May 12, 1959 R. B. SHULTERS ET AL 2,885,764

TOOL FOR PREPARING AND APPLYING WIRES TO TERMINALS

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Fig. 1.

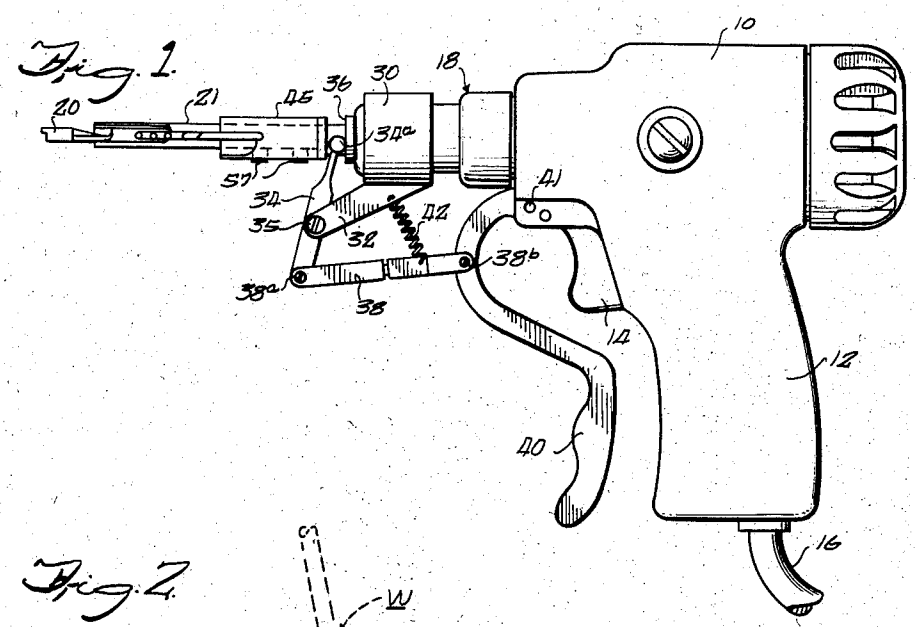


Fig. 2.

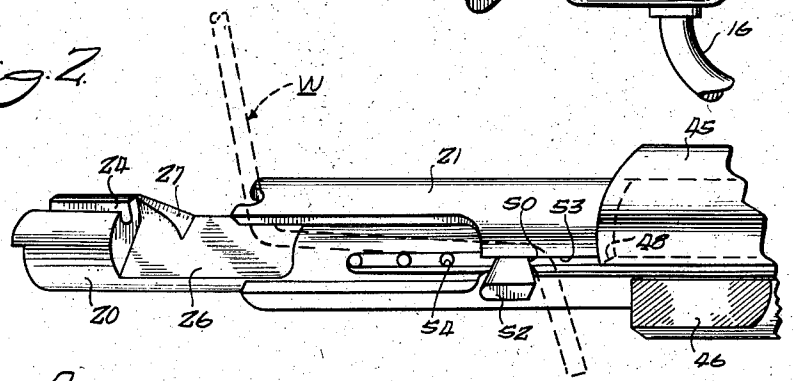
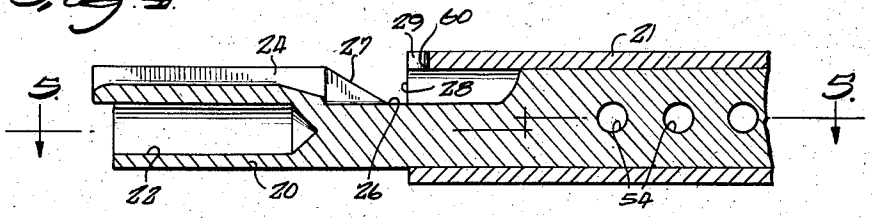


Fig. 4.



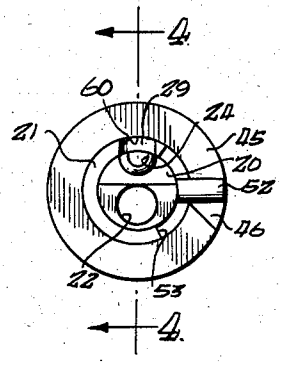


Fig. 3

Inventors
Robert B Shulters
John R. Bos
By: Carlson, Pitzner, Hubbard & Wolfe
Attorneys

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Fig. 5.

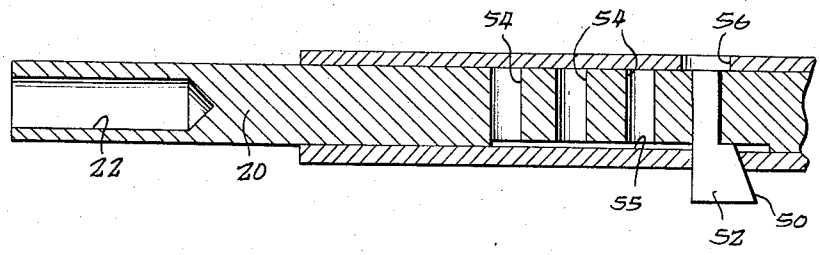


Fig. 6.

