

No. 840,066.

PATENTED JAN. 1, 1907.

L. A. JONES.
CONDUIT.

APPLICATION FILED OCT. 17, 1904.

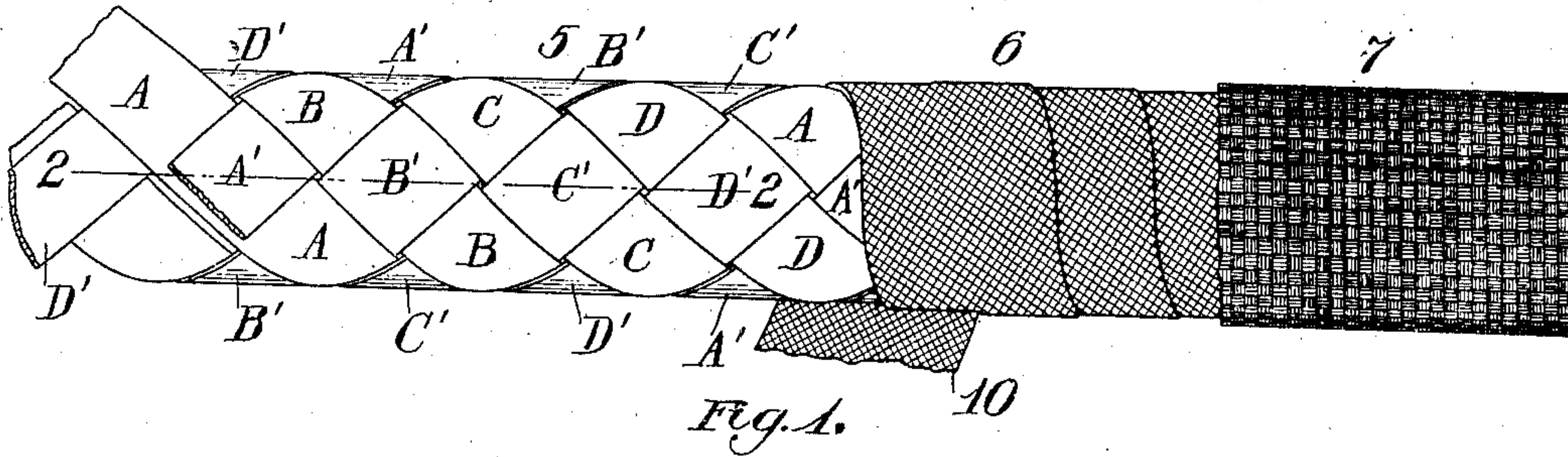


Fig. 1.

