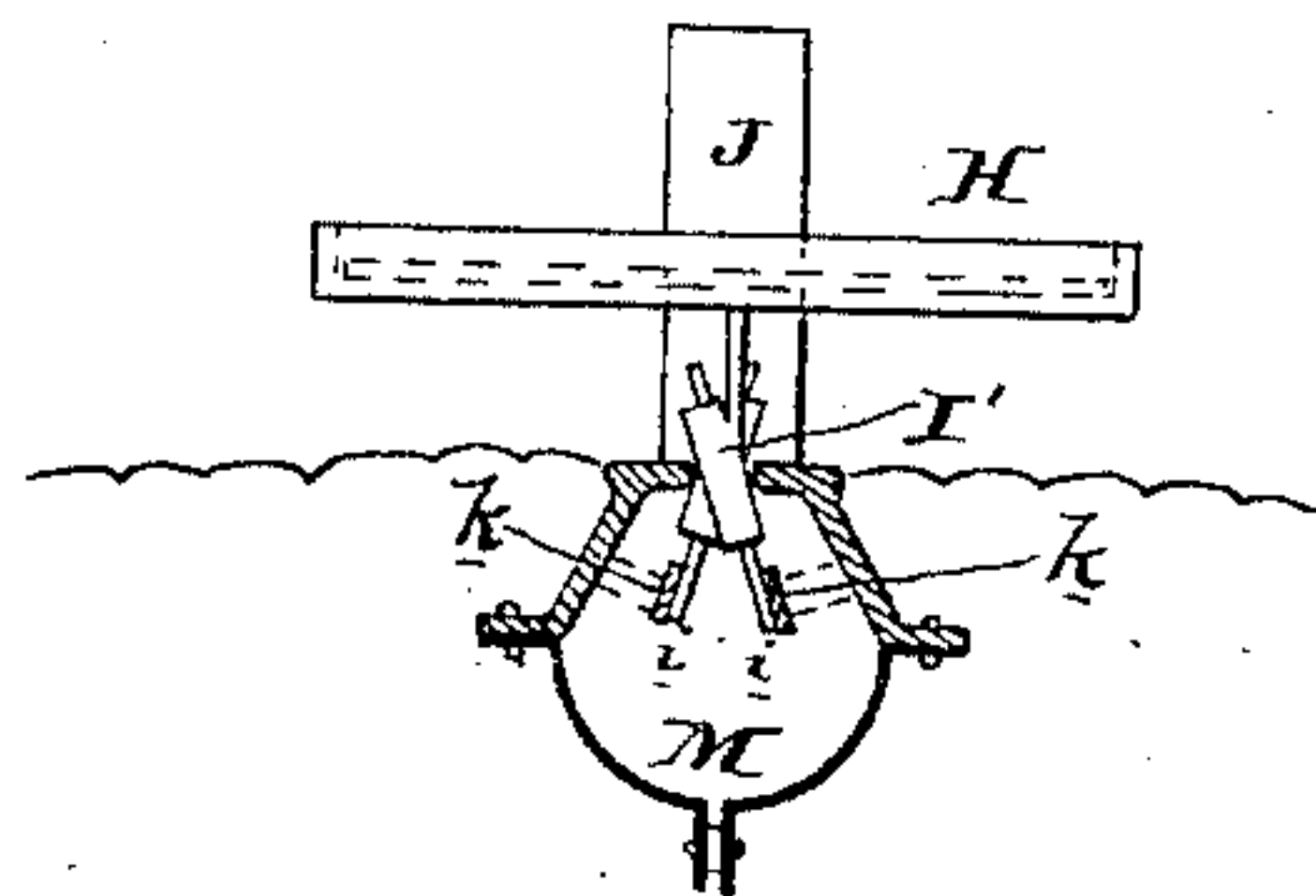
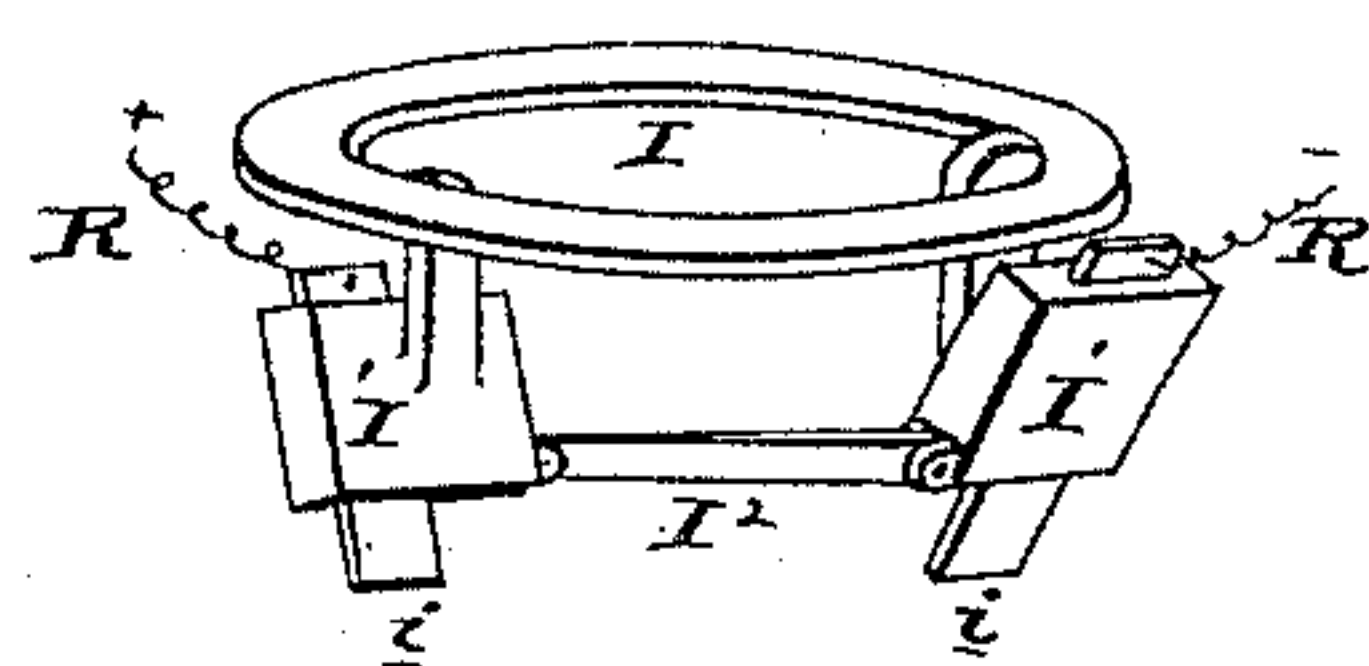
