Aug. 1, 1939. J. W. HOBBS 2,167,756

AUTOMATIC SWITCH LAMP SOCKET

Filed Nov. 18, 1938

Fig. 1

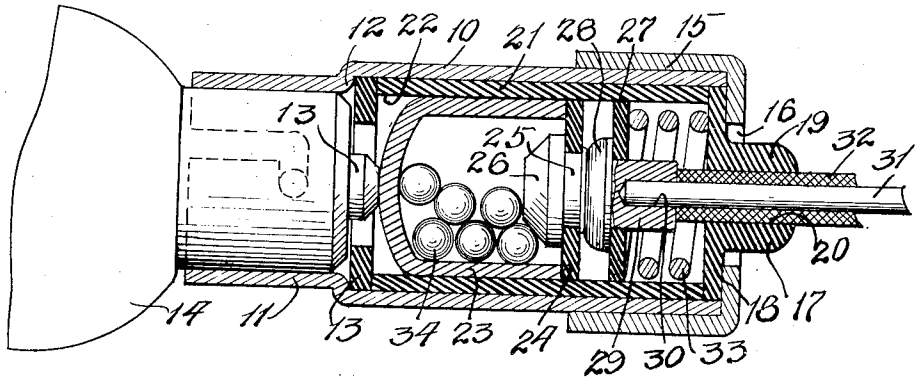


Fig. 2

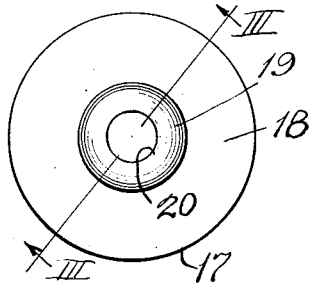
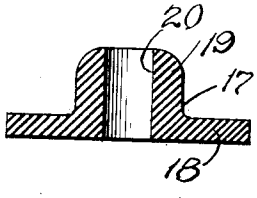


Fig. 3



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Patented Aug. 1, 1939

2,167,756

UNITED STATES PATENT OFFICE

2,167,756

AUTOMATIC SWITCH LAMP SOCKET

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Application November 18, 1938, Serial No. 241,174

3 Claims. (Cl. 173—346)

The present invention relates in general to automatic switch lamp sockets and is more particularly concerned with improvements in the construction of certain parts of socket devices of such character, whereby assembly during manufacture may be facilitated, which will result in more efficient operation of the devices and longer life in service, and in which the parts which are subjected to the most wear may be easily and readily replaced.

It is a further object of the present invention to provide improved means in a socket construction of the herein-described character for connecting the contact parts thereof with a conductor connection.

A still further object is to provide in a socket construction wherein the socket contact parts and connected conductor are arranged to move as a unit when a lamp is put into or removed from the socket, improved means for slidingly and insulatingly supporting the conductor for movement in an axial direction and confining any raveling of its insulation covering to the portion of the conductor disposed within the socket shell.

More specifically, the present invention constitutes improvements in the construction disclosed in my Patent No. 2,107,570, issued February 8, 1938.

The above, further and other objects of the present invention will be apparent from the following description and accompanying drawing:

The accompanying drawing illustrates an embodiment of the present invention, and the views thereof are as follows:

Figure 1 is a longitudinal sectional view through a lamp socket embodying the features of the present invention, and showing the cooperative relationship of the parts when a lamp is inserted in the socket and the socket is disposed in such a position that the circuit controlling parts thereof will be in circuit closed position.

Figure 2 is an enlarged plan view of the insulating support for slidingly suporting the hot conductor connection to the socket.

Figure 3 is a diametric sectional view through the supporting member, taken substantially on line III—III of Figure 2.

The drawing will now be explained:

As illustrated in Figure 1 of the drawing, my improved device comprises a metallic tubular shell 10 having one end contracted to form a lamp-receiving socket portion 11 and defines an inwardly spaced abutment shoulder 12 extending circumferentially of the shell.

Abutting the shoulder 12 at its periphery is a washer 13 of suitable insulating material which forms a bottom for the socket portion 11. The central opening of this washer is adapted to receive therethrough the central contact connection 13 of a lamp 14 when it is inserted in the socket portion of the device.

The opposite end of the shell 10 is provided with a metallic cap 15 having a press fit engagement with this end of the shell and provided with a central opening 16 at its closed end.

The interior of this end of the shell and the inner surface of the capped end portion is insulated by a member 17 having a relatively thin circumferentially extending flange portion 18 at one end, this flange portion being of such a diameter as to extend to the inner wall of the shell 10. At its center, the member 17 is provided with an elongate sleeve portion 19 which extends through and outwardly beyond the opening 16 of the cap. The sleeve portion 19 defines an axially extending bore 20 through the member.

Cooperating with the washer member 13 and the insulating member 17 for insulating the interior of the enlarged portion of the shell 10, there is provided a tubular member 21 which is disposed with its ends respectively abutting the peripheral margin of the washer 13 and the flange 18 of member 17.

The above mentioned insulating members form an insulated compartment 22 within which there is housed a cup-shaped container 23 having its bottom disposed towards the socket portion of the shell 10, this cup-shaped member being slidably movable within the tubular insulating member 21.

Extending over the open end of the container 23 is a disk 24 of suitable insulating material, this disk having its peripheral edge in sliding engagement with the interior wall of the tubular insulating member 21 and mounting at its center a metallic contact member 25.

It will be noted that the contact member 25 extends to both sides of the disk 24 and that on the side thereof facing the chamber, is provided with a truncate-conical head portion 26 which is disposed within the cup-shaped member 23.

The end of contact member 25 adjacent the opposite face of disk 24 is beaded over to retain the contact member against removal from the disk.

