

No. 793,754.

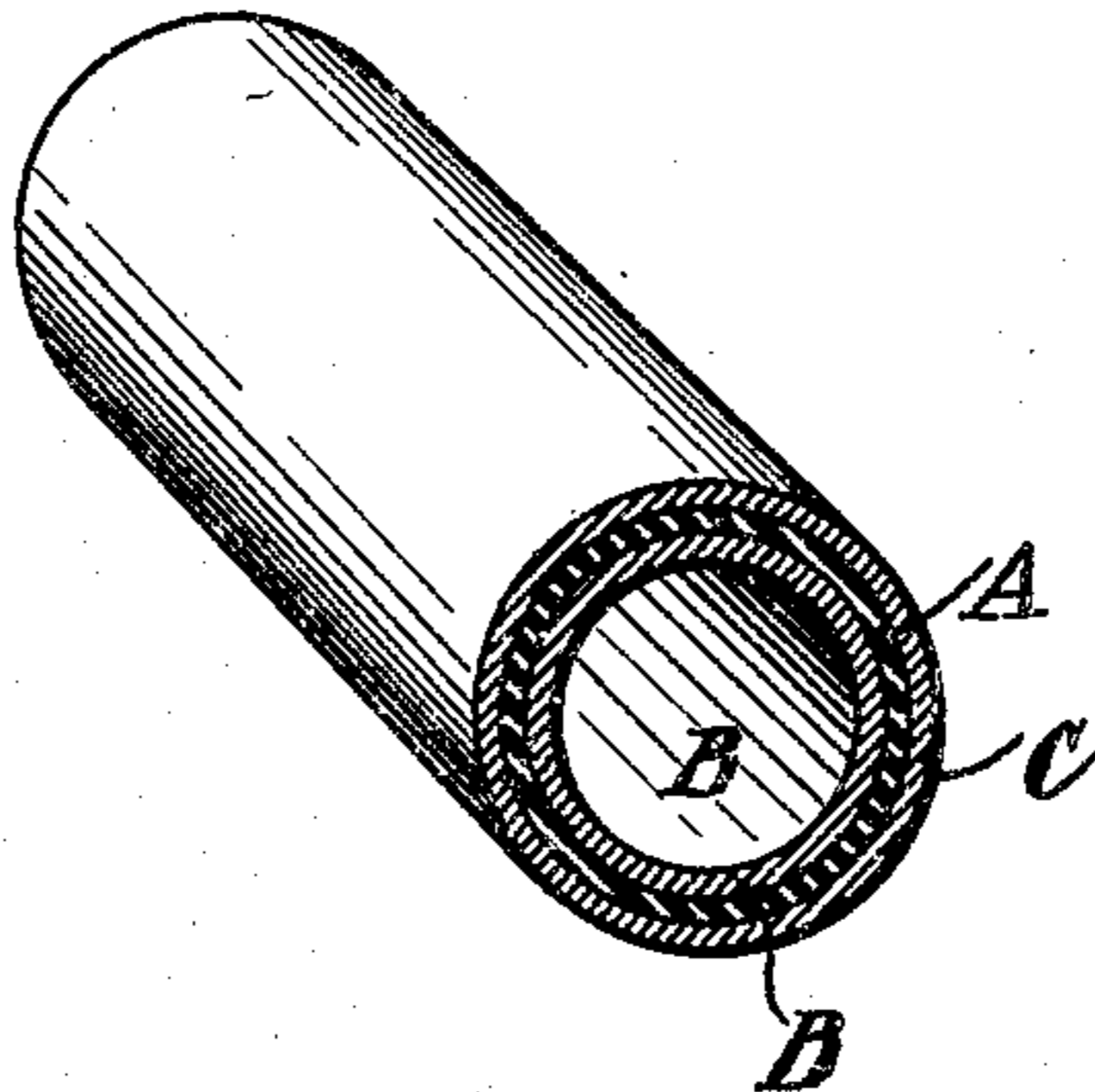
PATENTED JULY 4, 1905.

