Feb. 9, 1960 J. S. BROWN, JR 2,924,679

ELECTRIC OUTLET SOCKET

Filed June 11, 1958

Fig. 1.

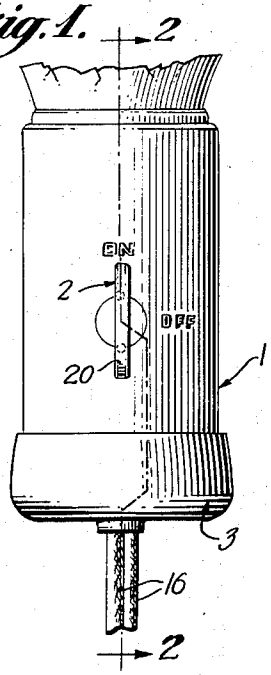


Fig. 2.

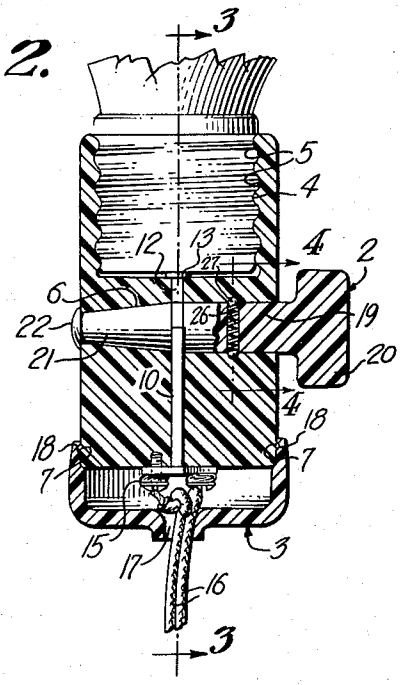


Fig. 3.

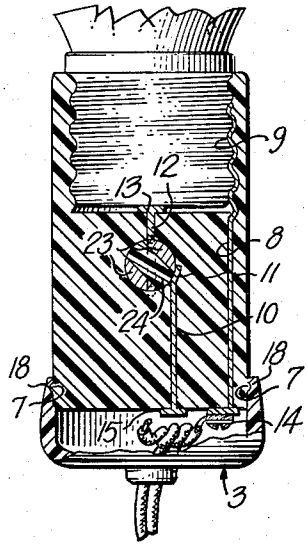


Fig. 4.

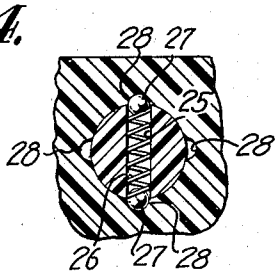
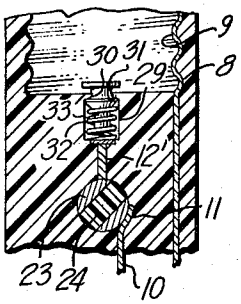


Fig. 5.



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ELECTRIC OUTLET SOCKET

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5 Claims. (Cl. 200—51.17)

This invention relates to improvements in electric sockets such as are used in lamps, on extension cords, etc. to receive a threaded light bulb or plug, and particularly to sockets incorporating cut off switches.

The general object of the invention is to provide an electric socket which, by the elimination of exposed metal, will be much safer to handle and substantially proof against shocking persons handling it.

Another object is to provide a socket of the kind described which will be capable of manufacture by molding processes and assembled by unskilled labor without need for tools.

A further object is the provision of an electric socket which can be manufactured at substantially less cost than those now in general use.

Yet another object is to provide a socket which will have the electrical conductors integral with the body so that no breakage can occur.

A still further object is to provide a socket having safety means to prevent shocks if the fingers are accidentally put into the open end.

Other objects of the invention will become apparent from the following description of practical embodiments thereof when taken in conjunction with the drawings which accompany, and form part of, this specification.

