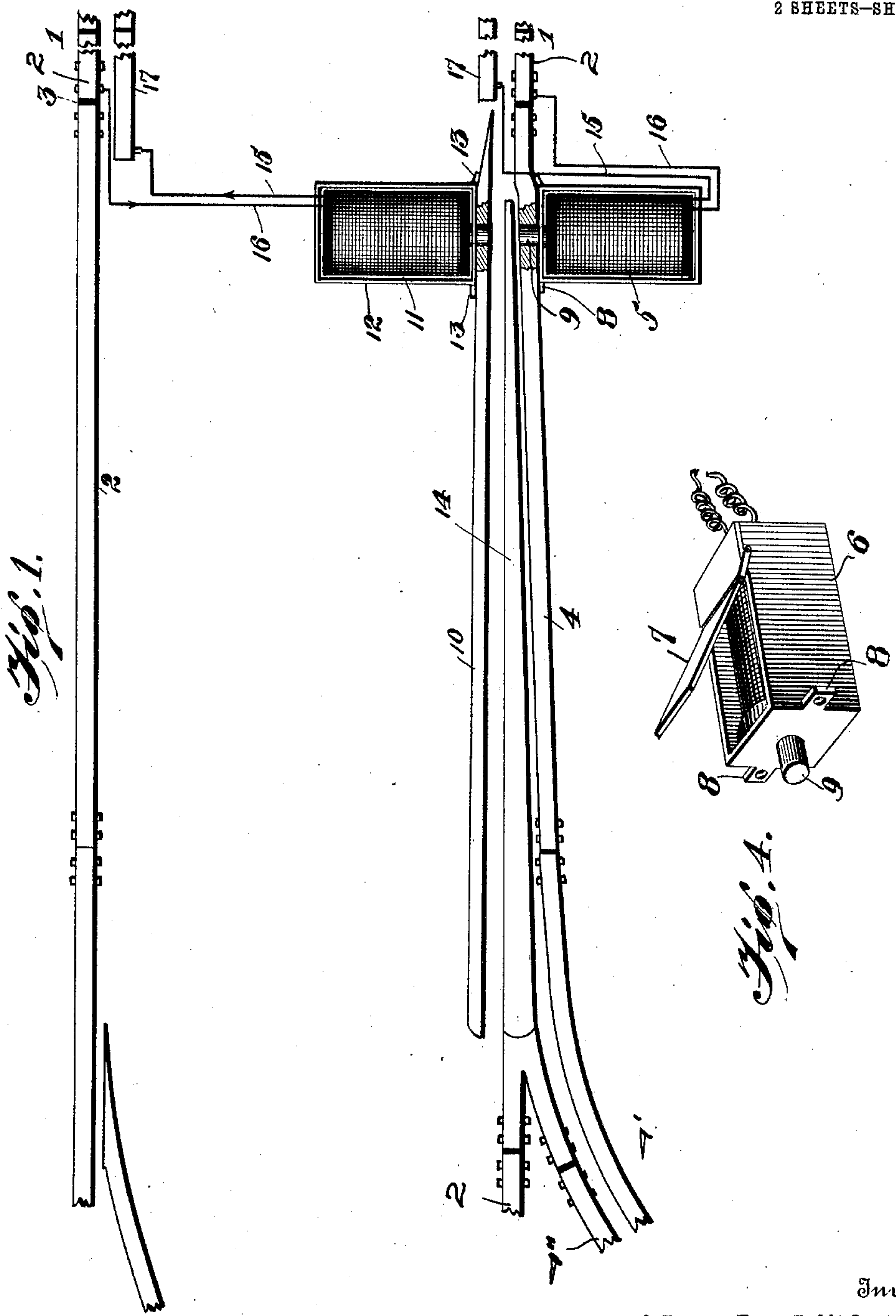


J. C. WALDEN.
ELECTRIC SWITCH.
APPLICATION FILED APR. 5, 1910.

997,106.

Patented July 4, 1911.
2 SHEETS—SHEET 1.



