

No. 631,015.

Patented Aug. 15, 1899.

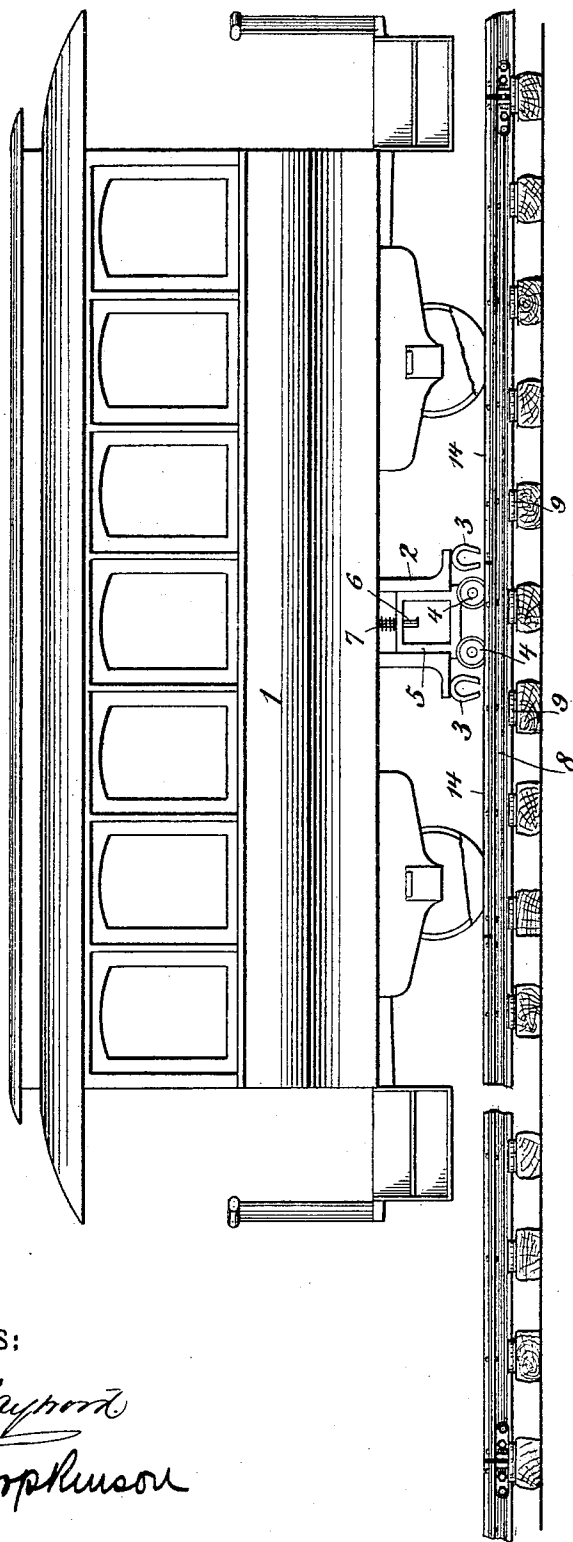
J. G. JUSTIN.
ELECTRIC RAILWAY SYSTEM.

(Application filed July 26, 1897. Renewed Jan. 20, 1899.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1,



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(No Model.)

