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TOOL FOR GRIPPING ARMORED CABLES

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Fig. 1

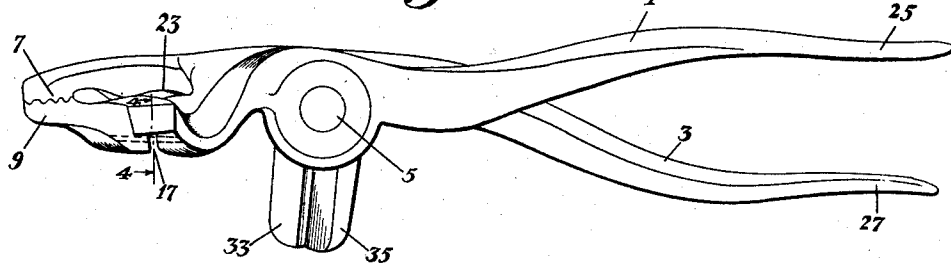


Fig. 2

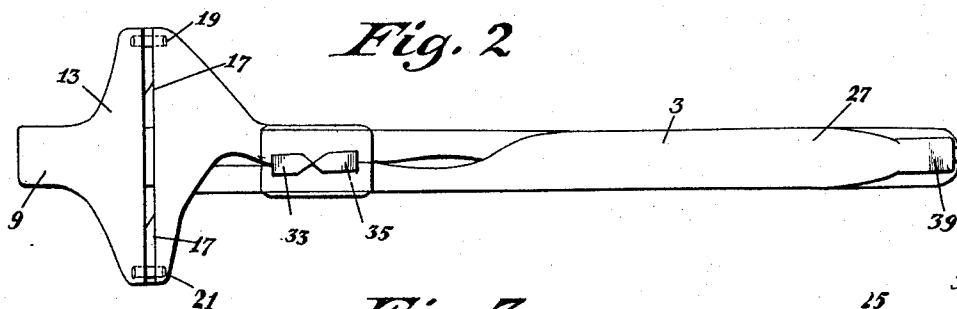


Fig. 3

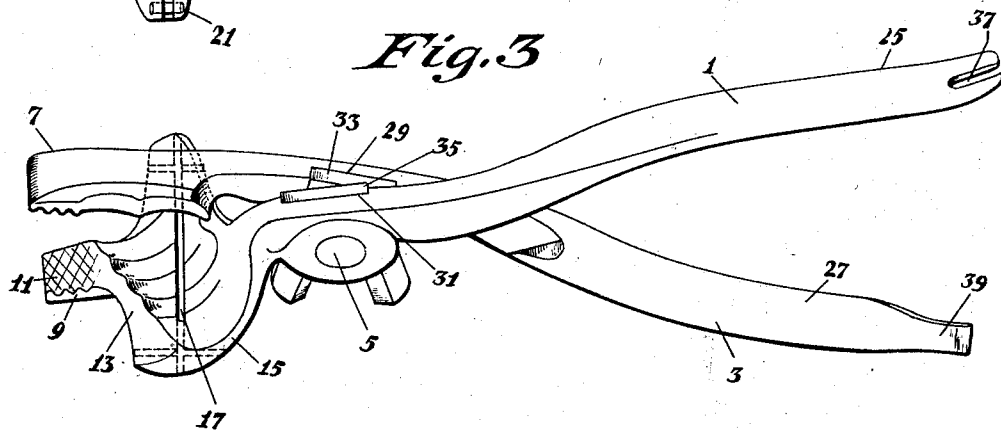
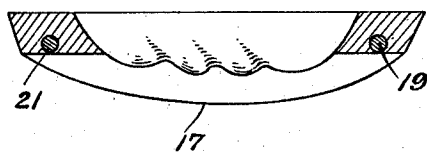


Fig. 4



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TOOL FOR GRIPPING ARMORED CABLES

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The present invention relates to tools which are suitable for gripping or supporting armored cables, and for holding the cable securely in position so that it may be severed or cut apart at any desired point.

In the prior art, so far as I am aware, it has been customary to either cut the cable at the desired point by means of a hack saw or to catch the cable in any desired point beneath one of the spiral twists in the armor by means of a clawing device adapted to rip the armored portion of the cable.

Each of the above named methods for severing cables is accompanied by several objections. If the cables are cut by means of a hack saw with nothing to guide the saw or to gauge the depth of the cut the workman is in continual danger of cutting deeper than is necessary in order to break the metallic surface which is arranged in a spiral twist about the insulated conductors contained therein. Such a method of cutting cables, therefore, often tends to cut the insulation wrapped about the conductors and to cut the conducting members at an undesired point.

In the other case above illustrated where the armored cable is cut by means of a clawing device adapted to tear the cable, objectionable features in operation are occasioned in that the cable is so torn apart that rough and jagged edges result. This is a frequent cause of many injuries to workmen, in that while working with the cable after it is cut they are so apt to cut their hands and expose themselves to unnecessary dangers of infection.

