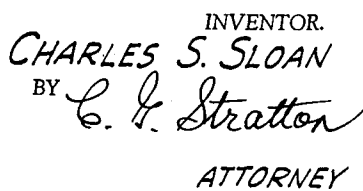


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LAMP RECEPTACLE

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This invention relates to lamp receptacle such as those used for indicator lights and other such miniature incandescent lights.

An object of the present invention is to provide a receptacle or socket for miniature lamps that embodies a novel terminal or contact construction that greatly facilitates assembly and assured safe and efficient retention of the terminals.

Another object of the invention is to provide a lamp receptacle construction in which both terminals effect contact with the lamp terminals under resilient or cushioning pressure, thereby insuring firm electrical connection between the receptacle and lamp and further insuring against lamp back-off as may be caused by vibration.

My invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom, economical of manufacture, relatively simple, and of general superiority and serviceability.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description and which is based on the accompanying drawing. However, said drawing merely shows, and the following description merely describes, one embodiment of the present invention, which is given by way of illustration or example only.

In the drawing, like reference characters designate similar parts in the several views.

FIG. 1 is a longitudinal sectional view of a lamp receptacle according to the present invention, a lamp being shown in position therein.

FIGS. 2 and 3 are cross-sectional views as taken on the respective lines 2-2 and 3-3 of FIG. 1.

FIG. 4 is a bottom plan view.

FIG. 5 is a fragmentary sectional view showing a detail of construction pertaining to one terminal of the receptacle in the position of the parts with the lamp removed.

The present receptacle is provided for operatively holding a lamp 10 that is here shown as having a lens holder 11 that removably mounts a lens 12 and is formed to have a receptacle 13 in which a bulb 14 is carried and which is provided with a central contact terminal 15 and an outer ring terminal 16. Insulation 17 electrically separates the terminals 15 and 16. In practice, said holder 13 is provided with external threads 18 or the equivalent for separable connection with the present receptacle generally designated 19. The lamp, per se, forms no part of the present invention.

The receptacle 19, generally, comprises a metal body 20, a rigid plastic insulator 21 lining the interior of the lower part of said body, a compression or reaction pad 22 disposed within said insulator, a central terminal 23 slidably extending through said insulator and the compression or reaction pad and adapted for endwise electrical contact with the lamp terminal 15, and a side terminal 24 extending through the insulator 21 and under lateral compression by the compression or reaction pad 22 and adapted for lateral-edge contact with the lamp terminal 16.

The receptacle body 20 is formed with a through bore 25 that has internal threads 26 which engage the threads 18 of the lamp holder 13. In any case, the body 20 is

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formed to house the receptacle 13 of the lamp 10 with the lamp bulb 14 extending outwardly and the two lamp terminals 15 and 16 disposed in the bore 25 beyond the area of separable connection between the receptacle body 20 and said lamp receptacle 13. Said body 20 may be provided with outer threads 27 for engagement with a clamp or mounting nut. However, the body may have an outer form that does not include threads 27 for different types of mounting on a panel or other body. The end of the bore 25 beyond the threads 26 is enlarged to provide a counterbore 28, a shoulder 29 being defined between said bore and counterbore.

The insulator 21 is preferably formed of a plastic consisting of tetrafluorethylene polymer of which "Teflon," a product of E. I. du Pont de Nemours & Co., is an example. Other insulator materials, particularly of comparable rigidity, may be used. In the present case, the insulator 21 is formed as a cup having a cylindrical wall 30 and an end wall 31, said cup being fitted into the counterbore 28 with the open end of the wall 30 abutted against the shoulder 29. A swaged flange or the like 32 may be turned inwardly from the end of the body 20 to firmly secure said insulator 21 in place within the body 20.

The end wall 31 of said insulator has a central bore 33 and at one side of said wall, there is provided a generally rectangular opening 34 having opposite extensions 35 which impart to the opening 34 a key slot shape. Said extensions are provided in the side of opening 34 that is nearest to the central bore 33.

The annular corner where the inner faces of walls 30 and 31 meet is preferably well rounded, as shown. For clearance purposes, the open end of wall 30 is reduced in thickness by enlarging the inside of the cup insulator 21.

The reaction pad 22 comprises a mass of resilient and compressible material that is disposed within the insulator 21, the same having an outer diametral size to fill, at least, the lower portion of the insulator interior. A central bore 36 is formed in the pad which preferably is made of silicone rubber for good reaction when compressed and long elastic life without crystallizing or hardening.

The central terminal 23 simply comprises a rod or pin 37 that extends through the mentioned bores 33 and 36, is provided on the outer end with an annular flange 38, and is provided on the opposite end with a contact head enlargement 39. A dielectric washer 40 may be interposed between head 39 and the reaction pad 22.

The normal expanded size of the pad 22 is shown in FIG. 5, the terminal flange 38 being held against the outer face of insulator wall 30 with the head 39 of the contact pin in the path of the terminal 15 when the lamp 10 is being inserted into receptacle 19. Upon full insertion of the lamp receptacle 13, as limited by the engagement at 41 between the end of receptacle body 20 and the lens holder 11, the terminal 15 will have firm contact with head 39 because the pad 22 has been compressed by the washer 40 under said head and the terminal 23 has been outwardly displaced, accordingly, as in FIG. 1. The firm contact, above mentioned, is the result of the reactive force of the compressed pad 22, said force materially increasing the friction between threads 18 and 26 to counteract back-off of the lamp.

