A method and a tool are provided for simultaneously exposing the conductors of sheathed three conductor-cable having at least two insulated conductive wires and a central ground wire at a selected position along the length thereof without severing the conductive wires and without disturbing the insulation of the individual conductive wires, while simultaneously spacing the conductive wires relative to the ground wire in a configuration conforming to a specially designed electrical fixture. The apparatus includes a cutting assembly having a pair of spaced blade members each having a point for piercing the sheath of the cable on respective opposite sides of the ground conductor when brought into engagement with the cable, a pair of slicing edges extending away from the piercing point for slicing the cable sheathing as the blade assembly is brought into closer engagement with a clamping assembly holding the cable in fixed position, and a wedge portion extending outwardly from the slicing edges for wedging the insulated conductors on either side of the ground conductor laterally away from the ground conductor. The tool is a hand-operated device having a clamping assembly disposed on the end of another actuating arm, a cutting assembly disposed on the end of another actuating arm, and means pivotally connecting the actuating arms for cooperably engaging and disengaging the cutting assembly and clamping assembly.

22 Claims, 15 Drawing Figures
METHOD AND TOOL FOR PREPARING THREE CONDUCTOR-CABLE FOR ELECTRICAL FIXTURE

This is a streamlined continuation of application Ser. No. 284,804, filed Aug. 30, 1972, abandoned; and which is a continuation-in-part of Ser. No. 267,331, filed June 29, 1972, abandoned; and which is a continuation-in-part of Ser. No. 232,595, filed Mar. 7, 1972, abandoned.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to the splitting of electrical cable and separating of the conductors therein and more particularly to a method of splitting an outer insulating covering of a three-conductor-cable and separating the conductors thereof without severing the conductors and to a hand-operated tool for carrying out the method.

2. Description of the Prior Art

Three-conductor cable are presently utilized in house and commerical wiring wherein the cable includes a pair of insulated wires for conducting alternating current and a centrally disposed non-insulated ground wire, all being encapsulated by an insulating sheath. The outer insulating sheath in which the three wires are disposed in parallel relation in a common plane generally presents a substantially oval shape in cross-section, being substantially flat on the elongate sides thereof.

In a commonly assigned application entitled "Method and Apparatus for a Wiring System Using Outlet Receptacles," Ser. No. 168,655, filed Aug. 3, 1971, there is disclosed a novel receptacle specifically designed for employing such a three-conductor-cable without severing the conductors. This is achieved by making a pair of elongate slits through the outer insulating sheath on each side of the ground wire and generally between the ground wire and each adjacent insulated conductive wire. The slitting of the cable must be done very carefully so that the insulation on the outside conductive wires is not disturbed, and prior to installation with the novel receptacle described in the aforementioned copending application, the insulated wires must be bowed or bent outward from the central ground wire for being received within wire supporting and separating elements having piercing members which upon completion of assembly of the receptacle are operative to penetrate the insulation thereof for providing positive electrical contact between the outside conductive wires and the piercing members.

Thus, through the use of the aforesaid described novel receptacle, it is possible to provide positive and permanent connections without cutting the conductive wires and separately mechanically connecting the same without the receptacle, as by winding, screw clamping, soldering or the like. Absent the provision of a tool capable of rapidly and efficiently preparing the cable for the receptacle, however, the advantages of the receptacle characterized herein are substantially minimized.

Although the present application is described with respect to the preparation of three-conductor cable for use with a specially designed outlet receptacle, such is to be considered by way of example, and is to be in no way limiting upon the scope of the novel tool of the subject application. The novel tool of the present invention is usable to prepare three-conductor cable for use with electrical fixtures, such as electrical outlets, switches, lights and the like.

SUMMARY OF THE INVENTION

Accordingly, it is an object of this invention to provide a method of preparing a three-conductor cable at a selected position along the length thereof for installation in a specially adapted electrical fixture.

Another object of the present invention is to provide a method of exposing the conductors of a three-conductor cable at a selected position along the length thereof without severing the conductors.

Still another object of the present invention is to provide a method of exposing the conductors of a sheathed three-conductor cable having at least two insulated conductive wires therein at a selected position along the length thereof without severing the conductive wires and without disturbing the insulation of the conductive wires.

