No. 709,063. Patented Sept. 16, 1902.

L. E. WALKINS.

ELECTRIC RAILWAY SYSTEM.

(Application filed Dec. 2, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

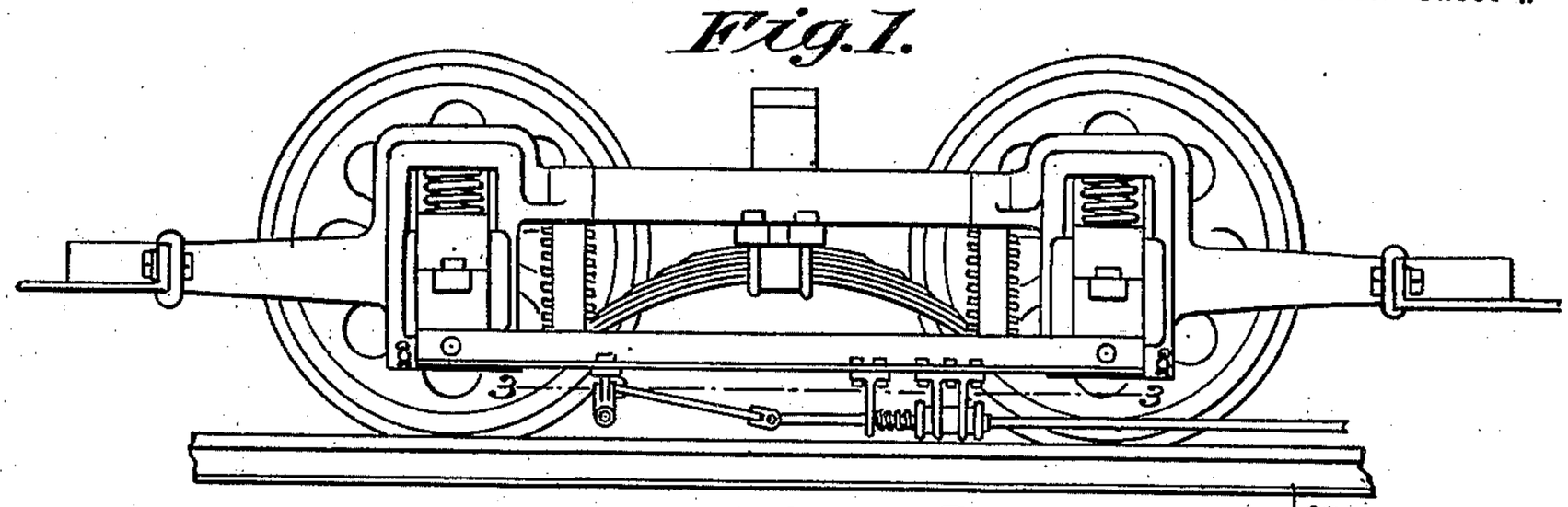

Fig. 3.