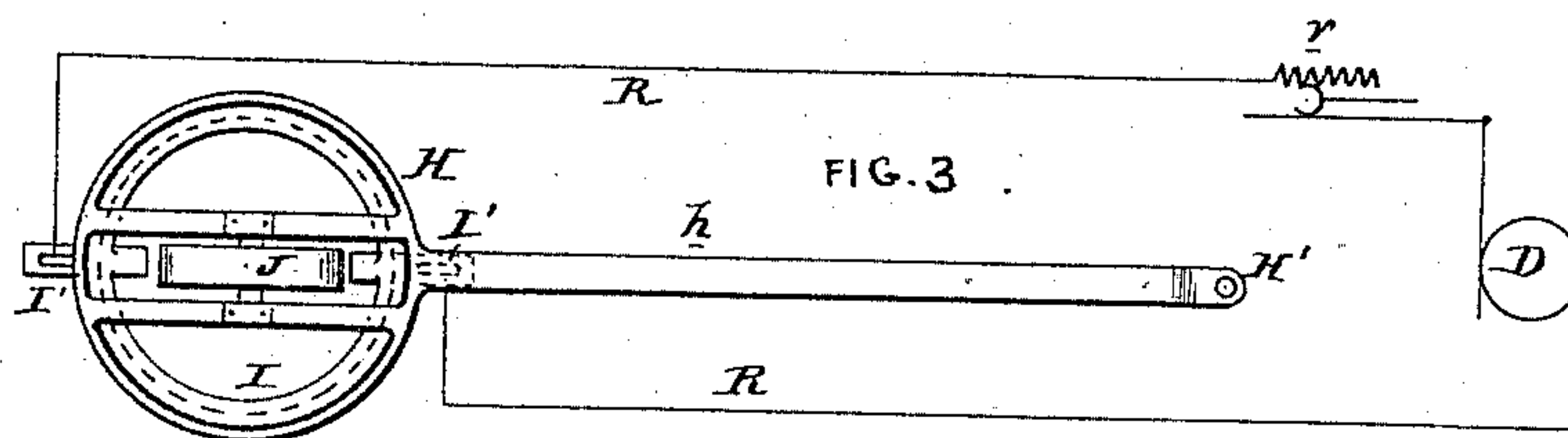
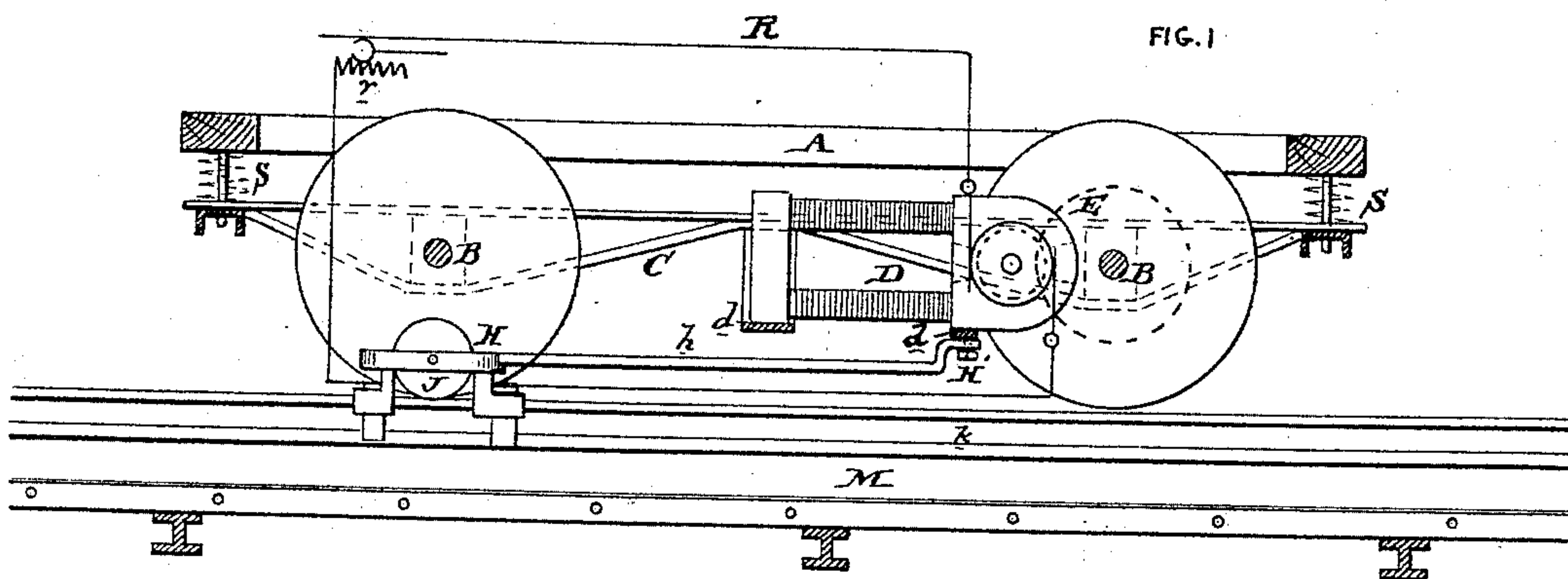