Yet another object of the present invention is to provide a method of exposing the conductors of a sheathed three-conductor cable having at least two insulated conductive wires therein at a selected position along the length thereof without severing the conductors and without disturbing the insulation of the individual conductive wires and for spacing the conductive wires relative to the ground wires in a configuration conforming to the arrangement necessary for being received in a specially designed electrical fixture.

A further object of the present invention is to provide a tool for preparing a three-conductive cable for installation on a specially designed electrical fixture.

A still further object of the present invention is to provide a tool for exposing the conductors of a sheathed three-conductor cable at a selected position along the length thereof without severing the conductors.

Yet a further object of this invention is to provide a hand operated tool for exposing the conductors of a sheathed three-conductor cable having at least two insulated conductive wires at a selected position along the length thereof without severing the conductors and without disturbing the insulation of the individual conductive wires.

Still a further object of this invention is to provide a hand operated tool for simultaneously exposing the conductors of a sheathed three-conductor cable having at least two insulated conductive wires therein at a selected position along the length thereof without severing the conductive wires and without disturbing the insulation of the individual conductive wires, while simultaneously spacing the conductive wires relative to the ground wire in a configuration conforming to a specially designed electrical fixture.

As an even further object of this invention is to provide a hand tool for use with a two-part electrical fixture having a three conductor cable positioned therein with the insulated wires thereof in a undisturbed state for clamping the parts into an assembled relation to cause cooperating elements of the electrical fixture to pene-
trate the insulative coverings of the conductive wires for providing electrical continuity to the electrical fixture.

Still a further object of the present invention is to provide a combination hand tool for simultaneously exposing the conductors of a sheathed three-conductor cable having at least two insulated conductive wires at a selected position along the length thereof without severing the conductive wires and without disturbing the insulation of the conductive wires, while spacing the conductive wires relative to the ground wire in a configuration conforming to a specially designed two-part electrical fixture, and for clamping the two part of such a fixture having a three-conductor-cable positioned therein with the spaced insulated wires thereof in an undisturbed state to cause cooperating elements of the electrical fixture to penetrate the insulative coverings of the conductor wires for providing electric continuity to the electrical fixture.

A yet further object of the present invention is to provide a novel cutting assembly for a sheathed three-conductor cable having at least two insulated conductive wires being capable of piercing the outer sheath of the cable on opposite sides of the central conductor, slicing the outer sheath between the central conductor in each of the adjacent insulated conductors without disturbing the insulation thereof, and for wedging the insulated conductors away from the central conductor.

A still further object is to provide a method of forming a unique blade structure having a piercing portion, a slicing portion and a wedging portion. The foregoing and other objects are attained according to one aspect of this invention through the provision of a unique combination tool having a clamping assembly for positioning and holding a sheathed three conductor-cable, a cutting assembly, and hand grip actuating arms for each of the clamping assembly and the cutting assembly which are pivotally connected for engaging and disengaging the clamping assembly and cutting assembly. The clamping assembly has a centrally disposed anvil and a pair of spring-biased gripping members for securing opposing sides of a cable with the central conductor thereof being aligned with the anvil. The cutting assembly features a pair of spaced blade members each having a point for piercing the sheath of the cable on respective opposite sides of the central or ground conductor thereof when aligned and brought into engagement with the cable being held by the clamping assembly, a pair of slicing edges extending away from the piercing point on opposite sides thereof for slicing the sheath of the cable as the blade assembly is brought into closer engagement with the clamping assembly, and a wedge portion extending outwardly from the slicing edges for wedging the insulated conductors on either side of the central or ground conductor laterally away from the central conductor in opposition to the spring bias of the gripping members.

In combination with the tool, a fixture support may be secured to one of the actuating arms and a C-shaped press may be pivotally secured to the other actuating arm in a manner that, in a disengaging position of the press, the fixture may be placed on the support, and upon pivotally moving the press into an engaging position, the actuating arms are operable to force the press in the direction of the fixture support for tightly clamping the two parts of the fixture and causing electrical contacts in one of the parts to slice through the insulation on three conductors and make electrical contact therewith.

In accordance with another aspect of this invention, a unique blade structure of the cutting assembly is constructed by forming a flat metal blank in the general configuration of at least one blade member having an upper surface, a lower surface, a peripheral end surface, an upper edge defined by the intersection of the upper surface and the peripheral end surface and a lower edge defined by the intersection of the lower surface and the peripheral end surface. The metal blank is then bent into a disposed configuration and is ground such that the upper and lower edges of the cutting portion thereof lie in the same plane with the lower edge defining the cutting edge.

