

(No Model.)

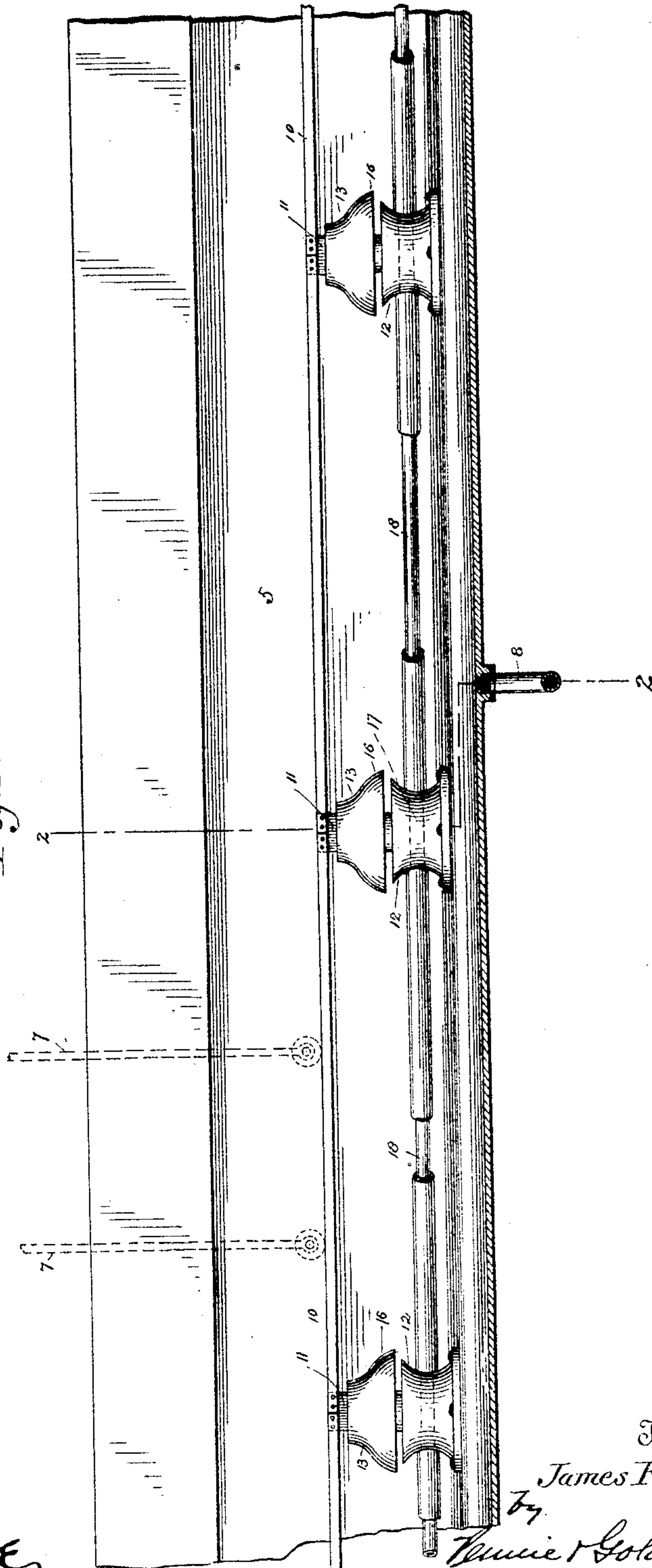
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J. F. MUNSIE.  
INSULATOR.

No. 455,107.

Patented June 30, 1891.

Fig. 1.



Witnesses

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2 Sheets—Sheet 2.

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Fig. 3.

