

No. 721,416.

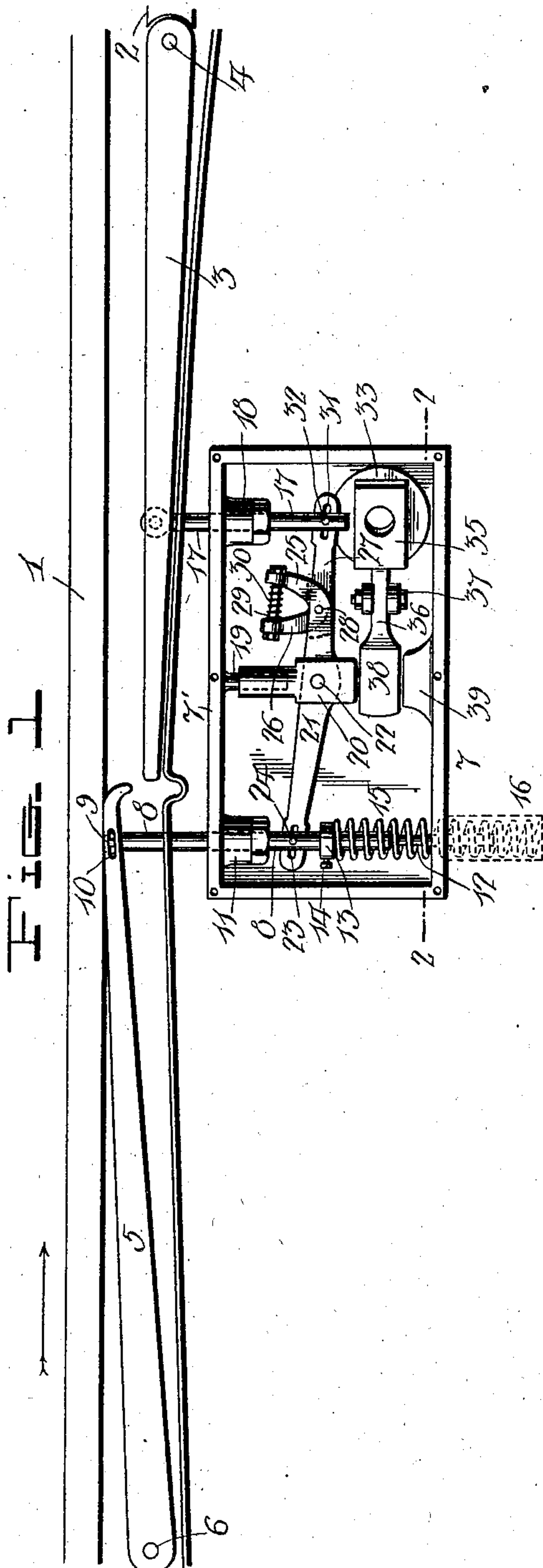
PATENTED FEB. 24, 1903.

