(No Model.) 2 Sheets—Sheet 1.

W. H. SAWYER.

ELECTRICAL CONNECTING CORD.

No. 311,611. Patented Feb. 3, 1885.

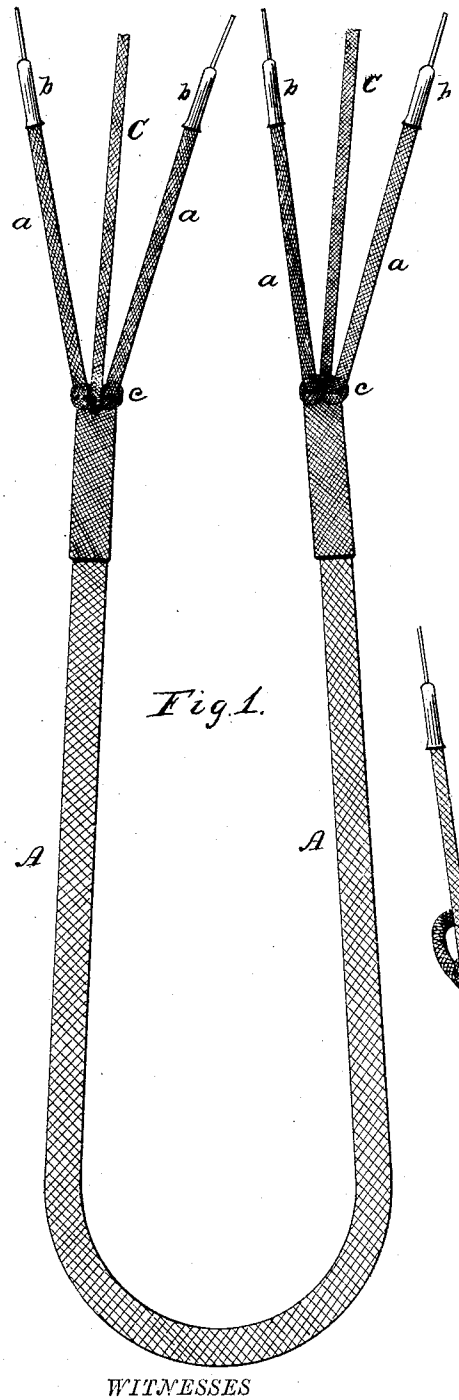


Fig. 1.



Fig. 2.

Fig. 3.

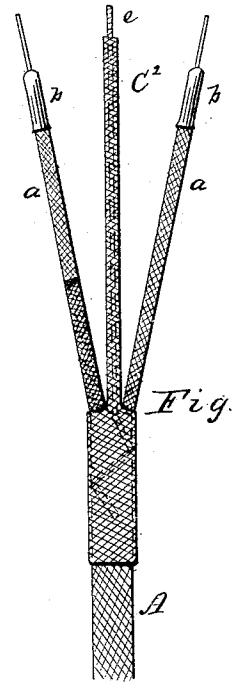


Fig. 5.

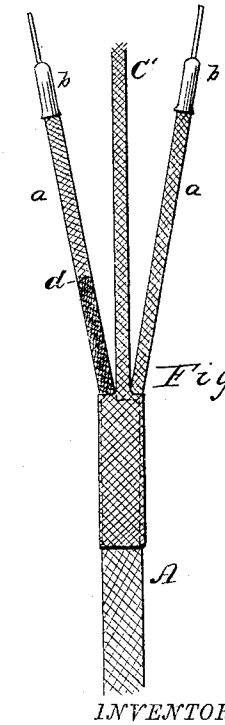


Fig. 4.

WITNESSES

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(No Model.) 2 Sheets—Sheet 2.

W. H. SAWYER.

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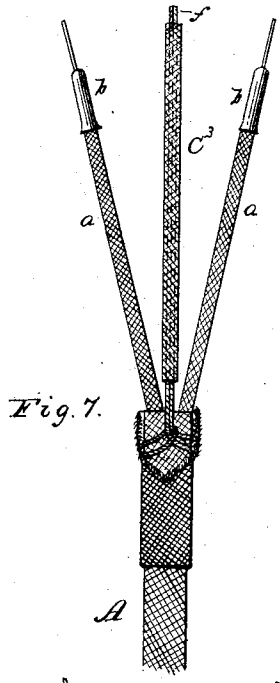


Fig. 7.

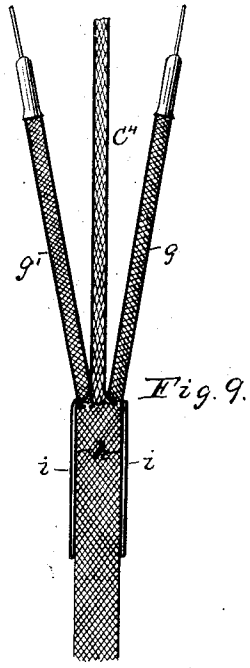


Fig. 9.