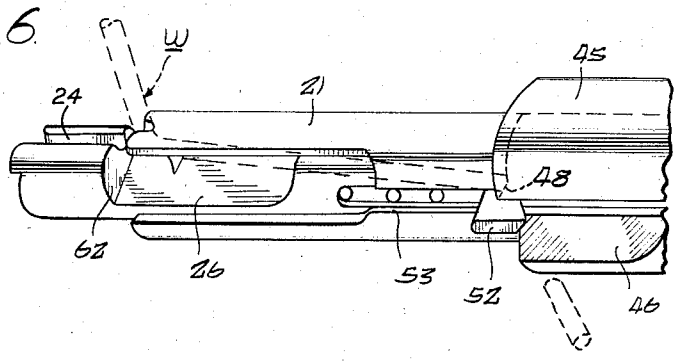
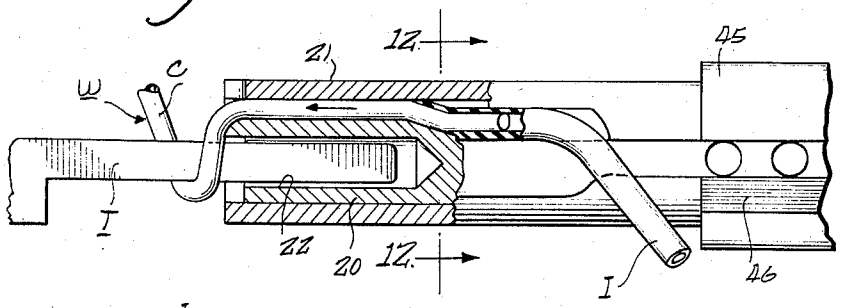


Fig. 11.



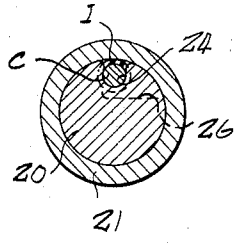


Fig. 12.

Inventors
Robert B. Shulters
John R. Bos
By: Carlson, Gitzner, Hubbard & Wolfe
Attorneys

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TOOL FOR PREPARING AND APPLYING WIRES TO TERMINALS

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Fig. 7

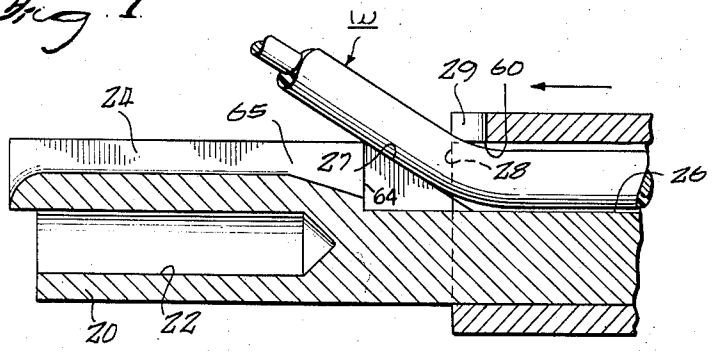


Fig. 8

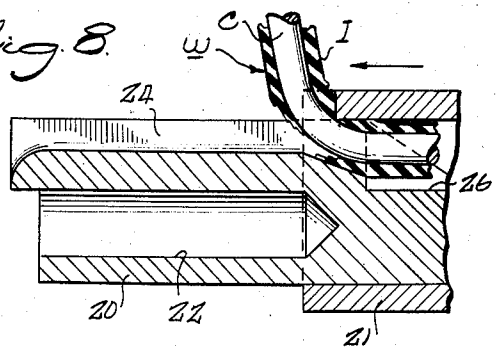


Fig. 9

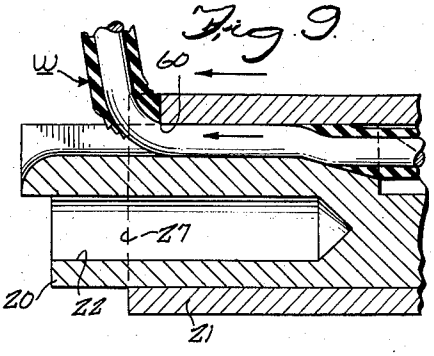
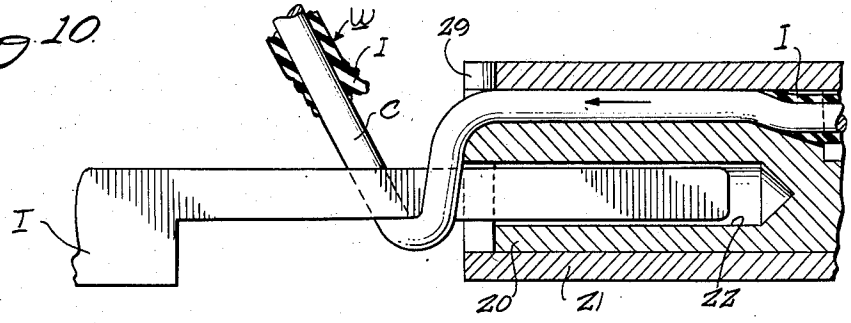


