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FLEXIBLE ELECTRIC CONDUCTOR

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

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My invention relates to electrical conductors and more particularly to a flexible electrical conductor cable designed for the transmission of electrical power by means of very high voltages. Hollow conductors have been used for the purpose because such conductors are desirable in that they all tend to reduce the corona losses. All of these hollow conductors, however, have certain inherent defects and the object of this invention is to produce such a cable without these known defects.

One of the prime objects of this invention is to produce a cable with concentrated metallic content near the outside circumference of the cable with a minimum of weight of the cable as a whole and the production of a hollow core which resists collapse due to radial stresses caused by tension of the cable.

A further object is to produce a cable of large diameter and a relatively small current carrying capacity that will be flexible and easily handled in the field with a low manufacturing cost.

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 hollow cable 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 side view of the wire forming the core to my cable.

Figure 2 is a cross section along the line 2—2, Figure 1.

Figure 3 is a cross section similar to that shown in Figure 2 with the addition of solid wires stranded on the core.

Figure 4 is a cross section similar to that shown in Figure 3 with the exception that the stranded wires are hollow.

Figure 5 is a cross section of my cable with some of the stranded wires being hollow and of larger diameter than the remaining wires. This is just prior to the passing of the cable through the closing die of a strander.

Figure 6 is a cross section of my cable similar to that shown in Figure 5 after the cable has passed through the closing die of the strander, showing how the hollow cables are compressed into position whereby they hold the loops of the core against longitudinal displacement along the axis of the cable.

Figure 7 is a broken section at right angles to Figure 6 showing the compressed part of the hollow conductor embracing the loop.

Figure 8 is a cross section of my cable in a preferred form.

In carrying out my invention I provide a core comprising a continuous wire 10 formed into a helical shape, the helix being of the same pitch and same diameter as the strand to be laid upon the said core. At intervals I provide circular loops 11 spaced along the helix, with the plane of the loops perpendicular to the axis of the helix. The outside diameter of the loops is the same as the inside diameter of the helix. All of this is readily apparent by referring to Figures 1 and 2. As may be readily understood, I intend to form the loops 11 integral with the helical wire 10.

It is upon these loops of the helical core that I strand the wires 12 conforming to the pitch and diameter of the helix of the core wire. See Figure 3. It is obvious that with this construction that if radial stress is applied to the loop 11, through tension on the cable, the portions 20, 21 of the core wire, shown in Figure 1 may tend to move so that they overlap each other. This movement, however, is resisted by the wires 13, 14 adjacent the wire 10 as shown in Figure 3 and the arch action of all the wires in the layer of the strand, so that radial collapse of the loop is prevented.

To provide against the deformation of the loops in a longitudinal direction, I may include hollow wires 15 among the wires of the strand, these wires being of larger diameter than the rest of those in the strand, so that while they lay, as shown in Figure 5 before they enter the closing die of the stranding machine, the closing die compresses these wires into the final position shown in Figures 6 and 7 so that the loop 11 is pressed into the hollow wire 15 causing the wire 15 to lock the loop 11 against longitudinal deformation.

In Figure 8 I show a cross section of a typical cable constructed after my invention. In this preferred presentation I show my core made of an integral wire formed into loops and helix with a layer of wires, both hollow and solid stranded over the loops and parallel with the helical wire and an outer surface of high electric conductivity comprising a plurality of individual conductors stranded thereupon. It is perfectly obvious that I may use only one strand upon my core, and that strand or strands may consist of either solid or hollow conductors or a mixture of both, and the design may change considerably with the electrical requirements. I may also employ wires of any shape, square or flat or round. The prime principle of the invention is the core built of a