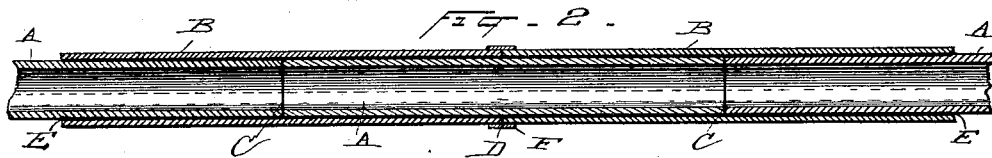
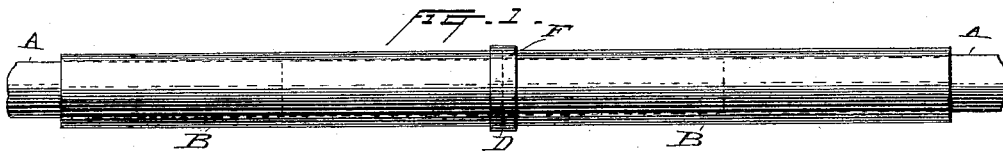


(No Model.)

E. H. JOHNSON.
TUBULAR ELECTRIC CONDUIT.

No. 454,275.

Patented June 16, 1891.



Witnesses
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UNITED STATES PATENT OFFICE.

EDWARD H. JOHNSON, OF NEW YORK, N. Y.

TUBULAR ELECTRIC CONDUIT.

SPECIFICATION forming part of Letters Patent No. 454,275, dated June 16, 1891.

Application filed September 15, 1890. Serial No. 364,966. (No model.)

To all whom it may concern:

Be it known that I, EDWARD H. JOHNSON, a citizen of the United States, residing at New York city, in the county and State of New York, have invented a certain new and useful Improvement in Tubular Electric Conduits, of which the following is a specification.

The object of my invention is to provide a tube to serve as the wireway for electrical conductors, which shall be strong, durable, of high insulating properties, and water-proof.

In carrying out my invention I employ a number of tubes of different diameters adapted to slip one into another. These tubes preferably are made of paper or other fibrous porous material, combined with an insulating compound, such as black petroleum pitch, the insulating compound and the paper base being combined by immersing the latter in a bath of insulating compound maintained in a liquid state by high heat a number of times with a period of rest between immersions. Tubes so prepared or otherwise suitably prepared to form an insulating-body are cut, preferably, into equal lengths, say, of ten feet, and the tubes of smaller diameter slipped half-way into the tubes of next larger diameter, a cementing substance, preferably, also, an insulating substance, such as asphaltum, being applied to the outside of the smaller tubes before slipping them into the larger ones, so that the tubes will be cemented together and form practically one tube, the joint between the inner tubes being covered by the outer tube. In this way any desirable length of tube is prepared, and also any desirable thickness of tube, the joints of each line of tubing going to form the entire or compound tube being protected by the next outer covering, the joints of the covering-tube coming about midway from the ends of the inner tube and the joints of the last covering-tube being provided with a covering-collar. In other words, the compound tube is made up of any number of thicknesses of individual tubes slipped one over the other and cemented together, all the tubes breaking joints.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of a compound tube of two thicknesses

embodying my invention, and Fig. 2 is a longitudinal central section of the same.

A are the several lengths of inner tube.

B are the lengths of the outer tube.

C are the joints between the lengths of inner tube, and D is the joint between the outer tubes, coming about midway between the joints C C. E is the cementing substance used to secure the tubes of one diameter to those of the next larger diameter. This cementing substance is applied on the outside of the inner tube before the insertion of the same into the next larger tube, with which it forms a comparatively tight fit, so that the cementing substance will be spread uniformly between the two tubes.

F is the collar closing the joints of the last outer covering.

My improved compound tube not only possesses advantages of durability, insulating and waterproofing qualities, but also possesses advantages for the factory, for transportation, and for application.

In the factory, instead of making up tubes for use of varying thicknesses, all the tubes are made of the same thickness, but of increasing diameters, so that one may be fitted within the other.

For transportation the tubes may be nested and a large quantity shipped, occupying but a small space.

The user may build up his tube to any desired thickness when applying the same, as the necessity for using different thicknesses arises in the course of application. When completed, he will have a tube superior to tubes made up of concentric thicknesses of material formed on the same mandrel.

What I claim is—

1. The combination, in a compound tube for electrical purposes, of two or more series of lengths of tubing of insulating material of different diameters and of continuous cross-section, one series of tubing being slipped within the series next larger in diameter and breaking joints therewith, and a cementing substance between each series of tubing, also of insulating material, substantially as set forth.

2. The combination, in a compound tube

for electrical purposes, of two or more series of lengths of tubing of different diameters formed of paper impregnated with an insulating compound, one series of tubing being
5 slipped within the series of next larger diameter and cemented thereto and breaking joints therewith, substantially as set forth.

3. A compound tube comprising a series of lengths of tubing slipped in another series of
10 lengths of tubing larger in diameter, so as to

break joint therewith, a cementing material binding the two series of tubing together, and a collar for the joints of the outer series of tubing, substantially as set forth.

This specification signed and witnessed 15
this 10th day of September, 1890.

EDWD. H. JOHNSON.

Witnesses:

W. PELZER,
E. CONRAU.