

No. 640,146.

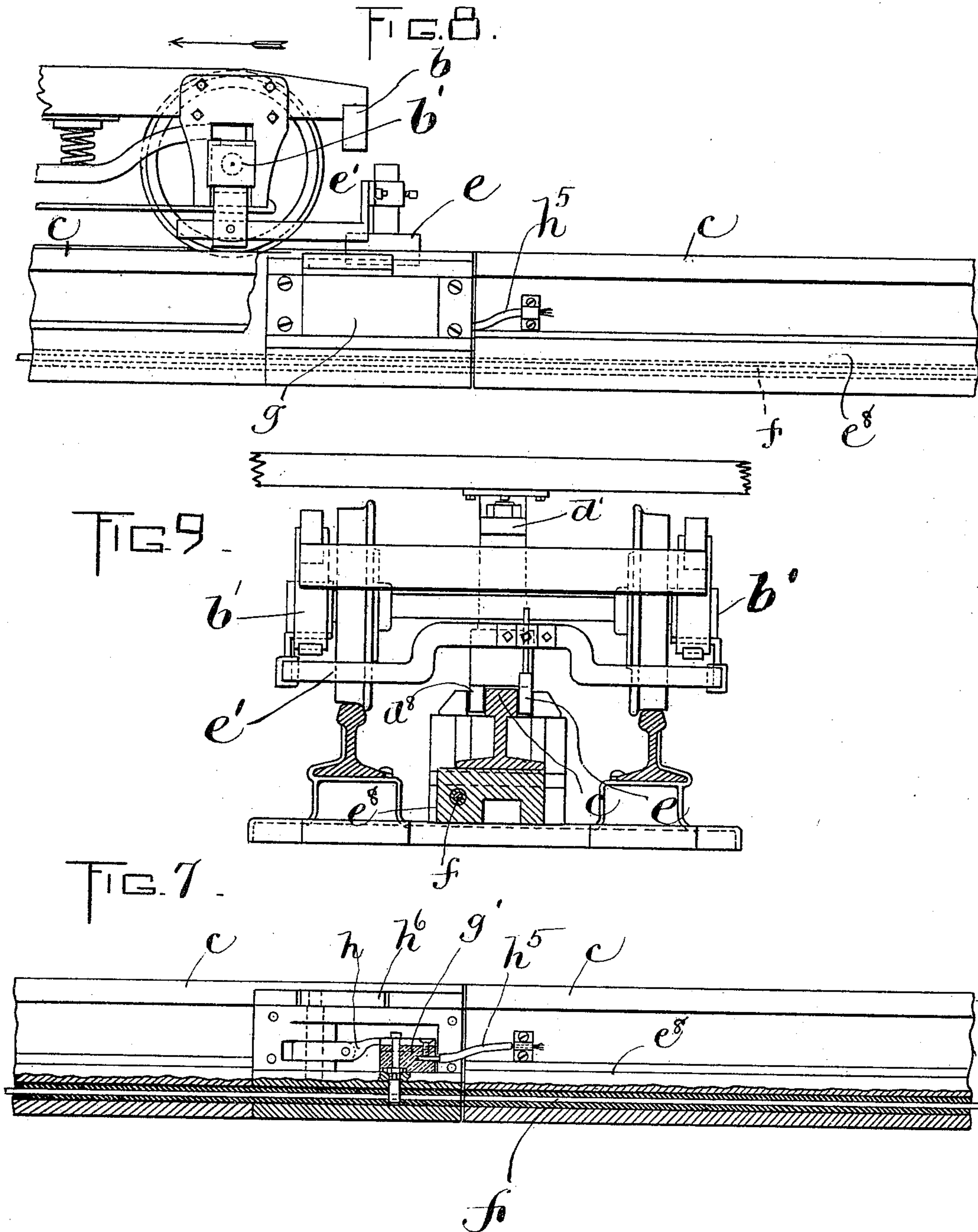
Patented Dec. 26, 1899.