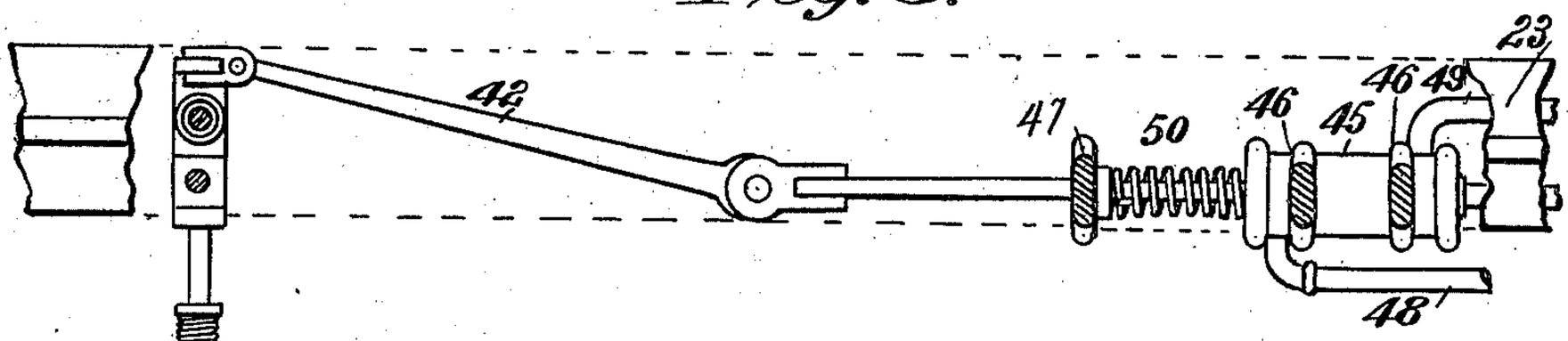

Fig. 2.