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Fig. 2,

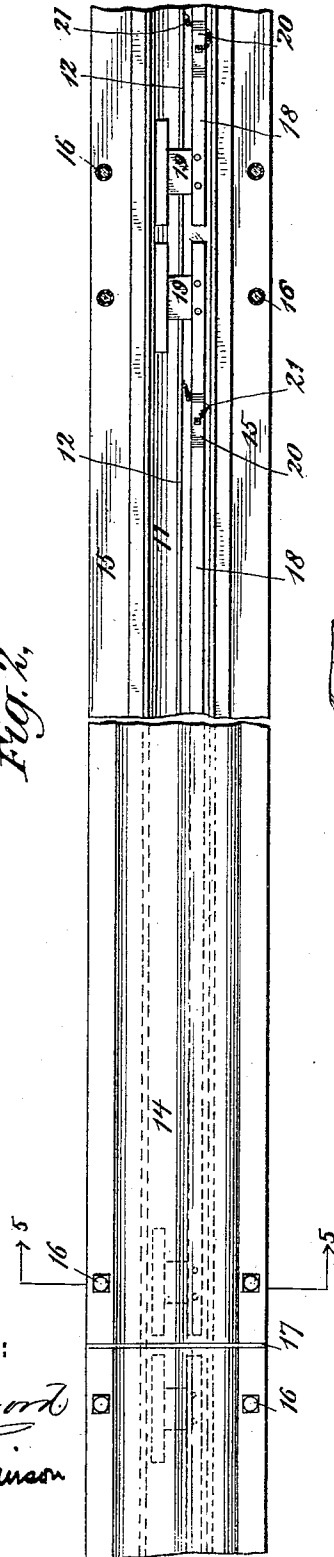


Fig. 3,

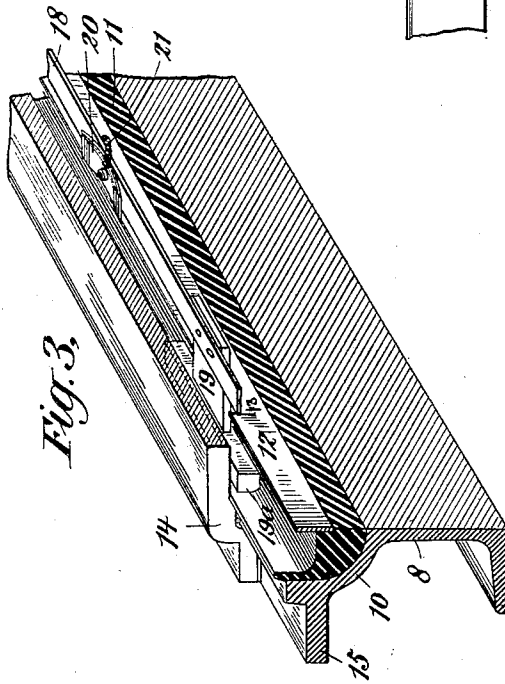


Fig. 4,



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Fig. 6,

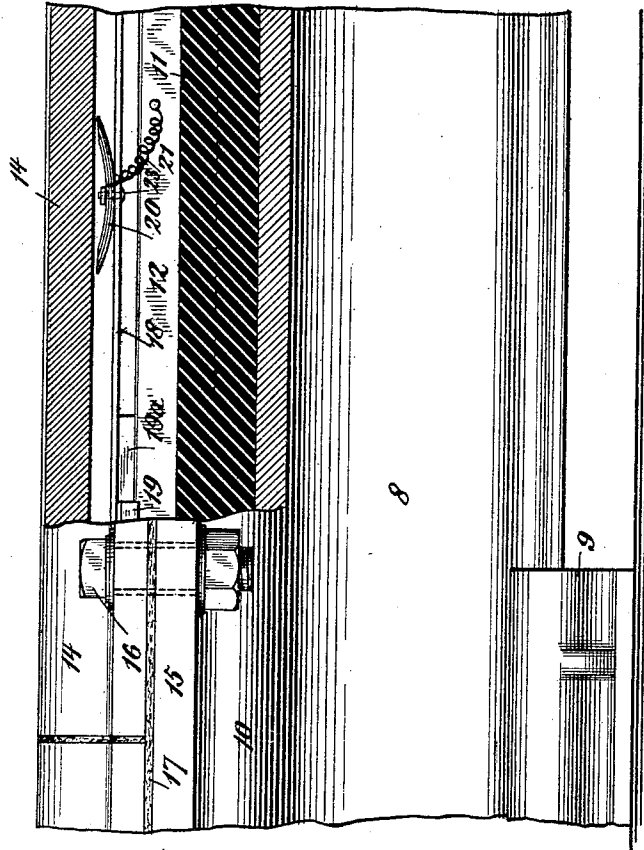
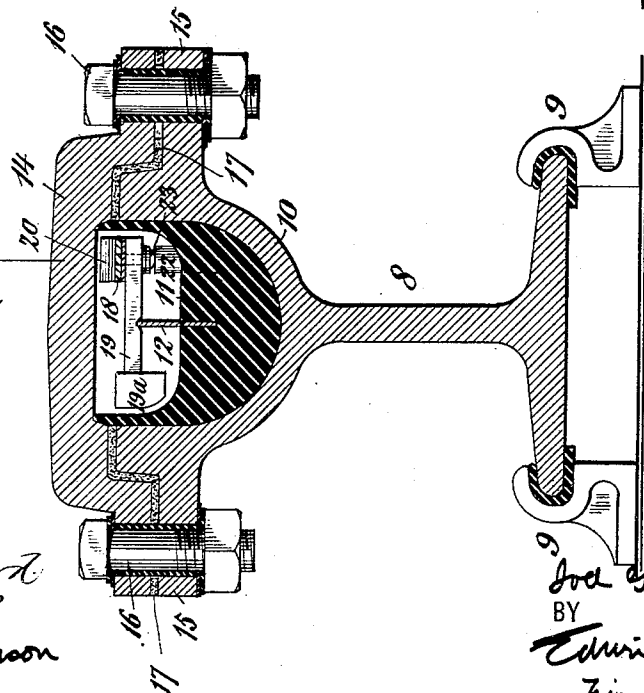