G. A. WEBER.  
INSULATION.

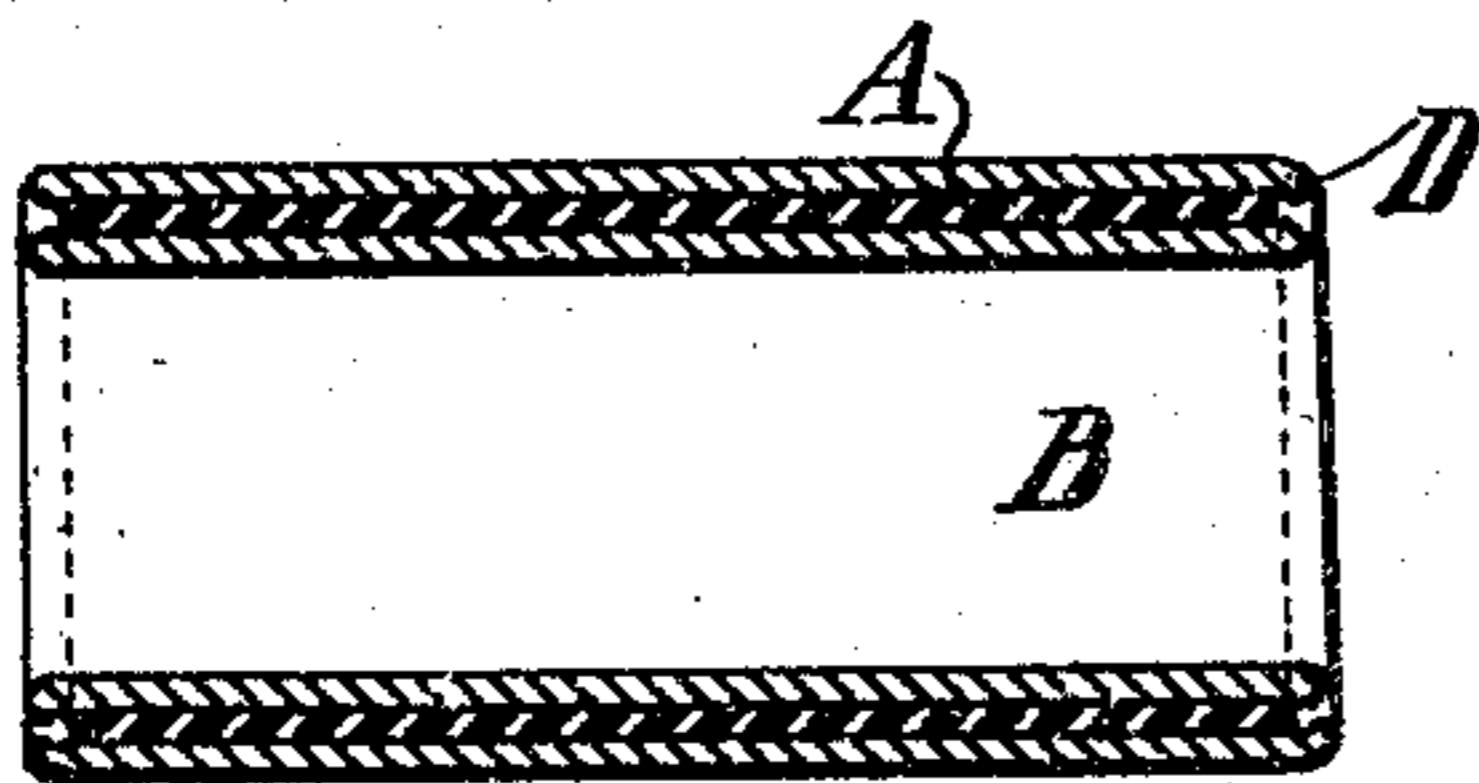
APPLICATION FILED FEB. 10, 1903.

