

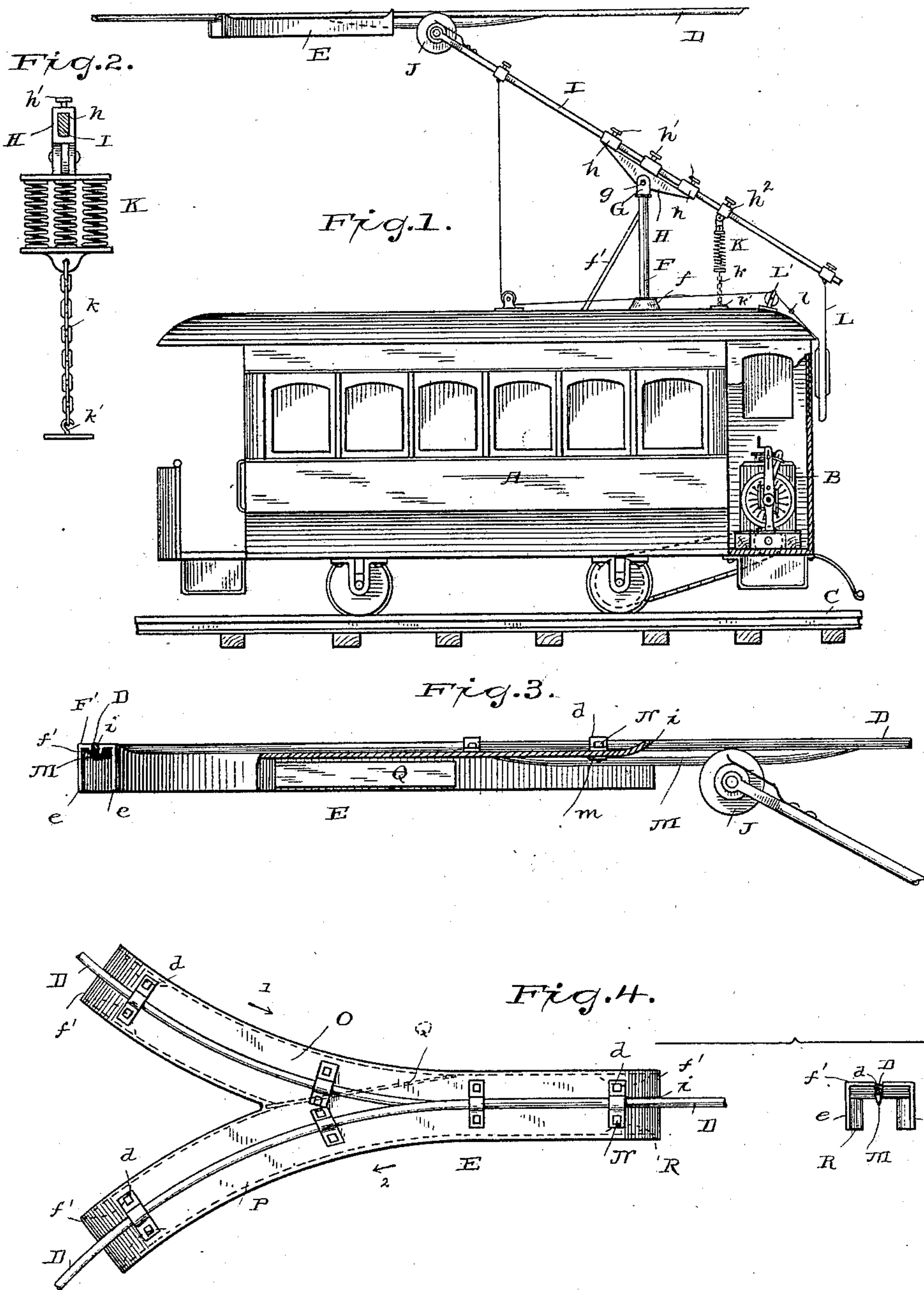
(No Model.)

2 Sheets—Sheet 1.

C. J. VAN DEPOELE.
OVERHEAD CONTACT AND SWITCH.

No. 397,451.

Patented Feb. 5, 1889.



Witnesses.

H. A. Lamb

C. L. Sturtevant

Inventor.

Charles J. Van Depoele

By

Frankland James

Attorney.

C. J. VAN DEPOELE.

OVERHEAD CONTACT AND SWITCH.

