F. J. HARRISON.

TOOL.

APPLICATION FILED SEPT. 20, 1919.

1,348,413.

Patented Aug. 3, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

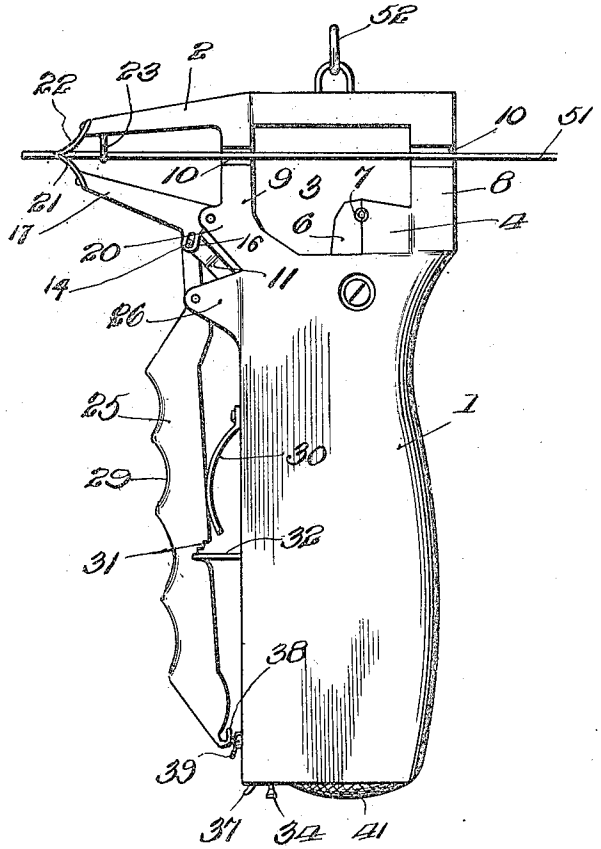


Fig. 2.

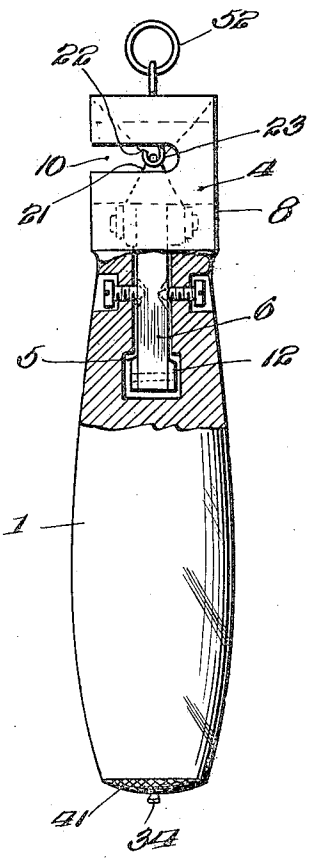
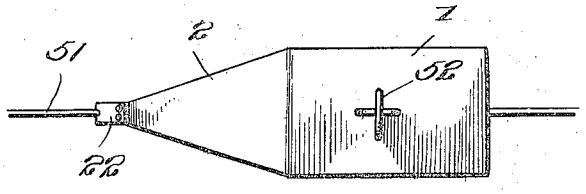


