Jan. 21, 1964 E. E. RADOCY 3,118,486

CONNECTOR LOCATING MEANS

Filed April 7, 1960

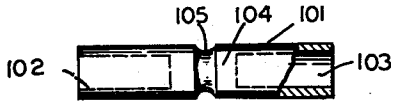

FIG.1

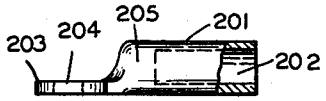

FIG.2

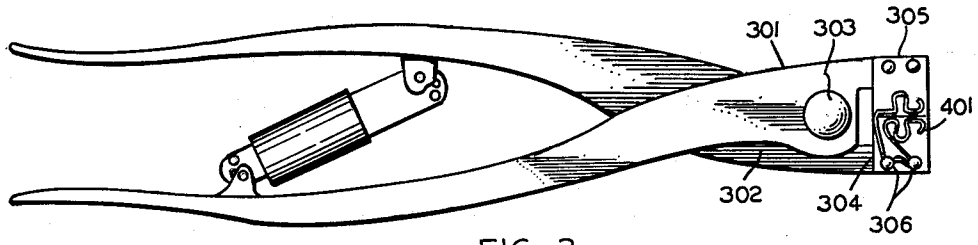

FIG.3

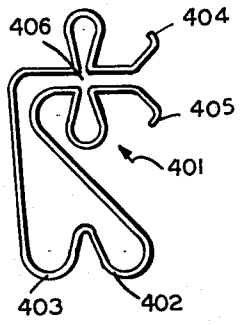

FIG.4

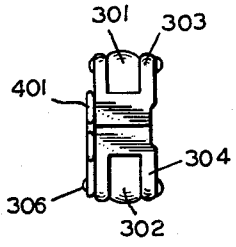

FIG.5

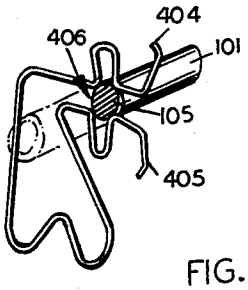

FIG.6

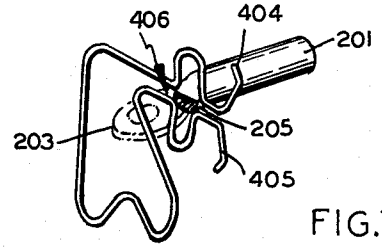

FIG.7

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CONNECTOR LOCATING MEANS

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1 Claim. (Cl. 153—1)

This invention relates to tools for compressing connectors onto conductors; and more particularly, to a stop plate for such a tool adapted to be used with both lugs and links.

It has been commonplace to use a stop plate in conjunction with tools for compressing tubular connectors onto conductors. The tools customarily include a pair of opposed dies which are brought together under pressure about a connector with a conductor inserted therein. The dies deform both the connector and the conductor; and if properly done, produce a good mechanical and electrical joint.

Of crucial importance in making a proper joint is the accurate locating of the conductor within the connector, and the connector between the dies. Frequently the connector is supplied with an internal stop element, and the conductor is inserted into the tubular portion of the connector until it abuts the stop. Alternatively, a peep-hole may be utilized to permit visual inspection of the end of the conductor within the connector.

The connectors generally utilized are links and lugs. A link is of substantially tubular construction, adapted to receive a conductor in both ends. Usually a separate compression operation is required to join each conductor to the link. A lug includes a tubular portion for receiving a conductor and a portion for making contact to a terminal. A conductor is inserted into the end of the tubular portion that is remote from the contact end. At least one compression operation is required to join the conductor to the lug.

It is generally desired, given a certain conductor diameter, to locate the crimp at a certain distance from the end of the conductor. However, the end of the inserted conductor will not be spaced the same distance from the conductor-remote end of the tubular portion of the lug, as will the inserted conductor be spaced from the conductor-remote end of the link.

To uniformly and accurately locate the connector with respect to the dies it has been customary to use a stop plate mounted on the tool adjacent the opening between the dies, into which opening the connector is inserted. The connector is then located by abutting a portion thereof against the plate.

There are two major disadvantages to this scheme. Firstly, when locating links, it is customary to abut the end of the tube against the stop plate. When locating lugs, however, it is customary to pass the contact portion through a hole provided in the stop until the tubular portion abuts against the stop plate. This then requires two different stop plates, one with a hole, the other without a hole, each located at different distances from the dies.

A possible solution might be to make the stop plate adjustable with respect to its distance from the dies. Unfortunately, it has been found that adjustable equipment is frequently improperly adjusted. It is thus desirable to design tools that leave as little to the operator's imagination or skill as is possible.

