially larger in diameter than said bulb and providing a seating shoulder for accurately locating the lamp in a socket.

4. The combination of a lamp comprising a bulb having a light source therein and a base having a transversely extending flange comprising a ring substantially larger in diameter than said bulb and surrounding said base and secured thereto by inwardly extending spaced arms, and a chamber enclosing said lamp and having a shoulder for engaging said ring and holding said bulb in spaced relation to the inner wall of the chamber, said ring defining with the said arms and said base openings through the flange and extending radially inward thereof to a point at least approximately within the projected confines of that portion of the bulb outer wall surface adjacent the base to thereby provide vents for the passage of cooling air through the chamber past the lamp and in intimate contact with the full length of the bulb thereof.

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