

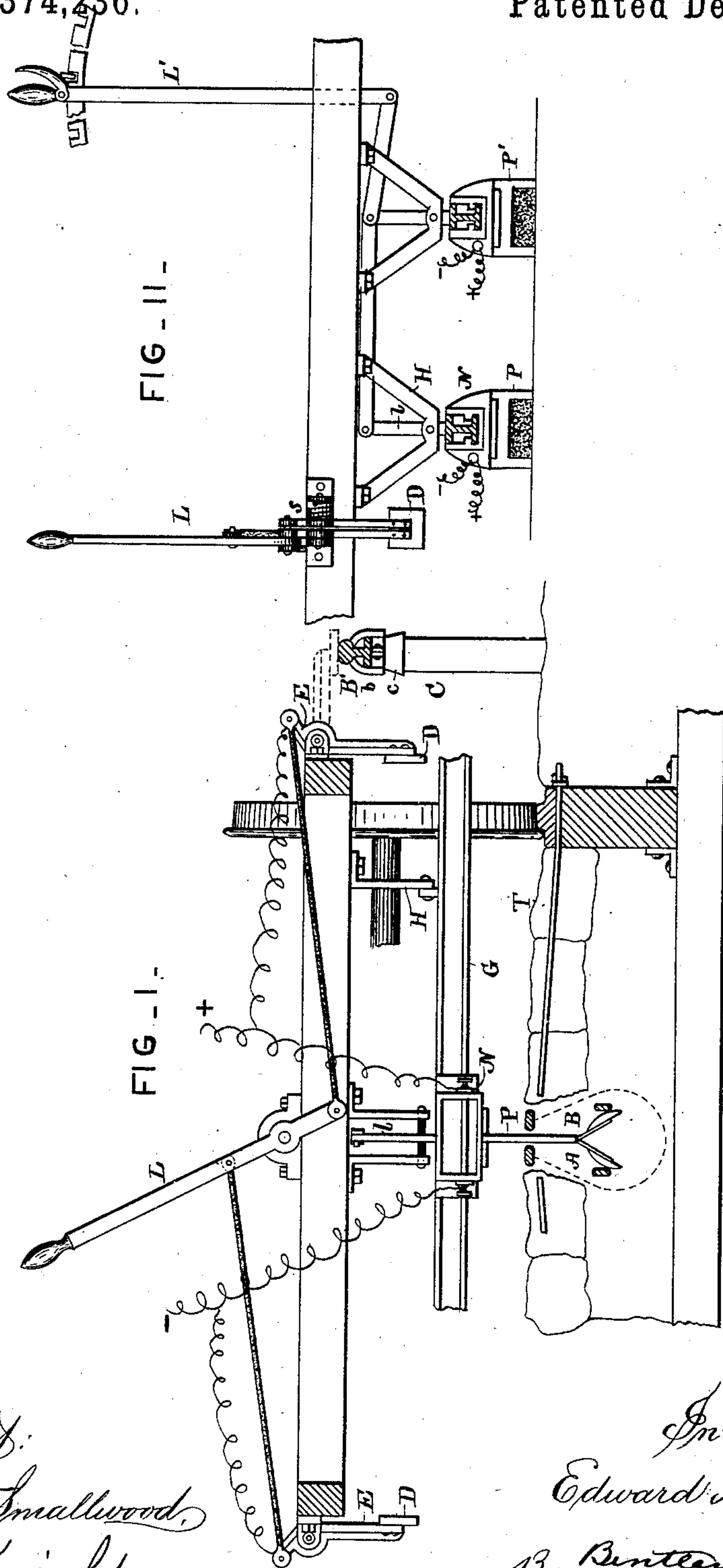
(No Model.)

E. M. BENTLEY.

ELECTRIC RAILWAY.

No. 374,236.

Patented Dec. 6, 1887.



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UNITED STATES PATENT OFFICE.

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ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 374,236, dated December 6, 1887.

Original application filed December 11, 1885, Serial No. 185,411. Divided and this application filed April 9, 1887. Serial No. 234,255. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. BENTLEY, a citizen of the United States, and a resident of the city of New York, State of New York, have invented certain new and useful Improvements in Electric Railways, of which the following is a specification, reference being made to the accompanying drawings, in which—

Figure 1 is an end elevation, and Fig. 2 a side elevation, of my device.

This application is a division of my application, No. 185,411, filed December 11, 1885.

It is often desirable to extend a city road out into the suburbs without going to the expense of laying a conduit the whole distance. From the point, therefore, where the conduit ends I continue exposed supply-conductors upon posts placed a foot or more in height along the road at intervals and provide contact devices additional to those used for the conduit, which are adapted to be thrown into operative position to connect with the elevated exposed conductors when that section of the road has been reached.

In Fig. 1, K represents the conduit, formed in any known manner.

A and B are the two inclosed supply-conductors, supported in the usual way.

P P' are two contact devices or plows, of any well-known construction, adapted to extend into the conduit to maintain the electrical connection with the conductors A and B. These plows are supported by carriers N, adapted to slide on transverse guides G. These guides are hung by transverse pivots from hangers H, and are adapted to be turned by lever l, connected to lever L', under the driver's control. By this means the plow can be thrown out of the conduit when its end is reached. The plows are beneath the vehicle, so as to avoid contact with any passing object; but the actuating devices for throwing them into and out of their operative position extend out from under said vehicle to an accessible point, which in the present instance is above the beams of the vehicle-body, where they may be readily reached by the operator.