In the drawings:

Figure 1 is a side elevation of an electric socket embodying the principles of the present invention;

Figure 2 is a vertical section through the socket, taken on the line 2—2 of Figure 1;

Figure 3 is a vertical section through the socket, taken at right angles to Figure 2 and on the line 3—3 of Figure 2;

Figure 4 is a fragmentary section taken on the line 4—4 of Figure 2, illustrating the means for releasably holding the switch key in its various positions; and

Figure 5 is a fragmentary section showing a modification of the structure shown in Figures 1 through 4.

In general, this invention concerns an electric socket which may be molded from plastic with metallic conductors in place, and made of several parts which can be readily assembled for use. It also contemplates means to automatically break the circuit to the socket proper when no light bulb, plug, etc. is in place.

Referring to the drawings in detail, and first adverting to that form of the invention shown in Figures 1 to 4, th socket is shown as comprising a body member 1, a switch key 2 and a cap 3. All of these elements will be molded of a suitable plastic which will preferably be fairly rigid but have some flexibility to allow the parts to snap fit together as will be described. This might be a synthetic rubber composition, or similar material.

The body will be molded to generally cylindrical shape having a socket recess 4 in one end. The recess will be formed with screw threads 5 to receive the threads of a bulb or plug. An opening 6 will be formed diametrically of the body to receive the key 2. The opening 6 will be tapered for a portion of its length. At the bottom, the

body will have an encircling ridge, or upstanding lugs, 7 to form a securing means for the cap 3.

Three metallic conductors are molded into the body in order to carry current to the socket 4. One will be a long conductor 8 extending from the bottom of the body into the socket 4. This conductor will have its upper end 9 which is within the socket recess curved to match the threads 5 and form part of the thread surface so as to make contact with the bulb or plug screwed into the socket. A second conductor 10 extends from the body bottom to the opening 6 and has a portion 11 of its length exposed within the opening and conforming to it. A third conductor 12 extends from the opening 6 to the socket bottom and is exposed within the opening and in the socket. A contact button 13 may be placed on the top of the conductor 12 if desired. Conductors 8 and 10 will have binding posts 14 and 15 respectively, to which electrical leads may be attached.

Cap 3 may be of any desired design, and serves to cover the binding posts and bared ends of electric leads 16. The cover will have a central opening 17 through which the wires may pass, and a recess 18 around its free edge into which the rib or ridge 7 may seat. The cap will be placed on the end of the body and snapped into place so that the cap rim will move over ridge 7 and allow the ridge to seat in the recess 18.

The switch key 2 has a central cylindrical section 19, which expands into an operating key 20 at the end and is tapered at its other end to form a frusto-conical section 21. A keeper button, or other slight enlargement, 22 will serve to lock the key in place when it is inserted in the opening 6. The frusto-conical section of the key shank will fit in the tapered portion of the opening 6 and prevent the key from being pressed too far inwardly of the body. At the same time the button 22 will prevent movement in a direction to withdraw the key from the body. Thus, the key will have a precise seating position within the opening. The button will not hold the frusto-conical section so tightly in the tapered portion of the opening that the key will not rotate freely.

About midway the length of the key, and in the plane of the two conductors 10 and 12, two metallic contactor members 23 will be embedded in the key shank. The contactors will be spaced from one another by a central bar 24 of the insulating material of the key. Each of the inserts will be of sufficient arcuate extent to bridge the contacts 10 and 12 when the key is rotated to one position. In another position of the key, 90° from the contact bridging position, the conductors 10 and 12 will engage the opposite inserts and therefore there will be no current flow between the conductors 10 and 12.

In order to hold the key in desired rotative positions, the key is provided with a diametral opening 25 in which a coil spring 26 is placed. A ball 27 will be fitted in each end of the opening, on top of the spring, and these balls will cooperate with recesses 28 in the body of the socket to releasably hold the key in either its on or off position. It will be obvious that the balls can be pressed inwardly, compressing the spring to a point where the balls are entirely within the shank of the key and held in this position while the key is inserted. As soon as the key is in its seated position, the balls will be in the plane of the recesses 28 and upon rotation of the key 20 will seat in the recesses as will be well understood.

