Sept. 28, 1937. C. W. SHORT 2,094,046

ELECTRICAL FITTING

Filed Dec. 17, 1935

Fig. 1.

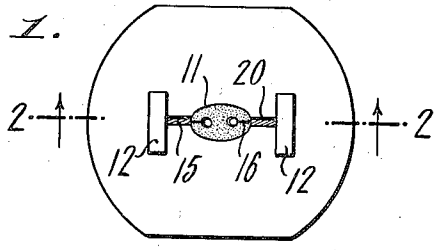
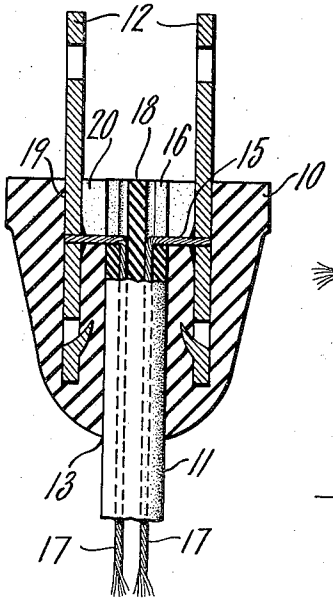


Fig. 2.



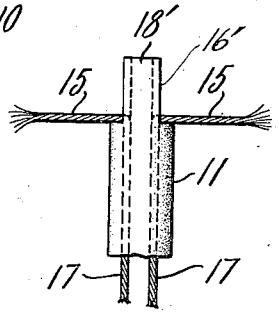


Fig. 4.

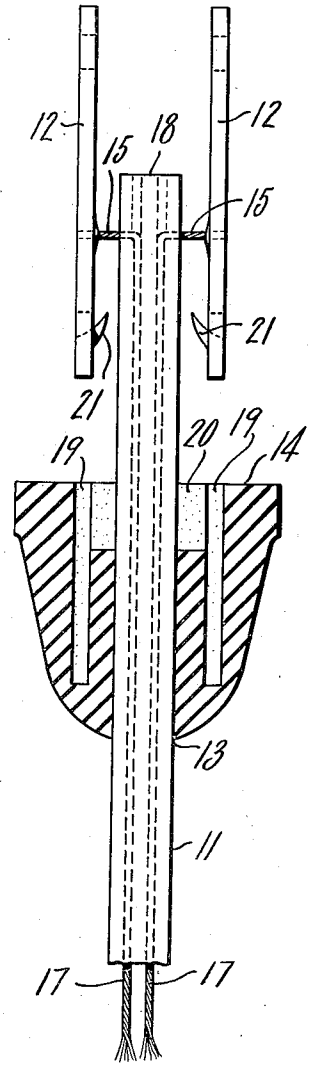


Fig. 3.

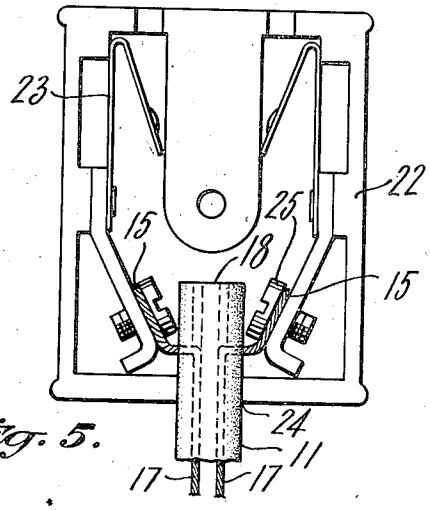


Fig. 5.

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Patented Sept. 28, 1937 2,094,046

UNITED STATES PATENT OFFICE

2,094,046

ELECTRICAL FITTING

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Application December 17, 1935, Serial No. 54,844

9 Claims. (Cl. 173—361)

This invention relates to electrical fittings, and particularly to the construction of the cable terminals and the means employed for insulating the conductor terminals bared for connection within the fittings.

This invention may be used in various types of electrical fittings for making a connection between the conductors of a lead-in cable and conducting members within the fitting. Heretofore the terminal end of the lead-in cable has been stripped of all of the insulating material around the terminals of the conductors for a distance sufficient to bare the conductors for connection to the conducting members, or binding post within the fittings, and such portions of the insulating material has been entirely removed from the cable. In such type of construction no insulating covering of the cable remained between the bare terminals of the conductors after they were connected to the conducting members of the fittings.

Under such conditions short circuits are liable to be caused by stray strands of the bare terminals crossing over from one terminal to the other. Also where soft rubber plug bodies are used the terminals may be brought in contact by the distortion of the rubber. Furthermore in plugs having the cable passage terminating with an opening in the face of the plug, the opening is not filled and this gives the plug a bad appearance.