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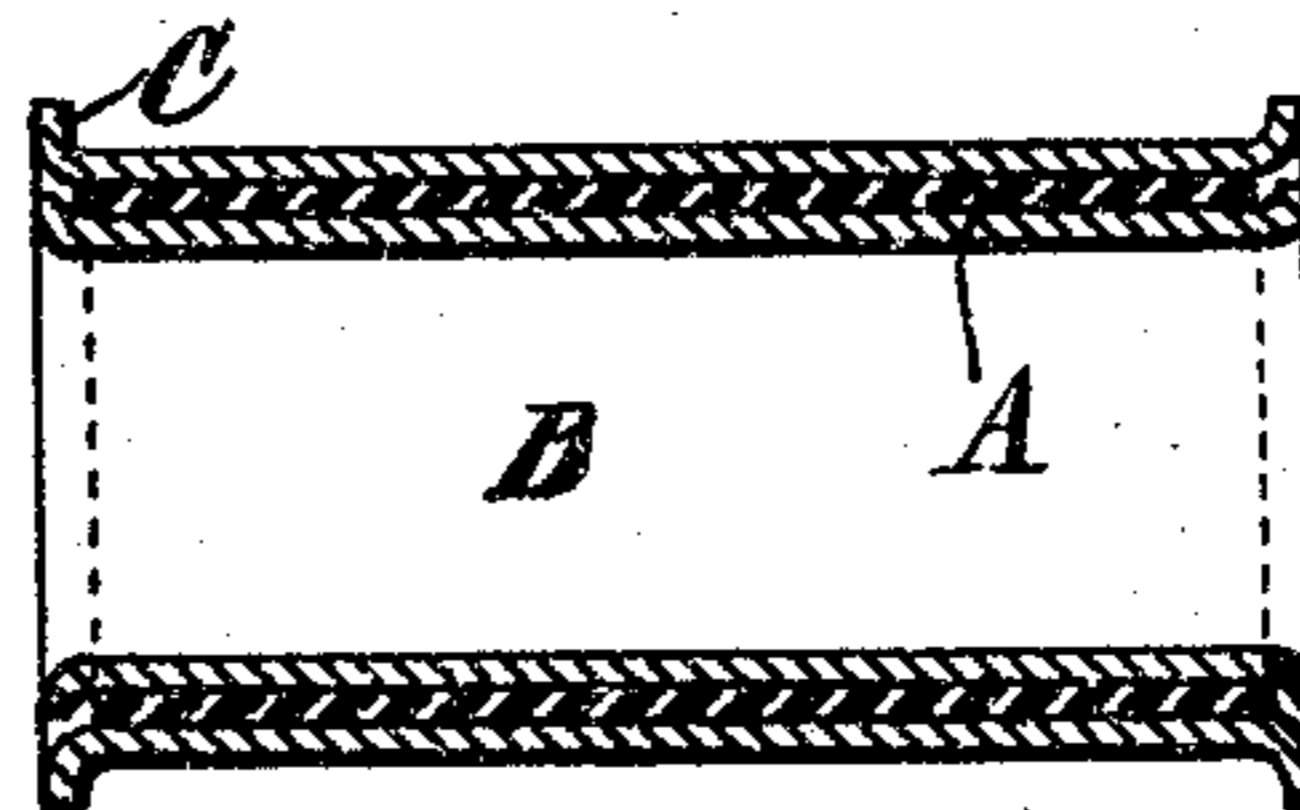
*Fig. 1.*