In Figure 5 of the drawing a slightly modified structure is illustrated where a countersunk recess 29 is located centrally of the socket recess 4. The central conductor 12' will be shorter than in the form previously described and terminate at the bottom of the recess 29. The recess will have its upper end toed in slightly, as at 30, to hold a plug 31 in place. The plug will be snapped into position and normally held in its upward position against the

toed in rim of the recess by means of a coil spring 32. This spring will be formed of a suitable spring metal coated with an insulating material. The plug 31 has a depending contact 33 to seat against the end of the conductor 12' when the plug is pressed downwardly. The plug will be of conducting material and will form part of the conducting line to the bulb or plug which is in the socket. It will be evident that when there is no plug or bulb in the socket, spring 32 will lift plug 31, breaking the circuit. This will prevent a child from getting a shock in the socket if he should put his fingers in the socket when the bulb is removed. Of course, as soon as the bulb is screwed into the socket it will contact plug 31 and force it downwardly until conductive contact is made with the end of the conductor 12'.

It will be evident that with both forms of the invention all of the parts may be molded of a non-conductive plastic material, and that they may be assembled without tools, merely by snapping one section on, or within, another. This will form a very efficient socket which can be made very cheaply. With the structure employed in that form of the invention shown in Figure 5, the safety factor of a break in the feed conductor when no bulb is in place has been provided.

While in the above practical embodiments of the invention have been disclosed, it will be understood that the precise details of structure shown and described are merely by way of illustration and the invention may take other forms within the scope of the appended claims.

What is claimed is:

1. An electric outlet fixture comprising, a one-piece molded body of insulating material having a threaded socket therein and having an opening therethrough at right angles to the axis of the socket and spaced from the socket, a conductor molded in said body and extending from said socket to the outside of the body at the end opposite the socket and spaced from said opening, a second conductor molded in said body and extending from said opening to the outside of the body at a point adjacent the first-mentioned conductor, a third conductor molded in said body and extending from said opening to said socket, and a key plug of molded insulating material insertable in said opening for rotation therein, said key plug having a metallic contactor therein to bridge the conductors at said opening when the key plug is rotated to one position.

2. In an electric outlet fixture as claimed in claim 1, said insulating material of the body and the key plug having some resiliency, said opening being tapered for at least a part of its length adjacent one end of the opening to converge toward the opening end, said plug having a similar shape to said opening and having a retaining button at the end of the tapered portion of greater cross section than the opening end to snap through the open end of the opening to hold the key plug in place.

3. In an electric outlet fixture as claimed in claim 1, means to releasably hold said key plug in position with its contactor bridging the conductors at the opening.

4. In an electric outlet fixture as claimed in claim 1, said third conductor comprising two aligned sections, with one of the sections being projectable into the socket axial of the socket, and means to yieldingly hold said projectable section projected into the socket and out of contact with the other section of the conductor.

5. An electric outlet fixture comprising, a one-piece molded body of insulating material having some resiliency, said body having a molded threaded recess therein to form a socket, said body having an opening completely therethrough at right angles to the axis of the socket and spaced from the socket, the opening having at least part of its length adjacent one end convergingly tapered toward that end, a key plug of molded insulating material having some resiliency and having a shape matching that of the opening including a tapered portion positioned in the opening, a retaining button integrally molded at the end of the tapered portion of the plug of greater cross-section than the tapered opening end to resiliently snap through the opening end upon endwise insertion of the key plug into the opening during assembly and retain the key plug in the opening, a conductor molded in the body and extending from the socket to the opposite end of the body spaced from the opening, conductors molded in the body and extending from the socket to the opening and from the opening to the opposite end of the body adjacent the first-mentioned conductor, the key plug having a metallic contactor molded therein to bridge the conductors at the opening when the key plug is rotated to one position, a cap of molded insulating material having some resiliency to fit over the end of the body remote from the socket to enclose the conductors at that end, and cooperating means on the body end and cap to permit the cap to snap into position on the body end and be retained thereon.

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