

(No Model.)

W. A. CONNER.
ELECTRICAL CONDUCTOR.

No. 388,477.

Patented Aug. 28, 1888.

Fig. 1.

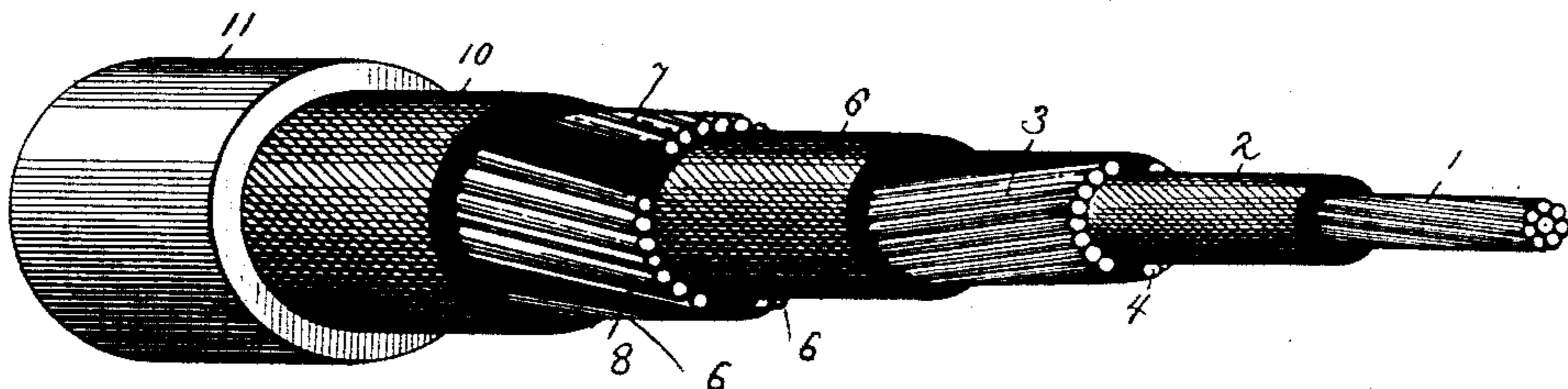
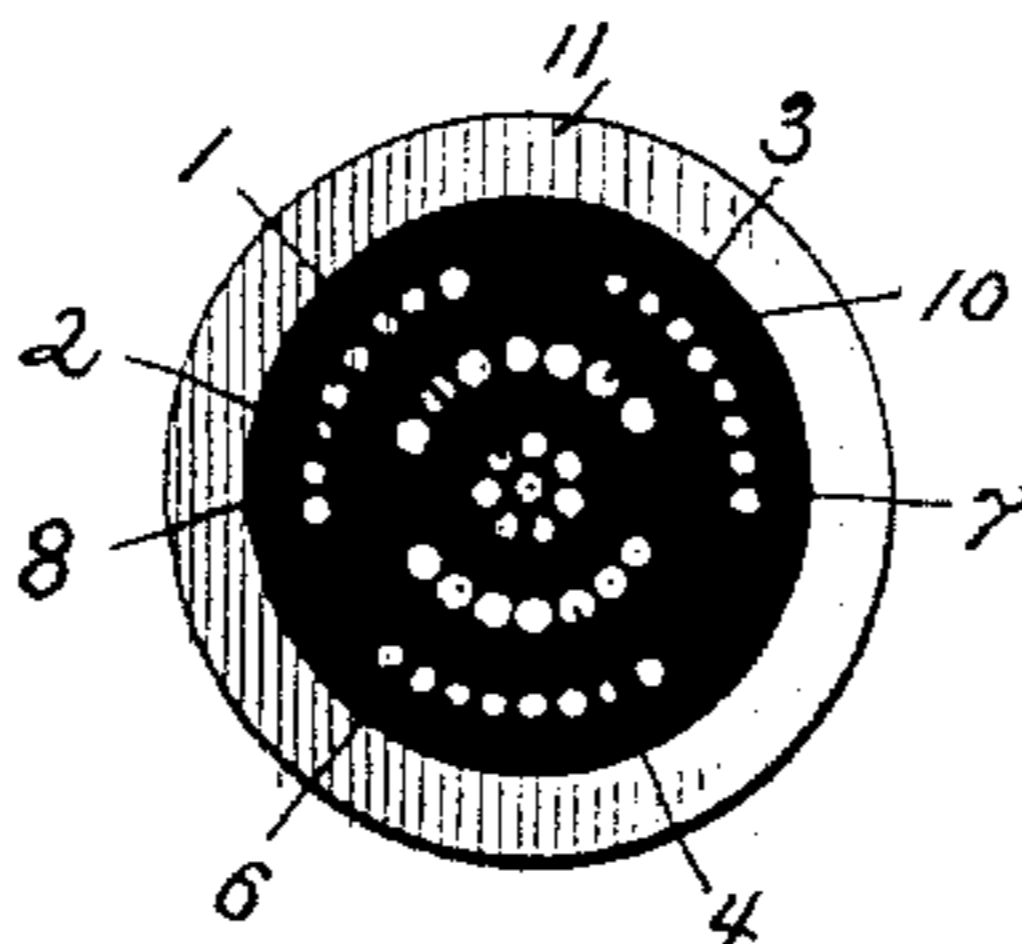


Fig. 2.