W. J. BELL.
STREET RAILWAY SWITCH.

APPLICATION FILED JULY 14, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

J. L. Brown

W. J. Bell

Inventor

Walter J. Bell,

By *J. L. Brown*

his Attorney

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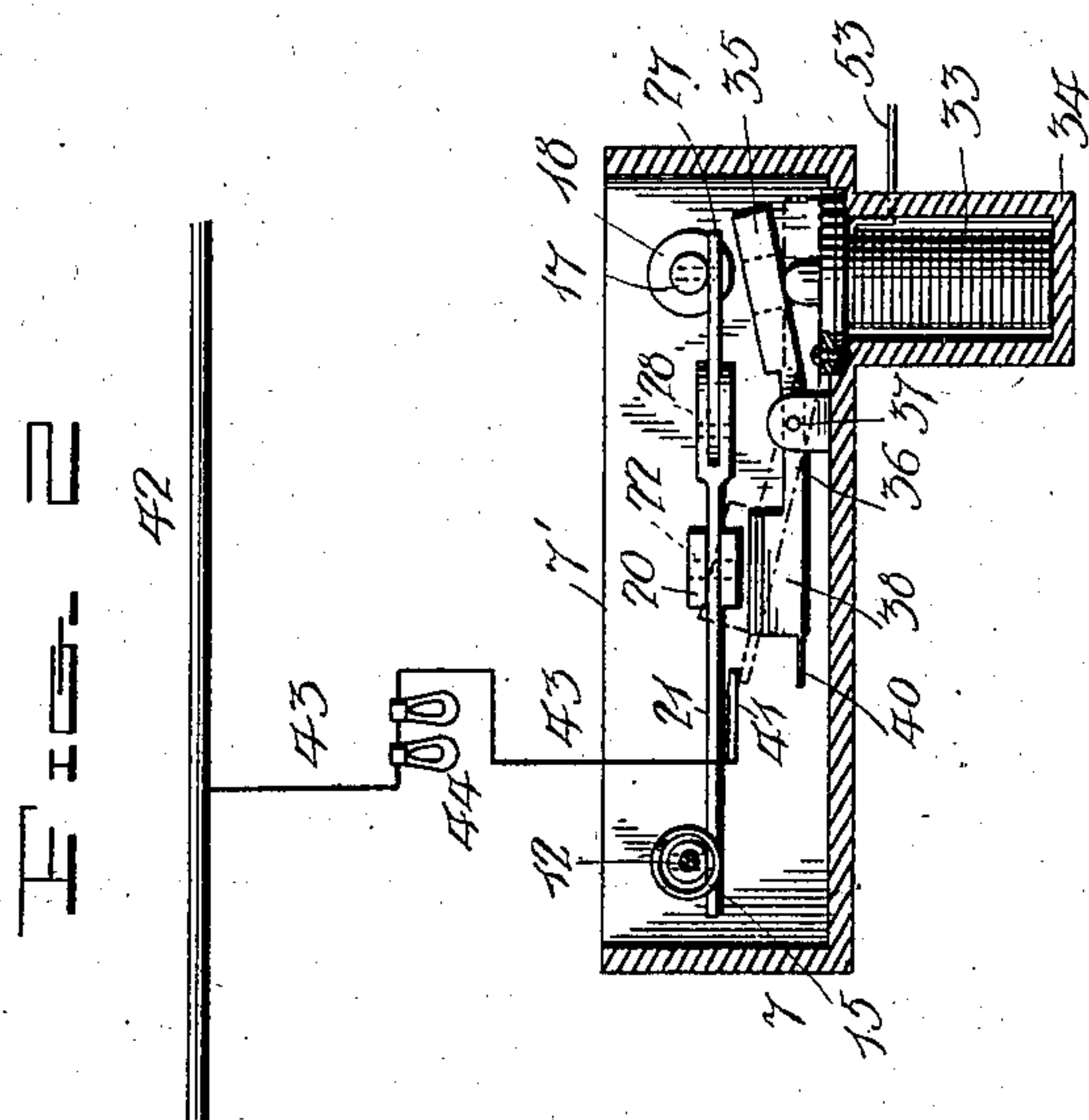
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NO MODEL.

2 SHEETS—SHEET 2.



Witnesses

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UNITED STATES PATENT OFFICE.

WALTER J. BELL, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF
TO LEON F. MOSS, OF LOS ANGELES, CALIFORNIA.

STREET-RAILWAY SWITCH.

SPECIFICATION forming part of Letters Patent No. 721,416, dated February 24, 1903.

Application filed July 14, 1902. Serial No. 115,497. (No model.)

To all whom it may concern:

Be it known that I, WALTER J. BELL, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Street-Railway Switches, of which the following is a specification, reference being had therein to the accompanying drawings.

10 My present invention relates to railway-switches adapted more especially for use in connection with surface and elevated street electric railways employing either the overhead or underground trolley connections or
15 what is known as the "third-rail" system.

The invention has for its object the production of switch-throwing mechanism enabling the location of the switch-throwing rail and the switch-tongue at the same side of the
20 track or at opposite sides thereof, as preferred; and a further object is the simplification of the entire structure, coupled with durability and absolute precision of action.

Another object is the provision of simple
25 and reliable means for indicating the thrown position of the switch-tongue.

Other objects of the invention, together with the advantages possessed by the new construction, are set forth in the following detailed description, in connection with which
30 attention is called to the accompanying drawings, illustrating the invention in its preferred form.

In the drawings, Figure 1 is a top plan view
35 of an electrical-railway switch embodying my invention. Fig. 2 is a vertical sectional view on line 2 2 of Fig. 1.

Referring to the drawings by numerals, 1
1 designate the rails of the main track, and
40 2 2 are the rails of the branch track.

3 is the switch tongue or point, pivoted at its inner end on a pin 4. The switch-throwing rail 5, which is pivoted at its inner end on the pin 6, is preferably located, as shown,
45 at the side of the track occupied by the switch-tongue, although said rail and tongue may be located at opposite sides of the track without departing from the spirit of the invention and without material modification of the

switch-throwing mechanism. Adjacent to 50 the track-rail carrying the switch-throwing rail and switch-tongue is a water-tight casing 7, having a removable cover. (Not shown.)

8 is a rod having at its outer end a pin 9, engaging a slot 10, formed in the free end of 55 the rail 5. The rod slidably extends through an opening in the casing-wall 7', at which is a stuffing-box 11, and its inner end, which is tubular, is in telescoping connection with a smaller rod 12, extending inwardly from the 60 opposite casing-wall and is guided thereby. Adjustable on the rod 8 is a collar 13, having a set-screw 14, and encircling the rods 8 and 12 and interposed between the set collar and the casing-wall is a coiled spring 15, the func- 65 tion of which is to restore the normal position of the free end of the rail 5 after the flange of the car-wheel which moves the rail has passed the end of the latter. An extension 16 of the casing (see dotted lines in Fig. 70 1) may be provided to enable the employment of a spring of greater length. The free end of the rail 5 is curved outwardly, thereby enabling movement of the rail by the wheel-flange from either direction. 75