Adjacently disposed to the disk 24 is a second insulating disk 27 which is likewise positioned with its peripheral edge in sliding engagement with the interior wall of the tubular insulating member 21. This disk also supports a contact member at its center, one end of the contact

member being provided with a head portion 28 adapted to make engagement with the adjacent end of contact member 25. The other end of the contact member extends axially from the disk 27 to provide a stem portion 29 having a central socket 30 for receiving one end of a conductor 31, which may be soldered or otherwise secured against removal in the socket 30.

This conductor is preferably covered with an insulating covering such as woven fabric 32, and it will be noted that the conductor with its insulating covering is carried axially into the interior of the shell 10 through the sleeve portion 19 of the member 17, and that the inner end of the insulating covering is terminated at the associated end of the stem portion 29.

Surrounding the stem portion 29 and connected end of conductor 31 is a coil spring 33 having one end bearing against the flanged portion of member 17 and its other end bearing against the insulating disk 27.

It will be noted that the coiled spring 33 acts to normally bias the movement of the cup-shaped member 23, the insulating disk 24, the insulating disk 27, and the connected conductor for movement as a unit towards the socket portion 11 of the device. Moreover, when a lamp 14 is inserted in the socket portion 11, the central connection 13 engages against the bottom of the cup-shaped member and shifts all the parts against the pressure of spring 33, thus retaining pressure engagement between the current carrying parts including the engagement of the head portion 28 of the contact connected to the conductor with the contact 25. It will thus be seen that the connection and disconnection of a lamp to the socket will cause sliding movement of the conductor 31 and its insulation where it passes through the sleeve portion 19 of the support 17. It has been found that by making this sleeve portion of relatively long length wearing of the insulation is materially reduced and any raveling which takes place at the severed end thereof will be confined within the interior of the shell 10 and will not continue past the inner face of the member 17.

This arrangement results in advantages which are not obtainable where the usual insulating washer is utilized at this point. It has been found that when the ordinary type of washer is used, the comparatively thin inner edge of the washer soon wears through the insulation and permits exposed parts of the conductor to more readily come in contact with the metallic parts of the device, thus causing short circuits and other troubles.

The use of a separate terminal contact connected to the end of the conductor has been found to possess meritorious advantages over the previous practice of connecting the conductor directly to the contact which is disposed within the cup-shaped member. As shown, the cup-shaped member contains a plurality of gravitationally responsive conductor elements 34, such as conducting spheres, which are adapted under tilting movement of the device to assume positions out of contact with the head 26 or in contact with head 26, for disconnecting and connecting the hot conductor with the cup-shaped member 23.

It will be apparent that the head 26 will be subject to wear and that if this head is permanently connected as by soldering or the like to the conductor, it will be harder and more inconvenient to replace the contact unit 25 than in a case where the contact 25 is separately formed from the contact terminal connected to the conductor.

From the foregoing description, it will be apparent that the present invention provides an improved automatic switch lamp socket in which the assembly of its parts during manufacture is facilitated; which includes a novel arrangement of parts resulting in efficient operation of the device and longer life in service; in which the parts that are subjected to the most wear may be readily and easily replaced; which includes improved means for connecting the contact parts thereof with a conductor connection; and which incorporates improved means for slidingly and insulatingly supporting the conductor connection for axial movements and confining any raveling of its insulation to the interior of the shell socket.

The invention has been described herein more or less precisely as to details, yet it is to be understood that the invention is not to be limited thereby, as changes may be made in the arrangement and proportion of parts, and equivalents may be substituted without departing from the scope and spirit of the invention.

I claim as my invention:

1. In a device of the character described, a tubular metallic shell adapted at one end to form a lamp receiving socket for engaging a circuit contact connection of the lamp, a metallic contact member insulatingly supported within said shell, said member defining a chamber, a contact member insulatingly supported at the open end of said chamber, a hot conductor extending into said shell, one of said contact members being arranged to make electrical contact with another circuit contact connection of said lamp, and the other of said contact members having an electrical connection with the hot conductor, spring means for resiliently opposing movement of said contact members and the hot conductor away from the socket end of the shell, a guide member of insulating material at the other end of said shell for slidingly supporting the hot conductor for axial movements, said guide member being supported interiorly of said shell, and freely movable gravity responsive conductor means movable within said chamber to connect and disconnect said contact members upon tilting movements of said shell.

2. In an automatic gravity operated switch lamp socket, a tubular metallic shell adapted at one end to form a lamp receiving socket, a cup-shaped metallic member insulatingly supported for sliding movement within said shell, the closed end of said member being disposed towards the socket end of the shell for engagement by a circuit contact on said lamp, insulatingly supported contact means at the open end of said cup-shaped member, a hot conductor extending longitudinally into said shell and having connection with said contact means, spring means biasing said cup-shaped member, contact means and hot conductor as a unit in a direction towards the socket end of said shell, an annular insulating member anchored at its periphery with respect to said shell, said insulating member having an elongate hub portion defining a bore for slidingly receiving and supporting the hot conductor therein, and freely movable gravity responsive conductor means movable within said cup-shaped member to connect and disconnect said cup-shaped member and contact means upon tilting movements of said shell.

3. In a device of the character described, a tubular metallic shell adapted at one end to form a lamp receiving socket, a closed metallic con-

tainer insulatingly supported for sliding movement in the shell and having an insulated contact member extending thereinto, said container arranged to make connection with one terminal connection of a lamp placed in said socket, a hot conductor extending into the opposite end of said shell, a second contact member connected to the end of said conductor and insulatingly supported for sliding movement in said shell, a spring acting to press the second contact into engagement with the first contact member, and freely movable gravity responsive conductor means movable within said chamber to connect and disconnect said chamber and the first contact upon tilting movements of said shell.

JOHN W. HOBBS.