(No Model.)

H. C. SPALDING.

COMPOSITE ELECTRIC CABLE.

No. 327,472. Patented Sept. 29, 1885.

Fig 1

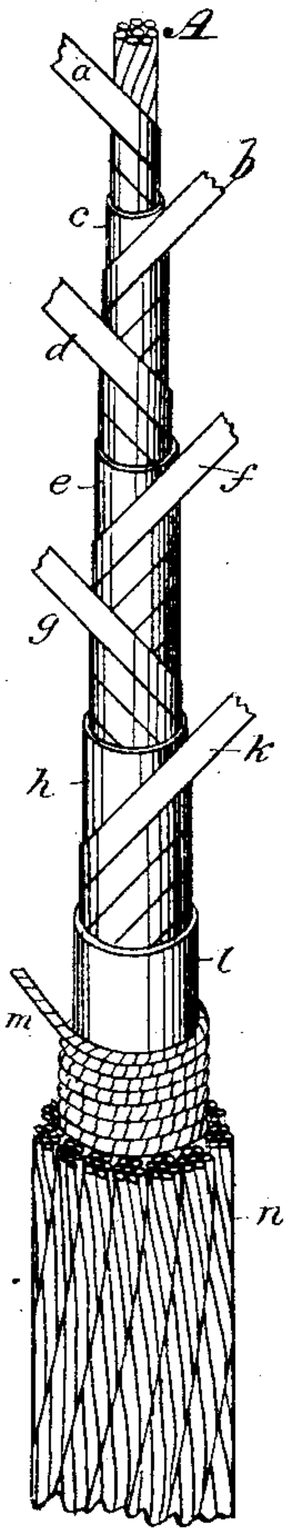

Fig 2

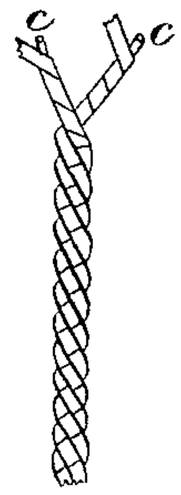

Fig 3

WITNESSES

W. H. Doggett.
W. Frisby

INVENTOR

Henry C. Spalding
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UNITED STATES PATENT OFFICE.

HENRY C. SPALDING, OF BOSTON, MASSACHUSETTS.

COMPOSITE ELECTRIC CABLE.

SPECIFICATION forming part of Letters Patent No. 327,472, dated September 29, 1885.

Application filed December 7, 1883. Renewed February 28, 1885. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. SPALDING, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a certain new and useful Composite Electric Cables, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

In another application I have shown and described an electrical cable containing two insulated conductors designed for the leading and return wires of a circuit and surrounded by a metallic sheath, which in its turn is insulated from the ground by an exterior coating of insulating material. The main purpose of this construction, as I have more fully explained in the application referred to, is to prevent induction and retardation, this being greatly facilitated by insulating the metal sheath in which an electrical equilibrium is produced by the current flowing in opposite directions in the two insulated conductors.

It is frequently desirable to construct cables in which provision is made for several circuits, and in this case I use as many pairs of insulated conductors as there are circuits; but to more perfectly neutralize or counteract the effect of one pair of these conductors upon one another and upon the sheath I twist them together and then twist the strands into a rope. In this way each conductor is brought into a great variety of juxtaposition to the others and to the insulated metallic sheath. In this my present invention mainly consists. It further comprises, however, the combination, with the twisted strands inclosed in one or more insulated metallic sheaths, of a layer or serving of twine and an armor composed of spirally-wound strands of wire, which give the cable great tensile strength and protect it from abrasion.

I will describe my invention by reference to the accompanying drawings, in which Figure 1 is a view of a portion of the cable with parts of each layer exposed. Fig. 2 is an enlarged view of one of the strands, and Fig. 3 is a view in elevation of the twisted rope composing the core.

A designates the core composed of strands, each of which is made up of two wires, *c c*, insulated, preferably, by spirally-wound strips of paper laid on a coating of resinous varnish and then twisted together, as shown in Fig. 1. The required number of these strands are twisted together, as shown in Fig. 3, to form a round and compact rope. Around the core is wound a spiral strip or ribbon of fibrous material, *a*, such as paper, and over this is applied a coating of resinous varnish, *c*. Then follow in order a spirally-wound layer of metal foil, *b*, a similarly-wound layer of paper, *d*, a coating of resinous varnish, *e*, a layer of metal foil, *f*, a third layer of paper, *g*, a coating of varnish, *h*, and a layer of paper, *k*. Over the latter is applied a coat, *l*, of bituminous insulating material or some similar compound that is permanently viscous to a slight degree. Into this is wound the twine *m*, and around the twine, which serves to compact the cable and forms an excellent foundation for the armor, strands *n* of fine wires are spirally wound. This completes the cable and gives it great strength and durability.

It may be stated that the materials used in the composition of this cable, and the manner of applying the same, may be considerably varied without departure from the invention. I have described, however, those which I have found to yield the most satisfactory results.

I do not claim, broadly, herein twisted wires nor twisted strands in an electrical cable; nor do I claim any of the insulating materials described, nor the manner of applying them, as these are matters that form the subject of other applications for patent.

What I claim is—

1. In an electrical cable, the combination, with a core composed of twisted strands, each consisting of two insulated wires forming or adapted to form a complete or round wire circuit, of one or more insulated metallic sheaths, substantially as set forth.

2. In an electrical cable, the combination, with a core composed of twisted strands, each consisting of two insulated wires forming or adapted to form a complete or round wire circuit and twisted together, of one or more insulated metallic sheaths, substantially as set forth.

3. In an electrical cable, the combination, with a core composed of twisted strands, each

consisting of two insulated wires forming or adapted to form a complete or round wire circuit, of one or more insulated metallic sheaths and a protective armor, as set forth.

4. In an electrical cable, the combination, with a core composed of twisted strands, each consisting of two insulated wires forming or adapted to form a complete or round wire circuit, of one or more insulated metallic sheaths and an armor composed of spirally-wound strands of wires, all as set forth.

In witness whereof I have hereunto signed my name in the presence of the two subscribing witnesses.

HENRY C. SPALDING.

Witnesses:

ALEX. L. HAYES,

E. B. WELCH.