(No Model.)

M. E. SHAFFER.

NON INDUCTIVE ELECTRIC CABLE.

No. 304,759. Patented Sept. 9, 1884.

Fig. 1.

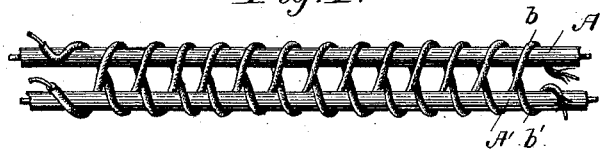


Fig. 2.

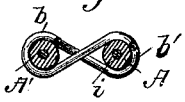


Fig. 3.

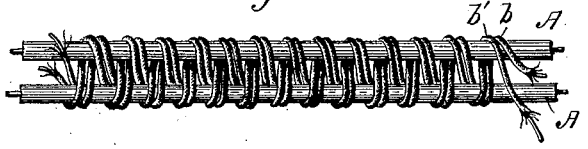


Fig. 4.

Fig. 5.

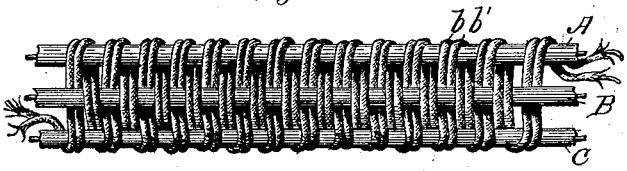


Fig. 6.

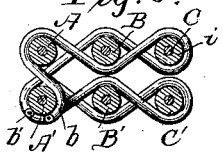
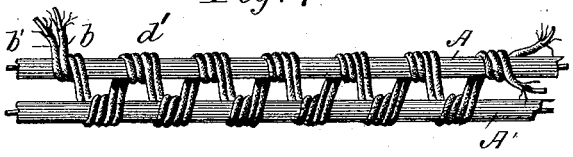


Fig. 7.



WITNESSES

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MARY E. SHAFFER, OF NEW YORK, N. Y.

NON-INDUCTIVE ELECTRIC CABLE.

SPECIFICATION forming part of Letters Patent No. 304,759, dated September 9, 1884.

Application filed March 25, 1884. (No model.)

To all whom it may concern:

Be it known that I, MARY E. SHAFFER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Non-Inductive Electric Cables; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of electric conductors for telegraphic or telephonic purposes which are formed into a non-inductive cable; and its object is to provide a simple and improved cable which will obviate the injurious effects produced by induction, whereby a number of circuits may be worked in the same cable.

To this end my invention consists, substantially, in weaving about the longitudinal wires of one or more circuits the wires of one or more independent circuits, substantially as will be hereinafter more fully set forth.

In the drawings, Figure 1 is a plan view showing a cable comprising two circuits, and constructed after the manner of my invention. Fig. 2 is a detail transverse sectional view thereof. Fig. 3 is a plan view illustrating a modification in the cable shown in Fig. 1. Fig. 4 is a plan view showing an improved cable comprising three circuits. Fig. 5 is a plan view of a larger cable constructed after the plan of the modification illustrated in Fig. 3. Fig. 6 is a transverse sectional view, in detail, of this larger cable. Fig. 7 is a plan view illustrating another modified form of cable comprising two circuits.

Corresponding parts in the several figures are denoted by the same letters of reference.

Referring to the drawings, A and A′ designate the wires which form one electric circuit, these wires being laid straight or longitudinally, as shown. *b* and *b′* designate the wires of another circuit, these wires being interwoven around the wires A A′ in any suitable manner. All the wires composing the cable are insulated by means of any suitable covering, as shown at *i*, Figs. 3 and 6, and the twisted or woven wires *b b′* are smaller than the longitudinal or straight wires A A′. The smaller wires *b b′* of one circuit may be woven about the wires A A′ of the other circuit in any suitable manner, and the said smaller wires are carried alternately across from one of the large wires to the other, as shown in the drawings. One form of weaving is illustrated in Fig. 1, in which the wires *b b′* are separately woven about the wires A A′, and are carried in opposite directions; or, as shown Fig. 3, the wires *b b′* may be carried parallel with each other and be alternately woven about the straight wires A A′.

In the cable shown in Fig. 4 two circuits of small wires, as designated by *b b′* and *c c′*, are provided, the wires of each of these circuits being carried parallel with each other, but the circuits being woven in opposite directions about the large wires A A′. A large cable—such as shown in Figs. 5 and 6—may be formed after the manner of my invention by providing a number of straight longitudinal wires, A A′, B B′, and C C′, each pair of wires forming a circuit, when the small circuit-wires *b b′* are interwoven about all the larger wires to bind them together into a compact cable.

In the modification shown in Fig. 7 the small wires *b b′* are, besides being interwoven, coiled around the large wires, as shown at *d′*.

In the arrangement of my improved cable the wires of one round or metallic circuit are preferably interwoven about the straight wires of another metallic circuit on a plane at or about right angles therewith, as shown in Fig. 5, by which relative arrangement the best results are secured.

It will be observed that electric cables constructed in accordance with my invention embody only the line-wires of the different circuits, so that there is no extra expense incurred for non-insulated binding-wires or filling, such as are usually employed in cables to carry the induced current to the ground. Therefore my improved cables can be constructed at but a small extra expense over the first cost of the line-wires, and any number of circuits may be worked through them and the induced current will be taken up.

It is obvious that my invention is adapted for use either as an outside line cable or conductor, or as an induction-killer to be attached to the main line at the office, and to extend inside the office.

I do not broadly claim an electrical cable

comprising a group of round or metallic circuits braided together or interwoven, a cable having been heretofore constructed of a series of strands braided together, each strand consisting of two insulated wires twisted together and forming a round or metallic circuit.

I claim as my invention—

1. An improved electric cable for telegraphic or telephonic purposes, having the separate line-wires of two or more independent circuits independently and separately interwoven, substantially as set forth.

2. The combination, in an electric cable, with the straight or longitudinal wires of one or more circuits, of the wires of one or more independent circuits interwoven about the said longitudinal wires, substantially as and for the purpose set forth.

3. The combination, in an electric cable, with the large longitudinal or straight wires of one or more circuits, of the smaller wires of one or more independent circuits, the smaller wires being interwoven alternately about the larger wires, substantially as and for the purpose set forth.

4. An improved electric cable composed of only the line-wires of two or more circuits, the wires of the different circuits being of different sizes and interwoven, substantially as and for the purpose set forth.

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

MARY E. SHAFFER.

Witnesses:

HERBERT S. OGDEN,

LEONARD S. WHEELER.