Oct. 30, 1956 G. W. CAPLIS ET AL 2,769,156

PHOTOCHEMICAL LAMP BASE

Filed Jan. 24, 1955

Fig. 1.

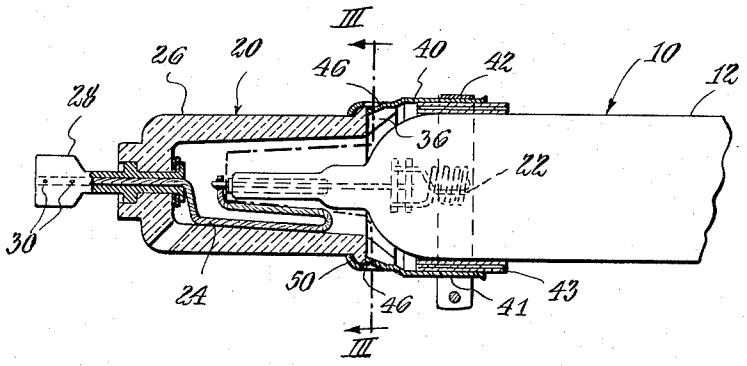


Fig. 2.

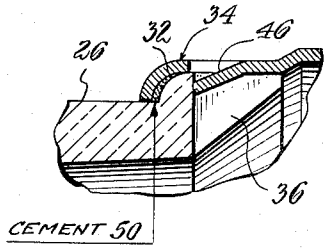


Fig. 3.

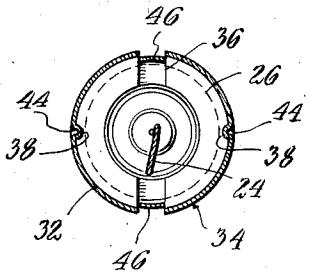
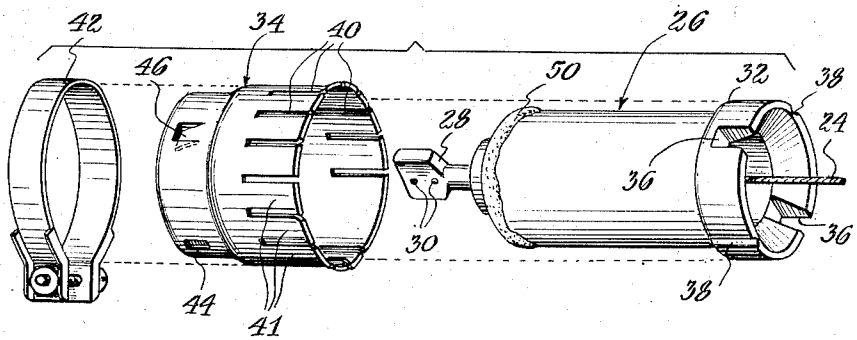


Fig. 4.



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United States Patent Office 2,769,156 Patented Oct. 30, 1956

2,769,156

PHOTOCHEMICAL LAMP BASE

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Application January 24, 1955, Serial No. 483,512

1 Claim. (Cl. 339—145)

The present invention relates to tubular electric lamps with bases at both ends, such as photochemical lamps and, more particularly, to an improved base for such a lamp.

We are aware on U. S. Patent 2,515,747 issued July 18, 1950, to Daniel J. Vaughan and assigned to the General Electric Company. This patent relates to a photochemical lamp base of the prior art type. The present invention provides a novel and improved lamp base.

This patented base may comprise a body portion of insulating material, such as porcelain, secured to a metal skirt by means of an enlarged shoulder on the body portion. A thin strip of asbestos paper moistened with a solution of sodium silicate is secured about the lamp envelope prior to the slipping of the slotted end of the skirt over the end of the lamp envelope. The skirt is secured firmly in place about the lamp envelope by a clamping collar. The skirt is tightly secured to the body portion by a split metal snap ring which is forced against the side of the shoulder of the body portion by four ring retaining dimples equi-spaced about the inner wall of the skirt. These ring retaining dimples because of their location on the shoulder engaging portions of the skirt are most difficult to form.

Relative rotary displacement between the body portion and the skirt is prevented by the insertion of a plurality of equi-spaced dimples in the skirt into a like number of longitudinal slots provided in the periphery of the shoulder of the body portion. The difficulties in making porcelain bodies to close tolerances is well known in the art. Although the metallic skirts and hence the snap ring retaining dimples therein may be located to close tolerances, variations in the shoulder of the porcelain body portions often produce an unsatisfactory base. A long shoulder prevents the snap ring from being securely anchored by the retaining dimples. A short shoulder provides considerable longitudinal movement between the skirt and the body portion.

