Patented Feb. 26, 1935 1,992,639

UNITED STATES PATENT OFFICE

1,992,639

METHOD OF MAKING ELECTRICAL CONDUCTORS

Horace A. Staples, Plainfield, N. J., assignor to Phelps Dodge Copper Products Corporation, New York, N. Y., a corporation of New York

Application November 3, 1933, Serial No. 696,482

5 Claims. (Cl. 205—2)

My invention relates to a method of making standard electrical conductors for the transmission of electric current, and has for its object the development of a method that will produce a cable in which the individual strands will have a more perfect lay without caging or bunching.

Heretofore, in the conventional method of stranding, the individual wires have been laid into the cable without straightening. Such wires have a spiral cast into them by the unwinding from the stranding spool; this spiral interferes with their laying into a uniform strand. It is also desirable that the wires be laid into the strand under tension, which should be uniform for each wire. In the ordinary method of stranding this tension has been secured by frictions on the stranding spools. Unless excessive time is spent in the adjustment of these frictions the tension is liable to be different for the individual wires.

The object of my invention is to produce a method of stranding in which the wires are straightened, and free from spiral casts and accidental kinks and are laid into the stranded cable with uniform tension on the individual wires.

I have also found that wire can be stranded into a more perfect lay if it is drawn through a reducing die simultaneously with the stranding operation which not only removes the spiral cast but puts tension on the wire as it is formed into the strand, and in fact, I have found that this drawing through a die simultaneously with the stranding operation is beneficial to the stranding of both solid and hollow wire.

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 a preferred way in carrying out my method 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 shows diagrammatically a preferred way my method may be carried out.

In the carrying out of my invention, I draw my individual wires to a diameter larger than the diameter which I wish in my stranded cable and then give them a final draw at the time of stranding. This accomplishes two very important functions. It straightens the wire free from the spiral cast due to its unwinding from a spool, at the same time it puts all the wires to be stranded under substantially uniform tension. This may be carried out on any standard stranding machine in which is provided a rotating end 21 upon which is mounted a frame 22 adapted to carry a plurality of coils of wire 23 disposed radially around the frame 22, (only two such coils being shown). On the spindle 21 is also mounted a member 24 carrying a plurality of drawing dies 25. The wires are drawn through the dies 25 and directed through the closing die 28 from which they proceed in the form of a stranded cable.

As the operation of this stranding head is well known to those skilled in the art of cable making, no further description is here required or necessary for a complete understanding of the invention.

I have illustrated my invention as practiced with the use of a standard planetary stranding machine, but I may use any type of stranding machine, such as a rigid frame strander or a high speed strander or a buncher.

By means of the drawing die 25 the wire is not only reduced in diameter but is straightened and leaves the die with substantially a uniform tension and it is bent into stranded form at the closing die 28 under this substantially uniform tension, so that a tight and quiet lay is secured.

I wish it distinctly understood that my method herein described and illustrated is in the form in which I desire to use 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. The method of making electrical conductors comprising drawing the individual wires oversize and giving each strand a draft through a die applying a balanced circumferential pressure to the strand in the stranding operation.

2. The method of making electrical conductors, comprising uniformly reducing the diameter of the individual wires by a drawing operation and instantly stranding the wires into a cable with substantially uniform tension.

3. The method of making electrical conductors comprising uniformly reducing the diameter of the individual wires by successive drawing operations and stranding the wires during the last draw with substantially uniform tension on all wires.

4. The method of making electrical conductors which consists in removing the spiral cast due to unwinding of the individual wires from their spools by a drawing operation in which a balanced circumferential pressure is given to each wire and simultaneously stranding the straightened wires into a cable.

5. The method of making electrical conductors which consists in removing the spiral cast due to unwinding of the individual wires from their spools by a drawing operation in which a balanced circumferential pressure is given to each wire and simultaneously stranding the straightened wires into a cable with substantially uniform tension.

HORACE A. STAPLES.