April 5, 1949. I. F. MATTHYSSE 2,466,607

INSULATED WIRE TERMINAL

Filed Sept. 8, 1944

FIG. 1.

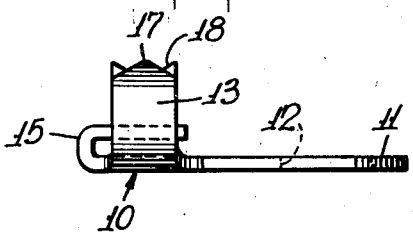


FIG. 2.

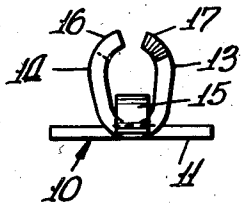


FIG. 3.

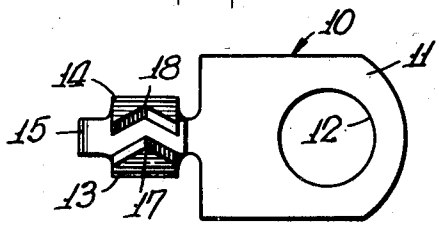


FIG. 4.

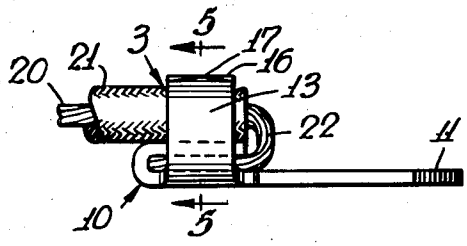


FIG. 5.

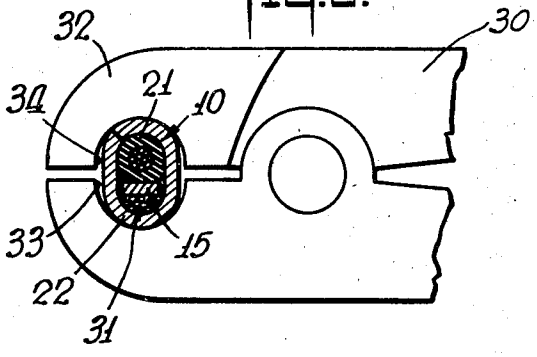


FIG. 6.

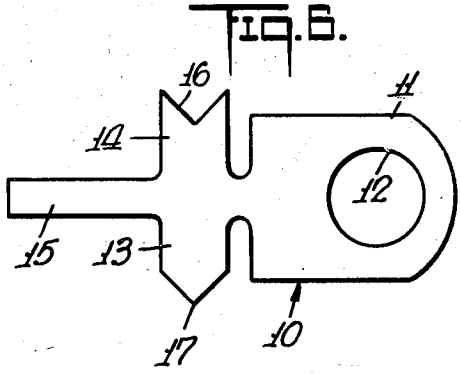
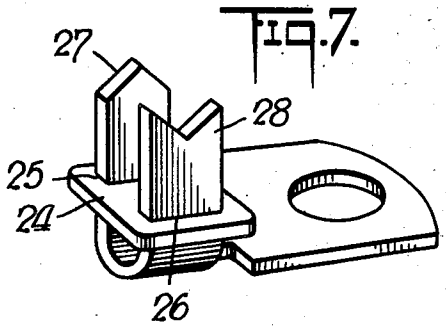


FIG. 7.



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UNITED STATES PATENT OFFICE

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INSULATED WIRE TERMINAL

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Application September 8, 1944, Serial No. 553,234

3 Claims. (Cl. 173—269)

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My invention relates to wire terminals and more particularly to a terminal designed to accommodate an insulated wire.

The primary object of my invention is to provide a terminal for an insulated wire wherein the bared end of the wire is doubled upon itself and the terminal is secured both to the insulation and the bared portions of the wire, thus obtaining increased pull-out values.

Other objects are to provide a terminal connection for a wire in which wire breakage adjacent the point of gripping is reduced to a minimum; to provide a connection for an insulated wire wherein a portion of the tensile forces that may be applied will be carried by the insulation at the point of connection; to provide a terminal connection that is designed to produce a snub action for resisting tensile forces applied to the conductors; to provide a terminal connection for an insulated wire that is shorter than the combined length of contact of wire and insulation; to provide a connection that causes a uniform pressure to be applied to the conductor contacting surfaces; to provide a connector wherein uninsulated wire may be secured, when necessary; to provide all the foregoing objects in a connector which may be made of sheet metal, and in one piece, solderless, and preferably secured by a crimping tool.

I accomplish these and other objects and obtain my new results as will be apparent from the device described in the following specification, particularly pointed out in the claims, and illustrated in the accompanying drawing in which:

Fig. 1 is a side view of my connector before attaching a conductor thereto.

