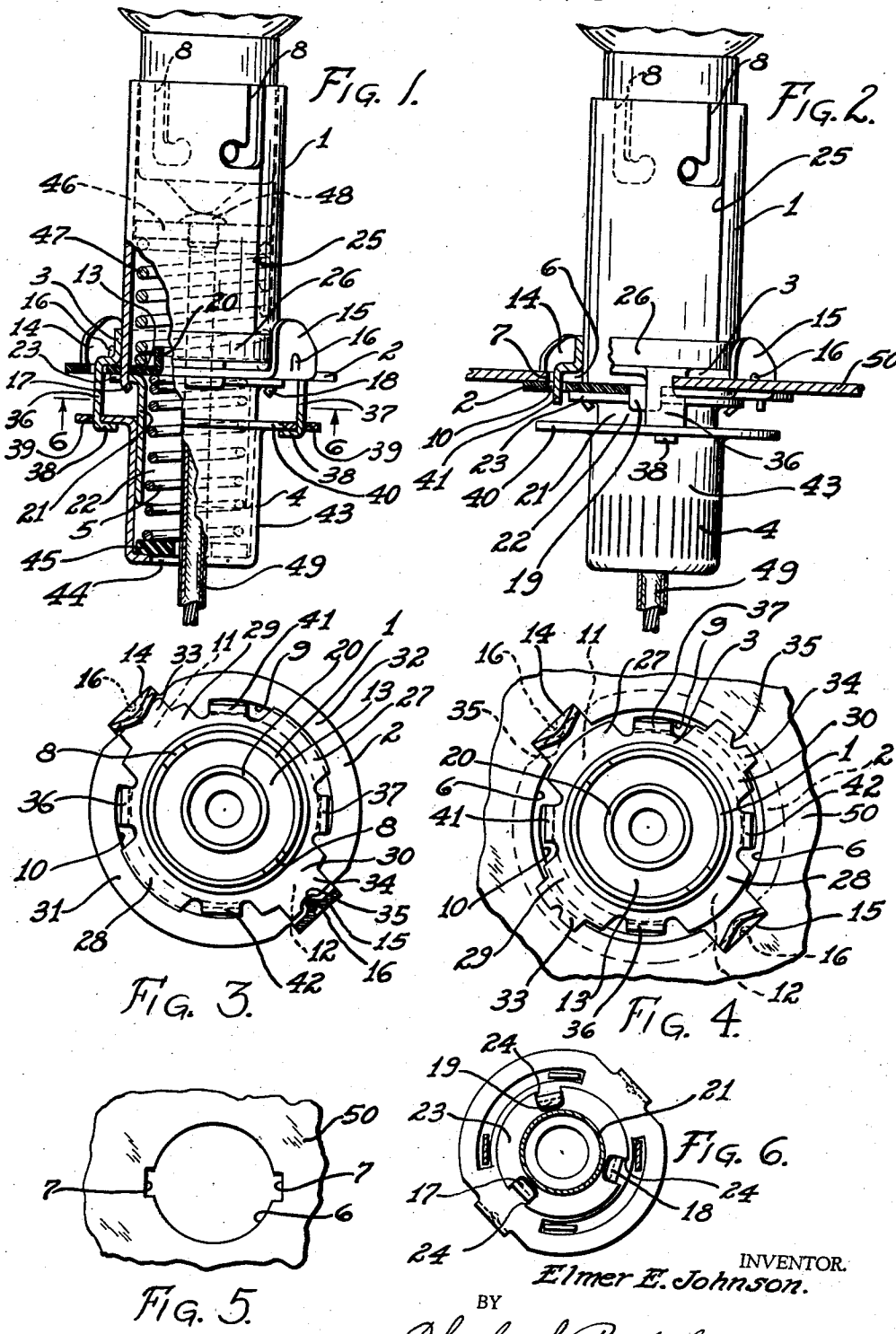


Sept. 12, 1944.

E. E. JOHNSON
LAMP SOCKET UNIT

2,357,955

Filed June 21, 1941



INVENTOR.

Elmer E. Johnson.