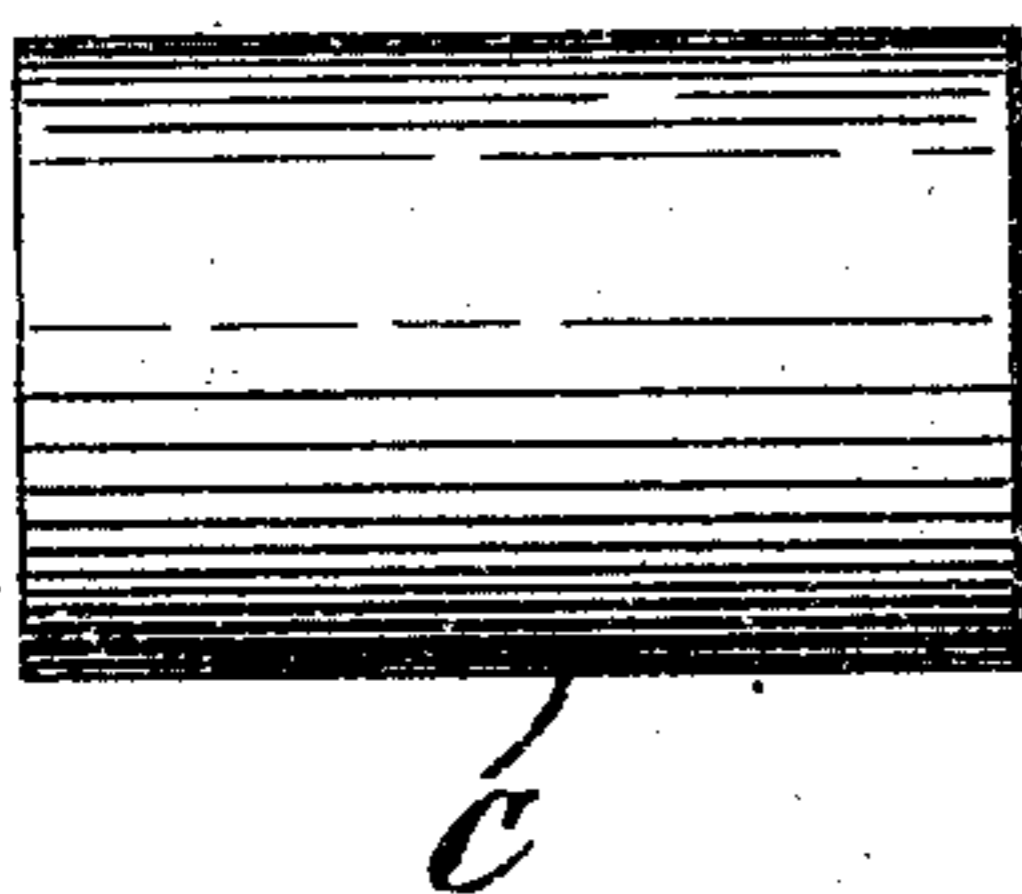
*Fig. 2.*



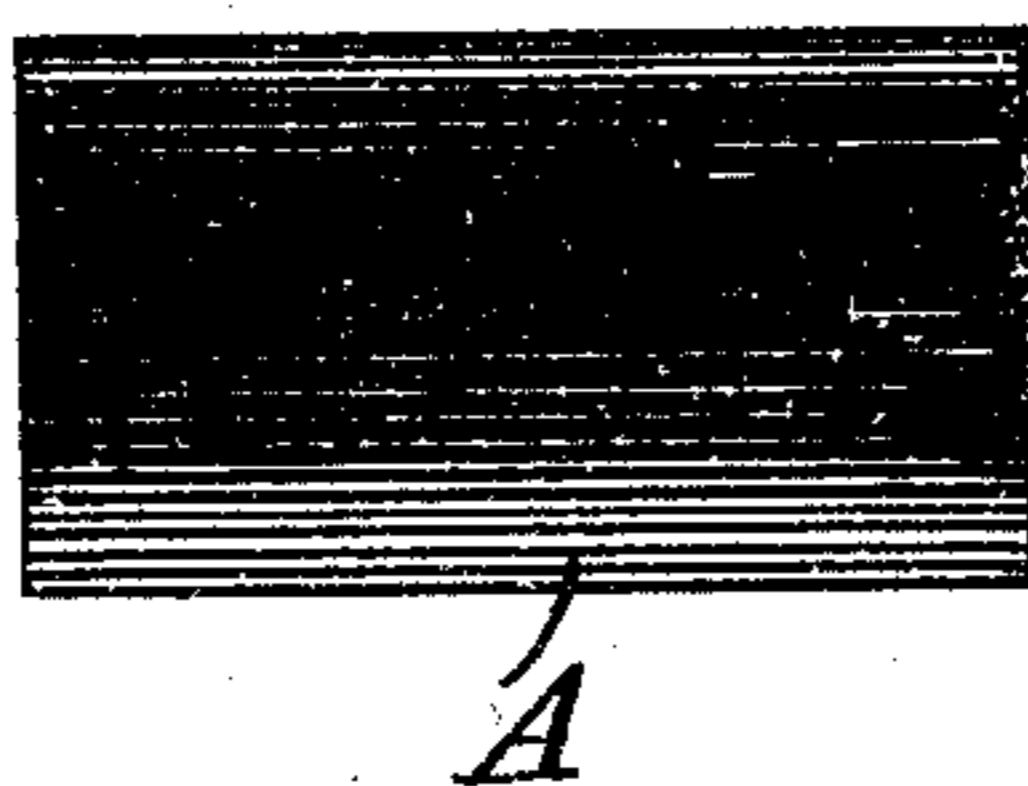