Witnesses
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JESSE C. WALDEN

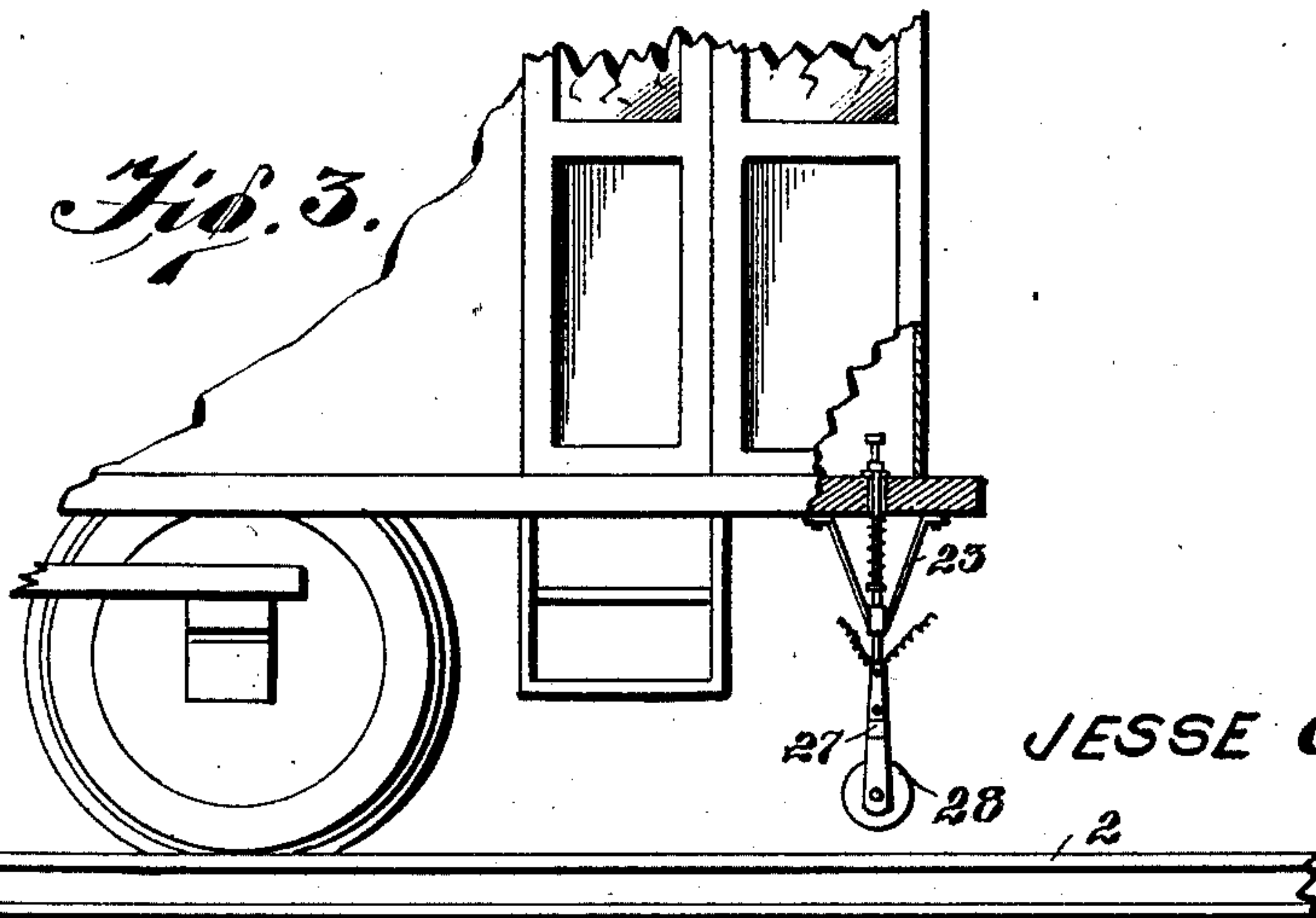
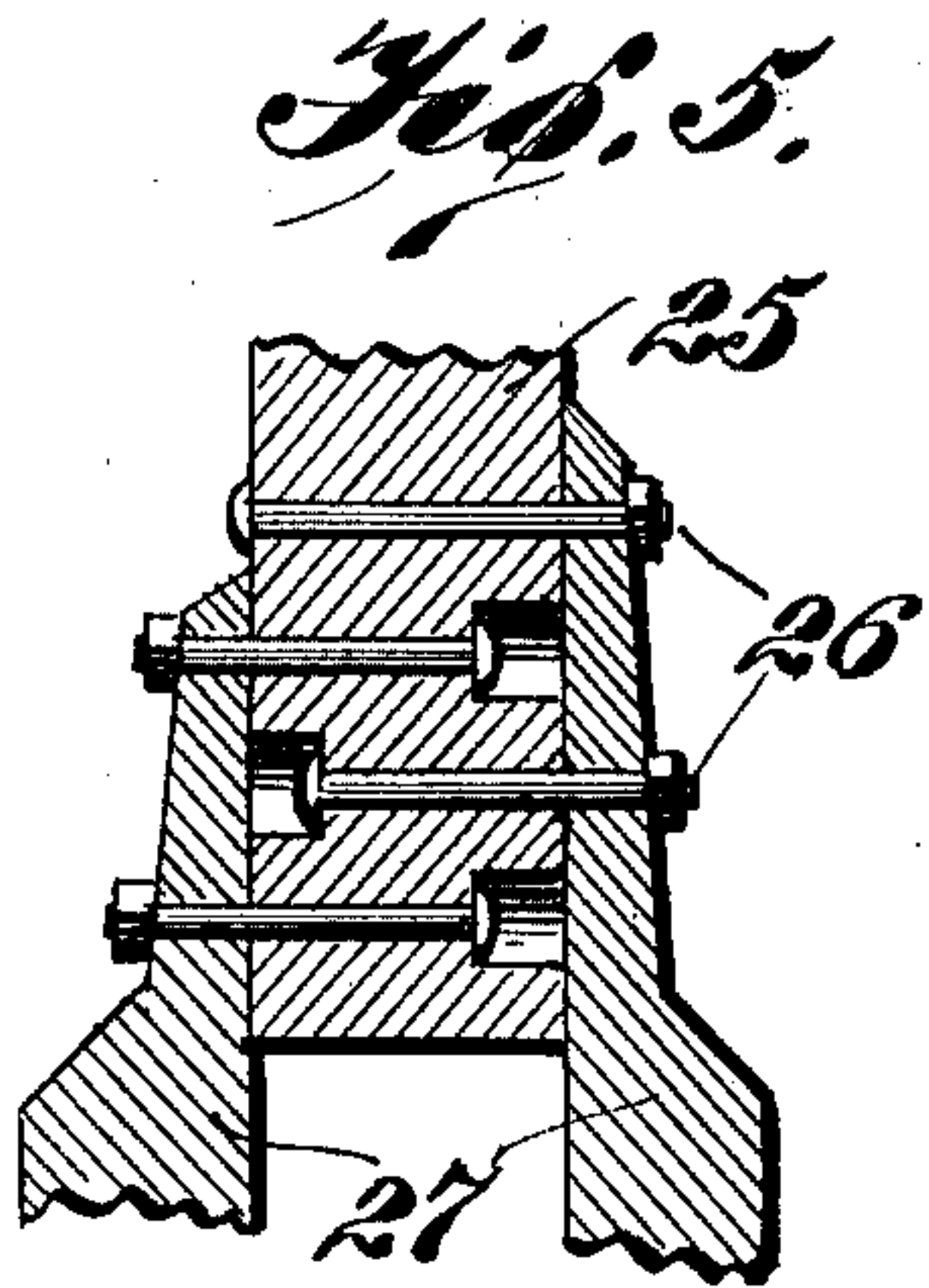
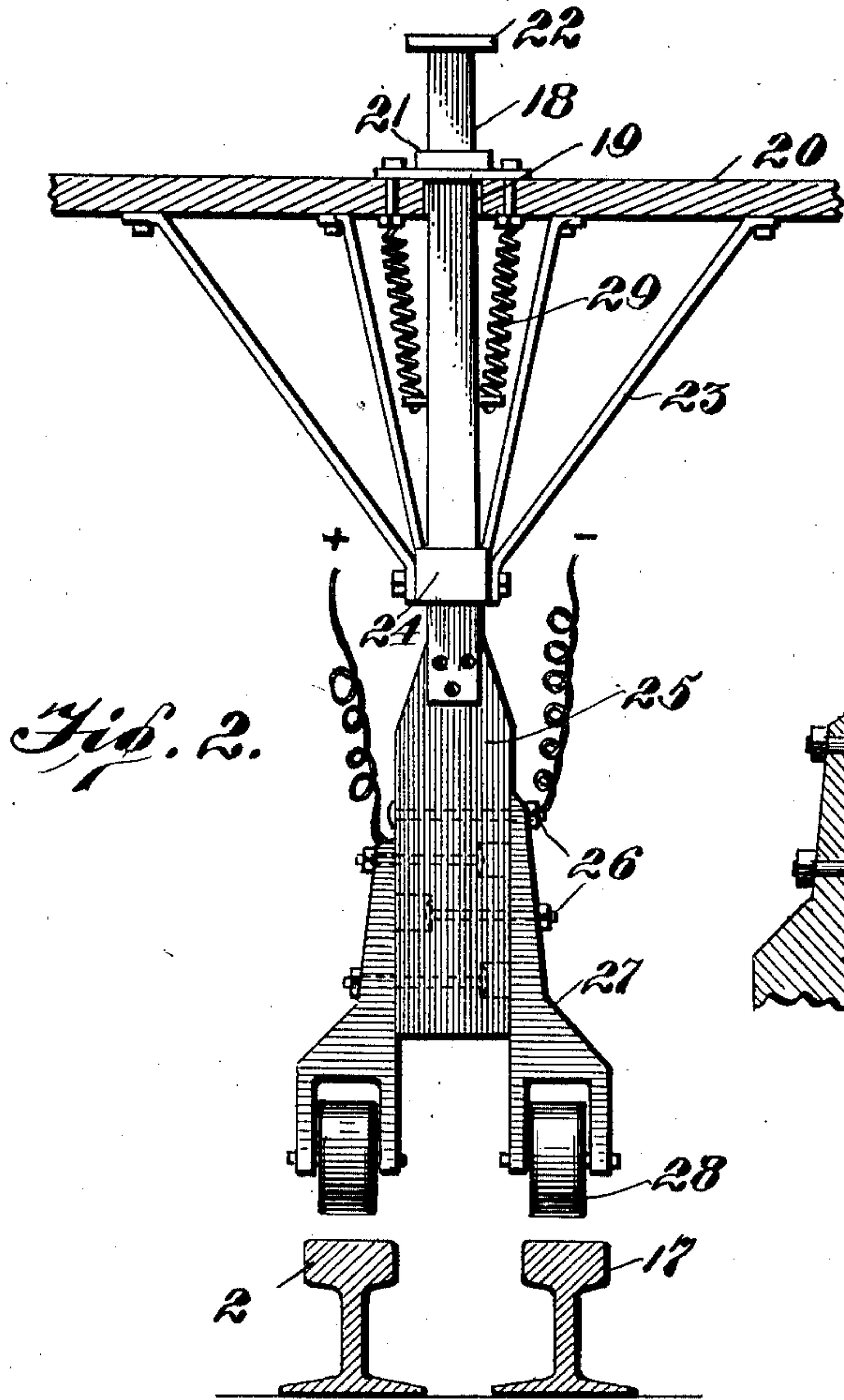
By E. E. Vrooman,
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Witnesses

