(No Model.)

E. M. BENTLEY.

ELECTRIC RAILWAY.

No. 427,725. Patented May 13, 1890.

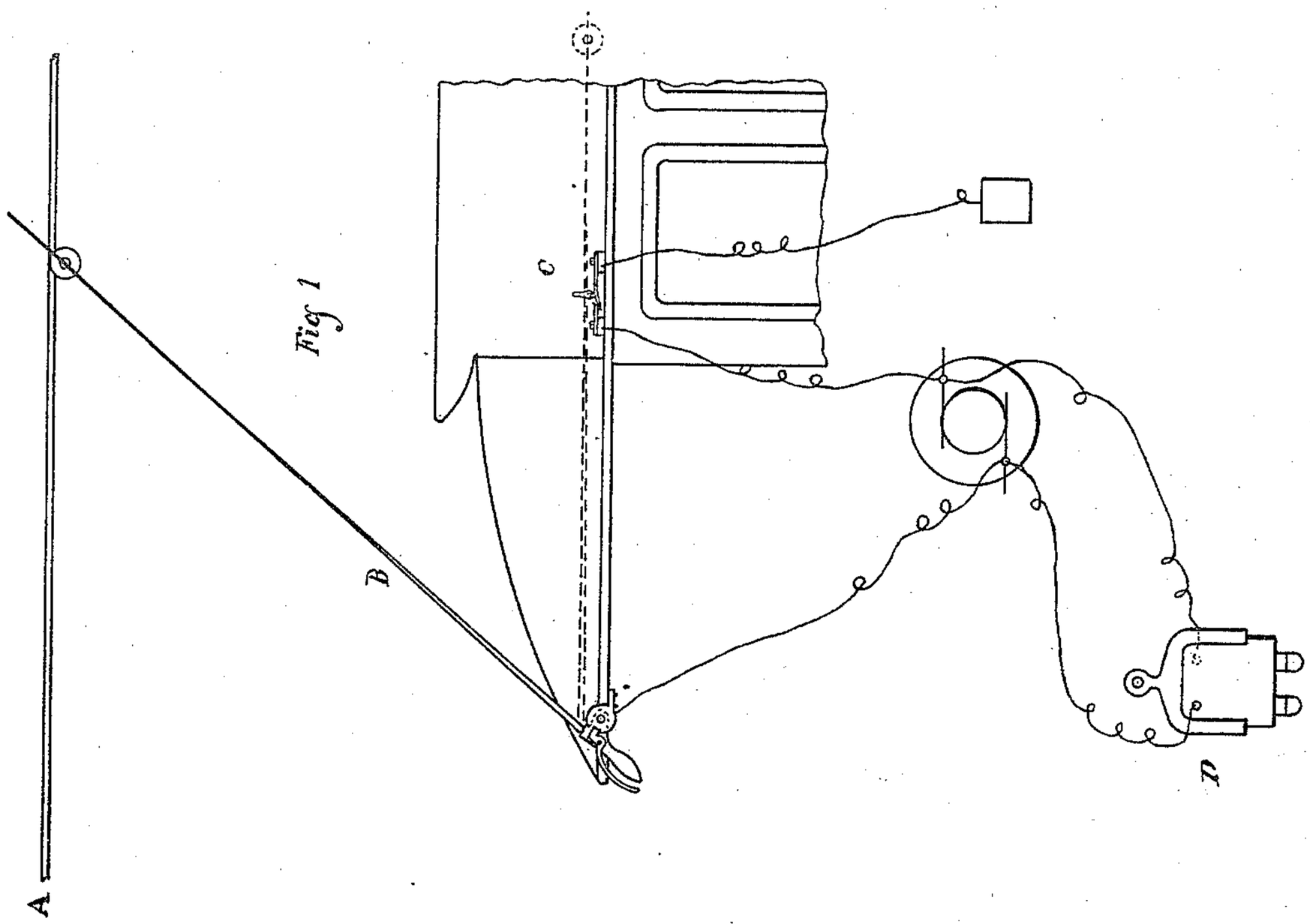

Fig 1

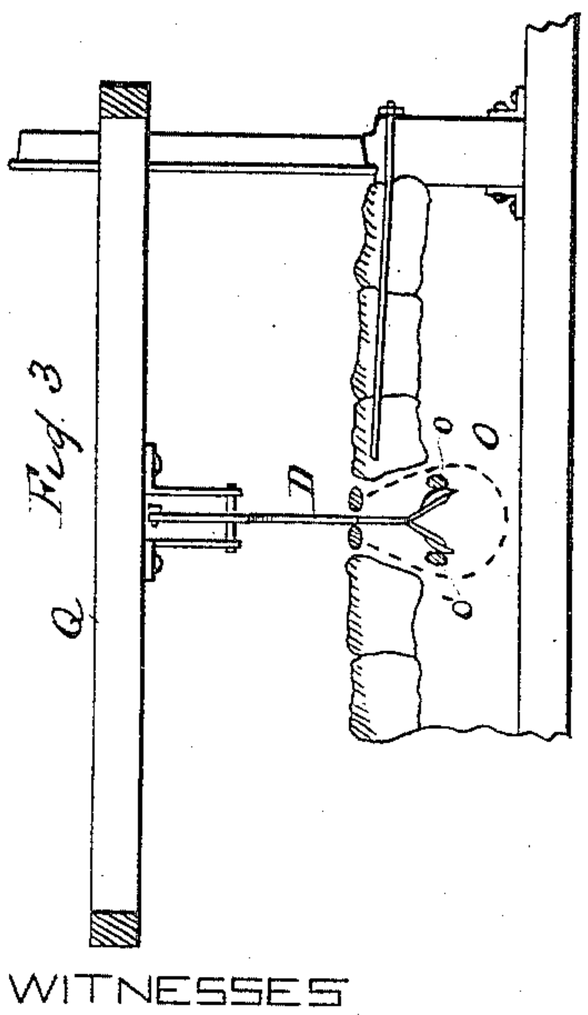

Fig. 3