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

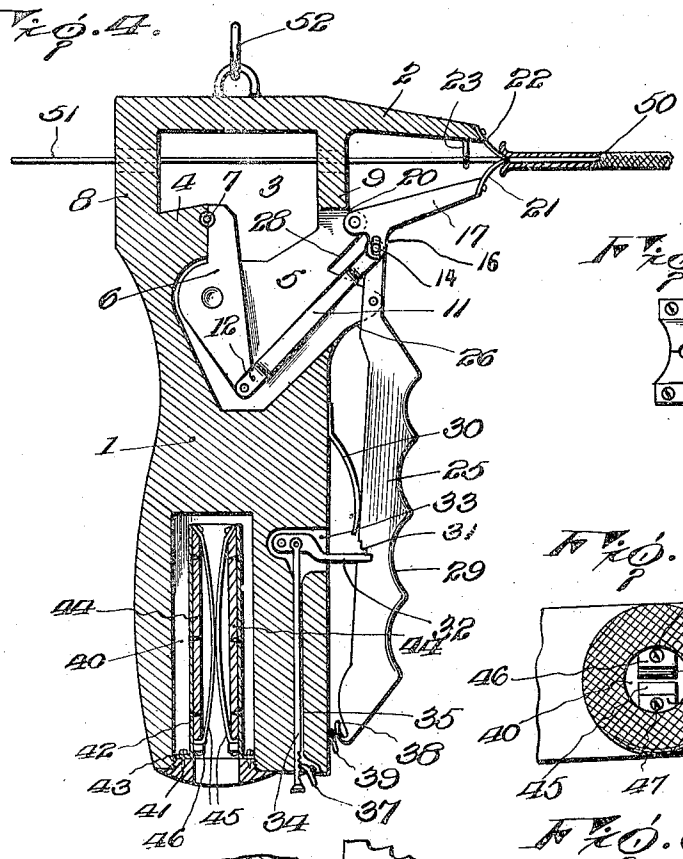


Fig. 6.

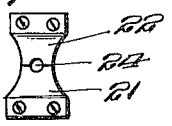


Fig. 7.

Fig. 8.

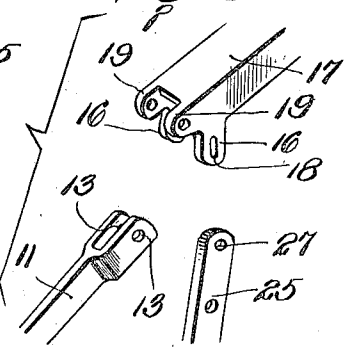
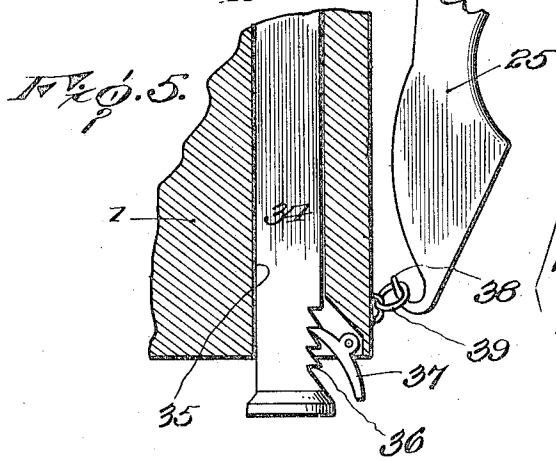


Fig. 5.



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UNITED STATES PATENT OFFICE.

FREDERICK J. HARRISON, OF INDIANAPOLIS, INDIANA.

TOOL.

1,348,413. Specification of Letters Patent. Patented Aug. 3, 1920.

Application filed September 20, 1919. Serial No. 325,073.

To all whom it may concern:

Be it known that I, FREDERICK J. HARRISON, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Tools, of which the following is a specification.

This invention is a tool for use by electricians in preparing wires for making electric connections with other wires or with binding posts. The object of the invention is to provide a simple and compact tool which may be manipulated to cut a wire to a desired length; to remove the insulation from the end of the wire; and to polish the portion of the wire from which the insulation has been removed or an exposed end of the wire which has become tarnished or coated so that it is not apt to make a good electrical connection. Other incidental objects will appear in the course of the following description and the invention resides in certain novel features which will be particularly pointed out in the claims following the description.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved tool;

Fig. 2 is an edge view of the same, with parts broken away and in section;

Fig. 3 is an end view;

Fig. 4 is a longitudinal section;

Fig. 5 is an enlarged detail view of a portion of one end of the tool;

Fig. 6 is a detail view of the insulation stripping blades;

Fig. 7 is a detail end view;

Fig. 8 is a detail perspective view showing the manner of connecting the stripper and cutting blades with the operating lever.

In carrying out the invention, I provide a body 1 which will preferably be constructed of metal so as to resist hard usage and will be properly shaped to be conveniently held in the hand. At one end of this body 1, is a lateral extension or arm 2 which is preferably formed integral with the body and in the said end of the body is an open space 3 through which the wire may be inserted when it is to be cut. A projecting portion 4 of the body extends into this space and constitutes the fixed jaw of the cutter. Below the said open space 3, a chamber or recess 5 is formed in the body and the movable cutter 6 is pivotally mounted within the said chamber or recess, one end of the said cutter extending into the open space 3 and being adapted to bear against the opposed face of the fixed cutter 4, as clearly shown. The opposed faces of the two cutters are provided with mating semi-circular grooves or recesses 7 which will fit around the wire so as to hold the part which is not to be severed, the cut-off end dropping to the ground or the floor of the workroom as will be readily understood. A web 8 forming a part of the back of the body and a similar web 9 disposed approximately at the front edge of the body define the side walls of the open space 3, and in the said webs are notches or open-ended slots 10 which form guides for the wire from which the insulation is to be removed.

