

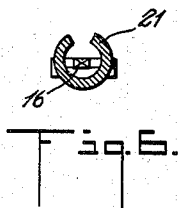
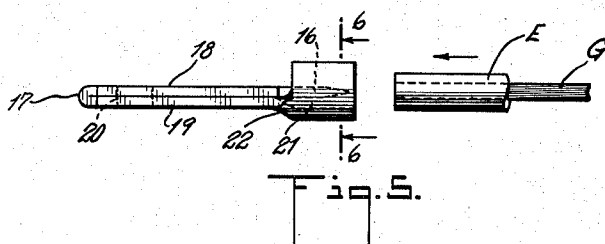
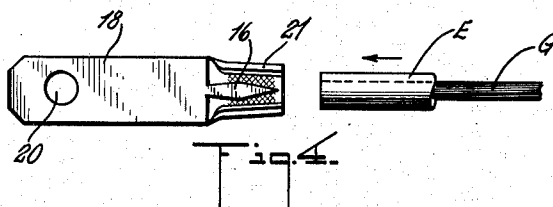
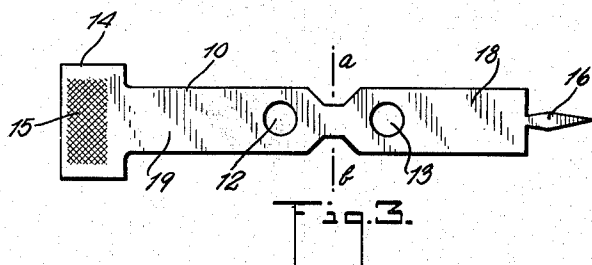
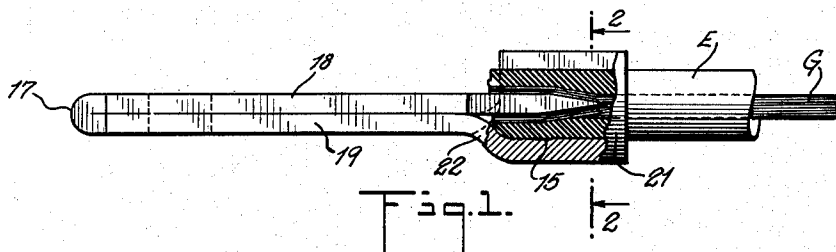
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TINSEL WIRE CONNECTOR

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TINSEL WIRE CONNECTOR

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2 Claims. (Cl. 173-269)

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The invention relates to a terminal for an electric cable, cord or conductor and the invention specifically relates to an electric terminal connector, lug or clip for use with cables, cord plugs, or similar electric conductors having a conductor of the multiple strand wire type encased in an insulation of any one of the usual types.

In one form of such cables or conductors now in general use, commonly called tinsel wire conductors, the core is made up of a bundle of fine wires enclosed in an insulation which is made up of cotton or silk threads wound spirally on the wire core. This form of insulation does not permit of the usual practice of stripping or cutting back an end of the insulation so as to provide an exposed end of the conductor for connection with the terminal. In this art it has been suggested to provide terminals with inturned prongs which bite through the insulation laterally to make a more or less haphazard contact through the sides of the wire core conductor. An obvious objection to this transverse punching procedure is that the prong might not contact the conductor at all, and even if it did the contacting area between the pointed end of the prong and the side of the conductor is limited to the inevitably small area which makes up the extreme pointed end of the prong. In such cases the contacting area between the pointed end or sides of the prongs and the wires are too small and too casual.

The primary object of the invention is to provide a simple, one-piece form of terminal, resembling conventional forms of such terminals in that it may be formed as a simple stamping operation and which will positively insure an extensive area of contact between the terminal and the wire conductor when installed in position on the cable by the simple act of pushing the cable and terminal together endwise.

Broadly, this aspect of the disclosure is attained by providing the terminal with a pin-like prong of any desired length arranged to enter into and to extend lengthwise of and embedded in the bundle of wires forming the conductor or core to extend in the direction lengthwise of the core rather than at right angles to the length of the core as in the prior art.

In this way there is avoided any necessity of stripping back or in any other way modifying the insulation and the insulation being thus retained intact insures the retention of the entire cable insulation up to the exposed prong or blade of the terminal.

The intrusion of the prong into the bundle of wires of course tends to spread the bundle and

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this might possibly tend to rupture the insulation especially if it happened to be quite thin or should there be any bending back and forth between the cable and terminal while in use. In order to avoid this possibility the present disclosure features a ferrule or clip which will perform the dual function of restraining any outward distortion of the insulation in the part thereof which contains the connecting prong and at the same time to insure a positive compression of the bundle of wires about the prong and also to protect and armour the end of the insulation and thus to defeat the possibility of its ravelling.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawings and in part will be more fully set forth in the following particular description of one form of device embodying the invention, and the invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

In the accompanying drawings:

Fig. 1 is a view partly in side elevation and partly in vertical section of a terminal, very much enlarged, forming a preferred embodiment of the invention and showing one of a pair of blades of a male connecting plug for insertion into an electric outlet receptacle;

Fig. 2 is a transverse sectional view taken on the line 2-2 of Fig. 1;

Fig. 3 is a plan view of the stamped blank from which the terminals of the other views are formed;

Fig. 4 is a composite view in plan of the terminal shown in Fig. 1 with an end of the cable located in position to be inserted therein when moved in the direction of the arrow;

Fig. 5 is a view in side elevation of the showing of Fig. 4; and

Fig. 6 is a transverse sectional view taken on the line 6-6 of Fig. 5 looking in the direction indicated by the arrows.