In accordance with the present invention the foregoing disadvantages of the prior art are obviated by stripping the cable conductor terminals so that the portion of the cable sheath or covering which normally separates the conductors is not removed from the terminal end of the cable. The bare conductor terminals are bent laterally from the unremoved portion of the covering and electrically connected to the contact members. After the conductor terminals and the contact members have been assembled in the fitting, the unremoved portion of the covering projects between the laterally projecting conductor terminals and serves as an insulator for the bare terminals. The interposed projecting covering prevents stray strands of a multi-stranded conductor terminal from crossing over from one terminal to the other and causing short circuits. Where such a connection is used in a plug, the projecting portion of the covering also fills or partly fills the cable passage to the face of the plug and thereby improves the appearance of the plug.

The above advantages and other objects of this invention will be more clearly understood by referring to the following description and the accompanying drawing in which:

Figure 1 is a top plan view of an electrical plug embodying this invention;

Figure 2 is a cross-section of the plug on line 2—2 of Fig. 1;

Figure 3 is a view partly in section illustrating the method of assembling the plug parts;

Figure 4 is an elevational view of a stripped cable terminal illustrating the modified method of stripping the conductor terminals in which a portion of the insulating covering is removed from the end of the cable; and

Figure 5 is an interior view of a cube tap having one half of its shell removed showing the electrical connection between the cable terminal and the conducting members within the other half of the shell.

An embodiment of this invention is illustrated in Figs. 1 to 3 in reference to an electrical plug having a soft rubber body 10 which has been molded and vulcanized with passages formed therein for the reception of the cable 11 and contact members 12 prior to assembling these parts in the body 10. The contact members may be either of the male or female type, but as shown in this embodiment they are of the male type as indicated by the blades 12. Referring to Fig. 3, the conducting elements are assembled in the body 10 by passing the cable 11 from the rear end of the plug through the passage 13 in the plug body and out through its face 14. The cable covering may be made of rubber or of a rubber-like composition and the conductor terminals 15 may be stripped therefrom either by cutting away a portion of the covering on one side of the conductor as shown in Fig. 4 or by slitting the covering as shown at 16 in Fig. 1 and pulling the terminals through the cut or slit made in the covering, but in any event the insulating cable covering which normally separates the conductors is not removed. Another and less desirable way of laterally bringing out the terminals without removing the insulating material in which they were embedded is by forcibly pulling out laterally and downwardly the terminal ends so that they will rip through the side walls of the insulation. Still another less desirable way is to puncture the side walls of the cable at a suitable distance from its end and then withdraw through the punctures the end portions of the conductors lying between the punctures and the cable end.

As shown in Fig. 1 the insulating covering of the cable 11 is provided with longitudinal slits 16 which extend inwardly to or adjacent to the

conductors 17 and as shown in Fig. 4 some of the covering is removed to provide openings 16'. The terminals 15 of the conductors are bared by pulling them laterally through the slits 16 or openings 16' and are connected to the contact blades 12 so that the conductor-free covering 18 in Fig. 2 or 18' in Fig. 4 extends beyond and between the laterally extending bared conductor terminals 15. The blades 12 and the conductor terminals 15 so assembled are inserted respectively in the blade recesses 19 and conductor terminal recesses 20 and are retained in the body 10 by the barbs 21 on the contact blades 12.

As shown in Fig. 2 the conductor-free portion 18 of the cable covering extends between and beyond the laterally projecting conductor terminals 15 and to the end of the cable passage 13 and thereby prevents short circuits from being caused by stray strands of the conductor terminals crossing over from one terminal to the other or by the conductor terminals being forced in contact with one another by the compression of the plug body. The extension of the stripped portion 18 of the covering also fills the end of the passage 13 and gives the face of the plug a finished appearance, but the extension may be shortened if desired.

The embodiment of this invention illustrated by the cube tap, or female fitting shown in Fig. 5 is illustrative of a wide variety of electrical fittings or appliances in which a covered, preferably rubber covered cable is led through an opening in the wall of a shell and the current-carrying conductors are attached to binding posts 25. In order to illustrate the interior connections the half shell 22 containing the female contact members 23 is shown, the other complementary half being removed. Each half is provided with complementary half openings 24 for the reception of the lead-in cable 11. The terminals 15 of the conductors are bared as previously described and connected to the binding posts 25.

The several modifications of this invention have been shown and described in reference to a two conductor cable. It is obvious that the principles of this invention are applicable to one or more conductor cables, and it will be understood that changes in details as shown may be made without departing from the spirit of this invention, and it is intended to cover all of its phases within the scope of the appended claims.

Having thus described my invention what I claim and desire to protect by Letters Patent is:

1. An electrical device having a body provided with conducting members, an electrical cable having an insulating covering and spaced apart conductors therein connected to said members, said covering having openings in the end adjacent to said connections, said openings extending longitudinally from said ends for a distance at least as great as the length of the bare conductor required for making the connection with said members, said conductors being pulled through said openings and extending laterally toward said members, and said insulating covering having said openings therein and all of the conductors removed therefrom extending between and beyond said laterally projecting conductors.