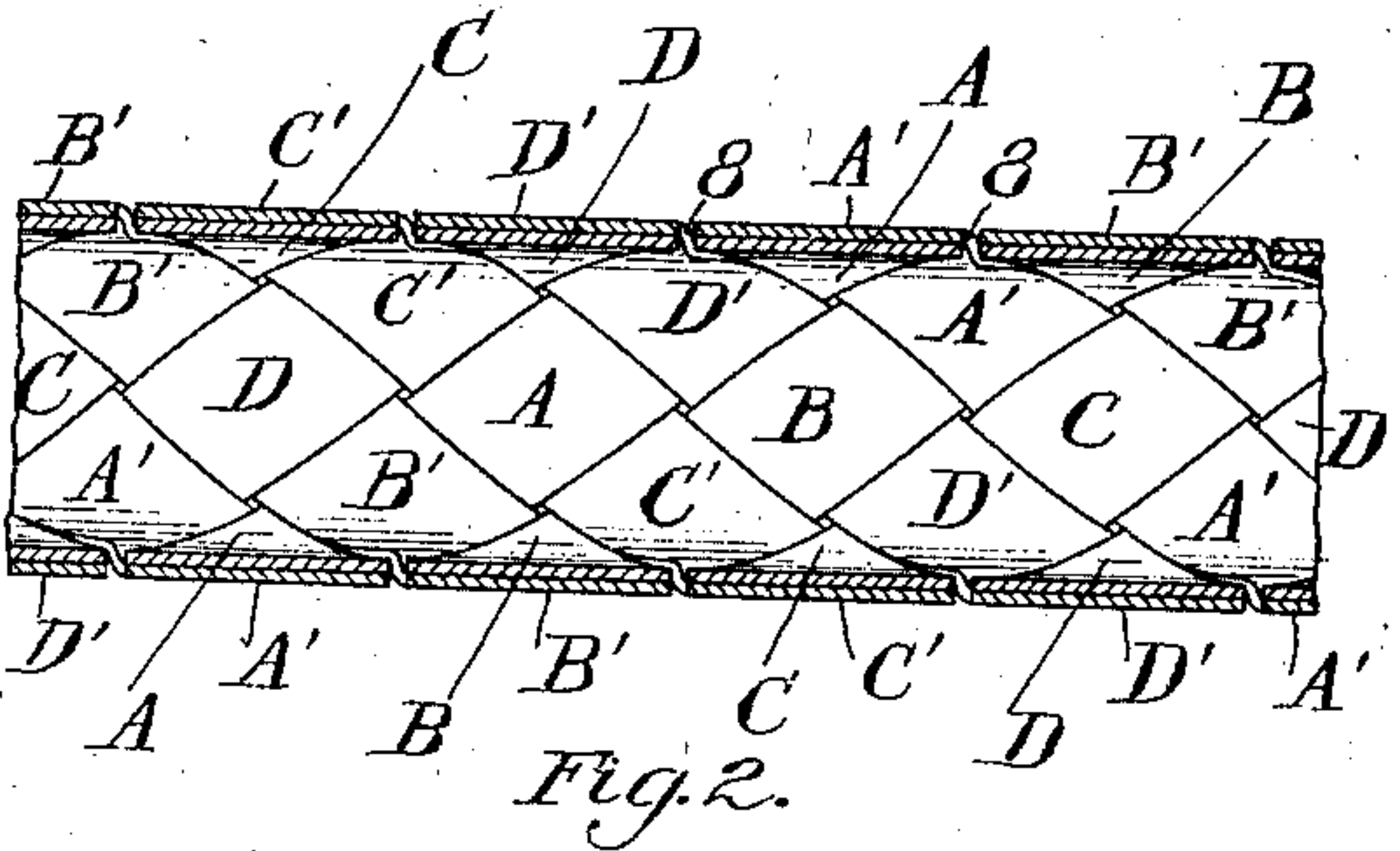


Fig. 2.

