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ELECTRICAL JACK
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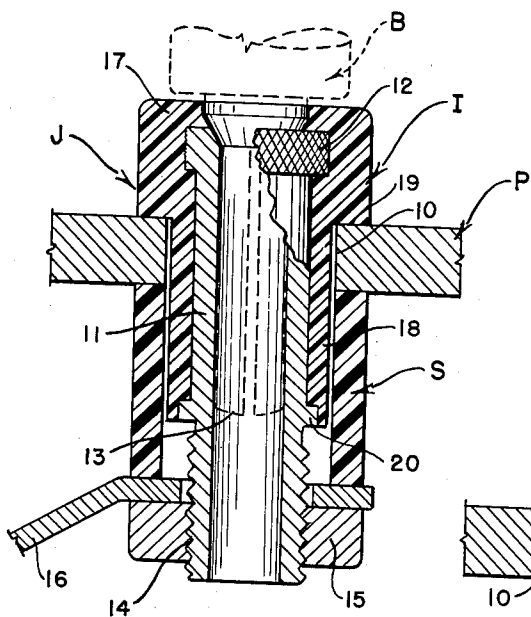


FIG. - 1

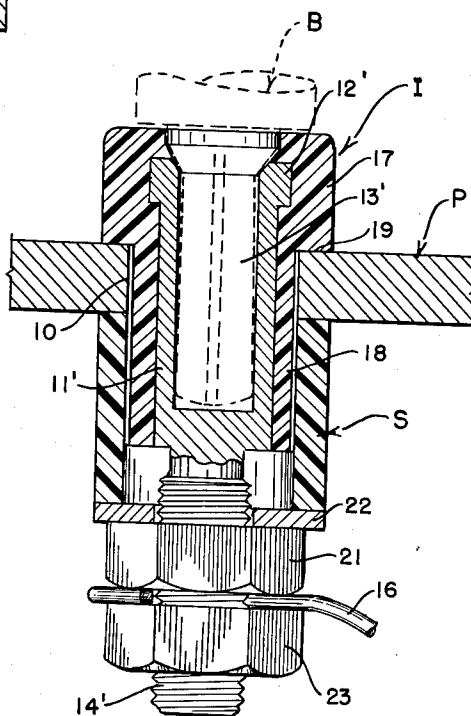


FIG. - 2

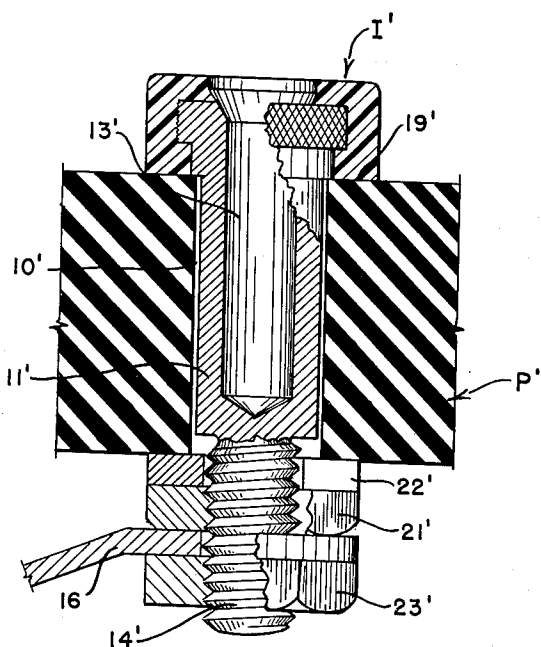


FIG. - 3

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ELECTRICAL JACK

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1 Claim. (Cl. 339—126)

This invention relates to electrical connecting devices and more particularly to such devices which are commonly known as jacks for receiving plugs to quickly and conveniently establish electrical connections between conductors.

One of the objects of my invention is to produce an improved electrical jack connecting device for mounting on a panel or like structure.

A further object is to produce an improved electrical jack in which is embodied a metal plug receiving socket and associated therewith is molded insulating material both of which cooperate with clamping nuts for readily attaching the jack to a support such as a panel.