Fig. 5,



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UNITED STATES PATENT OFFICE.

JOEL G. JUSTIN, OF SYRACUSE, NEW YORK.

ELECTRIC-RAILWAY SYSTEM.

SPECIFICATION forming part of Letters Patent No. 631,015, dated August 15, 1899.

Application filed July 26, 1897. Renewed January 20, 1899. Serial No. 702,846. (No model.)

To all whom it may concern:

Be it known that I, JOEL G. JUSTIN, a resident of Syracuse, in the county of Onondaga and State of New York, have invented a new and useful Improvement in Electric-Railway Systems, of which the following is a specification.

The present invention relates to electric-railroad systems, and especially to a system in which the electric current is carried in an underground conduit and contact is made with such conduit by means of a magnet carried on the car operating to draw up the contact-points to complete the circuit through the motor carried on the car.

In the drawings is illustrated a construction embodying my invention, in which—

Figure 1 is a side elevation. Fig. 2 is a plan view of the conduit carrying the electric conductor, certain parts being broken away. Fig. 3 is a view in perspective and partial central vertical section of the electric conduit. Fig. 4 is a side elevation view of a portion of the conductor. Fig. 5 is a section along line 5 5 of Fig. 2 on an enlarged scale; and Fig. 6 is a side elevation of the part shown in Fig. 5, the part shown in longitudinal vertical section being on the same scale as Fig. 5.

Like letters of reference refer to like parts throughout the several views of the drawings.

Referring to the drawings in detail, 1 represents the car, which on its under side intermediate the two axles carries a frame 2, upon which are mounted horseshoe-magnets 3. Contact is made with the electrical conductor by means of trolleys 4, carried on a frame 5, which slides in the frame 2, being guided by a stem 6 on the car and yieldingly mounted in connection with the rail by means of a spring 7.

8 designates the third rail or conduit which carries the electric conductor. This conductor may be a third rail intermediate the tracks or may be itself one of the tracks. This rail is suitably seated in chairs 9 and insulated from the ground. A conduit 10 is constructed on the upper portion of the rail and is partially filled with insulating material 11. Partially embedded in this insulating material and preferably centrally located therein is an electric conductor 12, which consists of a continuous ribbon of conducting material. This

ribbon is provided at suitable intervals with cut-out portions 13, provided with a knife-edge.