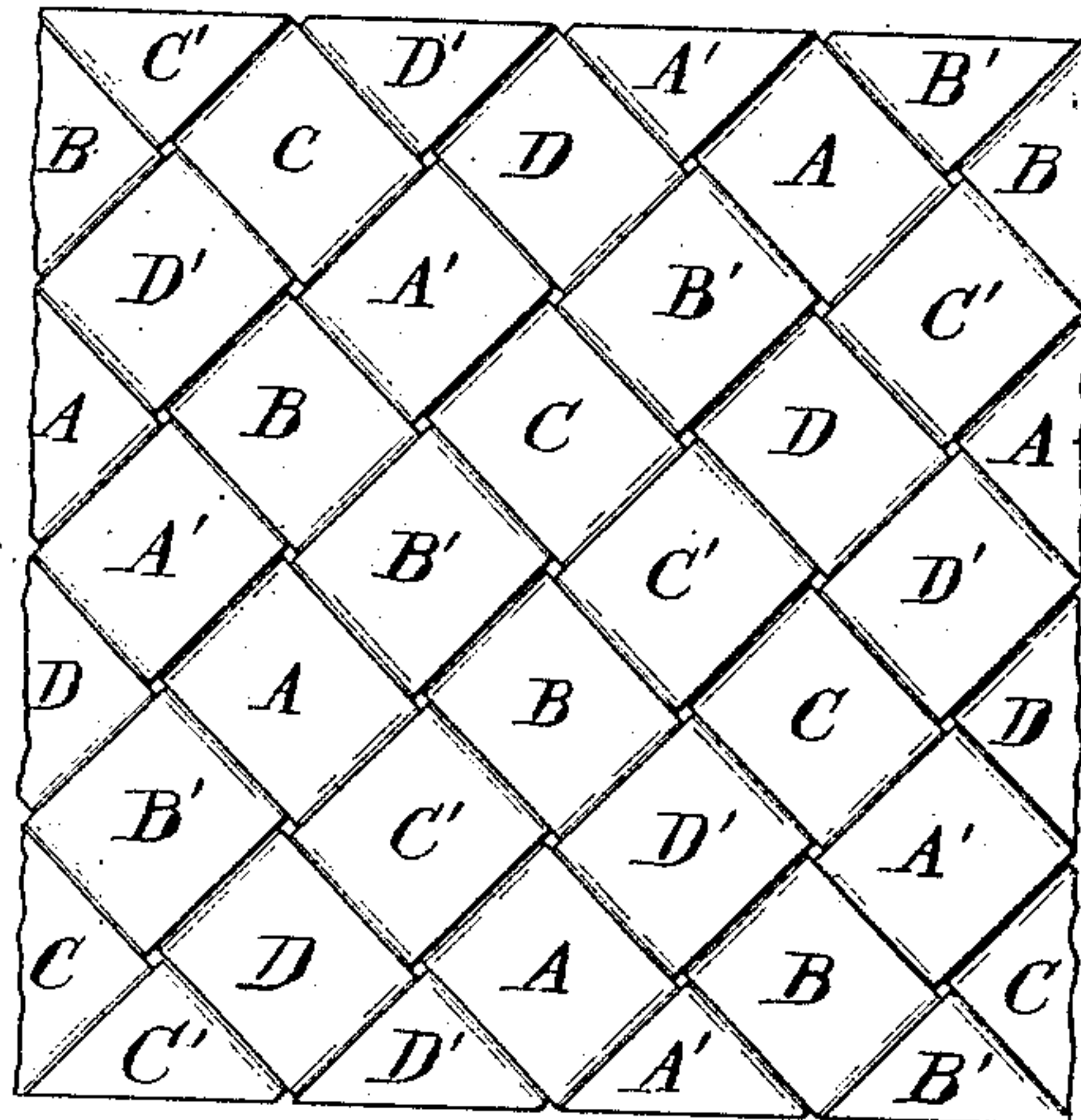


Fig. 3.