No. 397,451.

Patented Feb. 5, 1889.

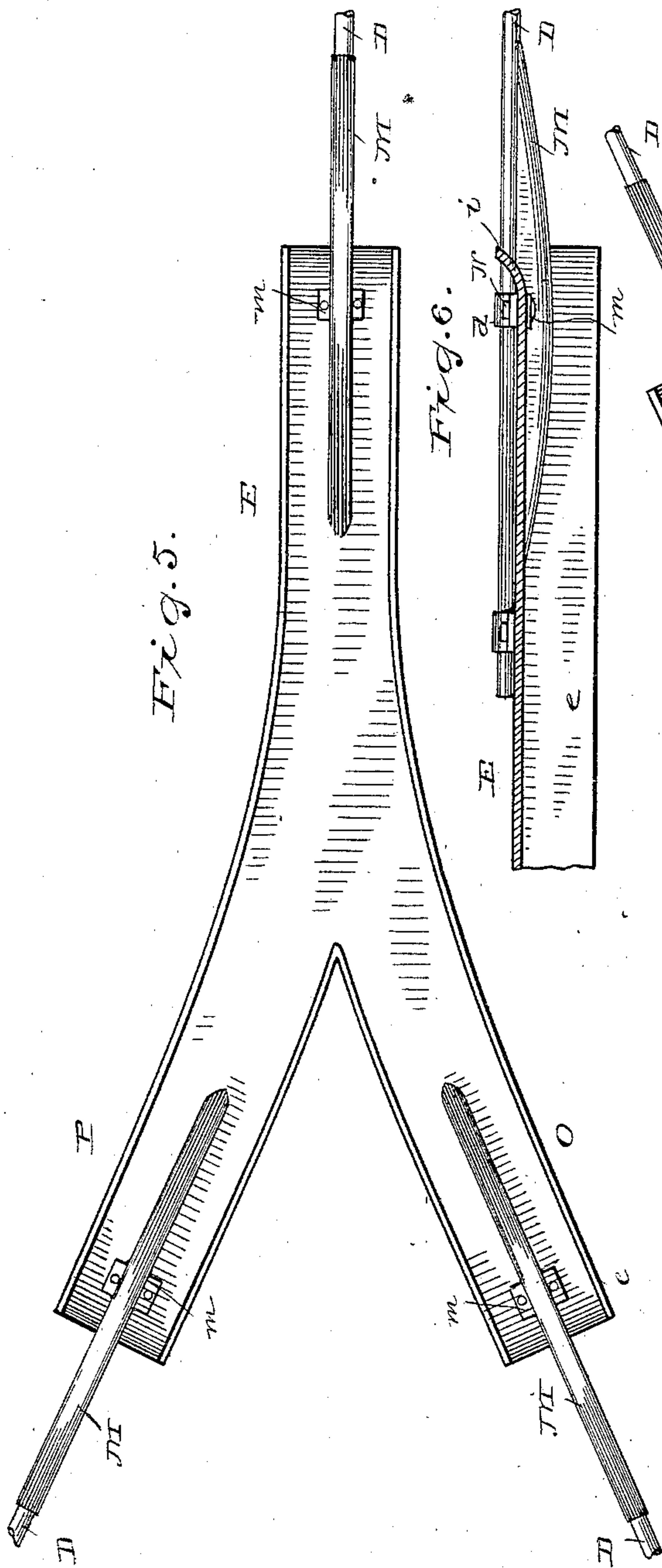
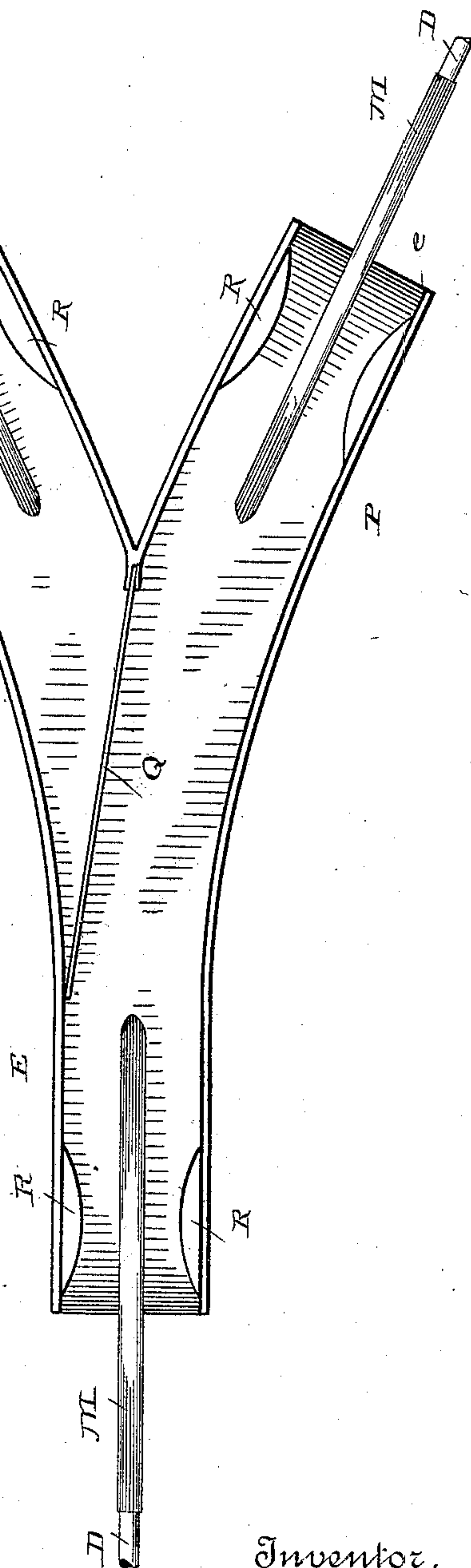