Fig. 2 is an end view thereof.

Fig. 3 is a top view of the same.

Fig. 4 is a side view with conductor secured therein.

Fig. 5 is a transverse section through 5—5 of Fig. 4, with crimping pliers in position.

Fig. 6 is a flat development of my connector.

Fig. 7 is a perspective view of my connector with an apertured plate used as a separator.

Referring more in detail to the drawing, reference numeral 10 designates my terminal, provided at one end thereof with a terminal lug section 11 having a circular aperture 12. Two wing sections 13 and 14 extend laterally from the remaining end of the terminal, with a third section 15 extending longitudinally from the rear of the connector.

The two wing sections 13 and 14 are bent over to provide a U-shaped channel and the rear section 15 is bent and the free end positioned between the two wings of the channel to form a separator. The ends of the wings may be V-shaped, as at 16 and 17 to interlock when the U-shaped channel is compressed to the conductor 20. Such a conductor is illustrated in Fig. 4, provided with insulation 21, and bared end 22.

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In assembling the conductor to the connector, the bared end 22 of the wire is bent to form a U, and with the insulated portion 21 positioned above the separator 15, and the bared end 22 positioned underneath the separator. Thereafter, the ends 16 and 17 of the connector body are rounded and compressed, preferably by means of a tool 30, shown in Fig. 5, wherein the jaws 31 and 32 are provided with transverse grooves 33 and 34 into which the connector body is placed. The wire and a portion of the insulation is compressed sufficiently to form a permanent connection.

The wire-end 22, being in direct contact with the connector body 10, establishes the electrical connection. The contact is maintained under pressure of the compressed joint with the compressed insulation insuring a uniform pressure taking up any relaxation that may occur in the connection. Any direct tension on the conductor 20 is resisted by the insulation which is directly secured by the compressed connector body. The separator is of the "floating" type, that is, it is capable of movement independently of the side walls of the body and of accommodating itself to variations in conductor diameters without distortion of the side walls. The pressure is constantly communicated from one conductor section to the other, and a constant pressure between the conductors is therefore maintained.

The resulting advantages of such a terminal connection are: the mechanically gripped wire is strengthened by the mechanically gripped insulation, thus avoiding breakage of the wire; repeated flexing of the insulated wire leading to the connection does not affect the wire at the gripped portion; the overall length of the connector is less than a straight line type of connection, thus the smaller connector is more suitable for installation in close quarters, and less likely to cause a short circuit between adjacent terminals should one or more rotate on their mounting screws; the cushioning effect of the insulation provides a connection less likely to be severed or broken; the wire can be easily inspected to determine its condition; a uniform pressure is maintained in the connection; a snub type of

connection insures a stronger joint; and the connector itself may be made of sheet metal, in one piece which facilitates its manufacture, and assembly to the conductor when the crimping tool is applied thereto.

The separator may be made of a separate piece of metal 24, and for instance, provided with separate slots 25 and 26 for insertion of the two legs 27 and 28 of the U-shaped section and function exactly as does the separator in the one piece connector, as is shown in Fig. 7. Moreover the terminal can be used to grip an uninsulated wire in the same manner although the cushioning effect of the rubber insulation will not be present.

I have thus described my invention, but I desire it understood that it is not confined to the particular forms or uses shown and described, the same being merely illustrative, and that the invention may be carried out in other ways without departing from the spirit of my invention, and, therefore, I claim broadly the right to employ all equivalent instrumentalities coming within the scope of the appended claims, and by means of which, objects of my invention are attained and new results accomplished, as it is obvious that the particular embodiments herein shown and described are only some of the many that can be employed to attain these objects and accomplish these results.

I claim:

1. A connector for connecting an insulated electrical conductor having an exposed end to a supporting fixture, said connector having an electrically conducting tongue section extending therefrom for supporting the connector and transmitting electrical current therethrough, to the supporting fixture; comprising a body section having a plurality of side wall portions, and a separator positioned between the side walls and

having a length not materially less than the width of the side walls and movable independently thereof, so as to provide a plurality of longitudinally extending compartments, one of said compartments having an entrance opening for insertion of the insulated conductor therein, the side walls having a length sufficient to form a gripping closure for the inserted insulated conductor in said one compartment, another of said compartments having an entrance opening for insertion of the bared end of the conductor therein, said separator having a free edge extending transversely from one side wall to another on the side of the separator opposite the entrance opening for the insulated conductor, and around which the bared end of the conductor is bent.

2. The connector of claim 1 wherein the body section has a bottom portion and the separator is integrally connected to the bottom portion on the same side of the connector as is the entrance opening for the insulated conductor.

3. The connector of claim 1, wherein the separator comprises a plate section having a plurality of openings for the side wall portions.

IRVING FREDERICK MATTHYSSE.

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