Nov. 17, 1953 E. D. DAVISON 2,659,140

WIRE STRIPPER

Filed April 30, 1949

Fig. 1.

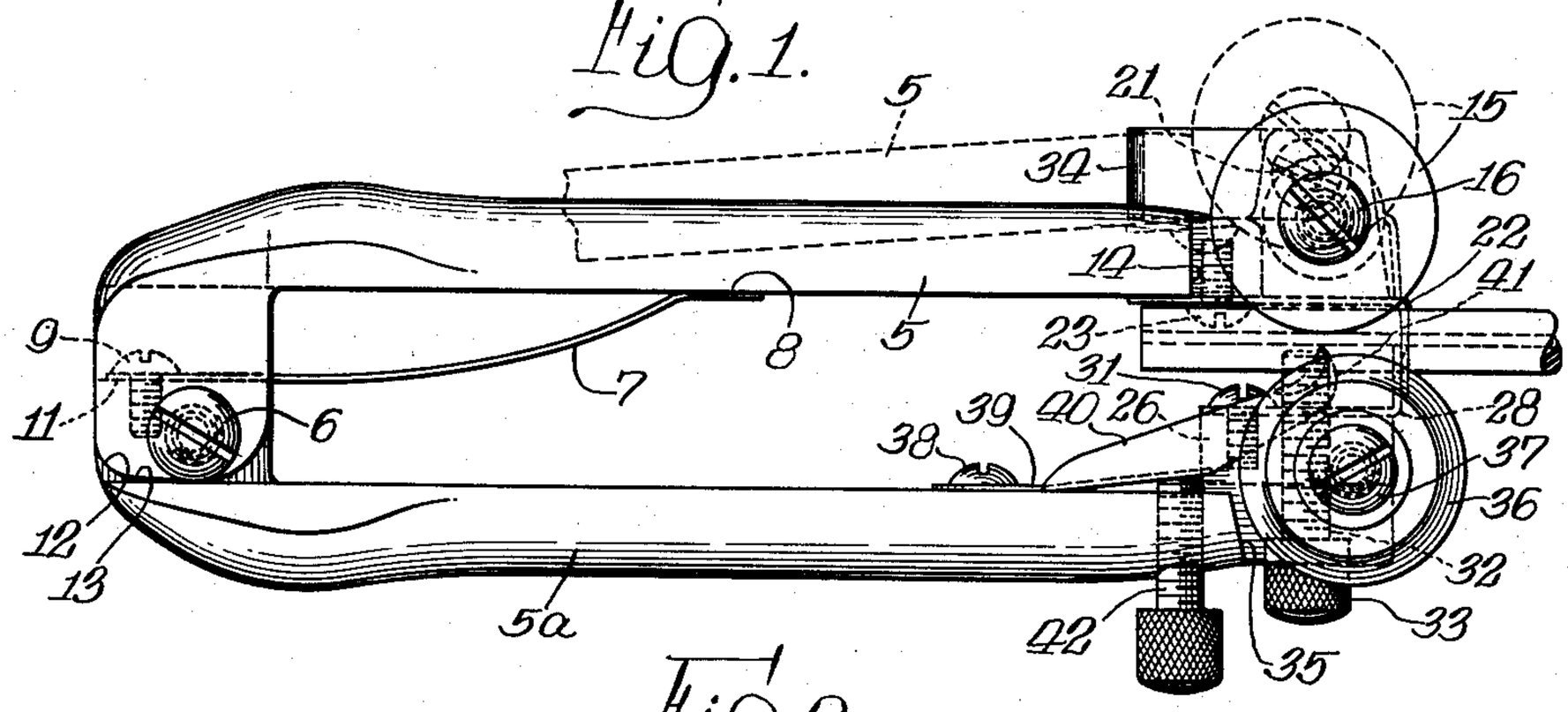


Fig. 2.