BRIEF DESCRIPTION OF THE DRAWINGS

Various other objects, features and attendant advantages of the present invention will be more fully appreciated as the same becomes better understood from the following detailed description when considered in connection with the accompanying drawings, wherein like reference numerals designate like or corresponding parts throughout the several views, and in which:

FIG. 1 is an exploded perspective view illustrating a specially designed outlet receptacle and a specially prepared sheathed three-conductor cable for being received within and between the two parts thereof;

FIG. 2 is a perspective view of the unique tool formed according to the present invention for preparing the cable shown in FIG. 1;

FIG. 3 is a side view taken generally along the line 3—3 of FIG. 2 showing a cable positioned within the tool, with the actuating arms thereof not shown;

FIG. 4 is a partial cross-section view taken along the line 4—4 of FIG. 3 with the cutting assembly being shown in a pre-operative position;

FIG. 5 is a partial cross-section view, similar to that shown in FIG. 4, with the cutting assembly being shown in a post-operative position;

FIG. 6 is a side view of another embodiment of the tool of FIG. 2, being provided with a receptacle clamping mechanism, with the inactive position of the clamping mechanism being shown in phantom;

FIG. 7 is a view similar to that of FIG. 6 showing the clamping mechanism in a fully operated position;

FIG. 8 is a perspective view of a metal blank used in the preparation of a cutting member for the tool of this invention;

FIG. 9 is a perspective view of the blank shown in FIG. 8 in an intermediate phase of the production of the blade;

FIG. 10 is a perspective view of a still further phase in the production of the cutting blade; and

FIG. 11 is a diagramatic view, partly in cross-section, illustrating a step in producing the cutting blade of this invention and specifically the novel method of grinding a cutting edge in proceeding from the intermediate phase shown in FIG. 9 to the phase shown in FIG. 10.

FIG. 12 is an enlarged fragmentary elevation of a modification of the preferred embodiment according to the present invention with parts in section illustrating the details thereof;
FIG. 13 is an enlarged fragmentary elevation with parts in section of the preferred embodiment illustrated in FIG. 4 showing the operation thereof; FIG. 14 is an enlarged fragmentary elevation of another modification of the preferred embodiment according to the present invention; and FIG. 15 is a fragmentary perspective of a cable end portion prepared by the operation of the modified tool illustrated in FIG. 14.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now to the drawings, and more particularly to FIG. 1, thereof, there is shown a specially designed outlet receptacle formed in two parts 10 and 11, respectively as described in the aforementioned application Ser. No. 168,655. A conventional sheathed three-conductor cable 12 is illustrated being especially prepared for assembly with the parts 10 and 11 of the outlet receptacle wherein the insulated conductors 13 and 14 thereof are bowed or bent outwardly of the central bare ground wire 15 so as to coincide with the specially designed inner configuration of the parts 10 and 11 of the outlet receptacle.

In FIG. 2, a tool for preparing the cable 12 in the configuration shown in FIG. 1 is shown having a clamping assembly generally designated by the reference numeral 16, a cutting assembly generally designated by the reference numeral 17, and hand grip actuating arms 18 and 19. The actuating arms 18 and 19 are pivotally connected at 20 with the cutting assembly 17 extending from one end of the actuating arm 19 and the clamping assembly extending from one end of the actuating arm 18. Each of the actuating arms 18 and 19 may be provided with coverings on the hand grip portions thereof, as illustrated.

The clamping assembly 16, as shown in FIGS. 2-5, is composed of a pair of opposed gripping members 21 and 22 being pivotally mounted by pins 25 and 26 on end supports 23 and 24 integraly formed on the end of the actuating arm 18 opposite the pivot point 20 from the hand grip portion. The gripping members 21 and 22 each have a projecting member 27 and 28, respectively, including an aperture 29 and 30, respectively, for receiving a compressed coil spring 31 extending through a hole 32 in an arcuate portion of the arm 18 integrally connecting the end supports 23 and 24 for biasing the lower portions of the gripping members toward each other. On the inwardly disposed surfaces of the lower portions of the gripping members 21 and 22 there are formed indentations 33 and 34, respectively, shown as being substantially right-angled cut-outs, for receiving the cable 12. Positioned between the gripping members 21 and 22 and shown being integrally formed between the end supports 23 and 24 is an anvil 35 which presents an elongate edge of a width being slightly greater than the diameter of the ground conductor 15.