*Fig. 3.*



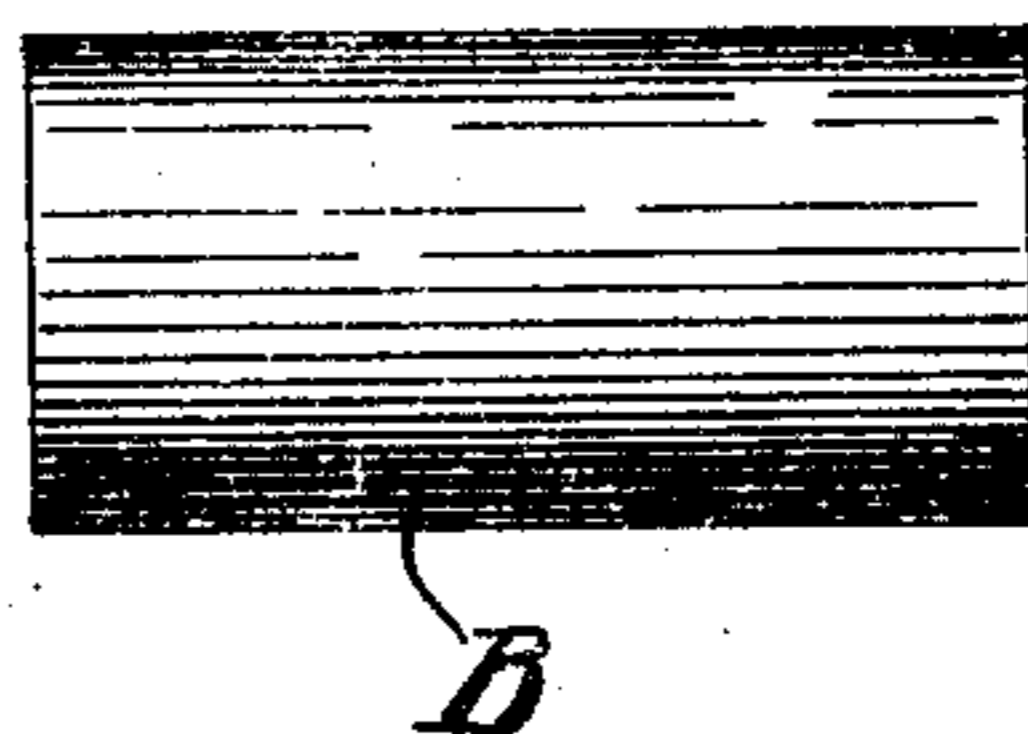
*Fig. 4.*



*Fig. 6.*



*Fig. 5.*