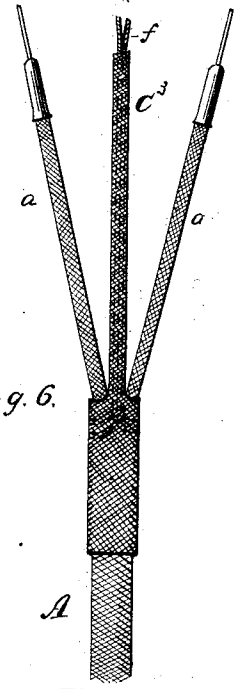


Fig. 6.

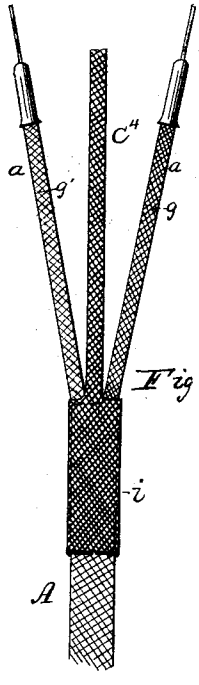


Fig. 8.

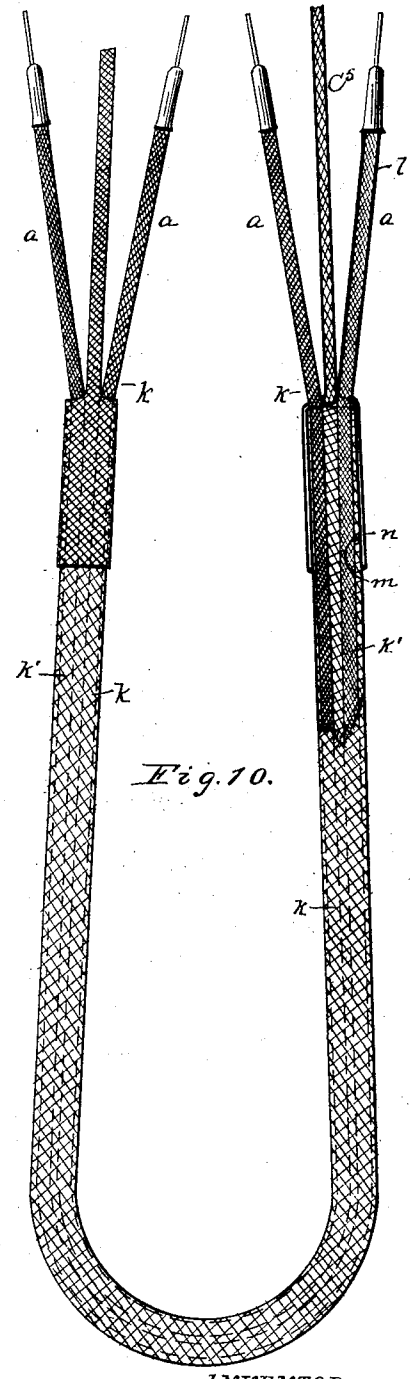


Fig. 10.

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UNITED STATES PATENT OFFICE.

WILLIAM H. SAWYER, OF PROVIDENCE, RHODE ISLAND.

ELECTRICAL CONNECTING-CORD.

SPECIFICATION forming part of Letters Patent No. 311,611, dated February 3, 1885.

Application filed September 26, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. SAWYER, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Electrical Connecting-Cords, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to electrical connecting-cords comprising two conductors, and designed for use with hand-telephones and similar instruments; and it relates especially to that class of such cords which are provided with a non-conducting suspending cord or branch at one or both ends for sustaining the weight of the instrument and thereby taking the strain off the conductors.

In providing the non-conducting suspension-cord it has heretofore been customary to take two covered conductors and inclose them in a common tubular covering by braiding for a suitable length, taking the two conductors out of the braid at each end, and then continuing the braid in the form of cord for a suitable length, this extended cord-like portion serving as the suspending-cord and being left somewhat shorter than the projecting end portions of the covered conductors. This method of providing the extra suspension-cord is obviously troublesome and expensive, in that a considerable manipulation of the braiding apparatus is necessary. In another connecting-cord a separate non-conducting cord, in addition to the two conductors, runs through the whole length of the common tubular braided covering and projects from both ends thereof with the projecting end portions of the conductors. In this form it would seem that there is a greater length of non-conducting cord used than is necessary, and it is therefore wasted. Telephones have also been suspended by a distinct non-conducting suspending-cord which is not inclosed in a common covering with the conductor. This contrivance is clumsy and inconvenient from the fact that conductors and suspension-cords are liable to become twisted and tangled together.

The object of my invention is to obviate a great portion of the expense and trouble of manufacture of connecting-cords, as heretofore, provided with extra suspension-branches; and it consists in a connecting-cord comprising two covered conductors inclosed for the main portion of their length in a common covering, from which they project at both ends, and a separately-formed suspension-cord attached to said covered conductors at the crotch or point where they emerge from their common covering, this attached suspension-cord being somewhat shorter than the projecting portions of the conductors, so that the latter will be left slack, and therefore unstrained when the instrument is suspended.

