

UNITED STATES PATENT OFFICE

1,961,833

APPARATUS FOR MAKING HOLLOW CABLES

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Application October 26, 1932, Serial No. 639,629

4 Claims. (Cl. 117—20)

My invention relates to the making of hollow cables and more particularly to that class of electric cables which are formed of tubular elements.

Such cables are used for the transmission of high voltage electric current, and comprise a number of tubes of relatively small diameter, stranded into a cable, upon which in the usual construction solid wires are stranded.

It is desirable that such cables be of long length.

This necessitates that the individual tubular members be of indefinitely long length. Such long tubes can best be made by forming flat strip metal into a butt seam tube, as the limitations of methods of making seamless tubes prevent seamless tubes of small diameter and gage from being a commercial product.

Heretofore attempts to strand open seam tube into cable have not proved successful. Attempts have been to draw the open seam tube from flat stock on spools, and strand from these spools into a cable in the ordinary method of stranding. The bending of the tube around the spool, during drawing and the unwinding from the spool during stranding, as well as the various bends forced on the tube in its passage from the spool to the closing die of the stranding machine, have resulted in distortion and collapse of the tube.

The object of my invention is to overcome the above difficulties of tube forming and stranding, and to so locate my tube forming tools that the tube is not subject to bending until stranded.

The foregoing and other features of my invention will now be described in connection with the accompanying drawing forming part of this specification in which I have represented my machine in its preferred form after which I shall point out in the claims those features which I believe to be new and of my own invention.

In the drawing:—

Figure 1 is a diagrammatic sketch of my device in part section.

Figure 2 is an enlarged detail of the tube forming dies.

Figure 3 shows a section of the open seam tube as it comes from the die 7.

In carrying out my invention I employ a standard stranding machine with a projecting rotating end 1 upon which is mounted a frame 2 adapted to carry a plurality of coils of flat strip material 3. Also on this spindle 1 I mount a member 4 adapted to carry plug rods 5. Member 6 is mounted immediately in front of frame 4 and carries forming dies 7. These dies and plugs are arranged at such an angle that when the tubes are formed into the cable at the closing die 8 of the stranding machine, the flat stock and resulting tube has travelled in substantially a straight line from the guides 9 to the closing die 8.

Where it is desirable to reinforce the stranded tubes with a metal ribbon I apply the ribbon

simultaneously with the stranding. To accomplish this I provide a revolving disc or tapping head 10 which may be suitably geared to the revolving spindle of the stranding machine and adapted to carry one or more spools of metallic ribbon 11.

In operation the cable is drawn forward through the various mechanisms by a capstan 15 and reel stand (not shown) of the usual construction geared to the revolving spindle in the usual manner.

I shall preferably combine the above mechanism with subsequent stranding heads of the usual construction, so that any outside layers of wires are stranded on the above cable as a core as a simultaneous operation. However, this is not necessary, and I may form a cable of tubular elements, in one operation, and cover this core cable with wire in a subsequent operation.

If desired, I shall place two or more of the above mechanisms in tandem in order to make core cables of several concentric layers of tubes. It is understood that I may also dispense with the tapping head without impairing the usefulness of my invention.

I wish it distinctly understood that my apparatus herein described and illustrated is in the form in which I desire to construct it and that changes or variations may be made as may be convenient or desirable without departing from the salient features of my invention and I therefore intend the following claims to cover such modifications as naturally fall within the lines of invention.

I claim:—

1. A machine of the class described in combination, a member carrying a plurality of reels of flat metal, means mounted on said member for forming the flat metal into tubes and means to strand the tubes into a cable with substantially uniform tension on the tubes.

2. The device of claim 1 with the addition of means for taping the tubes together.

3. The machine of claim 1 with the addition of a closing die, said die being located with respect to the tube forming members that the tubes converge in a straight line to the closing die.

4. In a machine of the class described in combination, a rotating spindle adapted to carry reels of flat stock and tube forming elements through which the stock passes and is changed from a flat to tubular form, a closing die through which all the tubes pass, means for twisting the tubes into the form of a cable, and means for drawing the cable through the die, the travel of the material from the stock to the cable being in substantially a straight line.

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