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2,254,845

MOUNT FOR QUARTZ LAMPS

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Fig. 1.

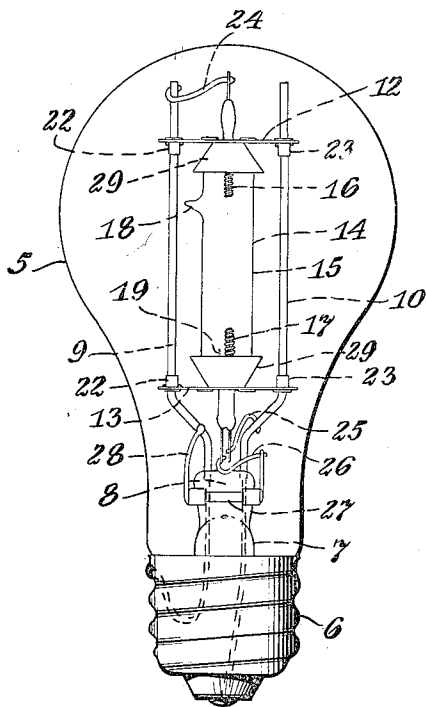


Fig. 2.

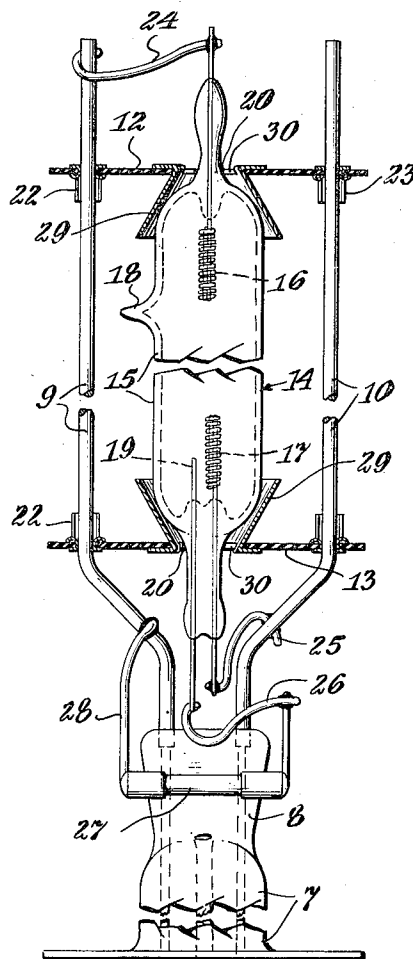


Fig. 4.

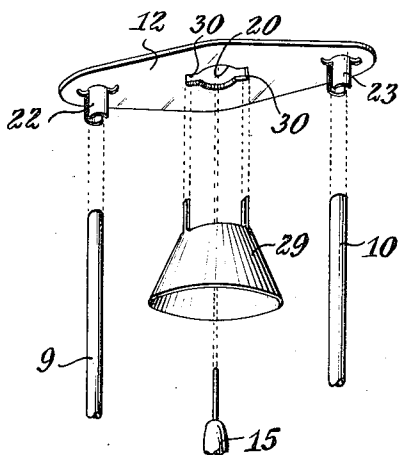
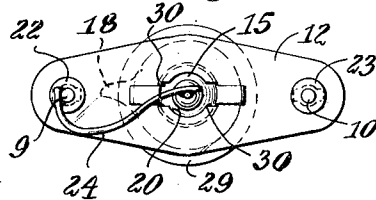


Fig. 3.



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MOUNT FOR QUARTZ LAMPS

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4 Claims. (Cl. 176-122)

The present invention relates to electric discharge lamps and particularly to a mount for supporting the lamp which is simple and economical to manufacture and which rigidly supports the lamp in any position.