The recess or chamber 5 opens through the front edge of the body and in the said chamber is arranged a link 11 having its inner end pivoted to the lower end of the cutter 6, the said inner end being forked, as shown at 12, so as to fit around the lower end of the cutter. The outer end of the link is forked and provided with openings which receive the pin 14, the end of the link fitting between lugs 16 on a lever 17 and the ends of the pin playing in slots 18 in said lugs. The lever 17 is provided with additional lugs or perforated ears 19 which are pivotally connected to a lug or ear 20 on the body 1 at the upper end of the recess or chamber 5 and the free end of the said lever carries a scraper 21 which coacts with a similar scraper 22 secured on the end of the arm 2 to fit around the wire and remove the insulation therefrom. On the inner or under side of the arm 2, a guide 23 for the wire is provided and this guide may be of any preferred form, being illustrated as a hook extending from the inner face of the arm to engage around the wire. The scrapers 21 and 22 are preferably of resilient metal and are constructed in their meeting edges with notches 24 which will fit around the wire, the edges of the scrapers at the sides of the notches meeting so as to pass through the insulation and effectually remove the same from the wire.

An operating lever or handle 25 is fulcrumed near its upper end between lugs 26 on the body 1 and at its upper end is provided with an opening 27 to receive and carry the pin 14, the end of the lever being disposed within the fork at the outer end

of the link 11. The lever or handle 25 is provided with a plurality of finger seats 29 in its outer surface so that it may be conveniently grasped by the user and between the inner surface of the lever and the opposed surface of the body 1, I provide a spring 30 which is secured to the body and bears at its free end against the lever so as to normally project the lower end of the lever from the body. The blades will thus be automatically retracted to free a wire and pressure upon the handle will move the blades into contact with the wire. In order to regulate the throw of the operating lever or handle so that the blades will be given only such movement as will permit them to perform the required work and to accommodate the tool to wires of different gages, I provide a plurality of shoulders or notches 31 in the inner edge of the lever which are arranged in stepped relation and are adapted to be engaged by a stop pin or dog 32 pivotally mounted within a recess 33 in the edge of the body and controlled by a bar or rod 34 pivoted to the dog and extending longitudinally through a passage 35 in the body and beyond the end thereof. At its free end, the bar or rod 34 is constructed with a plurality of teeth 36 which are engaged by a pawl 37 pivoted in the body immediately adjacent the bar and having one end projecting beyond the body so that it may be easily operated by pressure from the user's fingers. It will be readily understood that if the bar 34 be pushed inwardly the dog 32 will be set to engage a shallower notch in the handle and by causing the dog to engage the proper notch, the tool will be adjusted to the gage of the wire upon which it is to operate. The inward movement of the bar 34 will cause it to ride freely under the pawl 37 but to permit the bar to be drawn outwardly the said pawl must first be released.

To hold the handle 25 against movement when the tool is not in use, I provide a hook 38 at the free end of the handle and mount a ring 39 upon the body 1 in position to engage over the said hook, as shown clearly in Fig. 5, so that the handle will be effectually restrained against the action of the spring 30.

In the end of the body 1 remote from the cutter and scraper blades, I provide a longitudinal chamber 40 opening through the end of the body, as clearly shown in Fig. 4. The polishing members are disposed within this chamber 40 and are carried by a screw cap or plug 41 threaded into the end of the chamber. A cylinder 42 is secured to the inner end of the plug 41 by screws or other fastenings inserted through an annular flange 43 on the cylinder which rests against the plug. Base bars 44 are secured on the inner wall of the cylinder and a strip 45 of sandpaper, emery cloth, or other abrading material is carried by each bar. The inner end of each bar is beveled slightly and the inner end of one abrading strip is firmly secured upon said beveled surface. The abrading strip extends longitudinally over the bar 44 and its outer end is bent over the outer end of the bar, a clamping plate or washer 46 being arranged to bear upon said end of the abrading strip. The clamping plate is carried by a set screw 47 which is inserted into the end of the bar 44 and carries the washer or clamping plate so that when the screw is turned home the end of the abrading strip will be firmly secured.