The present invention, therefore, has as its primary object that of producing a tool or device for supporting or gripping an armored cable, to be cut apart at a desired point, in such a manner that only the heavy metallic wrapping about the cable may be cut, and that of producing a tool whereby such cuts as may be made upon the cable will not result in rough and jagged edges.

Still another object of my invention is to produce a gripping or supporting tool for armored cables that will definitely gauge the depth of the cut so that only a minimum amount of cutting will be necessary in order

to sever the metallic wrapping about the conductors.

Still another object of my invention is to produce a tool for gripping armored cables for cutting in which the cable is securely held in such position with respect to the cutting tool that only the minimum amount of the cable will be touched by the cutting tool, and the cable as a whole, will be uninjured.

Still another object of my invention is to produce a tool for supporting cables that is provided with cutting edges within easy reach of the supporting members, so that upon reversing the tool the workman may cut the insulated conductor contained within the protective armor of the cable.

Still another object of my invention is to combine with the supporting and cutting tool other instrumentalities such as a screw driver, pliers, and tack pulling elements, as well as other similar arrangements, so that a workman using a cable gripping tool of the character to be hereinafter described in detail will not be obliged to continually change from one tool to another in order to work with electrical cables in the usual manner.

Still other objects of my invention are to produce a cable supporting tool which is simple in its construction and arrangement, and a tool which is equally adapted to use by either right or left handed workmen.

Other objects are to provide a supporting tool for cables and the like which is easy to operate, convenient and practical in its arrangement, and a supporting or gripping tool which is inexpensive to manufacture and market.

Other and ancillary objects will at once be apparent to those skilled in the art to which this invention relates upon reading the following specification and claims in connection with the accompanying drawings, wherein:

Fig. 1 is a longitudinal side view of my invention;

Fig. 2 is a top view;

Fig. 3 is a perspective view showing the arrangement of the cable gripping surface and the slot for guiding the operating tool used to cut the cable; and,

Fig. 4 is a sectional view on the line 4—4 of Fig. 1, and illustrates a section through the slotted guide member.

Now making reference to the accompanying drawings, the arrangement assumes, in its preferred form, the general appearance of a pair of pliers. The tool is formed from two handle members 1 and 3 pivoted at a point 5 in a manner similar to the ordinary pliers used by all mechanics. The members 1 and 3 at a point to the left of the pivot member 5 (looking at the arrangement of the drawings) have provided at their ends jaw members or gripping surfaces 7 and 9. These gripping surfaces, as shown, are provided with milled or knurled surfaces 11 suitable for securely holding objects which may be picked up thereby.

One of the jaw members 9 is considerably widened out between its end portion, where it is used as a gripping member or as a pair of pliers, and the point of pivotal support 5 with the other jaw member 7. In this widened portion 13 I desire to support the armored cable which is to be cut apart.

The widened portion 13 of the jaw 9 is provided with a spirally grooved surface 15, which is similar in nature to the surface of the well known spirally wrapped armored cable, known in the art as BX cable. This widened or expanded surface 13 is arranged at an angle of approximately 35° with respect to the plane of members 1 and 3, so that upon placing a cable upon the grooved portion of the surface 15 it will rest in a position 35° with respect to the longitudinal alignment of the members 1 and 3. This angle is found to be most suitable for cutting the cables, although, if desired, I may arrange the surface 13 at any other angle.

Now looking at Fig. 2 particularly, it will be seen that the expanded or spread portion 15 of the jaw member 9 has arranged in its upper surface a slot 17. Into this slot a hack saw or other suitable cutting tool will be placed, so that the cable may be cut at any desired point. The slotted portion 17 forms a mitre arrangement and will serve to guide the cutting tool used for working upon the cable (not shown), which is supported by the jaw members 7 and 9. At either end of the slot I have arranged replaceable depth gauges 19 and 21, which may be of hardened steel or the like, for the purpose of guiding the depth of cut which the cutting tool may take upon the armored cable supported in the jaw members. It will readily be seen that with the hack saw operating upon the armored cable the cutting action will be relatively easy until the saw strikes the hardened surfaces 19 and 21, when the cutting action will become more difficult, and it will at once be apparent, with the gauges 19 and 21 set at a point with reference to the upper portion of the work positioning spiral grooved portion 15 of the

widened face or portion 13 of the jaw member 9 such that the usual type of cable will be cut to just the particular depth that no injury to the insulated cable contained within the armored portion will be apparent, that the cutting operation is complete.

For the purpose of permanency of the tool I have provided the depth gauges 19 and 21 as replaceable units and may, if desired, provide each with threads so that when they become worn they easily may be supplanted by new units, or the gauges may be in the form of plugs which can be driven out and replaced by new ones.

In order that the cable to be cut may be securely held in the spirally grooved and expanded portion 13 of the jaw member 9 I have provided the jaw member 7 with a recessed portion 23 which is directly over the spiral portion 15 of the expanded portion of the jaw 9. It is thus seen that by gripping the ends 25 and 27 of the handle members 1 and 3 the jaws 7 and 9 will tend to hold securely any object placed within them.

