Dec. 5, 1950 J. ROGOFF 2,533,200

PARTIALLY INSULATED ELECTRICAL TERMINAL

Filed Sept. 15, 1945

Fig. 1.

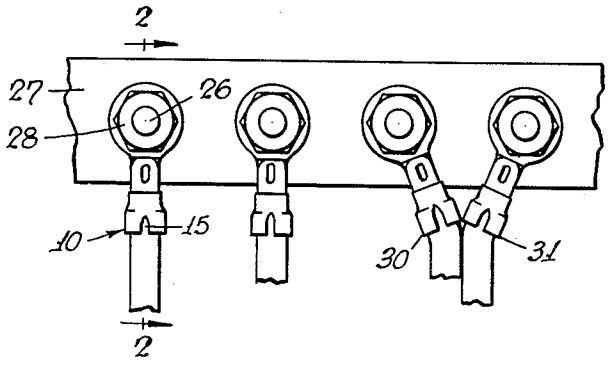


Fig. 2.

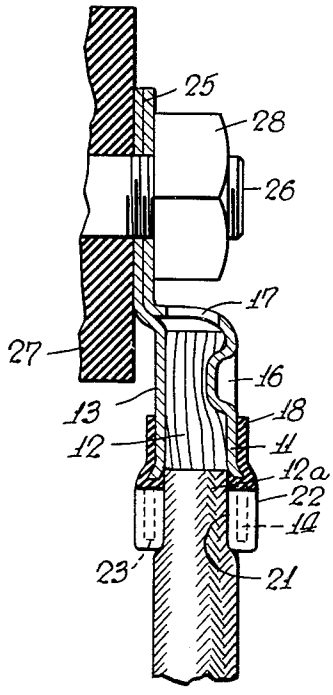


Fig. 3.

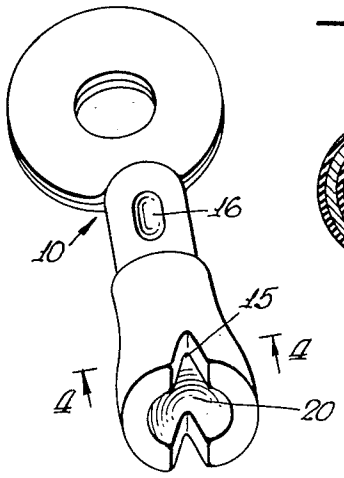
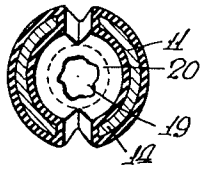


Fig. 4.



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PARTIALLY INSULATED ELECTRICAL TERMINAL

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2 Claims. (Cl. 173—269)

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My invention relates to electric connectors which are mounted adjacent each other.

It is common practice in electrical wiring to mount wire terminals adjacent to each other on terminal strips. Such terminal strips are usually made of insulating material provided with one or more rows of bolts. In some cases insulating barriers are provided between the bolts; in other cases the strips are flat and without insulating barriers. In both cases, the terminals which are mounted on the terminal strips usually extend beyond the barriers. Such terminals are commonly installed with their barrels parallel and although they may be tightly bolted in place, shock or vibration may cause the terminals to rotate around the bolt as an axis, until the ends of the barrels touch, thereby causing an electrical short circuit.

Terminals of this character are either indented or soldered onto wire ends and then short lengths of insulating tubing are slipped over the barrels of the terminals to prevent short circuiting In order to get the insulating tubing on to the terminal barrels, it is first necessary to slip the tubing over the wire ends before the latter are installed on the terminals and then, after installation, to push the tubing over the terminal barrels. When large numbers of terminals are installed, this process is relatively slow and costly. In addition, the tubing may be a loose fit on the terminal barrels, and consequently it may slide off after installation, thereby permitting terminals to become uninsulated.

One object therefore of my invention is to insulate that portion of the terminal which is likely to touch an adjacent terminal.

Another object of my invention is to provide an insulated shroud on the terminal which will provide an insulated connector overlap on the insulation of the wire and at the same time provide an insulation grip on the insulation of the wire.

Still another object of my invention is to provide a terminal which can be indented or soldered onto a wire end without affecting or damaging the insulated portion.