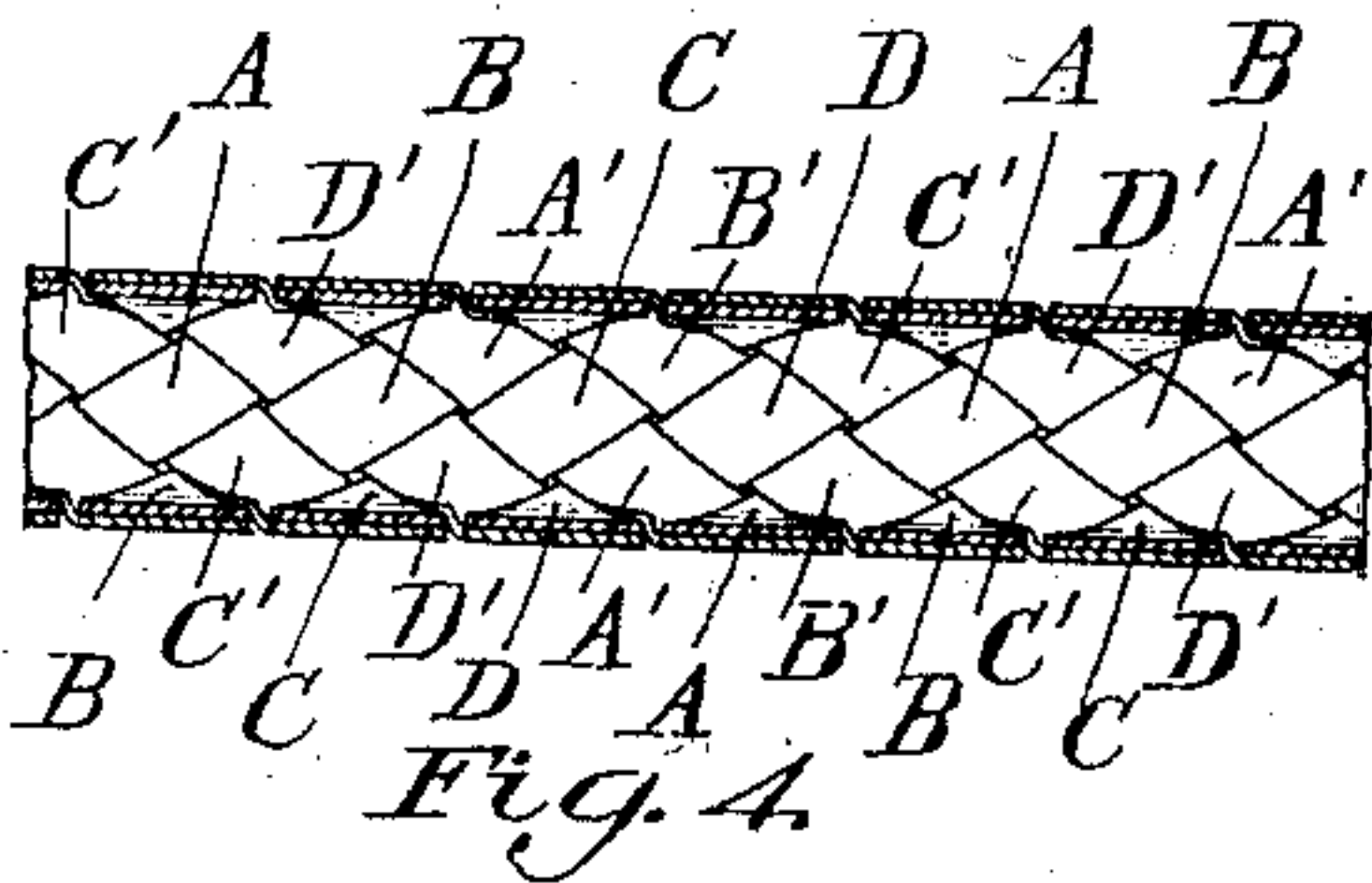


Fig. 4.