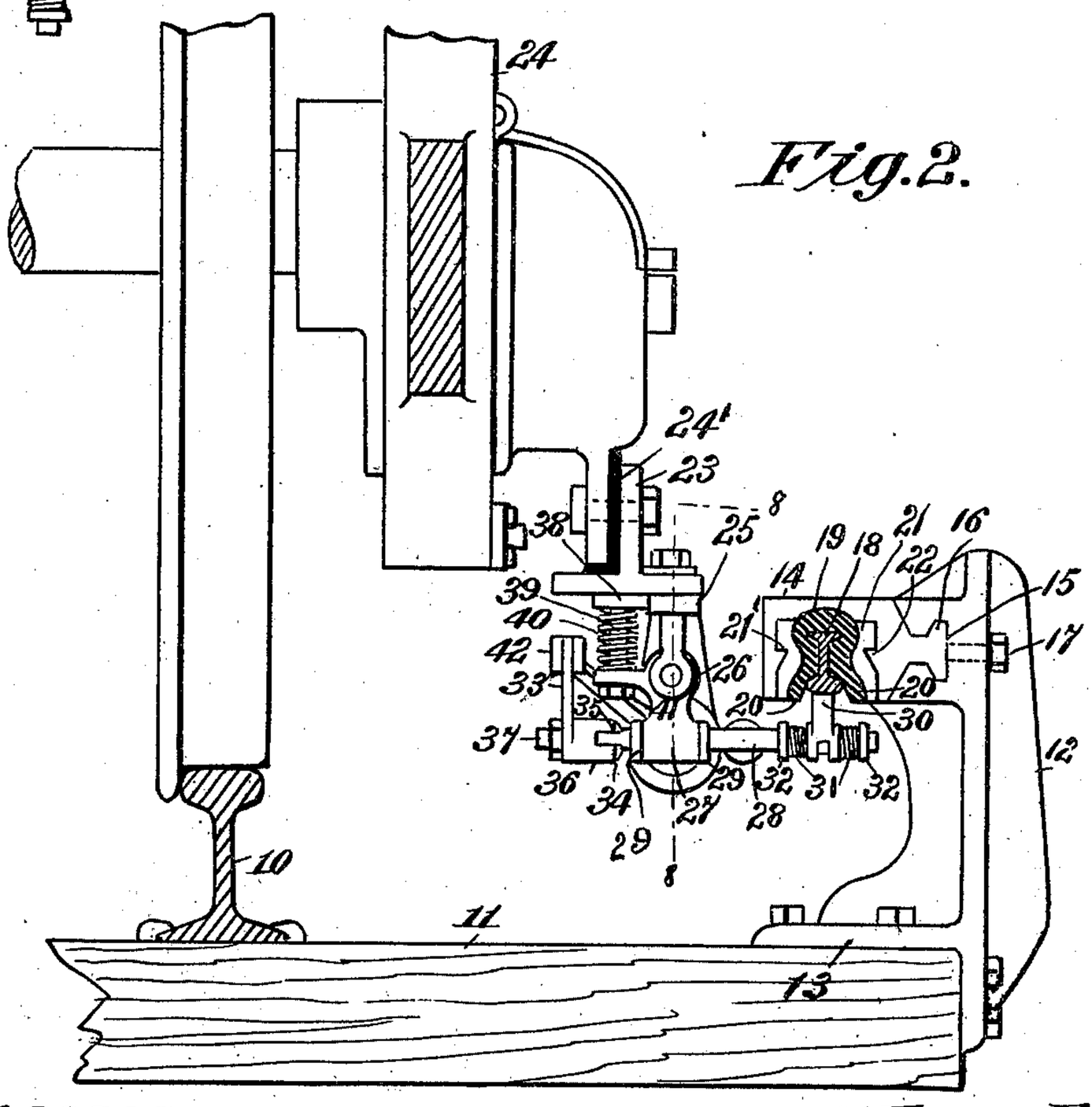

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Fig. 4.

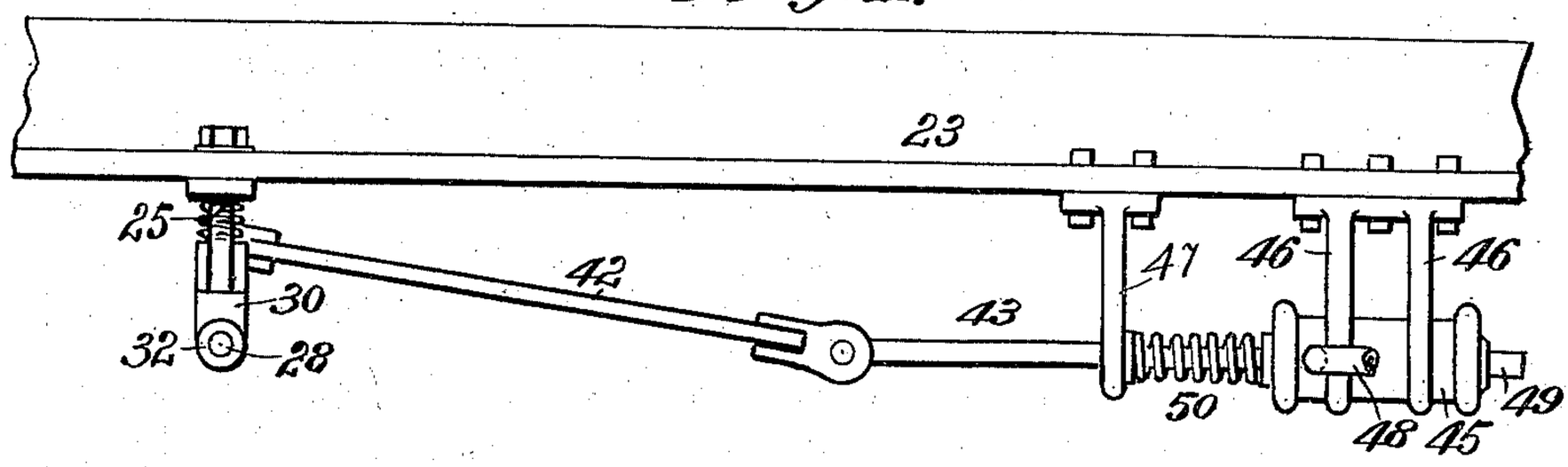


Fig. 5.