Secondly, when compressing a connector, the metal flows somewhat, and the axial length of the connector changes. Due to this flow of metal, if a crimp is made in one half of a link at a given distance from its end, and thus a certain distance from the middle; then, when the link is moved end-for-end to crimp the other portion, if the second crimp is made at the given distance from its

end, it will not be at the same certain distance from the center of the link. This is not desirable, as usually the conductors are located within the link with respect to the middle of the link.

Accordingly, it is an object of this invention to provide a single, non-adjustable stop plate for a compression tool which will cooperate with both links and lugs.

It is another object of this invention to provide a stop plate which will accurately locate crimps for links manufactured according to this invention by cooperating with the middle of said links.

It is yet another object of this invention to provide a link which is adapted to cooperate with the stop plate of this invention.

A feature of this invention is a device for locating a connector with respect to the dies of a compression type tool comprising resilient means to circumferentially grasp a substantially circular surface, and resilient means to grasp opposed substantially flat surfaces.

These and other objects and features of this invention will become more apparent by reference to the following description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a view in elevation of a link;

FIG. 2 is a view in elevation of a lug;

FIG. 3 is a view in elevation of a compression tool with a stop plate embodying the principles of this invention attached thereto;

FIG. 4 is a view in elevation of a stop plate in accordance with the principles of this invention;

FIG. 5 is a view in end elevation of the compression tool and stop plate of FIG. 4;

FIG. 6 is a perspective view of the stop plate of this invention operatively gripping a link; and

FIG. 7 is a perspective view of the stop plate of this invention operatively gripping a lug.

Referring to FIG. 1, reference character 101 indicates a substantially tubular malleable metal link having cavities 102 and 103 separated by a wire stop 104. A groove 105 is disposed circumferentially about the middle of the link. A dielectric sleeve (not shown) may be disposed about the tube, which sleeve should have a mediate circumferential depression adjacent groove 105. The wire stop 104 is adapted to limit the insertion of conductors (not shown) into the cavities 102 and 103.

Referring now to FIG. 2, a malleable metal lug, which is indicated by 201, has a cavity 202 and a flat contact portion tab 203. An opening, such as 204 may be included in the tab, adapted to receive a bolt or the like. A wire stop 205 may be provided to limit the insertion of a conductor (not shown) into the cavity. Alternatively a peep-hole (not shown) may be provided at the end of the cavity for visual inspection of the end of the conductor.

FIGS. 3 and 5 show a compression tool having handles 301 and 302 pivoted at 303, and having mounted thereon dies 304 and 305; and a stop plate 401 which is mounted to one of the handles by bolts, as at 306, or the like. In operation, the connector is placed between the dies and into engagement with the stop plate. The handles are brought together about their pivot, bringing the dies together about the therebetween positioned connector, crimping the connector.

Referring to FIG. 4, reference character 401 denotes the stop plate embodying this invention. Stop plate 401 is formed of wire having a spring like characteristic, such as piano wire. Bends 402 and 403 are adapted to receive bolts for mounting to the compression tool. In use (see FIG. 6) a link 101, with a conductor inserted therein, is disposed between the dies 304 and 305 and the wire lips 404 and 405, so that groove 105 is firmly embraced by the slightly sprung wire elbows forming the

detent orifice 406. Detent orifice 406 thus locates the middle of the link 101 with respect to the dies 304 and 305. When the first crimp is made and the link turned end-for-end and reinserted into the tool, despite any metal flow of the walls of the tubes, the second crimp will still be accurately located with respect to the center groove 105 of the link.

When a lug 201 is to be compressed onto an inserted conductor (see FIG. 7) it is inserted between the dies 304 and 305 so that the flat portion 203 passes through wire lips 404 and 405 and portion 205 abuts and is partially included by the sprung wire elbows forming detent orifice 406. In this manner the lug is accurately located and held with respect to the dies.

This invention has thus been described but it is desired to be understood that it is not confined to the particular forms or usages shown and described. The same being merely illustrative, and that the invention may be carried out in other ways without departing from the spirit of the invention, and therefore, the right is broadly claimed to employ all equivalent instrumentalities coming within the scope of the appendent claim, and by means of which objects of this invention are attained and new results accomplished, as it is obvious that the particular embodiments herein shown and described are only some

of the many that can be employed to obtain these objects and accomplish these results.

I claim:

A device for locating a connector with respect to the dies of a compression type tool comprising two opposed spring elements, said elements being adapted to be fixedly mounted to said tool, each opposed spring element including an opposed bend, said bends forming an opening of increased spacing between said opposed spring elements, and each opposed spring element further including an end, said ends being adjacent to each other, and adapted to have a connector passed therebetween.

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