(No Model.) 2 Sheets—Sheet 1.

D. MASON.

ELECTRIC RAILWAY TROLLEY.

No. 488,023. Patented Dec. 13, 1892.

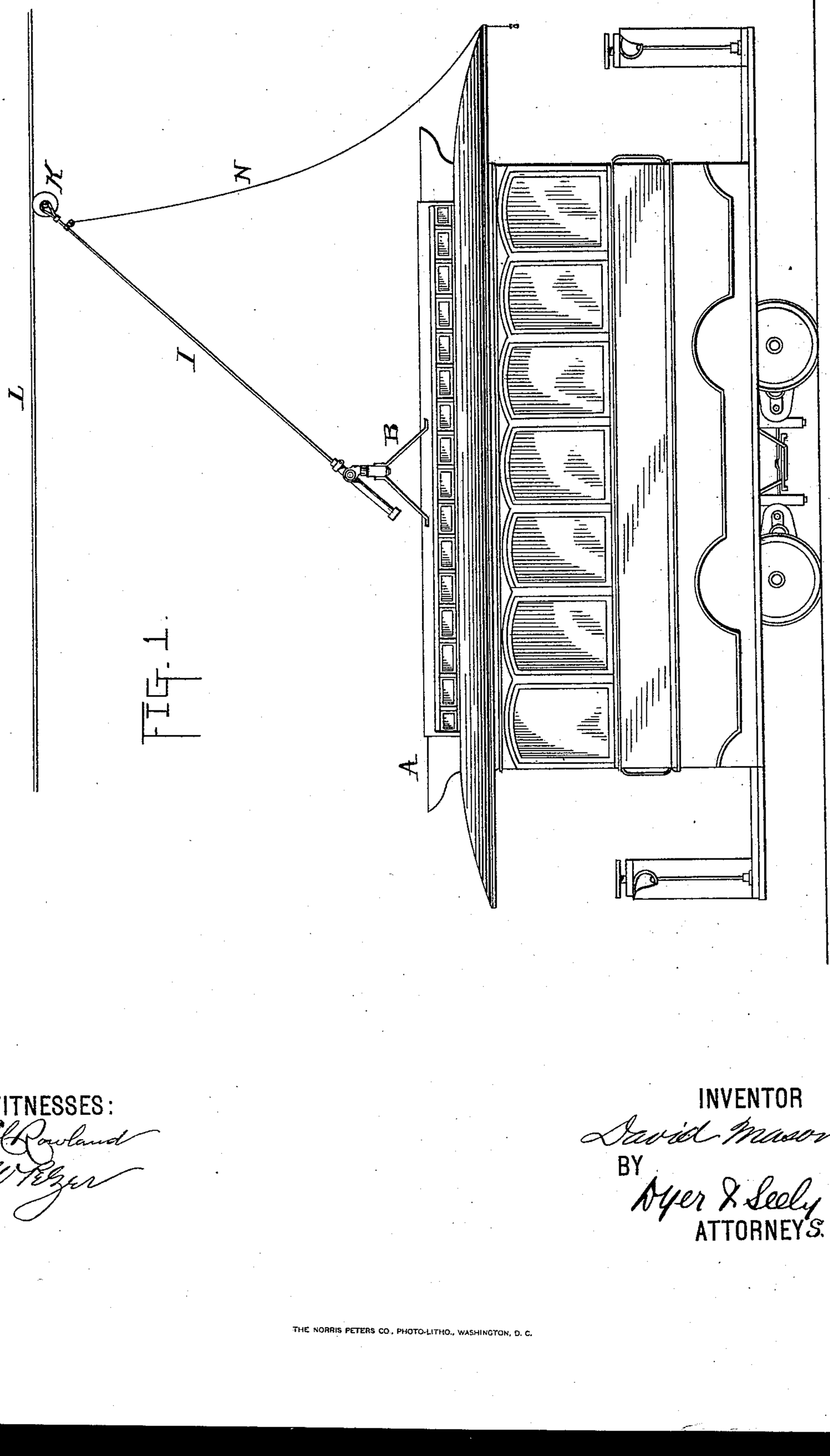

FIG. 1.

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(No Model.) 2 Sheets—Sheet 2.

