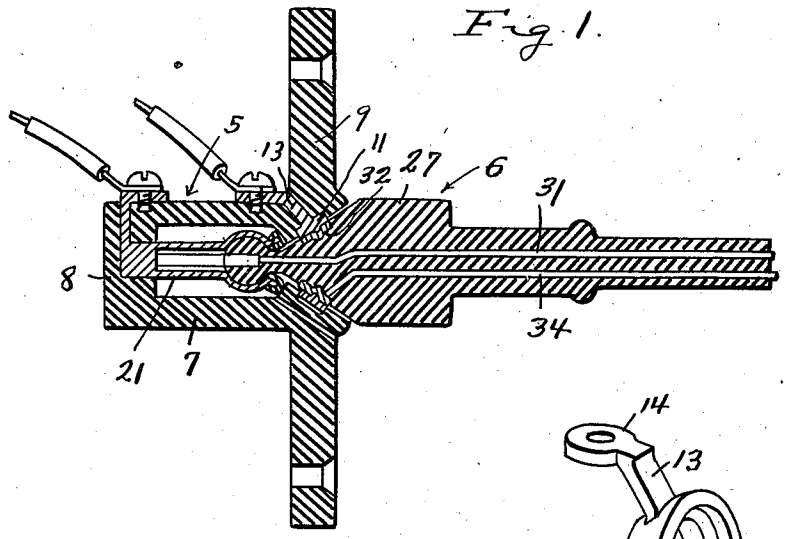
Nov. 12, 1940. A. L. WOODSIDE 2,221,280

ELECTRIC SOCKET AND PLUG

Filed Oct. 22, 1938 2 Sheets-Sheet 1

Fig. 1.



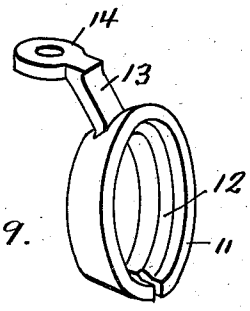


Fig. 9.

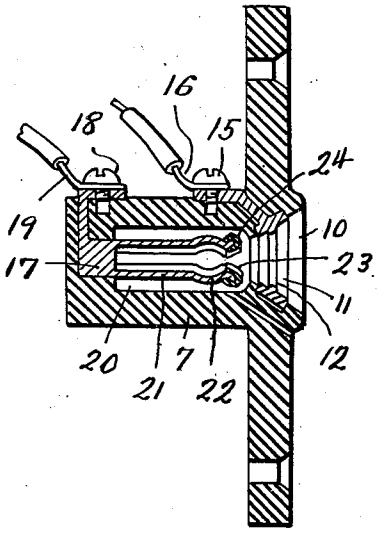


Fig. 2.

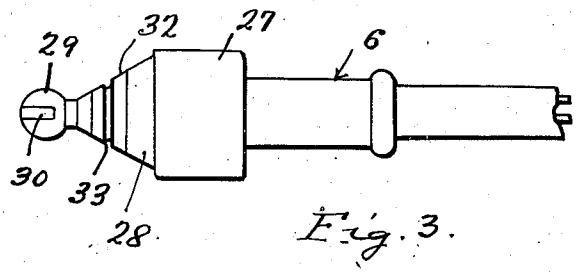


Fig. 3.

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Fig. 4.

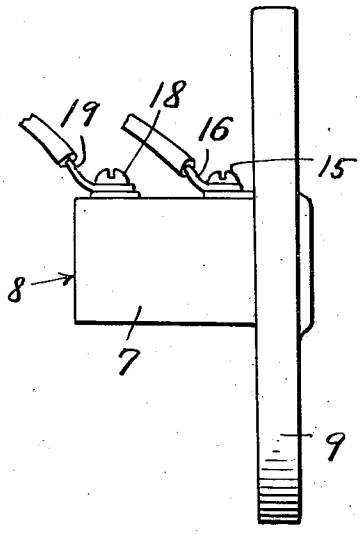


Fig. 5.

