May 9, 1944. W. V. RICHARDS 2,348,649

LAMP SOCKET UNIT

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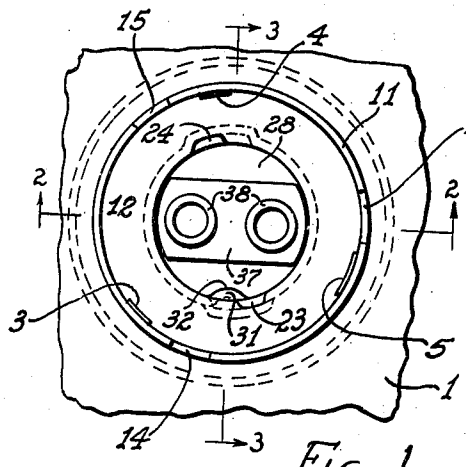


FIG. 1.

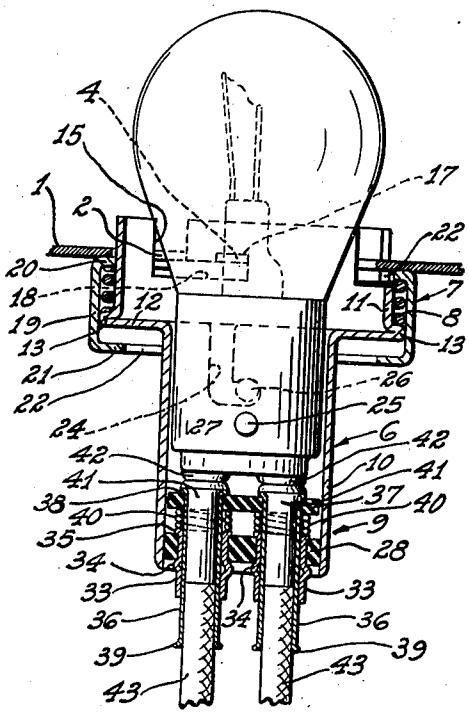


FIG. 2.

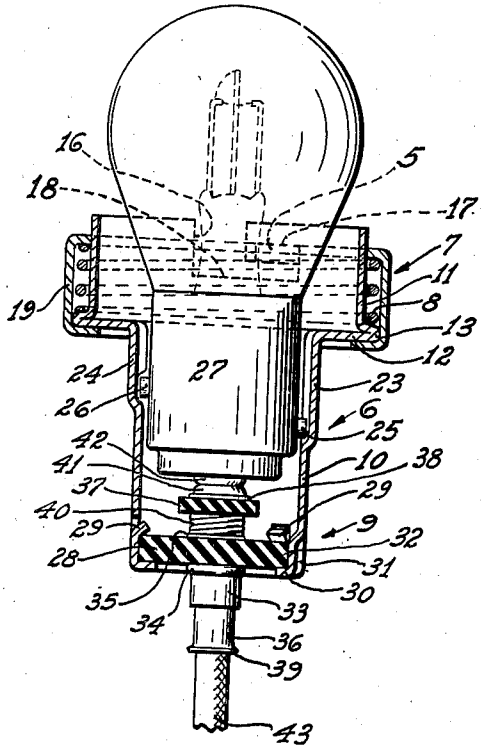


FIG. 3.

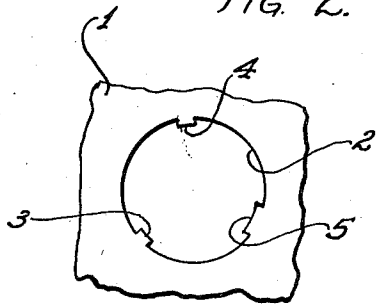


FIG. 4.

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LAMP SOCKET UNIT

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5 Claims. (Cl. 173—339)

This invention relates generally to electric lamp socket constructions.

One important object of the invention is to provide a lamp socket unit which is so constructed and arranged that the unit may be easily and quickly connected and disconnected with respect to a mounting.

