

(No Model.)

P. P. BANHOLZER.
ELECTRIC RAILWAY CONDUIT.

No. 518,540.

Patented Apr. 17, 1894.

Fig. 1.

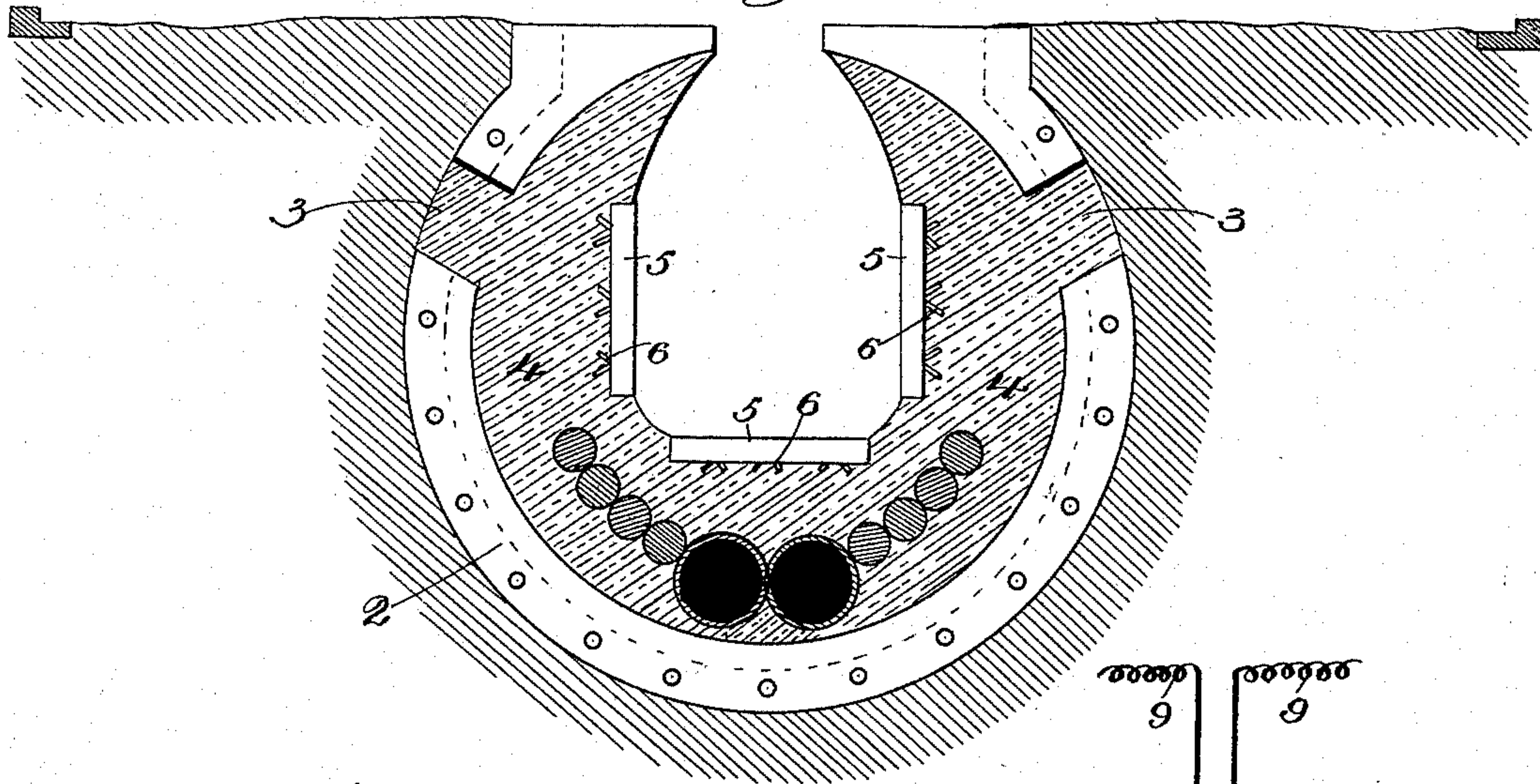


Fig. 3.