Fig. 7.



Witnesses.

H. A. Lamb

C. S. Sturtevant.

Inventor.

Charles J. VanDepoele

By

Frankland James.

Attorney.

UNITED STATES PATENT OFFICE.

CHARLES J. VAN DEPOELE, OF LYNN, MASSACHUSETTS.

OVERHEAD CONTACT AND SWITCH.

SPECIFICATION forming part of Letters Patent No. 397,451, dated February 5, 1889.

Application filed November 12, 1888. Serial No. 290,553. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. VAN DEPOELE, a citizen of the United States, residing at Lynn, in the county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Overhead Contacts and Switches, of which the following is a description.

My invention relates to improvements in electric railways, and includes improvements upon the invention forming the subject-matter of a prior application for Letters Patent filed by me March 12, 1887, Serial No. 230,649.

The novel features of the present application comprise an improved switch for upward-pressure suspended contact devices and improved devices connecting the conductors with the switches and acting to lessen or eliminate all sudden, jerky, and rough movement of the traveling contact on entering and leaving the switches.

The invention furthermore includes various details of construction and arrangement hereinafter pointed out, and referred to in the appended claims.

In the accompanying drawings, Figure 1 is an elevation showing an electric-railway motor-car and suspended conductor with switches and contact devices embodying my invention, a portion of the front of the car being broken away to show the motor. Fig. 2 is a detail view showing the adjustable tension-spring by which the upward contact is maintained. Fig. 3 is an elevation showing one of the switches, a portion of the main conductor, and the contact device, the switch-box being partly broken away to show the interior arrangement. Fig. 4 is a plan view showing a branch from the suspended main conductor and the switching devices therefor. Fig. 5 is an inverted plan view showing my improved switch and the ribs extending from the extremities thereof, all on an enlarged scale. Fig. 6 is a fragmentary elevation, partly in section, showing one of the extremities of the switch shown in Fig. 5. Fig. 7 is an inverted plan view, also on an enlarged scale, showing the switch with the addition of the fixed guides at the extremities.

Similar letters denote like parts throughout.

As illustrated in the drawings, A is a car of the type in use on street-railways and ar-

anged to be propelled by an electric motor, B, suitably located thereon in any desired position, and having its armature in mechanical connection with the carrying-wheels thereof.

C is the track upon which the car moves.

D is the main supply-conductor, suitably supported from its upper side at any desired height above the car and extending at substantially the same height along the line of travel of the car.

An insulated post or socket, F, is mounted upon the top of the car and provided at its lower portion with an enlarged base, *f*, or other means by which it may be attached to the roof of the car. A brace-rod, *f'*, may also be provided. A bifurcated support, G, fits down into and is free to turn within or upon the post F. A metallic frame or clamp, H, is hinged at *g* between the arms of the pivot G, being thereby both hinged and pivoted upon the post F. Extensions or solid portions *h* upon the brace H are longitudinally apertured to receive the contact lever or arm I, which is secured in the desired position in its hinged and pivoted supporting-frame H by set-screws *h'*.

