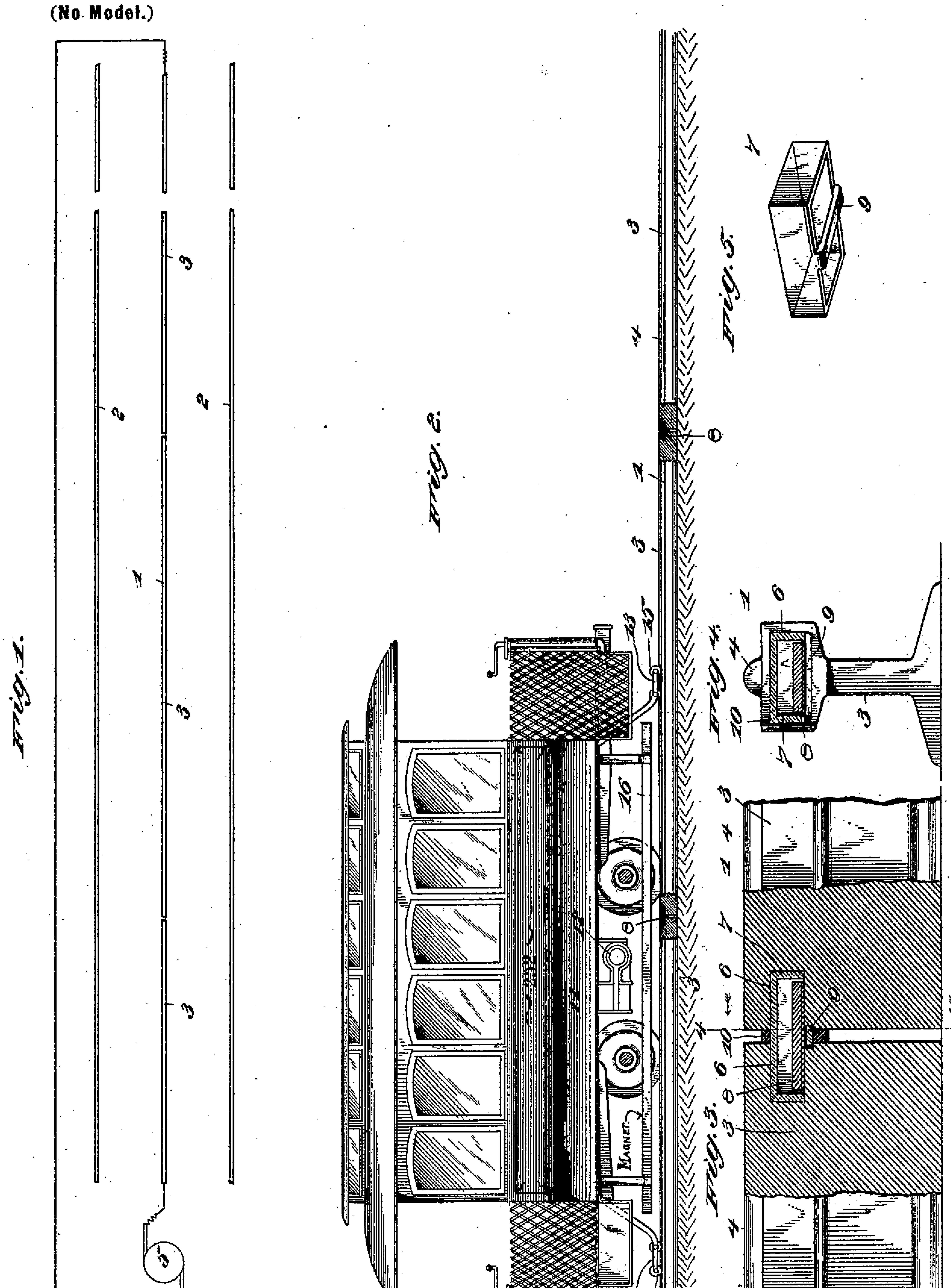
No. 621,492. Patented Mar. 21, 1899.

W. J. GEORGE.

ELECTRIC RAILWAY.

(Application filed June 8, 1898.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM J. GEORGE, OF JOHNSTOWN, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO CHARLES LEVENTRY, OF SAME PLACE.

ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 621,492, dated March 21, 1899.

Application filed June 8, 1898. Serial No. 682,914. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. GEORGE, a citizen of the United States, residing at Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and useful Electric Railway, of which the following is a specification.

This invention relates to electric railways; and it has for its object to effect certain improvements in the sectional conductors of that class of electric-railway systems in which the circuit is normally closed throughout the entire conductor and the motors of the cars are arranged in series with the conductor.

To this end the invention primarily contemplates improved means of mounting and housing the switch-plates which automatically close the circuit through the contiguous sections of the conductor.

With this and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a plan view of an electric railway equipped with the sectional conductor contemplated by the present invention and showing in diagram the circuit-wire connections with the terminals of said conductor. Fig. 2 is a longitudinal sectional view of the track, including a few sections of the sectional conductor or third rail and showing in elevation the motor-car. Fig. 3 is an enlarged detail sectional view of the switch-box construction arranged at the joints or contiguous ends of the sections of the third-rail conductor. Fig. 4 is a detail cross-sectional view on the line 4 4 of Fig. 3. Fig. 5 is a detail bottom perspective view of one of the hollow switch-boxes.