A still further object is to produce an electrical jack structure which when attached to a panel will have its metal plug receiving socket fully insulated from the panel.

Yet another object is to produce an improved electrical jack in which a metal plug receiving socket has molded thereto in surrounding relation to the open end thereof a ring of insulation material which will not only insulate the socket but also provide shoulder means for clamping the socket to a panel by nut means cooperating with the rear end of the socket structure.

Still another object is to produce an improved electrical jack structure in which insulation material is molded to a metal plug receiving socket in such a manner as to provide an insulation means completely surrounding the socket and a shoulder against its open end so that the jack can be easily and quickly clamped to a panel surface adjacent a hole by a sleeve of insulating material and a nut and when so clamped the jack will be fully insulated from the panel as also will be any electrical conductors attached to the socket structure.

Other objects will become apparent from the following description taken in connection with the accompanying drawings in which:

Figure 1 is a longitudinal sectional view of an electrical jack structure embodying my invention, said jack being shown attached to a panel hole.

Figure 2 is a longitudinal sectional view of another jack structure embodying the invention; and

Figure 3 is a longitudinal sectional view of still another structure in which the invention is embodied.

Referring to the drawings in detail and first to Figure 1, there is disclosed panel P having a hole 10, whereby my improved electrical jack structure J may be clamped to the panel. This improved jack structure, as shown, comprises an elongated member 11 made of suitable electrical conducting material having on one end a flange 12, the peripheral surface of which is preferably knurled. The elongated member has a cylindrical bore 13 forming a socket into which an electrical plug, such as are of the banana type, may be inserted to make an electrical connection between two conductors, one of which has the plug attached to its end and the other of which is connected to the jack. The plug is shown by dotted lines in Figure 1, and is indicated by the reference

letter B. The elongated member opposite the flange end, has external threads 14, with which can cooperate a nut 15 to accomplish the mounting of the jack on the panel and also to electrically connect a conductor to the jack as, for example, by means of the wire lug 16.

The elongated member 11 has molded thereon electrical insulating material I. This material completely surrounds the elongated member from the flanged end inwardly to a point adjacent the inner end of the threads. The insulating material may be a plastic or any other suitable molded material, such as hard rubber. The portion of the insulating material which surrounds the flanged end is of larger diameter than the remaining portion 18 of the material which surrounds the intermediate section of the elongated member. This will establish between the two portions a shoulder 19. The portion 17 surrounding the flanged end is so molded that part of it will extend outwardly beyond the end surface of the elongated member and it will be provided with an opening whereby to permit the plug B to be inserted in the socket to make the electrical connection. By having the insulating material extend outwardly beyond the end of the elongated member, the end surfaces of this member will be protected. When the molding is performed, the knurled surface on the flange will aid in making a strong union between the insulation and the elongated member. The elongated member also has an annular ridge 20 adjacent the inner end of the threads which has for its primary purpose the provision of a shoulder to aid in molding the insulation material.

The jack is also provided with a sleeve S of suitable insulating material such as plastic, rubber or fabric. The sleeve is of sufficient internal diameter to slip over the portion 18 of the insulating material which is molded to the elongated member and the portion 18 has such an external diameter as to fit within hole 10 of the panel to which the jack is to be mounted.

When the jack is mounted on the panel, as shown, the shoulder 19 of the insulating material I will abut the front surface of the panel surrounding the hole 10. The sleeve S will be mounted on the portion 18 of the insulating material so that one end will abut the rear surface of the panel P surrounding the hole. The sleeve S will have such length that when positioned as shown, it will extend outwardly beyond the inner end of the threads. Thus, when the nut 15 is threaded on to the elongated member with the wire lug 16 positioned inwardly of the nut, it will cause the wire lug to be clamped between the nut and the sleeve and the shoulder 19 of the insulating material to be clamped against the panel, thus holding the jack in position and establishing an electrical connection between the wire lug and the elongated member since the nut will be of electrical conducting material. When the jack is mounted as shown in Figure 1, it will be firmly held on the panel and the elongated member will be fully insulated from the panel material, thus it will not be necessary that the panel be of insulating material.

