

March 15, 1966

G. LHOMME ETAL

3,239,855

DEVICES FOR POSITIONING CIRCUIT WIRES ON CONNECTING LUGS

Filed April 2, 1962

2 Sheets-Sheet 1

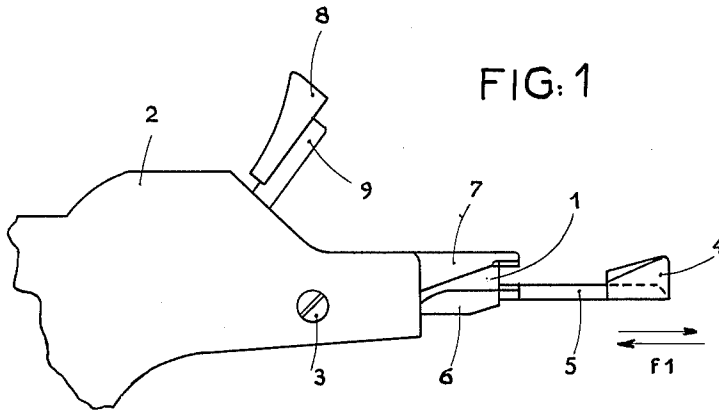


FIG. 1

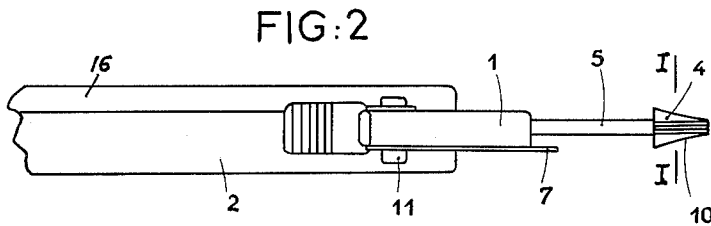


FIG. 2

FIG. 2a

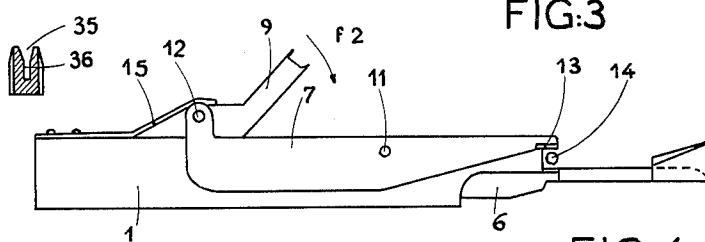


FIG. 3

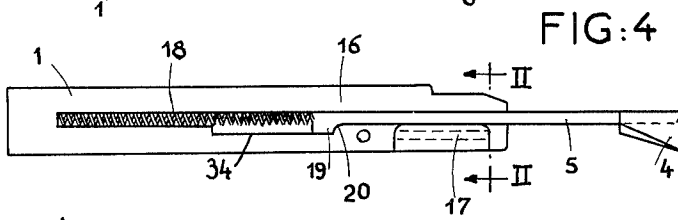


FIG. 4

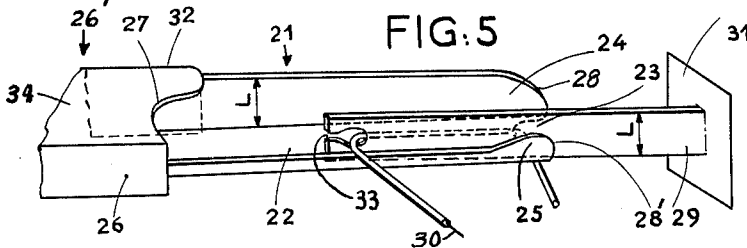


FIG. 5

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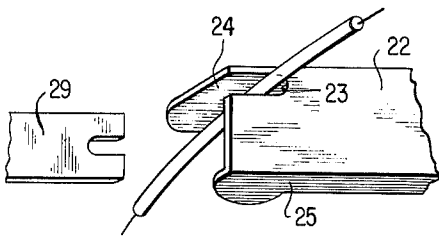