Another object is to provide means on the lamp socket, and means on the base of an electric lamp whereby the lamp may be assembled with the socket in only one position to predetermine the position of the lamp filaments.

A further object is to provide improved contact means for the lamp.

A still further object is to provide a lamp socket construction which consists of very few inexpensive, yet durable parts which may be easily and quickly assembled together.

Other objects and advantages of the invention will be apparent after considering the description hereinafter set forth in conjunction with the drawing annexed hereto.

In the drawing,

Figure 1 is a top view of the lamp socket unit as applied to a mounting, the lamp and parts of the contact assembly being omitted to better illustrate certain features of construction;

Figure 2 is a vertical section taken substantially on line 2—2 of Figure 1, including the lamp and other parts not shown in the latter figure;

Figure 3 is a vertical section taken substantially on line 3—3 of Figure 1 except that the mounting for the socket unit is omitted; and

Figure 4 is a top view on a reduced scale of a portion of a mounting designed to receive the socket.

Referring to the drawing, numeral 1 designates a mounting or support preferably made of relatively thin sheet stock, provided with a generally circular aperture 2 within which the socket unit is adapted to be disposed. The mounting is also provided with a plurality of conventional bayonet projections 3, 4, and 5 which project radially toward the center of the aperture 2. These projections are preferably equally spaced apart, and the projection 5 is preferably made somewhat wider than the other projections so that the lamp socket may be connected to the mounting in a predetermined position.

The lamp socket unit, among other things, includes a shell or socket body generally designated 6, a ring member generally designated 7 and resilient means 8 carried by the forward extremity of the body, and contact means generally designated 9 carried by the rear extremity of the body.

Considering first the design and construction embodied in the socket body or shell generally designated 6, one extremity thereof is in the form of an elongated generally cylindrical tubular portion 10, and its other extremity is preferably expanded or enlarged to provide a relatively short generally tubular cylindrical portion 11, which portions are joined together by a transverse shoulder portion 12. An annular bead portion is formed adjacent the junction between the enlargement 11 and the shoulder 12, to provide an abutment 13 for one end of the resilient means which is in the form of a helical spring 8. The outside diameter of the spring is preferably made slightly less than the outside diameter of the abutment 13 so that the spring does not project beyond the periphery of the abutment, the object of which will be described later.

The enlargement 11 or forward extremity of the socket body, is preferably provided with a plurality of conventional bayonet seats, generally designated 14, 15, and 16, equally spaced apart to receive the bayonet projections 3, 4, and 5, respectively, provided on the mounting 1. The bayonet seat 16 is preferably made somewhat wider than the other bayonet seats, so as to receive the larger bayonet projection 5. This provides an arrangement whereby the socket unit can be connected to the mounting in only one position to predetermine the position of the filaments of the electric lamp. The bayonet seats are substantially identical in construction, and it is believed that a description of one will suffice. Referring primarily to Figures 2 and 3, it will be apparent that bayonet seat 15 includes an entrance opening and a notch 17 which are communicatively connected together by a circumferentially extending slot 18. When the lamp socket unit is properly assembled with the mounting 1, as evidenced in Figure 2, the notches of the three bayonet seats receive the bayonet projections 3, 4, and 5 in a well known manner.

The ring member generally designated 7 carried by the forward extremity or enlargement 11 of the socket body will now be described. This ring is preferably channel shape in cross-section, and includes an annular axially extending portion 19 provided with radially extending side walls forming abutments 20 and 21. As a consequence, the ring is provided with apertures 22 which receive the extremities 10 and 11 of the socket body. The ring is so constructed and arranged that it provides an enclosure for the