In devices of this type the usual practice is to support the inner mount for the lamp by the outer envelope or bulb, particularly where the outer bulb is tubular and of small diameter. In certain bulbs, where the maximum diameter is greater than the neck of the bulb to which the base is secured, it is not feasible to provide a suitable supporting member to make contact with the outer bulb due to the inconvenience in assembly which increases manufacturing costs.

It is accordingly an object of the present invention to provide a gaseous discharge lamp wherein a supporting mount is employed which readily lends itself to jig operation in mounting the lamp in the surrounding envelope, thus facilitating fabrication of the device.

Another object of the present invention is to provide a rigid support for a discharge device which can be readily assembled and inserted into the outer envelope without the necessity of contacting the latter.

Another object of the present invention is the provision of a gaseous discharge device wherein a simple and rigid mount is provided for the lamp which is unaffected by the heat generated during operation with the mount serving the additional purpose of supporting a heat reflecting shield for preventing condensation of the vaporized discharge supporting medium.

Still further objects of the present invention will become obvious to those skilled in the art by reference to the accompanying drawing wherein:

Fig. 1 is an elevational view of a discharge device constructed in accordance with the present invention;

Fig. 2 is a fragmentary view partly in cross-section and on an enlarged scale of the mount or support for the lamp as shown in Fig. 1;

Fig. 3 is a top plan view of the structure as shown in Fig. 2, and

Fig. 4 is an elevational view depicting the manner of assembling the mount as shown in Fig. 2.

Referring now to the drawing in detail, the device as shown in Fig. 1 comprises an enclosing envelope 5 of suitable vitreous material such as glass or the like transparent to light, and, if desired, it may be of quartz or other ultra-violet pervious material. Appropriately secured to the

envelope is a base 6 of the usual type to enable the device to be screwed into a socket.

The envelope 5 is provided with a mount comprising a reentrant stem 7 having the customary press portion 8. A pair of leading-in conductors 9 and 10 of suitable metal, such as magno or the like, and provided with a seal forming portion having a coefficient of expansion approximating that of the vitreous envelope, are sealed to the press and connected to the center contact and shell of the base 6. As will be noted, the leading-in conductors 9 and 10 are of rod-like form and widen out immediately above the press portion and extend in parallel relation longitudinally of the enclosing envelope 5.

A pair of bridges 12 and 13 of a suitable insulating material, such as mica or the like, tie the leading-in rods together for the purpose of forming a rigid mount for a discharge lamp 14. The lamp 14 as shown is of the high pressure type and comprises an envelope 15 of vitreous material capable of withstanding the high temperature of operation, such as quartz or the like, and provided with a pair of electrodes 16 and 17 between which a discharge occurs when a suitable potential is applied therebetween. After evacuation of the envelope 15 through an exhaust tip 18, it is filled with an ionizable medium, such as mercury, together with an inert gas, such as argon, neon, or the like, to facilitate starting. In addition a starting electrode 19 is sealed into the envelope 15 and positioned adjacent the electrode 17 for initially ionizing the gaseous medium to start the arc.

The lamp 14 as shown has the customary elongated tapering seal at each end to which the leading-in wire for each electrode is sealed. This elongated end passes through openings 20 provided in the bridges 12 and 13, as can be seen more readily in Figs. 2 and 4, which thus suspends the lamp 14 between the latter in firm engagement therewith. Each bridge is in turn provided with a pair of eyelets 22 and 23 secured thereto having annular portions projecting normal to the surface through which the rod-like leading-in conductors 9 and 10 extend and, after the bridges are in the proper position relative to the lamp 14 and the leading-in conductors, the eyelets are secured to the latter in any suitable manner, such for example as by welding.

Upon securing the bridges in place, a flexible lead 24 is welded to the leading-in conductor 9 and to the upper electrode 16, and in a similar manner a flexible lead 25 connects the lower electrode 17 to the other leading-in conductor 10

to complete the electrical connection from the base 6 to the opposite electrodes 16 and 17 of the lamp 14. The starting electrode 19 is connected by a flexible lead 26 to a starting resistance 27 with the latter in turn connected to the leading-in conductor 9 by a flexible lead 28 so that opposite instantaneous polarity is supplied to the starting electrode 19 through the resistance 27 to that supplied to the electrode 17.

