(No Model.)

L. DAFT.

ELECTRIC RAILWAY.

No. 412,605. Patented Oct. 8, 1889.

Fig 1.

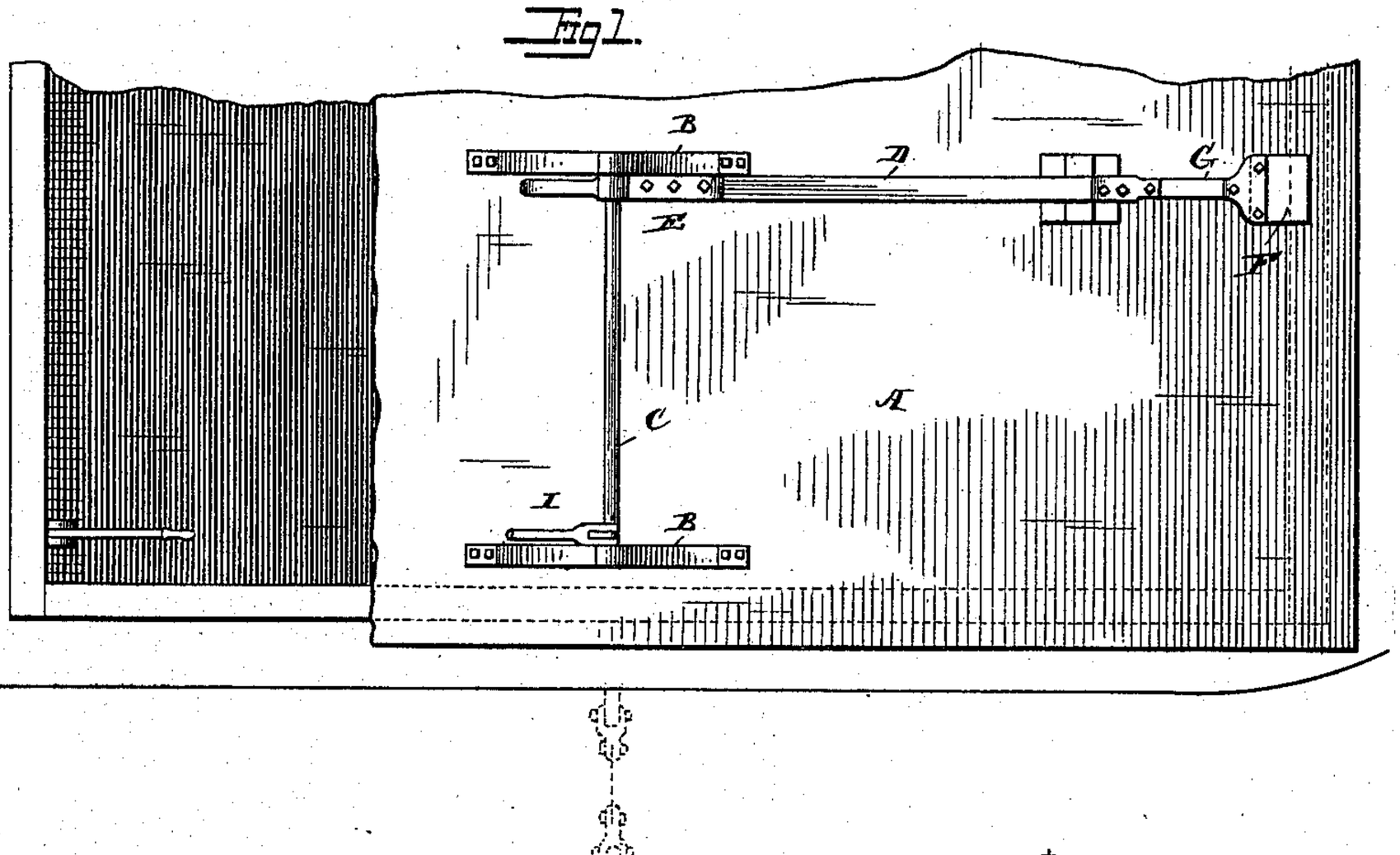

Fig. 2.

Fig 3.

Fig 4.

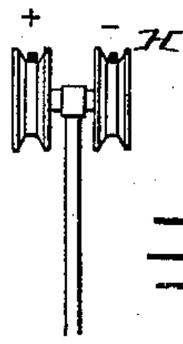

Fig 5.

Witnesses
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UNITED STATES PATENT OFFICE.

LEO DAFT, OF PLAINFIELD, NEW JERSEY.

ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 412,605, dated October 8, 1889.

Application filed June 11, 1888. Serial No. 276,670. (No model.)

To all whom it may concern:

Be it known that I, LEO DAFT, a subject of the Queen of Great Britain, and a resident of Plainfield, Union county, State of New Jersey, have invented certain new and useful Improvements in Electric Railroads, of which the following is a specification.

Heretofore it has been customary to use in connection with overhead conductors for electric railroads some sort of contact-car or trolley having flanged wheels to travel on the conductor, and this trolley has been connected to travel with and be drawn along on the conductor by the car. It has always been difficult to so construct and arrange these trolleys that they will not become derailed at any slight obstruction—such, for instance, as a loose conductor-grip—and more especially has this been the case when used on curves or where kinks or bends are likely to occur in the conductor.