Referring to the accompanying drawings, the numeral 1 designates the sectional electric conductor, which, as shown in the drawings, is preferably in the form of a third rail arranged centrally between the usual track-rails 2 of the track upon which the motor-car travels, and said sectional third-rail conductor 1 consists of a series of duplicate longitudinally-alined rail-sections 3, which in cross-section are of the same form as the track-rails and may also be secured in the road-bed in the same manner as the latter rails; but for the purpose of carrying out the present invention the alined third-rail sections 3 are provided on their upper surfaces with the longitudinal track-ribs 4, which serve as guides for the trolley wheels or brushes carried by the motor-car and which will be hereinafter more fully referred to.

The sectional third-rail conductor 1 is designed to have the current normally pass without interruption through the entire length of the same. So in operating the railway it is necessary that the said conductor be supplied with a constant current of great quantity and low electromotive force, and the generator or dynamo which is employed to supply this current has its positive and negative poles respectively connected, by means of suitable wire connections, with the opposite terminals of said third-rail conductor, said generator or dynamo being designated by the numeral 5 and the circuit-wire connections for the same being indicated in diagram in Fig. 1 of the drawings.

The contiguous ends of the third-rail sections 3 are formed with rectangular sockets or mortises 6, which receive therein the ends of a rectangular switch-box 7, made of glass or any other suitable non-conducting material. Each of the non-conducting switch-boxes 7 is preferably closed on all of its sides except at the bottom and is designed to loosely house therein a floating switch-plate 8, preferably made of iron faced with copper. The floating switch-plate 8 within each non-conducting switch-box 7 is of the same rectangular configuration as the box and works therein above the plane of a cross-bar 9, connecting the lower side edges of the box at a point intermediate the ends of the latter and partially fitting in the sockets or mortises 6, formed within the adjacent ends of the rail-section. At both sides of the cross-bar 9 the box 7 is entirely open at its lower side, so that the ends of the switch-plate 8 when in its normal position will contact with the contiguous rail-sections, as clearly illustrated in Fig. 3 of the drawings, so as to normally close the circuit through the sections and to provide for breaking the circuit when lifted up within the

switch-box in the manner to be presently explained. To provide for excluding water from the interior of the switch-box for each joint of the sectional rail or conductor, each switch-box has fitted thereon an encircling gasket-collar 10, formed of rubber or other equivalent material and closely fitting the space between the adjacent ends of the rail-sections, housing the switch-box therein.

The motor-car 11 is provided with the ordinary equipment and is designed to have the motor 12 thereof connected in series with the third-rail or conductor sections by means of the oppositely-located front and rear trolleys 13 and 14, which trolleys carry wheels or brushes 15, that travel on the longitudinal track-rib 4 of the third rail or conductor, as plainly illustrated in Fig. 2 of the drawings. The front and rear trolleys 13 and 14 are respectively connected, by means of suitable wire connections, with the separate poles of the car-motor 12 and are spaced a greater distance apart than the length of the rail or conductor sections 3, whereby said trolleys will always bridge the joint between two rail-sections and maintain a series circuit through the motor 12. For the purpose of carrying out the present invention it is also necessary to suspend from the car, at the lower side thereof, a switch-controlling magnet 16. This switch-controlling magnet 16 may be of any suitable type, either a permanent magnet or an electromagnet energized by current from the line; but said magnet must extend longitudinally of the sectional rail or conductor and be of sufficient length so as to influence the switch-plate at any joint of the sectional rail or conductor after the advance trolley 13 has just passed over such joint and to hold said switch-plate elevated in an inoperative position until the car has completely passed the same.

In the operation of the system it will be understood that while a car is passing over the joint between two rail or conductor sections 3 the magnet 16 will elevate the floating switch-plate 8 at such joint and hold the same in such position out of contact with the contiguous ends of the rail or conductor sections, thereby breaking the circuit at this point and causing the current to pass in series through the car-motor and said sections, as plainly shown in Fig. 2 of the drawings. After the car has passed the joint the switch-plate 8 falls by gravity to its normal position, so as to again close the circuit through the adjacent sections of the rail or conductor.

Changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In an electric-railway system, a sectional conductor, composed of alined sections, floating switch-plates, housed directly within the contiguous ends of the sections, and normally in metallic contact therewith, and means, carried by the car, for causing said switch-plates to move bodily out of contact with the conductor-sections, substantially as specified.

2. In an electric-railway system, a sectional conductor, composed of alined rail-sections having contiguous mortised ends, floating switch-plates housed within the mortised ends of the conductor-sections and normally resting in metallic contact with said sections, and a magnet, carried by the car, for elevating said switch-plates out of contact with the conductor-sections, substantially as specified.

3. In an electric-railway system, a sectional conductor composed of alined rail-sections having sockets or mortises in their contiguous ends, switch-boxes housed within said sockets or mortises, and magnetically-controlled switch-plates arranged within said boxes, substantially as set forth.

4. In an electric-railway system, a sectional conductor composed of alined rail-sections having sockets or mortises in their contiguous ends, switch-boxes fitted in said sockets or mortises and open at their lower sides, and magnetically-controlled switch-plates loosely arranged within said boxes and normally in electrical contact with the rail-sections, substantially as set forth.

5. In an electric-railway system, a sectional conductor composed of alined rail-sections having sockets or mortises in their contiguous ends, switch-boxes fitted in said sockets or mortises and open at their lower sides, magnetically-controlled floating switch-plates arranged within said boxes and normally in electrical contact with the rail-sections, and a gasket-collar encircling each switch-box and fitting the space between the adjacent ends of the rail-sections, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM J. GEORGE.

Witnesses:
WM. WILLIAMS,
F. D. CONFER.