No. 882,292. PATENTED MAR. 17, 1908.

W. S. BROWN.

FLEXIBLE CONDUIT.

APPLICATION FILED AUG. 21, 1907.

Fig. 1.

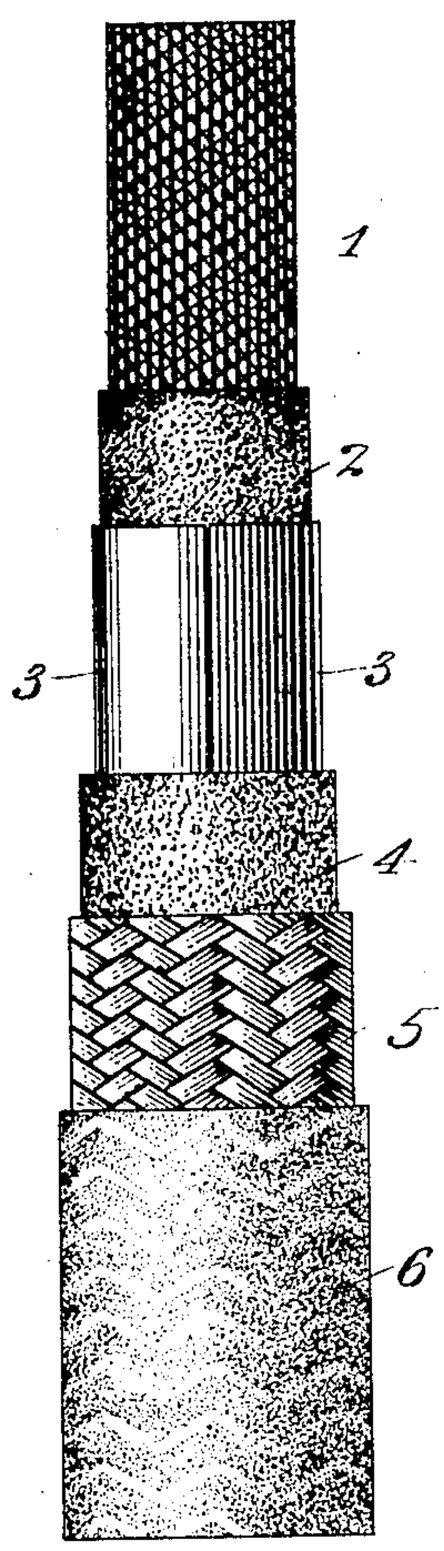


Fig. 3.

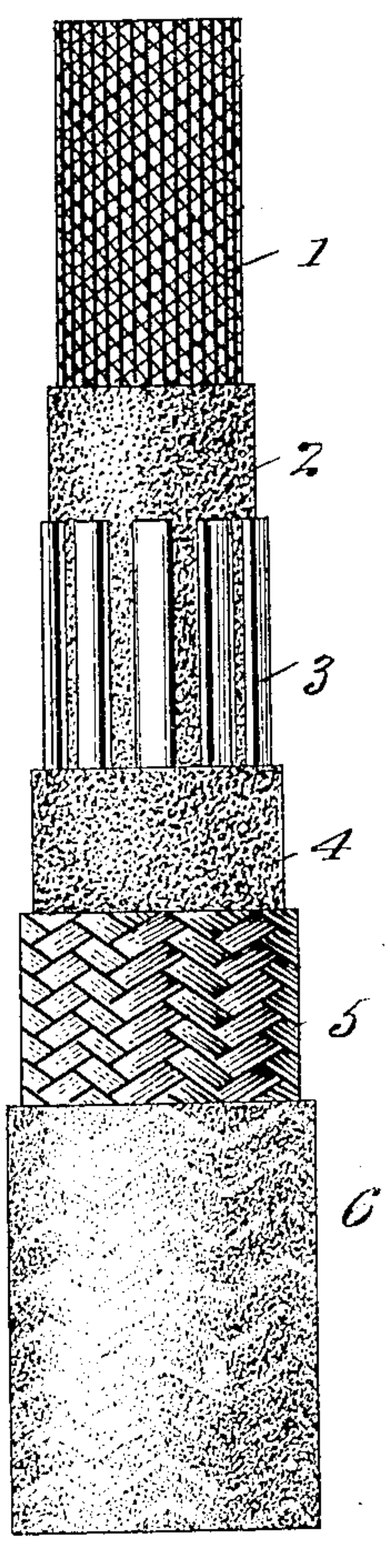


Fig. 5.