Fig. 10



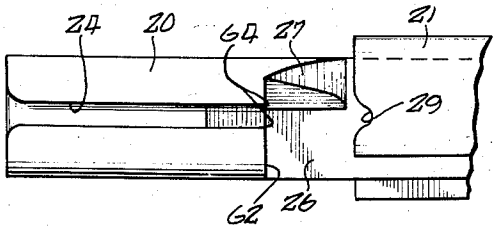


Fig. 13

Inventors
Robert B. Shulters
John R. Bos
By: Carlson, Pitzner, Hubbard & Wolfe
Attorneys

United States Patent Office 2,885,764 Patented May 12, 1959

2,885,764

TOOL FOR PREPARING AND APPLYING WIRES TO TERMINALS

Robert B. Shulters, Spring Lake, and John R. Bos, Grand Haven, Mich., assignors to Gardner-Denver Company, Quincy, Ill., a corporation of Delaware

Application April 18, 1955, Serial No. 501,968

9 Claims. (Cl. 29—33)

The present invention relates generally to making a connection between a wire and an electrical terminal and more particularly to a tool for effecting such a connection by winding the wire in successive convolutions about and in intimate engagement with the terminal.

Tools of this general character conventionally include a rotary shaft or bit which is disposed within a guide or sleeve, the bit being provided at its forward end with a longitudinal recess for the reception of the terminal and a radially offset longitudinal groove for the reception of the wire. In the operation of the tool the bit is rotated and the wire is wound about the terminal, the wire being withdrawn longitudinally from the groove as it is applied to the terminal. By way of an example of such a tool, reference is made to United States Patent No. 2,585,010 issued February 12, 1952, to Bell Telephone Laboratories, Incorporated, as assignee of C. N. Hickman, et al.

In tools of the type shown in the afore-mentioned patent the external sleeve coacts with the bit so that the wire receiving groove in the bit is closed by the contiguous surface of the sleeve and only the forward end of the groove is accessible for the reception of the end of a wire therein. Further, the wire must have been previously skinned or stripped of its insulation since the groove is sized in accordance with the diameter of the wire, i.e., the bare conductor. With such tools experience has shown that the necessity for prestripping is limiting upon the usability of these tools and the stripping operation and the operation comprising the actual insertion of wires into the wire receiving groove is a relatively delicate and time consuming undertaking.

It is an object of the present invention, therefore, to provide an improved tool for connecting wires to terminals which is effective not only to make the actual connection but in addition is capable of receiving wire as it is supplied from a supply spool or the like, and to prepare the wire for the connecting operation.

A more particular object lies in the provision in a tool of the aforesaid general character of an improved construction and arrangement facilitating the reception of an insulated wire, cutting it to a predetermined length, stripping the desired amount of insulation therefrom and forming a connection of the wire thus received and prepared with a terminal.

A further object of the invention is to provide a tool which effectively receives, prepares and applies a wire to a terminal, and at the same time is of minimum nose or tip dimension permitting use in places where space is at a premium, which is so constructed and arranged as to minimize the danger of damage to the wire, as by nicking or the like, and which permits of economical manufacture.

The objects of the invention thus generally set forth together with other objects and ancillary advantages are attained by the construction and arrangement shown by way of illustration in the accompanying drawings, in which:

Figure 1 is a side elevation of a power operated tool embodying the features of the present invention.

Fig. 2 is a perspective view of the forward end portion of the tool shown in Fig. 1 with the components illustrated in normal or loading position.

Fig. 3 is a front end elevation of the forward end portion of the tool shown in Fig. 2.

Fig. 4 is a longitudinal section taken substantially in the plane of line 4—4 in Fig. 3.

Fig. 5 is a longitudinal section taken in offset planes as indicated by the line 5—5 in Fig. 4.

Fig. 6 is a perspective view similar to Fig. 2 but illustrating component relationship immediately succeeding cutting operation.

Figs. 7, 8, 9 and 10, are a series of fragmentary longitudinal sections similar to Fig. 4 illustrating the various component relationships succeeding the cutting operation and including the positioning of the wire to be applied to the terminal, the removal of the insulation therefrom, and the initiation of the application thereof to a terminal.

Fig. 11 is a central longitudinal section similar to Fig. 4 but showing the components of the forward end of the illustrative tool in condition for applying a wire to a terminal.

Fig. 12 is a transverse section taken substantially in the plane of line 12—12 in Fig. 11.

Fig. 13 is a plan view of the front end portion of the tool's bit and sleeve.