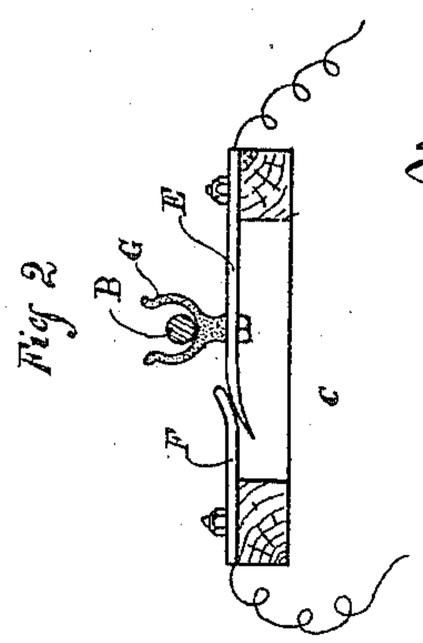

Fig 2

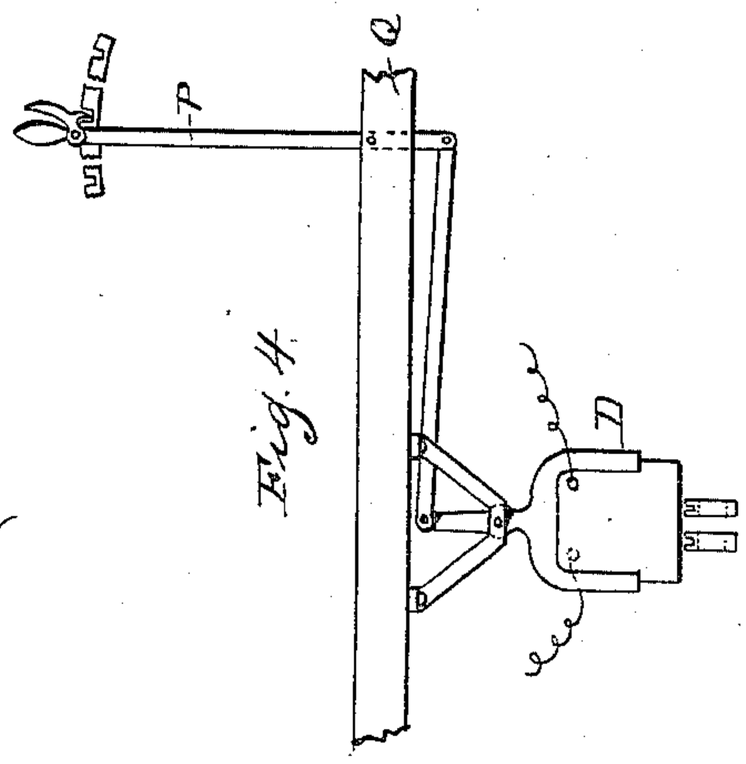

Fig. 4

WITNESSES

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UNITED STATES PATENT OFFICE.

