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2,999,220

LAMP BASE

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FIG. 1.

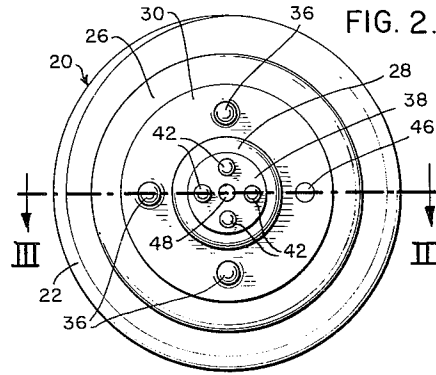
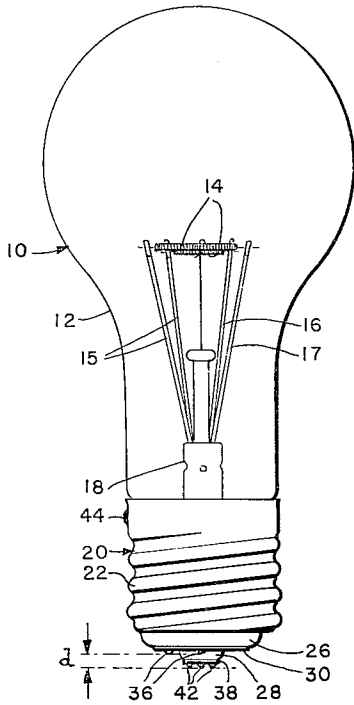


FIG. 3.

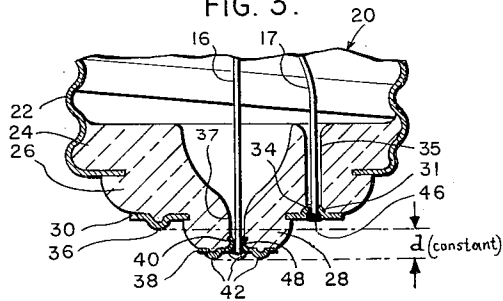


FIG. 4.

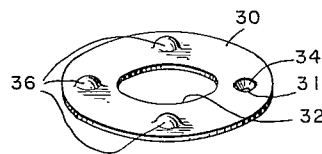


FIG. 5.



FIG. 8.

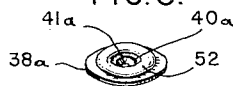


FIG. 6.

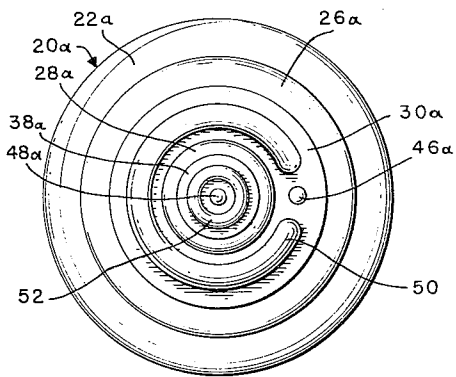
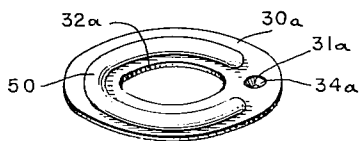


FIG. 7.



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6 Claims. (Cl. 339-146)

This invention relates generally to electric lamps and similar devices and, more particularly, to a base for an electric lamp requiring a multiplicity of end contacts such as the so-called "three-light" lamp for example.

As is well known, electrical connection with the enclosed filament of an incandescent lamp is achieved by means of lead wires which are sealed through the lamp envelope and joined, either by soldering or the like or by mechanical means, to the rim of the base shell and to an insulated contactor member such as an eyelet mounted on the end of the shell so as to provide a side and end contact respectively. In the case of three-light lamps two end contacts are required in conjunction with the side contact to enable one or both of the filaments to be selectively energized. This is accomplished by forming an annular platform in the outer surface of the insulator between the shell and eyelet and mounting a metal ring thereon to which the appropriate lead wire is attached to provide an intermediate contactor.

Heretofore, when the lead wires were soldered or welded to the intermediate and end contactor members sufficient material was fused to form a protruding juncture or terminal which, by virtue of its contour, seated against the socket terminals when the lamp was placed into the socket fixture. Thus, the fused terminals in such prior art bases constituted, in fact, the end contacts of the lamp and the height thereof had to be kept within rather close tolerances not only to control the overall length of the finished lamp but, more importantly as in the case of three-light lamps, to insure that both the end and intermediate contactor terminals seated against and made positive contact with the corresponding socket elements. As a result, accurate control of the soldering or welding operation was mandatory in order to produce terminals which were within tolerance thereby making this operation a costly and critical one. Effecting the electrical connection of the lead wires by mechanical means inherently is incapable of alleviating or solving this problem of criticality insofar as such techniques necessarily entail a peening or similar metal-working operation which is equally difficult to control as regards the height of the finished terminal. Besides, fused junctures are preferred since they provide a more positive and permanent connection.