Aligned with the indentations 33 and 34 and formed in the end supports 23 and 24 are cable guide channels 36 and 37. Because of the symmetrical design of the clamping assembly 16 and the use of a single coil spring 31, the consistancy of the alignment of the central or ground conductor 15 of the cable 12 with the anvil 35 is assured.

The cutting assembly 17 is shown being formed of a pair of blade members 38 and 39 being affixed to a blade support 40 integrally formed on the end of the actuating arm 19 opposite the pivot point 20 from the hand grip portion thereof. Shown best in FIGS. 2 and 4 are four grooves 41, 42, 43 and 44 for receiving the lower edges of the blades 38 and 39 for insuring the stability of the positioning of the blades throughout a cutting operation. The blades 38 and 39 are affixed by machine screws 47 to the blade support 40 through depending leg portions 45 and 46, respectively.

Each of the blade members 38 and 39 is of a generally dished configuration providing a piercing point 48, slicing edges 49 and 50 extending oppositely from the piercing point, and a wedging surface 51. As most clearly shown in FIGS. 4 and 5, the blade members 38 and 39 are positioned such that the slicing edges 49 and 50 of each blade member are spaced from the corresponding slicing edges of the other blade member a distance slightly greater than the width of the anvil 35, and the blade members are mounted so that the respective slicing edges thereof are in parallel relation to each other and to the outside surfaces of the cable to be cut.

Thus, in operation, referring specifically to FIGS. 3, 4 and 5, when a cable 12 is positioned between the indentations 33 and 34 of the spring-biased gripping members 21 and 22, the center or ground conductor 15 is maintained in alignment with the lower edge of the anvil 35 and the space between the blade edges. By manually manipulating the actuating arms 18 and 19 for bringing the hand grip portions thereof toward each other, the piercing points 48 of the blade members 38 and 39 engage the cable 12 and penetrate the outer sheath thereof with the piercing points respectively being positioned between an outside insulated conductor and the central ground conductor. In addition, it may be seen that the penetrating points 48 of the blade members are positioned inward of the insulative coverings of the outside conductors 13 and 14 so that the insulative coverings thereof are left undisturbed during penetration of the sheath.

Further manipulation of the actuating arms 18 and 19 causes the slicing edges 49 and 50 of each of the blade members to cut completely through the sheath of the cable 12 while the surfaces 51 thereof wedge the insulated conductors 13 and 14 away from the center or ground conductor 15, simultaneously forcing the gripping members 21 and 22 outwardly against the resisting force of the biasing spring 31. Thus, the resultant cable 12 prepared for the outlet receptacle parts 10 and 11 being shown in FIG. 1 is obtained.

Referring now to FIGS. 6 and 7, another embodiment of the invention is shown, being a combination tool for piercing the cable sheath, cutting the cable through on both sides of the center ground conductor and separating the insulated conductors therefrom without disturbing the insulation thereon, and for clamping the parts 10 and 11 of the outlet receptacle shown in FIG. 1. Thus, means are provided on a back wall 52 of the actuating arm 18 for receivably supporting one of the parts 10 and 11 of the receptacle, while the other opposing part may be loosely positioned thereon. The actuating arm 19 being pivotally mounted about pivot 20 to the arm 18 is provided with a C-shaped press member 53 being pivotally secured to the arm 19 at 54. Thus, the C-shaped press member 53 may be rotated about the pivot point 54 from a disengaging position, shown in phantom in FIG. 6 to an engaging position, shown in solid line in FIG. 6, wherein an upper press
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plate 55 becomes disposed immediately above the upper outlet receptacle part 10 or 11, as the case may be. Upon manual manipulation of the actuating arms 18 and 19, as shown in FIG. 7, wherein the arm 19 is moved in the direction of the arm 18 as indicated by the arrow 56, which normally results as indicated hereinafter in the movement of the cutting assembly 17 into the clamping assembly 16, the press member 53 is drawn downwardly in the direction indicated by the arrow 57 through movement of the connecting pivotal point 54 in an arcuate path about the pivot 20 of the arm 19, whereby the press plate 55 urges the upper part of the outlet receptacle tightly into engagement with the lower part thereof, so that contact elements therein penetrate the insulative covering of the conductors 13 and 14 and make electrical contact therewith. Upon release of the actuating arms 18 and 19, the spring-biased gripping members urge the arms apart, whereby the press member 53 may be freely pivoted about the point 54 for releasing the receptacle parts 10 and 11 therefrom to permit ready access thereto for removing the same from the receptacle support on the back wall of the arm 18.