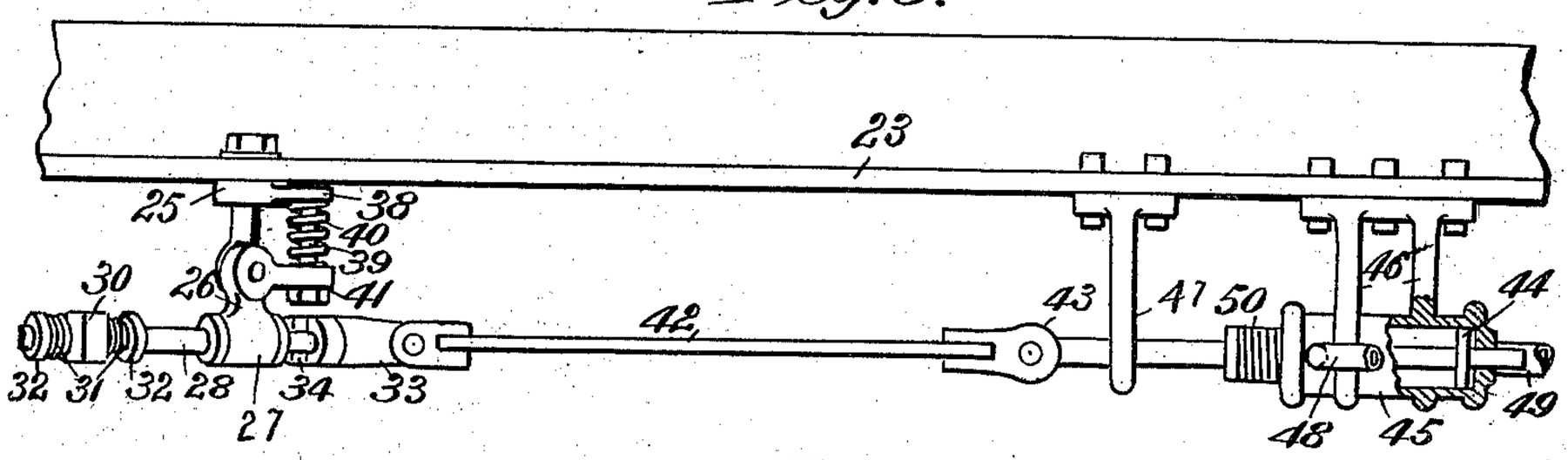


Fig. 6.

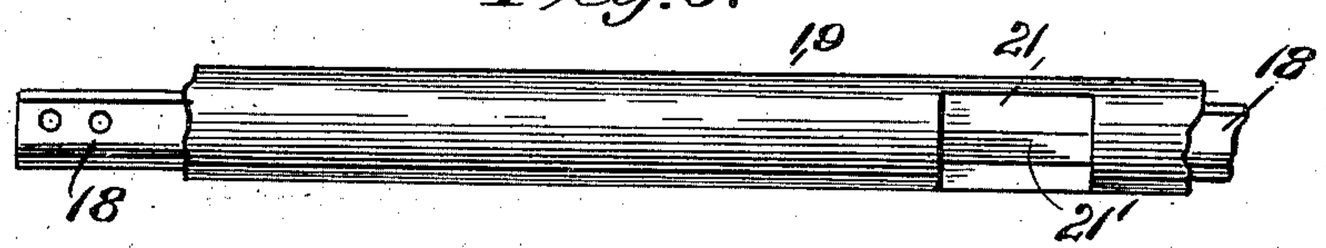


Fig. 7.

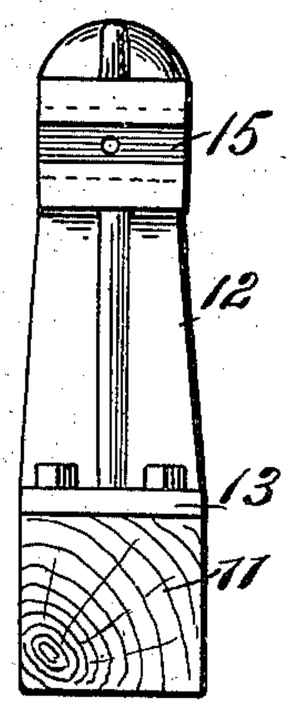
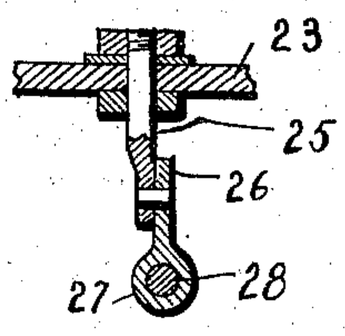


Fig. 8.



