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TWEezer-LIKE TOOL FOR LONGITUDINALLY SLITTING THE WEB
CONNECTING A JOINED CONDUCTOR-PAIR
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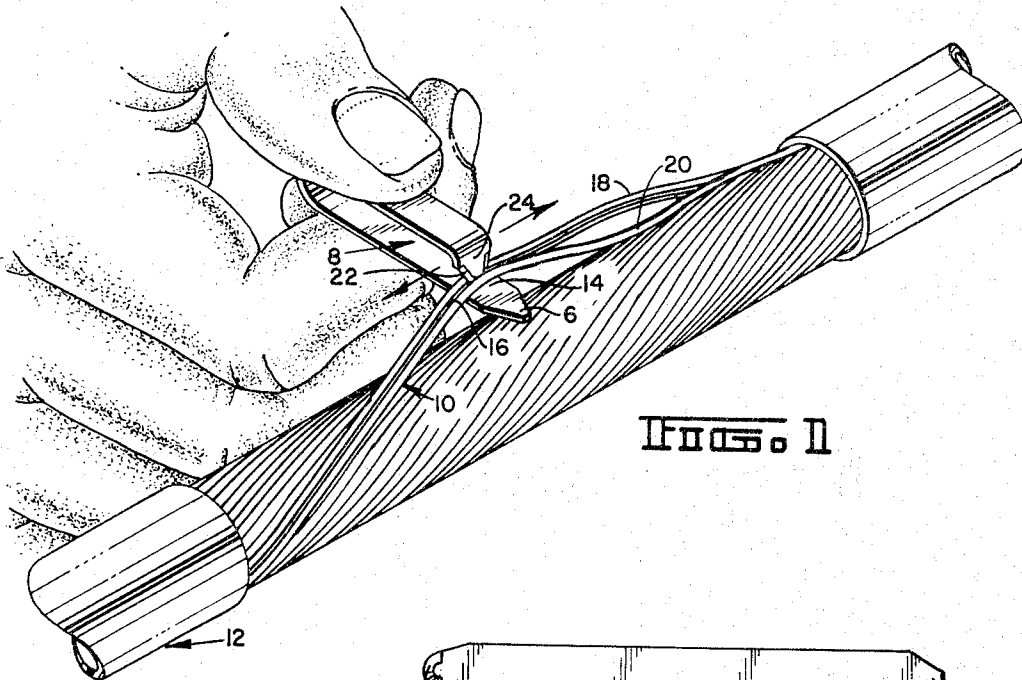


FIG. 1

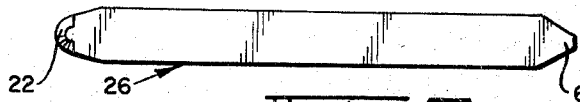


FIG. 2

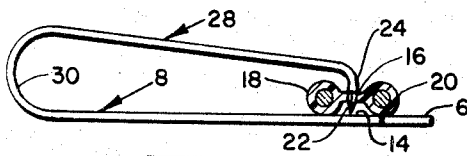


FIG. 4

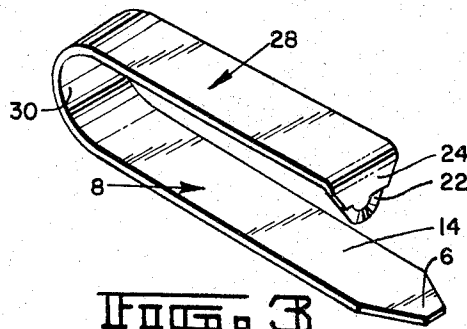


FIG. 3

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TWEezer-LIKE TOOL FOR LONGITUDINALLY SLITTING THE WEB CONNECTING A JOINED CONDUCTOR-PAIR

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ABSTRACT OF THE DISCLOSURE

Disclosed herein is a tweezer-like tool for slitting the web connecting a joined conductor pair. The tool may be integrally stamped from a unitary strip of material and includes a knife edge disposed transverse to the tool axis, an anvil opposite the knife-edge and a tapered end adjacent the anvil; the disposition of these members enables the operator with one hand to readily isolate a single conductor-pair from a multiple pair cable and separate the pair to facilitate the making of a tap-in connection.