FIGS. 8–11 illustrate a novel method of constructing the blade members 38 and 39 of the present invention. Thus, it is seen that a flat metal blank generally designated by the reference numeral 60 being in the configuration of a pair of the cutting blade members may be provided by stamping, punching, cutting or the like from a sheet of metal so that there is presented a flat upper surface 61, a corresponding flat lower surface 62 (FIG. 11), a peripheral end surface 63, an upper edge 64 formed between the upper surface 61 and the peripheral end surface 63 and a lower edge 65 formed between the lower surface 62 and the peripheral end surface 63. As shown, the blank preferably provides for a pair of cutting blades, such as blades 38 and 39 (FIGS. 4 and 5), being integrally connected at this stage by the depending legs 45 and 46, which have apertures therein for receiving the machine screws 47 (FIG. 2) for attaching the blade members to the blade support on the arm 19. Thereafter, the respective blade member portions are bent or stamped into a dished configuration, shown being formed by four separate substantially flat surfaces 66, 67, 68 and 69 arranged at relative oblique angles and all being directed in the same direction from a plane containing the depending lug portion 45 or 46, as the case may be. When so desired, it is observed that the upper edge 64 becomes disposed inwardly into the dished portion from the end surface 63, while the lower edge 65 is positioned outside the dished portion.

Any suitable grinding wheel or honing device, designated by the numeral 70 in FIG. 11, may be utilized for grinding along a given plane, shown being parallel with that of the original lower surface 62 or one containing the depending lug portion 45 or 46, so that the upper edge 64 and the lower edge 65 of the blade member both lie in a common plane. With the lower edge 65, now the outside edge, defining the sharp or cutting edge of the blade member, and according to its position on the various planar surfaces 66–69, defining a slicing edge 49, a slicing edge 50 and the piercing point 48 provided therebetween.

Thus a relatively inexpensive method for producing blade members of the character described herein and being especially designed for cooperative use in the tool of the present invention for piercing or penetrating an outer sheath of a three-conductor cable, for slicing completely through the sheathing of the cable and for providing wedging action such that when arranged according to the invention the outer insulated conductors are moved away from the center ground conductor, is provided.

With reference to FIGS. 12 and 13 a modification of the tool 16 according to the present invention will be described in detail. In the modification, the gripping members 21 and 22 are in mutually opposed relationship, with the anvil portion 35 of the tool substantially recessed from the portions 33 and 34 of the gripping members. The modified tool of FIG. 12 is especially suited for slitting a sheath covered cable 12A which has only a pair of insulated conductors 13 and 14 internally of the sheath. Thus the cable 12A differs from that of cable 12 in that there is no uninsulated third conductor. The cable 12A is located between the gripping members initially against the portions 33 and 34 of the gripping members. The handles 18 and 19 of the tool are then closed to engage initially the cutting blades 38 and 39 on the outer sheath of the cable 12A and to pivot the blades and thereby progressively wedgingly drive the cutting blades through the sheath to slit the outer sheath and to spread apart the individual conductors 13 and 14, in a manner as heretofore described. The cable 12A thus may be terminated to the receptacle 11, wherein no third or ground potential conductor 15 is required in the environment in which the receptacle 11 is used. As another modification of the tool illustrated in FIG. 12, the cutting blades 38 and 39 are mounted on the blade support 40 in abutting relationship, rather than in slightly spaced apart relationship of the preferred embodiment as illustrated in FIG. 4. This is required for slicing a single slit through the sheath of the cable 12A between the individual conductors 13 and 14. For example, the blade support 40 of the modified tool of FIG. 12 may be made much narrower than the blade support 40 of the preferred embodiment illustrated in FIG. 4. Thus the narrowness of the blade support 40 determines the amount of spacing if any between the cutting blades 38 and 39 when mounted in the grooves 41 and 42 provided in the blade support 40.