It has been found in practice that the only real disadvantage resulting to the conductor of a connecting-cord by sustaining the weight of the instrument is the loosening of the metallic tips with which the conductors are provided, and by which they are connected to binding-posts. Therefore if the end portions of the conductors are left slack there is no objection to the intermediate portions of the conductors and their coverings being made to sustain the weight of the instrument, or no disadvantage will result to the cord, as a whole, if the weight of the instrument by accident or inadvertence is brought upon its intermediate portion exclusive of its metallic tips and the ends immediately joined thereto. The separately formed and attached cords or branches therefore answer as well for purposes of suspension as do the integrally-formed extensions of the common braided covering, or the non conducting cords extending entirely through and projecting from the ends of the same. The separately formed and attached suspension-cords are much more conveniently provided, and render the complete connecting-cord much cheaper than those heretofore constructed.

My invention will be readily understood from the following particular description, in connection with the accompanying drawings, in which—

Figure 1 is a view of a connecting-cord constructed according to my invention. Fig. 2 is a view of the separately-formed suspension-cord; and Fig. 3 illustrates the manner of attaching such suspension-cord. Fig. 4 is a view of one end of a connecting-cord of modified construction, the manner of attaching the suspension-cord being illustrated partly in

dotted lines. Fig. 5 is a view of one end of another modified connecting-cord. Fig. 6 is a view of one end of another modified construction, and Fig. 7 is a view of the same with a portion of the attaching-braiding removed. Fig. 8 is a view of still another modification, and Fig. 9 is a sectional view illustrating its construction. Fig. 10 is a view of another connecting-cord involving my invention.

In Fig. 1, the letter A indicates a connecting-cord of ordinary construction, in which two covered conductors are inclosed, except their end portions, in a common tubular braided covering. These end portions are indicated by the letters *a a*, and have metallic tips *b b* attached to them in the usual manner. The suspending-cord is designated by the letter C. It is a distinct piece, as shown in Fig. 3, and is provided at its end with a loop, *c*, which tightly embraces the two projecting conductors at the point where they emerge from the common tubular covering. The manner in which this loop is fastened to the conductors is illustrated in Fig. 3. It is passed over both conductors, and then the suspending-cord is passed in between them under the loop, after which the loop should be forced down snugly to the crotch and the cord drawn tightly, making a neat and snug fastening. If desired, the loop may be tied or stitched in place; but such tying or stitching is not necessary.

In Fig. 4 the main portions of the connecting-cord are the same as in Fig. 1; but a braid is started, as shown, at one end of the cord at *d*, on one of the projecting conductors a short distance from the crotch, and is continued down past the same and over the main covering for a short distance, as shown in dotted lines. It is then reversed and braided back to the crotch, from which it is continued separately in the form of a cord, C'. A braid may then be started at the extreme end of one projecting conductor and continued down past the crotch for a little distance, when it should be reversed and continued back over the entire projecting portion of the other conductor.

The form shown in Fig. 5 is the same as in Fig. 4, except that a piece of twisted cord, *e*, is inclosed in the suspension-braid, the whole forming the suspension-cord C².

In the form shown in Figs. 6 and 7 a loop, *f*, of twisted cord is looped around the connecting-cord and has two extended strands of equal length. A braid is started at the crotch and extended downward over the loop and the main common covering for, say, an inch, and is then reversed back to the crotch, from whence it is continued over the two extended strands, as at C³.

Instead of a loop with two extended strands, a single twisted cord might be used with one end tied around the connecting-cord just below the crotch, and, if desired, still more securely fastened by any ordinary form of glue or other adhesive substance.

In the form shown in Figs. 8 and 9 one projecting conductor is braided down to the crotch from its extreme end, the outer braid being shown at *g* in section in Fig. 9. The other projecting conductor is then braided from its extreme end down to the crotch, as shown at *g'*, and the braid continued down over both conductors and the common covering for a short distance, as at *h*—say an inch—when it is reversed back to the crotch, as at *i*, then continued separately in the form of a cord, as at C.

In the form shown in Fig. 10 one of the conductors of the connecting-cord is covered for its entire length with a braid similar to that of the common covering before it is inclosed in the same. It is then inclosed in the tubular braid, as shown at *k* in dotted lines, with the other conductor, *k'*, which has only its ordinary covering. After being so inclosed a braid is started at the extremity of the conductor with the ordinary covering, as at *l*, and it is braided down to the crotch, the braid being continued past the same for, say, an inch, as at *m*, and is then reversed to the crotch, as at *n*, from whence it is continued in the form of a suspending-cord, as at C⁵.

I have practically used the various methods of attaching the suspension-cord which I have illustrated, and find them all efficient and far more practical and economical than the methods heretofore used.

What I claim is—

1. An electrical connecting-cord comprising two covered conductors inclosed in a common braided covering from which they both project at both ends, and two non-conducting suspension-cords separately formed and attached at or near the points, respectively, where the conductors emerge from their common covering.

2. The combination, with an electrical connecting-cord comprising two covered conductors inclosed in and projecting at both ends from a common tubular covering, of two non-conducting suspension-cords separately formed and attached to the connecting-cord at or near the points, respectively, where the conductors emerge from their common covering.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM H. SAWYER.

Witnesses:
GILMAN E. JOPP,
W. A. HATHAWAY.