G. W. McCLINTOCK.
ELECTRIC RAILWAY.

(Application filed Oct. 21, 1898.)

(No Model.)

3 Sheets—Sheet 2.



WITNESSES:

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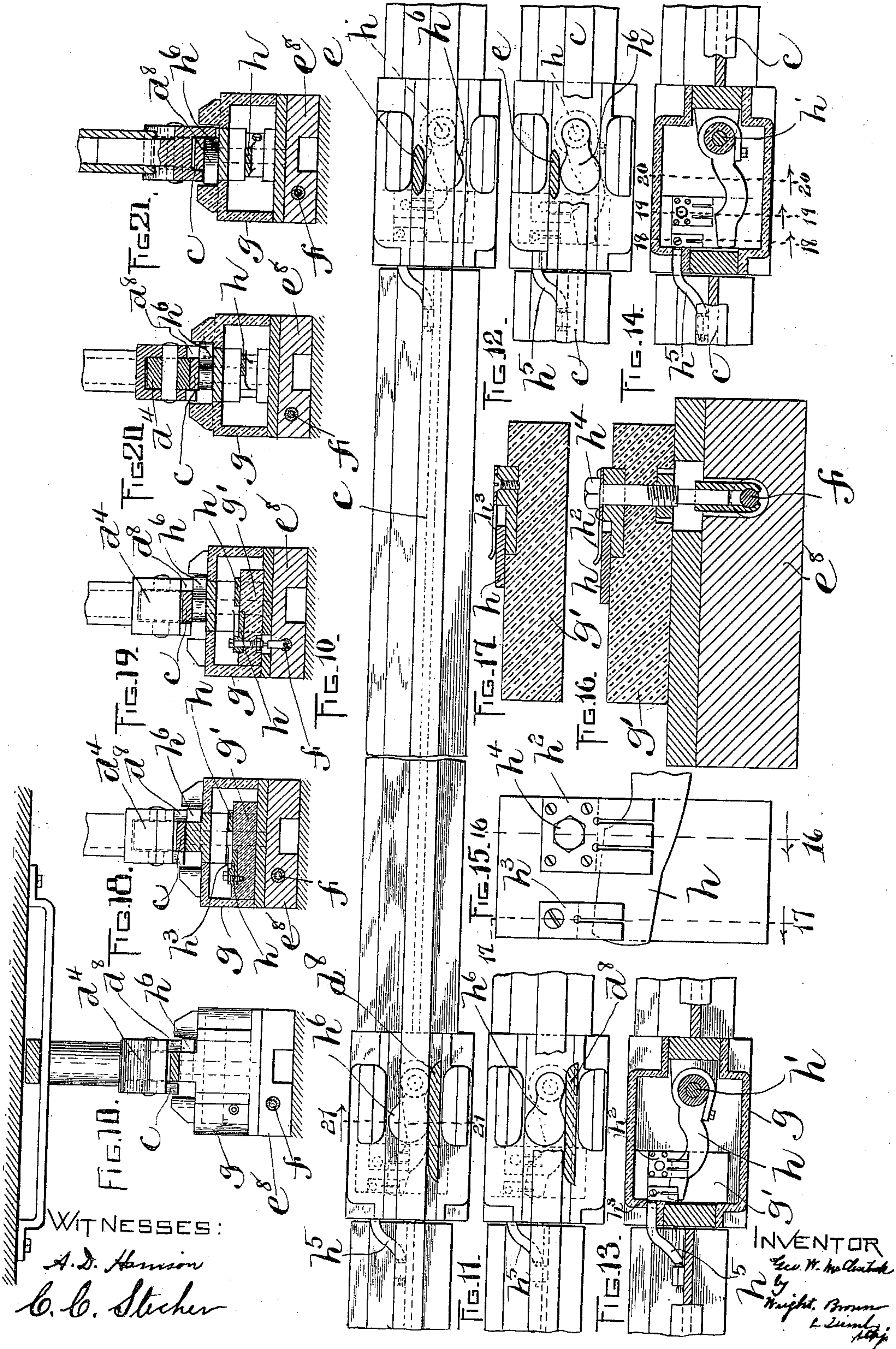
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UNITED STATES PATENT OFFICE.

