United States Patent

[11] 3,629,640

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[73] Assignee **Sylvania Electric Products Inc.**

[54] **LAMP BASE**
4 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** ..... **313/318,** 339/145 T
[51] **Int. Cl.** **H01j 5/50**
[50] **Field of Search** 313/318, 331; 339/144, 145

[56] **References Cited**

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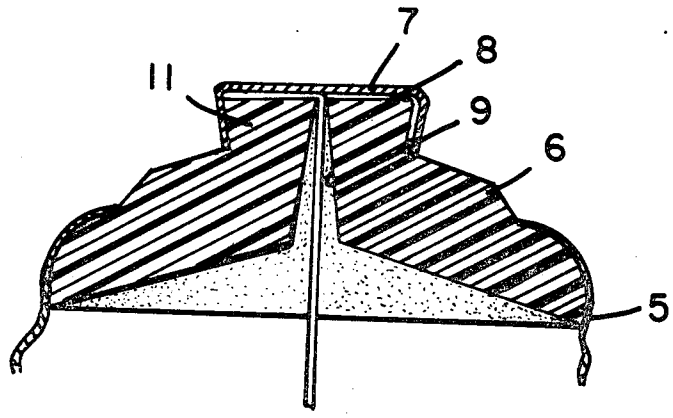
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ABSTRACT: An electric lamp having a contact base, and a contact base for said lamp, the base having a metal shell closed at one end by a glass plug with a hole at its apex through which a lead-in wire can pass, a metal cylinder being fitted to the plug over the lead-in wire to be the center contact.



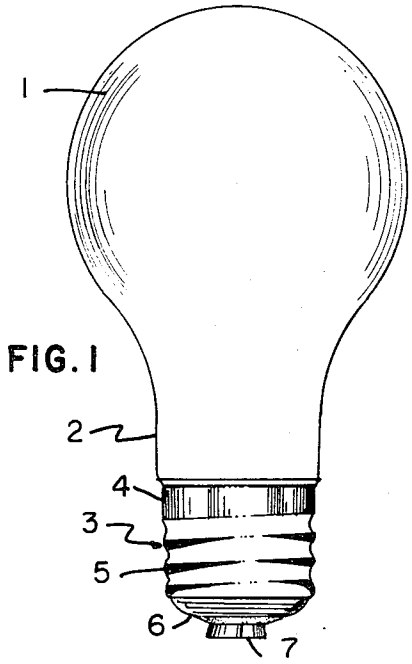


FIG. 1

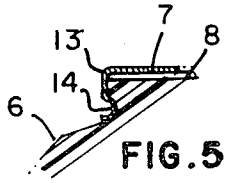


FIG. 5

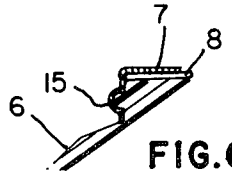


FIG. 6

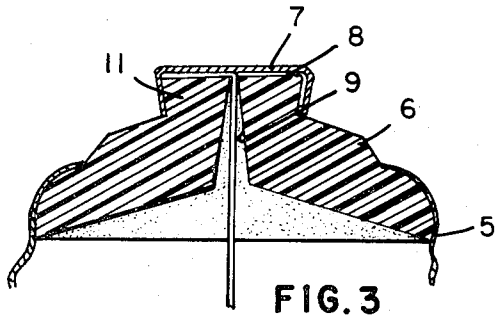


FIG. 3

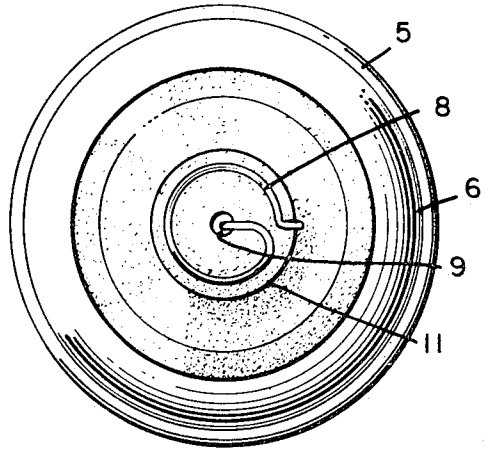


FIG. 4

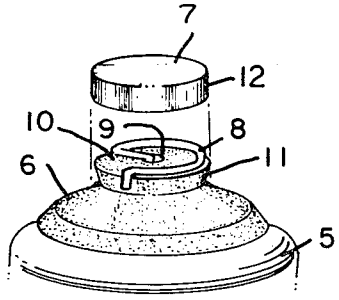


FIG. 2

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LAMP BASE

FIELD OF INVENTION

This invention relates to lamp contact bases and to lamps having such bases.

BRIEF SUMMARY OF PRIOR ART

Incandescent lamps, high-pressure mercury lamps, and some other types, have a contact base at one end thereof. This base has a cylindrical shell, generally threaded, closed at one end by a glass plug having a hole at its apex through which a lead-in wire can pass. A metal eyelet contact is sealed to the glass plug on its outside, the hole in the eyelet being in register with the hole in the plug. The neck of the sealed lamp bulb is then fixed to the otherwise open end of the cylindrical shell, either mechanically or by cement, and one of the lead-in wires passes through the hole in the eyelet and its outer end is bent back onto the outer surface of the eyelet and soldered to it.

The soldering operation is awkward and expensive, and some of the flux used in the soldering operation remains on the eyelet and wire and may corrode the contact. The residue of soldering flux can also produce a short circuit between the base shell and the eyelet by a chemical action which produces salts under conditions of high relative humidity.