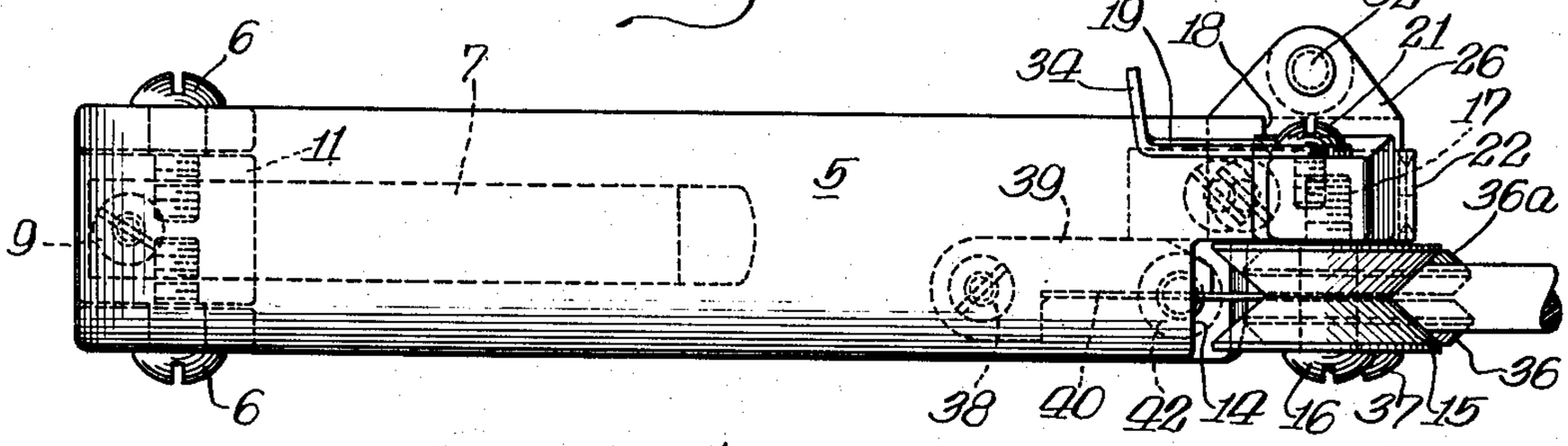


Fig. 3.

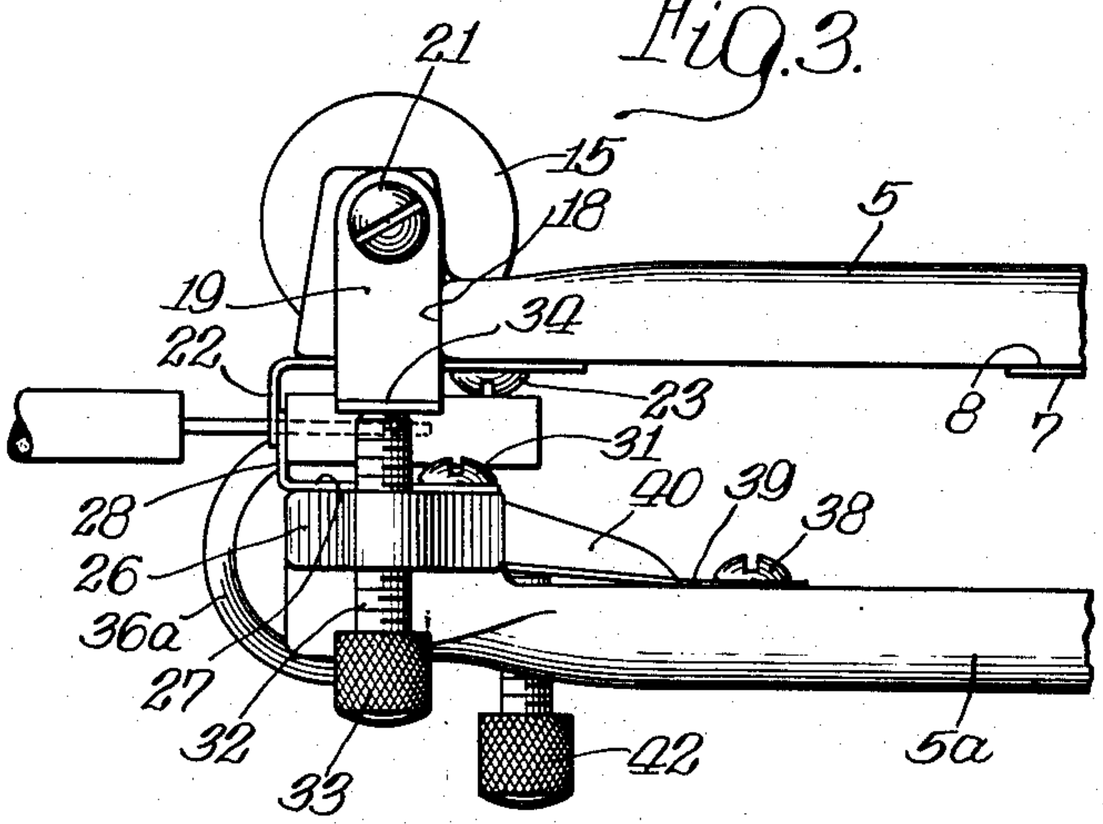
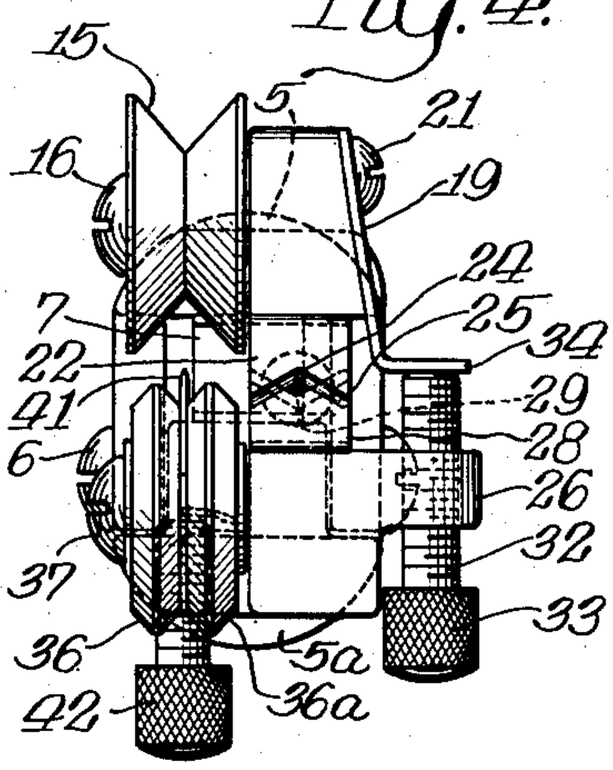