GEORGE W. MCCLINTOCK, OF WOLLASTON, MASSACHUSETTS, ASSIGNOR OF
ONE-THIRD TO C. G. LEE, OF QUINCY, MASSACHUSETTS.

ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 640,146, dated December 26, 1899.

Application filed October 21, 1898. Serial No. 694,186. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. MCCLINTOCK, of Wollaston, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Electric Railways, of which the following is a specification.

This invention relates to electric railways employing a supply-rail at or near the level of the roadway.

The object of the invention is to provide a safe and efficient means for communicating the current to the car in railways of this class; and to this end it consists in the novel features of construction and arrangement which I shall hereinafter proceed to describe and claim.

In the railway hereinafter described one of the road-rails might be employed as a supply-rail, the other being used for the return; but it is preferable to use a third rail and employ the two road-rails for the return in the ordinary manner.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of the supply-rail in a railway constructed in accordance with my invention, showing the car in side elevation and the trucks in section. Fig. 2 represents a top plan of the parts below the car-body. Fig. 3 represents an enlarged side elevation of the supply-rail, showing the contact-shoe mountings in section. Fig. 4 represents an enlarged plan view of the supply-rail. Fig. 5 represents a reverse plan view of the contact-shoe. Fig. 6 represents a longitudinal sectional view of the switch. Fig. 7 represents a view in side elevation of a section of the supply-rail, being a view taken on the opposite side of the switch from that shown in Fig. 6. Fig. 8 represents a side elevation of the rail and a portion of the car-truck, showing one of the throw-off shoes. Fig. 9 represents a rear elevation of the car-truck with the roadway in section. Fig. 10 represents a plan view of the rail, showing the throw-on and throw-off shoes. Fig. 11 represents a plan view of the forward end of a rail-section with parts broken away, showing also the throw-on shoe in section. Fig. 12 represents a similar view of the next succeeding rail-section. Fig. 13 represents the meeting ends of two rail-sections in hori-

zontal section. Fig. 14 represents a similar view of the next succeeding rail-sections. Fig. 15 represents an enlarged detail plan of the switch. Fig. 16 represents a section on the line 16 16 of Fig. 15. Fig. 17 represents a section on the line 17 17 of Fig. 15. Figs. 18, 19, and 20 represent sections on the corresponding number of lines of Fig. 14. Fig. 21 represents a section on the line 21 21 of Fig. 10.

The same reference characters indicate the same parts in all the figures.

Referring to the drawings, *a* designates the car-body, *b b* the trucks, and *c* the supply-rail, placed in the present instance centrally between the two road-rails of the roadway.

d is the trolley or contact-shoe, mounted at or near the middle of the car on the swinging arm *d'*, pivoted at *d²* to the car and adapted to slide along a segmental guide *d³* to allow for the displacement of the shoe in passing around curves. The shoe *d* is provided with a spindle *d⁵*, which turns in a socket *d⁶* on the end of the swinging arm *d'* and is normally pressed against the rail by means of a spring *d⁷*, which allows for a vertical movement of the shoe.