While the invention is susceptible of various modifications and alternative constructions there is shown in the drawings and will herein be described in detail one presently preferred embodiment, but it is to be understood that it is not thereby intended to limit the invention to the specific form disclosed, but on the contrary it is intended to cover all modifications and alternative constructions falling within the spirit and scope of the invention as expressed in the appended claims.

Referring more particularly to the drawings, there is shown in Fig. 1 a power operated tool for effecting a connection between a wire and a terminal. In general, this illustrative tool includes a body 10 which is equipped with a pistol-grip type handle 12 mounting a triggerlike finger piece 14 by means of which power supplied to the tool is controlled. The exemplary tool is adapted for electrical operation and suffice it to say for present purposes it incorporates within the body 10 a rotary electric motor to which power is supplied by way of a suitable cable 16 attached to the tool at the base of the handle 12. The finger piece 14 is operatively associated with a switch (not shown) disposed within the handle 12 for controlling the application of electrical power to the motor that is located within the body 10.

At its forward end the tool terminates in a nose assembly, generally designated 18, which includes a wire winding bit 20 disposed within a forward projecting sleeve 21 and which may incorporate suitable speed reduction gearing and clutch mechanism for coupling the tool's motor to the bit 20.

As can be seen in the drawings, for example in Figs. 3, 4, 10 and 11, the bit 20 is provided with a longitudinal recess 22 for the reception of a terminal T about which a wire W is to be wound in contiguous helical convolutions so as to effect an electrical connection therebetween. To position the wire W for application to the terminal T upon rotation of the bit 20 the bit is provided with a wire receiving groove 24. The groove is formed in the bit adjacent the outer end thereof and is disposed in radially offset relation to the recess 22, extending longitudinally in the peripheral surface of the bit. In operation the wire W is withdrawn from the groove 24 as it is wound about and in intimate engagement with the terminal T received in the recess 22.

In accordance with the present invention the illustra-

tive tool incorporates an improved construction and arrangement of components facilitating the reception of the wire with its insulation in place thereon just as it is supplied from a supply spool or the like, and by means of the improved construction and arrangement the wire is cut to a predetermined length, is stripped of a predetermined amount of insulation, and is positioned automatically in the wire receiving groove **24** for subsequent application to a terminal received in the recess **22** of the bit **20**.

In accordance with one aspect of the invention the bit **20** and the sleeve **21** are especially formed to permit side loading of the wire W, as distinguished from axial insertion thereof as in prior tools. More particularly, the bit and sleeve are constructed and arranged so that the wire W can be loaded into the tool by simply laying it across the bit, subsequent manipulation of the components of the tool causing the wire to be prepared and automatically positioned in the wire receiving groove **24** of the bit **20** for application to the terminal T. Thus in the illustrative tool, the sleeve **21** is mounted for relative longitudinal movement with respect to the bit **20** between a normally open or loading position and a forward position wherein the contiguous inner surface of the sleeve closes the wire receiving groove **24** to retain the wire W therein. Intermediate its ends the bit is relieved as at **26** to expose the rear end of the wire receiving groove **24** and is provided at one side of this relieved portion with a wire positioning surface **27** for guiding a wire laid across the relieved portion thereof toward the wire receiving groove **24**. In the loading position of the sleeve (Fig. 2) the forward end portion of the bit is exposed so that the wire W can be laid across the surface **26**. Upon relative forward movement of the sleeve **21** with respect to the bit **20**, the forward end of the sleeve, as indicated at **28**, moves the wire W forwardly toward the bit's guide surface **27**. Continued forward motion of the sleeve relative to the bit causes the wire to be directed outwardly along the guide surface **27** and toward the wire receiving groove **24**. This operation will be apparent from Fig. 7. It will also be seen that movement of the wire outwardly along the guide surface **27** of the bit **20** by the forward end **28** of the sleeve **21** also results in circumferential movement of the wire W with respect to the sleeve. To further facilitate positioning of the wire W with respect to the groove **24**, the sleeve may be provided with an additional guide surface, here shown in the form of a notch **29**. The notch is disposed in alined relation with the wire receiving groove **24** of the bit **20** and is thus positioned for engagement of the wire when it has reached the outermost limit of the bit guide surface **27** so as to retain the wire in alinement with the groove **24**. It will also be seen that further forward movement of the sleeve **21** with respect to the bit automatically directs the wire along the groove **24**.

