

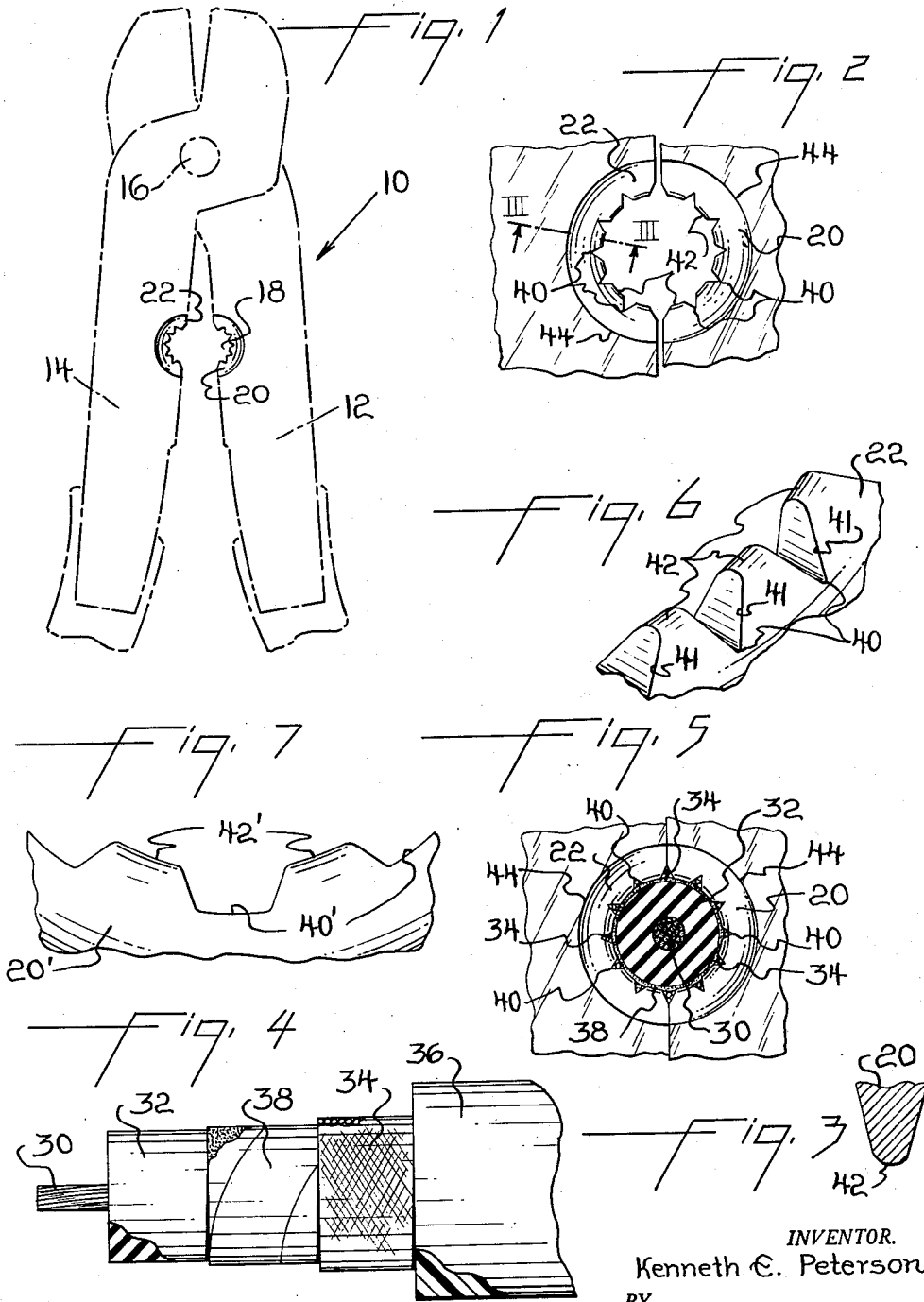
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TOOL FOR CUTTING SHIELDED WIRE CABLE

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TOOL FOR CUTTING SHIELDED WIRE CABLE

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5 Claims. (Cl. 30—91)

A common type of electrical conductor is the shielded wire cable, which in standard form (e. g., military specification MIL-C-3162) comprises an inner conductor of stranded wire which is surrounded by an insulation sheath. A covering of metallic braid surrounds the insulation which in turn is surrounded by an outer insulation sheath. In some forms of such cable a plastic wrapper is placed between the inner insulation and the metallic braid. The inner conductor is adapted to carry electricity while the metallic braid is used for grounding the cable. Generally the insulation is of rubber or a similar material.

In order to utilize this type of conductor, it is necessary to strip away the outer insulation to expose a section of the metallic braided portion. This metallic braided portion must be terminated short of the end of the inner conductor, so that a grounding lead can be attached thereto; see patent application No. 583,080, filed May 7, 1956, in the name of Forney. When cutting this inner metallic conductor it is important that the insulation between the metallic braid and the inner conductor is not ruptured or severed in any way.

Thus it is an object of this invention to provide a tool for quickly and accurately severing the metallic braid of a shielded wire cable without rupturing or injuring the underlying sheath of insulation.

