Dec. 22, 1942. C. L. STEBER 2,305,934

LIGHTING FIXTURE

Filed Feb. 2, 1940

Fig. 1

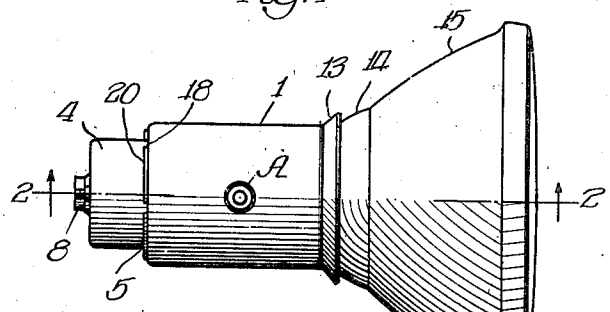


Fig. 2

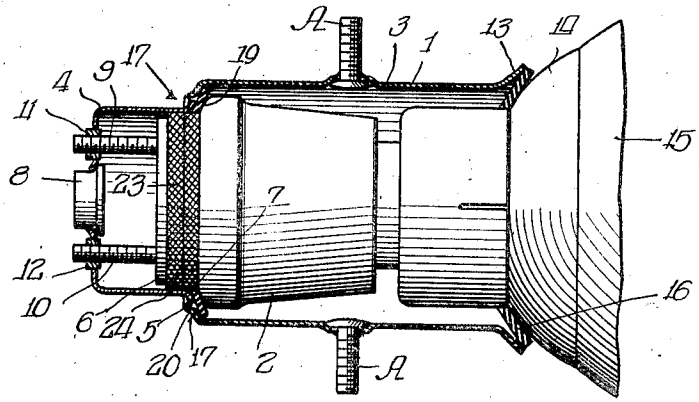


Fig. 3

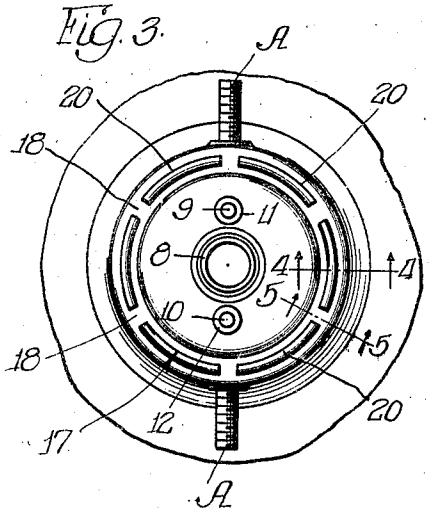


Fig. 4

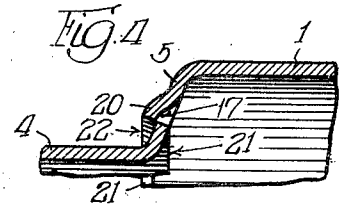
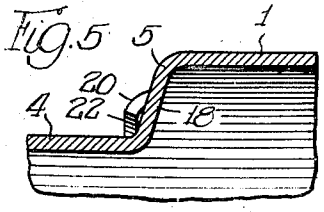


Fig. 5



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LIGHTING FIXTURE

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14 Claims. (Cl. 173—358)

This invention relates to a lighting fixture and more particularly to an electrical connector for lighting fixtures. More specifically the invention relates to an electrical lamp socket member.

The primary object of the present invention is the provision of a new and improved lamp socket which is provided with novel means for readily and rapidly dissipating heat generated by an electric lamp.

Another important object of the invention is the provision of an electrical connector or socket member for outdoor use, the socket member being provided with new and improved means for rapidly dissipating the heat therefrom and still render the same watertight.

Another object of the invention is the provision of an outdoor socket member which constitutes few and simple parts and which can be readily and very economically manufactured, the device being rendered weathertight and still capable of rapidly dissipating the heat generated by the lighting fixture.

Numerous other objects and advantages will be apparent throughout the progress of the following specification.

The accompanying drawing illustrates a selected embodiment of the invention and the views therein are as follows:

Fig. 1 is a detail elevational view of a lamp mounted in a socket member which embodies the invention;

Fig. 2 is a longitudinal sectional view on the line 2—2 of Fig. 1;

Fig. 3 is a detail end view looking from the left toward the right in Fig. 1;

Fig. 4 is a detail sectional view on the line 4—4 of Fig. 3;

Fig. 5 is a detail sectional view on the line 5—5 of Fig. 3.