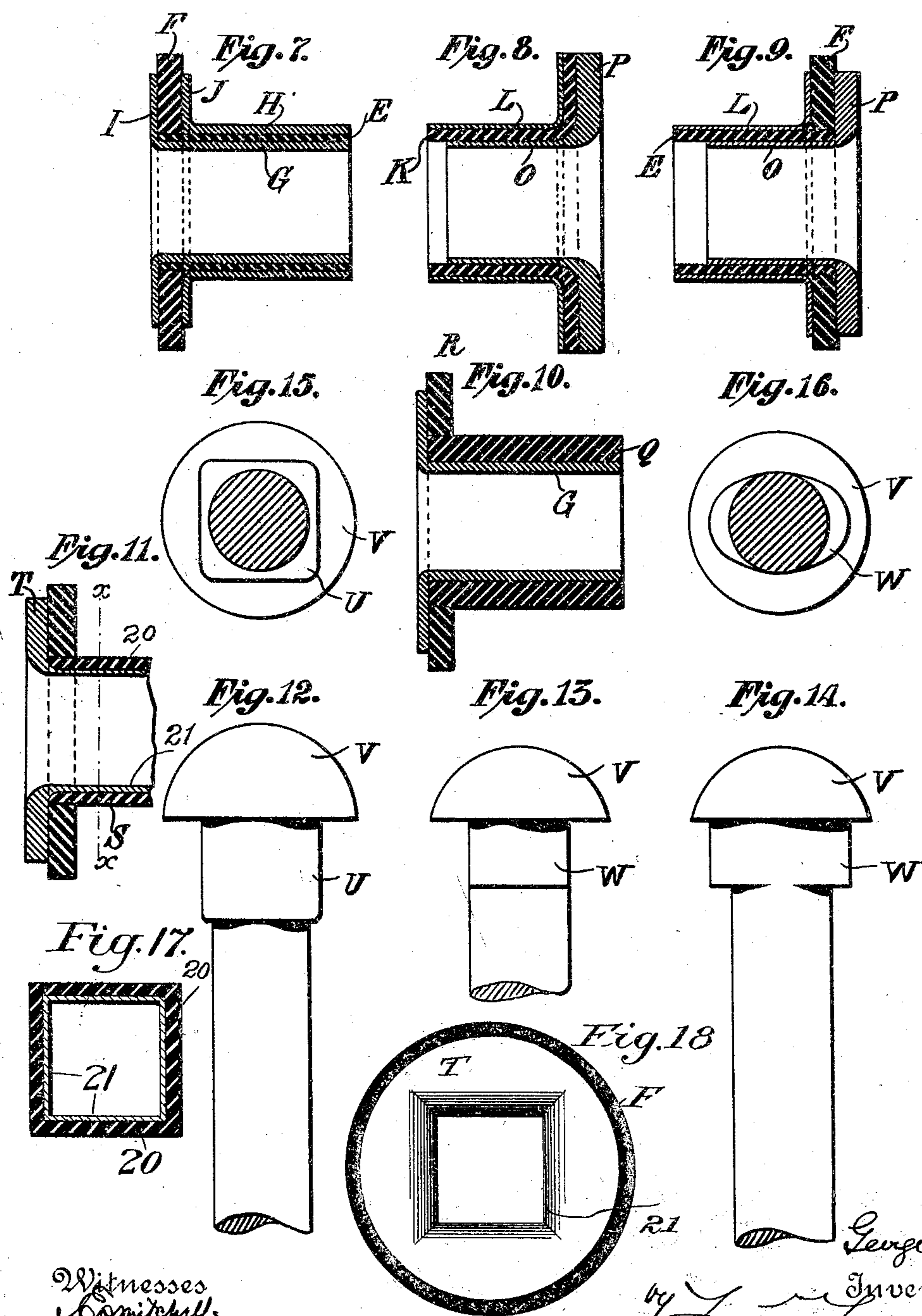
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INSULATION.