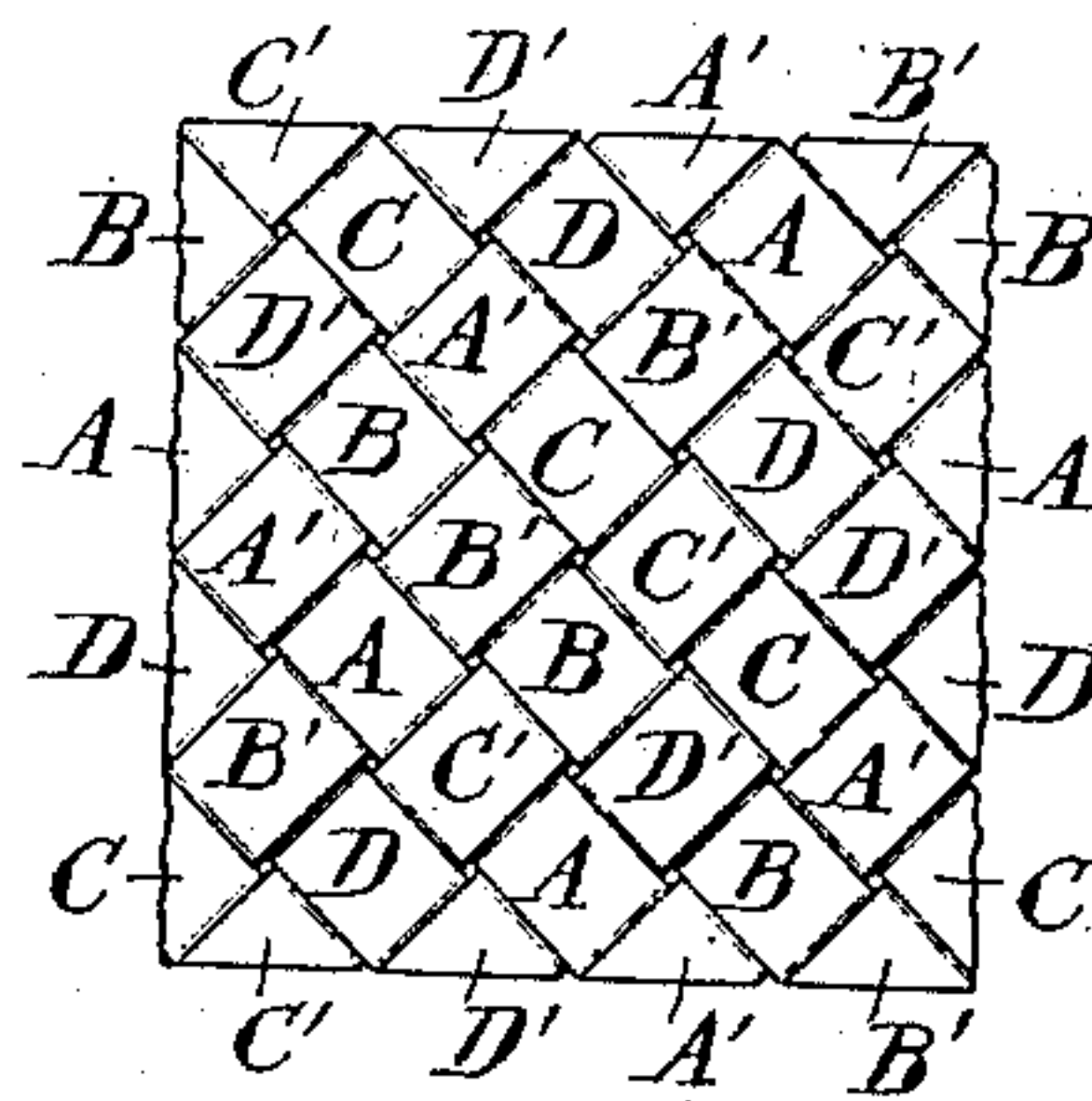


Fig. 5.

Witnesses:

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UNITED STATES PATENT OFFICE.

LOUIS A. JONES, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNOR TO
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CONDUIT.

No. 840,066.

Specification of Letters Patent.

Patented Jan. 1, 1907.

Application filed October 17, 1904. Serial No. 228,675.

To all whom it may concern:

Be it known that I, LOUIS A. JONES, a citizen of the United States, residing at Cambridge, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Conduits, of which the following is a specification.

The object of this invention is to provide a flexible conduit constructed to receive electric wires and formed of insulating material.

The object of the invention is further to provide a conduit which is not easily crushed and which will resist longitudinal displacement of the parts composing the same when electric wires are being inserted therein or being removed therefrom.

The object of this invention is, again, to provide a conduit which can be quickly and practically manufactured by machinery in order that the cost of the same may be brought within reasonable limits.

The invention consists in a flexible conduit constructed as set forth in the following specification, and particularly pointed out in the claims thereof.

Referring to the drawings, Figure 1 is a side elevation of my improved conduit, partly broken away to illustrate more clearly the construction of the same. Fig. 2 is a longitudinal section taken on line 2 2 of Fig. 1. Fig. 3 is a development of a portion of the inner tube. Fig. 4 is a section similar to Fig. 2 of a smaller tube. Fig. 5 is a development of a portion of the tube illustrated in Fig. 4.

Like characters refer to like parts throughout the several views of the drawings.

The conduit in its completed form consists of an inner tube 5, a protective wrapping 6, and an outer tube 7. Said inner tube is formed of flat strips of resilient and insulating material A, B, C, and D, preferably consisting of thin fiber-board, each being wound in the form of a right-hand helix. Interlaced with the strips A, B, C, and D are similar strips of flat insulating material A', B', C', and D', wound to form left-hand helices and interlaced with the right-hand helices formed by the strips A, B, C, and D. Said strips A, B, C, and D and A', B', C', and D' are preferably made of such a width and wound at such a pitch that they cross each other at right angles, each of the strips A, B, C, and D passing alternately over and under the

strips A', B', C', and D' and forming as a whole a tube which is very flexible laterally and is not easily crushed by outside pressure. The object of crossing the strips A, B, C, and D at right angles to the strips A', B', C', and D' is twofold: first, by thus crossing the strips it is easier to form the short bend 8, and, second, the tube when completed can only be very slightly elongated by a longitudinal pull imparted thereto.