(No Model.)

R. M. HUNTER.  
CONTACT DEVICE FOR ELECTRIC CARS.

No. 440,597.

Patented Nov. 11, 1890.



Attest  
*R. M. Hunter*  
*A. J. Quinn*

FIG. 4

Inventor  
*R. M. Hunter*

# UNITED STATES PATENT OFFICE.

RUDOLPH M. HUNTER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO  
THE ELECTRIC CAR COMPANY OF AMERICA, OF SAME PLACE.

## CONTACT DEVICE FOR ELECTRIC CARS.

SPECIFICATION forming part of Letters Patent No. 440,597, dated November 11, 1890.

Original application filed January 26, 1887, Serial No. 225,498. Divided and application filed May 15, 1890, Serial No. 351,865.  
Again divided and this application filed August 11, 1890. Serial No. 361,635. (No model.)

*To all whom it may concern:*

Be it known that I, RUDOLPH M. HUNTER, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Electric Railways, of which the following is a specification.

My invention has reference to electric cars; and it consists in certain improvements, all of which are fully set forth in the following specification and shown in the accompanying drawings, which form part thereof.

This application (Case 159) is a division of my application, (Case 141,) Serial No. 351,865, filed May 15, 1890, which is in turn a division of my application, Serial No. 225,498, filed January 26, 1887.

My invention has particular reference to the collector device for supplying current to the motor of a vehicle from the conductor or conductors extending along the railway, and also the relation of the collector device to the motor and vehicle-body supported upon the axles.

The vehicle-body or superstructure is supported upon springs and the motor and collector device are supported by a frame carried upon the axles independently of the vehicle-body or superstructure. The current-collector device consists of a frame loosely connected at one end to the frame supported on the axles and extends longitudinally, and the other end is free to have lateral motion and carries the contact shoe or shoes, which make a traveling contact with the line conductor or conductors. The contact shoe or shoes are movable about a vertical axis. When a slotted conduit is used for the conductor or conductors, the contact shoe or shoes extend down through the slot and make connection with the conductor or conductors within the conduit, and the movability about a vertical axis enables the collector device to follow all the irregularities in the slot or conductors. The free end of the frame or arm may be supported vertically in any suitable manner. One method of supporting it is shown, and consists of a wheel running upon the slot-rails of the conduit. The principles of con-

struction are the essential features, and hence the structure specifically shown is only for the illustration of such features.