Fig. 4.



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2,659,140

WIRE STRIPPER

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3 Claims. (Cl. 30—91)

1

The invention pertains to an instrument or tool adapted to be held in the hand of the user for use in cutting and stripping the insulation or sheathing from electric wire although also adapted for use as a wire cutter, as a gripping tool and for other purposes.

One of the primary objects of the invention is to provide a tool of the character described by which insulation, covering or sheath of a non-metallic nature of an electric wire may be cut both longitudinally and circumferentially of and stripped from the wire without injury to the wire or without injury to an inner wrapping or insulation where there are two or more layers or wrappings about the wire and it is desired to remove only an outer layer or layers thereof.

Another important object is to provide a device of the character described whereby the insulation cover or sheath of a wire may be removed over any desired length of the wire whether at an end of the wire or over a length intermediate of the wire ends, the device also being adapted to effect scraping of the exposed wire surface to effect better electrical contact therewith.

Special features and objectives of the invention also reside in an arrangement whereby both the depth of the cut along the length of the wire, that is, longitudinally of the wire axis, and the depth of the cut transversely or circumferentially of the wire axis may be regulated to a nicety and whereby the cutting depth of one cutter may be predetermined independently of the cutting depth of the other cutter or with and by the adjustment of the other cutter whereby simultaneously to set predetermined cutting depths for both longitudinal and circumferential or transverse cutting, etc.

Other objects as well as the advantages and uses of the invention will be or should become apparent and understood after reading the following description and claims and after viewing a preferred embodiment illustrated in the accompanying drawings, in which:

Fig. 1 is a view in side elevation showing the parts in operative position for cutting the insulation of a wire longitudinally at one end of the wire;

Fig. 2 is a top view of the device of Fig. 1;

Fig. 3 is a view in side elevation of a fragment of the device illustrating the manner in which insulation is cut circumferentially of the wire and stripped therefrom; and

Fig. 4 is an end elevation looking at the left hand end of Fig. 3.

2

A pair of bars 5 and 5*a* suitably shaped to provide hand grips are hinged together at one end of each by a screw or other form of pintle 6 and are normally urged apart by a leaf spring 7 which, at one end, presses against the bar 5 as indicated at 8 and, at its other end, is anchored as by a screw 9 to an abutment shoulder 11 forming part of the hinge of the bar 5*a*. The axis of the hinge or pivot between the bars 5, 5*a* is displaced forwardly of the center of the hinge abutments of the bars or grips 5 and 5*a*, and the hinge abutments of the bar 5 to the rear of the hinge or pivot are rounded on a short radius as indicated at 12 for engagement with the surface 13 of the bar 5*a*, thereby to limit the opening or outward movements of the bars from one another under the influence of spring 7. Ordinarily, the bars will not need to move apart farther than the distance indicated by the dotted position of bar 5 and the full line position of bar 5*a* in Fig. 1.