Means is provided for moving the sleeve **24** longitudinally with respect to the bit **20** between its rearmost or loading position (Fig. 2), and its fully forward or operating position (Fig. 11). In the present instance, manually operable means has been provided for this purpose though it will be readily apparent to one skilled in the art that a tool of this character can incorporate power actuated means for this purpose. As shown, the nose assembly **18** is equipped with a collar **30** mounting a stationary arm **32**. A lever **34** is pivoted intermediate its ends, as at **35**, on the outer end of the arm **32**. The upper end **34***a* of the lever **34** is received in a peripheral channel **36** formed adjacent the rear end of the sleeve **21**. To permit relative movement between the lever end **34***a* and the sleeve **21** in the channel **36** the end **34***a* is rounded and adjacent the end **34***a* the lever **34** is necked down. This construction and arrangement permits free fore and aft rocking movement of the lever about the pivot **35** which movement similarly produces forward and rearward movement of the sleeve **21** with respect to the bit **20**. To produce such movement of the lever **34** its lower end is connected by means of a link **38** to a finger piece **40**. At its upper end the finger piece **40** is pivotally connected at **41** to the body **10**. The lower end of the finger piece **40** is formed and disposed for convenient manipulation by the fingers of an operator holding the illustrative tool. It will be seen from this construction and arrangement that a squeezing of the finger piece **40**, so as to move its lower end toward the handle **12** of the tool, causes rearward motion of the lower end of the lever **34** by means of its connection thereto by the link **38**, the latter being pivotally connected at **38***a* to the lever **34** and at **38***b* to the finger piece **40**.

Since it is desirable that the sleeve be in retracted position with respect to the bit when the tool is at rest so that the wire W can be readily laid across the bit surface **26**, a biasing spring **42** is provided. The spring **42** normally urges the lever **34** and the finger piece **40** toward the positions thereof shown in Figs. 1 and 2 and thus it is interposed in a tensioned condition between the stationary arm **32** and the link **38** adjacent the rear end of the latter so as to exert a pulling force thereon.

In carrying out another aspect of the present invention, means is provided for cutting the wire W that is loaded into the tool to a predetermined length. Such length being determined, in general, by the amount of wire required in the formation of a predetermined number of convolutions of the wire to be placed about the terminal T in effecting connection of the wire to the terminal. In the present instance this means includes a pair of relatively movable cutting edges which are disposed to cross one another in the movement of the sleeve **21** with respect to the bit **20**, so as to shear the wire. Thus, one of the cutting edges is fixed with respect to the bit **20** and the other is fixed with respect to the sleeve **21**. In the illustrative tool the sleeve **21** has mounted thereon adjacent its rear end a collar **45** which is longitudinally slotted as at **46** to define with the forward transverse face of the sleeve a cutting edge **48**. The cutting edge **48** is disposed for cooperation with a cutting edge **50** formed along the upper rear side of a pin **52** which is fixed with respect to the bit **20** and projects generally radially therefrom through an elongated longitudinally disposed slot **53** formed in the sleeve **21**. Preferably the edge **50** is formed by chamfering the rear face of the pin **52** so that the edge **50** extends outward and rearward from the bit **20**. This construction disposes the edge **50** whereby the cutting edge **48** of the sleeve **45** traverses it progressively from its outermost towards its innermost end as the sleeve **45** moves forwardly with respect thereto in the forward movement of the sleeve **21**. To receive the pin **52** the bit **24** is transversely apertured as at **54** and a series of apertures **54**, spaced longitudinally with respect to each other, are provided to permit alternative location of the pin **52** and thus of its cutting edge **50** whereby to permit adjustment of the length of wire remaining loaded in the tool after the cutting operation. To retain the cutting edge **50** alined with respect to the cutting edge **48**, i.e., to prevent rotation of the pin **52**, the outer end portion thereof is elongated and the inner end of this elongated portion is received in a channel **55** formed longitudinally in the outer surface of the bit **20** and intersecting the outer ends of the apertures **54**. The channel **55** is of a width corresponding to that of the pin **52** so that its side walls engage the sides of the elongated portion of the pin **52**.

To provide access to the inner end of the pin **52** the sleeve **21** has an opening **56** formed therein opposite the slot **53** which opening permits the insertion of a drift pin or the like against the innermost end of the pin **52** whereby the pin can be ejected from the respective ones of the apertures **54**.

As shown, the sleeve **45** is fixed in place upon the sleeve **21** by means of set screws **57** (Figure 1). Thus,

by merely loosening the set screws the sleeve 45 may be readily removed. This constructional feature together with the particular construction of the sleeve 45, as hereinbefore described, to define its cutting edge 48 permits the cutting edge to be restored to a sharp condition by simply removing the sleeve and face-grinding it. Similarly, the cutting edge 50 of the pin 52 can be restored by a simple transverse grinding operation on the chamfered rear face of the pin 52. Further, the attachment of the sleeve 45 to the sleeve 21 by means of the set screws 57 readily permits its adjustment along the sleeve 21 to compensate for any change of location of the cutting edge 48 thereof as might be occasioned by its resharpening.

It will be seen that the pin-in-slot construction, 52, 53 serves to guide longitudinal movement of the sleeve 21 with respect to the bit 20 and prevents any relative rotary movement therebetween. Thus, maintenance of proper alinement of the cutting edges 48 and 50 and of the positioning notch 29 of the sleeve 21 and the wire receiving groove 24 of the bit is insured.