BY

Charles S. Penfold

ATTORNEY

UNITED STATES PATENT OFFICE

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LAMP SOCKET UNIT

Elmer E. Johnson, Bronson, Mich., assignor to
H. A. Douglas Mfg. Co., Bronson, Mich., a corporation of Michigan

Application June 21, 1941, Serial No. 399,131

7 Claims. (Cl. 173—339)

This invention relates generally to circuit continuing devices and more particularly has to do with a lamp socket construction.

One particular object of the invention is to provide a lamp socket unit which may be easily and quickly connected and disconnected with respect to a mounting or support.

Another object is to provide a socket unit which can be economically manufactured on a production basis.

Other objects and advantages of the invention will appear after considering the description hereinafter in conjunction with the drawing annexed hereto.

In the drawing:

Figure 1 is a side view in elevation of the lamp socket unit, with portions broken away to better illustrate certain parts;

Figure 2 is a side view in elevation of the unit, similar to Figure 1, applied to a mounting;

Figure 3 is a top view of the socket unit illustrated in Figure 1;

Figure 4 is a top view of the unit and mounting shown in Figure 2;

Figure 5 is a plan view of the mounting provided with means adapted for cooperation with parts of the unit; and

Figure 6 is a section taken substantially on line 6—6 of Figure 1.

Referring to the drawing, the lamp socket unit is specifically designed for entry into an aperture provided therefor in a mounting and, among other things, includes a socket member or shell designated 1 adapted to receive an electric lamp or plug; a locating or positioning member 2 permanently secured to the socket 1 adapted to engage the rear or one side of the mounting; a retaining or locking element 3 carried by the socket 1 adapted for movement with respect to the socket and locating member 2 by operating means 4 whereby the locking element may be adjusted to engage the front or other side of the mounting; and resilient means 5 for holding the socket unit in place once it is connected to the mounting.

A mounting or support 50 clearly illustrated in Figure 5, is preferably made of relatively thin sheet metal material, and provided with a circular aperture 6 having diametrically opposed notches 7. The socket member 1 of the unit is preferably made of sheet metal stock fashioned to provide a tubular cylindrical portion, its forward or free extremity having bayonet seats 8 for receiving the bayonet pins on the base of an electric lamp bulb.

The locating member 2 is permanently secured to the rear extremity of the socket in a position transverse to its longitudinal axis. The locating member is preferably flat and annular in form, and of a diameter somewhat greater than the diameter of the socket; and, among other things, is provided with a pair of diametrically disposed circumferentially extending narrow slots 9 and 10, the extremities of which are spaced apart by the intermediate portions 11 and 12. By this arrangement, the central portion 13 of the member is made generally round and of a size slightly greater than the diameter of the socket so that the circumferential slots 9 and 10 are located exteriorly of and more or less concentric to the socket. This locating member is also provided with a pair of oppositely disposed forwardly extending pilot fingers 14 and 15, which are adapted to register with the notches 7 of the mounting when the socket 1 is projected into the circular aperture 6 thereof. More specifically, these fingers are arranged in alignment with the intermediate portions 11 and 12, substantially at right angles to a line passing through the mid points of the slots 9 and 10. The extremities of the pilot fingers 14 and 15 are preferably slightly tapered and inturned to some extent so that they may be easily inserted into the notches 7 provided in the mounting 50. Each of the pilot fingers adjacent its base may be provided with an inwardly extending depression or corrugation 16 whereby to reinforce and prevent bending or distortion of the finger.

The generally circular central portion 13 of the locating member 2 is also provided with a plurality of equally spaced apart apertures which receive the continuations 17, 18, and 19 formed on the inner end of the socket for securing the socket and member together. The central portion 13 is further provided with a relatively short protuberance 20 extending forwardly into the socket in concentric relation thereto.