FIG. 13 illustrates the cutting blades 38 and 39 of the modified tool driven through the cable 12A to slit the outer sheath of the cable and to spread apart the individual conductors 13 and 14 to desired locations for a purpose as heretofore described. In the modified tool, the gripping members 21 and 22 readily support the cable 12A during the slitting operation, despite the absence of the anvil 35 which would ordinarily be disposed between the members 21 and 22, as in the embodiment of FIG. 1. To prevent premature pivoting of the gripping members 21 and 22 as the cutting blades 38 and 39 of the modified tool slit the cable 12A, the spring 31 may be selected with a larger spring constant to resist undesired pivotal motion of the gripping members as the cutting blades 38 and 39 slit through the sheath of the cable 12A. However, as the cutting blades 38 and 39 are driven forcibly and wedgingly through the cable sheath the spring 31 will be collapsed resiliently as the cutting blades 38 and 39 forcibly spread apart the conductors 13 and 14 and spread apart correspondingly the gripping members 21 and 22. Thus, the modified tool illustrated in FIGS. 12 and 13 is espe-
pecially adapted for providing a single slit in a two-conductor cable sheath and for spreading apart the individual conductors of a two-conductor sheath covered cable.

FIG. 14 illustrates a modification of the gripping members 21 and 22 for preparing the end portion of a cable as shown in FIG. 14. As shown in the FIG. 14 the gripping member 21 is provided thereon with a generally elongated L-shaped guide mark illustrated at 80. Such guide mark may be provided on the gripping member 21 as shown or alternatively on the gripping member 22, and may be provided on either of the preferred embodiments illustrated in FIG. 2 or in FIGS. 12 and 13. In operation, a cable 12 having an end portion 82 is located between the gripping members 21 and 22, with the terminal end 84 of the cable being generally aligned with the guide mark. Upon operation of the tool, the cutting blades 38 and 29 will be wedgingly driven or otherwise displaced through the sheath of the cable 12, the blades slitting the cable in a manner as heretofore described. However, since the end portion of the cable is to be slit, the blades will be driven through the cable sheath and will emerge through the terminal end 84 of the cable. Thus, as shown in FIG. 15, the individual conductors 13, 14 and 15 of the cable 12 will be spread apart at the terminal end 84 of the cable. This will allow the terminal end 84 of the cable to be terminated with the outlet receptacle 11 as shown in FIG. 1. Obviously, when the modified tool as illustrated in FIGS. 12 and 13 is used in this fashion, upon slitting the sheath of a two-conductor cable 12 A, only the conductors 13 and 14 will be spread apart at the terminal end of the cable 12A.

It should be noted that the outlet receptacle 11 may be a plug-in type electrical outlet as shown or any other type of wiring device or fixture normally associated with house wiring such as a junction box or a switch box.

In each slicing configuration, the individual conductors are outwardly bowed or bent with respect to the ground conductor, with the outer bowed shapes of the tool blades positioning and shaping the individual conductors in spread apart positions and in loop configurations suitable for placement within an area coinciding with the inter-configuration of the parts 10 and 11 of the outlet receptacle or other suitable wiring device or fixture. The stiffness inherent in the individual conductors keeps them in their spread apart conditions. The sliced outer sheath need not be removed from the individual conductors. The sliced outer sheath is also spread apart by the tool together with the individual conductors. During termination within the wiring device or fixture, electrical terminals will slice through both the individual insulation on the spread apart conductors and also the sliced outer sheath portions spread apart together with the spread apart individual conductors. Thus the tool according to the present invention satisfactorily prepares the individual conductors for connection to a wiring device or fixture without a further need to remove the outer sheath from the conductors. The tool thereby completes conductor preparation in one operation of the tool.