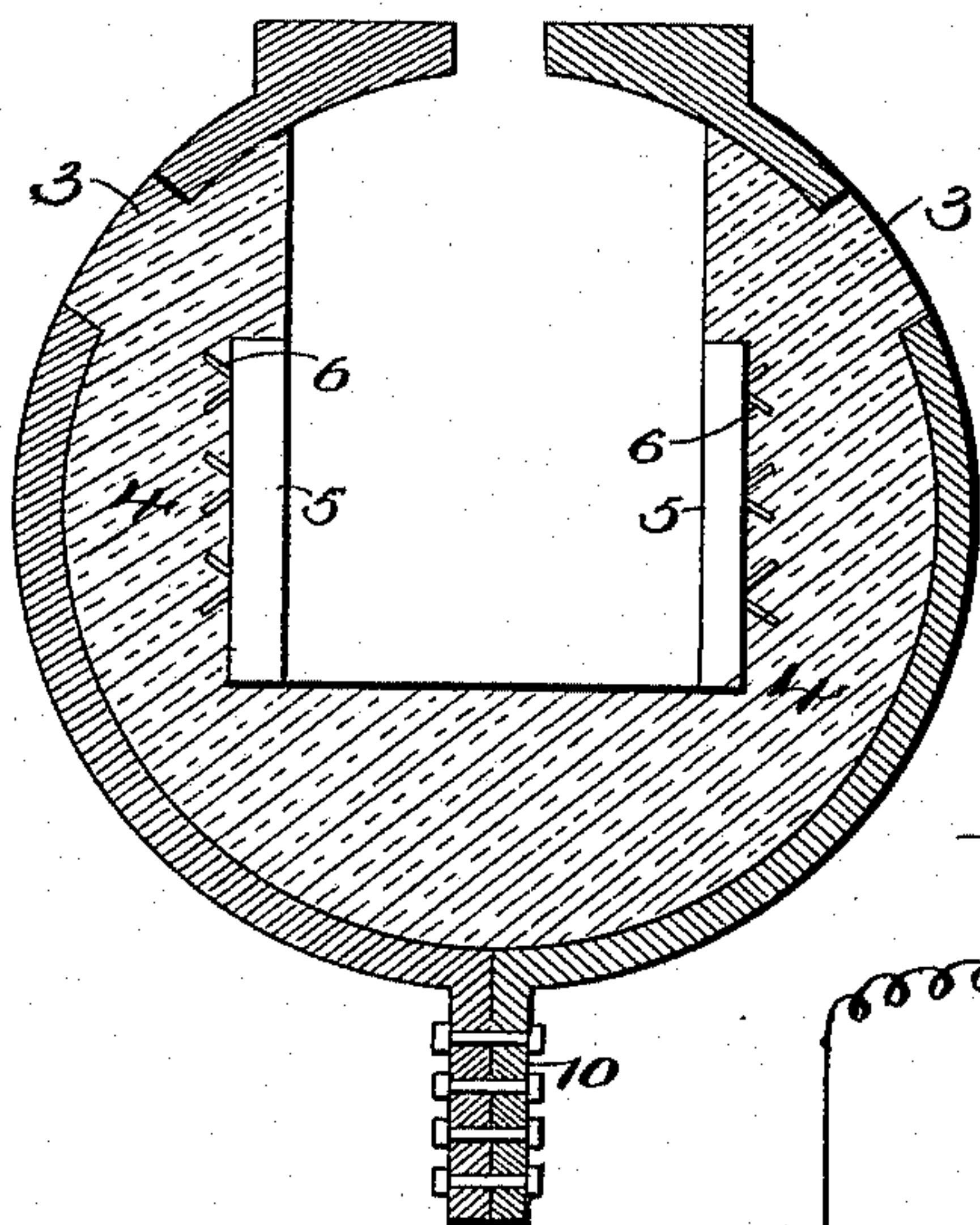


Fig. 2.

