Nov. 25, 1930. A. B. DIBNER 1,782,812

ELECTRICAL CONDUCTOR

Filed Jan. 21, 1927

Fig. 1

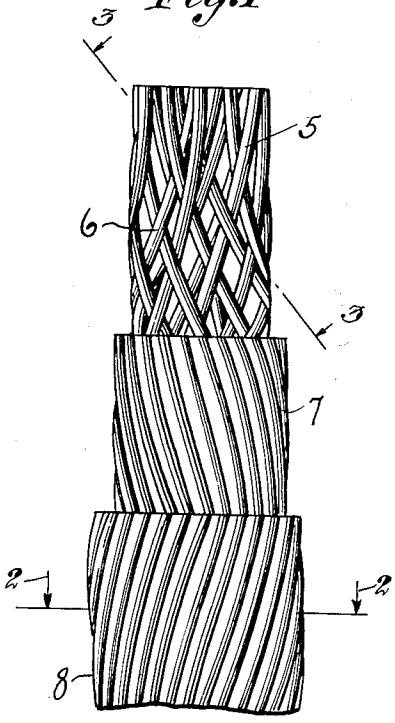


Fig. 3

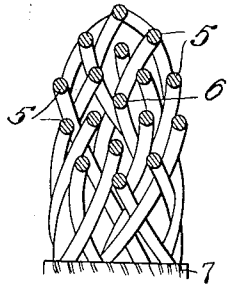
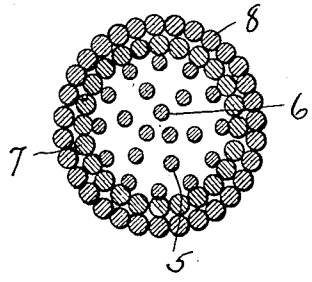


Fig. 2



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UNITED STATES PATENT OFFICE

ABRAHAM BERNARD DIBNER, OF PEEKSKILL, NEW YORK

ELECTRICAL CONDUCTOR

Application filed January 21, 1927. Serial No. 162,479.

This invention relates to electrical conductors and more particularly to that class of high tension transmission cables having a large cross sectional area combining the maximum strength and conductivity without sacrificing flexibility or limiting its uses under varying conditions.

One of the objects of my invention is to provide a high tension cable or conductor having a uniform flexible core of wide cross sectional area or diameter and which is formed or woven in such manner as to be relatively of light weight yet possessing high resistance to crushing stress and strain.

It is well known that the most ideal conductor for high tension transmission duty is one having a large diameter with the minimum of weight to resemble a tube as closely as possible. These factors are required for two main reasons. First, the corona loss along a high tension conductor being inversely proportional to the diameter would be reduced to the minimum and secondly its conductivity would be increased by concentrating the cross section of the conductor as close as possible to its perimeter.

Various means have been resorted to for obtaining these results but in all instances it has been necessary to sacrifice important physical characteristics such as flexibility, subjecting the cable or conductor to easy fracture or breakage; weakness to crushing throughout all areas of its cross section so as to be capable of withstanding clamping means on towers and other supporting structures; increased weight of the cable in proportion to the strength required and load to be carried as well as the difficult process of construction and the incident prohibitive high cost of manufacture.

My invention therefore is directed to a high tension conductor or cable in which a braided core of relatively large diameter is woven in such a manner that a considerable air space between the wires comprising the braid is provided so that when said core is covered the conductor or cable possesses great flexibility, uniform strength, maximum resistance to crushing and concentration of the conducting elements at the outer diameter.

To enable others skilled in the art to more fully comprehend the underlying features of my invention that they may embody the same in the practical applications and purposes and uses to which it may be employed, drawings depicting a preferred form of the invention are annexed hereto as a part of my specification in which

Fig. 1 is a view showing a portion of the cable partly in side elevation and partly broken away.

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

Fig. 3 is a diagonal sectional view taken on the line 3—3 of Fig. 1.

Referring now to the drawings 5, 6 designate the wires of a braided core woven in such manner as to extend in substantially uniform spaced relation relative to each other throughout their length providing considerable air space therebetween as illustrated by Fig. 2 of the drawing. The diameter of the core is preferably of such dimensions as to constitute the major thickness of the finished cable or conductor being so formed as to provide the maximum strength and uniform flexibility at all points of its cross section. The resistance to crushing afforded by a thick core in the form of a bundle of wires possesses many advantages over other means employed such as hollow conductors wherein cabling conducting wires or strands are wound about tubes of lead, also hollow flexible metal tubing, twisted metal stripping and other expedients. In all instances, the conductors have been found to be deficient in conductivity for a definite weight, lack tensile strength and are weak to resist crushing effects. In those instances employing twisted metal stripping it has been found that the cable or conductor lacks uniform power to resist crushing at points between the twisted sections and is subject to fracture when bent back and forth across the same point due to conditions of installation.

I have overcome the above objections and comply with the requirements of flexibility, strength and resistance to crushing effects

in employing a braided core in which the wires are wound comparatively straight, instead of spirally. There is comparatively little waste of copper employed since it is desired to provide as great an air space or air pockets as possible within the body of the finished conductor or cable. Consequently, the greater the diameter of the individual wires comprising the core the greater will be the interior air space and the more ideal condition. In other words, the best results are to be obtained where consistent with flexibility the greatest diameter of the core is had with the minimum number of woven wires.

Having formed a braided core of the required diameter, it is finished off by surrounding the braid with one or more layers of wires. The first lay 7 is spirally wound in one direction and the second lay 8 is spirally wound but in the reverse direction as is well known in the art. The last or outer layer exposed to the air is subject to the emission of corona.

A cable or conductor constructed in accordance with the above description and as shown by the drawing may be easily manufactured, requires no special parts or elements, can easily be handled and cut having the uniform physical characteristics throughout its entire length and at all points of its cross section. Considering the linear length of material employed, it is substantially light in weight as compared to the heavy duty conductor or cable employed in high tension work and is capable of installation where clamps, towers and other supporting structures are part of an equipment.

Having shown and described my invention what I claim as new and desire to secure by Letters Patent is:

1. A conducting cable, comprising a core formed of a plurality of wire strands interlaced with one another to form an open work structure having uniform strength and maximum resistance to crushing, and an outer layer comprising a plurality of wire strands wound about said core in the direction of its longitudinal axis.

2. A conducting cable, comprising a core formed of a plurality of wire strands braided together into a structure whose transverse section consists of wires spaced from each other in substantially concentric geometric figures, and an outer layer comprising strands of wire wound about said core in the direction of its longitudinal axis.

In testimony whereof he has affixed his signature.

ABRAHAM BERNARD DIBNER.