It will thus be readily seen from the description thus far that a mount is provided by the present invention which can be readily assembled in the manner shown in Fig. 2 and inserted in the surrounding envelope 5, after which the mount is fused to the envelope in a well known manner in the lamp art. Due to the interconnecting bridges 12 and 13 the rod-like leading-in conductors 9 and 10 are tied together and the lamp 14 supported by the bridges, thus forming a very rigid construction. Moreover, the bridges are of an electrical insulating material which prevents short-circuiting of the leading-in conductors and being of a material which is not affected by the heat generated by the lamp during operation, the device may be employed in any position without danger of loosening of the lamp due to contraction and expansion of the support or mount.

In addition to the foregoing it has long been recognized in the art that in a high pressure discharge lamp, particularly those of small sizes, it is frequently desirable to prevent condensation of the vaporizable material at the coolest portions of the lamp which is naturally back of the electrodes. Accordingly, the present invention contemplates the provision of heat reflecting shields 29 at each end of the lamp. These shields 29 are of suitable heat reflecting metal such as nickel, iron or an alloy and may be of cylindrical, cup-shaped, or conical configuration and secured to the bridges 12 and 13 in the form of an eyelet or by tabs.

As shown in the several figures, the shields 29 are of conical form and secured to each bridge 12 and 13 by tabs which pass through oppositely disposed slots 30 extending from the periphery of the opening 20 in the bridges. In assembling the mount shown in Fig. 2, after the leading-in conductors have been sealed to the reentrant press, the bridges are first provided with the eyelets 22 and 23 and the lower bridge 13 slipped over the rod-like leading-in conductor 9 and 10. The metallic shield 29 is then fitted into each bridge by inserting the tabs in the slots, as shown in Fig. 4, after which the tabs are bent into contact with the opposite surface of the bridge to that against which the shield rests.

The elongated seal portion of the envelope is then inserted in the opening 20 in the lower bridge 13 until the lamp engages the bridge. It should be noted that the smallest diameter of the shield 29 is larger than the diameter of the opening 20 so that the lamp 14 actually bears against the bridge, preferably leaving a slight spacing between the envelope and shield. This reduces the thermal conductivity therebetween which, although conserving heat to prevent condensation of the ionizable medium rearwardly of the electrodes, prevents the shield from becoming so hot as to melt the envelope 15 which might otherwise occur. Should it be desired, the envelope may rest in the shield, in which event the latter could be cup-shaped or cylindrical and it might be desirable to provide a series of holes therein to

slightly cool the shield to prevent melting of the envelope 15.

The next step in assembling the mount consists in slipping the upper bridge 12 over the leading-in conductors 9 and 10 and the upper elongated seal portion of the lamp 14 through the opening 20 until the bridge 12 rests on the envelope 15, as shown in Figs. 1 and 2. The respective eyelets of each bridge are then welded to the leading-in conductors, thus making a rigid mount. After welding the respective flexible conductors 24, 25, 26 and 28 which accordingly positions the resistance element 27, the mount is ready for sealing the flange tube to the outer surrounding envelope 5. The outer envelope is then evacuated and filled with a gas, if desired, and then the base secured thereto in the usual manner.

It thus becomes obvious to those skilled in the art that a discharge device is herein provided having a mount which rigidly supports the lamp and which can be readily inserted into the outer surrounding envelope regardless of variation in the internal diameter of the outer envelope. Moreover, the mount lends itself to jig operation during manufacture, thus materially reducing costs; and since it is unaffected by the heat generated during operation of the lamp, the latter may be burned in any position without the lamp becoming loosened due to contraction and expansion of the mount. Also, the lamp is surrounded by heat reflecting shields which are rigidly secured to the mount for preventing condensation of the vaporized discharge supporting medium in the vicinity of the electrodes.