It is, accordingly, the general object of the present invention to overcome the foregoing deficiencies of and objections to the prior art base and terminal constructions.

Another object is to obviate the criticality heretofore associated with the use and fabrication of fused type junctures between the lead wires and end contactor members of an electric lamp base.

A further and more specific object of the present invention is the provision of a base for a three-light incandescent electric lamp which will not only permit the lead wires to be soldered or welded to the end contactor elements but which will facilitate this operation and provide end contact means capable of insuring positive connection with the socket terminals and affording more accurate control of the overall dimension of the finished lamp.

The foregoing objects, and others which will become obvious to those skilled in the art as the description pro-

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ceeds, are achieved according to the invention by forming outwardly-projecting bosses on the intermediate and end contactor members of a three-light lamp base which bosses are so conformed and dimensioned that they protrude beyond the respective end surfaces of the base and thus provide preformed accurately-dimensioned intermediate and end contacts for the lamp. In order to insure that the aforesaid objective will be realized in those instances where soldered or welded lead wire terminals are employed, the aforesaid contactor members may also be provided with an inwardly-projecting boss which is apertured to receive the appropriate one of the lead wires and conformed to accommodate a major portion of the fused material used to connect said members to the respective lead wires. The outer end surfaces of each of the fused terminals thus formed is accordingly maintained a considerable distance inward from the ends of the outwardly-projecting bosses thereby eliminating any possibility whatsoever that the terminals will introduce variations in the overall lamp length or interfere with the seating of all of the aforesaid bosses against the socket terminals and the positive contact therewith when the lamp is placed in the socket.

For a better understanding of the invention reference should be had to the accompanying drawing wherein:

FIG. 1 is an elevational view of a three-light lamp incorporating the invention;

FIG. 2 is an enlarged plan view of the basal end of the lamp shown in FIG. 1 illustrating in greater detail the character of the intermediate and end contactor members;

FIG. 3 is a fragmentary cross-sectional view through the basal end of the lamp along the line III—III of FIG. 2, in the direction of the arrows;

FIGS 4 and 5 are perspective views of the intermediate and end contactor members employed in the lamp shown in FIGS. 1 to 3;

FIG. 6 is a view corresponding to FIG. 2 but illustrates an alternative embodiment of the invention; and

FIGS. 7 and 8 are views corresponding to FIGS. 4 and 5 but illustrate the character of the embossments used in the alternative embodiment shown in FIG. 6.

While the invention is broadly applicable to various kinds of electrical devices which require accurately dimensioned or disposed end contacts, it is particularly adapted for use in conjunction with incandescent lamps, especially those requiring a multiplicity of end contacts such as three-light lamps for example, and hence has been so illustrated and will be so described.

With specific reference to the form of the invention illustrated in the drawing, in FIG. 1 there is shown a well-known three-light lamp 10 which, briefly stated, comprises a sealed envelope 12 containing two filaments 14 of different wattage rating which are connected to lead wires 15, 16 and 17 and are supported within the envelope by means of said lead wires and a re-entrant glass stem assembly 18 in accordance with standard lamp-making practice. Two of the lead wires 15 are twisted together within the base 20 which is attached to the sealed end of the envelope 12 and are fastened as by soldering or welding to the rim of the threaded base shell 22 to provide a side terminal 44. The remaining leads 16 and 17 are separately connected to intermediate and end contactor members respectively, such as an intermediate contactor ring 30 and an apertured disc or so-called eyelet 38 of relatively thin sheet metal for example, as here shown, which members are of generally planar configuration and are attached to but insulated from the bottom of the base shell 22 by a molded insulator 24 (see FIG. 3). As shown in FIGS. 1 to 3, the exterior of said insulator is conventionally contoured to provide a major and minor extension such as an annular platform 26 and centrally-

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located generally cylindrical lug 28 on which the aforesaid contactor ring and eyelet, respectively, are mounted. It will also be noted that the platform 26 and lug 28 are terminated on planes which are substantially parallel to each other and normal to the lamp axis so that the aforesaid intermediate contactor ring 30 and eyelet 38 mounted thereon are similarly disposed and spaced a predetermined distance from each other outwardly from the bottom of the base shell 22, as is well known. The insulator 24 may be fabricated from glass or a suitable thermosetting plastic, for example, and have openings therethrough such as passageways 35 and 37 which communicate with the exterior surfaces of the platform 26 and lug 28 respectively, as shown in FIG. 3. The flat end surfaces of the aforesaid platform and lug are so dimensioned that the contactor ring and eyelet are substantially coextensive therewith, as shown.