In the drawings and referring first to Fig. 1, the terminal herein featured is intended to conduct current to or from a cable of the type which has a spirally wound insulation E encasing a bundle of fine wires at its core forming a conductor C.

The terminal is formed from a blank 10 as shown in Fig. 3 and which comprises a strip of thin bendable sheet metal punched to shape as is usual with similar forms of terminal blanks. The strip 10 is recessed at opposite sides adjacent its mid-length to form a portion reduced in width and adapted to be bent back sharply upon itself

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along the transverse axis of bend *a-b* mid-length of this reduced portion. The blank strip is provided in spaced relation to the axis *a-b* and on opposite sides thereof with a pair of apertures 12 and 13. One end of the strip is of increased width to form a wide, rectangular, clip or tube forming head 14. This head is provided on the side which is to become the inner side of the finished terminal with serrations 15 or is otherwise provided with a roughened facing.

The end of the strip opposite to the head is provided with a long, sharp pointed prong 16 extending axially of the strip and dimensioned in width so as to be intruded axially into the bundle of wires forming the conductor G. Preferably the prong is of the wide-shape or reverse tapered form shown to obtain a greater resistance to the conductor pulling off of the prong than would be the case if the prong was of uniform width in rear of its pointed end.

The flat strip blank 10 is bent back upon itself across the axis *a-b* to form a smooth turn 17 as viewed in Fig. 5 and a bevelled end nose in plan as shown in Fig. 4. The bent portions are forced firmly one on to the other. When so bent there is formed a tongue or blade of double thickness of material which tends to give the necessary rigidity to the blade portion of the terminal, even when formed of thin stock material. The blade portion is thus formed with a long flat upper length 18, with the prong 16 in the plane thereof and a longer lower length 19. The blank is so folded that the apertures 12 and 13 are brought into registry to form the usual holding hole 20 found in such devices.

The parts are so proportioned that when so bent the head 14 underlaps prong 16 and opposite sides of the head are rolled inwardly towards each other by the action of a suitable die press to form the U-shaped or split sleeve 21. The sleeve is formed concentric with the prong 16 and its inner face is in radially spaced relation to the prong as shown in Fig. 6 to receive the entire end of the cable.

It is suggested that the inner end of the bore of the sleeve be of slightly greater diameter than the outer end as shown in Fig. 4 to compensate for the greater width of the prong at its root end than at its pointed end. In order to bring the prong into the axis of the conductor the split sleeve is offset from the plane of the length 19 a distance equal to the radial thickness of the insulation E and this forms a Z-bend 22 at the point where the sleeve 21 joins the lower length 19 of the tongue forming portion of the terminal.

It is understood that the terminals are supplied to the operator as shown to the left of Figs. 4 and 5 and that size terminal is selected by the operator which is designed for use with the particular size of cable for which it is intended. The operator prepares the cable by cutting off the end squarely as shown to the right of Figs. 4 and 5. In assembling the cable end so prepared and the terminal they are related in axial alignment as shown in Figs. 4 and 5 and the squared off end of the cable is simply inserted axially into the open end of the split sleeve as indicated by the arrows. As the prong 16 moves into the bundle

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of wires it embeds itself therein incidentally tending to spread the wires about the same as shown in Fig. 1. This tendency to spread is resisted by the encircling insulation with the result that there is a crowding of the wires about the entire length of the prong thus insuring an extensive area of interengagement between prong and wires. The cable is advanced until stopped by the shoulders formed at the base of the prong.

The frictional engagement provided is such that under usual conditions the cable is held to the terminal but if not it is within the scope of the disclosure to compress the split sleeve after the cable has been inserted therein or to crimp or indent the sleeve into a more secure binding engagement with the insulation.

Should it be desired to remove the terminal from the cable it is simply necessary to forcibly pull them apart and which leaves them and particularly the terminal available for subsequent use.

I claim:

1. An article of manufacture constituting an electrical terminal for attachment to an insulated cable having a conductor core, said terminal formed of one piece of sheet metal bent back upon itself to form two superposed sections, the free end of one of said sections terminating in a split sleeve of cylindrical form dimensioned to receive the cable with a sliding fit when inserted therein, and the free end of the other section terminating in a prong, the prong being centered in the sleeve and extending along the axis of the sleeve, said terminal being so preformed to shape and ready to receive the cable when inserted into the split sleeve and said prong located to penetrate into the conductor core when the cable is inserted into the sleeve.

2. A preformed article of manufacture constituting an electrical terminal for attachment to an insulated cable having a conductor core, said terminal formed of one piece of sheet metal bent back upon itself to form two superposed sections in firm flatwise abutting relation to form a tongue of a double thickness of material at one end of the terminal, the free end of one section terminating in a sleeve open at opposite ends, the free end of the other section terminating in a prong extending axially into the sleeve, said sleeve being axially offset from the tongue and providing at the point where the sleeve joins with the tongue a Z-bend to form a stop for limiting the insertion of the cable into the sleeve end of the prong into the conductor core.

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