(No Model.)

J. A. STOUGHTON.

ELECTRIC CONDUCTOR.

No. 421,781. Patented Feb. 18, 1890.

Fig. 1

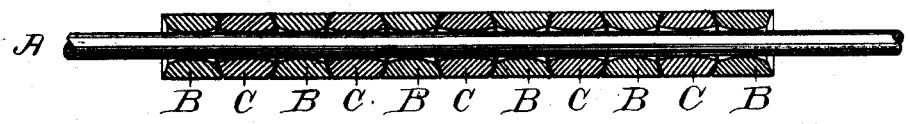


Fig. 2

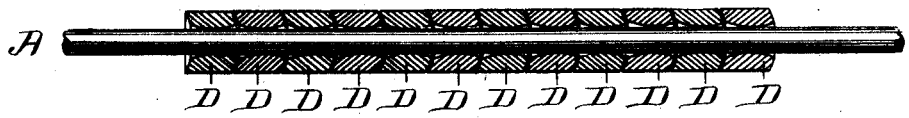


Fig. 3

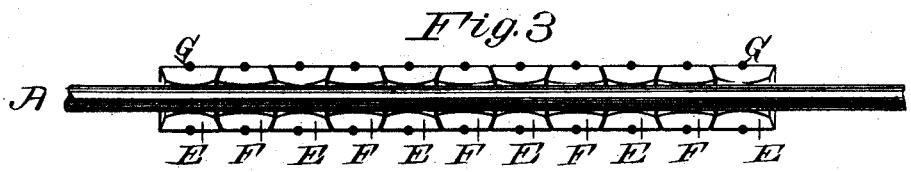


Fig. 4.

Fig. 5

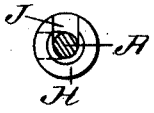
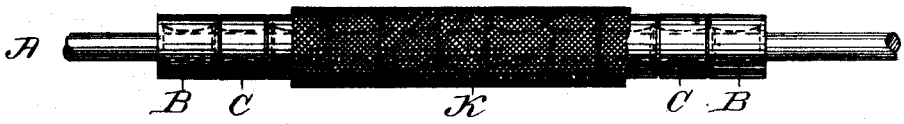


Fig. 6



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UNITED STATES PATENT OFFICE.

JOHN A. STOUGHTON, OF EAST HARTFORD, CONNECTICUT.

ELECTRIC CONDUCTOR.

SPECIFICATION forming part of Letters Patent No. 421,781, dated February 18, 1890.

Application filed December 4, 1889. Serial No. 332,565. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. STOUGHTON, of East Hartford, Connecticut, have invented a new and useful Insulated Electrical Conductor, of which the following description and claim constitute the specification, and which is illustrated by the accompanying sheet of drawings.

This invention consists of a metallic wire or other conductor of electricity, in combination with a series of mutually-articulated glass cylinders inclosing that conductor.

Figure 1 of the drawings represents a fragment of wire provided with a series of mutually-articulated glass cylinders. Fig. 2 is a view of a fragment of wire provided with a series of mutually-articulated glass cylinders which differ somewhat in form from those of Fig. 1. Fig. 3 is a view of a fragment of wire and of a series of half-cylinders, showing how such a series of half-cylinders may be fastened to an opposite series of similar half-cylinders by small wires, one of which may encircle two such half-cylinders, and thus hold them firmly together upon the electrical conductor. Fig. 4 is a view of a fragment of wire and of a series of glass pieces thereon, which pieces are identical with the glass cylinders of Fig. 1, except that each of them is provided with a longitudinal radial slit by means of which it may be fixed to the wire by being placed thereon laterally instead of longitudinally, as is necessary in the case of the glass cylinders of Fig. 1. Fig. 5 is an end view of what is shown in Fig. 4. Fig. 6 is a side view of a fragment of wire provided with a series of glass cylinders like those of Fig. 1, and also provided outside of those with additional flexible insulation such as has heretofore been commonly applied directly to electric wires.