FIG. 6

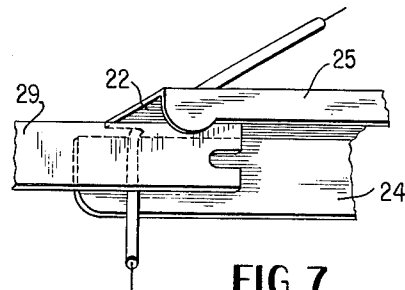


FIG. 7

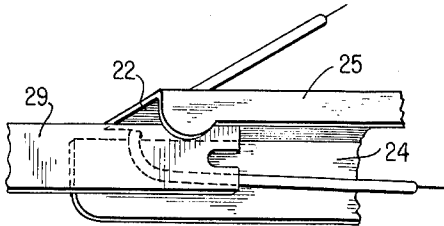


FIG. 8

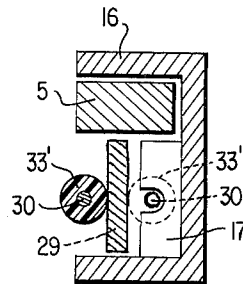


FIG. 11

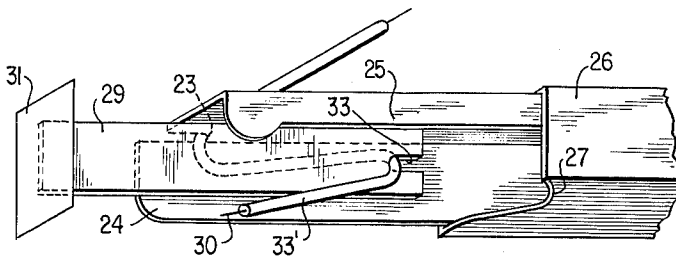


FIG. 9

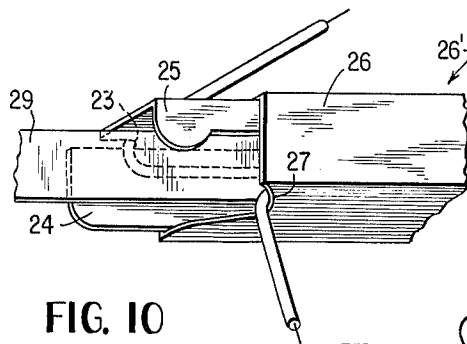


FIG. 10

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3,239,855

DEVICES FOR POSITIONING CIRCUIT WIRES ON CONNECTING LUGS

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Claims priority, application France, Apr. 13, 1961, 858,673

7 Claims. (Cl. 7—14.1)

The present invention concerns improvements in devices for positioning circuit wires on connecting lugs.

There has been described in applicants' U.S. Patent No. 3,110,329 issued November 12, 1963 a device for simultaneously effecting the baring and positioning of the circuit wire on connectors or connecting lugs, the disclosure of this patent being incorporated herein by reference thereto. Although this device is entirely suitable for meeting all the requirements which arise in current practice, it has nevertheless become apparent that precautions should be taken to prevent deformation or breakage of the soldering lugs in some cases. It is with the object of affording additional safety in the use of this device that improvements have been made to the initial invention disclosed in applicants' patent.

These improvements consists in providing a pre-guiding phase preparatory to the positioning of the tool employed for effecting the above baring and positioning of the wire. The pre-guiding of the tool by the connecting lug or connector makes it possible for the baring and positioning operation to be initiated only when the connecting lug is maintained in an absolutely adequate manner to receive the pressure of the tool.

The device forming the subject of the present invention is characterised by the fact that it comprises a pre-guiding device consisting of a sliding portion formed with a recess in which the connecting lug is engaged, the sliding portion sliding along the connecting lug when the tool is advanced until the instant when its forward end meets the base to which the connecting lugs are secured, and from this instant the sliding portion enters the tool itself and the free end of the connecting lug penetrates into the guide passage of the tool in such manner that, while the connecting lug is maintained on the one hand by the slotted metallic portion secured on the sliding rod and on the other hand by the guide passage of the tool, the operation of baring and positioning the circuit wire on the connecting lug takes place without any danger of deformation or breakage of the latter.

In accordance with one feature of the invention, the pre-guiding is effected by means of a slotted member of flared form mounted on the tool itself and sliding in relation thereto, in such manner that, on the one hand, the connecting lug extending through the slot is constantly maintained throughout the operation, while on the other hand the tool is capable of moving away any neighboring lugs which might be troublesome during the operation.

In a modification, the sliding portion is so formed as to be able to maintain one run of the circuit wire which is situated at the foot of the connecting lug while the other run is bared and positioned on the connecting lug.

Further features and advantages of the invention will become apparent from the detailed description which follows with reference to the figures of the accompanying drawings, which show by way of example one constructional form of the device according to the invention.

FIGURE 1 is a fragmentary front view of the whole device according to the invention.

FIGURE 2 is a fragmentary plan view of the whole device according to FIGURE 1.