The side terminal 24 is formed as an elongated flat spring that has a width greater than the width of opening 34 with an intermediate reduced portion 42 of a size to fit said opening, the width of the terminal being such that the same can be passed through the wide portion of opening 34 formed by the mentioned extensions 35. It will be clear that, before the pad 22 has been placed in the hollow of the insulator 21, said terminal 24, outer end 43 first, may be inserted into and through said wide portion of opening 34 until alignment between said open-

ing and the reduced portion 42 of the terminal is had. Then, by displacing the terminal 24 so that said portion 42 resides in the smaller part of opening 34, and placing the pad 22 in position to press the inner portion 44 against the inner face of the cylindrical wall 30 of the insulator, the terminal 24 is held against displacement toward the axis of terminal 23 and is biased by said pad in a direction toward the inner face of said wall 30. As a consequence, the terminal 24 is resiliently but firmly held in position.

Said inner portion 44 of the terminal is preferably transversely curved, as may best be seen in FIGS. 2 and 3, and, from a transverse bend 45, said portion 44 has an extension 46 that is directed toward the periphery of ring contact 16. The end 47 of extension 46 is curled or bent back.

It will be seen that the bend 45 constitutes a fulcrum that bears against the inner face of wall 30 and it will be understood that, normally, without the lamp 10 in the receptacle 19, the extension is directed angularly inward to be in the path of insertion of the lamp receptacle 13 and particularly of the ring terminal 16. Therefore, the periphery of terminal 16 will first engage the turned-back end 47 of the terminal 24 and then, by causing the extension 46 to flex inward on the fulcrum at the bend 45, create a firm contact between terminals 16 and 24.

The above contact is fully assured because, as the lamp receptacle 13 is threaded into the receptacle 19, the pad 22 is compressed, creating a lateral or radial pressure on the terminal portion 44, resiliently yet firmly holding the terminal in place.

It will be understood that the compression of the pad 22 may be created by finger pressure and in other ways and it will be clear that under such pressure, the resultant radial expansion of the pad insures the above mentioned inward pressure of terminal end 46 on the lamp flange 16. It can be seen, also, that such inward flexing of the end 46 may have a make and break association with a terminal or contact 16 whether or not the latter is part of a lamp.

The projecting portion 43 of the terminal 24 may be bent to any desired angle, relative to the portion 44.

While I have illustrated and described what I now contemplate to be the best mode of carrying out my invention, the construction is, of course, subject to modification without departing from the spirit and scope of my invention. Therefore, I do not wish to restrict myself to the particular form of construction illustrated and described, but desire to avail myself of all modifications that may fall within the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A lamp receptacle comprising a body having a through bore, one end of the body being provided with means to hold a lamp with the terminals thereof disposed within said bore, a hollow insulator member disposed in the other end of the bore, a central terminal slidably carried by said insulator member and engaged by one lamp terminal, an elongated terminal extending, in part, outward of the insulator member and, in part,

on the inside of said member with the end of said inside part in resilient lateral contact with the other lamp terminal, said insulator member having cooperating means for positioning said elongated terminal in said member, and a compressible dielectric pad disposed in the hollow of said insulator member and placed in compression by the central terminal when the latter is slidably displaced outwardly by the lamp to create lateral compression on said inside part of the elongated contact to tightly secure the elongated contact in said positioning means.

2. A lamp receptacle comprising a body having a through bore, one end of the body being provided with means to hold a lamp with the terminals thereof disposed within said bore, a hollow insulator member disposed in the other end of the bore, a central terminal slidably carried by said insulator member and engaged by one lamp terminal, an elongated terminal extending, in part, outward of the insulator member and, in part, on the inside of said member with the end of said inside part in resilient lateral contact with the other lamp terminal, said insulator member having cooperating means for positioning said elongated terminal in said member, said insulator member having an opening through which the elongated terminal extends, and the latter terminal having shoulders engaged with both inner and outer sides of the insulator member to hold the elongated terminal against endwise displacement, and a compressible dielectric pad disposed in the hollow of said insulator member and placed in compression by the central terminal when the latter is slidably displaced outwardly by the lamp to create lateral compression on said inside part of the elongated contact to tightly secure the elongated contact in said positioning means.

3. A lamp receptacle according to claim 2 in which the opening in the insulator member has enlarging extensions through which the elongated terminal is passed during insertion thereof into the insulator member, the compressed pad biasing the latter terminal in a direction out of register with said enlarging extensions and into the mentioned shoulder engagement.

4. A lamp receptacle according to claim 2 in which a transverse bend is formed in the inside portion of the elongated terminal, said bend having a fulcrum engagement with the insulator member, the end of the terminal beyond said bend being directed toward said other lamp terminal.

5. A lamp receptacle according to claim 4 in which the end of the elongated terminal that has the bend and has lateral engagement with the mentioned lamp terminal is transversely curved.

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