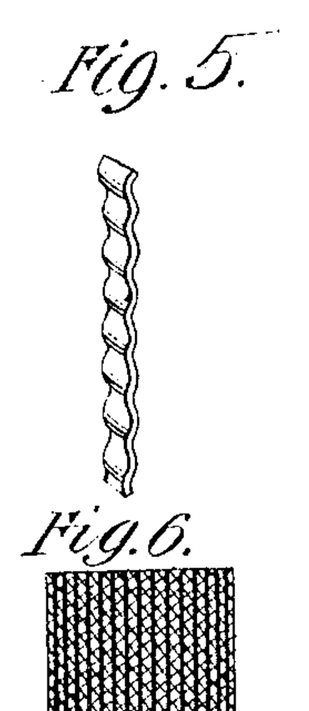


Fig. 6.

Fig. 2.

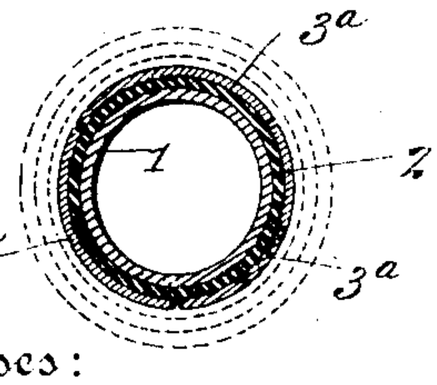
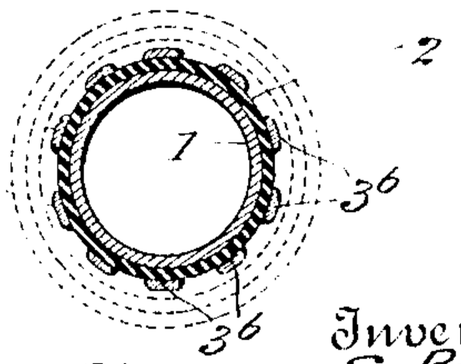


Fig. 4.



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WILLIAM S. BROWN, OF NEW YORK, N. Y.

FLEXIBLE CONDUIT.

No. 882,292. Specification of Letters Patent. Patented March 17, 1908.

Application filed August 21, 1907. Serial No. 389,452.

To all whom it may concern:

Be it known that I, WILLIAM S. BROWN, a citizen of the United States, residing at the city of New York, 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 full, clear, and exact description.

My invention relates to flexible electrical conduits such as are employed in the walls and ceilings of buildings and other installations so as to protect the electric wiring against moisture and abrasion or injury, and also insure against grounds and short-circuits.

An important requisite in conduits of this class is that they should be quite flexible to permit their being bent around corners wherever desired, but this flexibility should not be at the expense of strength. The conduit should retain its circular outline under all conditions and should be capable of withstanding considerable longitudinal strains which are applied in drawing or pulling these conduits into their positions for use. In carrying out the present invention, I have aimed to secure all these requisites by a conduit of insulating material throughout and having no metal in its composition which might endanger grounds and short-circuits, and fires resulting therefrom.

With these objects in view, my invention consists in the features of construction and combination as hereinafter set forth and claimed.

In the drawings, Figure 1 is a view in side elevation showing a flexible electric conduit embodying the principles of my invention; Fig. 2 is a sectional view of the same; Fig. 3 is a view similar to Fig. 1 showing a slightly modified construction; Fig. 4 is a sectional view of the same. Fig. 5 is a detail view illustrating another modification. Fig. 6 is a view similar to Fig. 1, showing a conduit with the construction of Fig. 5 embodied therein.

