

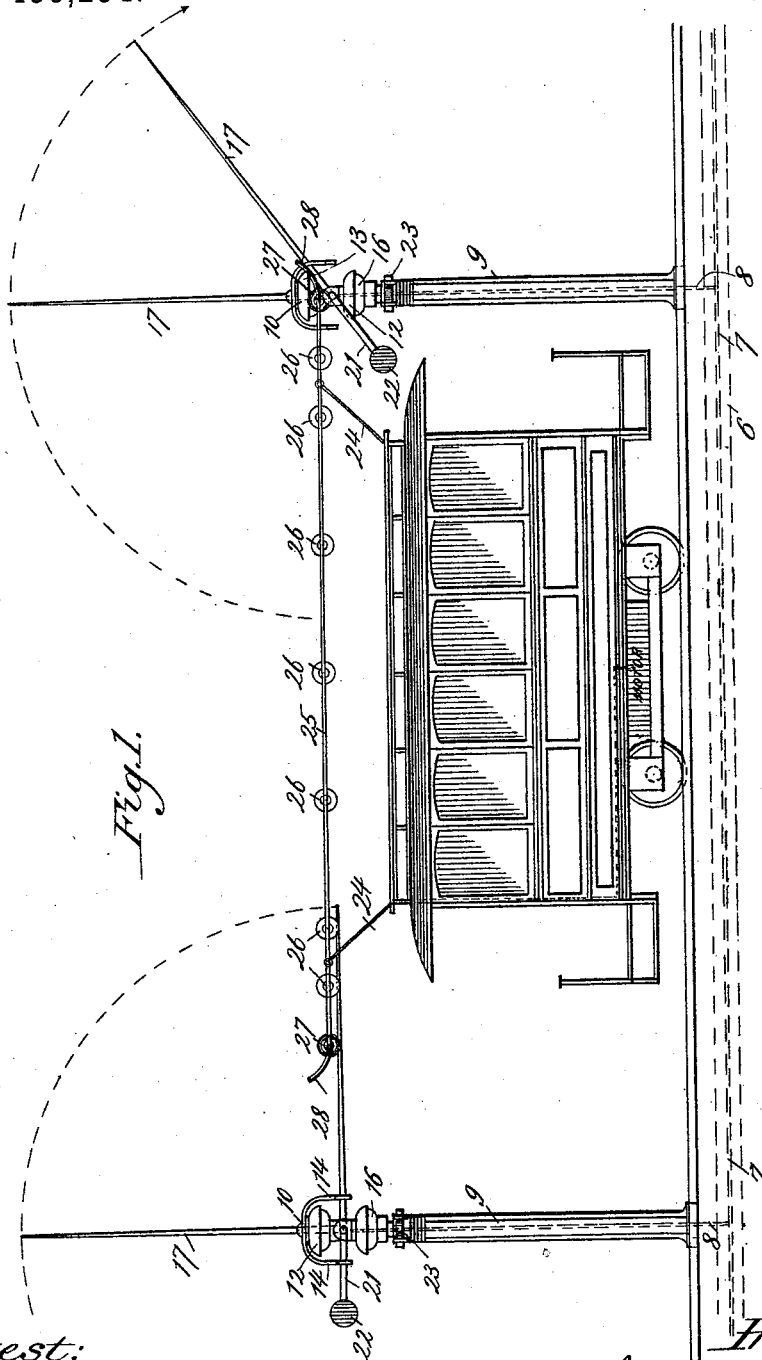
(No Model.)

2 Sheets—Sheet 1.

J. F. MUNSIE.  
ELECTRIC RAILWAY.

No. 455,234.

Patented June 30, 1891.



