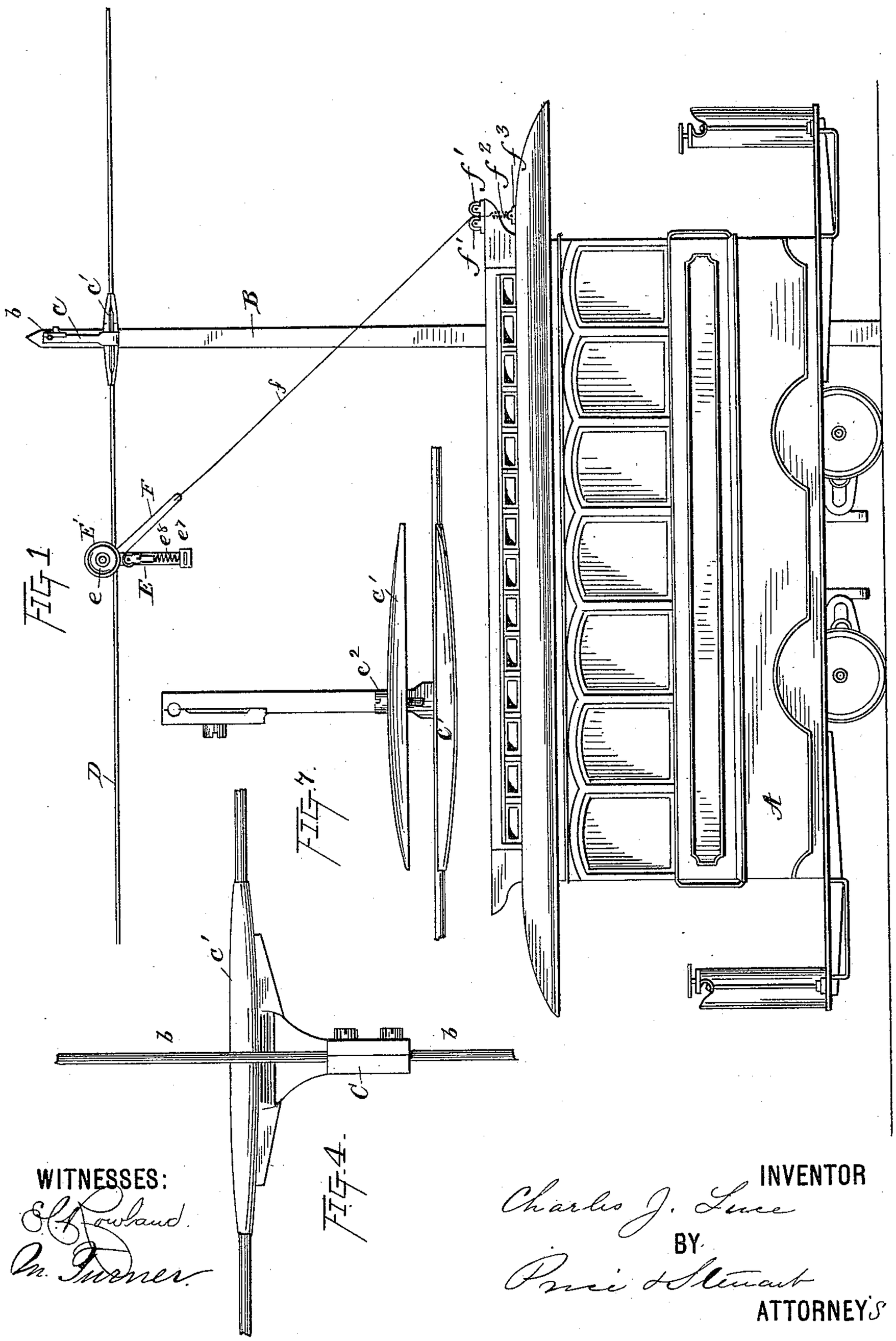
(No Model.) 2 Sheets—Sheet 1.