In addition, the patented base is assembled by machine. This automatic assembly results in mechanical impact on the brittle porcelain body of the base and considerable assembly shrinkage.

Hence, it has been found advantageous according to the invention to provide an improved base for a photochemical lamp which eliminates use of the snap ring and the four snap ring retaining dimples of the prior art design. The improved base of our invention has substituted an excess of a high temperature cement for the mechanical snap ring holding feature of the patented base. Again, our base incorporates a snap-fit locking feature which automatically provides a positive cement bond (the variable compensating factor) between skirt and body and insures a continued bond in the event of cement failure in service. This snap fit feature (the fixed compensating factor) comprises a bent-in locking tab in the base skirt for engagement with a radial locking slot in the top of the lamp base body to prevent relative vertical or rotary lateral movement of the parts. An excess of the high temperature heat resistant cement is placed between the

skirt and the porcelain body and is properly compressed or positioned with respect thereto until the tabs snap into the slots in the body, so that the cement fills the voids between the skirt and body and the excess of cement flows therebetween. Further, the locking tabs on either side of the skirt, now in engagement with the bottom wall of the radial tab slots in the shoulder of the porcelain body, provide an added safety locking feature if the cement bond fails under abnormal service conditions of excessively high temperature.

In its general aspect the present invention has as its objective an improved base for a photochemical lamp which eliminates the snap ring and the plurality of snap ring retaining dimples normally provided in the skirt of said base.

A specific object of the present invention is an excess of a high temperature cement between the porcelain body and the metallic skirt and which fills the voids therebetween.

An additional object is a base having a snap-in locking feature comprising bent-in locking tabs on the skirt which snap in against the bottom wall of radial locking slots provided in the top portion of the body, thus insuring a complete positive cement fill between the skirt and the body and adequately insuring a continued tight connection between the skirt and the body in the event of high temperature failure of the cement in service.

An additional object is an improved base for photochemical lamp having a variable compensating factor, an excess of cement, and a fixed compensating factor, a snap-in feature, which permits relatively larger tolerances in the dimensions of porcelain body of said base and yet prevents loose physical connections between the skirt and porcelain body of said base.

An additional object is an improved photochemical lamp base provided with a high temperature air drying heat resistant cement between the metal skirt and porcelain body to provide a tight connection therebetween and thus insure the proper mounting of the photochemical lamp in a lighting fixture.

Other objects of the invention will become apparent to those skilled in the art to which it appertains as the description proceeds both by direct recitation and by implication from the context.

Fig. 1 is a side elevational view of an improved base of the invention and showing said base in vertical section and secured about an electric lamp having a tubular envelope, such as a photochemical lamp.

Fig. 2 is an enlarged fragmentary view showing the cement bond between a metallic skirt and a body of insulating material of said base and showing the insurance locking feature therebetween.

Fig. 3 is a horizontal sectional view of the base and lamp along the line III—III of Fig. 1 in the direction of the arrows and showing the snap-fit locking slot provided in the top face of the shoulder of the body.

Fig. 4 is an exploded perspective view of the insulated body, metallic collar, and mounting or holding collar of the improved base of the invention.

Referring now to the drawings in detail, and particularly to Fig. 1 the reference numeral **10** designates an electric lamp having an elongated tubular envelope **12**. This envelope **12** may be provided with a base **20** of the invention at either end for engaging suitably spaced sockets (not shown). The envelope **12** may have an electrode mount **22** sealed to each end thereof and connected to the lamp base **20** of the invention by means of a flexible lead-in conductor **24**.

The improved base **20** of the invention has a hollow body **26** of insulating material, such as porcelain. This body **26** may be provided with a hollow metallic contact prong **28** which extends axially outwardly from the body

26, and is connected to the outer end of the flexible lead-in conductor 24, as by crimping at 30. The other end of the body 26 is provided with an enlarged arcuate shoulder 32.

A metallic skit 34 is secured about said shoulder 32. As shown in Figs. 3 and 4, the upper portion of the body 26 is provided with insurance (locking) snap-in slots 36, suitably diametrically disposed and metallic skirt dimples slots 38 juxtaposed 90° from the snap-in slots 36.

As shown particularly in Fig. 4, the right hand periphery of skirt 34 of the base 20 is provided with a multiplicity of suitably parallel slits 40 to form tines or prongs 41. These tines 41 may be readily compressed by clamping a base mounting collar 42 about a suitable asbestos strip 43 (Fig. 1) wrapped about the lamp envelope 12. The left hand end (when viewed in Figs. 1 and 4) of this skirt 34 is desirably contoured into an integral flange to fit about the shoulder 32 of the body 26 with a cement 50 therebetween. Relative rotary displacement between the body 26 and the skirt 34 is prevented by a plurality of dimples 44, for example, two are shown in Fig. 3 which are suitably diametrically disposed for engagement with rotary locking slots 38 in the periphery of the shoulder 32 of the body 26. Bent-in locking tabs 46 provided in the skirt 34 (Fig. 4), suitably 90° from the dimples 44 therein, engage the bottom wall of the locking slots 36 provided in the body 26.