*Fig. 1.*

*Attest:*

*J. H. Schott*  
*Percy B. Hills.*

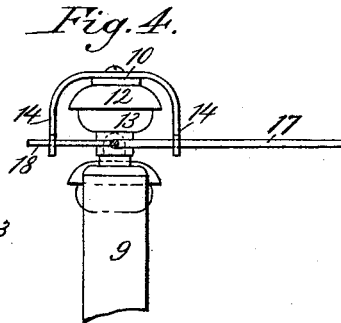
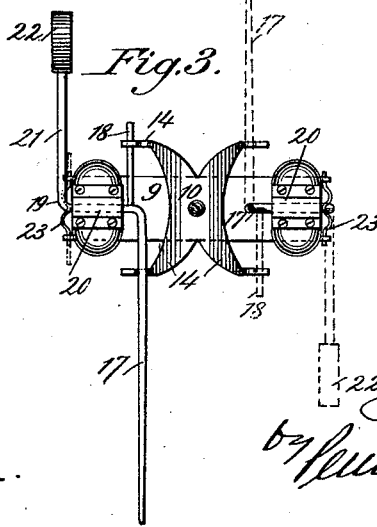
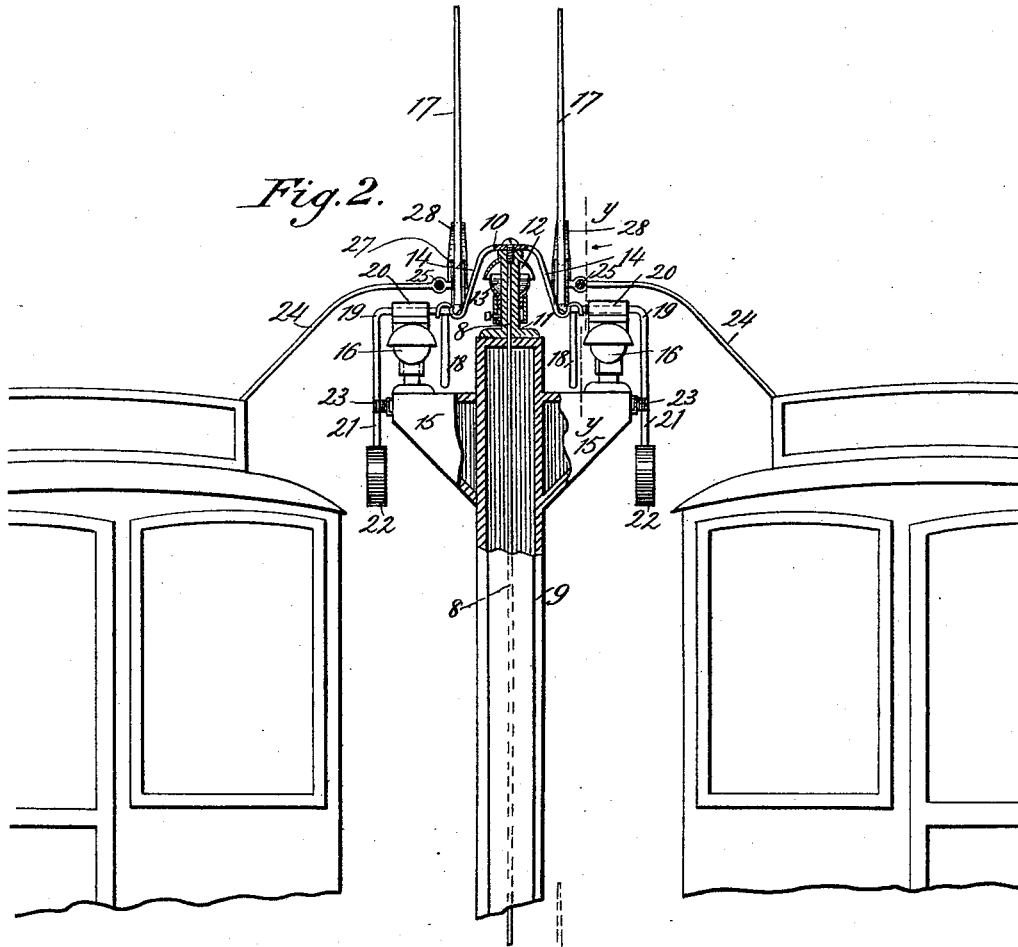
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*H. Schott*  
*Lucy B. Hill*

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# UNITED STATES PATENT OFFICE.