A guide member 21 is also preferably attached to the socket shell and to the locating member 2 by the continuations 17 through 19 formed on the shell. This guide includes a tubular cylindrical portion 22 having an annular right angular flange portion 23, which flange is provided with three equally spaced apart notches 24 adjacent its periphery which receive the continuations 17 through 19, the continuations being bent over and upon the flange 23 to permanently secure the member 2 and the guide 21 to the socket, as clearly illustrated. It should be noted that the diameter of the flange 23 is slightly less than the

diameter of the central portion 13 of member 2, and bears against its rear surface, whereas the rear extremity of the socket bears against its front side or surface. Also, the diameter of the cylindrical portion 22 of the guide is made somewhat greater than the diameter of the protuberance 20, for a purpose to be described later. Moreover, it should be noted that although the continuations 17 through 19 provided on the socket may be arranged as desired, same are preferably located so that the marginal edges forming the parting line 25 of the socket are firmly held together.

The locking or retaining element 3 forming a part of the socket unit will now be described. This element, as mentioned above, is adapted to engage the front side of the mounting, and as clearly illustrated, is preferably made in the form of a ring, which includes a relatively short cylindrical portion 26 within which is disposed the socket, and an outwardly extending generally annular flange portion. This flange, among other things, includes a pair of oppositely disposed portions 27 and 28, and a similar pair of oppositely disposed portions 29 and 30, which pairs are arranged in alignment with each other. In other words, the portions 27 and 28 form a straight angle, which is arranged substantially at right angles to the straight angle formed by the portions 29 and 30. The portions 27 and 28 are adapted to normally bear against the central portion 13, and the portions 31 and 32 of the locating member 2 which lie outside of the circumferential slots 9 and 10; and the portions 29 and 30 are adapted to normally bear against the intermediate portions 11 and 12 between the extremities of the slots 9 and 10. The diameter of the outwardly extending portion or annular flange formed by the portions 27 through 30, is preferably less than the diameter of the locating member 2, and the diameter of the aperture 6 provided in the mounting or support 50 so that when the lamp socket unit is being connected to the mounting, the portions 27 through 30 will clear the aperture 6.

The portion 29 of the retaining element 3 is provided with an outwardly extending ear portion 33 of a width somewhat less than the width of the portion 29, and the portion 30 diametrically opposite the portion 29, is provided with an outwardly extending ear portion 34 of a width somewhat less than the width of the portion 30. The outer extremity of each of the ear portions 33 and 34, is provided with a notch 35 which is adapted to clear the projection or corrugation 16 provided on each of the forwardly extending pilot fingers 14 and 15 of the locating member 2. When the socket unit is properly assembled with respect to the mounting the portions 33 and 34 bear against the front side of the mounting, and the locating member 2 against the rear side of the mounting, all of which will be later described.

The ring element 3 is also provided with a pair of rearwardly extending rather long slender lug portions 36 and 37, which are arranged diametrically opposite and between the portions 28 and 29, and the portions 27 and 30, respectively. The extremity of each of the lug portions 36 and 37 is provided with a finger 38. These fingers project through apertures 39 provided therefor in the flange 40 constituting an integral part of the operating means 4, and are clinched over and upon the flange 40 whereby to permanently secure the means 4 for movement with the locking element 3. Due to the fact that the fingers are

of a width less than the remaining portions of the lugs, the flange 40 of the means 4 is normally held in spaced apart relation with respect to the locating member 2 and the flange formed by the portions 27 through 30 of the element 3. If found desirable, the portions 27 and 28 could be entirely omitted without affecting the operation of the device, because other portions, such as 29 and 30 bear against the locating ring.

The ring element 3 is further provided with a relatively short rearwardly extending leg portion 41 disposed between the portion 27 and 29 of the element, and with a corresponding rearwardly extending leg portion 42 disposed diametrically opposite the leg portion 41 between the portions 28 and 30. As illustrated in Figures 1 and 3, the various parts are so constructed and arranged that the lug portion 36 and the leg portion 42 of the element 3 normally project through the circumferential slot 10, and the lug portion 37 and leg portion 41 project through the circumferential slot 9. Furthermore, it will be evident that the lug portion 36 and leg portion 41, and the lug portion 37 and the leg portion 42 provide bifurcations, which receive or straddle the intermediate portions 11 and 12 of member 2, respectively. The ends of the legs are preferably rounded so they will slide into the slots more easily.