Attest:

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UNITED STATES PATENT OFFICE.

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ELECTRICAL CONDUCTOR.

SPECIFICATION forming part of Letters Patent No. 388,477, dated August 28, 1888.

Application filed February 21, 1888. Serial No. 264,746. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. CONNER, a citizen of the United States, residing at Pittsburg, Allegheny county, Pennsylvania, have invented certain new and useful Improvements in Conductors of Electricity, of which the following is a specification.

My invention relates to electric conductors, and more particularly to large electric conductors—such as are used in electric-light systems, for instance—and it has for its object to produce an electric conductor or cable having a large carrying capacity for electricity, and at the same time having the electric conductors properly and safely insulated from each other and the whole arranged in a compact form, so as to produce a cable of the smallest dimensions and that shall at the same time be flexible to a greater or less extent; and as a means of attaining these objects my invention consists in a conductor or cable constructed substantially as hereinafter more particularly set forth.

Referring to the accompanying drawings, Figure 1 is a perspective view illustrating one form of cable embodying my invention, and Fig. 2 is a cross-section thereof.

In the use of electric conductors, especially where it is desired to convey powerful currents of electricity, it is exceedingly desirable that the conductors occupy the smallest possible space consistent with a construction furnishing enough conducting medium for the current and sufficient insulation between the conductors and the protecting-covering, which is usually placed around the conductors to prevent danger of leaks or short circuits. It is also desirable, and indeed essential, especially when conductors are to be used in subterranean passages or conduits, that the conductor or cable should have a certain degree of flexibility, in order that it may be conveniently and speedily handled in being introduced into the subterranean passages. Many efforts have been made to produce a conductor or cable having these characteristics, and my present invention relates more particularly to the construction of a conductor or cable having these characteristics in a more material degree than heretofore, and at the same time present a conductor or cable that may be easily and

quickly made without involving expensive machinery and delays in producing the same.

In carrying out my invention I first provide a central conductor or core, 1, of any material, which may be a single large wire or strand, or may be made up, as shown in the drawings, of a number of strands arranged in contact with each other. Over this central conductor or core, 1, is placed an insulating covering, 2, which may consist of any well-known materials which are commonly used for this purpose—such, for instance, as cotton fiber and asphaltum. Over this insulating material is arranged a series of conductors, 3 4, each of which is made up of a number of wires or strands arranged in contact and constituting a single conductor. In order to provide the necessary conducting cross-section of the conductor and at the same time to have sufficient insulating material between each conductor of the series and the central conductor, I arrange each conductor so that it presents a surface toward the center of the cable comparatively wide as compared with the dimensions of the conductor in the direction of the radius of the cable, or, in other words, I so form each conductor that its breadth exceeds its thickness, and they may be said to represent in cross-section a segment of a ring or cylinder. By this arrangement of the conductors it will be seen that I am enabled to get a larger number of conductors having a given cross-section in a smaller cable and still maintain the necessary and desirable insulating space or distance between the conductors than in any other form or arrangement with which I am acquainted, and it will be manifest that while all of the conductors 3 4 are arranged practically equidistant from the central conductor and are separated from each other sufficiently to prevent leakage or short-circuiting, they still form a cable of small cross-section and allow of sufficient flexibility in the cable to answer the requirements set forth. These conductors 3 and 4 may be covered and separated by a layer of insulating material, which is of any desired composition, and over this may be placed another layer of conductors, as 6 7 8, &c., which have the same characteristics—that is, they are broader than they are thick and are arranged concen-

tric with the central conductor or core, 1. Over this layer of conductors and between each conductor in turn is placed another layer of insulating material, 10, which layer separates the conductors from each other, and over that I preferably place a protecting-covering, 11, of lead or other material, as is usually employed in cables of this class.

In the practical manufacture of these cables I find it preferable to arrange the conductors around the central conductors or core in a long spiral, as indicated in reference to conductors 3 and 4.

It will be evident that in insulating the conductors I may not only use some plastic insulating material, as suggested, but that I can interpose between the conductors cords or ropes treated with insulating material, which will fill the intervening space between the adjacent conductors, and similar cords or tapes may be placed around each layer of conductors to separate them from the adjacent layer or from the protective covering when used.

While I have shown in the drawings the central conductor as made up of a certain number of wires and the next intervening layer as also made up of a number of wires, it is evident that any desired number may be used, as the distinguishing characteristic of my in-

vention is that the conductors forming the surrounding layers of conductors shall be greater in breadth than in thickness and practically form segments or sections of a ring or circle, and at the same time be arranged spirally around the central core.

I do not deem it necessary herein to specifically state all the various modifications of my invention which may be used, as they will be evident to those skilled in the art, and my invention is not limited to the precise arrangement shown, as many other arrangements may be made embodying the principles of my invention.

What I claim, and desire to secure by Letters Patent, is—

An electric cable having a central conductor or core and a number of insulated conductors arranged spirally around the central conductor, and each having a cross-section greater in breadth than thickness, and composed of a number of wires, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM A. CONNER.

Witnesses:

J. W. MARSH,

CHARLES S. CRAWFORD.