The essential principle involved in my present invention is based on the characteristic of independent longitudinal strips, ribs or members incorporated in a tubular body for imparting considerable strength to such body against longitudinal strains without substantially diminishing its quality of lateral flexibility. In the present invention, this principle is utilized by incorporating longitudinal strips, ribs or members in the body or material of a flexible conduit, such strips or members being independent of one another so as to be capable of a slight relative longitudinal displacement where the conduit is bent or deflected at any point. Inasmuch as the conduits are laid for the most part in straight lengths with occasional bends or corners, it is evident that this construction is particularly advantageous, since the elongations and contractions of the conduit walls required at a sharp bend are thereby distributed for considerable distances into the adjacent straight length of the conduit without unduly buckling, straining or distressing the material of the conduit at the particular local point where the bend is made.

Referring to the drawings in which like parts are designated by the same reference sign, I have illustrated a flexible electric conduit having an interior layer 1 of any textile or fabric woven, braided or knit into circular form. 2 indicates a waterproof or plastic composition coating therefor, which is preferably insulating in character.

3 indicates the layer embodying the longitudinal strips, ribs or members in accordance with my present invention.

4 indicates an additional waterproof or insulating coating; 5 denotes an outer protecting jacket for the conduit which is preferably coated on its surface with a waterproof composition 6.

The layer 3 embodying the present invention may be made in different ways. In Figs. 1 and 2 this layer comprises a plurality of entirely separate strips 3^a of strong canvas or paper running lengthwise, or parallel with the elements of the circular outline of the conduit. In this way, the strips together constitute a substantially complete layer, although each separate strip or element is wholly separate from and independent of each adjacent strip. This construction permits easy flexure of the conduit at any point without unduly straining or distressing the material thereof, since the only parts of the conduit which have considerable longitudinal strength are these strips 3^a, and these are capable of a limited relative movement longitudinally, so that the required displacement resulting from flexure at a given point is distributed through considerable lengths of the conduit at either side of the point of flexure.

In Figs. 3 and 4 a slightly modified construction is shown. The layers 1, 2, 4, 5 and 6 are of the ordinary or any desired construction, as in Figs. 1 and 2. In this form of the

invention, the layer 3 comprises a number of comparatively narrow strips of fibrous material such as ratan 3^b, which is a material well suited to the purposes of the present invention and illustrating the principles thereof. The ratan used may be of the sort ordinarily employed in chair seats and it is evident that this is strong, smooth and flexible, and at the same time insulating in character, and capable of being easily cut or sawed with ordinary tools. With this material, a sharp bend may be made in the conduit at any point, such bend merely resulting in slight relative displacement of the separate strips or members 3^b which displacement is distributed to and taken up by the straight portions of the conduit adjacent to the bend.

In some cases where especial flexibility is required I propose to crimp or corrugate the longitudinal strips as shown in Fig. 5, which gives them a slight longitudinal elasticity.

The essential characteristic of the material in the layer 3 is that it is fairly resilient to resist lateral flexure as distinguished from freely flexible materials such as fibrous cords or strands. The closely woven canvas shown in Fig. 1 is so tight and stiff as to have this lateral resiliency, which is increased by the segmental form of the strips. Ratan, as shown in Figs. 3, 4, 5 and 6, is particularly advantageous, as it has lateral resiliency in a very high degree. It is evident that such resiliency is important at the bends of the conduit. The resilient strips 3, embedded as they are between plastic layers 2 and 4, are capable of telescoping longitudinally on the inside of the bend, instead of being buckled. The result is to insure the distribution of the bend through a sufficient length of the conduit to prevent any local injury, whereas if freely flexible strips 3 were used, the conduit would be likely to bend or buckle sharply at local points and be contracted and injured In the appended claims, I therefore use the word "resilient" in the sense of having the property of resiliency or elasticity against lateral deflection, in the sense that ratan or very stiffly woven canvas possesses this quality.

What I claim is:—

1. A flexible electrical conduit comprising a tubular body of flexible material including a plurality of superposed layers two of which are of plastic composition and an intermediate layer between said plastic composition layers having separate strips or members of resilient material extending longitudinally or parallel to the elements of the circular outline, said strips being independent of one another and capable of relative displacement in a longitudinal direction.

2. A flexible electrical conduit comprising a tubular body of flexible material and independent corrugated strips or members embedded therein and extending longitudinally thereof.

In witness whereof I subscribe my signature, in the presence of two witnesses.

WILLIAM S. BROWN.

Witnesses:
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