JAMES F. MUNSIE, OF BROOKLYN, NEW YORK.

## ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 455,234, dated June 30, 1891.

Application filed May 8, 1891. Serial No. 392,103. (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 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.

My invention relates to certain new and useful improvements in and appertaining to electric railways, and has for its object to obviate the dangers and inconveniences incident to the customary permanent trolley-trackways for overhead electric railways by substituting therefor a trackway made up of separate sections normally in an upright position and out of contact with the feeding-conductor, said sections being adapted to be brought into electrical connection with the feeding-conductor by means of a trolley or trolleys upon the car, so as to continuously supply the car-motor circuit from the feeding-conductor.

It is characteristic of my invention that the sectional trackway points upwardly, so as to offer the least possible obstruction to the streets, and that it is normally out of circuit with the feeding-conductor, thereby avoiding danger to life and property. It is also an incident to the construction embodied in my improvements that the upright trackway-sections serve as lightning-conductors to protect adjacent property and the feeding-conductor itself, the trackway-sections being normally grounded (either directly or by means of lightning-arresters) through the posts or standards upon which they are mounted.

The preferred construction in which I have embodied my improvements is illustrated in the accompanying drawings, wherein—

Figure 1 represents in side elevation a portion of an electric railway and its appurtenances constructed and arranged in accordance with my invention. Fig. 2 represents an end elevation thereof. Fig. 3 represents a top plan view of one of the track-supporting posts or standards, the track-sections being represented as in the lower or current-transmitting position. Fig. 5 represents in end elevation the contact-plate, which rests upon the

upper portion of the posts or standards; and Fig. 4 represents a section and partial elevation on the line *y y* of Fig. 2, illustrating, however, the terminal position of the track-sections.

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

Referring to the drawings, 6 indicates a conduit for the reception of the feeding-conductor 7, which conductor extends, as usual, from the positive pole of the electric generator at the distant station to the end of the line, being provided from point to point with branch conductors 8, extending upwardly through suitable metallic posts or standards 9 to metallic contact-plates 10. Each metallic contact-plate 10 is mounted upon an insulator, whose stem 11 is perforated for the passage of the branch conductor, and which has a cap 12 overhanging a subjacent cup 13, adapted to be filled with sulphuric acid or other hygroscopic material. The construction of this insulator is not claimed herein, as it is made the subject-matter of other applications for patents filed by me. Its purpose is to maintain the inside of the cap 12 in a dry condition, so as to prevent grounding of the current from the contact-plate 10 in wet or foggy weather.

The contact-plate 10 is provided with downwardly and outwardly projecting arms 14, and opposite the intervening space between these arms is mounted upon a projection 15 of the post 9 an insulator 16, of like construction and material (preferably glass or vulcanite) as the insulator supporting the contact-plate 10.

Upon the top of the insulator 16 the metallic track-section is supported, said track-section consisting of the main body portion 17, rearward extension 18, horizontal bend 19, mounted to rock in bearings 20, and dependent arms 21, having a weight 22. Upon the side of the projection 15 is located a metallic spring 23 in conductive contact therewith, said spring 23 having a central bend, within which the dependent arm 21 is adapted to rest when the sectional trackway is in the upright position, so that said trackway when in the upright position will be grounded through the post 9.

The electrically-propelled car is to be provided with the usual motor suitably geared to

the traction-wheels and grounded therefrom, and the leading-in wire or wires of said motor are connected to the metallic spring-arms 24, which support the metallic bar 25. The bar 5 25 is provided with a series of contacts, preferably metallic trolleys 26, said trolleys being in line with the trackway-section, so as to come in contact with said sections successively during the progressive movement of the car. 10 At the outer ends of the bar 25, beyond the trolleys 26, are mounted the trolleys 27, of non-conducting material, whose function is to rock the sections into the horizontal position.