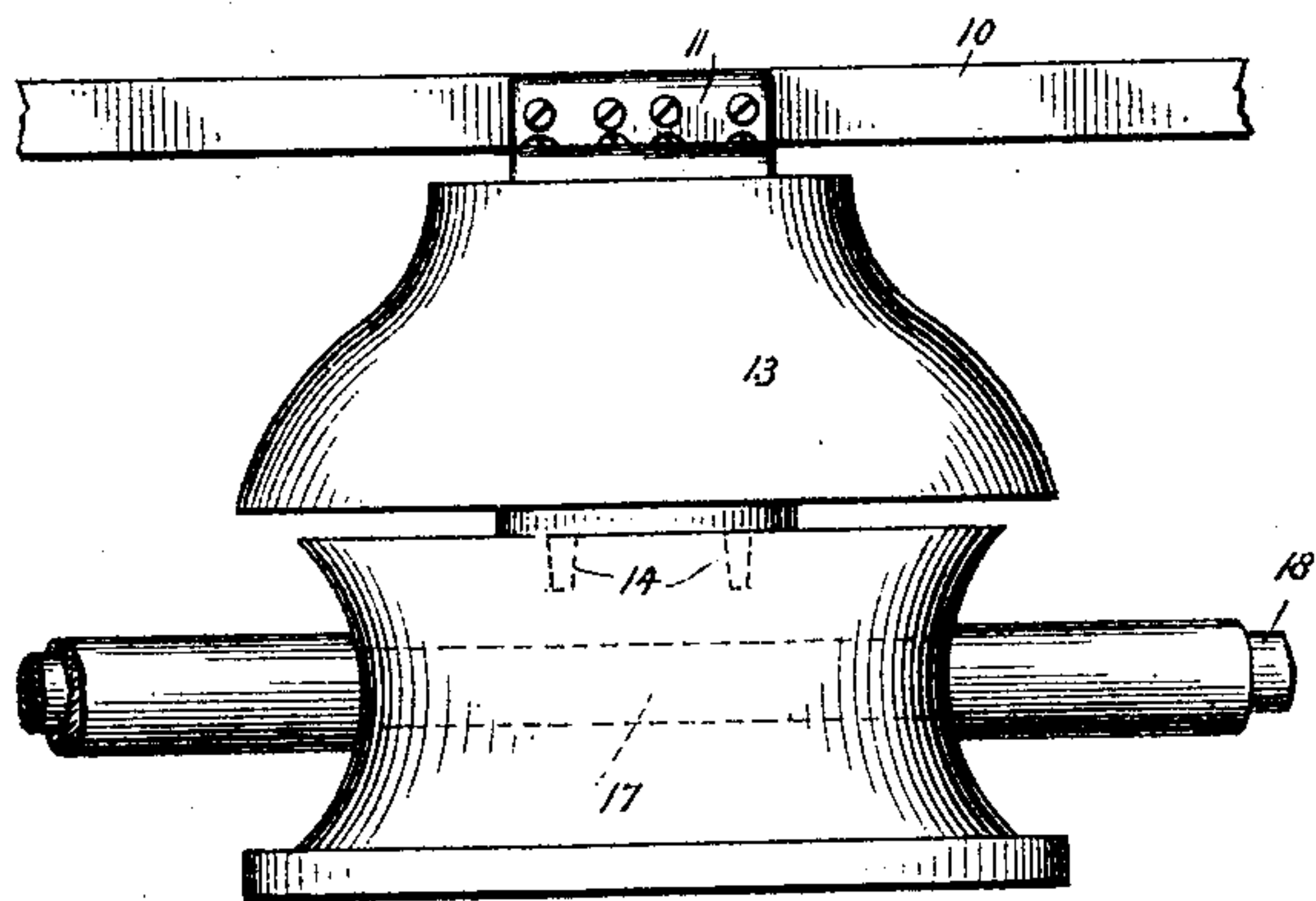


Fig. 4.

