March 19, 1935. J. P. WHALAN ET AL 1,994,972

WIRE AND SLEEVE CONNECTER TOOL

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Fig. 1.

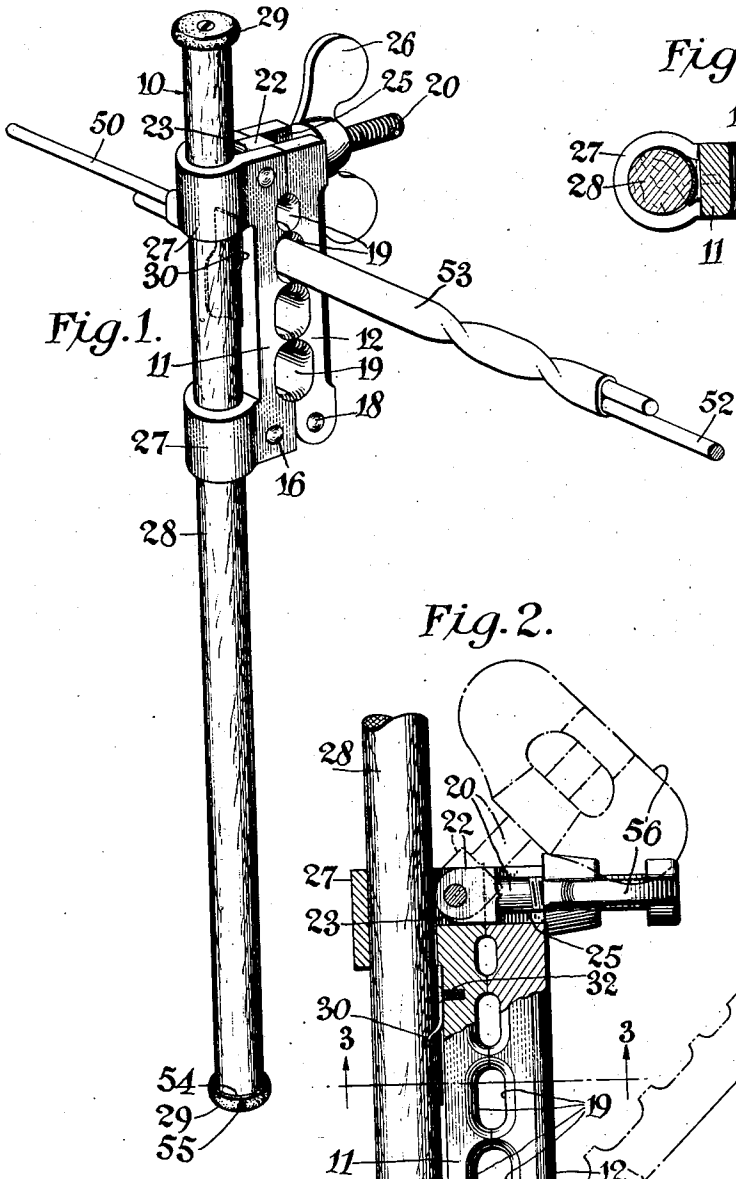


Fig. 3.

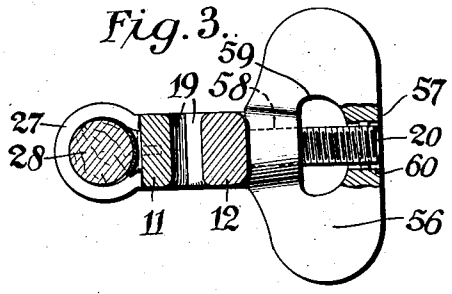
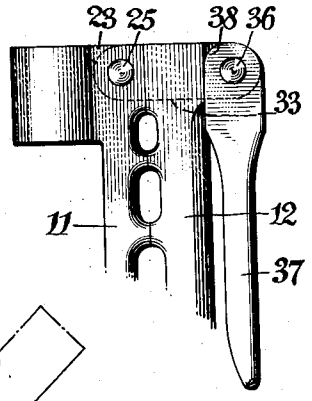


Fig. 2.

Fig. 4.



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WIRE AND SLEEVE CONNECTER TOOL

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2 Claims. (Cl. 140—118)

This invention relates to clamping devices and it has particular relation to tools for clamping and twisting wires or like elements.

One object of the invention is to provide a tool which is adapted to facilitate the splicing or interconnection of wires and their inclosing sleeves and which is adapted to be operated in a relatively small space.

Another object of the invention is to provide a wire clamping and twisting tool in which a handle for operating it is incorporated and adapted to be moved to various positions for the purpose of avoiding obstruction of other wires adjacent the place of operation of the tool.

Another object of the invention is to provide a wire twisting and connecting tool in which a handle is provided in such manner as to insure a maximum leverage of the handle and at the same time providing for operation in a very small place without danger of short circuiting other wires.

In the drawing:

Fig. 1 is a perspective of a wire and sleeve connecting tool embodying the invention;

Fig. 2 is a fragmentary side elevation of the tool, with portions broken away and shown in vertical section;

Fig. 3 is a cross-section taken substantially along the line 3—3 of Fig. 2;

Fig. 4 is a fragmentary side elevation of another form of tool structure.

A wire and sleeve connecting tool 10 embodying the invention comprises a pair of clamping jaws 11 and 12 that are hinged together by means of a link riveted at one end, as indicated at 16, in a notch 17 at the lower portion of the jaw 11. The lower end of the other jaw 12 has a pivotal connection 18 to the other end of the link 15. Thus the opposed portions of the jaws can be pivotally moved toward each other until they are in parallel relation and contact each other as shown in Fig. 2. Opposed portions of these jaws are provided with oblong recesses 19 graduated in size from one end of the tool to the other.

At the upper end of the tool 10 a screw threaded bolt 20 is provided with a head 22 pivotally mounted in a bifurcated portion 23 of the jaw 11. This bolt is mounted to swing into a recess 25 formed in the upper end of the jaw 12, and a wing nut 26 threaded upon the bolt provides for maintaining the opposed faces of the jaws tightly clamped together. In order to swing the jaws open or apart, the wing nut 26 is loosened and the bolt 20 swung to the broken line position shown in Fig. 2. Then the jaw 12 can be swung outwardly to its broken line position shown in the same figure.

A pair of spaced sleeves or barrels 27 are formed integrally at opposite end portions of the jaw 11 and a handle 28 is slidably disposed through the barrels. Opposite ends of the handle are provided with stops or enlarged heads 29 to prevent the handle from slipping in either direction from the barrels 27. This handle is composed of insulating material or is provided with a covering of insulation. In order to maintain the handle against accidental slipping from any given position in the barrels 27, a leaf spring 30 secured, as indicated at 32, to the back of the jaw 11 bears against the shank of the handle and will maintain it yieldably in any given position in the barrels.

Referring to Fig. 4, instead of employing means, such as the bolt 20, for securing the upper ends of the jaws 11 and 12 in closely clamped relation, a link 33 having a pivot pin 35 at one end mounted in a bifurcated end of the jaw 11 also has its intermediate portion movably disposed in the notch 25 in the upper end of the jaw 12. At the outer end of the link 33 a pin 36 is provided for pivotally supporting a latch 37 that is movable to the position shown in Fig. 4 to clamp the jaws 11 and 12 together. A cam surface 38 at the end of the latch bears against the outer surface of the jaw 12 to maintain the clamped relation of the tool parts. The barrel construction 27 slidably receives the handle 28 in the same manner as that described with reference to Fig. 1.

In the operation of the tool, a pair of wires 50 and 52 are threaded through a sleeve 53 and the jaws 11 and 12 of the tool are swung open to the broken line position shown in Fig. 2. The sleeve 53 is then engaged in one of the recesses 19 depending upon the size of the wire and sleeve, and by bringing the jaws together and locking them in close contact by the wing nut 26 and bolt 40, the sleeve and wires are held firmly together. Very satisfactory results have been achieved by employing two of the tools 10, one applied as described, to each end portion of the sleeve 53. Then by utilizing the handle 28 of each tool and imparting a rotary movement to the tool about the axis of the wires and the sleeve, the latter are firmly twisted together. One tool at one end of the sleeve can be manipulated while a like tool applied to the other end of the sleeve can be held firm to effect the desired twisting together of the wires and sleeve, or a tool at each end of the sleeve can be manipulated simultaneously.

When the wires are in a restricted location or a number of wires are strung close together the

handle 28 extending in one direction from the tool can be used to turn the jaws until an obstruction is encountered and then the handle is slidably guided through the barrel 27 to a position suitable for continuing the turning or rotary motion of the tool and at the same time avoiding the other wires or obstructions. In this manner if necessary the tool may be repeatedly turned through 360 degrees, and thus the desired twisting and securing of the wires and sleeves can be accomplished.

Since the handle 28 is composed of insulating material or is insulated, its contact with the other wires is not dangerous and also prevents short circuiting between wires which may be located immediately adjacent the working area of the tool. A handle 28 composed of wood has been found to operate satisfactorily in practicing this invention, and likewise a handle covered with insulating material has been found to be satisfactory. Also satisfactory results have been achieved by providing leather washers or rings to form the stops 29, and a washer of this kind can be forced or slipped over each end of the handle until it is seated in a groove 54 formed in the end portion of the handle. Suitable fastening devices 55, such as screws, or the like, insure firm connection between the handle and washers.

In the arrangement shown in Fig. 3, a wing nut 56, which can be used in place of the wing nut 26, is provided with a bridging portion 57 spaced from its screw threaded portion 58 across an intervening opening 59. An opening 60 slightly larger in diameter than the screw threaded portion 58 is formed in the bridging portion and is axially alined with the screw threaded portion. The outer end portion of the bolt 20 upon which the nut is threaded extends toward or into the opening 60, but preferably does not project beyond the outer surface of the bridging portion. Thus the bridging portion of the nut serves as a shield and prevents ropes, wires, or the like, from becoming entangled or otherwise caught upon the end of the bolt.

Although only two forms of the invention have been shown and described in detail it will be apparent to those skilled in the art that the invention is not so limited but that various changes may be made therein without departing from the spirit of the invention or from the scope of the appended claims.

We claim:

1. A wire and sleeve connecting tool comprising a pair of jaws pivotally connected together, said jaws having recessed upper end portions, a link mounted in the recessed upper end portion of one of the jaws, said link being movable into the recessed portions of the other jaw, and a latch pivotally secured to the outer end of the link and movable to lie alongside the latter jaw in parallel relation thereto, said latch having a bifurcated cam portion straddling the link end engaging one of the jaws to maintain both jaws in clamped relation when the latch is lying in parallel relation thereto.

2. In a wire and sleeve connecting tool, a handle supporting jaw having a sleeve construction formed thereon for slidably receiving a bar handle, a clamping jaw pivoted at one extremity to the extremity of the handle supporting jaw, a link having one end pivoted to the other extremity of the handle supporting jaw on the side opposite the sleeve construction and normally extending across an adjacent end portion of the clamping jaw in the closed position of the two jaws, and a cam latch pivotally supported upon the other end of the link and pivotable to a position substantially lengthwise of and against the side of the clamping jaw to secure the two jaws in clamped relation, the high point of the cam lever impinging and traversing a portion of the clamping jaw during the pivotal movement of the latch to its latching position.

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