2. An electrical device having a body provided with conducting members, an electrical cable having a rubber-like insulating covering and spaced apart conductors therein connected to said members, said covering having openings in the end adjacent to said connections, said openings extending longitudinally from said ends for a distance at least as great as the length of the bare conductor required for making the connection with said members, said conductors being pulled through said openings and extending laterally toward said members, and said insulating covering having said openings therein and all of the conductors removed therefrom extending between and beyond said laterally projecting conductors.

3. An electrical device having a body provided with conducting members, an electrical cable having a rubber-like insulating covering and spaced apart conductors therein connected to said members, said covering having narrow slits in the end adjacent to said connections, said slits extending longitudinally from said ends for a distance at least as great as the length of the bare conductor required for making the connection with said members, said conductors being pulled through said slits and extending laterally toward said members, and said insulating covering having said slits therein and all of the conductors removed therefrom extending between and beyond said laterally projecting conductors.

4. An electrical plug having a preformed body provided with a face and rear end, a bore extending through said body and opening into said rear end and into said face, recesses for contact members extending into said body and opening into said face, slots for cable conductor terminals opening into said face and extending between said passage and said recesses, contact members secured in said recesses, an electrical cable extending into said bore, said cable having an insulating covering and spaced apart conductors therein connected to said contact members, said covering having openings in the end adjacent to said contact members, said openings in said covering extending longitudinally to the depth of said conductors and rearwardly from the end of said cable, said conductors being pulled through said openings and extending laterally from said cable through said slots to said contact members, and said insulating covering having said openings therein and all of the conductors removed therefrom extending between and beyond said laterally projecting conductors.

5. An electrical plug comprising a soft rubber body having a passage of substantially uniform cross-section extending therethrough and contact members secured in said body and extending through its face, a cable extending into said passage, said cable having an insulating cover containing electrical conductors, said cover having openings extending longitudinally from the end thereof in said passage, the ends of said conductors being removed from said cover through said openings and connected to said members below the face of said body, a conductor-free portion of said cover extending into said passage and between the removed ends of said conductors and substantially to the end of said passage.

6. An electrical plug comprising a soft rubber body having an axial passage extending therethrough and contact blades secured in said body laterally of said passage and extending through the face of the plug, a cable having an insulating cover containing conductors extending into said passage, said cable cover having its end slitted and the bare ends of the conductors extending laterally through said slits and connected to said blades below the face of said body, and said slitted portion of said cover extending into said passage between the bare ends of said conductors and fill-

ing a sufficient portion of said passage to prevent contact between said bare ends of said conductors.

7. An electrical plug having a preformed body provided with a face and rear end, a bore extending through said body and opening into said rear end and into said face, recesses for contact members extending into said body and opening into said face, slots for cable conductor terminals opening into said face and extending between said passage and said recesses, contact members secured in said recesses, an electrical cable extending into said bore, said cable having an insulating covering and spaced apart conductors therein connected to said contact members, said covering having openings in the end adjacent to said contact members, said openings in said covering extending longitudinally to the depth of said conductors and rearwardly from the end of said cable, said conductors being pulled through said openings and extending laterally from said cable through said slots to said contact members, and said insulating covering having said openings therein and all of the conductors removed therefrom extending between and beyond said laterally projecting conductors and to the end of said bore terminating in the face of said plug.

8. An electrical plug having a preformed body provided with a face and rear end, a bore extending through said body and opening into said rear end and into said face, recesses for contact members extending into said body and opening into said face, slots for cable conductor terminals opening into said face and extending between said passage and said recesses, contact members secured in said recesses, an electrical cable extending into said bore, said cable having a rubber composition insulating covering and spaced apart conductors therein connected to said contact members, said covering having openings in the end adjacent to said contact members, said openings in said covering extending longitudinally to the depth of said conductors and rearwardly from the end of said cable, said conductors being pulled through said openings and extending laterally from said cable through said slots to said contact members, and said insulating covering having said openings therein and all of the conductors removed therefrom extending between and beyond said laterally projecting conductors and to the end of said bore terminating in the face of said plug.

9. An electrical plug having a preformed soft rubber body provided with a flat face and rear end, a bore extending through said body and opening into said rear end and into said face, recesses for contact members extending into said body and opening into said face, slots for cable conductor terminals opening into said face and extending between said passage and said recesses, contact members secured in said recesses, an electrical cable extending into said bore, said cable having a rubber composition insulating covering and spaced apart conductors therein connected to said contact members, said covering having narrow slits in the end adjacent to said contact members, said slits in said covering extending longitudinally to the depth of said conductors and rearwardly from the end of said cable, said conductors being pulled through said slits and extending laterally from said cable through said slots to said contact members, and said insulating covering having said slits therein and all of the conductors removed therefrom extending between and beyond said laterally projecting conductors and filling the end of said bore to the face of said plug.

CARLETON W. SHORT.