Various other modifications and variations of the present invention are possible in light of the above teachings. It is to be understood therefore that within the scope of the appended claims the present invention may be practiced otherwise than as specifically described herein.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. A tool for preparing a sheathed cable having two outer insulated conductors at opposite sides of a central conductor for electrical connection to an electrical fixture having transversely spaced electrical contacts therein without severing said conductors, said tool comprising:
   a first clamping jaw, an anvil mounted on said first clamping jaw and having a supporting surface arranged to extend along and support the central portion of said cable, said anvil being narrower than the space between said outer conductors,
   a pair of cable gripping members mounted on said first clamping jaw for movement between an inner position at which they grip and support opposite outer portions of such cable supported on said anvil, and an outer position at which they grip and support said outer portions after lateral deflection of said outer conductors for respective engagement with said contacts, yieldable means biasing said cable gripping members toward said inner position,
   a second clamping jaw, a pair of cutting blades mounted on said second clamping jaw, said cutting blades having cutting edges extending parallel to one another adjacent opposite edges of said anvil and wedging surfaces extending rearwardly and outwardly at an acute angle from said cutting edges, and means to cause relative movement of said first and second clamping jaws toward one another to cause said cutting edges first to slice through the sheath of a cable supported on said anvil along two parallel lines approximately coinciding with the inner sides of the outer conductors therein and then to cause said wedging surfaces to bend said outer conductors outwardly away from said central conductor, said gripping members being thereby forced outwardly against the resistance of said yieldable means to said outer positions.

2. A tool as described in claim 1 wherein said first and second clamping jaws are respectively mounted on two pivotally connected operating arms in a pliers-like hand tool.

3. A tool as described in claim 1 wherein said yieldable means comprises a single spring acting upon both said gripping members, whereby their resistances to outward movement are always balanced.

4. A tool as described in claim 2 wherein said operating arms are also respectively provided with cooperating clamping jaws which are adapted to support two portions of the housing of an electrical fixture and press them together around the prepared cable from opposite sides thereof to cause said electrical contacts to engage the separated conductors, slice through the insulation thereof and make electrical contact therewith.

5. A tool for preparing a three conductor cable for assembly with an electrical fixture comprising:
   means for clamping said cable with the central conductor thereof in a fixed position,
   a cutting assembly including a pair of blade members each being capable of being moved from a preoperative position out of engagement with said cable to
a fully operative position between said central conductor and one other of said three conductors, and means interconnecting said clamping means and said cutting assembly for moving said blade members from said preoperative position to said fully operative position.

6. A tool as set forth in claim 5, wherein said clamping means comprises:
a pair of cable gripping members for holding said cable,
means for biasing said gripping members toward said cable, and
an anvil positioned between said gripping members to be in alignment with said central conductor when said cable is held by said gripping members.

7. A tool as set forth in claim 6 wherein each of said gripping members is individually pivotally mounted, and wherein said biasing means is a spring extending between said gripping members.

8. A tool as set forth in claim 6, wherein said anvil is of a slightly greater width than the diameter of said central conductor.

9. A tool as set forth in claim 5, wherein each of said blade members comprises:
a piercing point for penetrating the sheath of said cable, and
a pair of slicing edges oppositely extending from said piercing point for cutting said sheath.

10. A tool as set forth in claim 9, wherein each of said blade members further comprises:
a wedging surface extending outwardly from said slicing edges for separating said one other of said three conductors from said central conductor as said blade members move from said preoperative position to said fully operative position.

11. A tool for preparing a sheathed three conductor cable of the type including two individually insulated conductors and a central noninsulated ground conductor for assembly with an electrical fixture comprising:
a clamping assembly for positioning and holding said three conductor-cable, said clamping assembly including a centrally disposed anvil and a pair of spring-biased gripping members for securing opposing sides of said cable with the central conductor thereof being aligned with said anvil,
a cutting assembly including a pair of spaced blade members each including a point for piercing the sheath of said cable on respective opposite sides of said ground conductor when aligned with and brought into engagement with said cable being held by said clamping assembly,
a pair of slicing edges extending away from said piercing point on opposite sides thereof for slicing said sheath of said cable as said blade assembly is brought into closer engagement with said clamping assembly, and a wedge portion extending outwardly from said slicing edges for wedging said insulated conductors on either side of said central conductor laterally away from said central conductor; and hand grip actuating arms for each of said clamping assembly and said cutting assembly being pivotally connected for engaging and disengaging said clamping assembly and said cutting assembly.

12. A method of preparing a sheathed three conductor-cable including two individually insulated conductors and a centrally disposed non-insulated ground conductor for assembly with an electrical fixture comprising the steps of:
piercing said cable sheath on opposite sides of the ground conductor,
slicing said cable sheath on both sides of said ground conductor and between said ground conductor and each of said insulated conductors without disturbing the insulation on said insulated conductors; and wedging the insulated conductors laterally away from the central ground conductor.