C. J. LUCE.

TROLLEY CARRIAGE AND CONDUCTOR.

No. 447,885. Patented Mar. 10, 1891.



WITNESSES:

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FIG. 2.

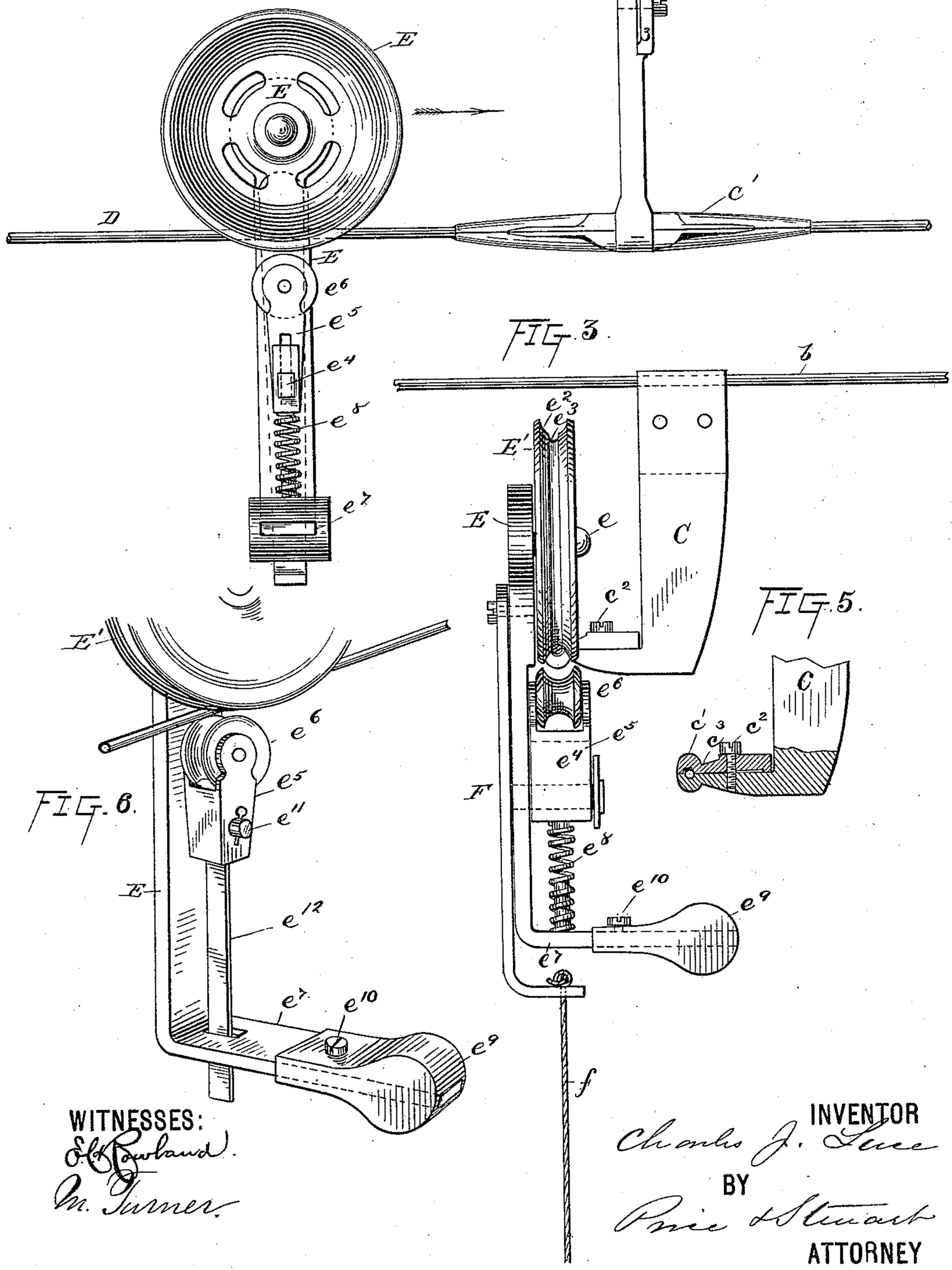

FIG. 6.