My invention is intended to provide a substitute for such contact-cars that will avoid the difficulties arising from their use, and which shall at the same time be simple, cheap, and effective and not liable to get out of order; and it consists in a contact-piece movably supported on the car so as to be carried into or out of contact with the conductor and arranged to be operated and controlled by the engineer or other person on the car.

In the accompanying drawings I have illustrated one form of the device which I have found to be effective, and Figure 1 is a plan view, partly in section, of a portion of a car provided with my invention. Fig. 2 is a sectional view of a portion of the car, showing the arm or lever and one form of operating mechanism. Figs. 3 and 4 are details of construction, and Fig. 5 is a diagram indicating some of the positions of the parts in practical operation.

The car is usually provided with one or more electric motors connected to propel it over the track, and I have not deemed it necessary to illustrate such motors, as they may be of any usual construction and arrangement and form no part of my present invention.

Mounted upon the roof of the car or cab A are suitable brackets B, supporting a shaft C, to which the arm or lever D is attached. This arm may be of any suitable construction, though I have found it convenient to make a portion at least of wood or similar light material, and I have shown the main portion D′ so made, one end being secured to the metal crank-piece E and the other carrying a contact piece or brush F. This contact-piece may be in the form of a wheel or a brush, preferably made up of sheets of copper *f* and supported by a connected piece G of spring material, and when both the + and − conductors are arranged overhead I provide two brushes or two wheels H properly insulated from each other. If the arm is of insulating material, proper conductors must, of course, be supplied to connect the contact piece or pieces with the motor, and if only one overhead conductor is used the rails may form the return-circuit. In order that the arm may be conveniently operated, a rod I is connected to the crank-piece, which may be operated directly or through intermediate connections, as shown, by the engineer. It is desirable that the brush present a perfectly-resilient contact with the overhead conductor, and while this may be accomplished in various ways I have shown an adjustable spring J, which will operate to hold the brushes against the conductors and at the same time permit them to yield so as to accommodate themselves to the varying position of the conductors and the motion and jolting of the car and always maintain good contact whether the car is moving forward or backward.

It will be observed that by the construction shown the brush or trolley may be readily raised or lowered from and toward the roof of the car, as indicated, and the position of the arm may be shifted or reversed so as to bear upon the conductor with elastic or resilient pressure regardless of the direction of travel of the car. The elasticity or resiliency of the brush-support itself and the elastic connections between the support and its operating mechanism both tend to cause the brush to accommodate itself to the inequalities of the road.

Instead of the special arrangement shown, it is apparent that I may use equivalent devices and combinations, and in some instances

I have found a counter-weight to operate with sufficient accuracy to hold the brushes in place.

Of course my invention may be used alone, as when the whole line of conductors is overhead; or it may be used as an adjunct when the conductors are placed on the ground in cases where it is desirable to have a portion of the conductor overhead, as at street-crossings and the like.

The operation of the device is obvious from the above, and need not be specifically set forth in detail, and it will be seen that by its use I am enabled to accomplish the desired result by very simple devices that are readily manipulated and controlled. Thus in Fig. 5 I have indicated the position of the parts of the device in actual operation, the arm X being shown in position it usually adopts when the car travels toward the right, and the arm Y (shown in dotted lines) being approximately in position for the car to travel toward the left, it being understood, of course, that the particular angle of the arm with relation to the top of the car and the conductor will vary in accordance with the height of the conductor or any particular portion of it above the top of the car, or the pitching or jolting of the car due to inequalities in the road. It is obvious that from this construction, when the car reverses its direction, the inclination of the arm is changed, it being shifted or reversed by the engineer by means of mechanism, substantially as shown, so that it will trail under and in contact with the conducting-wire, according to the direction of travel of the car, whether it be backward or forward, without the necessity of turning the car end to end. When the brush or trolley is not to be used, it may lie substantially parallel to the top of the car, as shown in Figs. 1 and 2; but when in use it will bear against the conductor under elastic pressure, in the manner before stated.

I do not herein claim the features shown herein and claimed in my application, Serial No. 321,564, which is a division of this case.

What I claim is—

1. The combination, with a car, of an adjustable arm mounted on the top thereof and adapted to bear upward against and to make moving contact with an overhead conductor, and operating-connections within reach of the engineer, substantially as described.

2. The combination, with a car, of a support mounted on the top thereof, an arm one end of which is pivotally supported thereby, a contact device carried on and extending from the end of the arm, and manual connections to operate and hold the arm upward in contact with an overhead conductor, substantially as described.

3. The combination, with a car, of an arm upon the roof thereof, an elastic connection between the arm and contact device, and elastic connections with the arm, so that it may accommodate itself to the inequalities of the road or conductor, substantially as described.

4. The combination, with a trolley or brush bearing upward against a conducting-wire, and its supporting and carrying connections on top of the car, of a shifting or reversing mechanism therefor fitted within the car-roof, substantially as described.

5. The combination, with an overhead conductor and electrically-propelled vehicle, of a contact device adapted to travel along said conductor, a flexible resilient support carrying the contact device at one end and supported at the other, and a shifting or reversing mechanism for said support, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LEO DAFT.

Witnesses:
R. W. HAWKESWORTH,
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