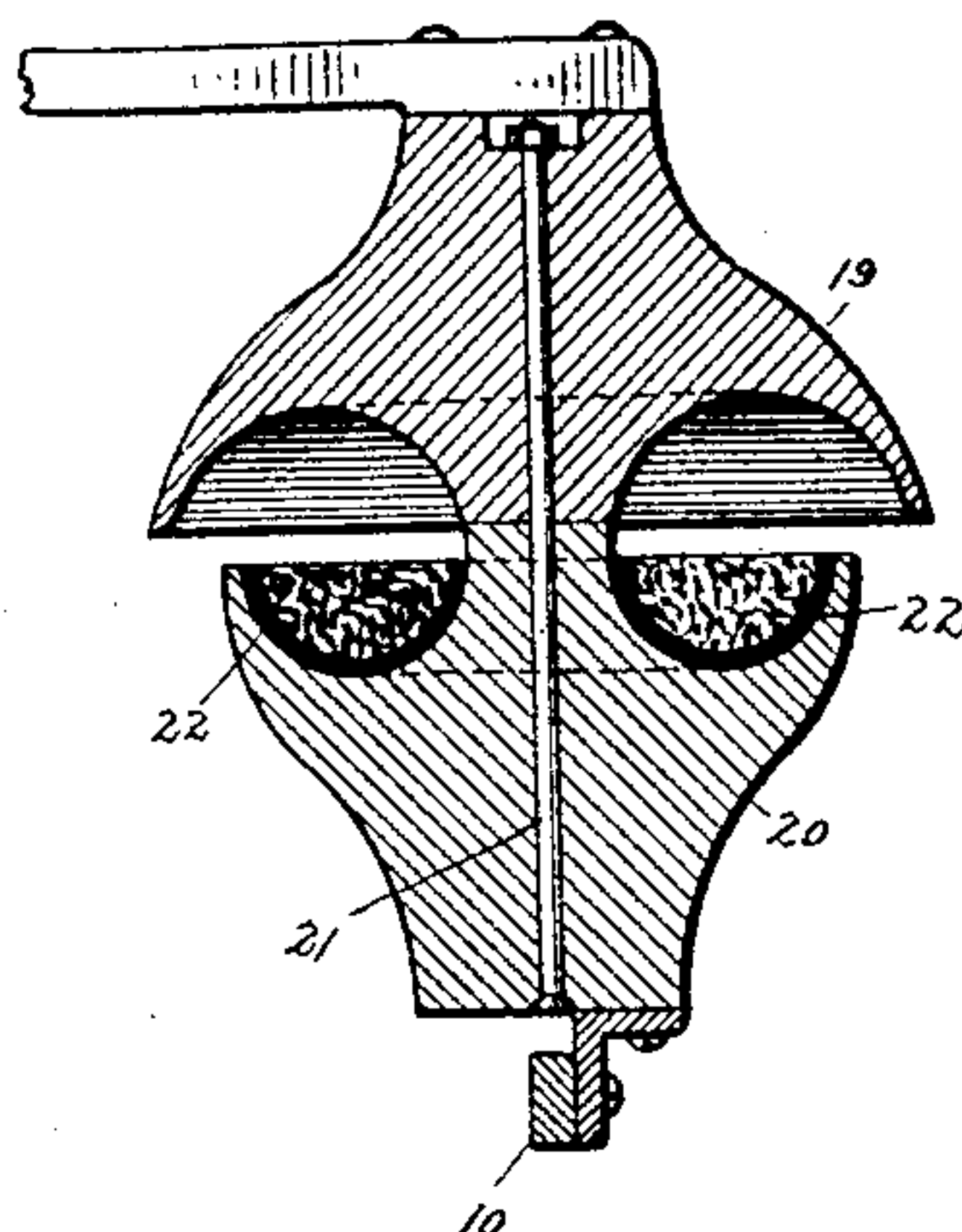
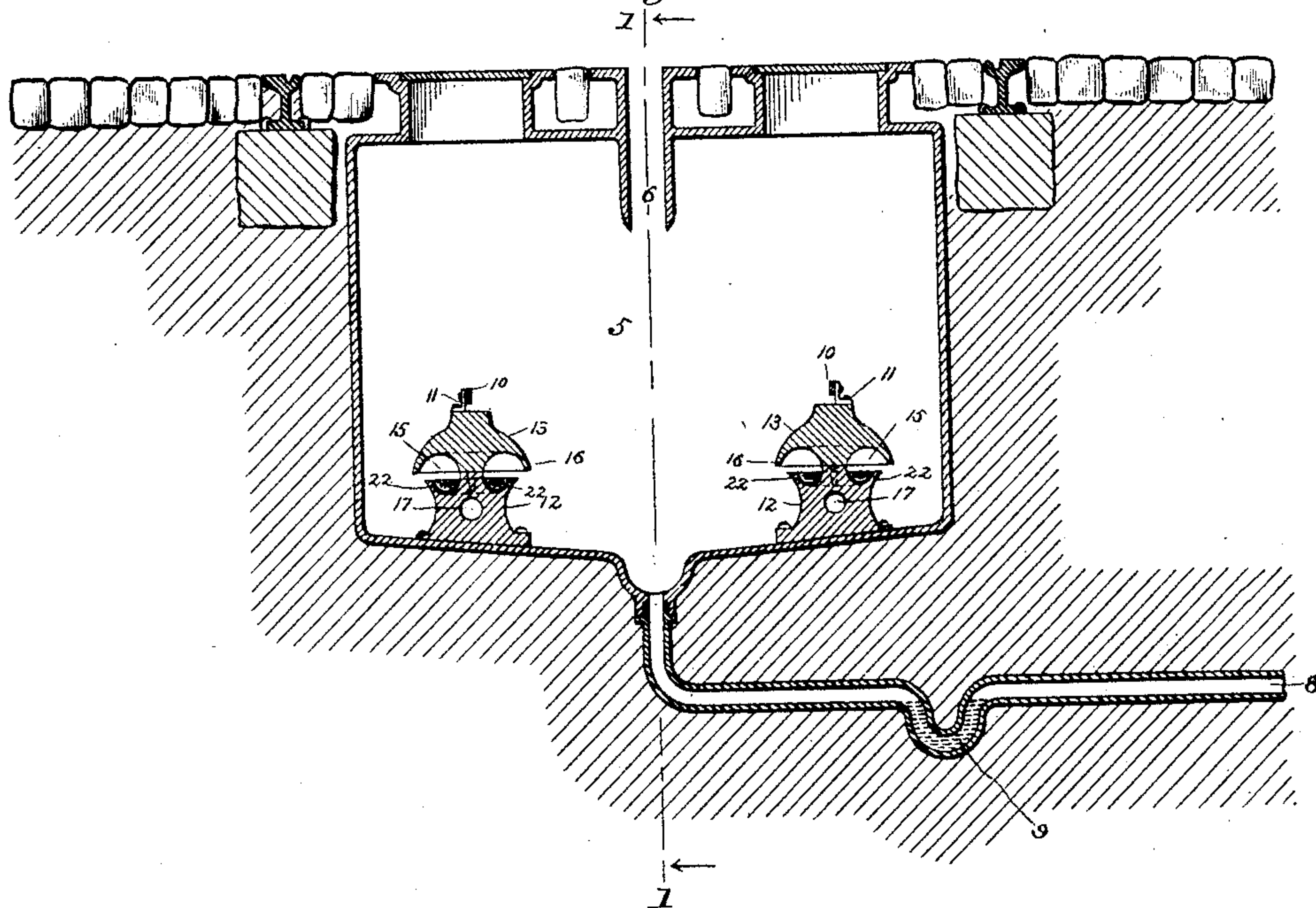