This invention relates to a slitting tool for separating pairs of insulated electrical conductors connected by a web of insulation. More particularly, it relates to a tool useful in the isolation and separation of joined conductors in a communication cable for a tap-in connection.

The modern communication cable comprises at least a single pair, and more commonly a plurality of pairs of insulated electrical conductors bundled together and enclosed in a protective sheath or sheaths. In order to reduce cross-talk resulting from induction between two or more pairs of conductors running parallel to each other in such a cable, the conductors are twisted about each other through 360 degrees over a distance of from about 6 to 8 inches or less to produce what is commonly known in the art as a lay. This twisting has given rise to certain problems due to the impossibility of precisely twisting a pair of conductors about each other to form helixes of identical length, and also due to the occurrence of "draw-down" or reduction in diameter of the conductors due to tension produced during the twisting operation. These problems, which are more fully discussed in U.S. Patent No. 3,102,160, have now been minimized by the use of pairs of insulated electrical conductors which are connected by a web of insulation, and which are herein designated as conductor-pairs.

The use of conductor-pairs in communication cable, while extremely desirable and advantageous, pose a problem upon installation of the communication cable in the field. When it is desired to form a tap-in connection to such a cable, the web connecting the insulated conductors of a conductor-pair must be slit so that the conductors can be separated to form a tap-in connection to electrical apparatus, terminal connectors or to a tap-in line consisting of another conductor-pair or a separate lead-in wires. However, since a tap-in connection must be made to a conductor-pair which is twisted with numerous other conductor-pairs in communication cable, it becomes difficult to isolate the desired conductor-pair from the main body of the cable and support it in a proper position for slitting. In addition, even if the conductor-pair is properly isolated from the cable, its rather small size makes precise slitting of the web difficult.

It can easily be seen that the use of a knife or other normal cutting tool would be generally unsatisfactory as applied to forming tap-in connections to a communication cable containing conductor-pairs. A separate tool would have to be used to isolate the desired conductor-

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pair from the cable and support it properly for slitting with the knife in order to prevent damage to adjacent conductor-pairs. This would require the use of both the workman's hands and would not permit manipulation of the cable as needed.

Moreover, the workman installing communication equipment is often forced to work in cramped quarters or precarious positions in which both hands cannot be used to operate tools and in which the use of a knife or other such cutting tool may be awkward.

Accordingly, a principal object of the present invention is to provide a slitting tool which can isolate a conductor-pair from an assembled communication cable.

Another object of the invention is to provide a slitting tool of the above character which will support a conductor-pair on an anvil portion of the tool to facilitate slitting.

A further object of the invention is to provide a slitting tool of the above character which is small, lightweight and easily manipulated.

Another object of the invention is to provide a slitting tool of the above character which can be readily and inexpensively formed from a unitary strip of material.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises an article of manufacture possessing the features, properties, and the relation of elements which will be exemplified in the article hereinafter described, and the scope of the invention will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawing in which:

FIGURE 1 is a perspective view showing the slitting tool of the present invention being used to isolate and separate a conductor-pair in a communication cable.

FIGURE 2 shows the slitting tool as stamped from a unitary strip of metal, and prior to being formed into final shape.

FIGURE 3 is a perspective view of the slitting tool of the present invention.

FIGURE 4 is a side elevation view of the slitting tool with the cutter piercing the web of a conductor-pair supported on the anvil portion thereof.

Similar reference characters refer to similar parts throughout the several views of the drawing.