As shown, the wire W is of the type commonly referred to as hookup wire, and it includes a conductor C having a covering of insulation I thereon. In accordance with still another aspect of the present invention, means is provided for severing the insulation I and for stripping it from the conductor C so as to bare the conductor for application to the terminal T to effect an electrical connection therebetween. More particularly, the present invention not only contemplates cutting of the insulation I at a point spaced from the end of the wire W but additionally contemplates separating the cut portions of the insulation so that severance of the insulation is complete. Further, the invention contemplates accomplishing this end prior to initiation of the winding operation to apply the conductor C to the terminal T.

In carrying out this aspect of the invention the forward or leading edge of the sleeve 21 is utilized in cooperation with the forward end portion of the bit 20, in which the groove 24 is formed, and especially that portion thereof that defines the rear end of the groove 24. As hereinbefore noted the wire receiving groove 24 is sized in transverse dimension to receive the conductor C of the wire W, i.e., the groove 24 is complementally formed with respect to the bare conductor C. It will be recalled from the foregoing description herein that upon forward movement of the sleeve 21 from its rearmost or loading position, its forward end 28 engages the wire W and moves it outwardly along the bit guide surface 27 and circumferentially along the end 28 of the sleeve 21 toward the open rear end of the wire receiving groove 24. Since the wire receiving groove corresponds in transverse dimension to the diameter of the conductor C, the wire W with the insulation I thereon is prevented from dropping into the groove 24. Thus, the lower edge of the sleeve 21 along the innermost edge of the notch 29, as indicated at 60, upon continued forward movement of the sleeve, bites into the insulation I, and forces that portion of the insulation immediately ahead of this edge forwardly. At the same time, such continued forward motion of the sleeve 21 tends to force the wire W into the rear end of the wire receiving groove 24. It will be apparent from an observation of Figs. 2 and 6 that upon relieving the bit 20 at 26 the forward end thereof was provided with a rear surface 62 disposed transversely of the bit. This construction provides the rear end of the wire receiving groove 24 with relatively sharp edges 64. Since the groove is dimensioned to receive only the conductor C of the wire W the forcing downward of the wire W into the rear end of the groove, upon forward movement of the sleeve 21 with respect to the bit 20, causes the side edges 64 to cut the insulation I and leaves forward end of the severed portion of the insulation in engagement with the transverse rear face 62 of the bit. Slight additional forward movement of the sleeve 21 will, therefore, cause complete parting of the thus severed insulation.

As just above noted, the severed end portion of the insulation abuts the transverse face 62 of the forward end portion of the bit 20 and is thus held against forward movement as the sleeve 21 continues to move forwardly. Further by virtue of its engagement with the wire W just ahead of the insulation cut the sleeve 21 carries the wire W forwardly with it. As a result the trailing portion of the conductor C of the wire W is withdrawn from the severed portion of the insulation I and at the same time is pulled along the wire receiving groove 24 until the sleeve 21 reaches its forwardmost position as shown in Fig. 11.

The wire W is thus fully prepared for application to the terminal T when the latter is inserted in the terminal receiving recess 22 of the bit 20. Upon initiation of rotation of the bit to wind the wire, or more particularly, the bared conductor C thereof, about the terminal T the conductor C is withdrawn forwardly or outwardly through the wire receiving groove 24. In so doing the trailing end portion of the conductor is fully withdrawn from the severed portion of the insulation I since the latter is held back by its engagement with the transverse rear face 62 of the bit. When the trailing end of a conductor C leaves the severed portion of the insulation I the latter is then free to fall from the tool through the enlarged forward end portion of the slot 53 in the sleeve 21 which in the forward position of the sleeve as shown in Fig. 11, registers with the relieved portion 26 of the bit 20.

To minimize the danger of damage to the conductor C as, for example, by nicking of the conductor by the bight portion of the rear end of the wire receiving groove 24 as the wire is urged downwardly into the rear end of the groove, as a result of the action of the forwardly moving sleeve 21 thereon, the groove 24 adjacent its rear end is deepened, as at 65, so as to receive that portion of the insulation I that is disposed immediately beneath the point of contact with the wire W of the cutting edge 60 of the sleeve 21. This deepening of the groove 24 is effected to a depth substantially equal to the thickness of the insulation. With the insulation I between this portion of the bottom of the groove and the conductor C, the latter is cushioned, i.e., the wire W is prevented from being forced against the lower rear edge portion of the groove 24 at that point. Thus, it is not likely to be damaged. As a result, the conductor is not weakened and is not likely to be broken as it is withdrawn through the wire receiving groove 24 during the subsequent winding operation wherein the conductor C is applied to the terminal T.

From the foregoing, therefore, it will be apparent that a tool constructed and arranged in accordance with the teachings of the present invention permits of ready insertion of a wire therein simply by laying the wire across the bit with the sleeve in its retracted position. Further, upon operation of the device, relative movement is produced between the bit and the sleeve whereby the end of the wire is cut to the predetermined desired length. The wire is automatically positioned for reception in the wire receiving groove, has its insulation severed and parted so that the insulation is stripped from the end of the wire's conductor as it is withdrawn through the wire receiving groove of the bit and is wound about and in intimate engagement with the terminal. It is also apparent that the cutting edges incorporated in the tool exemplifying the present invention are of durable form and can be readily resharpened as might become necessary. This latter can be accomplished simply by removing and face-grinding the sleeve 45 and the pin 52 which provide the wire-cutting edges 48 and 50, and by simply regrinding the rear face 62 of the forward end portion of the bit 20 and the forward end of the sleeve 21 to resharpen the insulation-cutting edges 64 and 60, respectively.

