Tool for Connecting Insulated Wire with Attachment Plug Blades

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Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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TOOL FOR CONNECTING INSULATED WIRES WITH ATTACHMENT PLUG BLADES

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1 Claim. (Cl. 81—5.1)

The invention here disclosed relates to the connection of wires with the contact blades of attachment plugs or other electrical devices and is a continuation-in-part of co-pending application for Patent Ser. No. 394,069 filed May 19, 1941 and issued Aug. 4, 1942, as Patent 2,292,049.

Objects of the invention are to provide simple and practical mechanism for connecting insulated wires in interlocked strain relief engagement with contact blades or the like, and to accomplish such connection without injuring the insulation of the wires, or harming the wires or contacts.

Further, it is a purpose of the invention, to provide simple means which will position and locate the wires and contacts in the relation in which they are to be associated and which can be operated to quickly and easily assemble such parts.

Other desirable objects and the novel features of the invention by which the purposes of the invention are attained are hereinafter set forth, illustrated in the accompanying drawing and broadly claimed.

The contact blades, as most clearly shown in Fig. 1, have keyhole type notches in the edges of the same, consisting of narrow entrance slots 13, opening into rounded enlargements 14.

The wires 15, which are to be assembled with the blades have rubber or other resilient insulation 16. There is a special relation between such wire and the notch in the blade, in that the enlargement at the inner end of the notch is enough smaller than the insulating covering of the wire to compressibly grip and hold the latter and the entrance portion 13, is narrow enough to reduce the insulation, in passage to the holding opening without injury and to reliably retain the wire in the latter position.

In use, the end of the blade is inserted in the lower jaw with the notch uppermost and the wire located transversely across the entrance to the notch, substantially as shown in Figs. 1 and 2. With the parts so positioned, the jaws are closed and in this closing movement, the rounded shallow transverse groove 12, in the upper jaw engages over the upper side of the insulation, at opposite sides of the blade and forces the wire downward in the notch to the final seated position indicated in Figs. 3 and 4.

In the movement down through the narrow entrance portion 13, the insulation is squeezed to a considerable extent, but has space to flow during such compression, in the upper portion of the longitudinal groove 14, in the upper jaw. In the fully seated relation, the insulation expands slightly in the enlarged portion 14, of the notch, but as the diameter of this portion is appreciably smaller than the normal diameter of the insulating cover, the insulation and hence the wire within it will be firmly gripped and held in the notch.

In the final, fully seated position, Figs. 3 and 4, the wire is firmly and positively held by its insulating coating, in the notch in the blade and hence a good firm strain relief connection is provided between the wire and blade. The electrical connection between the wire and blade can be made by removing part of the insulation from the wire, to enable the bare wire to contact the blade at one or more points.

The upper jaw 8, has a corresponding contact blade receiving groove or seat 11.

The upper jaw has a shallow rounded groove 12, extending transversely across the face of the same, intercepting the deeper longitudinally extending groove 11.
A fairly deep groove 10, is desirable, to hold the blade upright in the lower jaw and if with such a deep groove there is a tendency of the insulation to objectionably engage the face of the lower jaw at opposite sides of the blade, said lower jaw may be slightly relieved by shallow rounded cross grooves, such as indicated at 11.

The companion longitudinal grooves or seats 10, 11, in the ends of the jaws are preferably of a length and depth to fully position the blade both to locate the wire receiving notch in line with the wire engaging cross groove in the upper jaw and to operate as stops, Fig. 3, engaging opposite edges of the blade to limit the wire seating movement of the blades, so they can not possibly injure the insulation of the wire.

While shown as a hand tool, it will be evident that the novel features of the invention may be incorporated in a press or other form of machine tool.

In lieu of, or in addition to utilizing the inserted blade as a stop to limit the closing movement of the jaws, there may be provided an adjustable stop, such as indicated at 18, threaded on a screw stud 18, in position to limit the closing movement of the handles and hence the closing action of the jaws.

What is claimed is:

A tool for forcing an insulated wire transverse-ly in through a keyhole notch in the edge of an attachment plug contact blade and comprising companion jaws having narrow, deep, substantially parallel-sided longitudinal registering grooves in the opposed faces of the same, opening outward through the ends of the jaws and extending inward a distance sufficient to locate a contact blade seated therein with the keyhole notch in said blade disposed a predetermined distance inward from the ends of said jaws and one of said jaws having a shallow rounded groove extending transversely entirely across that face of the same which is opposed to the other jaw, at said predetermined distance inward where the keyhole notch in the blade will be so located and said shallow transverse groove crossing the narrow longitudinal notch in said jaw, open at both ends to receive an insulated wire which has been located over the entrance to said transverse notch in the blade and thereby arranged to press on the insulated wire at opposite sides of a blade located and supported on edge in the narrow longitudinal groove in the other jaw and to force said insulated wire down into seated position in said keyhole notch as said jaws come together over said inserted blade and said thus located wire.

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