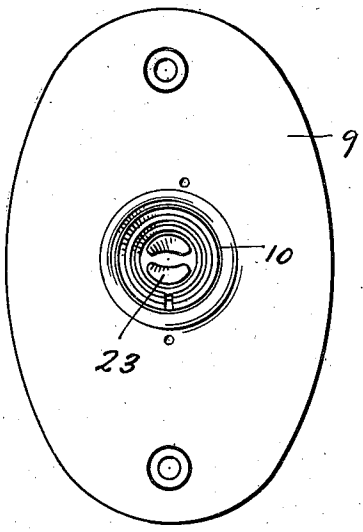
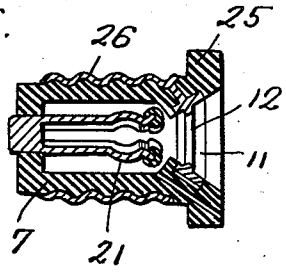


Fig. 6.



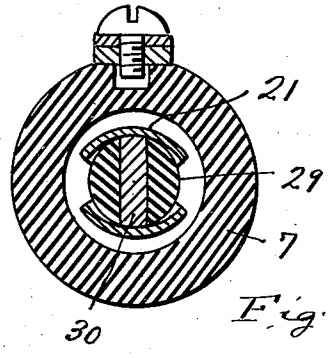


Fig. 7.

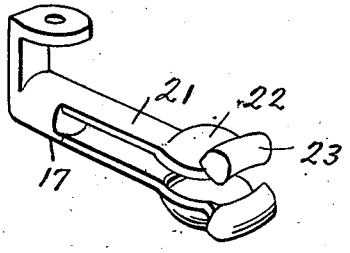


Fig. 8.

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Patented Nov. 12, 1940 2,221,280

UNITED STATES PATENT OFFICE

2,221,280

ELECTRIC SOCKET AND PLUG

Albert L. Woodside, Butte, Mont., assignor of one-half to Charles E. Woodside, Spokane, Wash.

Application October 22, 1938, Serial No. 236,470

1 Claim. (Cl. 173—330)

This invention relates to a coacting electric socket and plug especially useful for all types of electric appliances requiring the use of extension cords, and has for the primary object the provision of a durable, efficient and inexpensive device of this character which is simple to operate and provides in its construction a socket or female element and a plug or male element, the socket or female element being connected in the regular electric circuit and the male element or plug being connected to the extension cord of the electric appliance and said plug or male member being easily inserted in the socket or female element to complete the circuit to the appliance and which through a quarter of a turn will break the circuit to the appliance, eliminating the necessity of withdrawing the plug or male element in order to break the circuit to the appliance, or the use of an auxiliary switch in the extension cord as now frequently employed in order to break the circuit.

Another object of this invention is the provision of means in the construction of the socket or female member which will prevent a person from inserting the finger or fingers therein and receiving a shock.

With these and other objects in view, the invention consists in certain novel features of construction, combination and arrangement of parts to be hereinafter more fully described and claimed.

For a complete understanding of my invention, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a vertical sectional view illustrating a socket and plug constructed in accordance with my invention.

Figure 2 is a vertical sectional view illustrating the socket with the plug removed.

Figure 3 is a side elevation illustrating the plug.

Figure 4 is a side elevation illustrating the socket.

Figure 5 is a front elevation illustrating the socket.

Figure 6 is a vertical sectional view illustrating a modified form of socket.

Figure 7 is a transverse sectional view taken on the line 7—7 of Figure 1.

Figure 8 is a perspective view illustrating the contacts included in the construction of the socket.

Figure 9 is a perspective view illustrating one of the contact members.