At this point it is also desirable to state that the slotted portion 17 of the jaw 9 is arranged at such an angle with respect to the tool and with respect to the cable supported thereby that when a hack saw, or other tool, is used to cut the cable it will only cut just that portion of the cable that is absolutely necessary in order to break the same apart.

At the point of pivotal support 5 I have recessed the handle members 1 and 3 as shown at 29 and 31. In these recessed portions I have arranged the replaceable members 33 and 35 which are of hardened steel and arranged to form a bearing surface for the pivoted jaw and at the same time a wire cutting device. In accordance with this arrangement the hardened steel members 33 and 35 perform the dual function of providing by their inner surface a hard bearing surface for the relatively movable jaw members and of providing for cutting with the portion thereof which extends outwardly from the point of pivotal support. In accordance with this arrangement when the armored portion of the cable has been cut it is usually desirable to thereafter cut the insulated portion and conductors, but in most cases at a different point from where the cable was broken since the conductor must extend sufficiently far out from the armor to make desired electrical connections. This operation can be accomplished by merely reversing the tool and using the members 33 and 35 as ordinary wire cutters.

In order to provide a tool which is useful for many uses to which electricians and mechanics are usually accustomed I have arranged in the end 25 of the handle member 1 a claw device 37, which may be useful for pulling nails, tacks, and the like used in combination with a supporting ring to hold the

cable in place. At the end 27 of the handle member 3 I have provided a screw driver portion 39. These last named portions are mentioned only by way of example and I do not claim that they in any way enter into the novelty of my arrangement only insofar as they are suited to the convenience of the mechanic in not making it necessary to change from one tool to another when working with cable installations and the like.

At this point it may be desirable to further describe the operation of severing the cables. When a cable provided with a spirally wrapped armored portion externally to a pair (or more) of electrical conductors is to be cut it is placed in the flared or expanded portion 13 of the jaw 9 and arranged to rest in the spiral grooves 15. The handles 1 and 3 are then securely gripped so that the jaws 7 and 9 are brought together and the cable is kept tightly in position. At this time a hack saw, or other suitable cutting tool, is placed in the mitre slot 17 and a saw cut is made upon the cable member. This cutting is then continued until the saw comes to the depth gauges 19 and 21, which means that the cable is cut sufficiently deep to break apart.

When the cable is cut, as above described, the grip upon the same is released, and upon twisting the cable it is observed that the cable will separate into two parts and that the armored portion may be slid along the cable so that the workmen may connect the conductors to the desired points of electrical contact. In order to make the proper electrical connection it is now necessary to cut the conductors which are contained within the armored cable and this may be conveniently done by simply reversing the gripping tool and placing the conductors within the cutting members 33 and 35 and cutting the conductor in any well known manner.

Having now described my invention in its preferred embodiment it is understood that I may make such modifications therein as fall fairly within the spirit and scope of the invention as defined by the following claims; wherein,

I claim:

1. A gripping tool for armored cables and the like, including, a pair of pivotally mounted jaws, a flared portion on one of said jaws extending transversely thereto, a spirally grooved recess portion forming the inner surface of said flared portion of said jaw for supporting and positioning an armored cable in a predetermined manner, a recess portion on the other of said jaws for clamping over a cable supported in said first named recess portion and securing the said cable in said predetermined position in said recess, said first named jaw member being provided with a slotted portion extending transversely thereof and at an angle with respect to said grooved recessed portion and having the

mid-length of said slot arranged opposite the deepest point of transverse curvature of the said spiral groove intersected by the plane of the said slot for forming a guide for a cutting tool for cutting the outer surface of a cable supported within said jaw members.

2. A cable gripping tool as claimed in claim 1, including in addition, a depth gauge at each end of said slotted portion at a predetermined position with reference to the upper portion of the spiral grooves in said recess for gauging the depth of cutting on the outer surface of said supported cable.

3. A cable gripping tool of the class described including a pair of relatively movable jaw members, a transversely extending widened face provided on one of said jaw members, said widened face being provided on its inner face with a spirally grooved semi-circularly shaped recessed portion for conforming to the shape of a spirally wrapped armored cable for positioning and supporting the cable in a predetermined position upon movement of said jaws to clamp against each other, said widened face of said jaw member having a slotted portion extending transversely to the outer face thereof and through to the inner face thereof for a portion of its length at an acute angle with reference to the axial line of said spiral grooves and so arranged that the mid-length of said slot is opposite the deepest point of transverse curvature of the spiral groove intersected by the plane of the slot so as to form a miter guide for a cutting tool adapted to be inserted in said slot for cutting said supported cable, and a pair of replaceable depth gauges at the ends of said slot, said gauges being positioned at the ends of said slot with reference to the upper portion of the ridges of said spiral grooves for positioning said cable so as to definitely gauge the depth of cut of the cutting tool upon the said positioned and supported cable.

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