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UNITED STATES PATENT OFFICE.

LOUIS E. WALKINS, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO ED. WILSON FARNHAM, OF CHICAGO, ILLINOIS.

ELECTRIC-RAILWAY SYSTEM.

SPECIFICATION forming part of Letters Patent No. 709,063, dated September 16, 1902.

Application filed December 2, 1901. Serial No. 84,308. (No model.)

To all whom it may concern:

Be it known that I, LOUIS E. WALKINS, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Electric-Railway System, of which the following is a specification.

My invention relates to systems for supplying current to the motors of electric cars, and more particularly to the supply-conductor of such system and the coöperating contact device carried by the cars, my improvements being such that the conductor is effectively supported and effectually shielded against accidental contact with persons or animals and the car-contact is readily controlled by the motorman.

In the accompanying drawings, Figure 1 shows a side elevation of a car-truck carrying one form of my improved contact device, Fig. 2 being an enlarged transverse sectional detail thereof, showing a portion of the car-truck and also the conducting-rail. Fig. 3 is an enlarged horizontal section on the line 3 3 of Fig. 1. Fig. 4 is a detail in side elevation of the contact device, showing the shoe in its operative position. Fig. 5 is a similar view with the shoe out of its operative position. Fig. 6 is a detail in side elevation of a section of the conducting-rail with part of its insulated covering broken away, and Fig. 7 is a side elevation of one of the supporting-brackets. Fig. 8 is a detail sectional view on the line 8 8 of Fig. 2.

Similar characters designate like parts throughout the several figures of the drawings.

The numeral 10 designates the rails of an electric-railway system, they being supported in the usual manner upon ties 11. Situated at suitable intervals along the rails are substantially vertical brackets 12, preferably supported upon the ends of the ties and connected thereto through horizontal and vertical flanges 13, each resting against the top and end of a tie. At or near the top of the bracket is carried a substantially horizontal arm 14, extending toward the car-rails and being preferably separable from the bracket, which may be provided with one or more slots or recesses 15, having preferably inclined or wedge-shaped walls. These slots are adapted to receive projections 16 on the arms formed to fit therein and held in place by set-screws 17. Supported by the arms of these brackets is a supply-conductor 18, here shown as of the type commonly called a "third rail," which is held in an inverted position, with its contact-face at the lower side. This rail is provided with a longitudinally-extending covering of some suitable fireproof insulating material 19, which is preferably continuous and may be rolled on the rail. This covering completely surrounds the conductor, except over its contact-face, extending below this face in a flange 20, depending at each side, which causes it to occupy the bottom of a recess, where it will be impossible for persons or animals to accidentally contact with the rail, special effort being necessary to reach it. Lugs or projections 21 of insulating material preferably extend from each side of the rail at intervals equal to the distance between the supporting-brackets, these lugs being either secured to or integral with the covering. They are slotted or recessed at each side at 21′ conveniently in the inclined form shown in Fig. 2 to receive projections 22, extending into a recess in the under side of the bracket-arm.

Each motor-car of the system carries a contact device to receive from the third rail the current to supply the motor. In the embodiment of my invention here illustrated this device is mounted upon a suitable angle-bar 23, which may be supported upon the truck 24, conveniently extending between the outer faces of the boxes, being insulated therefrom at 24′. Upon a horizontal flange of this angle-bar is mounted a rod or supporting member 25, preferably swiveled or rotatable. At or near the lower end of this rod is pivoted an angle-lever 26, provided upon its vertical arm with a bearing 27, in which rotates freely a rod or member 28, said rod having fast upon it collars 29, contacting with the ends of the bearing to prevent longitudinal movement of the rod 28 within the bearing 27. At the outer end of the rod is mounted a contact shoe or member 30, preferably splined to the