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FIGURE 2a is a sectional view along the line I—I of the guide member of FIGURE 2.

FIGURE 3 is an external elevation view of the whole of the mechanism according to the invention.

FIGURE 4 illustrates the essential parts of the device according to the invention.

FIGURE 5 illustrates the sliding portion in the case of a particular modification.

FIGURES 6, 7, 8, 9 and 10 show the successive phases of the operation of the embodiment of FIGURE 5.

FIGURE 11 is a transversal section along line II—II of FIGURE 4 showing the structure of the baring device.

As illustrated in FIGURE 1 and FIGURE 2, the whole mechanism 1 is disposed between two cheeks 2 and 16 maintained by screws 3. The mechanism itself consists of three independent parts: a preparatory guiding member, a positioning and baring device, and finally a cutting device. The preparatory guiding member 4 is fixed on a rod 5, which can in turn slide in the direction of the arrows f_1 . The positioning and baring device is disposed within the mechanism 1 and is essentially that described in applicants' Patent No. 3,110,329 previously referred to. Finally, the device for cutting the circuit wire is a pair of shears formed of two blades 6 and 7 controlled by a handle 8 fixedly mounted on a lever 9.

The overhead view of FIGURE 2 corresponds to FIGURE 1. There will be seen therein the V-shape of the guide member 4, which makes it possible to move away the adjacent connecting lugs or connectors, and a slot 10 through which there is introduced the connecting lug on which it is desired to position the circuit wire. The slot 10 has features illustrated in FIGURE 2a, which is a sectional view line I—I of the member 4. A flared inlet 35 renders possible the ready introduction of the lug or connector and a constricted portion 36 having the same cross-section as the lug is intended to maintain the latter in position with minimum clearance. A pivot pin 11 serves for the pivotal mounting of the movable blade 7 of the shears.

As illustrated in FIGURE 3, when pressure is applied to the lever 9 in the direction of the arrow f_2 , the lever 9 bears against the upper face of the mechanism 1 and pivots the upper blade 7 of the shears, which is connected to the lever 9 by the pivot pin 12. The blade 7 pivoting about the pin 11 lowers the cutting portion 13 which, in traveling past the fixed blade 6, shears the circuit wire 14. The movable blade 7 and the lever 9 are returned to their initial position by a leaf spring 15 fixed to the upper face of the mechanism 1.

In FIGURE 4, the whole mechanism is assumed to be longitudinally open. One of the cheeks 16 of the mechanism 1 is formed with internal cavities receiving the knife edges 17, the sliding rod 5 and its return spring 18. It will be noted that the sliding rod 5 is terminated by an enlarged portion 19 which slides in an internal cavity 34 and abuts the wall 20 of the internal cavity. FIGURE 11 illustrates the structure of the baring device similar to that of the above-mentioned U.S. Patent 3,110,329. In order to show the operation of the baring device, a connecting lug 29 has been represented with a wire 30 positioned thereon. It can be seen that upon movement of the lug inside the tool the edge of the central groove of the knife 17 cuts and removes the insulation 33' which has therefore been represented by dotted lines at the right-hand side of the figure.

The described device operates as follows:

When the circuit wire has been positioned in the inlet recess in the connecting lug, the forward edge of the connecting lug or connector is introduced into the slot 10 in the guide member 4, in such manner that its lower longitudinal edge is parallel with and bears against the sliding rod 5. The whole tool is then advanced, the guide

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member 4 thus sliding on the fixed connecting lug until the end of the member 4 abuts the insulation at the foot of the connecting lug. At this instant, the free end of the connecting lug having penetrated into the tool, the connecting lug is securely held between the pre-guiding member 4 and the tip of the tool, while the circuit wire is situated on the base of the recess in the connecting lug, and it is then sufficient to continue the forward movement in order to bare the circuit wire and to grip it against the connecting lug as shown with reference to FIGURE 11. Thus, at the instant when the compressive force corresponding to the effective part of the travel is applied, the connecting lug is maintained at its two ends and is not likely to be deformed or broken.

The device according to the invention thus makes it possible to operate with complete safety.

The sliding portion illustrated in FIGURE 5 is adapted to a particular case. It may happen that there is a very large number of lugs situated close together and forming lug strips and that the lugs forming part of these strips are multiplied with corresponding lugs situated in one or more other groups. In such cases, since there is a very large number of wires, a special channel is not provided to receive all the wires for each successive strip, but each wire associated with the corresponding lug of a number of groups extends straight to the foot of the lug with which it is associated. Consequently, the tool according to FIGURES 1 and 4, with which it is assumed that the wires are taken from the upper portion of the lugs and extend into a lateral channel, would not be well suited for the positioning on the connecting lug of a multiplying wire extending to the foot of the lugs.