Fig. 2.



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# UNITED STATES PATENT OFFICE.

JAMES F. MUNSIE, OF BROOKLYN, NEW YORK.

## INSULATOR.

**SPECIFICATION** forming part of Letters Patent No. 455,107, dated June 30, 1891.

Application filed March 28, 1890. Renewed March 28, 1891. Serial No. 386,737. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES F. MUNSIE, a British subject, residing at Brooklyn, in the county of Kings and State of New York, have  
5 invented certain new and useful Improvements in Insulators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains  
10 to make and use the same.

My invention relates to certain new and useful improvements in insulating devices for underground or overhead conductors for electric railways, and has for its object to so construct and arrange the insulating device and  
15 its accessories as to maintain a portion of said insulating device intermediate of the point of connection of the conductor and the point of support of the insulator constantly in a dry  
20 condition for the purpose of preventing any possible grounding of the current in wet weather, the said dry portion serving as a complete insulating-break between the conductor and the ground.

25 In carrying out my invention I have devised the construction and arrangement of parts illustrated in the accompanying drawings, wherein—

Figure 1 represents a longitudinal section  
30 and partial elevation of an underground electric-railway conduit provided with my improvements, the section being taken on a plane indicated by the line 1 1 of Fig. 2. Fig. 2 represents a vertical cross-section  
35 thereof, taken on a plane indicated by the line 2 2 of Fig. 1. Fig. 3 represents, on an enlarged scale, a side elevation of one of the insulators employed in said conduit; and Fig. 4 represents in section a modified form of in-  
40 sulator particularly designed for overhead conductors.

Similar numerals of reference indicate similar parts throughout the several views.

Referring to the drawings, 5 indicates an  
45 electric-railway conduit provided with the usual longitudinal slot 6 for the passage of the trolley-hanger 7, and having suitable provision for carrying off to the sewer any dripping or condensation of water that may accumulate at the bottom of the conduit. A  
50 convenient device for this purpose is indicated by the outlet-pipe 8, leading to the

sewer and provided with a trap or seal 9 to prevent inflow of sewer-gases.

The positive and negative conductors are  
55 located, respectively, at opposite sides of the conduit, and consist of sections of conducting metal supported upon the top of my improved insulating devices. The metallic conducting-sections 10 referred to are electrically  
60 connected to form a continuous conductor (negative or positive) by means of connecting-pieces 11 of wrought-iron, so as to make a substantial joint of low resistance. I prefer to employ wrought-iron as the material  
65 of construction of the connecting-piece 11, for the reason that it will not be subject from any cause to permanent magnetization, which would tend to increase its resistance.