rod to permit it to adjust itself laterally to the rail, it being maintained in a central position by springs 31 at each side thereof, these springs acting against fixed collars 32. At or near the opposite end of the carrying-rod from the shoe is attached an actuating-lever 33, the rod and lever being compelled to rotate together by a pin or projection 34 on the rod extending into a slot 35 in a hub 36 of the lever, this arrangement permitting some longitudinal play to enable the other parts to move freely, as desired. The lever is limited in its movement on the opposite side from the pin by a nut 37, carried upon a threaded portion of the rod. Between the substantially horizontal arm of the lever 26 and an arm 38, carried by and turning with the swiveled support, is located a spring 39, serving to force the outer end of the carrying-rod upward, and thus holding the shoe in firm contact with the third rail. This spring is preferably retained in position by its encircling a rod 40, fixed to the arm 38 and extending downward through an opening in the lever-arm, a nut 41 being provided on its lower threaded end to limit the movement of the lever, and consequently of the shoe. To the lever 33 is articulated a connecting-rod 42, pivoted at its other end to the rod 43 of a power-actuated piston 44, operating in a cylinder 45, supported by brackets or hangers 46 from the under side of the angle-bar 23, a bracket 47, also carried by the angle-bar, serving as a support for the piston-rod. Into the cylinder at the ends lead pipes 48 and 49 from some suitable source of energy, as compressed air, controlled by a valve or valves operable by the motorman upon the car. A spring 50 (shown as situated between the head of the cylinder and a collar 51 upon the piston-rod) serves to normally hold the piston at the left of the cylinder and contact-shoe in coaction with the third rail.

In operation, the piston being in its normal position, the shoe rests against the under side of the third rail, held firmly in contact therewith by the spring 39, acting through the angle-lever and carrying-rod. Then if the motorman desires to remove the shoe from the rail he so operates the controlling-valves that the air or other motive fluid enters the end of the cylinder at which the piston is at rest and forces it to the other end. This acting through the contacting rod first rotates the carrying-rod in its bearing on the angle-lever, and with it the shoe, moving the latter in a substantially vertical plane out of contact with the rail, and then when the lever 42 has been drawn practically into alinement with the connecting-rod swinging or revolving the carrying member bodily upon the swiveled support, and thus withdrawing the shoe laterally from beneath the rail. To return the shoe to its operative position, it is only necessary to admit air to the opposite end of the cylinder, suitable exhaust connections being of course provided at each end, when the movement of parts just described will occur in reverse order.

It will be seen that in addition to enabling the motorman to control the position of the contact-shoe from his position upon the car with ease and certainty this arrangement further permits a single operator to simultaneously actuate the shoes on a plurality of cars under the conditions occurring in the multiple-unit system.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a third-rail system, the combination with a car, of a support rotatably mounted thereon, a lever pivoted upon the support, a member movably mounted upon the lever, and a contact-shoe carried by the member and longitudinally movable thereon.

2. In a third-rail system, the combination with a car, of a contact-shoe, a rotatable and revoluble carrying member for said shoe, and an actuating-lever connected to the carrying member and longitudinally movable thereon.

3. In a third-rail system, the combination with a car, of a contact-shoe, a rotatable and revoluble carrying member for said shoe provided with a projection, and an actuating-lever upon the carrying member provided with a slot into which the projection on the carrying member stands.

4. In a third-rail system, the combination with a car, of a support swiveled thereon, a lever pivoted upon the support, a rod extending through an opening in the lever, a contact-shoe carried by the rod, and an actuating-lever mounted upon the rod.

5. In a third-rail system, the combination with a car, of a support swiveled thereon, a lever pivoted upon the support, a rod extending through an opening in the lever, a contact-shoe carried by the rod, a lever mounted upon the rod, and a power-actuated piston connected with the lever.

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