Although one specific embodiment of the present invention has been shown and described, it is to be understood that modifications thereof may be made without departing from the spirit and scope of the appended claims.

What is claimed:

1. An electric discharge device comprising an enclosing envelope, a mount sealed to said envelopes provided with a reentrant stem having a press portion, a pair of leading-in conductors sealed to the press portion of said reentrant stem and extending an appreciable distance longitudinally of said envelope, a pair of spaced bridges supported by said leading-in conductors to increase the rigidity of said mount, a gaseous discharge lamp having elongated seal-forming portions suspended between said bridges with the seal-forming portions in engagement therewith and provided with electrodes therein between which a discharge occurs upon the application of a potential thereto, and a metallic reflecting shield surrounding the ends of said discharge lamp and through which the elongated seal-forming portions extend to prevent condensation of the vaporized medium in the vicinity of said electrodes during operation of said discharge lamp, said shield being spaced from said lamp to reduce thermal conductivity therebetween.

2. An electric discharge device comprising an enclosing envelope, a mount sealed to said envelope provided with a reentrant stem having a press portion, a pair of leading-in conductors sealed to the press portion of said reentrant stem and extending an appreciable distance longitudinally of said envelope, a pair of spaced insulating bridges supported by said leading-in conductors to increase the rigidity of said mount and provided with an opening therein coaxially disposed with respect to each other, a gaseous discharge lamp having a vitreous envelope provided with electrodes therein between which a dis-

charge occurs upon the application of a potential thereto, said electrodes being sealed to elongated reduced diameter portions of said lamp envelope with the latter extending through the opening in each of said bridges into contact therewith to form a rigid mount for said discharge lamp, and a metallic reflecting shield carried by each of said bridges through which the elongated reduced diameter envelope portions extend and surrounding the ends of said discharge lamp to prevent condensation of the vaporized medium in the vicinity of said electrodes during operation of said discharge lamp, said shield being spaced from said lamp to reduce thermal conductivity therebetween.

3. A mount for a gaseous electric discharge device comprising a flare tube adapted to be sealed to an envelope and provided with a press, a pair of leading-in conductors sealed to said press and extending an appreciable distance thereabove, a pair of spaced bridges secured to said leading-in conductors to increase the rigidity thereof, a gaseous discharge lamp having elongated reduced diameter seal-forming portions suspended between said bridges with the seal-forming portions in engagement therewith, and a metallic reflecting shield carried by each of said bridges through which the elongated reduced diameter portions extend and surrounding the ends of said discharge lamp to prevent condensation of the vaporized medium in the vicinity of said electrodes during operation of said discharge lamp, said shield being spaced from said lamp to reduce thermal conductivity therebetween.

trodes during operation of said discharge lamp, said shield being spaced from said lamp to reduce thermal conductivity therebetween.

4. A mount for a gaseous electric discharge device comprising a flare tube adapted to be sealed to an envelope and provided with a press, a pair of leading-in conductors sealed to said press and extending an appreciable distance thereabove, a pair of spaced insulating bridges provided with eyelets therein secured to said leading-in conductors and having an opening therein between said eyelets for increasing the rigidity of said mount, a gaseous discharge lamp having a vitreous envelope provided with electrodes therein between which a discharge occurs upon the application of a potential thereto, said electrodes being sealed to elongated reduced diameter portions of said lamp envelope with the latter extending through the opening in each of said bridges into contact therewith to form a rigid mount for said discharge lamp, and a metallic reflecting shield secured to each of said bridges through which the elongated reduced diameter envelope portions extend and surrounding the electrodes of said discharge lamp to prevent condensation of the vaporized medium in the vicinity of said electrodes during operation of said lamp, said shield being spaced from said lamp to reduce thermal conductivity therebetween.

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