In the form of my insulator illustrated in  
70 Figs. 1, 2, and 3 I have shown the same as consisting of a base 12 and a cap-piece 13, which may conveniently be formed of wood saturated with oil or of glass, glazed terracotta, or other equivalent material, the two  
75 parts being joined by means of dowel-pins 14 or the like. The base 12 is provided about its sides with a continuous annular groove, as shown, and on its upper surface with an annular depression 15, adapted to receive a  
80 hygroscopic solid or liquid—as, for instance, calcic oxide, desiccated calcic chloride, sulphuric acid, glycerine, or similar material having an affinity for water. The cap-piece  
85 13 has an overhanging flange 16, extending over the upper edge or rim of the base 12, so as to direct any water or drippings to the bottom of the conduit. Each base-piece is provided with an aperture or perforation 17  
90 extending entirely through it, and the said perforations are connected throughout by means of intermediate pipe-sections 18, having non-conducting jackets or coverings and adapted to receive and transmit to the insulating-bases a heating fluid or liquid—such as  
95 hot air, steam, hot water, or the like—for the purpose of raising the temperature of said bases, so as to drive off moisture therefrom or from the calcic oxide or calcic chloride employed ordinarily as the drying agent, so as  
100 to renew or revivify said calcic oxide or calcic chloride as drying agents.

In the form of my invention shown in Fig. 4 the cap-piece 19 will form the point of sup-



port, and the conductor-sections 10 will be connected to the under side of the base 20, the base and cap-piece being preferably connected by means of a through-bolt 21. The depression or cavity illustrated in the upper part of the piece 20 is for the reception of the hygroscopic material hereinbefore referred to.

The operation of my invention is as follows: In the form illustrated in Figs. 1, 2, and 3 any drippings of water that may take place from the walls of the conduit or through the hanger-slot upon the upper surface of the cap-piece 13 are directed to the bottom of the conduit, the depression in the top of the base-piece 12 being protected from said drippings by reason of the overhanging flange of the cap-piece. Any water that may splash against the bottom of the conduit is prevented from entering said depression by reason of the curved form of the sides of the base, which is almost if not a complete protection against access of water due to splashing. If, however, any drops of water should be splashed into the cavity or depression in the top of the base-piece 12, or should any condensation of water upon the under surface of the cap-piece have a tendency to form, such water or condensation will immediately be absorbed by the hygroscopic material within said depression, and as a consequence the lower surface of the cap-piece will remain constantly in a dry condition. This dry portion of the insulator is thus constantly interposed between the conductor and the ground, thereby preserving at all times a reliable insulation unaffected by drippings or splashings of water upon the top of the insulator or about its sides. If at any time it is desired to revivify the hygroscopic material by driving off its moisture, this purpose can be readily effected by introducing a heating agent through the system of pipes 18, as hereinbefore described. In some instances I contemplate dispensing with the hygroscopic material and employing the heating agent alone for maintaining the insulating-base in a dry condition; but the best results will be attained by the employment of the two conjointly.

In the form of my invention shown in Fig. 4 the general mode of operation and the results attained are similar to those just described, with the exception that no provision is made for heating the insulator.

It will be evident that the insulators may be heated by other means than the pipe sys-

tem shown, and I do not therefore restrict myself to that particular means of heating.

When I employ sulphuric acid as the hygroscopic material, I provide the cavity or depression in the upper part of the base 12 or 20 with a lining of acid-resisting character 22, such as sheet-lead or stearic pitch.

Having thus described my invention, what I claim is—

1. An insulator of the kind described, consisting of a base and an overhanging cap-piece, said base being provided at its upper surface with a filling of hygroscopic material, substantially as described.

2. An insulator of the kind described, provided with a base, an overhanging cap-piece, and means, substantially as described, for heating said insulator, substantially as described.

3. An insulator of the kind described, consisting of a base having a depression or cavity in its upper surface for the reception of a hygroscopic material and an opening for the reception of a heating agent, and an overhanging cap-piece, substantially as described.

4. An insulator of the kind described, consisting of a base and an overhanging cap-piece, said base being provided with a flange or extension at its upper rim to prevent splashing upon the under side of the cap-piece, substantially as described.

5. An insulating system for electrical conductors, consisting of a series of insulators having perforations or channels for the reception of a heating agent, and pipe-sections connecting said channels, substantially as described.

6. An insulating system for electrical conductors, consisting of a series of insulators having perforations or channels for the reception of a heating agent, and pipe-sections connecting said channels, said pipe-sections having non-conducting jackets, substantially as described.

7. The combination, with an insulator, of the conductor-sections 10 and connecting-joint 11, of wrought-iron, substantially as described.

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

JAMES F. MUNSIE.

Witnesses:

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A. M. PARKINS.