greater part of the extremity 11 including the spring 8, with the abutment 13 disposed intermediate the abutments 20 and 21 provided on the ring. As mentioned above, one end of the helical spring engages the abutment 13. The spring is placed under tension by the ring, and the opposite end of the spring bears against the abutment 20 of the ring to normally urge the ring forwardly to the extent limited by the abutment 21 of the ring engaging the shoulder portion 12 of the socket body, as clearly shown in Figure 3. Since the outside diameter of the spring is slightly less than the outside diameter of the bead or abutment 13, sufficient clearance is provided whereby the ring may slide freely with respect to the socket body. It should be noted that the enlargement 11 and the ring are so related that a chamber or pocket is provided for the spring and conceals same from view. It will also be noted that the various parts are so constructed and arranged that portions of the enlargement 11 project a predetermined distance in advance of the abutment 20 of the ring 7, so that the forward extremity of the socket body may be more easily and quickly piloted or projected into the aperture 2 provided in the mounting.

To assemble the socket unit with respect to the mounting 1, the socket body is first inserted into the aperture 2 to an extent whereby the openings of the bayonet seats 14, 15, and 16 receive the bayonet projections 3, 4, and 5, respectively, and the abutment 20 of the ring engages the mounting, whereupon the body is pressed farther into the aperture to a predetermined position, depressing the spring 8, whereby the body may then be rotated and released to place the bayonet projections in the notches of the seats as evidenced in Figures 1 and 2. The parts are preferably so constructed and arranged that the socket body cannot be rotated until the spring has been substantially entirely collapsed, in which state, the frontal surface of the abutment 20 of the ring is positioned in the same plane or slightly to the rear of the plane formed by the bases of the circumferentially disposed slots 18 of the bayonet seats. In fact, the forward movement of the socket during assembly is limited by the bayonet projections 3 through 5 which engage the base lines of the slots 18. If found desirable, provision may be made whereby the abutment 20 of the ring 7 may limit the forward movement of the socket unit while being assembled with respect to the mounting in which event the slots 18 would not define this limitation. It is to be specifically noted that when the socket body is rotated for attachment to the mounting that the spring and ring may or may not rotate with the body, depending upon the amount of friction encountered. Obviously, when the ring more or less remains static during rotation of the socket body, it becomes easier to connect and disconnect the body to the mounting.

The elongated tubular extremity 10 of the socket body is preferably provided with a pair of axially extending bayonet seats 23 and 24, the latter of which is of less axial extent than the former, as evidenced in Figures 2 and 3. These bayonet seats are preferably formed by extruding outwardly portions of the extremity 10 of the socket body, and bayonet pins 25 and 26 provided on the base 27 of the lamp bulb are adapted to cooperate with the bayonet seats 23 and 24, respectively, in a well known manner. The bayonet pins 25 and 26 and bayonet seats therefor are so constructed and arranged that it is only possible to assemble the lamp to the socket body in only one position. This is desirable for the purpose of predetermining the position of the various lamp filaments with respect to the bayonet seats 14 through 16, which in turn predetermine the position of the filaments with respect to some responsive element or apparatus. It is to be noted that the diameter of the bulb is somewhat less than the diameter of the forward extremity 11 of the socket body so that the lamp may be connected to the socket before or after the socket is assembled to the mounting.

The contact means generally designated 9 carried by the socket body will now be described. The open end of the extremity 10 of the socket body is preferably closed off by contact carrier 28 in the form of a disc of insulating material. This carrier is permanently secured or fixed in place by providing a plurality of inwardly extending tongues or stops in the body, as indicated at 29, and then oversetting the free end of the extremity 10 as indicated at 30 in Figure 3. In order to positively prevent rotation of the carrier 28, the body may be indented at 31 into a notch 32 provided therefor in the periphery of the carrier as shown in Figures 1 and 3.