In the drawings, Figure 1 is a sectional elevation of car with motor, showing the conduit. Fig. 2 is a perspective view of the ring-frame and contact-shoes of the collector. Fig. 3 is a plan view of the current-collector; and Fig. 4 is a cross-section through the road-bed and conduit, and shows the current-collector in elevation.

A is the vehicle-body or superstructure, and is supported upon the truss-frame C by springs S. The frame C is supported upon the axles B.

D is the motor having a connection with the axle B by gears E, and is supported on a cross-bar *d* of the truss-frame or truck.

The collector H here shown is formed like an independent truck adapted to run above the conduit or road-bed on a wheel, and is provided with depending contact-shoes *i*, which enter the slot through oblique guards *I'*, arranged at opposite obliquities, as shown in Figs. 2 and 4, and from which guards they are insulated. The guards are secured at the top to a ring-frame I, and are preferably connected at the bottom by a link *I*<sup>2</sup> for stability. The ring-frame I is supported in the circular frame H' of the collector, which is supported on the wheel J. (See Fig. 3.) By this means the contact-shoes may as an entirety move on a vertical axis, and the entire collector move laterally to follow the variations in the line of the slot of the conduit. The collector H is connected to the truck-frame by hinge-bar *h*, as shown in Fig. 1; but I do not limit myself to any particular form of connection.

R is the flexible motor-circuit, and connects the collector-shoes with the motor-brushes.

M is the slotted conduit, and may be made in any suitable way and contain the insulated conductor or conductors *k*, with which the contact-shoes *i* make electrical contact.

It will be seen that the collector proper is movable about a vertical axis to follow irregularities in the line of the conduit-slot or conductor or both, and is supported by the lat-



erally-movable end of a frame or drag or push-bar, which has its other end hinged or jointed to the vehicle.

The foregoing is a general description of the details of construction illustrated; but, as I have before stated, these details are given simply as one method of carrying the invention into effect, and I do not in any wise limit myself to the details herein set out.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an electric railway, the combination of a conductor extending along the railway, a traveling vehicle, a frame jointed at one end to the vehicle and having its other end free, and a current-collecting device carried upon the free end of the frame and movable about a vertical axis.

2. In an electric railway, the combination of a conductor extending along the railway, a traveling vehicle, a frame jointed at one end to the vehicle and having its other end free, and a current-collecting device carried upon the free end of the frame and movable about a vertical axis, and a supporting-wheel for holding the free end of the frame at a given distance above the conductor.

3. In an electric railway, the combination of a conductor extending along the railway, a slotted conduit in which the conductor is located, a traveling vehicle, a frame jointed at one end to the vehicle and having its other end free, and current-collecting device carried upon the free end of the frame and movable about a vertical axis.

4. In an electric railway, the combination of a conductor extending along the railway, an electrically-propelled vehicle, a truck-frame supported upon the axles independently of the car-body or superstructure, a frame jointed at one end to the truck-frame and having its free end free to move laterally, and a current-collecting device depending from said free end of the frame for making contact with the conductor and movable above a vertical axis.

5. In an electric railway, the combination of a conductor extending along the railway, a slotted conduit inclosing said conductor, an electrically-propelled vehicle, a truck-frame supported upon the axles independently of the

car-body or superstructure, a frame jointed at one end to the truck-frame and having its other end free to move laterally, and a current-collecting device depending from said free end of the frame for making contact with the conductor and movable above a vertical axis.

6. In an electric railway, the combination of a conductor extending along the railway, a traveling vehicle, a frame jointed at one end to the vehicle and having its other end free, and a current-collecting device carried upon the free end of the frame and movable about a vertical axis, an electric motor to propel the vehicle, and flexible conductors from the contact device to the motor.

7. In an electric railway, the combination of a conductor extending along the railway, a slotted conduit inclosing said conductor, an electrically-propelled vehicle, a truck-frame supported upon the axles independently of the car-body or superstructure, a frame jointed at one end to the truck-frame and having its other end free, a current-collecting device depending from said free end of the frame for making contact with the conductor and movable above a vertical axis, and flexible conductors from the contact device to the motor of the vehicle.

8. The combination of the vehicle-axles with a motor mechanically connected therewith, a frame connected at one end to the vehicle and having the other end free to have lateral motion, and a contact device carried by said free end of the frame and having movement about a vertical axis through the free end of the frame.

9. The combination of the vehicle-axles with a motor mechanically connected therewith, a frame connected at one end to the vehicle and having the other end free to have lateral motion, a support for said free end of the frame to hold it against vertical movement, and a contact device carried by said free end of the frame and having movement about a vertical axis through the free end of the frame.

In testimony of which invention I hereunto set my hand.

R. M. HUNTER.

Witnesses:

ERNEST HOWARD HUNTER,  
A. J. DUNN.