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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

GEORGE A. WEBER, OF NEW YORK, N. Y., ASSIGNOR TO THE WEBER RAILWAY JOINT MANUFACTURING COMPANY, OF NEW YORK, N. Y., A CORPORATION OF WEST VIRGINIA.

## INSULATION.

SPECIFICATION forming part of Letters Patent No. 793,754, dated July 4, 1905.

Application filed February 10, 1903. Serial No. 142,732.

*To all whom it may concern:*

Be it known that I, GEORGE A. WEBER, a citizen of the United States, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Insulation, of which the following is a specification accompanied by drawings.

My invention relates to improvements in insulation, but more particularly to insulating bushings, sleeves, and washers, although the broad principles of my invention may be applied to other suitable forms of insulation as desired.

The objects of my invention are to increase the life of different forms of insulation utilized under conditions where there is considerable wear and tear upon the parts—as, for instance, in those cases in which there may be a rubbing against the insulation.

Further objects of my invention will hereinafter appear; and to these ends my invention consists of the improved insulating parts embodying the features of construction, combinations of elements, and arrangement of parts, substantially as hereinafter fully described and claimed in this specification and shown in the accompanying drawings, in which—

Figure 1 is an insulating sleeve or bushing embodying my invention. Figs. 2 and 3 are longitudinal sectional views of modified forms of the same. Fig. 4 is a side view of the outer metallic sleeve. Fig. 5 is a side view of the inner metallic sleeve. Fig. 6 is a side view of the sleeve of insulating material. Fig. 7 is a longitudinal sectional view of a combined insulating sleeve and washer. Figs. 8 and 9 are longitudinal sectional views of modified form of Fig. 7. Figs. 10 and 11 are longitudinal sectional views of forms of sleeves and washers omitting the outer metallic sleeve. Figs. 12, 13, and 14 are views of suitable bolts to which my improved insulation may be applied. Fig. 15 is a transverse sectional view of the bolt shown in Fig. 12, and Fig. 16 is a transverse sectional view of the bolt shown in Figs. 13 and 14. Fig. 17 is a transverse

sectional view on the line  $x x$  of Fig. 11. Fig. 18 is an end view of the armored insulation constructed in accordance with Figs. 11 and 17.

One of the applications of my invention, of which there are many, is for insulating the shanks and heads, as well as the nuts, of bolts used in insulated joints—as, for instance, in the insulated joints of railroad-rail sections.

I am not to be understood as limiting myself to any particular use of my invention, for the improved insulating parts for carrying out the objects I have in view may be utilized wherever found applicable. In those cases in which the bare insulation comes in contact with metallic parts in which there is a certain amount of movement there is apt to be wear upon the insulation, which is injurious to the same and may cause short circuits.

I have found that by providing the insulating sleeves, bushings, washers, and other parts, as desired, with metallic armor, as it were, all the advantages of the high-insulating properties of the best fiber may be obtained without wear upon the insulation itself. All rubbing contacts according to my construction will take place between the metallic armor of the insulation and the parts for which insulation is desired.

Referring to the drawings, in Fig. 1 the insulating sleeve or bushing A, which may be of any suitable insulating material, is shown provided with armored sleeves B and C both inside and out. These sleeves may be of any suitable metal, and in Fig. 2 the ends D of the sleeves are shown bent toward each other to firmly hold the insulating-sleeve A in position. In Fig. 3 the edges of the outer sleeve C are shown bent outwardly to form flanges. This construction affords provision for preventing the sleeve from slipping when placed in the apertures of the web of a rail—for instance, to insulate the bolts from the rail-web.

In Fig. 7 there is an insulating-washer F of suitable material shown encircling one end of the insulating sleeve or bushing E, and the inner and outer armored sleeves G and H are

flanged at I and J to protect the washer F. The construction such as shown in Fig. 7 may be utilized, for instance, to insulate the head or nut of a bolt from the upright of the rail-chair in a rail-joint or from the fish-plate.