13. A method of preparing a sheathed three conductor-cable as set forth in claim 12 wherein said cable sheath is simultaneously sliced on both sides of said ground conductor.

14. A combination tool for preparing a three conductor tool for assembly with a two-part electrical fixture and for assembling the fixture comprising:
clampering means for holding said cable in a fixed position therein;
cutting means including a pair of blade members each being capable of being moved from a preoperative position out of engagement with said cable to a fully operative position between said central conductor and one other of said three conductors in said clamping means;
means interconnecting said clamping means and said cutting means for moving said blade members from said preoperative position to said fully operative position;
means for securing one of said two parts of said fixture on said clamping means; and
press means pivotally connected on said interconnecting means for movement between an engaging position with said fixture in said securing means and a disengaged position, said press means being operable by said interconnecting means during movement of said blade member from said preoperative position to said fully operative position.

15. A tool as set forth in claim 14 wherein said clamping means are disposed on one end of an actuating arm, said cutting means are disposed on one end of another actuating arm, and said interconnecting means comprises means for pivotally interconnecting said actuating arms.

16. A novel blade structure for use in a tool for preparing sheathed three conductor-cable for assembly with an electrical fixture comprising a metallic member having a generally dish configuration and including a piercing point, slicing edges extending oppositely from the piercing point and a wedging surface.

17. A method of manufacturing a blade structure comprising the steps of:
forming a flat metal sheet in the configuration of at least one blade member having an upper surface, a lower surface, a peripheral end surface, an upper edge defined between said upper surface and said peripheral end surface and a lower edge defined between said lower surface and said peripheral end surface;
bending said metal sheet into a dished configuration with said upper surface forming the inside of said dished configuration; and
grinding said dish configuration metal sheet along a given plane whereby the lower edge, the upper edge and the remaining peripheral end surface all lie in a common plane, such that the lower edge provides a cutting surface.
18. A method according to claim 17 wherein said blade member is dished upwardly from a given plane to provide at least two intersecting oblique surface, such that upon grinding the intersecting edge between said two oblique surfaces provides a piercing point and the edges of said oblique surfaces provide slicing edges.
19. In a tool having a pair of cutting blades for slitting multi-conductor electrical cable of the type having a sheath thereover, the combination comprising:
means for holding the cable in fixed position on said tool, said pair of cutting blades being mounted for engaging the sheath of said cable, force applying means for biasing said blades initially into engagement with said sheath and for progressively and pivotally displacing said blades wedgingly in penetration through said sheath for spreading apart portions of selected conductors of said multi-conductor electrical cable, and a wedge shape on said blades for progressively spreading apart selected ones of said conductors of said multi-conductor electrical cable during progressive wedging penetration of said blades into said sheath.
20. The structure as recited in claim 19, wherein said blades have their cutting edges in abutting relationship for making a single slit longitudinally of said multi-conductor cable during progressive wedging penetration of said blades into said sheath.
21. The structure as recited in claim 19, and further including:
means on said tool for positioning and for retaining an end portion of said cable for slitting through the terminal end of said cable by said cutting blades, said means comprising a pair of opposed clamping and gripping members for engaging and receiving the cable therebetween, at least one of said clamping and gripping members being provided thereon with indicia for locating the terminal end of the cable in desired position between said clamping and gripping members for slitting the terminal end of said cable by said cutting blades.
22. A method according to claim 13, and further including the step of: slicing said cable sheath by a scissoring action of the blades penetrating progressively through the sheath to spread by wedging progressively outward selected portions of the individual conductors.
* * * *
UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,846,894 Dated November 12, 1974

Inventor(s) STUART L. PARSONS and JAMES ALBERT KLOTH

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Figure 2 of the drawings should have the lead lines 38 and 39 extended to indicate a pair of blades. The lead line 49 should be extended to indicate a slicing edge on the blade 39. The shade lines between the blades 38 and 39 should be eliminated since their presence incorrectly gives the appearance of a single blunt blade instead of the correct appearance of a pair of blades having sharp rather than blunt slicing edges 49 and 50, as well as the piercing points 48 which are correctly shown on the figure 2.

Signed and sealed this 18th day of March 1975.

(SEAL)
Attest:
RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks