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[56]

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[54] **WIRE GUIDE FOR TERMINAL ATTACHING
MACHINES**
7 Claims, 2 Drawing Figs.

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[50] Field of Search..... 29/203
(DT), 203 (DTS), 211 (D)

ABSTRACT: A device for grabbing the end of a wire and positioning it for terminal attaching machines utilizing an air cylinder for closing the grabbers and having adjustments for positioning spring loaded parts to determine levels at which the wire ends are fed to the terminal attaching machines.

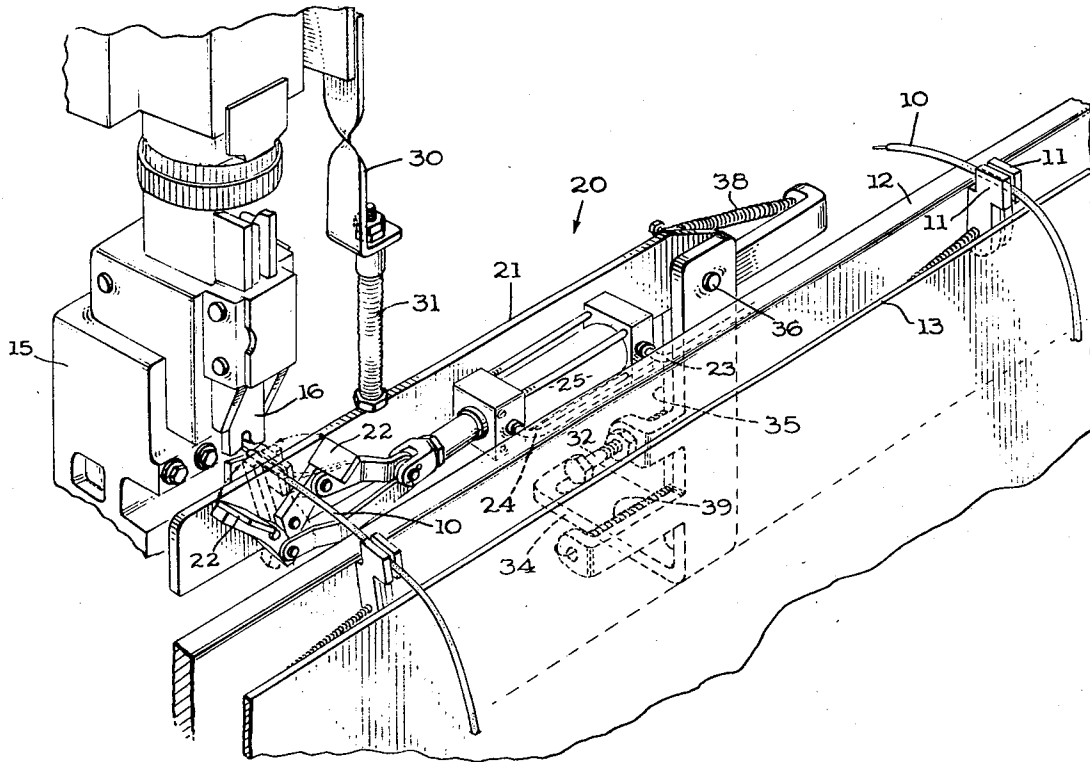
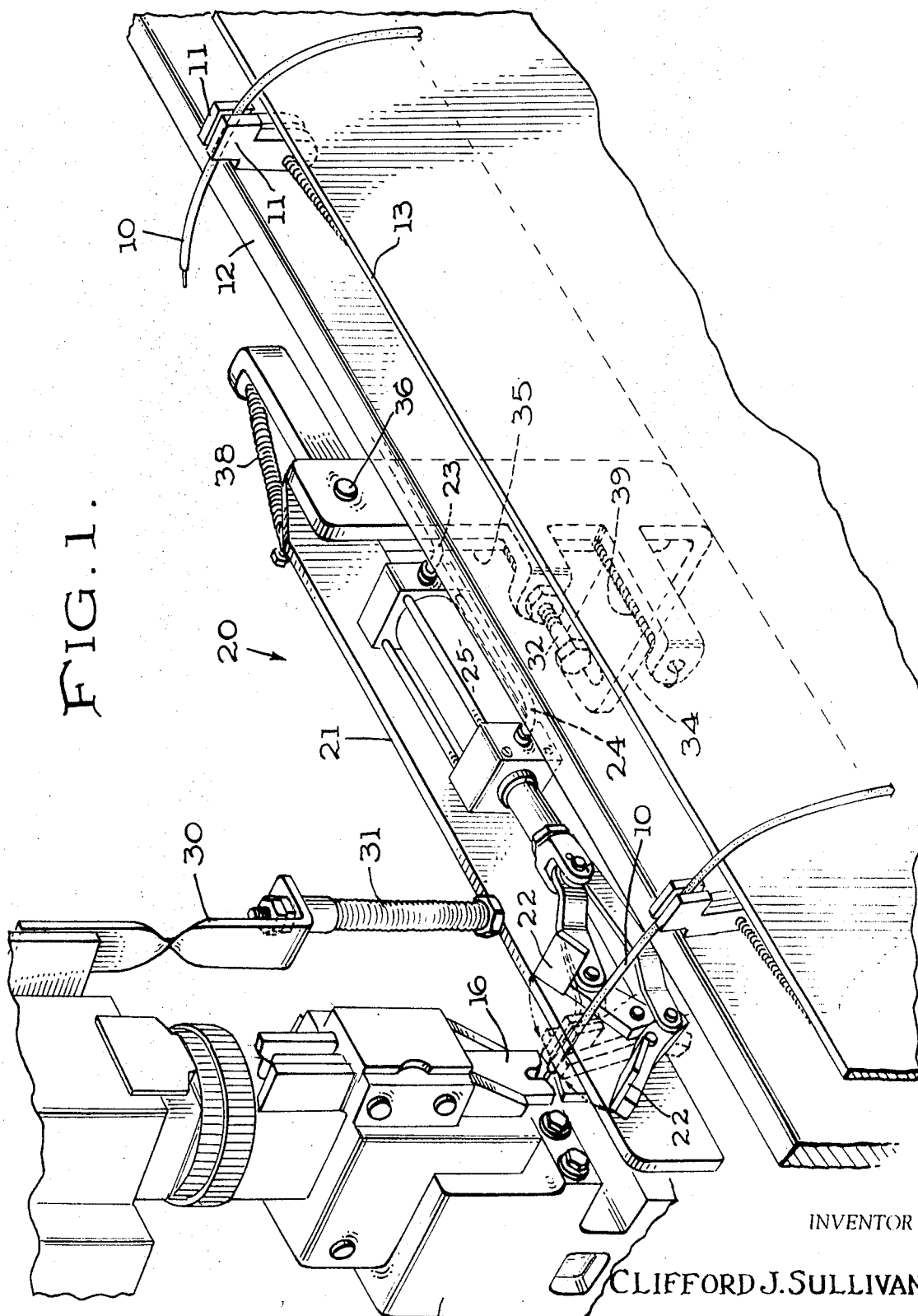


FIG. 1.



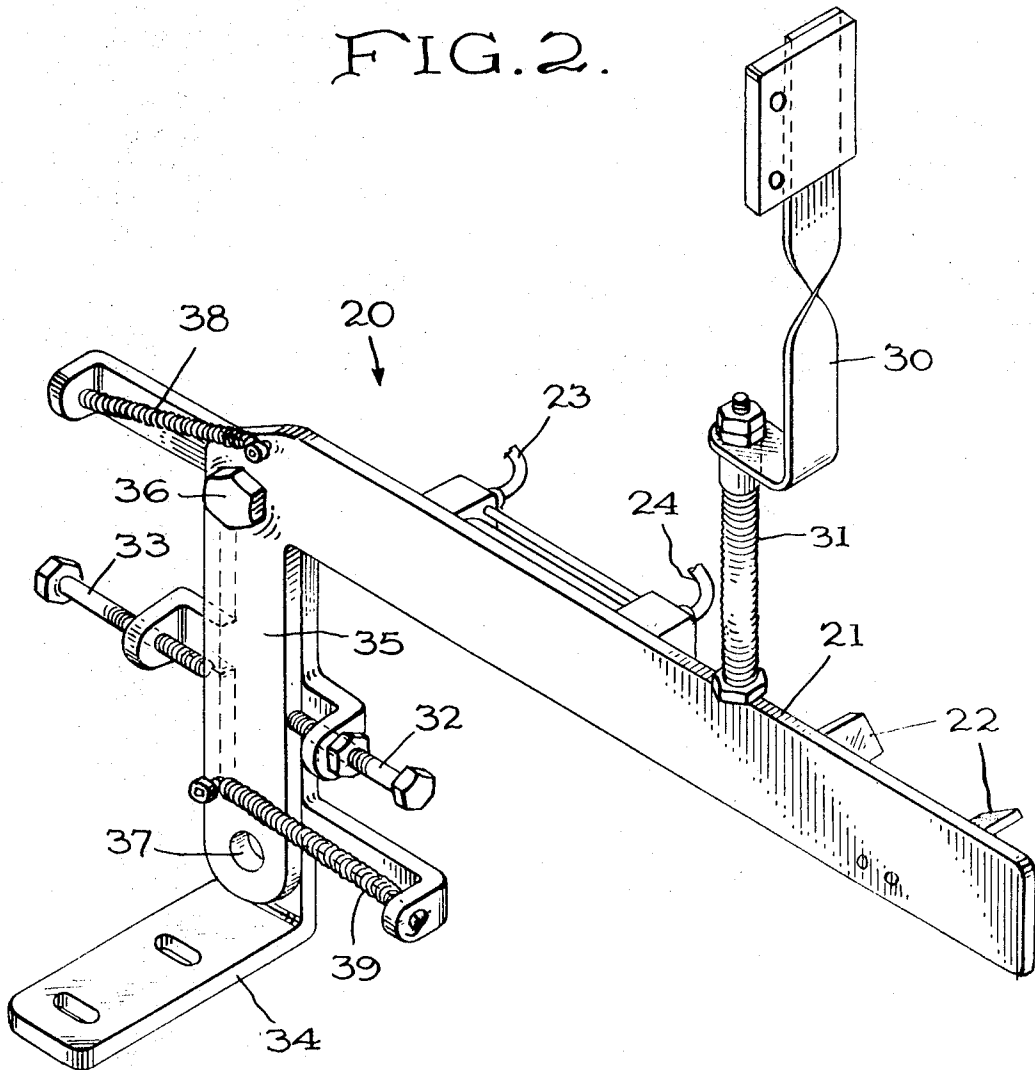
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FIG. 2.



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WIRE GUIDE FOR TERMINAL ATTACHING MACHINES

BACKGROUND OF THE INVENTION

The present invention relates to the attachment of electrical terminals to insulated wire and more particularly to a device for use with the terminal attachment machines for proper positioning of the wire in those machines.

The device of the present invention may be used in conjunction with machines for producing electrical conductors with terminals applied thereto such as is illustrated in the patent of K. H. Andren, U.S. Pat. No. 3,029,494 issued Apr. 17, 1962. However, the application of the device of the present invention is not limited to the machine illustrated therein but may be installed to operate in conjunction with other such machines.

Such machines of the type illustrated in the above said patent will deliver a cut to length and properly stripped wire lead to the terminating area. However, various conditions of the wire lead necessitate additional control of the wire for proper positioning for applying the terminals thereon.

The device of the present invention through adjustment thereof will place the wire to be terminated at the proper distance above the terminal and hold it there until a crimping tool descends to the point where it has gathered the wire into the throat of the crimping tool. At this point the device of the present invention, with all wire strands gathered, descends with the crimping tool to the terminal thus allowing the terminal to be attached to the end of the wire.

The device of the present invention may be used for straight-on terminal application but through its design may be a wire gathering device for the application of a flag or right-angle terminal. The gathering and positioning of the wire lead for the application of a flag terminal requires a vertical positioning movement as well as a simultaneous lateral movement to position the wire for proper termination. The device of the present invention functions well in this type of usage.

SUMMARY OF THE INVENTION

Basically the present invention is a device for gripping a wire near its end portion by means of gripping members achieved through an air cylinder and positioning this wire end in a position to be acted upon by a terminal adding machine through movement of a guide rail supporting the gripping members and mechanism therewith by means of a ram, spring-loaded attached to said guide rail, and adjustment bolts controlling the pivoting action of the mechanism. An additional alternate pivot point with adjustment thereabout allows vertical as well as horizontal adjustment.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other advantages of the invention will become apparent upon full consideration of the following detailed description and accompanying drawings in which:

FIG. 1 is a perspective view of the wire guide of the present invention shown in conjunction with associated terminal attaching machinery; and

FIG. 2 is a rear perspective view of the wire guide itself without associated machinery.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring first to FIG. 1 there is shown lengths of wire 10 carried by gripping fingers 11 which are moved by a conveyor mechanism (not shown) between guide rails 12 and 13. Gripping fingers 11 hold the length of wire 10 sufficiently far from their ends so that the remaining portion of the wire to the end upon which a terminal will be applied is sufficiently long to reach over the device of the present invention to the terminal applying machinery 15. As the length of wire 10 approaches gripping and guide device 20 a portion of length of wire 10 near the end to which the terminal will be applied slides along the guide rail 21 until it is positioned as shown by the length of wire 10 in the lower portion of FIG. 1. This posi-

tion at which application of terminals will take place is immediately above gripping members 22 and approximately centered between them. When this position of wire length 10 is reached a cam operated switch opens an electrically operated air valve (neither shown) which through connections 23 and 24 activate air cylinder 25 operating the associated piston and linkage to close gripping members 22, in which closed position they are shown in FIG. 1 in a dashed outline form.

Gripping members 22 remain in the closed position during the whole cycle at which time terminals are applied to the end of wire length 10. Thus a positive positioning control of wire length 10 is obtained. At this point the terminal applicator machine 15 is activated causing ram 30 through spring-loaded adjusting bolt 31 to depress rail 21 to a predetermined positioning level. This predetermined level is controlled by adjustment bolts 32 and 33 which are mounted through threaded ears attached to support 34. The ends of adjustment bolts 32 and 33 bear upon the edges of vertical portion 35 of rail 21. This determines the amount of pivotal movement allowed for rail 21 through pressure of ram 30. The unused part of the thrust pressure of ram 30 is absorbed by spring-loaded adjusting bolt 31. By increasing or decreasing the length of the spring-loaded portion of adjusting bolt 31, the relative time that rail 21 is depressed during the terminating cycle is controlled and thus varied.

Movement of guide rail 21 in relation to support 34 takes place about the pivot points 36 or 37. Movement about pivot point 36 takes place when only vertical positioning action is required. When a combination of both vertical and horizontal positioning action is required such as is needed when a right-angle or flag-type terminal is applied to the wire end, rail 21 is connected for movement to pivot about pivot point 37. Counterbalancing to the force of spring-load adjusting bolt 31, and repositioning is helped through the use of springs 38 and 39 which are attached at opposite ends to support 34 and to upper and lower points of the vertical portion 35 of rail 21.

Through the positioning of the ends of wire length 10 by means of wire guide device 20 as described above, the ends of wire length 10 previously stripped are held in a position to allow the crimping tool 16 to descend upon the wire gathering the wire strands together and applying the terminal thereto. The multipositioning feature of simultaneous vertical and horizontal action of the wire guide 20 is an important feature in the upper functioning of this device with machinery for applying terminals to the wire ends.

It will be obvious to those skilled in the art that various changes may be made without departing from the scope of the invention and the invention is not to be considered limited to what is shown in the drawings and described in the specification.

I claim:

1. A guide for positioning wires for attachment of terminals on the ends thereof by terminal attaching apparatus comprising support means for the support of the guide for positioning wires in relation to the terminal attaching apparatus; guide rail means to guide the end portion of the wire being positioned for the terminal attaching apparatus, pivotally attached to said support means; gripping means mounted on said guide rail means for movement therewith; moving means operated in timed relationship with the terminal attaching apparatus operatively attached to said guide rail means; and adjusting means mounted on said support means in operative relationship with said guide rail means to limit pivotal movement of said guide rail means.
2. The wire positioning guide of claim 1, further characterized by said guide rail means being L shaped with horizontal and vertical portions, said vertical portion having at least one pivot point thereon attaching it to said support means.

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3. The wire positioning guide of claim 2, further characterized by

said pivot point located near the top of said vertical portion near the intersection of the horizontal and vertical portions.

4. The wire positioning guide of claim 2, further characterized by

said pivot point located near the lower end of said vertical portion.

5. The wire positioning guide of claim 1, further characterized by

said gripping means including
a pneumatically operated piston,
and gripping members connected to said piston through linkage means to open and close said gripping members upon operation of said piston.

6. The wire positioning guide of claim 1, further characterized by

said moving means including

ram means connected for operation from the terminal attaching apparatus,
and spring-loaded adjustable means connecting said ram means to said guide rail means.

7. The wire positioning of claim 1, further characterized by said guide rail means being L-shaped with horizontal and vertical portions;

said gripping means including

a piston,
and gripping members connected to said piston through linkage means to open and close said gripping members upon operation of said piston;

said moving means including

ram means connected for operation from the terminal attaching apparatus,
and spring-loaded adjustable means connecting said ram means to said guide rail means.

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