The essence of this invention resides in the configuration of the intermediate contactor ring 30 and end eyelet 38 and in the manner in which such configuration is utilized not only to accurately control the overall-length of the lamp 10 but insure that the lamp will be firmly seated in positive contact with all of the socket terminals even though the aforesaid contactor elements are soldered or welded to their respective lead wires and these will be hereinafter described. To this end, portions of the contactor ring 30 intermediate of its edges are displaced to provide an outwardly-projecting embossment such as three radially-spaced dome-shaped bosses 36, as shown in FIG. 1 and more particularly in FIGS. 2 to 4. The height and disposition of the aforesaid outwardly-projecting bosses are such that they define an "intermediate contact plane," so to speak, which is substantially parallel to and spaced a definite predetermined distance from the annular platform 26.

Electrical juncture with the appropriate one of the lead wires 17 is effected in the conventional manner by threading said lead wire through the passageway 35 provided in the insulator 24 and through an aperture 31 formed in said ring and then welding or soldering the two elements together to form a well-known fused terminal 46, as shown in FIGS. 2 and 3. In order to insure that the ends of the outwardly-projecting bosses 36 and the "intermediate contact plane" defined thereby are disposed well beyond the outer surface of the fused terminal 46, the portion of the contactor ring 30 immediately adjacent the aperture 31 therein is displaced and flared inwardly to provide an inwardly-projecting dome-shaped boss 34 (FIGS. 3 and 4). In this manner a well or recess is provided which accommodates the major portion of the fused electrically-conductive material used to form the terminal 46 thereby materially reducing the exposed height of said terminal and achieving the aforesaid objective, as shown most particularly in FIG. 3. As illustrated, the lead wire 17 is of such length that the end thereof is completely embedded within the filling of fused material in the inwardly-projecting boss 34 so that the terminal 46 is substantially flush with the outer surface of the contactor ring 30.

As shown in FIG. 4, the contactor ring 30 is provided with a central opening 32 of slightly smaller diameter than the root diameter of the lug 28 so as to be firmly anchored in the insulating material, as is well known.

The end eyelet 38 is also provided according to the invention with a plurality of outwardly-projecting dome-shaped bosses 42 and an apertured inwardly-projecting boss 40. In this instance, however, the inwardly-projecting boss 40 and aperture 41 therein are centrally-located so that said aperture communicates with the centrally-located passageway 37 in the insulator lug 28, and four outwardly-projecting bosses 42 are employed and radially spaced at approximately equal distances around the eyelet, as illustrated most clearly in FIGS. 2 and 5. As in the case of the intermediate contactor ring 30 above-described, the apertured inwardly-projecting boss 40 re-

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ceives a lead wire 16 and a filling of fused electrically-conductive material to provide a recessed end terminal 48 which is substantially flush with the outer face of the eyelet 38, and the outwardly-projecting bosses 42 are dimensioned to define an "end contact plane" which is substantially parallel to and spaced a definite predetermined distance from the end face of the lug 28. Insofar as the outer surfaces of the platform 26 and lug 28 are precisely spaced one from another as a natural consequence of the molding of the insulator 24, the "intermediate" and "end contact planes" defined by the outwardly-projecting bosses 36 and 42 respectively are substantially parallel to each other and spaced apart a definite predetermined distance "d," as shown in FIGS. 1 and 3, which distance will remain constant from lamp to lamp since it is governed by preformed portions of the ring 30 and eyelet 38 rather than by the fused terminals 46 and 48 as was the case heretofore.

The contactor ring 30 and eyelet 38 may be conveniently fabricated from sheet brass or other suitable thin metal material by well known stamping techniques.

While in accordance with the above-described embodiment of the invention a plurality of outwardly-projecting bosses have been employed to define accurately and consistently spaced contact planes, the same result may be obtained by providing only one such boss on each of the contactor members. While this latter arrangement will not define planes of contact, the end result will still be the same insofar as the longitudinal distance between the ends of the contact bosses will again be precisely controlled and kept constant from lamp to lamp and it is this relationship which is essential and achieves the desired objective.