The operating means 4 for moving the locking ring 3, includes the flange 40, above referred to, and also a cylindrical tubular portion 43, which receives the cylindrical tubular portion 22 forming a part of the guide 21. It will be noted that the guide and means 4 are somewhat similar in shape, and that the latter is more or less in the form of a cup to slidably receive the guide. Otherwise expressed, the guide more or less provides means assisting to guide the part 4, and the element axially with respect to the socket shell 1. The guide 21 could be entirely omitted, without affecting the operation of the unit; but has proven desirable due to the fact that the lug portions 36 and 37 are rather fragile.

The free extremity of the part 4 is preferably provided with an end wall having an aperture 44 therein. A round washer 45 of insulating material is preferably seated against the said end wall and the coiled spring 5, placed under compression, is arranged within the part 4 and the tubular portion of the guide member, with one extremity of the spring bearing against the washer 45 and its opposite extremity bearing against the rear side or surface of the central portion 13 of the locating member 2, adjacent the protuberance 20 whereby to normally urge the part 4 rearwardly, and at the same time cause the retaining element 3 to normally bear against member 2. In other words, as clearly shown in Figure 1, the locking element bears against the front side of the ring 2, whereas part 4 is arranged in spaced apart relation to the rear side of the member 2. The exterior surface of the tubular portion of the part 4 is preferably knurled, as shown in Figure 2, so as to provide a better grip.

As clearly shown in Figure 1, contact assembly means are provided for the contact on the base of the electric lamp, or some other form of electrical plug. The contact assembly employed preferably includes a disc of insulating material which forms a contact carrier 46 normally pressed forwardly by means of a helical spring 47 disposed within the socket shell 1. One end of the spring bears against the contact carrier 46, and its other end encircles the protuberance 20 and bears against the central portion 13 of the locating member 2.

A contact or terminal 48 for the lamp is seated within an aperture provided therefor in the carrier 46, and a conductor 49 connected to the contact 48 extends through the spring 47, protuberance 20, spring 5, washer 45, and outwardly through the aperture 44 in end wall of the part 4 to a source of electrical energy for example, the storage battery of an automotive vehicle; it being understood that the socket is grounded to the mounting and frame of the automobile. The protuberance 20 and washer 45 could be entirely omitted, but have proven desirable as they serve to prevent damage or injury to the conductor wire.

It is a very simple matter to connect the unit to the mounting. This is accomplished by grasping the knurled handle portion of the operating means 4, and inserting the socket 1 axially into the aperture 6 of the mounting 50 so that the pilot fingers 14 and 15 are received within the notches 7 and the positioning member 2 is in bearing relation with the rear or one side of the mounting. The locking element 3 is then pressed and slid forwardly with respect to the socket, until the portions 27 through 30, including the ear portions 33 and 34 of the element are positioned in advance of the front or opposite side of the mounting, and the leg portions 41 and 42 escape or clear the slots 9 and 10, respectively, whereupon the element is rotated in a clockwise direction approximately 90 degrees, after which the means 4 is released to cause the ears 33 and 34 to bear against the front side of the mounting through the action of the spring 5. When the unit is locked in relation to the mounting as evidenced in Figures 2 and 4, the lug 37 and leg 41 embrace the intermediate portion 11 of the locating member 2, and the lug 36 and leg 42 embrace the intermediate portion 12. When the element 3 is being rotated in the direction just referred to to connect the socket unit to the mounting, the leg portions 41 and 42 of the element will pass over or else ride along the intermediate portions 11 and 12 of member 2; and clockwise rotation of the element is limited by the lug portions 36 and 37 which engage certain of the end margins of the slots 9 and 10. The parts are so constructed and arranged that the leg portions 41 and 42 tend to snap into the slots 9 and 10 when the unit is being connected with respect to the mounting. To release or disconnect the lamp socket unit from the mounting it is merely necessary to push the locking element 3 forwardly by the means 4, overcoming the action of the spring 5, so that the leg portions 41 and 42 clear the circumferential slots 10 and 9, respectively, whereupon the locking ring 3 is rotated in a counterclockwise direction until the ear portions 33 and 34 are arranged in alignment with the pilot fingers 14 and 15, in which event the unit will practically fall from the mounting. Forward movement of the ring 3 and operating means is preferably predetermined or limited, by the end of the guide member 21 which is engaged by the washer 45 carried by the means 4.

