Jan. 14, 1930. R. M. MARTENS 1,743,825

MEANS FOR EFFECTING SEALING OF ELECTRIC CABLE ENDS

Filed Feb. 25, 1929

Fig. 1.

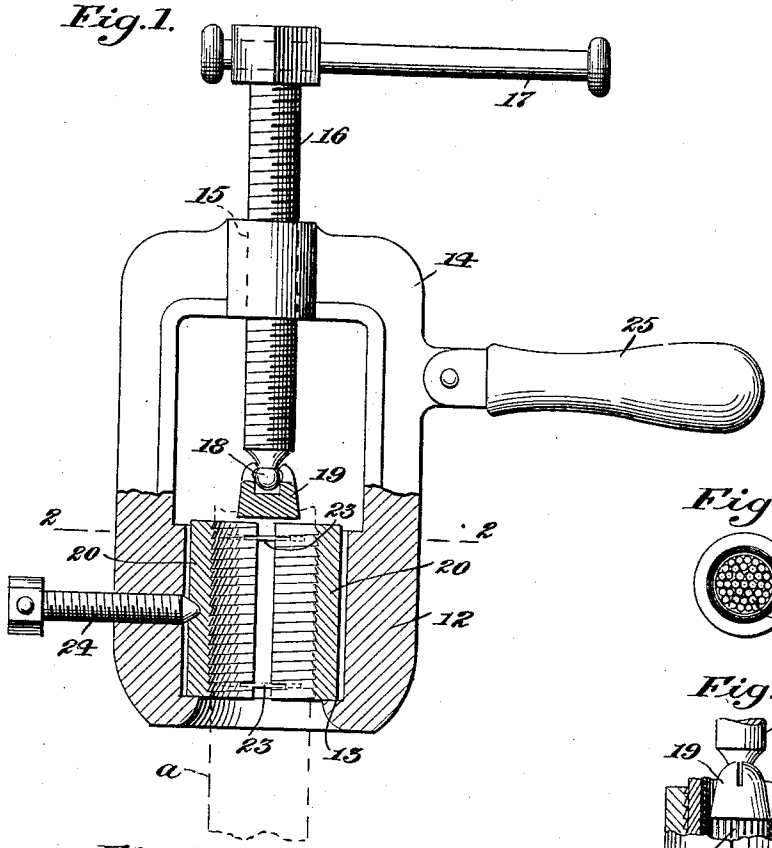


Fig. 4.

Fig. 3.

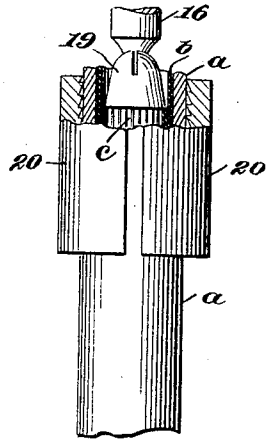
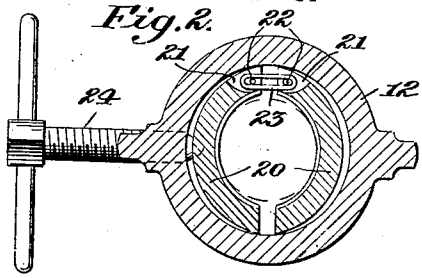


Fig. 2.



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MEANS FOR EFFECTING SEALING OF ELECTRIC-CABLE ENDS

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This invention relates to the sealing, usually temporarily, of the ends of cables which include electric conductors, and refers particularly to the treatment of the ends of lead sheathed conductors, commonly known as lead covered cables, to prevent the admission of air or moisture to the interior of the metal sheathing or tube, or the escape of fluid such as oil therefrom, while the cable is in storage or otherwise waiting to be installed for use. Such sealing is also sometimes desirable when a cable is to be tested by air pressure to ascertain if there is any defect that might permit leakage.

Heretofore a common practice of effecting end sealing of such cables has been by cutting back or belling the sheathing for a short distance, then cutting off a little of the conductor and insulation, and then returning the end edge of the sheathing to position to form a cavity capable of receiving sealing material such as melted tin. And sometimes the end edge of the sheathing has been turned in and, by a wipe joint of it over the ends of the conductors, a more or less successful sealing has been effected. Both of these methods however are tedious and costly, as expert workmanship is necessary.

One of the objects of my present invention is to facilitate the sealing of the ends of cables such as described, by forcibly depressing the ends of the conductors and insulation within the end of the shield, to form a cavity, which cavity is then readily filled with sealing material such as melted tin.

Another object of the invention is to provide a simple and inexpensive tool by means of which the above-stated operation can be easily effected without requiring the services of an expert workman, or the expenditure of any objectionable amount of time.

With the above-stated objects in view, the invention consists in the pressing or cavity-forming tool substantially as hereinafter described and claimed.

Of the accompanying drawings:

Figure 1 is a side elevation, partly in section, of my improved tool by means of which the operation hereinafter described may be effected.

Figure 2 represents a section on line 2—2 of Figure 1.

Figure 3 is a detail view illustrating some of the members of the tool as they act on the piece of work during the forming of a cavity in the end of a cable.

Figure 4 is an end view of the type of cable for the treatment of which the tool illustrated is intended.

Similar reference characters designate similar parts or features in all of the views.