The carrier is provided with a pair of spaced apart circular apertures. A tubular bearing member 33 is permanently secured in each aperture by providing a bead 34 and a flange 35 on the member which bear against the opposite flat surfaces of the carrier as clearly shown in Figures 2 and 3. A tubular element 36 is slidably mounted in each bearing member, and these elements 36 support a small block of insulation 37, provided with apertures through which the elements extend. The extremities of the tubular elements are flanged outwardly at 38 and 39 to hold the elements and block in relation to the carrier 28. A relatively small helical spring 40 surrounds each of the elements 36 and is disposed between the block 37 and carrier 28 for normally urging the block forwardly to cause the contacts 41 disposed in the elements to press against the contacts 42 carried by the base 27 of the lamp bulb. Although it is not essential, the outer ends of the springs are adapted to bear against the rear surface of the block 37, and their inner ends against the flanges 35 of the bearings 33. The block may be in the form of a disc, but in order to save expense, the block is made generally oblong in shape with its ends curved to substantially correspond to the internal diameter of the extremity 10. The contacts 41 are secured to conductors 43. Thus, it is apparent that the entire contact assembly is held against rotation, and that the contacts 41 including the elements 36 and block 37 are pressed forwardly by the springs 40.

Having thus described my invention, it is obvious that various modifications may be made in the same without departing from the spirit of the invention; and, therefore, I do not wish to be understood as limiting myself to the exact form, construction, arrangement, and combination of parts herein shown and described.

I claim:

1. A socket unit including, a socket provided with a large extremity and a small extremity joined together by a shoulder portion, said small extremity providing a receptacle for an electric plug and supporting contact means adapted to engage the plug, an annular abutment projecting laterally from said shoulder portion, a helical

spring encircling said large extremity with one end engaging said abutment, a ring slidable on the socket covering said spring having an abutment engaging the abutment associated with said shoulder portion, and another abutment on said ring engaging the other end of said spring for placing said spring under compression, said ring being so constructed and arranged that the abutments thereon straddle the said annular abutment projecting from said shoulder portion and means provided adjacent the forward end of said large extremity cooperating with said ring whereby the unit may be projected into one side of and held in relation to a mounting so that the plug may be inserted into the receptacle from the opposite side of said mounting.

2. A socket unit including, a socket, an abutment provided adjacent the front extremity of said socket, a generally round spring surrounding said extremity with one end engaging said abutment, a ring member axially slidable and freely rotatable about the socket surrounding said spring and said abutment, an abutment provided on said ring engaged by the other end of the spring whereby the ring is normally pressed forwardly, and bayonet connection means provided on said socket adapted to cooperate with a mounting in a manner whereby the ring through the action of said spring functions so that the bayonet connection means may be held connected to the mounting.

3. A socket unit including, a socket, an abutment provided adjacent the front extremity of said socket, resilient means carried by said extremity with one end engaging said abutment, a ring member slidably mounted with respect to said extremity and freely rotatable thereabout and surrounding said spring and said abutment, an abutment provided on said ring engaged by the other end of said resilient means whereby the ring is normally pressed forwardly, and connection means provided on said socket and adapted to cooperate with a mounting in a manner whereby the ring through the action of said resilient means functions so that said connection means may be held connected to the mounting.

4. A socket unit including, a socket provided with a large extremity and a small extremity, said small extremity providing a receptacle for an electric plug and supporting contact means adapted to engage the plug, abutment means projecting laterally from said large extremity, resilient means carried by said large extremity with one end engaging said abutment means, means enclosing said resilient means and said abutment having a portion adapted to engage the other end of said resilient means and another portion adapted to engage said abutment to place said resilient means under compression, and means provided adjacent said large extremity cooperable with said enclosing means whereby the unit may be projected into one side of and held in relation to a mounting so that the plug may be inserted into the receptacle from the opposite side of said mounting.

5. A socket unit including, a socket, an abutment projecting laterally from the socket, resilient means carried by said socket with one end engaging said abutment, bayonet connection means provided on said socket, a ring member enclosing said resilient means and said abutment and at least a part of said bayonet connection means, said ring being freely rotatable about said socket and having a portion normally engaging said abutment and a portion engaging the other end of said resilient means, said ring when moved to substantially collapse said resilient means exposing all of said connection means whereby said connection means may be connected to a mounting.

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