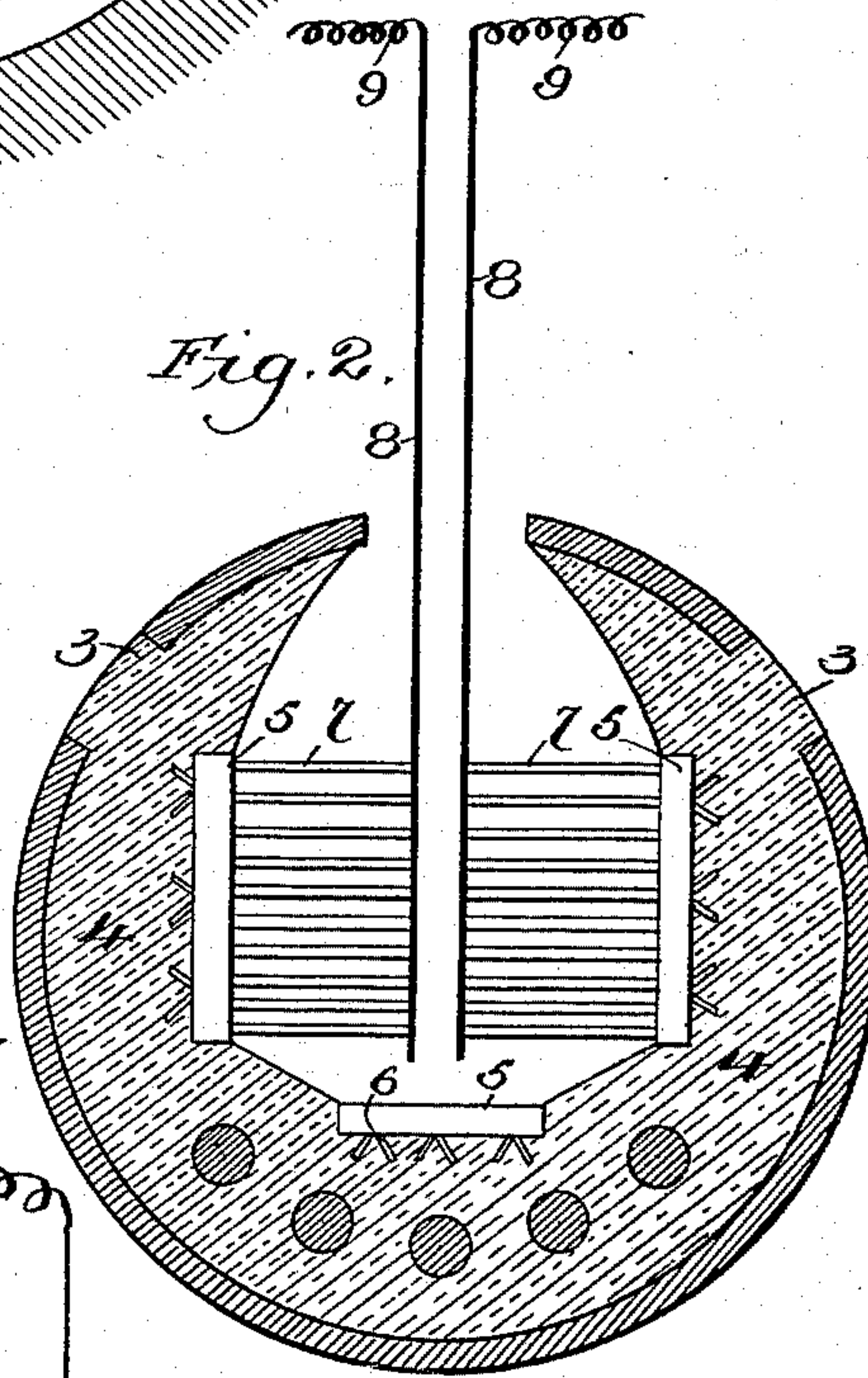
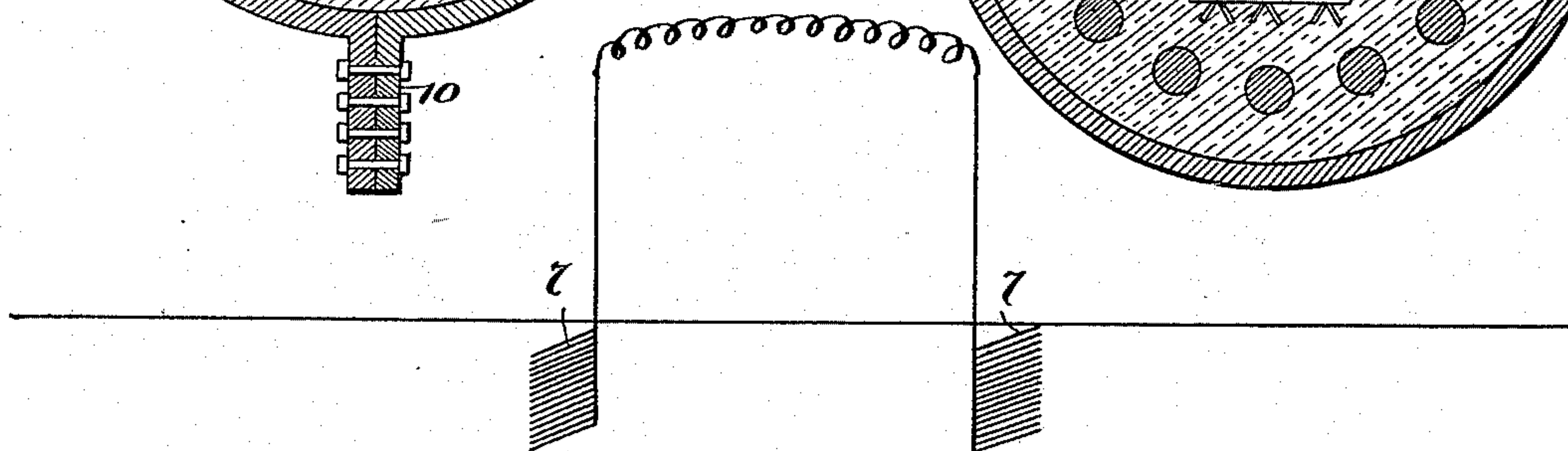