The letter A indicates a wire to be used as a conductor of electricity.

The letters B and C indicate mutually-articulated glass cylinders, which are strung upon the wire A and which are provided with axial holes, the diameters of the longitudinal centers of which are slightly larger than the diameter of the wire A, and the diameters of the ends of which holes are larger still. The ends of the cylinders B are concave, and the ends of the cylinders C are correspondingly convex.

The letter D indicates mutually-articulated glass cylinders identical with those denoted by the letter B, except that while one of the ends of each of them is concave the other end is convex.

The letters E and F indicate mutually-articulated half-cylinders of glass, which are to be united around the wire A to counterparts thereof by means of small flexible wires G fastening together each pair of them, so as to constitute a series of cylinders substantially like those of Fig. 1.

The letters H and I denote a series of pieces of glass identical with the cylinders B and C, respectively, except that each of them is provided with a longitudinal slit J, by means of which it may be placed upon the wire A laterally.

The letter K indicates any proper flexible insulation of electricity, which may be woven around the glass cylinders, or may be otherwise applied thereto.

Insulated electrical conductors like that shown in Fig. 1 may be manufactured by making the glass cylinders B and C and by passing them alternately one after another over one end of the conducting-wire until that wire is entirely covered with them, and insulated electrical conductors like that shown in Fig. 2 may be manufactured by making the glass cylinders D and passing them one after another over one end of the conducting-wire with their concave ends always in the same direction, and insulated electrical conductors like that indicated by Fig. 3 may be manufactured by fastening pairs of half-cylinders E and F around the conducting-wire by means of small flexible wires G, one of which may encircle each pair of such half-cylinders in a circumferential groove in their peripheries and have its two ends twisted together to secure firmness and permanency, while insulated electrical conductors like that of Fig. 4 may be manufactured by passing the glass pieces H and I laterally across the conducting-wire and arranging them alternately, so that their ends will articulate, and arranging them also in such positions that the slits J of no two adja-

cent pieces will be adjacent to each other. Insulated electrical conductors like that of Fig. 6 may be manufactured by doing what is above set forth relevant to Fig. 1 and by adding to the article of that figure an exterior flexible insulation of electricity of either of the already well-known kinds of such insulations.

The above-described varying size of the diameter of the longitudinal holes through the glass cylinders, together with the mutual articulation of the ends of those cylinders, gives a much greater degree of flexibility to my completed insulated electrical conductor than it would otherwise have, and in order to reach the highest attainable degree of flexibility the glass cylinders must be comparatively short and their mutually-articulated ends must be segments of spherical surfaces with the centers of the spheres represented by those surfaces coincident to the centers of the cylinders.

I contemplate the manufacture of my insulated electrical conductors mainly in the forms shown in Figs. 1, 2, and 6, and I contemplate the use of the glass half-cylinders of Fig. 3 and of the glass pieces of Fig. 4, mainly for the purpose of repairing my insulated electrical conductors whenever such repair is necessitated by accidental breakage of some of the glass cylinders of Figs. 1 and 2. Where such repair is effected by means of the glass pieces of Fig. 4 it will be desirable not only to arrange those pieces as above stated, but also to fill the slits J with some suitable substance which is a non-conductor of electricity.

The forms of the insulating-cylinders may be varied in many ways inside of the principle of my invention; but I believe that this specification and the accompanying drawings set forth the best modes of applying that principle.

I claim as my invention—

An insulated electrical conductor consisting of a metallic wire covered by a series of insulating-cylinders the ends of which are mutually articulated by means of having opposite concave and convex surfaces which are segments of spheres, the centers of which are substantially coincident with the centers of those of the cylinders which are provided with the convex surfaces, respectively, and the axial openings through which cylinders are larger in diameter at their ends than at their centers, all substantially as described.

Signed at Hartford, Connecticut, this 3d day of December, 1889.

JOHN A. STOUGHTON.

Witnesses:

ALBERT H. WALKER,

PHEBIE A. PHELPS.