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ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 427,725, dated May 13, 1890.

Application filed August 9, 1888. Serial No. 282,341. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. BENTLEY, a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Electric Railways, of which the following is a specification.

My invention relates to electric railways in which the arrangement shown in my patent, No. 385,787, of July 10, 1888, is employed. By the system therein disclosed a vehicle on an electric railway is provided with contact devices for both an inclosed and an exposed electric railway, the exposed section being a single-conductor and the inclosed section a double-conductor railway. For the exposed section it is necessary to provide both a contact device for the overhead wire and a ground-connection for the return, while for the inclosed section it is necessary that the ground-connection be broken, so that the only connection with the propelling motor is through the plow extending into the inclosing-conduit.

My present invention consists in a device by which when the overhead contact device is removed out of its operative position it will automatically interrupt the ground-connection.

In the accompanying drawings, forming part of my specification, Figure 1 is an elevation of one end of a car provided with an overhead contact device—such, for example, as is shown in Patent No. 386,784 to W. H. Knight—while the motor and the conduit contact device are diagrammatically indicated. Fig. 2 is a larger view of the switch for the ground-connection. Figs. 3 and 4 are detailed views showing the inclosing-conduit and means for operating the contact-plow.

In the drawings, A represents an overhead supply-conductor.

B represents a pivoted rod, having at its end a contact-wheel bearing against the under side of A. The rod B is pivoted above the front platform of the car, so that it may be dropped down along the roof of the car when out of operation. It is connected to one terminal of the motor, while the other terminal of the motor has a ground-connection through the switch C upon the roof of the car, so placed that when the rod B is dropped it will fall upon the switch and operate it.

D is the plow or contact device for the conduit, connected, as shown, to the terminals of the motor. This plow when in operation extends into a conduit O, inclosing the two supply-conductors *o o'*, and can be thrown up out of operative position by lever P, connected to a suitable portion of the car Q.

In Fig. 2 the switch C is shown as constructed with the spring-plate E normally resting against a contact F. Upon spring-plate E is a fork G, into which the rod B is adapted to fall. The circuit is normally closed by the spring E, resting against F; but when the weight of B falls upon E it is depressed, so as to break the connection with F. When this occurs, the ground-connection is interrupted, and the car will be in a condition to proceed along the conduit, both terminals of the motor being then insulated, except through plow D. In this figure the fork G is placed at right angles to the position it occupies in Fig. 1, and is shown closed, with the rod B just resting in the fork before its weight falls upon the spring to open the contact.

It is also evident that without departing from the spirit of my invention the current-connection can be controlled by the act of throwing into or out of its operative position the plow or contact device for the conduit, in the same manner, for example, that the circuit is controlled by this action in the device of Patent No. 338,174 to W. H. Knight, March 16, 1886.

My invention comprehends, broadly, the automatic control of the current-connection for the ground-line in the system above described by a contact device removable into or out of its operative position.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with an electrically-propelled vehicle, of two contact devices, one adapted for a single-supply conductor and the other for a double-supply conductor, both removable into or out of an operative position, and the former provided with a ground-connection controlled by one of the two contact devices.

2. The combination, with an electrically-propelled vehicle, of a contact device for the two inclosed supply-conductors, a contact device for a single exposed conductor, and a ground-connection having a switch automatically controlled by the movement of the latter contact device into or out of its operative position.

3. The combination, with an electrically-propelled vehicle, of a contact device for an overhead supply-wire, consisting of a pivoted rod on top of the vehicle, having at its free end a contact bearing against the supply-conductor, and a ground-connection with the propelling-motor, having a switch in line with the direction of movement of the said contact device, so as to be controlled thereby.

4. The combination, with an electrically-propelled vehicle, of a contact device for engagement with the supply-conductor movable into and out of operative position, and a ground-connection for the propelling-motor, having a switch controlled by the contact device, as described.

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Witnesses:
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