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FIG. 2

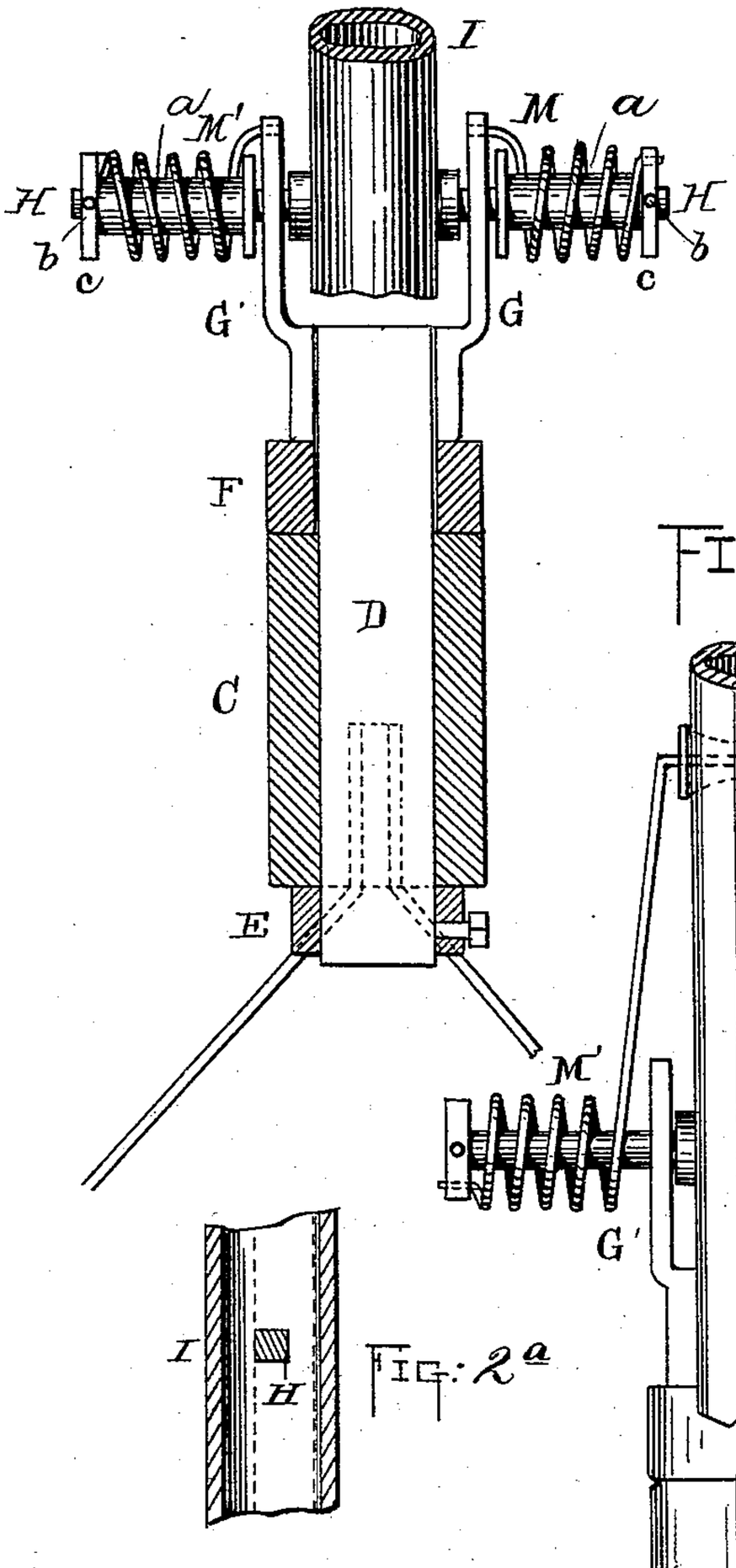

FIG. 3.