The sliding portion of the tool modified for this type of wiring (generally shown by 21 in FIGURE 5) is formed of three unequal branches bent over at a right-angle. The central branch 22 is formed with a recess 23 to grip the circuit wire and to maintain it on the base portion 31 supporting the connecting lug. The lateral branches 24 and 25 are terminated by rounded portions 28 and 28'. The width L of the branch 24 corresponds to the width L of the connecting lug represented by dashed-dotted lines. The branch 25 has a reduced width over its entire length. The fixed sleeve generally shown by 26', in which the driving portion 21 slides is also formed of three branches bent over at a right-angle. The central branch 34 is formed with a recess 27 and the lateral branch 26 is shorter than the lateral branch 32 situated opposite to it. The following procedure is adopted: the sliding portion of the tool is presented by its back, i.e. with the central branch uppermost (as shown in FIGURE 6) and the circuit wire is run into the small recess 23 in the sliding portion. The tool is then turned through 90° so that the branch 25 of small width is positioned against and above the connecting lug 29 (FIGURE 7), whereafter the circuit wire 30 is run past the recess 33 in the connecting lug as shown in FIGURES 8 and 9. The tool is then pushed forward and slides in contact with the connecting lug until its end 28 encounters the base portion 31 to which are fixed the connecting lugs. At this instant, with the portion 21 in the abutting position, it is the sleeve 26' which continues the movement of the tool and which moves in relation to 21. During this movement, the free end of the connecting lug penetrates under the sleeve 26' and the circuit wire is gradually lowered into position on the connecting lug.

As the forward movement of the tool is continued, the wire is bared and gripped on the connecting lug. At

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this same instant, the end of the branch 32 of the sleeve abuts the base portion 31 to which the connecting lugs are secured and the recessed portion 27 is substantially opposite the recess 23 in the central branch of the sliding portion. The circuit wire arriving at 23 extends further through the recess 27 after having been bared, looped and applied to the connecting lug. It therefore continues at the same level at which it arrives in relation to the base portion 31 and thus seems to continue after its multiplying on the connecting lug (FIGURE 10).

It will be understood that the description and the accompanying drawings have been given only by way of example, and that it is obviously possible to obtain other forms of tools while retaining the principle of double guiding on the connecting lug by means of a portion sliding in relation to the handle of the tool.

What we claim is:

1. In a tool facilitating the positioning of circuit wires on connecting lugs supported by a base portion, comprising guide path means adapted to receive one of said connecting lugs and a knife for baring a circuit wire: a pre-guiding device for engagement with said one connecting lug, said device comprising a sliding portion mounted for sliding movement in said tool, said sliding portion being formed with a recess adapted to receive said one connecting lug, said sliding portion being adapted to slide along said connecting lug into abutting engagement with said base portion upon forward movement of said tool toward said base portion.

2. In a tool according to claim 1, said sliding portion comprising a rod portion, said recess being in the form of a slot in an end portion of said sliding portion.

3. In a tool according to claim 1, said sliding portion including means operable to move away connecting lugs adjacent to said connecting lug, comprising a flared formation of said end portion, the width of said end portion gradually increasing in directions inwardly from the outward extremity of said end portion.

4. A tool according to claim 3, wherein said slot has a flared inlet for facilitating the reception of said connecting lug and a constricted portion of substantially the cross-sectional width of said connecting lug for retaining the latter in said slot.

5. A tool according to claim 1, said tool comprising a recessed portion in which said sliding portion is slidably mounted, the latter terminating in an enlarged portion abutting a wall of said recessed portion and thereby limiting said slidable movement of said sliding portion in a direction outward of said tool, a spring acting on said sliding portion maintaining it in the position of maximum extension.

6. A tool according to claim 1, said tool having the general form of a pistol and comprising shear means for cutting said circuit wire, said shear means comprising a pivoted blade member, and trigger means situated at the forward and upper portion of said tool for actuating said blade member.

7. A tool according to claim 1, said sliding portion being of U-shaped cross section, one of the legs of the U being of smaller height than the other, the portion connecting said legs having a recess at its outer end adapted to receive said circuit wire, said tool comprising a sleeve member slidably receiving said sliding portion and housing said baring knife.

No references cited.

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