The supply-rail *c* is composed of insulated sections 2, 3, and 4, &c., mounted on a wooden stringer or base *e⁸*, which is channeled or grooved longitudinally to carry the feed-wire *f*. At the end of each rail-section is a switch inclosed in a casing *g* and mounted on an insulating-base *g'* inside of said casing. The switch has a movable arm *h*, secured to a pintle *h'*, which is in electrical contact with the rail-section, at the end of which the switch is mounted, said arm being adapted to connect the two fixed members *h² h³* of the switch, one of which, *h²*, is electrically connected through the bolt *h⁴* with the feed-wire *f*. The other fixed member, *h³*, is connected, by means of a conductor *h⁵*, with the next adjoining rail-section. It will therefore be seen that when the switch is closed by throwing the arm *h* into contact with the fixed members *h² h³* two adjoining rail-sections will be thrown into circuit with the feed-wire *f*.

Secured to the pintle *h'* of the switch-arm *h* above the roof of the casing *g* and in a transversal recess provided below the top of the

rail-section is a cam or arm h^6 . This arm is so disposed that it may project on one side or the other of the side edges of the contact-rail, as illustrated, for instance, in Fig. 10, where the arm h^6 of the left-hand switch is shown on one side of the rail, while the corresponding arm of the right-hand switch is shown on the other side of the rail. The contact-shoe d is provided with metal contact-rollers or trolley-wheels $d^4 d^4$, and on one side is formed a downwardly-projecting flange or lip d^8 , which moves close along one side of the contact-rail c . When said flange or lip d^8 , which may be termed a "throw-on" shoe, comes in contact with the projecting arm h^6 of any of the switches, it turns the arm and its pintle so as to throw the switch-arm h into contact with the fixed members $h^2 h^3$ of the switch. (See Figs. 13 and 15.) At a distance from the throw-on shoe h^8 equal to the length of the supply-rail section is mounted in the rear of the car a throw-off shoe e , which moves closely alongside of the opposite edge of the supply-rail, so as to contact with the arms h^6 on said side and throw off or open the switches. This throw-off shoe I have here shown as supported by the rear car-truck on a cross-bar e' , secured at its ends to the axle-housings $b' b'$ of the latter. A similar throw-off shoe is mounted on the forward truck at an equal distance from the throw-on shoe d^8 , said second throw-off shoe acting when the car is moving in an opposite direction.

From the above description it will be seen that as the shoe d reaches the junction of two adjoining sections it throws both of said sections into circuit, whereby the car-motors may be energized, and as the throw-off shoe in the rear of the car comes along it throws the rear one of said adjoining rail-sections out of circuit, while at the same instant the shoe d throws two more rail-sections in, one of which is the first one of the aforesaid two adjoining sections.

Having thus explained the nature of my invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use,

what I claim, and desire to secure by Letters Patent, is—

1. In an electric railway, the combination of a contact-rail composed of sections insulated from each other, casings g located at the junctions of the sections, a vertical spindle journaled in each casing and carrying at its upper end a horizontal arm h^6 adapted to project on either side of the contact-rail below the surface thereof and outside of said casing, a horizontal switch-arm h secured to the spindle inside of said casing and electrically connected with one of the rail-sections, the switch members h^2 and h^3 mounted on an insulating-support inside of the casing, an electrical connection between the switch member h^3 and the adjoining rail-section, an insulating stringer or base e supporting the contact-rail, and a feeder-conductor embedded therein and having offsets to the switch members h^2 of the several sections, the arms h^6 when oscillated by the passage of a car throwing the switch-arm into and out of contact with the switch members, as set forth.

2. In an electric railway, the combination of a contact-rail composed of sections insulated from each other, a feeder-conductor, switches at the junctions of the sections, said switches having fixed and movable members connected with adjoining rail-sections and with the feeder-conductor, an external arm for each switch connected to its movable member and adapted to project on either side of the contact-rail, a car, a collector at or near the middle thereof, a throw-on shoe in proximity to said collector, a holder for said collector and shoe movable laterally with respect to the car for the purpose set forth, and throw-off shoes located at both ends of the car at a distance from the throw-on shoe equal to the length of a rail-section, substantially as described.

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

GEORGE W. McCLINTOCK.

Witnesses:

C. F. BROWN,

A. D. HARRISON.