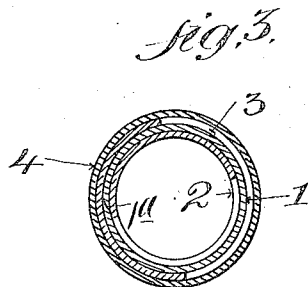
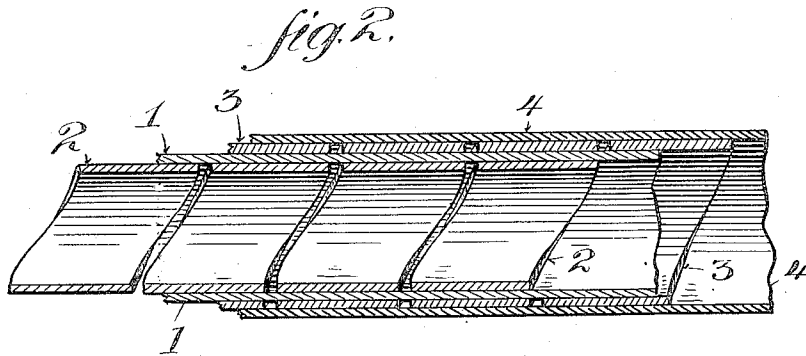
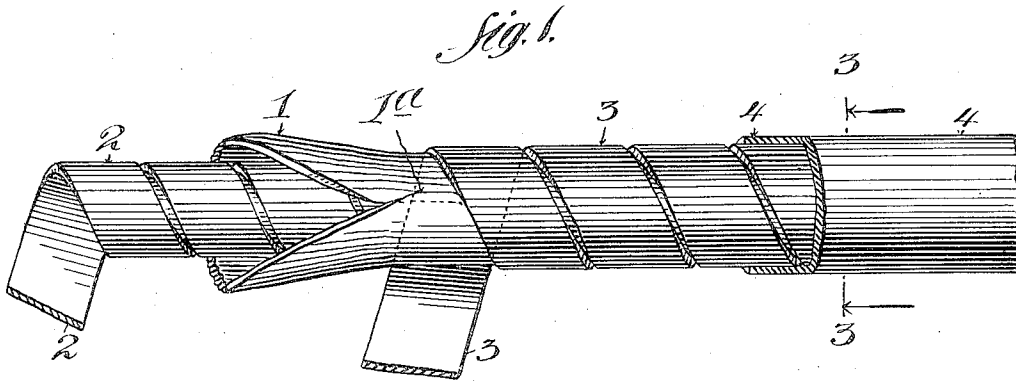


G. A. LUTZ.
FLEXIBLE CONDUIT.
APPLICATION FILED AUG. 21, 1907.

934,682.

Patented Sept. 21, 1909.



Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE A. LUTZ, OF NEW YORK, N. Y., ASSIGNOR TO AMERICAN CIRCULAR LOOM COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

FLEXIBLE CONDUIT.

934,682.

Specification of Letters Patent. Patented Sept. 21, 1909.

Application filed August 21, 1907. Serial No. 389,484.

To all whom it may concern:

Be it known that I, GEORGE A. LUTZ, a citizen of the United States, and resident of New York city, borough of Brooklyn, in the county of New York and State of New York, have invented certain new and useful Improvements in Flexible Conduits, of which the following is a specification.

The object of my invention is to provide a flexible conduit adapted to contain electric conductors and to prevent the inner linings of the conduit from being pulled out of the same.

In carrying out my invention I provide a flexible tube, preferably of fabric, having a lining of fiber or paper in spiral form, and an outer winding of fabric or paper in spiral form, the lining and winding being cemented or glued to said tube, and I also provide a protecting covering over the outer winding such as cotton or analogous strands braided around said winding, whereby the conduit may readily bend as required and the lining cannot be pulled from the same for any considerable distance.

Reference is to be had to the accompanying drawings forming part hereof, wherein—

Figure 1 is a side view, partly broken, of a conduit embodying my invention, Fig. 2 is a longitudinal section thereof, and Fig. 3 is a cross section substantially on the line 3, 3, in Fig. 1.

Similar numerals of reference indicate corresponding parts in the several views.

At 1 is a flexible tube preferably made of fabric, such as canvas, friction tape, or the like, which may have its longitudinal edges overlapped, as at 1^a, which tube may be made of one or more longitudinally disposed strips of fabric, and within the tube 1 is a spirally formed lining 2 of insulating material, such as paper or fiber, cemented, glued or otherwise firmly attached to the inner wall of tube 1, and at 3 is an outer winding of insulating material, such as paper or fiber, shown spirally disposed around tube 1 and preferably cemented, glued or otherwise secured thereto. The lining 2 on its exterior and the winding 3 at its interior are preferably not calendered so that the cement or glue may the more firmly attach the lining and winding to tube 1. For this purpose a suitable

strip of paper may be split longitudinally, the separated surfaces of which may readily hold the cement or glue so that the thus rough or unfinished outer surface of lining 2 may be readily cemented to the inner surface of tube 1 and the corresponding inner surface of winding 3 may be readily cemented to the outer surface of tube 1.

The spiral windings 2 and 3 are preferably wound on the same pitch and lap one over the other whereby the portions of tube 1 intermediate the adjacent edges of the windings are free to bend. At 4 is a covering surrounding winding 3, which may be fibrous strands braided or otherwise applied over the same, which cover may be made waterproof or fireproof or treated with insulating material in any well-known manner.

The spirally disposed lining 2 and winding 3 attached to flexible tube 1 as set forth provide a firm and strong conduit adapted to receive electric conductors and said lining and winding support the fabric tube 1 and hold it in tubular form. By having the spiral lining 2 secured to tube 1 as set forth said lining cannot be pulled out of the conduit for more than a short distance from the end of the latter because the material of the lining would tear if an attempt were made to remove it, and thus the conduit is protected against the removal of the lining and its usefulness and requirements as a conduit are preserved.

Having now described my invention what I claim is:

1. A conduit comprising a flexible tube, a spirally disposed insulating lining within the tube, and a spirally disposed winding surrounding the tube and wound in the same direction as the spiral lining the edges of the lining and winding substantially coinciding.

2. A conduit comprising a continuous integral flexible tube, a spirally disposed insulating lining secured to the inner wall of the tube, a spirally disposed winding cemented to the exterior of the tube, and wound on the same pitch and in the same direction as the inner spiral winding, and a covering surrounding said winding, the edges of the lining and winding substantially coinciding.

3. A conduit comprising a flexible tube, an insulating spiral lining secured to the inner

5 wall of the tube and an insulating spiral winding secured to the exterior of the tube and having substantially the same pitch as the lining and overlapping the same in corresponding convolutions, the edges of the lining and winding substantially coinciding to permit bending of the tube between the convolutions.

Signed at New York city, in the county of New York, and State of New York, this 19th day of August, A. D. 1907.

GEORGE A. LUTZ.

Witnesses:

T. F. BOURNE,
RALPH H. RAPHAEL.