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JESSE C. WALDEN, OF MYSTIC, IOWA.

ELECTRIC SWITCH.

997,106.

Specification of Letters Patent.

Patented July 4, 1911.

Application filed April 5, 1910. Serial No. 553,641.

To all whom it may concern:

Be it known that I, JESSE C. WALDEN, a citizen of the United States, residing at Mystic, in the county of Appanoose and State of Iowa, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to electrically operated railway switches, and has especial reference to apparatus for operating switches of street railways.

The object of the invention is to provide an improved apparatus by means of which a switch may be thrown by the operation of electrical switch operating mechanism controlled from a moving car.

The invention has further for its object to provide improved electrical switch-operating mechanism by means of which a switch may be electrically thrown on the approach of a car to the switch in either direction.

With these and other objects in view, the invention consists in the novel construction and arrangement of parts and combinations as hereinafter particularly set forth and claimed.

Referring to the accompanying drawing,—Figure 1 is a plan view of a portion of a railroad track located at a switch, showing electrical devices for throwing the switch. Fig. 2 is a view in elevation of a device for closing an electric circuit to operate a switch. Fig. 3 is a detail view, with parts broken away, showing a portion of the end of the car on a track with a circuit closer depending therefrom. Fig. 4 is a detail view in perspective of an electro-magnet in its casing, employed in connection with this invention. Fig. 5 is an enlarged detail view in vertical section, showing a portion of the contacting device and the means for connecting the parts together.

To illustrate the carrying out of the invention, 1—1 indicates the main rails of the track, the sections 2 thereof adjacent to the switch being insulated from each other by the insulation 3, and 4' is a section of one of the branch rails 4 which is insulated at one end from the main rail section 2 and at the

other end from the branch rail 4. Located at the end of one of the branch rails 4 is an electro-magnet, 5, located in a casing, 6, provided with a hinged cover, 7. The forward end of the casing 6 is secured by means of the wings, 3, to the branch rail, 4, the core, 9, of the electro-magnet projecting into and being secured to the branch rail 4. Opposite and on one side of the branch rail 4 is a section of rail 10, adjacent to one end of which, opposite the point at which the electro-magnet 5 is located is an electro-magnet, 11, located in a casing, 12, secured to the rail section. 10, the core 13 of the electro-magnet 11 projecting through the rail section 10. Extending between the cores 9 and 13 of the electro-magnet is the end of a throw switch which is insulated from the branch rail 4 and the main rail section 2, 14. Each of the electro-magnets is located in an independent electric circuit consisting of the wires 15 and 16 connecting respectively with a section of rail 17 and a rail section 2 of the main rail.

In order to throw the switch, a device carried by a car is employed which is moved into contact with a section of main rail 1 and the rail section 17 to close the circuit and energize one of the electro-magnets. For this purpose a device such as shown in Figs. 2 and 3 is employed, which consists of a vertical rod 18 extending through an opening 19 in the floor 20 of a car at the forward end thereof, and through a collar, 21, secured to the floor over said opening, and having a foot pedal 22 at its upper end for the motor-man of the car, said rod being braced by means of brace rods, 23, secured at their upper ends beneath the floor 20, and at their lower ends to a sleeve, 24, through which the rod 18 projects, and is adapted to slide. Secured to the lower end of the rod 18 is an elongated wooden block, 25, to the sides of which are bolted by bolts and nuts, 26, the metallic hangers, 27, having mounted in their lower ends the contact rollers, 28, suspended above an insulated section 2 of the main rail and a rail section 17 adjacent thereto. The metallic hangers 27 are connected by wires 27' with the electric circuit in a car from which the contacting device is suspended. The rod 18 has connected

thereto a pair of coiled springs, 29, the lower ends of said coiled springs being connected to the rod 18, and the upper end to the bottom of the floor 20. By this means the rod 18 is held up, and the rollers 28 suspended above the rail sections 2 and 17. By pressure of the foot on the pedal 22 the rod 18 may be moved down to hold the rollers 28 in contact with rail sections 2 and 17; and on releasing the foot from the pedal 22 the reaction of the springs 29 will cause the rod 18 to be drawn up and the contact rollers 28 to be instantly released from the rail sections 2 and 17. Two of these devices, as shown in Fig. 2, are employed; one on each side of the front end of the car, as indicated in Fig. 3, so that, by the operation of one or the other the switch point may be moved to open or closed position.