The operation of the invention is as follows: The several trackway-sections are normally in the upright position, in consequence whereof they are out of contact with the arms 14, and consequently out of electrical connection with the feeding-conductor. At the same 20 time they are grounded through the post 9, so as to act as lightning-conductors, thereby being no source of danger, but really a safeguard to life and property. During the forward movement of the car the non-conducting 25 trolley 27 comes in contact with the track-sections 17 and rocks said track-sections successively to a horizontal or substantially horizontal position, as indicated in Figs. 1, 3, and 5. The first effect incident to the rocking 30 downwardly of a track-section is to break connection between it and the ground, and the final effect is to bring the track-section and its rearward extension 18 into contact with the arms 14, thereby permitting the current 35 from the corresponding branch conductor 8 to pass from the contact-plate 10 to the track-section. Consequently as soon as the first of the series of conducting-trolleys makes contact with such track-section the motor is actuated to drive the car onward. The trolleys 40 therefore ride forward upon the lowered track-section until the advance non-conducting trolley 27 comes in contact with the next succeeding track-section, which is thereby lowered in like manner and brought into circuit with the 45 feeding-conductor and eventually with the motor-circuit as soon as the first of the trolleys 26 touches said track-section. It will be observed that the arrangement is such that the circuit 50 is not broken from the feeding-conductor to the car-motor during the forward motion of the trolleys from one track-section to another for the reason that before the last of the series of conducting-trolleys has left one 55 track-section the first of the series comes in contact with the next succeeding track-section, thereby insuring continuity of current-supply to the motor-circuit. It will be observed that the extreme ends of the bar 25 are curved or bent upwardly. I prefer this 60 construction, as it enables said ends to act as spring-buffers to take up the shock of impact just before the pulley 27 actually strikes the track-section. These bent ends will be provided with facings 28 of non-conductive material.

It will of course be understood that the car is to be supplied with the usual switches, resistances, and other customary appurtenances for varying its speed, for stopping or 70 starting the car, or for reversing its direction of movement.

As soon as the rear non-conducting trolley 27 leaves the free end of the track-section over which it has just passed the said track-section immediately swings back to its original 75 upright position by reason of the weight 22, and is caught and held in place by the central bend of the spring 21 and grounded by said spring through the post 9. 80

It is evident that instead of grounding the track-sections by establishing actual electrical contact between said sections when in the upright position and the posts that said 85 ground may be established through the intermediacy of lightning-arresters interposed between the posts and the upright track-sections.

Having thus described my invention, what I claim is— 90

1. In an electric railway, the combination, with the feeding-conductor, of a trolley-track consisting of a series of sections suspended in an upright position and adapted to swing 95 downwardly, substantially as described.

2. In an electric railway, the combination, with the feeding-conductor, of a trolley-track consisting of a series of sections suspended in an upright position and adapted to swing 100 downwardly, said sections being normally out of conductive connection with the feeding-conductor, substantially as described.

3. In an electric railway, the combination, with the feeding-conductor, of a trolley-track consisting of a series of sections suspended 105 in an upright position and adapted to swing downwardly, said sections being normally out of conductive connection with the feeding-conductor and grounded, substantially as described. 110

4. In an electric railway, the combination, with the main feeding-conductor and its branch conductors, of contact-plates connected to the terminals of the branch conductors, and a trolley-track consisting of a 115 series of sections suspended in an upright position out of conductive contact with said contact-plates and adapted when swung downwardly to complete connection with said contact-plates, substantially as described. 120

5. In an electric railway, a car provided with a series of trolleys mounted upon its upper portion, the terminal members of the series being of insulating material and the intermediate ones of conductive material, 125 substantially as described.

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

JAMES F. MUNSIE.

Witnesses:

JOHN C. PENNIE,  
D. G. STUART.