The particular electrical connector or socket member herein disclosed for the purpose of illustrating the invention comprises a receptacle or shell 1 into which there is operably mounted or arranged a connector or socket member 2. The shell 1 is made out of sheet metal, preferably being stamped and formed from a single piece of sheet metal. The shell has an enlarged forward portion 3 and a reduced rearward portion 4 providing an annular offset or shoulder 5. The socket member 2 is of insulating material such as porcelain or Bakelite and is located in the rear part of the front portion 3 of the shell 1. The connector or socket 2 also has a reduced portion 6 which extends a predetermined distance into the rear portion 4 of the shell, the rear portion 6 of the socket member 2 being offset as indicated at 7 so that it will fit snugly against the offset 5 of the shell, as clearly shown in Fig. 2. Contact members for making electrical contact with the conductors are arranged in the rear end of the socket member 2, the conductors (not shown) being preferably mounted in a shielded cable which passes through a bushing 8 formed in the rear end of the offset portion 4 of the shell 1. Screws 9 and 10 pass through the socket member 2 and threadedly engage threaded bushing members 11 and 12 respectively, formed in the rear end of the shell 1. The bushing 8 and members 11 and 12 are arranged so as to make a watertight connection with the shell. Moreover, when the screws 9 and 10 are tightened, they draw the shoulder 7 of the socket member 2 tightly against the shoulder 5 of the shell 1.

The forward end of the shell terminates in a bell shaped mouth or end 13 so as to engage the outwardly flaring or bell shaped part 14 of an electric light globe 15. A washer member 16 is arranged about the part 14 of the globe and inside of the bell end 13 of the shell so that when the globe is screwed tightly in the socket member 2 a watertight fit will be formed about the entire periphery of the lamp globe at the part 14 thereof. The shell may be adapted for use with a supporting fixture in turn adapted to receive and engage and has oppositely disposed threaded members A which may act as trunnions for pivotally supporting the lamp to the lamp support as will be understood.

For outdoor use it has been found very advantageous to use a "sealed beam" light globe and such a globe 15 is herein shown. This globe is made of relatively heavy glass material into which the lamp filaments are arranged, also the interior surface of the lamp is mirrored or otherwise treated to provide an inside reflecting surface. It has been found that lamps of relatively high wattage generate a considerable amount of heat and it is a requirement of the underwriters that the temperature inside of the socket where the electrical connections are made be held under a predetermined maximum temperature. Therefore, means are provided in the present invention to cause any heat which may be generated to dissipate rapidly and still maintain the fixture weatherproof. Heat generated by the lamp is largely transmitted to the shell 1 and then has a tendency to pass along the shell to the rear part 4 of the shell and, if proper heat dissipating means were not provided, the temperature

where the electrical connection is made would exceed the underwriters maximum set temperature. In actual practise, it has been found that by disrupting or upsetting the metal of the shell 1 at the shoulder 5, heat would be prevented from being transmitted to the part 4 of the shell. The shell 1 at the offset part 5 is, therefore, provided with a plurality of upsets or cutouts 17. These cutouts or slots 17, while relatively small, are sufficient to prevent the heat from being transmitted rearwardly, as the heat can only pass rearwardly by conduction to the part 4 of the shell through the integral or intact parts 18. Therefore, such heat as may be generated by the lamp and transmitted to the shell 1 will not all be transmitted to the part 4. In fact, because of the small integral connecting parts 18, and the cutouts 17, the heat will be dissipated from the shell 1 before it can reach the reduced end 4 of the shell. To render the shell waterproof at the shoulder where the cutouts 17 are formed, a washer element 19 is arranged between the shoulder 7 on the socket member 2 and the inside of the shoulder 5 on the shell 1 where the offset portion 4 is integrally attached.

The slits 17 are merely cuts formed in the shell with the metal raised up a very slight distance from the remaining body of the shell to provide what may be termed louvers 20. These louvers tend to protect the shell somewhat from the weather but regardless of their weather protecting capabilities the shell is rendered watertight because of the washer member 19, the washer member 19 being drawn tightly against the shoulder 5 on the shell so as to make a waterproof connection between the shell and the socket member so as to prevent water from getting inside of the shell through the cuts 17.