FIG. 3.

FIG. 5.

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CHARLES J. LUCE, OF NIANTIC, CONNECTICUT.

TROLLEY-CARRIAGE AND CONDUCTOR.

SPECIFICATION forming part of Letters Patent No. 447,885, dated March 10, 1891.

Application filed April 4, 1890. Serial No. 346,601. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. LUCE, a citizen of the United States, and a resident of Niantic, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Trolley-Carriage Conductors and Devices Connected Therewith, of which the following is a specification.

My invention relates to improvements in that class of apparatus in which an overhead wire carrying a main circuit is connected by its terminals to a dynamo or other generator of electricity and a motor located upon a moving vehicle. The apparatus by which I accomplish these results is shown in the accompanying drawings, in which like letters refer to like parts.

Figure 1 represents my devices as operating. The main wire is shown suspended overhead, a car located upon the tramway, and the connection from the main wire to the car and from thence to the motor thereon. Fig. 2 is a side view of a trolley-carriage seated upon the main wire and showing one form of self-adjusting friction-pulley, and also connecting-brace for line-wire with its supporting-bracket. Fig. 3 is an end view of the same. Fig. 4 is a top view of connecting-brace with its bracket and rod or wire by which it is suspended. Fig. 5 is a side view of the suspending-bracket, partly in section; Fig. 6, a perspectivive view showing a modified form of self-adjusting friction wheel or pulley; Fig. 7, the bracket and the brace in two parts and means for closing them.

Viewing Fig. 1, A shows an ordinary car seated upon a tramway, within which suitably located is an electric motor. (Not shown in the drawings, but may be of any of the approved forms, and therefore not shown here.) Beyond the car is shown a post, as B, to which the bracket C may be suspended; or another post located upon the opposite side of the railway similar to the post B may be stationed and connected together by a rod or wire, as *b*, from which the bracket may be suspended between the posts. Suitably attached to this bracket is the brace *c'*, which supports the main wire, and is constructed in such form as to co-operate with the devices of the trolley-carriage hereinafter more fully described. The bracing-piece *c'*, which supports the main wire and is attached to the bracket C, may be provided at its ends with means for securing the ends of the main wires thereto; but I construct it preferably in the form shown in Fig. 7—that is to say, split longitudinally and provided with a longitudinal and semicircular groove in each half—so that the main wire may be in the groove in that part attached to the bracket, and the upper half, provided also with a groove, is secured to the lower one by means of the bolt c^2. The whole when placed together conforms in shape to the groove in the wheel or pulley of the trolley-carriage, so that the wheels or pulleys may ride thereon.

Viewing Figs. 4 and 5 it will be seen that between the bolt and the outside of this brace there is a longitudinal recess or depression in the upper half of the bracing-strip, (shown at c^3,) within which the inner flange of the wheel or pulley of the trolley-carriage travels in passing over the brace. This flange and the extensions thereof at either side serve to prevent the trolley-carriage from leaning against the bracket or striking it in passing.

D is the main wire, one terminal of which is connected with a dynamo or other generator of electricity, and the other may be a return-wire connected with the other terminal or grounded, as is usual in such cases. Upon this main wire D the trolley-carriage E runs. This trolley-carriage is constructed as follows: A frame E is provided at its upper end with a spindle *e*, upon which is journaled the pulley E'. This pulley is provided with two circumferential grooves e^2 e^3, the smaller one adapted to be seated and run upon the main wire D and the larger one e^2 to conform to the shape of the bracing-piece *c'*.