In Fig. 8 the insulating sleeve and washer are shown in one piece and molded to the required form. As before, there is an armored sleeve L outside of the sleeve, while the inner armored sleeve is provided with a thickened portion at P, forming a substitute for the usual metallic washer used beneath the head of a bolt or adjacent the nut. With the construction shown in Figs. 8 and 9 no washer is necessary in the position described. In Fig. 9 the sleeve E and washer F are separate, while the armored sleeve O is provided with the thickened portion P.

In any or all of the constructions shown and described in this application I am not to be understood as limiting myself to armored sleeves upon both the inside and outside of the insulating material, for they may be used either inside or outside, as desired, or in both positions. An instance of this variation is illustrated in Figs. 10 and 11, in which the armored sleeve G is shown upon the inside only of the sleeve and washer R. In Fig. 11 the inner sleeve S is shown enlarged at T to obviate the use of a metallic washer.

One form of bolt to which my improved insulation is applicable is shown in Fig. 12. In this instance the bolt is provided with a squared portion U adjacent the head V to prevent the bolt from turning within the insulating-sleeve.

In Fig. 17, which is a sectional view of Fig. 11 on the line  $x x$ , the insulating part of the device is shown comprising the insulating-sleeve 20, protected by the armored sleeve 21. The bore of the sleeves is made to conform to the conformation of the portion U of the bolt, and of course it is to be understood that the inner bore of the device, as shown in Figs. 11, 17, and 18, may be cylindrical, if desired. The metallic sleeve or armor 21 may be made in any suitable manner to conform to a given cross-section.

In Figs. 13 and 14 a bolt is shown provided with an elliptical portion W adjacent the head. In both the forms of bolt illustrated the portions U and W prevent the bolt from turning within the insulating-sleeves. The insulating-sleeve forms, in effect, a ring, as shown in the drawings, which may be of any desired longitudinal extent; but I am not limiting myself to a ring of such extent that it may be called a "sleeve." The ring may be said to be provided with metallic armor for protecting the insulating material, and in the case of the sleeve and washer it will be seen that the armor extends at each side of the washer or adjacent thereto.

Obviously some features of my invention may be used without others, and my invention may be embodied in widely-varying forms.

Therefore, without limiting myself to the construction shown and described nor enumerating equivalents, I claim, and desire to obtain by Letters Patent, the following:

1. As an improved article of manufacture, an insulating-ring of suitable material, provided with metallic armor upon both the interior and exterior thereof, the edges of both interior and exterior armor beyond the edges of said ring being turned transversely to the insulating-ring, substantially as and for the purposes set forth.

2. As an improved article of manufacture, a cylindrical insulating-sleeve of suitable material, provided with metallic armor upon both the interior and exterior thereof, one of said pieces of armor having its extreme edges beyond the edges of the sleeve bent outwardly, said sleeve and armor being open at both ends and thereby adapted to be slipped over the middle portion of a relatively long part to be insulated, for substantially the purposes set forth.

3. As an improved article of manufacture, an insulating-sleeve of suitable material and an insulating-washer, and metallic armor for at least one of the surfaces of the sleeve, said armor extending at one side of the washer, for substantially the purposes set forth.

4. As an improved article of manufacture, a hollow cylindrical insulating-sleeve of suitable material and an insulating-washer, the sleeve being provided with hollow interior metallic armor extending outwardly adjacent to the washer, for substantially the purposes set forth.

5. As an improved article of manufacture, an insulating-sleeve of suitable material and an insulating-washer, the insulating-sleeve being provided with an interior metallic sleeve-forming armor provided with a thickened flanged portion extending outwardly adjacent to the washer, for substantially the purposes set forth.

6. As an improved article of manufacture, a hollow bushing of insulating material, and a hollow protective armor for one of the surfaces thereof, said bushing and armor having an oval interior contour, whereby the rotation of a bolt of cooperating cross-section is prevented, for substantially the purposes set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

GEORGE A. WEBER.

Witnesses:

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H. G. OGDEN, Jr.