April 24, 1928. 1,667,510

J. R. COE

ELECTRIC CONDUCTOR

Filed July 30, 1924

Fig 1

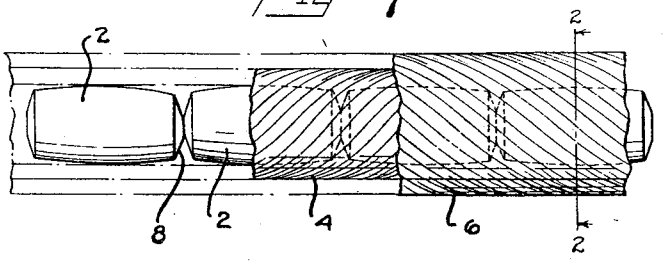


Fig 2

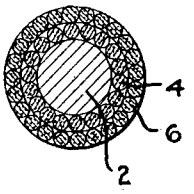


Fig 3

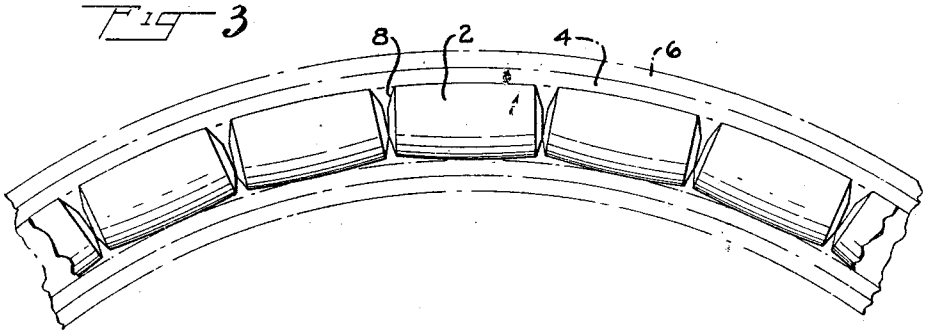
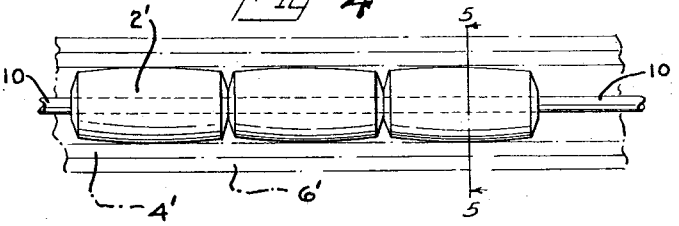


Fig 4



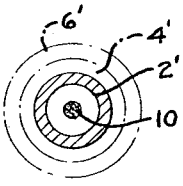


Fig 5

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UNITED STATES PATENT OFFICE.

JAMES ROBERT COE, OF WATERTOWN, CONNECTICUT, ASSIGNOR TO THE AMERICAN BRASS COMPANY, OF WATERBURY, CONNECTICUT, A CORPORATION OF CONNECTICUT.

ELECTRIC CONDUCTOR.

Application filed July 30, 1924. Serial No. 728,998.

My invention relates to electric power transmission conductors, and has special reference to aerial electric conductors that are particularly adapted for high tension transmission. Conductors of this type are usually provided with a core, and with one or more layers of wire cabled or spirally wound side by side upon the core. In cables of this type at present in general commercial use, a solid core of copper or other conducting metal is employed, but it has been found because of the small diameter of the conductor necessary for a given amperage, when a core of this character is employed, that at high voltage there occurs a substantial leakage of energy from the conductor due to what is known as the corona effect. This corona effect decreases as the diameter of the conductor increases. Accordingly, it has been proposed to make the core of hollow construction, so as to permit the stranded conductor to be made of considerably greater diameter than such conductors provided with a solid conducting core for the same resistance per unit of length. Such hollow cores, however, have various objections which are overcome by my improved construction.

The principal object of the present invention is to provide a new and improved electrical conductor of the character indicated which has all of the advantages of the prior constructions, as above described, while doing away with the disadvantages.

