

(No Model.)

B. R. SHOVER & F. P. TOWNSEND.
ELECTRIC RAILWAY SYSTEM.

No. 569,432.

Patented Oct. 13, 1896.

Fig. 1.

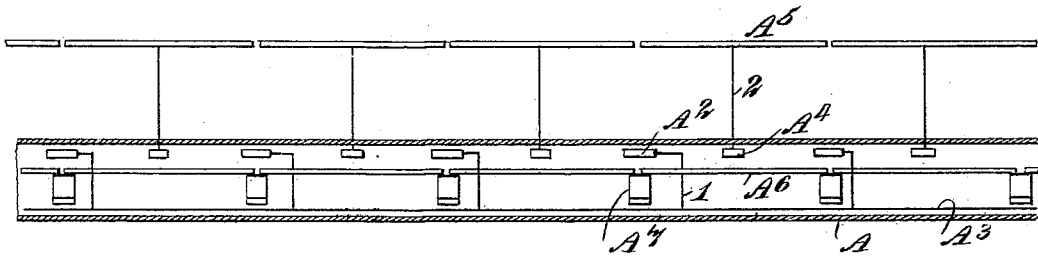


Fig. 2.

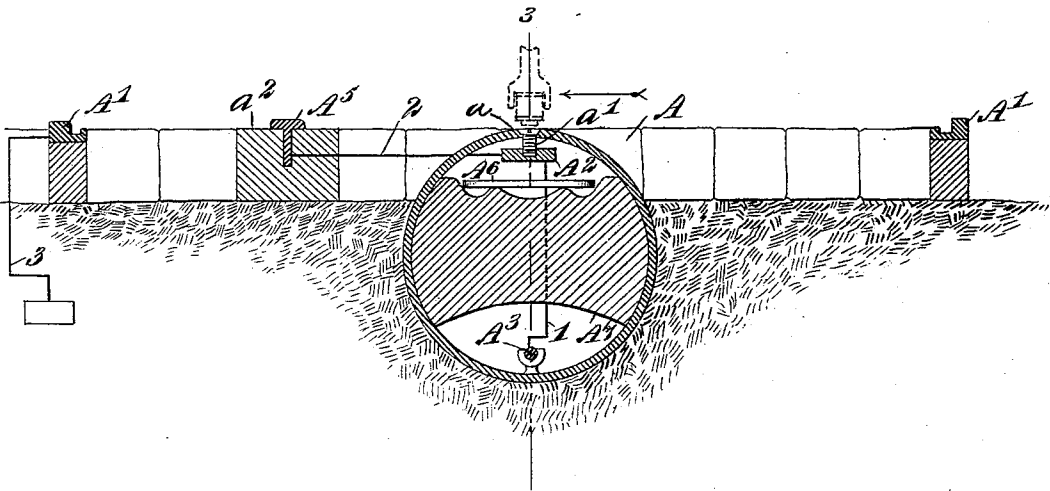
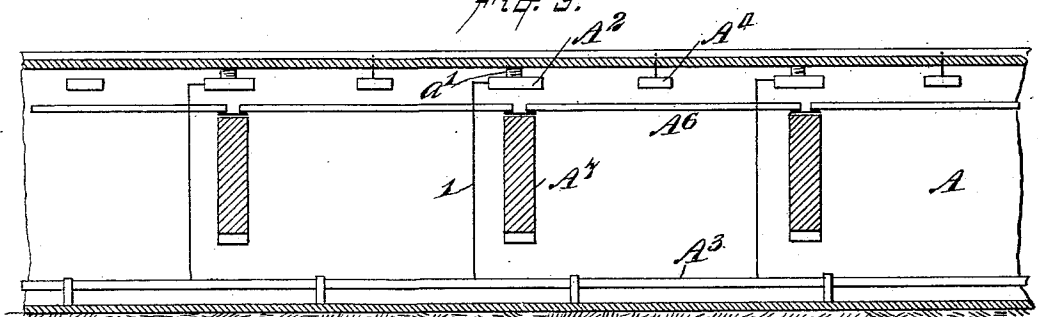


Fig. 3.



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ELECTRIC-RAILWAY SYSTEM.

SPECIFICATION forming part of Letters Patent No. 569,432, dated October 13, 1896.