Fig. 4.



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PAUL P. BANHOLZER, OF PHILADELPHIA, PENNSYLVANIA.

ELECTRIC-RAILWAY CONDUIT.

SPECIFICATION forming part of Letters Patent No. 518,540, dated April 17, 1894.

Application filed November 16, 1893. Serial No. 491,103. (No model.)

To all whom it may concern:

Be it known that I, PAUL P. BANHOLZER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Electric Railways; 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 to make and use the same.

This invention relates to electric railways and has special reference to that class of the same which include an underground conduit between the tracks and level with the surface of the street, and consists essentially of a novel form of conduit or tube, open at the top and having a non-conducting plastic substance therein for holding and confining conductors for conveying the current which are fed by wires from a generator, and a transmitter for translating the current from the conductors to the motor.

The principal objects and advantages of the invention are to transform metallic tubes already in existence and use in electric conduits by filling them in with concrete material and cement, either one or both combined, or other non-conducting material adapted for the purpose to prevent them from becoming rusted through and through and make them available for the purpose for a great length of time, by the addition of conductors, it not being necessary to disturb the conduits or road bed to make the changes, as the cement and non-conducting material may be poured thereinto in a plastic condition and the conductors located therein before said cement and non-conducting material has become entirely hardened; further, in avoiding a dependency upon some mechanical action for contact with the current; and further, having all the parts rigid so that nothing can get out of order.