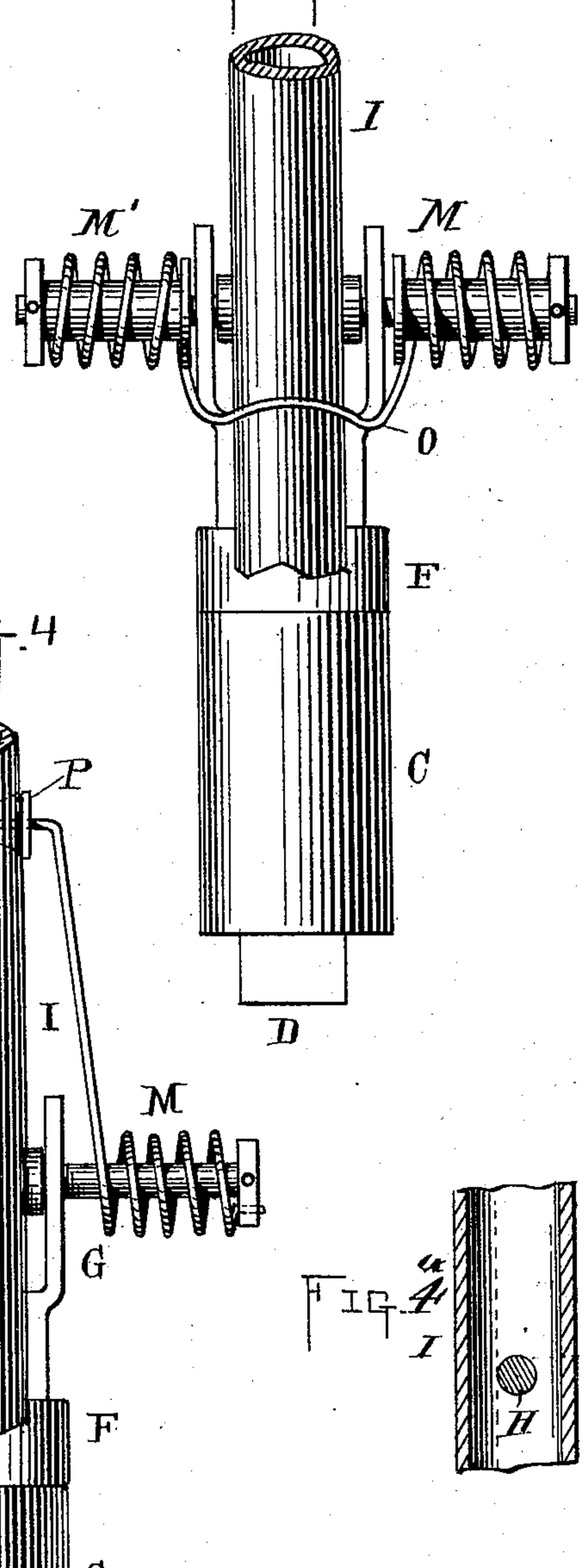

FIG. 4

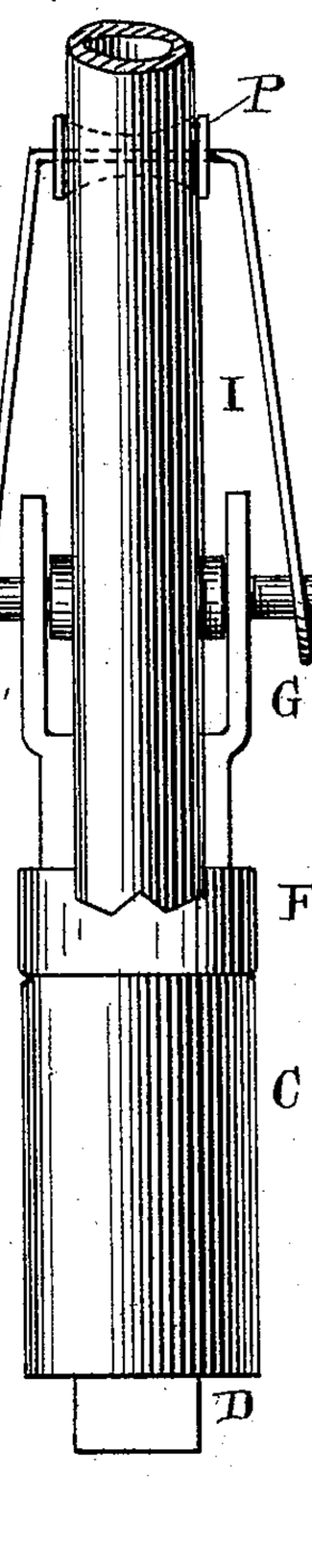

FIG. 2a

FIG. 4a

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UNITED STATES PATENT OFFICE.

DAVID MASON, OF NEW YORK, N. Y., ASSIGNOR TO THE SPRAGUE ELECTRIC RAILWAY AND MOTOR COMPANY, OF SAME PLACE.

ELECTRIC-RAILWAY TROLLEY.

SPECIFICATION forming part of Letters Patent No. 488,023, dated December 13, 1892.

Application filed March 3, 1890. Serial No. 342,447. (No model.)

To all whom it may concern:

Be it known that I, DAVID MASON, a citizen of the United States, residing at New York, in the county and State of New York, have invented a certain new and useful Improvement in Contact Devices for Electric Railways, of which the following is a specification.

My invention relates to that class of electric railways in which a contact device carried by the car is made to travel upon the under side of an overhead conductor for conveying current from said conductor to the motor upon the car. Such contact device is usually a grooved wheel carried by a pole, which pole is supported flexibly, so as to follow the undulations or variations in the line of the overhead conductor or in the relative situation of a conductor and the car on the track which occur in practice. In my application filed November 9, 1889, Serial No. 329,892, I have shown and described an arrangement of this general character in which the flexibility of the pole is secured by the use of a helical coiled spring, which itself formed the support of the pole and by the flexibility and the elasticity of which the pole was allowed to yield downwardly; but the contact device was constantly maintained in spring-contact with the conductor, the spring being coiled about a horizontal axis transverse of the car. By my present invention I do away with making the spring the direct support for the pole, although I still obtain the advantages which arise from the use of a spring coiled on a horizontal axis transverse of the car.