The protective wrapping 6 preferably consists of a flat strip of adhesive tape 10, wound in helical form about the periphery of the inner tube 5. The particular form or material of said protective wrapping 6 is immaterial so long as the same affords a means for protecting the inner tube 5, so that the waterproofing composition and mica, which are subsequently applied to the conduit, may not penetrate to the interior of the tube through the interstices between the strips. The outer tube 7 is a tubular layer, preferably of woven fabric, which serves to protect the inner layers and which renders the conduit as a whole non-extensible, but which may be of knitted or braided material, provided that it is made non-extensible by the introduction of longitudinal threads therein or by a non-extensible element incorporated elsewhere in the conduit. The tape 10 is wound in the form of a helix around the tube 5, with each layer overlapping the layer adjacent thereto in order to more securely seal said inner tube.

The construction of my improved conduit by means of machinery is rendered practical and rapid by first forming the tube 5 upon a braiding-machine especially adapted for the purpose and with sufficient tension upon the different strips A A', B B', C C', and D D' so that a sharp bend 8, Fig. 2, may be obtained between said strips, thus presenting upon the outer and inner surfaces of said tube a smooth surface, the smooth inner surface being especially desirable in devices of the character described in order that the electric wires as they are inserted in said tube may not catch upon the interior thereof. After a conduit has been formed as hereinbefore described—viz., of the inner tube 5, protective wrapping 6, and woven covering 7—the same is subjected to a process by means of which a waterproof and insulating composition is applied thereto, and said tube is then run

through powdered mica to give it a sparkling and glistening appearance of a distinctive character.

While I prefer to form the inner tube 5 of flat strips of insulating material, preferably thin fiber-board, I do not wish to limit myself to such material.

Thin metal strips, as well as strips of material of other descriptions, may be employed 10 in the manner above described to form a tube to inclose insulated wires and to protect them from injury by abrasion or violence and when arranged as described herein and set forth in the claims are within the scope of 15 my invention.

It will be understood that the particular arrangement of the two series of flat strips, as described and claimed, reduces liability of electric wires catching upon the interior of 20 the tube when said wires are being inserted in the tube, because there is no abrupt shoulder presented against which the end of the wire that is being inserted might catch. All edges of the strips that might be presented to 25 the end of a wire that is being inserted are at such an angle (forty-five degrees) to the path of movement of the wire being inserted that the end of such wire will simply ride along said edge and not be stopped thereby.

30 Having thus described my invention, what I claim, and desire by Letters Patent to secure, is—

1. A flexible conduit for electric wires consisting of two series of flat strips of resilient 35 material, each strip of one series forming a right-hand helix, and each strip of the other

series forming a left-hand helix, the individual strips of one series being interlaced with the individual strips of the other series, all of the strips being approximately at an angle of 40 forty-five degrees to the longitudinal dimension of the space within the conduit.

2. A flexible conduit for electric wires consisting of two series of flat strips of resilient 45 and insulating material, each strip of one series forming a right-hand helix, and each strip of the other series forming a left-hand helix, the individual strips of one series being interlaced with the individual strips of the other series, all of the strips being approximately 50 at an angle of forty-five degrees to the longitudinal dimension of the space within the conduit.

3. A flexible conduit for electric wires consisting of two series of flat strips of resilient 55 material, each strip of one series forming a right-hand helix, and each strip of the other series forming a left-hand helix, the individual strips of one series being interlaced with the individual strips of the other series, combined with an element rendering the conduit 60 as a whole non-extensible, all of the strips being approximately at an angle of forty-five degrees to the longitudinal dimension of the space within the conduit.

65 In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

LOUIS A. JONES.

Witnesses:

CHARLES S. GOODING,
ANNIE J. DAILEY.