The uses of the tool will, it is thought, be readily understood. When it is necessary to remove insulation from a wire, the end of the coated wire is placed between the jaws 4 and 6 and the handle 25 pressed toward the body 1. The shorter arm of the handle will be consequently swung away from the body and a pull exerted upon the link 11 to rock the cutter 6 and swing the working end thereof toward the fixed cutter jaw 4. The insulation 40 will thus be cut through while the wire 51 will be held in the grooves 7 and thereby prevented from being severed. The handle is then released and will swing away from the body under the influence of the spring 30 so that the cutter 6 will be rocked away from the stationary jaw 4 and the wire freed. The wire is then placed within the grooves 10 and inserted through the guide 23 with its end projecting between and beyond the scraper blades 21 and 22. After the wire has been adjusted so that the cut in the insulation will be engaged by the edges of the scraper blades the handle 25 is again pressed toward the body 1 and held thereto while the wire is drawn through the notches 10 and the guide 23, the relative movement of the wire and the blades causing the insulation to be scraped from the wire, as shown in Fig. 4. As the insulation is not always scraped cleanly from the wire it may sometimes be desirable to polish the exposed portion of the wire and to this end the wire, after it has been drawn through the guide 23, is lifted from the grooves 10 and the exposed end thereof then inserted between the abrading strips 45. Relative reciprocation of the wire and the abrading strips will quickly produce the desired bright clean surface on the wire so that the electrical connection may be made.

When the handle 25 is pressed toward the body 1 by the user of the tool, the short arm of the lever swings outwardly and carries with it the pin 14. Inasmuch as the pin 14 is in engagement with the lever 17 and the link 11, the said members will be caused to follow the movement of the pin and the slots 18 accommodate the relative angular move-

ment of the parts. The outward movement of the short arm of the handle 25 causes the lever 17 to swing about its pivot so that the scraper blade 21 is moved toward the stationary scraper blade 22 and the wire is thus engaged so that the insulation can be removed.

It is not always convenient to carry the tool in the pocket of a garment nor is it always desirable to place it in a kit. In order, therefore, that it may be always accessible so that the electrician may not lose time in hunting for the tool, I attach to the end of the body a ring 52 which may be engaged over a hook upon the operator's belt so that loss of the tool will not be apt to occur and it will always be accessible.

Having thus described the invention, what is claimed as new is:

1. A tool for the purpose set forth comprising a body, a series of alined open-sided guides across one end of the body, scraper blades mounted upon the edge of the body in alinement with the guides, and means on the edge of the body for separating the scraper blades or moving them into juxtaposition.

2. A tool for the purpose set forth comprising a body having a laterally projecting arm at one end, a scraper fixed upon the end of said arm, a coacting scraper pivotally mounted on the side of the body and disposed in the plane of the lateral arm, and means on the edge of the body and operatively connected with the second-mentioned scraper to move the same to or from the fixed scraper.

3. A tool for the purpose set forth comprising a body, a scraper fixed on the body, a lever pivotally mounted upon the body, a scraper carried by the free end of said lever and arranged to coact with the fixed scraper, means mounted on the body and operating upon said lever to move the scraper thereon toward and from the fixed scraper, and yieldable means for holding the scrapers normally apart.

4. A tool for the purpose set forth comprising a body, a fixed scraper thereon, a lever pivoted upon the body, a scraper carried by said lever and arranged to coact with the first-mentioned scraper, a handle fulcrumed upon the body and having a lost-motion connection with the lever, and means acting on said handle to normally hold the scrapers apart.

5. A tool for the purpose set forth comprising a body, a fixed blade on the body, a movable blade mounted upon the body, a handle mounted upon the body and operatively connected with the movable blade and provided in one edge with a plurality of stop shoulders in stepped relation, a dog mounted upon the body, and means upon the body for setting said dog to engage any one of the stop shoulders.

6. In a tool for the purpose set forth, a body, a fixed blade upon the body, a movable blade mounted on the body to coact with the fixed blade, a handle mounted on the body and operatively connected with the movable blade, a variable stop mounted on the body in the path of said handle, an adjusting rod connected to said stop and extending beyond the body, and means on the body to engage said adjusting rod and hold it in a set position.

7. A tool for the purpose set forth comprising a body having a laterally projecting arm at one end, a lever fulcrumed upon the body adjacent said laterally extending arm, scrapers carried by said arm and said lever, an operating handle fulcrumed upon the body, and a pin and slot connection between the operating handle and the said lever.

In testimony whereof I affix my signature.

FREDERICK J. HARRISON. [L. S.]