The arm I consists, desirably, of a light bar, which may be of metal or wood, and is bifurcated at its outer extremity to receive the grooved contact-wheel J, which is suitably pivoted between the extremities thereof.

One or more tension-springs, K, three being shown in the present instance, are secured to the lower end of the frame H, as indicated in Fig. 2, or to an adjustable clamp, *h*², movable upon the arm I. The springs K are adjustably secured to the roof of the car by chain and hook *k* *k'*, or equivalent means, and act to press the outer end of the contact-arm upward and hold the grooved contact-wheel J in electrical contact with the suspended conductor D. A cord or chain, L, is attached at one end near the lower extremity of the arm I and at its other also to the arm I, but near its outer extremity or at any convenient point on the opposite side of its fulcrum to that upon which the springs K directly act. In case of accidental displacement of the contact-wheel J the cord or chain L, passing through guide L' and being provided with a suitable stop, *l*, will prevent the arm I moving upward or swinging laterally beyond a predetermined distance, and the cord itself

affords a convenient means of replacing the contact-wheel in operative relation with the conductor.

The pivotal connection between the contact-arm I and car through the frame II and post F will allow the contact-wheel J to remain in operative relation with the conductor, notwithstanding the swaying of the car due to unevenness of the track, sufficient lateral action as well as vertical motion being permitted by the elasticity of the springs K, and additional freedom of movement being allowed by the resiliency of the arm I. At points where the conductor D unites with other conductors or diverges are located switching devices for uniting the several conductors and properly guiding the contact-wheel.

The switching devices consist of hollow boxes or frames E, preferably of metal, and comprising side walls, *e*, and a top wall, F', the sides forming guideways and being separated sufficiently to allow the contact-wheel to pass freely therethrough.

The conductor D may extend along the exterior of the top wall, F, of each switch-box, or it may terminate at clamps *d*, by which it is preferably secured in position. The boxes E are in metallic contact with the conductors with which they are connected, and the current passes from the box to the contact-wheel without interruption. The extremities *f'* of the top wall of the switch are curved upward to prevent the contact-wheel J striking thereagainst and receiving a sudden and severe blow on entering the switch—an occurrence that would be likely to derail the contact-wheel. Said extremities are apertured or notched at *i* for the passage of the conductor D.

To prevent wobbling or violent oscillation of the contact-wheel J within the switch, and particularly as it enters and leaves the same, I provide the ribs M, which are secured to the under side of the conductor a short distance in advance of where it enters the switch and continue into the switch a short distance and act to guide the contact-wheel smoothly thereinto. The ribs M are narrow tapering strips of metal grooved along a portion of their upper edge to fit against the under side of the conductor and are rounded off toward their lower edges to fit the groove of the contact-wheel, and said lower edges are tapered from their longitudinal center toward each extremity, so as to present oppositely-disposed planes meeting at the entrance to the switch.

The guide-ribs M may be strips of metal soldered, brazed, riveted, or made integral with the main conductor and by it retained in the described position, a portion thereof projecting into the switch-box. As shown in Figs. 3 and 8, however, it will be found convenient to provide the said ribs with extensions or lugs *m*, which may rest against the under side of the top wall of the switch-box and receive the bolts N, by which the conductor-retaining clamps *d* are held in posi-

tion. When the interior cross-section of the switch-box is made wider than the face of the contact-wheel, as will be found necessary on sharp or complicated curves, in order to prevent the wheel pinching or binding during its passage therethrough, additional guide-ribs, R, Fig. 7, are formed or provided at the exits from the switches, so that the contact-wheel will be gradually brought to the proper position before leaving the switch. When, however, the groove in the contact-wheel J is of ample width and only working play allowed on the interior of the switch-box, this precaution will be wholly unnecessary, as the contact-wheel will be unable to issue from the box without its groove engaging the guide-rib M.

The suspended switches correspond in direction with the track-switches. As shown in Figs. 3, 4, 5, and 7 by way of illustration, conductors from two directions converge and unite. It is assumed for the purpose of this description that one contact device will move through the switch in the direction of the arrow marked 1 on Fig. 4 and that a contact device will also move through said switch in an opposite direction, as indicated by the arrow 2.