In general, the slitting tool of the present invention is a tweezer-like device used for separating joined pairs of electrical conductors in a communication cable in order that a tap-in connection can be made to the cable. With reference to FIGURE 1 of the accompanying drawing, the tapered end 6 of a first leg 8 of the slitting tool is inserted under a conductor-pair 10 in a communication cable 12, in which a portion of the sheath has been removed in order to make a tap-in connection. The conductor-pair 10 is thus isolated from the remainder of the cable. By then lifting up the slitting tool, the conductor-pair 10 can be held apart from the main body of the communication cable 12 on the anvil portion 14 of the tool, thereby facilitating the slitting of the web 16 joining the insulated conductors 18 and 20 of the conductor-pair 10. When the tool is squeezed between the thumb and forefinger of the operator, the knife-edge 22 of the cutter 24 is forced through the web 16 and into contact with the anvil portion 14. By then reciprocating the tool in the direction of the arrows in FIGURE 1, the web 16 can be slit as desired and the insulated conductors 18 and 20 separated so that a tap-in connection to the communication cable 12 can be readily made.

More particularly and with reference to FIGURE 2, the slitting tool of the present invention is formed from a

unitary strip 26 of material, preferably metal, although plastic or other materials may be used. One end of the strip is stamped or otherwise formed into a sharp knife-edge 22 which can be straight as shown or serrated, and which can penetrate and slit the web 16 of a conductor-pair. The opposite end 6 of the strip is tapered for insertion under a conductor-pair in a communication cable to lift the pair free from the main body of the cable.

The strip 26 is formed into a completed slitting tool, as illustrated in FIGURES 3 and 4, by bending at approximately the center to produce a first elongated leg 8 and a second elongated leg 28 which are oppositely disposed and substantially parallel to one another. The second leg 28 is further bent at a point just behind the knife-edge 22 to form a cutter 24 which extends perpendicularly from the second leg 28 toward the first leg 8.

The area of the first leg directly opposite the cutter 24 forms an anvil portion 14 which will support a conductor-pair 10, as illustrated in FIGURES 1 and 4, isolated from the main body of the communication cable 12.

The U-shaped portion resulting from bending the strip 26 at 30 provides a spring means which resiliently urges the cutter 24 away from the anvil portion 14 so that a conductor-pair 10 will readily fit therebetween when the slitting tool is used. The spring action also enables the tool to be readily removed from the work when a slitting operation has been completed.

The slitting tool of the present invention can be easily and inexpensively formed from a unitary strip of material by a simple stamping operation which forms the tapered end and the knife-edge, and two bending operations, producing the cutter and the spring means.

The design of the tool is such that it is small, lightweight and easily manipulated in the cramped quarters often encountered during the installation of communication equipment, and it can be operated with one hand leaving the other hand of the workman free to operate other tools or perform other duties.

The tapered lifting means enables the workman to isolate a single conductor-pair from the mass of conductor-pairs forming a communication cable, and lift it free of the cable for easy slitting. Once free of the cable, the conductor-pair is readily positioned by the operator on the anvil portion of the tool, and when the tool is squeezed to force the knife-edge through the web the conductor-pair is held on the anvil portion. The slitting operation is then readily performed by a simple reciprocation of the tool in the direction of the arrows as shown in FIGURE 1.

A conductor-pair isolated and separated by the slitting tool of the present invention readily lends itself to the formation of a tap-in connection since the insulated conductors can be readily stripped of insulation, if necessary, and connections made.

It will thus be seen that the objects set forth above,

among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above article without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention, which, as a matter of language, might be said to fall therebetween.

Having described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A tool for isolating and separating a conductor-pair formed of two web-connected insulated conductors in a communication cable comprising

(A) a first elongated leg

(1) having a substantially flat anvil portion for supporting a conductor-pair apart from other cable pairs, and

(2) an end extending beyond said anvil portion for isolating a conductor-pair from other cable pairs;

(B) a second elongated leg

(1) substantially parallel and opposite to said first leg, and

(2) having a cutter extending substantially perpendicularly therefrom toward said anvil portion,

(a) said cutter including a knife edge aligned transverse to said first and second legs; and

(C) spring means

(1) interconnecting said first leg and said second leg and

(2) resiliently urging said cutter and said anvil portion apart.

2. A tool as defined in claim 1 wherein said end on said first leg is tapered to facilitate the isolation of a conductor-pair from other cable pairs.

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