Other advantages will become apparent from time to time to those using the device, and it will be understood that many changes could be made and substituted for those shown and described hereinafter, so long as they are within the scope of the invention.

In the drawings:—Figure 1 is a sectional view of a conduit embodying the invention and showing it in position between tracks. Fig. 2

is a similar view of the conduit, together with the brushes and their support, showing the manner of inserting the non-conducting material therein. Fig. 3 is a similar view showing a slight modification in the construction and arrangement of the parts. Fig. 4 is a diagrammatic view of the use and form of the brushes.

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

Referring to the drawings, the numeral 1 indicates the conduit which is made in sections and bolted together end for end, as shown at 2 in Fig. 1, and has formed in the upper portion thereof openings 3, through which the non-conducting filling 4 is introduced while in a plastic condition and said material may consist of asbestos cement, concrete together with glass, terra cotta, common cement or other material. The openings 3 may be placed at other points on the surface of the conduit and in inserting the filling, it is pressed through the said holes or openings till the mass protrudes when it is surfaced exteriorly and shaped interiorly to the proper form. When the masses harden or become set they cleat together and cannot come apart. Before the mass becomes hard, metallic conductors 5 are placed along the sides and in the bottom, if so desired, said conductors being formed of bars or strips of steel or copper and carry the current in the conduit, being fed by suitable wires, which are charged from a dynamo or other generator. The outer surfaces of the said conductors, or those surfaces thereof which engage the hardened material are formed with prongs 6, which serve as barbs to hold the said conductors in position within the cement or non-conducting material. The wires which feed the conductors, connect them together by being attached to each strip once and when one section or segment becomes disarranged it does not interfere with the other sections of the line.

In connection with the conductors, transmitters 7 are employed, which consists of sets of metal brushes for collecting the current from the conductors in the channel of the conduit and conveying it to the motor through the opening in the said conduit. The said brushes are rigidly supported and one set op-

erates against each conductor. When the brushes become charged the current passes from the positive to the negative after it has passed through the motor and to sustain the brushes in rigid position, hangers 8 are employed. The current passes from the brushes to the car in insulated wires 9, which pass upwardly through and inside of the hangers to prevent leakage against the conduit or tube.

It will be observed that leakages cannot occur, as the conductors are set on the sides and the conduits are drained, and should a leakage occur in the conduit it cannot endanger life any more than the rail does that is used for the return current. When one part of the conduit becomes disarranged or unconnected, it can be taken out and replaced without interfering with the line. The construction as herein set forth is economical, as it may be applied to any railway without interfering with the road bed or removing tracks, by making the tubes the size and shape to conform to the road-bed.

In Fig. 3, the sections of the conduit are shown connected longitudinally, as at 10 and the conductors are arranged on the sides only.

The manner of filling the conduit or pipe, as hereinbefore set forth, can also be in like manner employed in connection with ordinary pipes used in water-mains or for similar purposes to thereby strengthen the same and

obviate internal corrosion and also to prevent the metal thereof from being attacked by material which may pass therethrough.

Having thus described the invention, what is claimed as new is—

1. In an under ground trolley system, the combination with a conduit having openings in its sides in addition to the slot opening of conductors arranged in the said conduit, a plastic material forced into the conduit through the side openings, and securing the said conductors in place substantially as described.

2. The herein described conductor for under ground systems, composed of a plate having a series of prongs on one face to anchor the plate in a plastic material, substantially as set forth.

3. The conduit or pipe herein set forth having perforations or openings therein and a plastic material inserted in said opening to the inner surface of the pipe and flush with the outer surface of the pipe in the said opening substantially as described.

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

PAUL P. BANHOLZER.

Witnesses:

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WM. H. BARRETT.