Below the pulley E' and firmly secured to the frame E is a projection or stud e^4, and arranged upon or about this stud is the vertically-sliding box e^5. The upper part of this box is constructed to carry a spindle upon which is journaled the pulley e^6, which is intended to co-operate with the pulley E' when the trolley-carriage crosses the brace *c'* and furnishes an additional means for preventing the carriage from being derailed. The frame

E is bent at e^7, so as to furnish a base-support for the spring e^8, as shown in Figs. 2 and 3, the upper end of which spring meets the lower surface of the sliding box e^5, whose movement is vertical and operates automatically. When in the course of its travel on the main wire it reaches the brace c', an adjustable counter-balancing-weight e^9 is placed upon the bent end of the frame E and may be secured in any position by the set-screw e^{10}. Thus it will be seen that as the trolley-carriage moves along its course upon the wire the sliding box e^5 adjusts itself automatically to the brace c' and co-operates with the groove wheel or pulley E′ to prevent it from jumping the track. A modification of this automatic device is shown in Fig. 6, in which figure the box e^5, which supports the journaled wheel or pulley e^6, is pivoted at e^{11}, so as to adjust itself to the brace c' by turning backwardly or forwardly upon its pivot, and is held in position by the tension of the flat spring e^{12}, which is attached to the lower end of the box e^5 and passes through a slot in the bent end of the frame E. To the frame E is also pivoted an arm F, whose pivoted point is located between the journaled centers of E′ and e^6, and to the end of this arm a conducting-wire f is attached, which leads to a binding-post on the moving vehicle consisting of the rollers or pulleys f' and f', through which the wire f passes, and is secured to one end of a spiral spring f^2, which is fastened at the other end of a staple f^3, which staple is in electrical connection with one of the terminals of the motor located on the vehicle. This arm F is so arranged in order to dispense with the necessity of a rigid upright connecting-arm, connecting the moving vehicle and trolley-carriage, and in order that the connecting-conductor f may be lengthened or shortened, to give more or less angular inclination to the arm F, in order that the pull thereon which impels it upon the main wire may be far enough out of a perpendicular line to give a smooth and steady movement to the trolley-carriage. This arm f should be pivoted to the carriage at a point between the wheels or pulleys E′ and e^6, so that there will be no lifting or pulling down of the carriage and to give it a straight movement over the bracing strip.

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

1. In an electrical railway, the combination of a moving vehicle upon which a motor is carried, a main conducting-wire, a trolley-carriage mounted on the wire provided with a wheel or pulley above and below the wire, and a conductor attached to a rigid arm, as F, and the latter pivoted to the carriage at a point between the wheels or pulleys and connected at its other end to the moving vehicle, substantially as described.

2. In an electrical railway, the combination of a moving vehicle bearing a motor, a main conducting-wire, and mounted thereon a trolley-carriage consisting of a frame supporting two circumferentially-grooved and co-operating wheels to receive said wire, and automatically adjusted to receive said wire or its supporting-brace, a wire connecting the trolley-carriage to the car and motor and provided with a flexible or elastic connection where it joins the car, substantially as and for for the purposes specified.

3. In an electrical railway, the combination of a trolley-carriage with a conducting-wire, as D, supported by a bracket, as C, consisting of a connecting-brace, as c', constructed in two longitudinal halves provided with longitudinal grooves to receive the conducting-wire, and means for securing the two halves together and arranged to pass between the circumferentially-grooved wheels of the trolley, substantially as described.

4. A trolley-carriage consisting of a frame supporting two wheels adapted to be run one above and the other below a main conducting-wire, the upper one having two circumferential grooves to conform to the wire and a connecting-brace, in combination with a moving vehicle for propelling the trolley-carriage and a connecting-brace F, substantially as described.

Signed at New York, in the county of New York and State of New York, this 22d day of March, A. D. 1890.

CHARLES J. LUCE.

Witnesses:
JAMES L. STEUART,
DAVID T. ALGER.