A suitable air drying heat resisting cement 50 such as Insa-lute cement No. 1 may be employed. Insa-lute cement No. 1 is a trade name for an air drying white adhesive cement having the consistency of heavy cream. Insa-lute cement No. 1 is manufactured by the Sureisen Cement Co. of Pittsburgh, Pa. It is an electrical insulating and heat resistant cement which resists acids, temperatures up to 1093° C. (2000° F.) and oils and fire.

Assembly of the base

As shown particularly in Fig. 4, the body 26 of the base 20 having the lead-in conductor 24 crimped to the contact 28 is provided with a suitable excess coating of cement 50 on the outside thereof and is inserted prong first into the metallic skirt 34 so that the left hand shouldered end (when viewed in Fig. 4) of the skirt 34 rests against the excess cement 50 on the shoulder 32 of the body 26. The shoulder 32 on the body 26 has forced the resilient tabs 46 outwardly from their normal locking position. The skirt 34 is rotated on the body 26 until the dimples 44 in the skirt 34 engage the displacement slots 38 provided in the periphery of the shoulder 32 of the body 26. It will be understood that when the dimples 44 engage the slots 38 that the snap-in tabs 46 in the skirt 34 are positioned to register radially with the insurance locking snap-in slots 36 of the body 26. The body 26 and the cement 50 is then compressed, as by hand, against the skirt 34 (with the excess cement forced therebetween) until the tabs 46 snap into the slots 36 and frictionally engage the bottom wall thereof.

It will be understood that these resilient tabs 46 are prebent to swing inwardly and frictionally engage, or scrape, the bottom of the slots 36 in the body 26, thereby providing an added positive safety locking feature which prevents lateral and vertical movement between the body 26 and the skirt 34, if the cement 50 fails under abnormal service conditions.

The upper end of the flexible leading-in conductor 24 is then secured, as by welding, to the electrode mount 22 of a photochemical lamp 10. The envelope 12 is inserted into the base 20 of the invention so that the tines 41 of the skirt 34 engage the strip 43 of asbestos paper moistened, for example, with a solution of sodium silicate and wrapped around the skirt engaging portions of the envelope 12. The adjustment or tightening bolt on the collar 42 may then be tightened so that the base 20 is securely affixed to the envelope 12 of the lamp 10.

Thus it will be seen from the foregoing description that we have provided an improved base 20 for a photochemical lamp 10 which eliminates the use of a snap ring and a plurality of snap ring retaining dimples in the skirt of the prior art base. We have employed an excess of a high temperature cement 50 (as a variable compensating factor) to fill the voids between the (loose tolerance) porcelain body 26 and the metallic skirt 34 of the base 20 and to provide a tight connection between the skirt and the body. Further, we have provided a base 20 having an insurance snap-in locking feature comprising bent-in locking tabs 46 (as a fixed compensating factor) on the skirt 34 which snap frictionally inwardly against the bottom wall of radial locking slots 36 provided in the top face of the body 26 to provide a tight connection between the skirt 34 and the body 26 and to insure adequate mounting of the lamp 10 in its socket. Through the use of excess cement 50 between the skirt 34 and the body 26 we are able to employ loose tolerances in the dimensions of the porcelain body 26 and still provide a positive physical connection between the skirt 34 and the body 26. Our high temperature air drying heat resistant cement 50 between the skirt 34 and the body 26 provides a tight connection therebetween and insures the proper mounting of the photochemical lamp 10 in suitable lighting fixtures.

Although a preferred embodiment of our invention has been described it will be understood that modifications may be made within the spirit and scope of the invention.

We claim:

A base for a double ended tubular electric lamp comprising a loose tolerance hollow tubular body of electrically insulating material and having a circumferential shoulder at one end, said shoulder being provided with a plurality of radial snap-in locking slots in the upper portion thereof, a metal skirt overlapping and secured to said shoulder and having a like number of bent-in locking tabs for frictionally engaging the bottom of said slots to fixedly compensate for variations in the dimensions of said body and to positively hold said body and said skirt against relative rotary and longitudinal displacements, and high temperature cement completely filling the voids between said body and said skirt to variably compensate for variation in the dimensions of said body and to insure said frictional engagement of said tabs with the bottoms of said slots.

References Cited in the file of this patent

UNITED STATES PATENTS

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