The following is a description of a preferred embodiment of my invention, reference being had to the accompanying drawings, in which,

Figure 1 is a side elevation of a portion of a stranded aerial conductor embodying my invention, portions of the spirally wound wires at one end being indicated by dotted lines;

Fig. 2 is a transverse sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a diagrammatical view illustrating the relative positions of the component parts of the core of the stranded conductor when the conductor is bent;

Fig. 4 is a side elevation showing a modified form of core, the wires cabled about the core being shown diagrammatically; and

Fig. 5 is a sectional view taken on the line 5—5, of Fig. 4.

The electric conductor illustrated in Figs. 1, 2 and 3 of the drawings is provided with a core comprising a plurality of short barrel-shaped blocks 2 arranged end to end, a layer of solid wires 4 cabled about the core in one direction side by side so as to contact with each other, and a second layer of solid wires 6 cabled side by side about the core in the opposite direction. The blocks 2 are preferably made of wood, but may also be made of glass, porcelain or other suitable material. When made of wood they afford sufficient support and are relatively light in weight. Each member has a substantially cylindrical surface which is curved longitudinally in an arc having its center in a plane at right angles to the axis of the member and midway of its ends, the length of the radius of the arc effecting to some extent the degree of flexibility of the completed conductor, as will be hereinafter described. A six inch radius is suitable for most purposes where the blocks are five-eighths of an inch in diameter. The ends of the blocks 2 are chamfered or rounded to provide tapering end surfaces 8. The wires 4 and 6 are made of copper, bronze, aluminum or other metal of high electrical conductivity, and when of cupreous material are preferably hard drawn.

With this construction of conductor it will be apparent that it may be made of any desired diameter for a given high voltage, so as to reduce to a minimum the corona leakage; and at the same time it is of light weight, low cost, and has a much less tendency to crushing or distortion than conductors having a tubular hollow core. It will also be apparent that by constructing the blocks 2, as above described, the completed conductor will be of the desired degree of flexibility, and the slight longitudinal curvature of the blocks provides an effective support at relatively short intervals for the layers of cabled wire. Fig. 3 shows the cable bent in a short radius, the longitudinal curvature of the blocks determining the degree of abruptness of the bending. It will be apparent that by decreasing the radius of the arc of the longitudinal curvature of the blocks that the flexibility of the conductor may be increased, and vice versa.

Instead of the blocks 2 being made solid as above described, they may when made of metal or glass, each be hollow with fairly

thick walls so as to be rigid as shown in Fig. 5 and may be provided with an axial aperture, and when thus constructed may be strung upon a wire or other flexible member 10 as shown in Figs. 4 and 5, the blocks being indicated in these figures at 2', and the two layers of wire at 4' and 6'. This latter construction provides a lighter core and a simple means of assembling the rigid blocks and holding them in position during the cabling operations.

As will be evident to those skilled in the art, my invention permits of various modifications without departing from the spirit thereof or the scope of the appended claims.

What I claim is:

1. A cable constituting an electrical conductor for high tension transmission lines having, in combination, a core comprising a plurality of short rigid members arranged end to end, and contacting wires of high electrical conductivity arranged spirally and side by side about said members.

2. A cable constituting an electrical conductor for high tension transmission lines having, in combination, a core comprising a plurality of short substantially cylindrical members arranged endwise and contacting wires arranged spirally and side by side about said members and of high electrical conductivity.

3. A cable constituting an electrical conductor for high tension transmission lines having, in combination, a core comprising a plurality of members arranged endwise and each having its exterior surface substantially cylindrical and curved longitudinally in an arc having its center in a plane substantially at right angles to the axis of the member extending substantially through the center thereof and contacting wires wound spirally thereon.

4. A cable constituting an electrical conductor for high tension transmission lines having, in combination, a core comprising a plurality of barrel-shaped members arranged end to end, and contacting wires arranged spirally about said members and of high electrical conductivity.

5. A cable constituting an electrical conductor for high tension transmission lines having, in combination, a core comprising a plurality of members having axial apertures, and a flexible member upon which said members are strung, and contacting wires of high electrical conductivity arranged spirally side by side and surrounding said members.

6. A cable constituting an electrical conductor for high tension transmission lines having, in combination, a core comprising a plurality of short substantially cylindrical members having their ends tapering and arranged end to end, and contacting wires arranged spirally about said members and of high electrical conductivity.

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