BRIEF SUMMARY OF THE INVENTION

My invention eliminates the foregoing disadvantages by omitting the eyelet contact from the glass plug and by shaping the outside center portion of the latter to form around the hole a protuberance having some reentrant or protruding portions on its wall to hold a metal contact cap when the latter is fitted to it. The protuberance can be in the shape of a frustum of a cone with the larger geometrical base of the frustum at the end of the protuberance. In other words, the latter is tapered inwardly toward the main body of the glass plug. The eyelet contact is completely missing from the base.

The lamp lead-in wire that would in prior devices have been soldered to the eyelet contact, passes through the hole in the glass protuberance and is flattened down against the top of the protuberance in a somewhat circular pattern, the end of the wire being bent over the flattop of the protuberance and down against the outside of the tapered cone.

A shallow cylindrical metal cap closed at one end has its open end set down over the protuberance and lead-in wire, its cylindrical sides being forced back against the tapered part of the protuberance and the lead-in wire, either by being pushed back against the tapered portion and wire mechanically or by one of the well-known magnetic forming processes.

The result is a very good contact, firmly anchored to the glass protuberance and to the lead-in wire, free from any eyelet holes and from any wires on the outside of the contact. The lead-in wire is in positive contact with the metal cap both on the flattop of the glass protuberance and on its sides.

The protuberance can be of other shapes suitable for holding the cap when the latter is pressed into place. For example, cylindrical without taper, but have a reentrant or protruding bead around its circumference, or a series of reentrant or protruding dimples, or a roughened surface or the like.

The invention has many advantages. It reduces material costs and maintenance problems by eliminating corrosion caused by soldering flux; it improves lamp reliability because there is no flux to get into glass cracks and react with moisture in the air to form electrically conductive salts with consequent short circuits. In fact, it reduces the number of cracks in the glass caused in the previous bases by the high localized heat of the soldering fires.

The center contact can be of copper or aluminum, an alloy including either, or other metal. Aluminum is difficult to solder, and so was not feasible with previous devices, but with my invention it can be readily used thus reducing expenses.

BRIEF DESCRIPTION OF DRAWINGS

Other objects, advantages and features of the invention will be apparent in view of the following specification, taken in connection with the accompanying drawings in which:

FIG. 1 is an elevational view of an incandescent lamp having a solderless contact;

FIG. 2 is a perspective view of a portion of the a base showing the contact cap in position to be assembled on the base;

FIG. 3 is an enlarged cross section of the base contact region;

FIG. 4 is a bottom base with the cap removed;

FIG. 5 is an enlarged cross section of a different shapes; and

FIG. 6 is an enlarged cross section of the base contact region of still another shape.

In FIG. 1, the glass lamp bulb 1 has its sealed neck portion 2 cemented to the base 3 in the usual manner. The base 3 has the cylindrical metal shell 4, threaded in part by the threads 5, the shell being sealed at its lower end to the glass plug 6, as shown in cross section in FIGS. 2 and 3. The center contact cap 7 is shown in its final shape in FIGS. 1 and 3, and in an earlier state in FIG. 2.

In the latter figure, the lead-in wire 8 is shown emerging through hole 9, and bent back against the flattop portion 10 of protuberance 11, with the cap 7 above the latter and ready to be fitted onto it. At this stage, the cap has a plain cylindrical wall 12, which is slipped down over the protuberance 11 and wire 9 and its wall 12 pressed back against them for a secure fit, the resultant structure being shown in FIG. 3. A top view of the latter figure, not showing the cap 7, is given in FIG. 4.

The base is cemented or otherwise attached to the lamp envelope 1, in the usual manner, before the cap 7 is affixed to protuberance 11 and wire 8.

Instead of having an inwardly tapered protuberance 11, the base 3 can have the protuberance without the taper, that is, with a plain cylindrical wall 12, which has an inwardly or outwardly extending bead 14, 15, which can extend all around the circumference of the protuberance 11 or only part way around it, for example by being a series of dimples, that is, small raised or indented portions, or some other manner suitable for holding the cap 7 firmly to protuberance 11 when bent back around it.

After the cap 7, in the cylindrical form shown in FIG. 2, is placed over the protuberance 11, it is bent back inwardly against the cylindrical wall 12 of the latter. This can be done mechanically, by pushing it back as a metal rod, or by closing a two-piece mold around it, or in some other suitable manner. Instead of a mechanical method, a magnetic forming method, such as is well known, can be used.

The taper on protuberance 11 can be produced while forming the glass plug 6, if a two-part mold is used to form it, or the protuberance 11 can be made with untapered sides, and the taper or other means to hold the cap 7, ground into it afterward. The reentrant bead 14, if sued, could be added afterward by running a flame around the glass in the place where the bead is desired.

What I claim is:

1. An electric lamp comprising a sealed lamp bulb, a lead-in wire extending from one end thereof, a base affixed to said end of said bulb around said lead-in wire, said base having a shall one end of the shell being attached to said end of said lamp bulb, the other end of said shell being closed by a glass plug having a protuberance extending outwardly therefrom with a hole in said protuberance through which a lead-in wire extends and is bent back against said protuberance, the latter having means for mechanically engaging a contact cap, and a contact cap engaged by said means and mechanically held firm in contact with said lead-in wire and said protuberance.

2. The lamp of claim 1, in which the means for engaging a contact cap is a reentrant portion of said protuberance.

3. The lamp of claim 2, in which the reentrant portion is a conical wall on said protuberance.

4. The lamp of claim 1, in which the protuberance terminates in a flat portion against which the lead-in wire can be bent.

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