It is also to be noted that the foregoing construction and arrangement is of relatively simple form requiring a minimum number of individual components and machining operations to form the same. By the same token the simplicity of the components and their inherent rugged character not only permits their economical manufacture but also permits them to be formed of minimum size thereby minimizing the tip dimensions of the tool to the end that its utility is enhanced particularly for applications where space is at a premium.

We claim as our invention:

1. In a tool for preparing and applying an insulated wire to a terminal by winding the same about the terminal, the combination comprising a bit adapted for rotation with respect to the terminal and having a terminal receiving recess in the forward end thereof and a wire receiving groove spaced radially outward from said recess, the bit being relieved intermediate its ends to define the rear end of said groove and to provide the same with relatively sharp rear edges, a sleeve telescoped over said bit and mounted for longitudinal movement with respect thereto, said sleeve having a sharp front edge, a first wire cutting edge fixed on said sleeve and a second wire cutting edge fixed with respect to said bit and disposed for cooperation with said first wire cutting edge during longitudinal movement of said sleeve with respect to said bit, said bit and said sleeve having guide surfaces thereon for directing said wire toward said groove during forward longitudinal sleeve movement with respect to said bit, said sleeve front edge being engageable with the wire to bite into its insulation and to urge the wire against said sharp groove edges so as to cut the insulation, said sleeve during further forward longitudinal movement urging the wire along said groove to part the insulation, and said groove edges being effective to hold the severed insulation portion against movement with the wire as it is withdrawn through said groove upon rotation of said bit to wind the wire about the terminal whereby the conductor of the wire is bared for intimate engagement with the terminal.

2. In a tool for preparing and applying an insulated wire to a terminal, the combination comprising a bit having a wire receiving groove formed in its peripheral surface, said groove corresponding in width to the diameter of the conductor of the wire, the bit being relieved intermediate its ends to define the rear end of said groove and to provide the same with relatively sharp rear edges, and a sleeve telescoped over said bit and mounted for longitudinal movement with respect thereto, said sleeve having a sharp front edge, and means for moving said sleeve longitudinally with respect to said bit with the forward end of said sleeve traversing the outer end portion of said bit, the forward end of said sleeve front edge being engageable with the wire during forward longitudinal movement thereof with respect to said bit to bite into its insulation and to urge the wire into the rear end of the groove and the insulation against said sharp groove edges so as to cut the insulation, and said sleeve during further forward longitudinal movement urging the wire along said groove as the forward end thereof traverses the outer end portion of said bit with said rear groove edges restraining the cut insulation so as to part the insulation.

3. In a tool for preparing and applying an insulated wire to a terminal, the combination comprising a bit having a wire receiving groove formed in its peripheral surface of a width corresponding to the diameter of the conductor of the wire, the bit being relieved intermediate its ends to define the rear end of said groove and to provide the same with relatively sharp rear edges, a member mounted for longitudinal movement with respect to said bit so as to traverse said groove, and means for moving said member longitudinally with respect to said bit, said bit and said member having guide surfaces thereon coacting during forward longitudinal movement of said member with respect to said bit to direct said wire toward said groove, said member during further forward longitudinal movement with respect to said bit urging the wire into the rear end of said groove and its insulation against said sharp groove edges so as to cut the insulation and upon continued forward longitudinal movement thereof to draw the wire along said groove to part the insulation, said rear groove edges holding the severed insulation portion against movement with the wire as the wire is moved forwardly along said groove so as to bare the conductor of the wire for intimate engagement with the terminal.

4. In a tool for preparing and applying an insulated wire to a terminal, the combination comprising a rotary bit having a terminal receiving recess in the forward end thereof and a wire receiving groove therein terminating at one end thereof in spaced relation to the forward end of the bit, and a sleeve mounted upon said bit for longitudinal movement with respect thereto, means on said sleeve engageable with the wire during forward movement of said sleeve with respect to said bit for cutting said wire to a predetermined length, and cutting means respectively carried by said sleeve and bit and engageable with the wire in the forward longitudinal movement of said sleeve with respect to said bit to cut and separate the insulation upon the wire, said sleeve during its forward longitudinal movement further drawing the wire along said groove into position for application to the terminal upon rotation of said bit.