D and D are contact-shoes on the end of bell-crank levers E E, which are normally held in the vertical position shown by coil-

springs S on the pivots about which they turn. These levers E E are adapted to be turned by lever L to the position shown in dotted lines, where they will come in contact with the elevated conducting-rails. One of those rails is shown at B, and is held in place by separable metallic clamp b, surrounding glass insulator c, which is supported upon post C.

The shoes D D are connected to the corresponding plow-contacts by a branching conductor leading from the hinge of lever E, which is of conducting material and stationary relatively to the vehicle, and both are connected to the respective motor-terminals.

The inclosed conduit-section may slightly overlap the exposed suburban section; or, as in Fig. 2, the side contacts may be in advance of the plow-contacts, so that the former may be raised to meet the elevated conductors and contact be made before the plows are thrown out and contact interrupted at that point.

The contact device for the inclosed conductors is shown beneath the car and movable about the center formed by the pivotal points of guide G, while its dimensions are such that it may be turned and lifted out of the conduit into the space between the bottom of the vehicle and the surface of the conduit.

The lever L' has a latch engaging with notches in a segment, and serves as a stop to hold the plow in its normal vertical position, or in its elevated position, so that the vehicle may proceed along the exposed section.

I desire it to be understood that my invention is not limited to the height of supporting-posts for the exposed conductor shown in the drawings. They are there shown, for convenience, about the height of the car-axle; but they may be of any height without departing from the spirit of my invention. I am also not limited to the precise form of contact devices or other mechanical detail shown. There may be many variations of these forms embraced by my invention.

I claim—

1. In an electric railway, the combination of an inclosed conductor upon one section, a suspended conductor on a succeeding section, a vehicle electrically propelled adapted to travel along both sections, and two contact devices therefor, one adapted to extend into

the inclosing slotted conduit to connect with one conductor and the other consisting of an arm having a contact-surface at its outer extremity adapted to make a traveling connection with the suspended conductor, and removable into and out of an operative position.

2. In an electric railway having both an inclosed and exposed section of supply-conductor, the combination, with an electrically-propelled vehicle on the railway, of two contact devices adapted to the supply-conductors on the two sections, respectively, and a branching conductor leading from the motor-terminal to each of the said contact devices.

3. In an electric railway having both an inclosed and an exposed section of supply-conductor, the combination, with an electrically-propelled vehicle, of two contact devices adapted to the two sections of supply-conductor, respectively, and overlapping the adjacent ends of the conductor-sections, so that both may be in contact at the same time.

4. In an electric railway having both an inclosed and an exposed conductor-section, the combination, with an electrically-propelled vehicle, of a contact device beneath it extending into the inclosing-conduit to the conductor therein, and bearing on the conductor, so as to be detachable therefrom, and a conductor adapted to connect the exposed conductor-section with the propelling-motor.

5. In an electric railway, the combination, with inclosed and exposed sections of supply-conductor, the former being in a sub-surface conduit, of an electrically-propelled vehicle adapted to travel along both sections, and having a conductor leading from the motor-terminal adapted to connect with the exposed section, and a removable contact device for the inclosed section adapted to connect the motor with the conductor in the conduit.

6. In an electric railway, the combination of a section of supply-conductor inclosed in a conduit beneath the surface of the roadway and a section suspended above the surface, an electrically-propelled vehicle having a conductor adapted to connect the propelling-motor with the suspended conductor, and a contact device leading into said conduit to connect with the supply-conductor therein, and movable relatively to the vehicle, so as to be raised out of connection when the end of the inclosed section of conductor is reached.

7. In an electric railway, the combination of a supply-conductor having a section of its length inclosed in a conduit beneath the surface of the roadway and a section suspended above the surface, an electrically-propelled vehicle adapted to travel along both sections of supply-conductor in connection therewith, a conductor connecting the propelling-motor with the suspended supply-conductor, a contact device connected to said vehicle of a length to enter the conduit and connect with the supply-conductor, and lifting mechanism for elevating the said contact device above the surface of the roadway.

8. In an electric railway having an inclosed and exposed supply-conductor on successive sections, respectively, the combination, with an electric locomotive, of a contact device adapted to maintain the connection of the motor with the supply-conductor of one section and a second contact device adapted to the conductor of the other section normally out of its operative position, but adapted to be moved into said operative position when its section is reached.

9. In an electric railway having an exposed and inclosed section of supply-conductor, the latter being in a sub-surface conduit, the combination, with an electrically-propelled vehicle, of a contact device connecting with the inclosed conductor and movable relatively to the vehicle, so as to present no obstacle to the progress of the vehicle along the exposed section, and a stationary conductor on the vehicle adapted to receive a second contact device connecting with the exposed conductor, and also movable, so as to be out of operation along the inclosed section.

10. An electric locomotive provided with two sets of contact devices, one adapted to connect with an exposed and the other with an inclosed electric-supply conductor.

11. The combination, with an electric locomotive, of a contact-plow extending into a slotted conduit, and a transverse guide therefor, pivoted transversely, so as to have a longitudinal movement.

12. The combination, with plow P, of a movable transverse guide therefor.

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Witnesses:

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