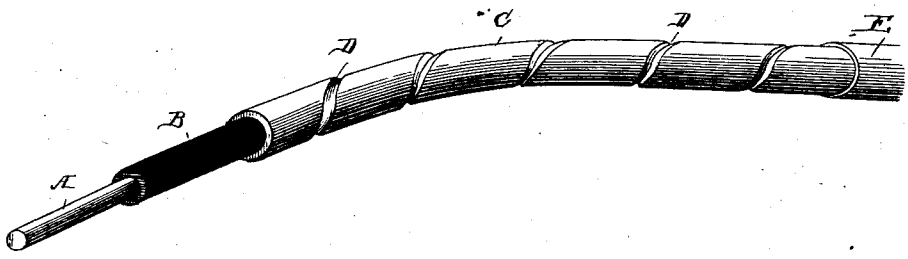
(No Model.)

E. G. ACHESON.

ELECTRIC CONDUCTOR.

No. 380,157. Patented Mar. 27, 1888.



Attest:
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UNITED STATES PATENT OFFICE.

EDWARD G. ACHESON, OF PITTSBURG, PENNSYLVANIA.

ELECTRIC CONDUCTOR.

SPECIFICATION forming part of Letters Patent No. 380,157, dated March 27, 1888.

Application filed July 7, 1887. Serial No. 243,669. (No model.)

To all whom it may concern:

Be it known that I, EDWARD G. ACHESON, a citizen of the United States, and a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Electric Conductors, of which the following is a specification.

My invention relates to electrical conductors, and more particularly to that class of conductors which are provided with metallic shields or coverings for the purpose of intercepting the inductive action of neighboring electric currents, or for making a return or metallic circuit wire.

In my Patent No. 342,892 I have described and claimed a conductor consisting of a wire covered with an insulating material, over which was applied a shield or covering composed of electrolytically-deposited copper or other metal.

My present invention relates to a conductor of the class shown in the patent referred to. I have found, however, that while the conductor, as made in the manner set forth in said patent, forms a perfect anti-inductive conductor or metallic circuit, electrically considered, there are still some mechanical disadvantages in it, arising, principally, from the fact that it cannot be bent or twisted to any great degree without liability of fracturing the exterior covering of the deposited metal.

It is very desirable, and sometimes necessary, that the conductor should be bent or twisted, and to accomplish this result without danger of destroying the integrity of the covering has been the problem which I have solved by my present invention, and which consists in an electric conductor composed of a central conductor covered with insulating material, upon which is applied a shield or covering consisting of a strip extending spirally around the same, and having spirally-formed spaces or recesses between the adjacent edges, whereby the conductor may be bent or twisted to almost any degree.

In the accompanying drawing I have illustrated a conductor embodying my invention.

The primary conductor A is of any suitable material and size to suit the requirements of the case, and it is enveloped in an insulating material, B, which may be composed of any suitable and well-known compound, but preferably of some fibrous material saturated or covered with a hydrocarbon having a rather high melting-point—such as asphaltum, for instance. Over this insulating material is applied a metal sheath or covering, C, and while it may be of any suitable conducting material, I preferably use copper deposited by the electrolytic process. This sheath or covering consists of a strip extending spirally around the insulated conductor, and is provided with one or more continuous spiral spaces or recesses, D, which may extend entirely or partially through the covering and may be formed in any desired manner. One way in which these grooves may be formed is by a mechanical cutting-tool—as, for instance, a diamond-point—arranged to travel lengthwise and around the conductor spirally; but a more practical way, especially when the sheath or covering is formed by electrolytic deposition, consists in applying to the insulated primary conductor a thread or cord of some non-conducting material which will stop out or prevent the deposition of the copper, and passing the conductor through a bath and depositing the sheath or covering upon certain portions thereof, leaving the insulating material exposed more or less in the spiral recesses in the covering.

The sheath having the spaces or recesses may be covered with any suitable insulating material, E—as cotton, paint, japan, and the like—and, if desired, the whole may be inclosed either as a separate conductor or as a number of conductors in a metallic sheath. It will thus be seen that while the primary conductor is completely insulated from the sheath or covering the said covering acts as an anti-inductive shield to the primary conductor; or it may be utilized as one limb of a complete metallic circuit, so as to form the return-circuit of the primary conductor; or it may be connected to earth at its extremities or at intervals along the line.

When my improved conductor is used for a metallic circuit, I preferably make the covering of such a thickness that it will be equal in cross-section to the cross-section of the primary conductor, so that the electrical resist-

ance of the two conductors will be practically equal. The conductor as thus formed presents all the advantages of a metallic circuit or anti-inductive conductor, and at the same time is exceedingly flexible and capable of being bent or twisted without danger of rupture, the spaces or recesses allowing the edges of the spiral band to approach each other on the one side and recede from each other on the opposite side as the wire is bent. It will be understood that the spiral band between the grooves will be of a greater or less width according to the size of the conductor and the degree of flexibility desired.

Without limiting myself to the precise construction shown and described, which may be modified in various ways without departing from the spirit of my invention, what I claim is—

1. An electric conductor consisting of a line-wire, an insulating-covering for the same, and a metallic shield or covering consisting of a strip extending spirally around the same, and having a spiral space or recess between the adjacent edges, substantially as described.

2. An electric conductor consisting of a line-wire, an insulating-covering for the same, a metallic shield or covering consisting of a strip extending spirally around the same, and having a spiral space or recess and a protective covering, substantially as described.

3. An electric conductor consisting of a line-wire, an insulating-covering, and an electro-deposited shield or covering having a spiral space or recess, substantially as described.

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

EDWARD G. ACHESON.

Witnesses:

GEO. F. MCCOMBS,

H. C. BAIR.