A further object of my invention is to provide a terminal with an insulated shroud that can be compressed onto the insulation of the wire without causing the insulation on the shroud to be broken through

A still further object is to provide a connector with a form of insulation that may be applied rapidly and in bulk.

I accomplish these and other objects and obtain my new results as will be apparent from the device

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described in the following specification, particularly pointed out in the claims, and illustrated in the accompanying drawing in which:

Fig. 1 is a plan view of a terminal strip to which connectors have been mounted employing my invention.

Fig. 2 is a longitudinally sectioned view taken in the plane 2—2, of Fig. 1.

Fig. 3 is a perspective view of a connector employing my invention.

Fig. 4 is a transverse sectional view taken through the plane 4—4 of Fig. 3.

As is indicated in the drawing, I have provided the connector 10 with an end portion 11 into which an exposed wire end 12 is inserted until positioned in the barrel 13 thereof.

The connector barrel may terminate in a shroud 14 which is split as at 15, to accommodate the insulated wire 12a.

The barrel 13 may be indented as at 16 to the wire end 12 by standard indenting tools, or if the barrel has an open back 17, the wire end can be soldered into the barrel by introducing the solder into the open back.

Insulation 18 is provided on the end of the barrel adjacent the opening for the insertion of the wire, for the purpose hereinafter explained. Where a shroud is provided, the insulation covers the shroud. That portion of the barrel 13 which is subsequently used for indenting the wire end is not insulated.

The insulation comprises a tough plastic, rubber, or synthetic rubber film. Since the barrel portion is bare, the insulation can be formed during manufacture, by dipping the connector end in the liquid insulation up to the desired limit on the barrel. Where a shroud is provided, it will be entirely covered in the dipping process extending partially into the opening of the shroud. When the connector has been removed and the insulation has solidified, the opening 19 to the barrel may be covered by a film of insulation material. The opening can be reestablished by rupturing the film or membrane with a tool as is shown in Fig. 3 and Fig. 4.

If the shroud opening is sufficiently large, the membrane 20 will not form, and just the inner and outer coats of insulation 21 and 22 will adhere on the inner and outer surface of the connector body including the end 23.

The connector 10 is illustrated in Fig. 2 as a terminal having lug portion 25 through which a bolt 26 extends from the terminal strip 27 made of insulating material, and locked thereto by nut 28.

The two adjacent terminals 30 and 31, illustrated in Fig. 1, indicate how the terminal may rotate upon their respective bolts, if loosened, to permit the ends of the connector bodies to touch and short circuit the connections. By providing the ends of the terminals with insulation, as aforesaid, such short circuits can be avoided. Moreover, since the insulated shroud overlaps the insulation of the wire, there is no exposed wire to be accidentally touched by an adjacent connection.

The end insulation coverings may be separately made and bonded to the shrouded end by suitable adhesives, or the insulation may be sprayed on. These methods are, obviously, not as satisfactory, especially in small connectors wherein the dipping process can be carried out quickly, cheaply, and in bulk.

In some connectors, various materials may be stored within the barrel for various purposes, such as utilizing zinc-petrolatum, to establish a better connection where stranded aluminum wire is used. In such case, the film 20, which may form in the dipping process, can be utilized to retain the material in the barrel until ready for use.

Thus by the simple expedient of covering the ends of connectors with insulation, leaving the metal barrels exposed for indenting or soldering purposes, I am able to provide a connection which has the advantages of a completely prepared insulated connector with uninsulated portions where not required, thus reducing the cost, and insuring a safe and reliable connection with no danger of a short circuit.

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. An electrical connector comprising a hollow soft metal body suitable for indentation with a free end having an opening for the insertion of the bared end of an insulated conductor, a remaining end of the metal body provided with an attaching means for mounting the metal body to a terminal, said attaching means having an axis of mounting substantially normal to the axis of the metal body, whereby the metal body may be attached in any position about the axis of the attaching means, said metal body being covered only at its free end with insulating material secured thereto, the bared end of the conductor adapted to be indented to the uncovered portion of the metal body.

2. An electrical connection comprising a connector having a hollow body made of malleable metal provided with a free end having an opening, an insulated conductor having a bared end inserted therein, a remaining end of said hollow body having means for attaching the connector to a supported terminal, said metal body being covered only at the free end thereof with insulating material, the bared end of the conductor being indented to the uncovered portion of the metal body.

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