5. In a tool for preparing and applying an insulated wire to a terminal, the combination comprising a rotary bit having a terminal receiving recess in the forward end thereof and a wire receiving groove spaced radially outward from said recess, the bit being relieved intermediate its ends to define the rear end of said groove and to provide the same with relatively sharp rear edges, a sleeve telescoped over said bit and mounted for longitudinal movement with respect thereto, a member on said sleeve and spaced from the forward end thereof and providing a first wire cutting edge, a second member fixed on said bit and spaced from the forward end thereof and providing a second wire cutting edge disposed for cooperation with said first wire cutting edge during longitudinal movement of said sleeve with respect to said bit to cut the wire, said sleeve being engageable with the wire to urge the wire into the rear end of said groove and the insulation against said sharp groove edges upon relative longitudinal movement thereof so as to cut the insulation and to move the wire along said groove to part the insulation and position the conductor of the wire within said groove whereby upon rotation of said bit the wire is wound about the terminal with the conductor bared for intimate engagement therewith.

6. In a tool for preparing and applying an insulated wire to a terminal, the combination comprising a rotary bit having an internal terminal receiving recess and a wire receiving groove in the peripheral surface of the forward end portion thereof terminating in spaced relation to the forward end of said bit, said groove corresponding in width to the diameter of the wire's conductor and corresponding in depth at the forward end thereof to the conductor diameter and being deepened at the rear end thereof to correspond to the conductor diameter plus one thickness of the wire's insulation, means mounted for relative longitudinal movement with respect to said bit to traverse said groove, said means being arranged to engage the wire during its relative forward movement with respect to said bit to press the wire into the rear end of the groove to cut the insulation upon said wire and during continued forward longitudinal movement thereof with respect to said bit to further draw the wire along said groove separating the insulation and moving the bared conductor of the wire into position for application to a terminal received in said recess upon rotation of said bit.

7. A tool for preparing and applying an insulated wire to a terminal, the combination comprising a rotary bit having a terminal receiving recess in the forward end thereof and a longitudinally disposed wire receiving groove formed in the peripheral surface thereof adjacent its forward end, said bit being relieved intermediate its ends to provide a transverse face defining the rear end of said groove and providing the same with relatively sharp rear edges, a sleeve telescoped over said bit and mounted for longitudinal movement with respect thereto, said sleeve having a longitudinal slot in one side thereof, a pin projecting outwardly from said bit through said slot and having a cutting edge thereon, a member fixed with respect to said sleeve and defining a cutting edge disposed for cooperation with the cutting edge of said pin upon longitudinal movement of said sleeve with respect to said bit, and means for moving said sleeve from a normally retracted position wherein the relieved portion of said bit is exposed for the reception of the wire to a forward position wherein the forward end of said sleeve traverses said bit and the groove therein, said sleeve being arranged to engage the wire as an incident to its forward movement to press the wire against the sharp groove edges so as to cut the wire's insulation, said sleeve drawing said wire along said groove upon further forward movement thereof with respect to said bit to part said insulation and to draw the wire's bared conductor along said groove into position for application to a terminal received in said recess upon rotation of said bit.

8. A tool for preparing and connecting an insulated wire to a terminal comprising, in combination, a body housing a motor, a bit for winding the wire about the terminal and comprising a generally cylindrical member journaled for rotation in said body and drivingly connected to said motor, said bit having an internal terminal receiving recess in the outer end thereof and having a wire receiving groove in its peripheral surface adjacent the outer end thereof, a sleeve disposed about said bit and mounted for relative longitudinal movement with respect thereto, means for moving said bit longitudinally with respect to said sleeve between a retracted position wherein the forward end of said bit and its wire receiving groove are exposed and a forward position wherein the forward end of said sleeve traverses the forward end of said bit and wire receiving groove, and means mounted on said sleeve and said bit and operative during forward longitudinal movement of said sleeve with respect to said bit for cutting said wire to a predetermined length, said sleeve being arranged to engage said wire during its forward movement to move said wire toward and along said groove, and said sleeve and said bit cooperating during forward movement of the former with respect to the latter both to cut and to part the wire's insulation and additionally to position the wire's bared conductor for application to a terminal received in said recess.

9. In a tool for preparing and applying an insulated wire to a terminal, the combination comprising a rotary bit having a terminal receiving recess in its forward end and having an elongated longitudinally disposed wire receiving groove in the peripheral surface of its outer end portion corresponding in width to the conductor of the wire, said bit being transversely relieved to define the inner end of said groove and to provide the same with sharp rear edges, a sleeve mounted for longitudinal movement with respect to said bit between a retracted position wherein the forward end portion of the bit is exposed and a forward position with the forward end of the sleeve traversing the forward end portion of the bit during such movement, said bit having a guide surface thereon adjacent the rear end of said groove which surface is exposed when said sleeve is in its retracted position to receive a wire laid thereacross, the forward end of said sleeve being engageable with the wire during its forward longitudinal movement and coacting with said guide surface to direct the wire into the rear end of said groove and to urge the wire's insulation against the sharp groove edges so as to cut the insulation, said groove edges holding the severed insulation portion against movement with the wire as the wire is moved forwardly along said groove by said sleeve whereby to bare the wire's conductor for intimate engagement with a terminal received in said recess upon rotation of said bit.

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