The free end of bar 5 is cut away at one side as indicated at 14 for reception of a V-grooved roller 15 freely rotatable upon a screw pivot 16 having threaded engagement as indicated at 17 with a threaded bore in the end of the bar 5. The axis of rotation of the roller 15 preferably is perpendicular to a median plane passing through both bars 5 and 5*a*. This roller carried by the free end of the bar 5, together with the rollers 36 and 36*a* disposed at the opposite sides of a cutting blade 41 which are hereinafter more fully described, provide clamping jaws or means for tightly gripping and guiding therebetween the sheathed or insulated wire to be stripped of its insulation or sheathing. By reason of the free rotation of these rollers, the stripper or tool may be readily moved or drawn longitudinally of the wire or the wire drawn longitudinally of the stripper or tool and guided between the rollers whereupon the cutting blade longitudinally slits this insulation or sheathing to a predetermined depth. The opposite side of the free end of the bar 5 is cut away to provide a recess 18 for the reception of one end of an L-shaped stop member 19 and a screw or the like 21, which is threaded into the bar end through a hole in the stop member 19, thereby to retain the stop member.

Between the recesses 14 and 18 is a cutter jaw member 22 which is held rigidly to the inside surface of the bar 5 by a screw or other fastening means 23. The outer end of the jaw is turned downwardly at right angles to the remainder of the cutter jaw member and terminates in a V-

notch **24** providing cutting edges **25**, the beveled faces of which are directed toward the observer in Fig. 4. Similarly mounted on the inside surface of a boss **26** integral with the outer end of the bar **5***a* is a cooperative cutter jaw member **27** having an up-turned right angle shearing jaw portion **28**, V-notched as indicated at **29** in Fig. 4, and beveled to provide cutting edges cooperative with the cutting edges **25**. Viewing Fig. 4, the beveled surfaces of the cutting edges **29** are facing away from the observer so that the flat sides of jaws **22** and **28** slide on one another and, between them, provide a shearing effect. The jaw member **27** is held rigidly on the boss **26** by screw or the like **31**.

Extending through the boss **26** is a threaded bore adapted to have threaded engagement with an adjustment screw **32**, the head of which may be knurled as indicated at **33** to provide a finger grip for turning it. The screw **32** provides an adjustable abutment cooperative with the projecting arm **34** of the stop member **19** when the latter is turned from the position indicated in Fig. 2 to that indicated in Figs. 3 and 4, thereby to limit the movement of the free ends of the two bars **5** and **5***a* toward one another.

One side of the free end of the bar **5***a* is also cut away as indicated at **35** to provide clearance for a pair of rollers **36** and **36***a* which are freely rotatable upon a pivot provided by a screw **37** secured in the free end of the bar **5***a*. The axis of rotation of the rollers **36** and **36***a* preferably is parallel to the axis of rotation of the roller **15**, and the rollers **36** and **36***a* are so mounted as to be cooperative with the roller **15** to receive and retain a wire therebetween. Each of the rollers **36***a* is beveled on both circumferential edges, as is clearly apparent from the drawing, so that either may be the inner or outer roll, the two being interchangeable with one another.

Secured as by a screw **38** to the inner flat surface of the bar **5***a* is a leaf spring or the like **39** carrying a cutter **40** the blade of which, designated **41**, is disposed between the two rollers **36** and **36***a*. The plane of the blade **41** is generally parallel to the planes of rotation of the rollers **36** and **36***a*, and the blade is preferably scarfed or beveled on both sides of its rearwardly facing edge and on an arc as shown in Fig. 1 so as to engage the wire sheath or insulation and cut the same longitudinally of the wire axis. The cutter **40** is normally retracted toward the bar **5***a* by the action of the leaf spring **39**, and this movement retracts the blade **41** radially inward of the rollers **36**, **36***a*. In order to move the blade **41** radially outward centrally of the groove provided by the adjacent beveled edges of the rollers **36**, **36***a* a knurled head set screw or the like **42** is threadedly engaged in a bore within the bar **5***a* and at its inner end presses against the leaf spring **39**. In this manner the cutter blade may be set to cut to a predetermined depth toward the wire in the sheath and, as the wire is drawn relatively between the rollers **15** and **36**, **36***a*, the insulation or sheath will be cut to a uniform depth longitudinally of the wire.

