

(No Model.)

S. BERGMANN.
LINING FOR INTERIOR CONDUITS.

No. 603,230.

Patented Apr. 26, 1898.

FIG. 1.

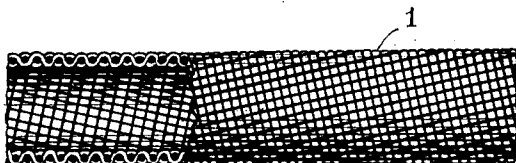


FIG. 2.

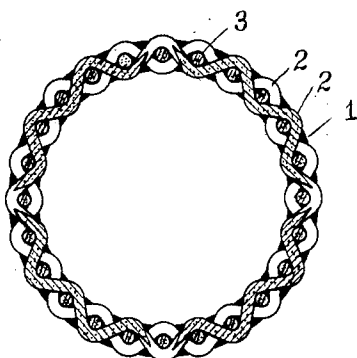
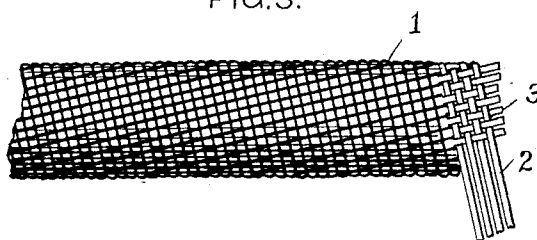


FIG. 3.



WITNESSES:

Donn Fitchell
J. E. Pearson

INVENTOR

Sigmund Bergmann
BY
Geo. H. Benjamin
ATTORNEY.

UNITED STATES PATENT OFFICE.

SIGMUND BERGMANN, OF NEW YORK, N. Y., ASSIGNOR TO THE SPRAGUE
ELECTRIC COMPANY, OF SAME PLACE.

LINING FOR INTERIOR CONDUITS.

SPECIFICATION forming part of Letters Patent No. 603,230, dated April 26, 1898.

Application filed November 24, 1896. Serial No. 613,241. (No model.)

To all whom it may concern:

Be it known that I, SIGMUND BERGMANN, a citizen of the United States, residing at New York, State of New York, have invented a new and useful Improvement in Linings for Interior Conduits, of which the following is a specification.

The object of my invention is the production of conduits for electric wires which shall combine economy and high insulation with fireproof qualities.

A further object of my invention is the production of conduits which shall be sufficiently stiff to retain their form and resist all ordinary pressures tending to cause their collapse and which shall have a practically homogeneous structure of such a nature as to be easily severed by a clean cut without scaling or chipping.

My invention is also particularly useful as a lining for conduits of metal or other material for electric wiring.

While my improved conduit is especially adapted for use with what is known as "indoor wiring" and for the protection of a system of small wires employed for the smaller distribution-branches, it is to be understood that the same is useful in all classes of distribution and for the protection of all kinds of wires, and I do not in any wise limit myself to the use of my invention in connection with one or more single classes of electric wires.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side view of a portion of my improved conduit, showing a part of the same broken away. Fig. 2 is a transverse section thereof; and Fig. 3 is a side view of the same, showing more in detail one method of weaving or braiding adapted to the purposes of my invention.

Conduits have been hitherto made of a flexible and partly absorbent material, such as paper rolled usually in spiral form and treated with various waterproof and insulating compounds; but hitherto the materials used have been of such a nature as to require long treatment of the paper or other flexible material in the effort to impregnate the same with the insulating and waterproofing mate-

rials, and it has been found necessary in practice to subject conduits made of paper, as above described, to strong pressure for the purpose of forcing the insulating materials into the substance of said paper. Moreover, when paper so treated is cut for the purpose of adapting the conduit to its particular location in any specific use it is found to be hard, brittle, and heterogeneous in structure, causing the edges to chip off and the insulating material to flake from the surface of the paper, thus leaving exposed the surface of the paper itself. Paper being an exceedingly hygroscopic material thoroughly insulated joints are difficult to make with the old forms of conduit alluded to.

It is the object of my invention to do away with the above-stated objections and to produce a conduit which can be easily and quickly made without the necessity of any pressure or long treatment, such conduit when completed exhibiting a practically homogeneous structure, due to complete absorption of the insulating material by the fabric. The result of this construction has been found to be that when my conduits are cut the edges of the cut are perfect and there is no separation of insulation from fabric and no mutilation of the tube. A new substance may almost be said to result from the intimate combination of the fabric and absorbed materials. Consequently my conduits are eminently useful in the production of joints of high insulating quality.

As shown in the drawings, the foundation of my conduit is formed of a woven or braided tube 1, made from a vegetable fiber—such, for instance, as cotton, linen, flax, or jute—having warp-threads 2 and woof-threads 3, which may be combined in any manner well known in the art. Indeed, although not specifically shown in the drawings, it will be obvious that knitted tubes are equivalents for the woven or braided tubes shown. The weaving or braiding should be sufficiently loose and the threads of which the fabric is composed should be of such a nature that absorption of the insulating material is promoted to the fullest possible extent. I have found that the wicking used for circular burners of lamps is suitable for my purpose where

small conduits are desired, as such wicking is made of materials peculiarly calculated to act as absorbents.

I prefer to make my conduits of seamless 5 tubings, but do not limit my invention thereto.

In the completion of my conduit the fabric tube constructed as above described is first dipped in a solution of fireproof material, and for this purpose I prefer to employ a tung- 10 state of soda. The tubing thus treated is then immersed in or otherwise treated with a drying-oil, preferably the residuum produced upon distillation of bitumen or tar. This is an excellent insulator and a waterproof sub- 15 stance as well. The tubing thus treated when dry is ready for use as a conduit for electric wires, and while producible in indefinite lengths can nevertheless be easily cut at desired points. At the same time I have found 20 that tubing thus constructed and treated will not collapse under any ordinary strains likely to be brought to bear upon it in use and is therefore superior to other fabric tubes heretofore in use for these purposes.

25 I am aware that a tube or conduit has heretofore been made of a fabric made from as-

bestos strands or yarns which are non-absorptive in character, but such I do not claim as my invention.

What I claim is—

1. The method of forming conduits for electric wires which consists in treating a tube made from an absorbent vegetable fiber in a bath of fireproof material, then treating it in a bath of drying-oil, and finally drying the 35 tube so treated, substantially as described.

2. In a conduit for electric wires, a tube made from an absorbent vegetable fiber, a fireproofing material and a drying-oil in the pores of said fabric, substantially as described. 40

3. In a conduit for electric wires, a seamless tube made from an absorbent vegetable fiber in combination with tungstate of soda and a drying-oil in the pores thereof, substantially as described. 45

In testimony whereof I affix my signature in the presence of two witnesses.

SIGMUND BERGMANN.

Witnesses:

G. W. FOSTER,
WM. FRANKSEN.