In carrying my invention into effect I support the pole by means of a hinged joint from the car, the pivotal support being placed transversely on the roof of the car, and upon this axis I place spiral springs, which are arranged to exert a pressure on the pole such as will force the contact device upwardly against the conductor. I prefer to employ two springs, one of which is coiled on the axis on each side of the pole, the springs being reversely coiled. I prefer also to support the pole on a vertical pivot, around which it swings freely, whereby the inclination of the pole is made reversible, and it is also allowed a lateral swinging motion, so that it may follow curves and other variations in the lateral position of the overhead conductor relative to the car.

My invention is illustrated in the accompanying drawings.

Figure 1 is a side elevation of a car provided with a contact device embodying my invention; Fig. 2, a front elevation and partial section of the support for the pole; Fig. 2ª, a vertical section of a portion of the pole through its pivot; Fig. 3, a front elevation of a modified arrangement of the spring; Fig. 4, a similar view showing still another modification, and Fig. 4ª a vertical section through the pivot of the pole illustrated in Figs. 3 and 4.

A is an electric-railway car, which, it will be understood, is provided with an electric motor mounted upon and propelling it. Upon the roof of the car is a standard B, composed of branching legs, which support a stationary sleeve C, through which passes a turning-stem D, secured to which are collars E and F, above and below the sleeve C. Upon the collar F lugs G and G′ extend upwardly and near their upper ends are provided with poles through which the spindle H passes, said spindle extending out some distance on each side of the lugs. The spindle H is squared at its middle part and passes through a squared aperture in the pole I. Said pole carries at its upper end the grooved contact-wheel K, which travels on the under side of the conductor L. Upon each extremity of the spindle H is a sleeve *a*, fixed to the spindle by means of a pin *b*, which passes through the flange *c* at the end of the sleeve and through the spindle. Upon each sleeve *a* is coiled a spiral spring M M′, each of said springs being attached at one end to the flange *c* and at the other end to the lug G or G′, through which lugs the spindle H passes loosely. It will be seen that by this arrangement of the springs, they being attached at one end to the spindle which carries the pole and at the other end to the relatively-stationary lugs, such lugs resist the downward tendency of the pole, they being, as shown, each coiled reversely to the other, so as to produce this result. The springs being coiled spirally on a horizontal axis, they are not caused to undergo

an injurious strain when the pole is depressed and such pole can readily be brought down to a horizontal position, if necessary, or made to assume any position between its normal one and the horizontal one which may be required by variations in the height of the conductor relative to the car.

In order to reverse the inclination of the pole, it is turned on its vertical axis, the stem D turning with the sleeve C, so that the pole can be swung completely around, and the springs will exert their pressure in the new position in the same way as before. A cord or line N is attached to the upper part of the pole and brought within reach of the person in charge of the car, so that the reversing operation can be readily performed.

In the form of my invention shown in Fig. 3 the springs are made to bear directly upon the pole, they being not connected with the stationary lugs, but joined together by a cross-piece or wire O, which passes above the pole below its hinge, and by exerting a downward pressure on this part of the pole forces the contact device up against the overhead wire. In this form of my invention the pole I is placed loosely upon the spindle H, and such spindle is stationary. A somewhat similar arrangement is shown in Fig. 4; but in this case the springs are joined above the axis of the pole and on the lower side of the pole, so as to push the pole directly upward. With this arrangement I provide a grooved roller P, which bears against the lower side of the pole and moves along the pole as the same rises and falls, so that the bearing-point of the spring on the pole varies with the degree of inclination.

What I claim is—

1. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device, and a spiral spring coiled on a horizontal axis and connected with the car and exerting an upward pressure upon the pole, substantially as set forth.

2. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device and hinged upon the car, and a spring coiled on the axis of the pole and exerting an upward pressure thereon, substantially as set forth.

3. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device and hinged on a horizontal axis transverse of the car, and a spring coiled on the axis of the pole and exerting an upward pressure thereon, substantially as set forth.

4. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device hinged to the top of the car, and reversely-coiled springs upon the axis of the hinge supporting the pole, said springs engaging said pole, so as to raise said pole toward a vertical position, substantially as set forth.

5. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device hinged to the top of the car, and springs coiled about the axis of the hinge supporting the pole and connected therewith, whereby said arm is normally held upward toward a vertical position, according to the height of the conductor, substantially as set forth.

6. The combination, with an electric-railway car and an overhead conductor, of a contact device making an underneath contact with said conductor, a pole carrying said contact device hinged to the top of the car, springs coiled on the axis of the hinge for raising the pole toward a vertical position, said hinged pole being connected with the car by a swiveling support, substantially as set forth.

This specification signed and witnessed this 24th day of February, 1890.

DAVID MASON.

Witnesses:
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C. M. WELLS.