Referring in detail to the drawings, the numeral 5 indicates the socket or female element while the character 6 indicates the plug or male element. The socket or female element includes a housing 7 closed at one end, as shown at 8, while its opposite end is integral with a face plate 9 apertured to receive screws or like fasteners for the mounting of the socket in a wall. The face plate and the open end of the body 7 are shaped to form a substantially conical-shaped opening or mouth 10 for the body and has the walls thereof grooved to receive therein a substantially annular split contact 11 provided on its inner face with an annular rib 12. An extension 13 is integral with the contact 11 and extends through the body 7 where the latter joins onto the face plate 9 and terminates in a terminal 14 adapted to rest flatly against the wall of the body exteriorly of the latter and is provided with a screw threaded opening to receive a screw 15 for connecting an electric wire 16 thereto. The electric wire 16 forms part of an electric circuit. The body directly under the aperture of the terminal 14 is provided with a socket in which the screw 15 may move when threaded fully into the opening of the terminal 14. The end wall 8 of the body 7 has formed therein a passage provided with angularly related branches to receive a terminal 17 including angularly related portions, one of which terminates in an apertured portion screw threaded to receive a set screw 18 to receive the other wire 19 of the circuit. The other angularly related portion of the terminal 17 extends into the chamber 20 of the body 7 and is integral with contact arms 21 each of a flexible nature and arranged in parallel relation to one another with their free ends terminating in cup-shaped portions 22 with lips 23 thereon. Insulating pieces 24 are mounted on the lips of the contact members or elements 21 so that should a child or person with a very small finger attempt to insert the finger into the body by way of the opening 10 the finger will be prevented from coming in engagement with the contact arms 21 and receiving a burn or electric shock.

If desired as shown in Figure 6, the body 7 may have the face plate eliminated and equipped with a flange 25 in lieu thereof so that the body can be easily handled for being threaded into an ordinary electric output socket. In this form of body a screw threaded ferrule 26 is provided thereon and is connected with the extension 13 of the contact 11 and the terminal 17 of the contact arms 21 extend through the ends of the body so as to cooperate with the ferrule 26

in completing an electric circuit with a conventional type of screw threaded socket type electric output.

Referring in detail to the plug or male element 6, it consists of an elongated body 27, a portion of which is of substantially conical shape, as shown at 28, and terminates in an end portion in the shape of a ball or sphere 29 on which is mounted a contact strip 30 curved to conform to the contour of the ball or sphere and which is connected to an electric lead or conductor 31 extending through the body 27 for connection in any well known manner to a wire of an electric cord (not shown). A substantially conical shaped contact 32 is mounted in a groove formed in the conical shaped portion 28 of the body 27 and is provided with a groove 33 to receive the rib 12 of the contact 11 when the conical shaped portion 28 is inserted in the opening 10 of the face plate and body 7 of the female element or socket 5, the ball or sphere 29 entering between the contact elements 21 and received by the cup-shaped portions thereof to establish an electrical connection. A conductor 34 embedded in the body 27 of the plug connects with the contact 32 and with the other wire of the extension cord. When the plug is positioned in the socket it may be turned to move the contact 30 out of engagement with the contacts 21, consequently breaking the circuit between the contacts 21 and the conductors 31 and 34 of the plug or to the electric appliance to which the extension cord is connected, obviating the necessity of withdrawing the plug from the socket in order to break the circuit. The plug constructed in accordance with the foregoing and as shown in the drawings will be extremely durable and capable of withstanding excessive strains or pulls and is easily inserted into the socket due to the shape of the portion 28 of the plug and the shape of the opening in the face plate or the open end of the body of the socket.

It is believed that the foregoing description, when taken in connection with the drawings will fully set forth the construction and advantages of my invention to those skilled in the art to which such a device relates, so that further detailed description will not be required.

What I claim is:

A socket and plug device comprising a female element including a body of non-conducting material having a chamber therein opening out at one end of the body and said opening being of conical shape, a metal ring of tapered shape embedded in the wall of said opening with its internal circumference flush with said wall of the opening, a rib on said circumferential wall of the ring, a part of the ring extending to the exterior part of the body for engaging a conductor member, a contact member embedded in the closed end of the body and having a pair of spring contacts extending into the chamber, a male member of non-conducting material having a conical-shaped portion for fitting in the conical opening and said conical part having an annular groove therein for receiving the rib, the groove carrying part being of conducting material, a conductor passing through the male member and connected with the said conducting part, a head on the end of the conical part of the male member for engaging the pair of spring contacts, a contact part of conducting material carried by the head and bridging the spring contacts when the male member is in one position and said contact part disengaging the spring contacts when the male member has been partly rotated to another position, a conductor passing through the male member and connected with the contact part of the head.

ALBERT L. WOODSIDE.