Application filed September 10, 1895. Serial No. 562,103. (No model.)

To all whom it may concern:

Be it known that we, BARTON R. SHOVER, of Indianapolis, in the county of Marion and State of Indiana, and FRANK P. TOWNSEND, of Asbury Park, in the county of Monmouth and State of New Jersey, have invented certain new and useful Improvements in Electric-Railway Systems, of which the following is a full, clear, and exact description.

This invention relates to electric-railway systems of the class in which the main electric wire and circuit-closing devices are located within a conduit placed in the ground between the rails or adjacent to one of the rails.

The object of this invention is to so construct the parts that the main wire and all other parts from which danger by contact would arise will be placed in a closed conduit, and, further, to provide an electric-railway system wherein the loss by leakage from the main wire will be reduced to a minimum.

The invention consists in a main wire and circuit-closers located in a closed conduit, the said closers being closed by an electromagnet carried by a car to convey the current through the motor of the car.

It further consists in the construction and novel arrangement of parts, as will be hereinafter described, and more particularly pointed out in the appended claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a diagrammatic view of an electric-railway system embodying our invention. Fig. 2 is a transverse section showing the system in place between the rails, and Fig. 3 is a longitudinal section on the line 3 3 of Fig. 2.

Referring to the drawings, A designates a conduit, of any suitable insulating material, adapted to be placed below the road-bed between the rails A', but having a portion of its top surface exposed at the surface of the road-bed, as at *a*. The conduit is to be made in sections of suitable length and entirely closed on all sides, excepting that manholes or handholes may be placed at intervals for convenience in making repairs; but the manholes will be provided with tight covers, so that the

conduit is practically closed throughout its length.

A² indicates a series of contact-plates secured in any desired manner to the upper portion of the conduit. As here shown they are secured by means of screw-bolts *a'*, the upper ends of which are flush with the outer top surface of the conduit. From the contact-plates A² wires 1 extend to the main wire A³, located within the conduit.

A⁴ indicates another series of contact-plates located in the conduit substantially on a horizontal plane with the plates A² and alternating therewith. From the contact-plates A⁴ wires 2 extend to a working rail A⁵, consisting of short sections made of iron or other metal and insulated one from another at the ends and attached to a string-piece *a''*, of wood or other suitable material, placed in the road-bed between the rails. This string-piece may be treated with any suitable material, such, for instance, as creosote, to prevent the rotting of the wood.

A⁶ shows movable iron contact strips or sections of suitable length insulated one from another at the ends and resting loosely on insulating-blocks A⁷, secured within the conduit. The plates A² A⁴ and the contact-strips A⁶ constitute circuit-closers between the main wire A³ and a ground or return circuit 3.

The operation is as follows: A permanent magnet is to be carried by the motor on the car, and so arranged as to be slightly above the exposed top surface of the conduit, as indicated in dotted lines in Fig. 2, and a brush, trolley, or similar device, adapted to engage with the working rail A⁵, has electrical connection with the motor on the car. The permanent magnet is wound with coils which are in series with the electrical circuit of the car. The action of this magnet will be to draw a section-strip A⁶ into engagement with a pair of contact-plates A² A⁴, thus closing the circuit from the main wire A³ through a wire 1, a plate A², a strip A⁶, a plate A⁴, a wire 2 to a section of the working rail, and thence through the brush, the series coils on the magnet, and the motor on the car, and through a car-wheel to the ground-circuit 3. The additional magnetism imparted to the permanent magnet by the current passing

through the series coils gives the section-strip A⁶ better electrical contact with the contact-plates A² A⁴. As the car passes along, the contact-strips A⁶ will be successively elevated, 5 and as the working rail sections are quite short there can be no danger from them to a person in front or rearward of a car.

Having thus described our invention, we claim as new and desire to secure by Letters 10 Patent—

An electric-railway system, comprising a closed conduit, a main circuit-wire located therein, contact-plates fixed within the upper portion of the conduit and having connection 15 with the main wire, other contact-plates in the conduit between the first-named contact-plates, a sectional working rail between the track-rails, one of the track-rails being in

the return-circuit, connections between said other contact-plates and the working rail, contact-strips in the conduit and a permanent magnet carried by a car, and connected in series with the motor on the car, for moving the strips to contact with the plates, substantially as specified.

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