Alternatively, instead of discrete portions of the contactor members being displaced a ring 30a may be provided wherein a continuous C-shaped embossment 50 is provided which extends from a point adjacent one side of the apertured inwardly-projecting boss 34a around said ring to a point on the opposite side of said boss, as shown in FIG. 7. In like manner, an eyelet 38a may be provided having an annular embossment 52 spaced from and concentric with a centrally-disposed inwardly-projecting boss 40a and aperture 41a, as shown in FIG. 8. As will be noted in FIG. 6, with this arrangement the C-shaped embossment 50, annular embossment 52 and fused end terminal 48a are disposed in spaced concentric relationship with each other and the base shell 22a when the ring 30a and eyelet 38a are mounted in their assembled positions on the insulator platform 26a and lug 28a respectively of the base 20a.

While the invention as hereinbefore described has been considered in terms of a multiple contact lamp base, an eyelet having inwardly and outwardly-projecting bosses conformed in accordance with the foregoing principles of the invention may also be advantageously utilized as the end contactor member for a single-filament lamp since it would not only afford more accurate control of the overall lamp length but also facilitate the soldering or welding of the lead wire and provide a contact surface which would inherently remain free of oxidation and present a neat appearance.

As will be appreciated from the foregoing, the objects of the invention have been achieved by providing a lamp base which, by virtue of the configuration of its end contactor members, not only insures positive connection with the corresponding socket terminals but permits and even facilitates the soldering or welding of the lead wires to said contactor members.

While several embodiments of this invention have been described in detail in accordance with the patent statutes, it will be understood that various modifications in the configuration and arrangement of parts may be made without departing from the spirit and scope of the invention.

I claim:

1. A multiple-contact base comprising, a shell, an in-

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insulator attached to and projecting beyond an end of said shell and contoured to provide two extensions of unequal length, a first contactor member of generally planar configuration mounted on one of said extensions and located at a first plane that is spaced from the end of said shell and is transverse to the shell axis, and a second contactor member of generally planar configuration mounted on the other of said extensions at a second transverse plane located beyond said first plane, said first and second contactor members each comprising a sheet-metal element a portion whereof is displaced to form at least one outwardly-projecting boss of sufficient axial length to provide preformed contact surfaces that are spaced predetermined fixed distances from the end of said shell and from each other.

2. A multiple-contact base as set forth in claim 1 wherein, other portions of said first and second sheet-metal contactor members are displaced in the opposite direction to provide an inwardly-projecting boss having a lead-wire aperture therein, and said insulator is provided with lead-wire passageways that communicate with said apertures.

3. A multiple-contact base as set forth in claim 1 wherein the displaced portions of each of said first and second sheet-metal contactor members form a plurality of outwardly-projecting bosses that define a contact plane spaced a predetermined fixed distance from the end of said shell.

4. A multiple-contact base comprising, a shell, an insulator attached to and projecting beyond an end of said shell and contoured to provide two extensions of unequal length, a first contactor member of generally planar configuration mounted on one of said extensions and located at a first plane that is spaced from the end of said shell and is transverse to the shell axis, and a second contactor member of generally planar configuration mounted on the other of said extensions at a second transverse plane located beyond said first plane, said first and second contactor members respectively comprising a ring and disc of sheet metal portions whereof are displaced to form an outwardly-projecting embossment of elongated arcuate configuration that provide preformed contact surfaces and define contact planes located predetermined fixed distances from the end of said shell and from each other.

5. In a three-light lamp base which comprises a metal shell that is terminated at one end by an insulator contoured to provide an annular platform and an extension that project beyond the end of said shell, said extension being centrally located with respect to and projecting out-

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wardly from said annular platform, and wherein an intermediate contactor element and an end contactor element of sheet metal and generally planar configuration are mounted on said annular platform and on the end of said extension respectively, the improvement comprising at least one outwardly-projecting boss on said intermediate and end contactor elements defined by displaced portions thereof and located and dimensioned to constitute preformed contact surfaces that are spaced predetermined fixed distances axially from the end of said shell and from each other.

6. In an electrical connector of the type adapted to be inserted into a socket or the like, first and second contact means, and a body of insulating material attached to the body portion of said electrical connector and holding said first and second contact means in spaced apart electrically-isolated relationship at the end of said connector, each of said contact means comprising a sheet-metal contactor member of generally planar configuration having an aperture therein and a portion that is displaced and defines at least one outwardly-projecting boss that axially extends a predetermined distance beyond the outer face of the respective contactor members, a conductor connected to each of said contactor members and extending through said insulating body, the outer ends of said conductors being disposed in the aperture in the respective ones of said contactor members and joined to said members by a quantity of fused metal that extends to the outer face of said members and constitutes an exposed terminal thereat, said outwardly-projecting bosses extending beyond the associated ones of said terminals and thereby constituting preformed contact surfaces for said electrical connector that are spaced a predetermined fixed distance from the end thereof and from each other.

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