Other objects and attainments of the present invention will become apparent to those skilled in the art upon a reading of the following detailed description when taken in conjunction with the drawings in which there is shown and described an illustrative embodiment of the invention; it is to be understood, however, that this embodiment is not intended to be exhaustive nor limiting of the invention but is given for purposes of illustration in order that others skilled in the art may fully understand the invention and principles thereof and the manner of applying it in practical use so that they may modify it in various forms, each as may be best suited to the conditions of a particular use.

In the drawings:

Figure 1 is a front view of a tool showing an illustrative embodiment of a metallic braid cutter as set forth in this invention;

Figure 2 is a fragmentary enlarged view of the cutting teeth shown in Figure 1;

Figure 3 is a fragmentary plan view taken through III—III of Figure 2;

Figure 4 is an enlarged view of the shielded wire conductor;

Figure 5 is a view of the cutter shown in Figure 2 during the cutting operation;

Figure 6 is a fragmentary perspective view of the cutting teeth shown in Figures 1 through 3; and

Figure 7 is an embodiment showing a different shape of cutting teeth.

As shown in Figure 1 the cutting means of this invention may be applied to a conventional type of tool 10

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(shown in broken lines in Figure 1) having a pair of arms 12, 14 which are commonly pivoted as at 16. The cutting means 18 comprises a pair of complementary semi-circular blades 20 and 22 disposed on the inner surfaces of the arms 12 and 14 respectively. It is understood however that the cutting tool of Figure 1 is merely exemplary of a preferred embodiment. Actually the cutting means can be incorporated in various types of tools wherein the blades may be brought together to cooperate with each other in a cutting relationship.

A common type of shielded wire cable is shown in Figure 4. This cable has an inner conductor 30 surrounded by a sheath of rubber insulation 32 which is surrounded by a metallic braid 34, which in turn is surrounded by an outer insulation sheath 36. A thin, circular section of plastic wrapping 38 is provided between the insulation 32 and the metallic braid 34.

A cutter constructed according to the principles of this invention provides a means for severing the metallic braid 34, without injuring the inner insulation 32. Since the cutting blades 20, 22 are identical it will only be necessary to describe one of them. The cutting blade is shown as concavo-convex, describing a segment of a circle whose concave surface has a radius approximately equal to the radius of the rubber insulation sheath 32. Thus, as seen in Figure 5, when the cutting blades are brought together on the cable, the blades define a circle having a circumference approximately equal to the circumference of the rubber insulation.

As shown in the drawings the cutting blade is formed on the inner edge of the handle 12. The blade is preferably tapered toward the concave edge as shown in Figures 3 and 6. A series of V-shaped notches are provided in the concave edge at regular intervals thus forming teeth which perform the severing operation. The preferred embodiment has an included angle of approximately 60° between the V-shaped teeth thus forming a negative rake angle of about 30°. As shown in Figure 7, the notches may be of other shapes, e. g. a keystone having a 30° negative rake angle.

As shown in Figures 3 and 6, the teeth are made blunt by rounding off their inner surfaces to form confining lands 42. The cutting edges are formed by the intersection of the notches with the planar surfaces while the sides of the teeth defining thickness are blunt by reason of the arc formed therebetween. The lands 42 direct the rubber inwardly during the cutting operation, thus preventing rupture of the insulation.

When it is desired to sever the metallic braid 34, the outer insulation 36 is first stripped with a conventional type of tool to expose a portion of the braid. The cable is then inserted between the blades 18, 22 and with the section to be severed placed intermediately of the blades. The blades are then brought together, gathering the metallic braid in the notches, as shown in Figure 5. The inner surface of the teeth 42 gently bear upon the inner insulation.

The cutting blade constitutes a series of teeth 40 which are accurately disposed. The apices of the teeth are of substantial width to form lands which function as bearing surfaces. The notches between the teeth define the sharp severing edges 41 which actually cut the metallic braid. The lands 42 define segments of a circle having a circumference approximately equal to the circumference of the inner insulation 32. Thus when the cutting blades are brought to bear upon the cable, as shown in Figure 5, the rotation of the tool causes the sharp edges formed by the notches to sever the braid. However, because of the blunt surfaces 42, the inner insulation 32 is confined within the periphery of the inner circle and left unharmed.

Changes in construction will occur to those skilled in

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the art and various apparently different modifications and embodiments may be made without departing from the scope of the invention. The matter set forth in the foregoing description and accompanying drawings is offered by way of illustration only. The actual scope of the invention is intended to be defined in the following claims when viewed in their proper perspective against the prior art.

I claim:

1. A device for severing the metallic braid on a shielded braid wire having an insulation sheath underneath the shielded braid including; a plurality of blades, each blade comprising a segment of a circle with a concave edge having a radius approximately equal to the radius of the insulation sheath, said blade having a plurality of acute angle notches therein which form teeth, said teeth being blunt in lateral cross section, whereby the blades cooperate to sever the metallic braid without rupturing the underlying insulation.

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2. A tool for use in severing a sheath of metallic braid surrounding an underlying sheath of flexible insulation, including, a plurality of complementary concavo-convex segmental blades tapering in thickness toward their concave surface, the concave surface being rounded between the tapered sides, and a plurality of acute angle notches in the concave surface forming teeth therebetween, whereby the blades may be utilized to sever the metallic braid without rupturing the underlying insulation.

3. The device of claim 1 wherein the notches are spaced from each other to provide lands therebetween on the concave edge.

4. The device of claim 1, wherein the notches are substantially V-shaped.

5. The device of claim 1 wherein the notches are substantially in the shape of a keystone.

No references cited.