In Figure 2, there is disclosed another form of jack. The elongated member 11' is made of electrical conducting material and has a socket 13' which received the banana plug B. The socket only extends partly through the elongated member and the remaining part of the elongated member is solid and provided with external threads 14'. The elongated member has insulating material I molded thereon in the same manner as in the jack of Figure 1, this being in surrounding relation to the flanged end 12' of the elongated member. There is thus provided the shoulder 19. The jack also has the sleeve S for clamping it to the panel P after the portion 18 has been inserted through the opening 10. The jack is held clamped to the panel P by nut 21 and there is also provided a washer 22

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between the nut and the end of the sleeve. Nut 21 serves only to clamp the jack to the panel P and is not employed to clamp the wire lug to the jack. This is accomplished by a second nut 23, and, as shown, the wire lug 16 is positioned between the two nuts so that when the nut 23 is screwed up, the wire lug will be held between the two nuts. One feature of this arrangement embodying the two nuts is that the wire lug may be connected and disconnected from the jack at will without disturbing the mounting of the jack on the panel.

In some jack installations, the panel may be thicker than in others, and this panel may be made of insulating material. Under such conditions, it will not be necessary then to have the elongated socket member provided with insulating material which covers that portion of the member extending through the panel hole. A suitable jack for a thick panel of insulating material is shown in Figure 3, wherein the panel P' is provided with an opening 10'.

The elongated member may be the same as that shown in Figure 2, wherein the socket 13' extends only part way through the elongated member. The insulating material I' is molded only to the flanged end of the elongated member and does not surround the central part of the elongated member. This insulating material establishes the shoulder 19', whereby when the elongated member is positioned in the hole 19 of the panel the jack may be clamped to the panel by the use of the nut 21' cooperating with the threads 14' on the elongated member. If desired, a lock washer 22' may be employed to lock the nut 21' to its clamping position. The wire lug 16 is connected to the jack by a second nut 23' in the same manner as is done in the jack of Figure 2.

It is further noted in connection with the jacks of Figures 2 and 3 employing the two nuts that they may have connected thereto in a free manner not only wire lugs 16 but ends of conducting wires by wrapping these wires around the threaded end of the elongated member between the two nuts so as to be held thereon when the outer nut is screwed up.

In all of the jacks disclosed, it will be noted that the members having the socket for receiving the plug have their outer ends provided with surrounding insulating material and this insulating material is permanently molded on the elongated member and is insured of being firmly maintained thereon by having the flange of the elongated member embedded in the insulating material. The insulating material not only surrounds the end of the elon-

gated conducting material which receive the plug, but also covers the end surface so that it will not be possible to make electrical contact with the elongated member unless a deliberate inserting movement is made into the socket.

5 Being aware of the possibilities of modification in the particular jack structure shown as embodying my invention, all without departing from the fundamental principles of the invention, I desire it to be understood that the scope of the invention is not to be limited in any manner except in accordance with the structure claimed and equivalents thereof.

What is claimed is:

15 In an electrical jack structure for mounting in an opening of a panel, an elongated member of electrical conducting material having a smooth walled socket open at one end to snugly receive in a slidable manner an electrical plug when inserted therein, said member having an annular flange at the open end of the socket and at the other end being provided with external threads, electrical insulating material permanently carried by molding same on the elongated member in surrounding relation to the socket end including the flange, the outer open end of the socket being flared outwardly and the insulating material overlying the end surface of the elongated member beginning at the end of the flared surface and extending outwardly a substantial distance to provide thick insulation surrounding the open end of the socket, said insulating material also being so formed as to provide a shoulder inwardly of the annular flange to abut the panel adjacent the opening when the jack is inserted in the opening, the socket in the elongated member extending inwardly beyond the shoulder, and a nut cooperating with the threads and a sleeve, engageable with the panel, surrounding a part of the member and insulating material remote from the open end of the member for clamping the shoulder against the panel.

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