The manner in which the cut 17 is formed and the manner in which the louvers 20 are provided is more clearly shown in Figs. 4 and 5. The material is slit along the line 21, Fig. 4, and then the outer part is forced outwardly a slight distance, as indicated at 22, to provide the overhanging louver 20. Figs. 4 and 5 show the cut and the overhanging louver considerably overemphasized and on an enlarged scale.

The socket member or connector 2 also creates or generates a certain amount of heat which must also be dissipated so as to maintain the temperature in the part 4 of the shell below the predetermined maximum. Therefore, a woven strand of copper material 23 is placed about the reduced end 6 of the socket member 2 and in tight engagement with the inside of the shell 1 in the reduced portion, as clearly indicated at 24, Fig. 2. This strand 23 is relatively flat and is preferably made of some material which will rapidly conduct heat. The heat in the chamber at the reduced end 4 of the shell as well as the heat received by the insulator 2 will, therefore, be gathered by the member 23 and immediately transmitted to the body of the shell where it dissipates in the atmosphere. It has been found that the strand or braid 23 of conductive material, when made of woven strands of fine copper wire, will conduct the heat from the inside of the chamber and dissipate it through the outer walls of the shell. In actual practise, it has been found that the provision of the stranded copper wire braid 23 prevents the interior of the part 4 of the shell from becoming too hot. After long periods of use, the temperature of the interior of the part 4 of the shell has always remained considerably below the maximum temperature permitted. In cases where there are two heat factors present, it has been found that the present invention adequately takes care of each. The provision of the slits formed between the two parts of the shell prevents the heat generated by the lamp from being transmitted or conducted to that part of the shell where the electrical connections are made. Also, the provision of the braid of stranded copper wire tightly engaging the exterior surface of a part of the socket member and the inner walls of the shell conducts the heat from within the casing and transmits it to the outer walls of the casing where it rapidly dissipates in the atmosphere. The braided strand 23 is so positioned with respect to the shoulder 5 and the washer 19 that it will be squeezed tightly between the connector and the shell as the screws 9 and 10 are sufficiently tightened.

Changes may be made in the form, construction and arrangement of the parts without departing from the spirit of the invention or sacrificing any of its advantages, and the right is hereby reserved to make all such changes as fairly fall within the scope of the following claims.

The invention is hereby claimed as follows:

1. An electrical connector comprising a sheet metal casing having a plurality of spaced cuts formed circumferentially thereabout whereby to interrupt the conductivity of heat from one end to the other end of the casing, and integral means at the cuts to provide externally projecting shields adjacent to the cuts, the width of each cut being less than would admit water freely to flow therethrough from the exterior to the interior of the casing, said integral shield means being offset from the adjacent casing surface a distance not substantially greater than the gauge of the metal, and means positioned interiorly of said cuts to seal said casing against any leakage of water through said cuts.

2. An electric connector comprising a casing having a lamp socket member arranged therein, electric contacts at one end of the member, said casing having parts of the metal struck out therefrom to provide spaced cuts in the casing so as to interrupt the transmission of heat by conductivity from one end of the casing to the other, the widths of the cuts being less than would admit water freely to flow therethrough from the exterior to the interior of the casing, and means positioned interiorly of said cuts to seal said casing against any leakage of water through said cuts.

3. An electric connector comprising a casing having a lamp socket member arranged therein toward one end thereof, electric contacts at one end of the member, said casing between the socket part of the member and the contact carrying end thereof being provided with spaced circumferential cuts to interrupt the integral continuity of the metal and thereby its characteristic of conductivity of heat, at the socket member receiving end of the casing, before the heat reaches that part of the casing which houses the contacts, the widths of the cuts being less than would admit water freely to flow therethrough from the exterior to the interior of the casing, and gasket means interposed between said socket member and said casing to seal the casing against any leakage of water through said cuts.

4. An electric connector comprising, a sheet metal casing, the metal of the casing between its ends being interrupted at spaced intervals, leav-

ing only relatively small intacts integrally connecting the two ends of the casing, a socket member in one end of the casing, a braid of flat copper wire around a part of the socket member and between the socket member and the casing to conduct heat from the socket member to the casing.