In order to secure their uninterrupted passage without interference or injury, the intersecting portions or ways O P are separated by a flexible tongue, Q, attached to the point of divergence of the portions O P, its outer extremity normally resting against the side wall of the part O. A contact-wheel passing through the switch in the direction of the arrow 1 will come in contact with the tongue Q, move it sidewise, and pass, the tongue then returning to position. A contact-wheel entering in the direction of the arrow 2, the presence of the tongue Q will prevent it passing out through the portion O and deflect it, causing it to follow the portion P and issue upon the rib M, from which it passes smoothly into contact with the under side of the conductor D.

It will be understood that contact-wheels and tension devices of other forms than that described may be used in connection with my improved switch with good results; also, that the advantages ensuing from the use of the guide-ribs M are wholly independent of the employment of the switch-tongue Q or deflecting ribs or contractions R.

I do not limit myself to the precise details shown and described, since various minor changes of form and arrangement may be made consistently with the foregoing description.

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

1. A switch for suspended electric-railway conductors, comprising a box attached to the conductor and formed with two or more branching compartments leading there-

through, one or more of the compartments having a contracted portion adjacent to its extremity, substantially as described.

2. A switching device for electric railways, consisting of an open-bottom metallic box or frame secured to and depending from the under side of a suspended conductor and formed with two or more branching compartments leading therethrough, the extremities of such compartments flaring outwardly toward the conductor to form lateral guides and inwardly to facilitate the passage of the contact device, substantially as described.

3. A switching device for electric railways, comprising an open-bottom box, conductors connected to the upper portion of the box, and a guide rib or ribs connecting the extremity or extremities of the switch-box with the conductor, substantially as described.

4. A switching device for electric railways, comprising an open-bottom box, conductors leading to the upper closed portion of the box, and a guide-rib connecting the interior of each extremity of the switch-box with the conductor, substantially as described.

5. A switch for suspended electric-railway conductors, comprising a downwardly-open frame or box having passages extending therethrough, the main conductor attached to the upper portion thereof, and a guide rib or strip extending from the inner under side of the box and against the under side of the conductor, substantially as described.

6. A switching device for suspended electric-railway conductors, comprising an open frame or box having branching compartments extending therethrough and suspended from the main conductor, and fixed guides at the extremities of said passages, substantially as described.

7. A switching device for suspended electric conductors, comprising an open-bottom box or frame formed with branching compartments and depending from the conductor, a rib or ridge at the under side of the conductor and extending into the switch-box, and lateral guides on each side of the rib, substantially as described.

8. In an electric railway, the combination,

with the car, of a post extending upward therefrom, a frame hinged and pivoted upon said post, and a longitudinally-adjustable arm secured in said frame and provided at one end with a grooved contact-wheel for engagement with a suspended conductor and at the other with a tension-spring for maintaining the contact-wheel in operative position, substantially as described.

9. The combination of a moving vehicle, a support or post extending upward therefrom, a frame hinged and pivoted therein, an arm longitudinally adjustable in the pivoted frame and provided at its outer end with a contact-wheel arranged to bear against the under side of the conductor, and tension-springs acting against the arm for holding the contact-wheel in position, substantially as described.

10. In an electric railway, the combination, with the car, of a post extending upwardly therefrom, a contact-carrying arm hinged and pivoted upon said post, and a tension-spring adjustably secured to the lower part of said arm and connected with the car, said spring acting to hold the outer extremity of the arm and the contact carried thereby upward against a suspended supply-conductor, substantially as described.

11. In an electric railway, the combination, with a car, of a post extending upwardly therefrom, a contact-carrying arm hinged and pivoted upon said post and provided at one end with a grooved contact-wheel for engagement with the supply-conductor suspended above the line of travel of the car, and a rope or other flexible connection secured near the outer end of said arm and connected with the car, and a rope or flexible connection secured at or near the lower end of said arm, whereby the outer extremity of the arm may be lowered by one rope and the arm moved into the desired position by the other rope, substantially as described.

In testimony whereof I hereto affix my signature in presence of two witnesses.

CHARLES J. VAN DEPOELE.

Witnesses:

J. W. GIBBONEY,

CHAS. L. OECHSNER.