The operation of the invention is as follows: Upon approaching a switch, such as shown in Fig. 1, if the main line is open and it is desired to throw the switch to enter the branch line, the motorman moves the contact rollers 28 of one of the contacting devices on the side of the car which is adjacent to the main rail on the opposite track to the electric casings 5 and 11 down into contact with the main rail section 2 and the rail section 17 on the side of the track just referred to, thereby closing the circuit through the wires 27' connected with the electric circuit in the car, the metallic hangers 27, rollers 28, rail sections 2 and 17 and the electro-magnet 11, and energizing the same, thereby attracting the switch point, and drawing it toward the core 13 and against the rail section 10. Should the branch line be open and it be desired to close the same and proceed along on the main line, the motorman moves down the rod 18 on the other side of the car to close the circuit through the wires 27' connected with the electric circuit of the car, the metallic hangers 27, rollers 28 and the rail section 2 and the rail section 17 on the side of the track in which the electro-magnets are located, to energize the magnet 5 by the completion of the circuit through the same, thereby attracting the switch point and causing it to be moved over to the branch line rail 4 and open the main line.

Having described the invention, I claim:

1. In an apparatus of the character described, insulated main rail sections, a conducting metal bar adjacent to each of said main rail sections, an insulated branch rail section, a conducting metal bar opposite said branch rail section, an electro-magnet secured at one end of said branch rail section and said conducting bar, each of said electro-magnets having its core located opposite the other, and each being in an electric circuit through one of said main rail sections and conductor bars, and a throw switch

having its point extending between the cores of said electro-magnet.

2. In an apparatus of the character described, a pair of electro-magnets located opposite each other, and a throw switch having its point extending between the cores of said electro-magnets, an insulated main rail section, and a metallic conductor bar located in an electric circuit connected with one of said electro-magnets, and an insulated main rail section and an electric conducting bar located in an electric circuit with the other electro-magnet, and a branch rail insulated section connected with said electro-magnet.

3. In an apparatus of the character described, pairs of insulated rail sections, an insulated branch rail section, and an electrical conductor bar opposite said branch rail section, an electro-magnet connected to said branch rail section, an electromagnet connected to said conductor bar, each of said magnets having its pole opposite to the other, a pivoted switch point projecting between the poles of said electro-magnets, each of said pairs of insulated rail sections being in an electric circuit with each of said electro-magnets.

4. In an apparatus of the character described, an insulated main rail section, an electrically conducting rail section parallel with said main rail section, an insulated branch rail secured, an electro-magnet secured to said branch rail section and having its pole projecting through the same, said electro-magnet being in an electric circuit with said insulated rail sections, and a pivoted switch point projecting over the pole of said electro-magnet.

5. In an apparatus of the character described, a pair of insulated rail sections, an insulated branch rail section, an electro-magnet connected with said branch rail section and having its pole extending through the same, said electro-magnet being in an electric circuit with said rail section, a pivoted switch point projecting over the core of said electro-magnet, and a vertically movable arm located on an electric car and electrically connected therewith, and having contact devices adapted to be moved into and out of contact with said insulated rail section.

6. In an apparatus of the character described, a vertically movable rod extending through the floor of an electric car and having a pedal at its top, a guide support for said rod depending from the bottom of said car, reacting springs connecting said rod with the floor of the car, an insulated projection on the lower end of said rod, metallic hangers depending from said projection and electrically connected with said car and each having a contact roller.

7. In an apparatus of the character described, an electrical contact device consisting of a vertically movable rod extending

through the floor of an electric car and having a pedal at its top, a guide support for said rod depending from said floor, retracting springs connecting said rod with said
5 floor, a wooden projection depending from the lower end of said rod, a pair of metallic brackets bolted to said wooden projection, and electrically connected with the car, and

a contact roller located in the end of each of said depending brackets.

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

JESSE C. WALDEN.

Witnesses:

JOHN W. GIBSON,
R. A. WALDEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."