The illustrated device may be held in either hand of the user in almost any convenient position, it being understood that some may prefer to hold the two bars or grips **5** and **5***a* in a more or less horizontal plane, whereas other users may desire to hold the device with the bar or grip **5***a* upward and directly above the bar or grip **5**, depending upon the whim of the user. In any event, when it is desired to strip the insulation

or sheathing from an end portion of a piece of insulated electric wire, the cutter blade **41** may first be employed to split or slit the insulation entirely along that length which is to be removed. Thereafter, the cutter jaws **22** and **28** may be brought together to the desired extent, as may be determined by the set screw **32**, to cut the insulation circumferentially at the point from which it is to be stripped. If it is necessary, the cutter jaws may be rotated 90° relative to the wire and brought together again to complete severance of the insulation in case the first operation is not sufficient.

Some operators may desire to cut the insulation circumferentially, using the jaws **22** and **28**, before slitting the insulation longitudinally through the use of the blade **41** and, in some cases, it may not be necessary to employ the blade **41** at all since a pull upon the circumferentially severed insulation may result in its removal from the wire end. However, where a portion of insulation is to be removed intermediate of the ends of a piece of wire, it is necessary to cut or break the insulation longitudinally over the length of that portion which is to be removed and, for such purpose, the blade **41** is especially useful. As will be appreciated, the adjustment of the screw **32** determines the proximity of approach of the jaws **22**, **28** toward one another by engaging with the adjustable abutment **34**. If desired, the abutment **34** may be swung out of the way and the jaws **22**, **28** may be brought together to effect shearing of the wire, whether the wire is or is not covered with an insulating sheath. The jaws **22**, **28** may also be used to scrape the conductor wire to insure good electrical contact.

While I have illustrated and described what is at present the preferred embodiment of the invention, it will be understood that the invention may be embodied in other forms and that various changes and modifications may be made in the details without departing from the invention spirit or scope of the appended claims.

I claim:

1. In a tool of the character described, a pair of relatively rigid hand-grip members pivotally connected together adjacent to one end of each for relative pivotal movements of their opposite ends toward and from one another, a circumferentially grooved roller rotatably mounted on the said other end of one member on an axis extending transversely of the path of movement of said other ends toward and from one another, a pair of rollers rotatably mounted adjacent to but spaced from one another on said other end of the other member on an axis substantially parallel to the axis of rotation of the first said roller, said rollers being cooperative with one another to roll along a sheathed wire therebetween with said grooved roller on one member and said pair of rollers on the other member being free to rotate and to receive and grip therebetween the sheathed wire but permit said tool to be moved relative to and longitudinally of said wire upon a pulling effort causing rotation of said rollers, a spring-mounted sheath-cutting blade secured to said other member and disposed between said pair of rollers, and means for moving said blade relative to said pair of rollers in a path toward and from the bottom of the groove of the first said roller.

2. In a tool of the character described, a pair of relatively rigid hand-grip members pivotally connected together adjacent to one end of each

for relative pivotal movements of their opposite ends toward and from one another, spring means normally urging said opposite ends of said members apart, a circumferentially grooved roller rotatably mounted on the said other end of one member on an axis extending transversely of the path of movement of said other ends toward and from one another, a pair of rollers rotatably mounted adjacent to one another on said other end of the other member on an axis substantially parallel to the axis of rotation of the first said roller, said rollers being cooperative with one another to roll along a sheathed wire therebetween with said grooved roller on one member and said pair of rollers on the other member being free to rotate and to receive and grip therebetween the sheathed wire but permit said tool to be moved relative to and longitudinally of said wire upon a pulling effort causing rotation of said rollers, a sheath-cutting blade disposed between said pair of rollers, a spring mounting said blade upon said other member and normally tending to move said blade away from said first mentioned roller, and means for moving said blade relative to said pair of rollers in a path toward and from the bottom of the groove of the first said roller.

3. In a tool of the character described, a pair of relatively rigid hand-grip members pivotally connected together adjacent to one end of each for relative pivotal movements of their opposite ends toward and from one another, spring means normally urging said opposite ends of said members apart, a circumferentially grooved roller rotatably mounted on the said other end of one member on an axis extending transversely of the path of movement of said other ends toward and from one another, a pair of rollers rotatably mounted adjacent to one another on said other end of the other member on an axis substantially parallel to the axis of rotation of the first said roller, said rollers being cooperative with one another to roll along a sheathed wire therebetween with said grooved roller on one member and said pair of rollers on the other member being free to rotate and to receive and grip therebetween the sheathed wire but permit said tool to be moved relative to and longitudinally of said wire upon a pulling effort causing rotation of said rollers, a sheath-cutting blade carried by said other member and disposed between said pair of rollers, means for moving said blade relative to said pair of rollers in a path toward the bottom of the groove of the first said roller, and spring means between said blade and said other member and upon which said blade is mounted for normally tending to move said blade away from the first said roller.

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