14 designates the rail upon which the traveling contact-point runs. This rail is made of some suitable conducting material, as phosphor-bronze or the like, and is bolted to the flanges 15 of the rail by bolts 16, which are insulated. A packing 17 of any suitable material is interposed between the rail 14 and the flanges 15. Contact is made between the electric conductor 12 and the rail 14 by means of a counterbalanced contact device, which consists of a longitudinally-extending strip of magnetic material 18, supported upon the electric conductor by means of arms 19, which fit into the cut-out portions 13 of the electric conductor. Each of these arms on the side of the conductor opposite to the strip 18 carries a counterbalance 19^a, which, however, is not sufficient to overcome the weight of the strip 18. Secured to each of the strips 18 is a brush 20, which consists of several strips of copper or like conducting material bent into arc shape, the outer ends of the arcs being adapted to press upon the under side of the rail 14. These contact-pieces are in electrical connection with the conductor 12 by means of a wire 21. Each rail-section is insulated from the others, as also are contact-rails 14. Seated in the insulating material 11, immediately under the contact-pieces 20, are supports 22, upon which rest the heads of bolts 23, by means of which the contact-pieces are secured to the strips 18.

The operation of the construction will be apparent. As the car travels over the track the magnets, acting upon the magnetic strip 18, draw the same up, so that the contact-piece 20 is pressed in contact with the under surface of the rail 14, thus completing the circuit through the trolley and the motor carried on the same back to the source of power through any suitable return-circuit. As the car moves along the successive contact-pieces are picked up and dropped, so that only one rail-section is in connection with the source of electricity at a given time.

What is claimed as new is—

1. In an electric railway, a conduit, a conductor in said conduit, a contact-rail, an oscillating frame supported on said conductor,

and consisting of arms pivoted on the conductor, said arms being connected by a strip of magnetic metal which carries a contact-point connected with said conductor, substantially as specified.

2. In an electric railway, a conduit, a conductor therein provided with cut-out portions, a frame carrying a strip of magnetic metal pivoted in the cut-out portions of said conductor, a contact-piece carried by the magnetic strip and a contact-rail, substantially as specified.

3. In an electric railway, a conduit, a conductor therein provided with cut-out portions, the counterbalanced frame carrying a strip of magnetic metal pivoted in the cut-out portions of the conductor, a contact-piece carried by the magnetic strip, and a contact-rail substantially as specified.

4. In an electric railway, a conduit, insulating material partially filling the conduit, a flat conductor supported in the insulating material, an oscillating frame carrying a strip of magnetic metal, a contact-piece and a contact-rail, substantially as specified.

5. In an electric railway, a conduit, insulating material partially filling the conduit, a flat conductor supported in the insulating material and provided with cut-out portions, an oscillating frame supported on the cut-out portions of the conductor and carrying a strip of magnetic metal, a contact-piece and a contact-rail, substantially as specified.

6. In an electric railway, a conduit, insulating material partially filling the conduit, a flat conductor partially embedded in the insulating material, an oscillating frame sup-

ported on said conductor, a strip of magnetic metal carried by the oscillating frame, a contact-piece, and a contact-rail, substantially as specified.

7. In an electric railway, a conduit, insulating material partially filling the conduit, a flat conductor partially embedded edgewise in the insulating material and provided with cut-out portions, an oscillating frame supported in the cut-out portions of the conductor and carrying a strip of magnetic metal, a contact-piece, stops upon which the oscillating frame normally rests, a contact-piece carried by the magnetic strip, and a contact-rail, substantially as specified.

8. The combination of a conduit, a conductor therein, counterbalanced arms oscillating on said conductor, a strip of magnetic metal connecting said arms and a contact-piece consisting of one or more arc-shaped pieces of conducting metal secured to said strip, substantially as specified.

9. The combination of a conduit, a conductor therein, cut-out portions in said conductor, oscillating arms seated in said cut-out portions, a counterbalance to said arms, a strip of magnetic metal connecting said arms, and a contact piece or brush secured to said strip, substantially as specified.

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

JOEL G. JUSTIN.

Witnesses:

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