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. In combination: a mounting provided with an aperture having notches, a socket extending

through the aperture, locating means provided on said socket engaging one side of said mounting and having means registering with said notches to prevent rotation of the socket and locating means relative to the mounting, openings provided in said locating means, locking-means carried by said socket having means projecting through said openings, and means connected to said projecting means for moving said locking means around the socket to engage the opposite side of the mounting to retain the socket in place.

2. In a device of the kind described, a socket, an abutment provided on the socket, movable means carried by the socket, said socket being adapted to be projected into an aperture of a mounting with the abutment engaging one side thereof, a handle carried by said movable means for moving the movable means relative to the socket so that portions of the movable means will engage the opposite side of the mounting, and resilient means for pressing the abutment and portions of said movable means toward each other and against the mounting and the handle in a direction corresponding to that of said movable means.

3. A socket unit adapted for entry into an aperture of a mounting including, a socket, abutment means on the socket adapted to engage one side of the mounting, spring pressed locking means bearing against one side of the abutment means, and means connected to the locking means for sliding and rotating the latter around the socket and out of bearing with the abutment means to engage the opposite side of the mounting to hold the socket in relation to the mounting.

4. In a device of the kind described, a socket, an abutment provided on the socket, movable means carried by the socket, said socket being adapted to be projected into an aperture of a mounting with the abutment engaging one side of the mounting, and means connected to said movable means for rotating the latter around the socket so that portions of the movable means will engage the opposite side of the mounting, and resilient means functioning to press said abutment means and said portions of said movable means against said mounting whereby to hold said socket in position.

5. In combination: a relatively thin mounting provided with an aperture having substantially diametrically opposed notches intersecting the aperture, a socket member disposed within said aperture, a positioning ring permanently secured to said socket and extending radially therefrom, engaging one side of said mounting, said positioning ring being provided with axially extending lugs seated within the notches of said mounting whereby to prevent rotation of said socket with respect to the mounting, said positioning ring also being provided with a pair of arcuate slots, a locking element carried by said socket, said element including a radially extending portion provided with a pair of diametrically disposed outwardly extending ears bearing against the opposite side of said mounting at points intermediate said lugs, said ears also being of a width substantially corresponding to the width of said notches and the width of said lugs on said positioning ring, said radially extending portion of said locking element also being provided with a pair of diametrically disposed axially extending fingers projecting through the aperture in said mounting and through the slots in said positioning ring, said socket being provided with a tubular continuation extending in a direction

corresponding to said fingers, a tubular operating member surrounding said tubular continuation provided with a radially extending flange having apertures therein receiving the extremities of said fingers providing a permanent connection between said operating member and said element, resilient means disposed in said tubular continuation bearing against said positioning ring and acting on said operating member for clamping the mounting between said positioning ring and said element, and axial projections also provided on the flange of said locking element projecting into the slots of said positioning ring cooperating with said fingers whereby to receive portions of the positioning ring between said slots for locking the socket against displacement with respect to said mounting, the connection between said operating member and said locking element being such that said element may be moved axially along and around the socket to place the ears on said element in alignment with notches in the mounting and the lugs on the positioning ring whereby the socket and parts carried thereby may be detached from the mounting.

6. In combination: a mounting provided with an aperture, a socket projectable into said aperture from one side of the mounting, stationary abutment means on the socket engaging said side of the mounting, locking means on the socket disposed on one side of said abutment means, said locking means being disposed exteriorly of the socket and engaging the other side of the mounting, means disposed on the other side of the abutment for rotating said locking means around the socket, and resilient means acting to hold said socket to the mounting.

7. In combination: a mounting provided with an aperture, a socket projectable into the aperture from one side of the mounting, abutment means stationary on the socket engaging one side of the mounting, means insertable into the opening from said one side of the mounting and rotatable around the socket and engaging the other side of the mounting, said means including portions disposed on opposite sides of socket, and resilient means pressing said rotatable means against said other side of said mounting.