5. An electrical connector comprising, a casing having a lamp receiving end and a contact receiving end, means for preventing heat generated by the lamp from being transmitted to the contact receiving end comprising interrupted circumferential cuts formed in the casing between the two said ends of the casing, an electric connector member in the casing, contacts on the connector member at the contact receiving end thereof, and a woven strand of heat conducting material about and in heat transfer relation with the casing and the connector member at the contact receiving end of the latter to conduct heat from the contact end of the socket member to the casing.

6. An electrical connector comprising, a metal shell having an enlarged front end and a reduced rear end, a plurality of relatively narrow members integrally connecting the front end and the rear end, a socket member arranged in the enlarged end, electric contacts carried by the socket member and arranged in the smaller end of the shell, and a flat woven strand of copper wire arranged about the socket member within the reduced end of the shell and in heat conducting contact with the socket member and shell.

7. An electrical connector of the character described comprising a metallic casing having a laterally extending wall defining opposite end portions of different diameter, socket means positioned in said casing portion of larger diameter, electric contacts for said socket means in said portion of smaller diameter, and means on said laterally extending wall for preventing substantial conductivity of heat between said portions at the junction of the portions, said means comprising a plurality of narrow arcuate slits arranged in the laterally extending wall substantially concentric with the longitudinal axis of the connector and providing integral intacts of only narrow width joining said casing portions together.

8. An electrical connector of the character described comprising a metallic casing having a laterally extending wall defining opposite end portions of different diameter, socket means positioned in said casing portion of larger diameter, electric contacts for said socket means in said portion of smaller diameter, and means on said laterally extending wall for preventing substantial conductivity of heat between said portions at the junction of the portions, said means comprising a plurality of narrow arcuate slits arranged in the laterally extending wall substantially concentric with the longitudinal axis of the connector and providing integral intacts of only narrow width joining said casing portions together, and shield means extending over said slits to direct the slitted openings towards the longitudinal axis of said connector.

9. An electrical connector of the character described comprising a metallic casing having a laterally extending wall defining opposite end portions of different diameter and providing an internal shoulder between said portions, socket means positioned in said casing and against said shoulder, a plurality of slitted openings in said laterally extending wall, and gasket means positioned interiorly of said openings and clamped between said shoulder and said socket means.

10. A connector of the character described comprising a metallic casing, socket means mounted within said casing adapted to removably receive an electric lamp bulb, means on one end of said casing including a gasket for forming a water-tight connection with a lamp bulb received in said socket means, means at the other end of said casing for receiving electrical connections to said socket means, a plurality of substantially water-resistant louvres for preventing substantial heat transfer between said first named end of said casing and said electrical connection receiving end of said casing, and gasket means between said socket means and said casing for preventing any leakage of water through said louvres.

11. A connector of the character described comprising a metallic casing, a lamp socket mounted in said casing, and means for dissipating heat from said lamp socket to said casing comprising a relatively thin and flat braid of heat conducting material surrounding said lamp socket in heat conducting relationship therewith and having heat conducting contact with said casing around substantially the entire circumference of said braid.

12. A connector of the character described comprising a metallic casing, a lamp socket mounted in said casing, a substantially flat ring of heat conducting material surrounding said lamp socket and having substantially continuous thermal contact with the socket and the casing, said casing being provided with a plurality of slotted openings arranged around the circumference of the casing adjacent said heat conducting ring, and means positioned interiorly of said casing for sealing the casing against entrance of water through said slotted openings.

13. An electrical connector of the character described comprising a metallic casing having a laterally extending wall defining opposite end portions of different diameter, socket means positioned in said casing portion of larger diameter, electric contacts for said socket means in said portion of smaller diameter, means on said laterally extending wall for preventing substantial conductivity of heat between said portions at the junction of the portions, said means comprising a plurality of narrow arcuate slits arranged in the laterally extending wall substantially concentric with the longitudinal axis of the connector and providing integral intacts of only narrow width joining said casing portions together, and a heat conducting band arranged in said portion of reduced diameter for conducting heat from the electrical contacts of said socket means to said casing portion.

14. A connector of the character described comprising a metallic casing having a socket receiving portion and a portion receiving electrical contacts for said socket, a band of heat conducting material surrounding the contacts of said socket, said heat conducting band having thermal contact with the contact portion of said socket and the contact receiving portion of said casing, and a plurality of circumferentially extending slits arranged in said casing adjacent said heat conducting band and providing integral intacts of narrow width joining said socket receiving and said contact receiving portions of the casing together.

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