Referring first to Figure 1, the tool includes a steel casting having a cylindrical portion 12 the lower end of which is shaped to present an annular ledge or shoulder 13, and a yoke-shaped portion 14, the latter having a threaded hole 15 in line with the center of the portion 12. Mounted in the threaded hole 15 is a screw 16 having a handle 17 at its upper end and a ball-shaped lower tip 18 on which is loosely mounted a pressing shoe 19. The pressing surface of the shoe 19 is substantially flat, and the area of said surface is sufficient to contact, when in use, with the ends of all of the conducting wires in the group *c* enclosed by the sheath *a* in order to effect the operation hereinafter described.

Removably mounted in the cylindrical portion 12 which for convenience will be hereinafter referred to as the socket of the tool, is a two-part sleeve 20 which, when the tool is in use, is supported by the shoulder 13 of the socket. The two halves of the sleeve 20 are provided with edge slots 21 which are traversed by pins 22, and each pair of pins are embraced by a link 23 (Fig. 2), whereby the two halves of the sleeve are capable of considerable movement toward and from each other.

A work clamping screw 24 is mounted in a

threaded hole in the side of the socket 12, its inner end bearing against one of the members of the sleeve 20, the latter having preferably, although not necessarily, a recess for the inner end of the screw.

Connected to the yoke 14, at the side of the tool opposite the screw 24, preferably by a pivotal connection, is a handle 25 by means of which the entire tool may be held while the operating screw 16 is being tightened as hereinafter described.

The inner surfaces of the two sleeve members 20 are formed with suitable projections, such as in the form of screw threads, to so grip the piece of work being operated upon that it can not slip endwise during the end depressing operation which will now be described.

A cable comprising a lead sheath *a*, insulation *b* and conducting wires *c* (Figures 3 and 4) is slipped into the expansible and contractible sleeve 20 to about the position indicated by dotted lines in Figure 1, and the screw 24 is actuated to close the sleeve the lower substantially flat edge of which is supported on the shoulder 13 of the tool socket, such closing of the sleeve effecting a tight grip of the sheath *a* to prevent endwise movement of the sheath in the tool. It is to be understood, of course, that at this time the ends of the sheath, insulation and conductors, are flush or substantially so. Such is the usual condition of an unsealed cable.

When the cable is gripped in the tool as described, the screw 16 is operated to cause the lower face of the shoe 19 to contact with the end of the conductor or conductors in the cable and also with the insulation, and operation of the screw 16 is continued until the shoe has been forced into the sheath to a sufficient distance to form a cavity in the end of the cable deep enough to receive adequate sealing material such as melted tin. Then reverse operation of the screw 16, and actuation of the screw 24 to release the gripping action of the two-part sleeve 20, enables the cable to be removed or separated from the tool which latter is then ready for another operation.

It is not always necessary to form a cavity as deep as illustrated by Figure 3. The depth of the cavity is easily determined by the operator. Said figure illustrates some of the insulation, the outer cylindrical portion thereof, as not depressed by the shoe. This is because, when the shoe 19 has an insufficient diameter to include all of the insulation in the depressing operation, any of the insulation left upstanding as illustrated by said Figure 3 can be easily manually pressed in and down prior to filling the sealing material in the cavity. When the shoe 19 has a diameter equal to the inner diameter of the sheath *a*, the operation described will force the entire insulation as well as the conductors as far within the end of the sheath as may be desired.

The loose connection of the shoe 19 with the end of the screw 16 not only permits the screw to complete the cavity-forming operation without rotating the shoe when the latter is bearing on the ends of the wires, but also enables one shoe to be substituted for another to meet conditions required for cables of different sizes. And the removability of the gripping sleeve 20 provides for the employment of sleeve segments of different thicknesses when cables to be operated upon are considerably larger or smaller than illustrated.

Having now described my invention, I claim:

1. A tool for depressing the ends of a group of conductors and insulation within the ends of metal sheaths which enclose such conductors and insulation, said tool comprising means for gripping the sheath, a pressing shoe movable to and from the interior of the sheath, said shoe having a substantially flat pressing surface of sufficient area to contact with the ends of all of the conductors of the group, and means for actuating said shoe.

2. A tool of the character described, having a socket, a divided sleeve in said socket, means for contracting the sleeve, and a screw having a pressing shoe movable to and from the interior of the sleeve, said shoe having a substantially flat pressing surface of sufficient area to contact with the ends of all of the members of a group of conductors.

3. A tool of the character described, having a socket, a sleeve in said socket, said sleeve comprising a plurality of members having their inner faces formed with projections to bite into and grip a cable sheath, means for closing the sleeve members, and a screw having a pressing shoe movable to and from the interior of the sleeve, said shoe having a substantially flat pressing surface of sufficient area to contact with the ends of all of the conductors of a group in the sheath.

4. A tool of the character described, comprising a socket having an annular shoulder, a yoke integral with the socket, a collapsible gripping sleeve mounted within the socket and adapted to be supported by said shoulder, and a screw mounted in a threaded hole in said yoke in alinement with the center of the socket, said screw having a pressing shoe at its end adjacent to the socket, said shoe having a substantially flat pressing surface of sufficient area to contact with the ends of all of the members of a group of conductors.

5. A tool of the character described, having a socket, a two-section sleeve in said socket, each section of the sleeve being substantially semi-circular in form and having its inner surface provided with work-gripping ribs, a screw in one side of the socket to press one section of the sleeve toward the other, a

screw in alinement with the center of the socket, and a shoe loosely connected with the end of said screw adjacent to the socket, said shoe having a substantially flat pressing surface of sufficient area to contact with the ends of all of the members of a group of conductors.

In testimony whereof I have affixed my signature.

RUDOLPH M. MARTENS.