17 is a rod slidable in an opening in the opposite end of the casing-wall 7', at which is a stuffing-box 18. The outer end of this rod 17 is pivoted to the switch-tongue near its free end. Fixed to and extending inwardly from the 80 casing-wall 7', intermediate of its ends, is a pin 19, which forms the support and guide for a slidable fulcrum-piece 20, having its inner end formed tubular for connection with the pin 19 and its outer end slotted horizon- 85 tally to receive a lever 21, pivoted thereto by a pin 22. One end of the lever is provided with a slot 23, engaged by a pin 24, fixed to and depending from the rod 8. The opposite end of the lever is bent outwardly, as at 25, 90 and is slotted to receive one arm 26 of a bell-crank lever 27, which is pivoted thereto by a pin 28. A headed rod 29 connects the lever end 25 and lever-arm 26 in a manner to permit flexing of the bell-crank lever in one di- 95 rection, and a coiled spring 30, encircling the rod and bearing at its ends against the end and arm, serves to normally aline the long

arm of the lever 27 with the lever 21. The function of this construction will presently be set forth.

The long arm of the lever 27 has a slot 31, engaged by a pin 32, fixed to and depending from the rod 17.

33 is an electromagnet secured within an extension 34 of the casing.

35 is an armature on one end of a lever 36, pivoted by a pin 37 to ears extending upwardly from the bottom of the casing. The opposite end 38 of the lever is preferably enlarged and is when the armature is attracted by the magnet elevated to a position between the outer end of the fulcrum-piece 20 and an abutment 39, extending inwardly from the adjacent casing-wall. As shown in Fig. 2, this end 38 of the lever 36 is normally below the end of the fulcrum-piece, and therefore out of the path of the latter, and in operation when the rail 5 is moved by a wheel-flange the lever 21 27 is swung without communicating movement to the switch-tongue, the fulcrum-piece being carried over the lever end 38. When the magnet becomes energized, the attracted armature elevates the lever end 38 between the fulcrum-piece and abutment. In this adjustment of the parts movement of the switch-throwing rail 5 is communicated by the rod 8, lever 21 27, and rod 17 to the switch-tongue. In other words, the wheels of a car moving in the direction of the arrow engage and move the rail 5 to the right, and through the described connections the switch-tongue is moved to the left, thereby directing the car to the right on the side tracks 2 2. It will be understood that while the magnet is deenergized the switch-tongue remains in its normal position to keep the main track open and that while a circuit is established through the magnet the parts are controlled to effect the switching of the car by the engagement of the wheel-flanges with the rail 5. The function of the yielding connection between the levers 21 and 27 is to prevent breakage or disorder of any of the parts when a stone or other obstruction lodges between the switch-tongue and main rail.

The lever 36 carries a yielding contact 40, which in the elevation of the lever end 38 to shift the fulcrum of the lever 21 27 engages a contact 41, suitably supported in and insulated from the casing. The contact 40 is connected through the lever and casing with the ground, and connecting the contact 41 with the trolley-wire 42 is an insulated conducting-wire 43, in which is arranged an incandescent electric lamp or lamps 44. When the contacts are brought into engagement, a grounded circuit is established through the wire 43 and lamps 44 from the trolley-wire, and the consequent illumination of the lamps is the signal to the operator on the car or train that the parts are set to effect the throwing of the switch.

Any suitable means for energizing the magnet from the car may be provided, which means includes conveniently-located circuit-closers—as, for instance, the ordinary push-buttons.

I claim as my invention—

1. In a switching mechanism, a lever through which the switch is moved said lever being normally inactive to throw the switch and means electrically moved to provide a fulcrum for the lever to render it active to throw the switch.

2. In a switching mechanism, a lever through which the switch is moved, a fulcrum-piece normally withdrawn from the lever to render the latter inactive to throw the switch, and electrical means to present the fulcrum-piece to the lever to render it active to throw the switch.

3. A switching mechanism comprising a switch-tongue, a spring-pressed switch-throwing rail, a lever operatively connected at its ends to the tongue and rail, a fulcrum-piece movable to and from the lever to render the latter active and inactive to throw the tongue, and electrical means for moving the fulcrum-piece.

4. A switching mechanism comprising a switch-tongue, a switch-throwing rail located at the side of the track occupied by the tongue, a water-tight casing, a rod pivoted to the rail and slidable in the casing, a spring adjustable as to tension and arranged to press the rail normally against the track-rail, a rod pivoted to the tongue and slidable in the casing, a lever pivoted at its ends to said rods, a guided fulcrum-piece pivoted intermediately to the lever, an electromagnet, and a lever carrying an armature and arranged to be brought into and out of engagement with the fulcrum-piece in the manner and for the purpose substantially as set forth.

5. In a switching mechanism, a switch-tongue, a switch-throwing rail, and a lever operatively connected to said tongue and rail said lever being formed in two flexibly-connected parts.

6. In a switching mechanism, a switch-tongue, a switch-throwing rail, a lever connected at one end to the rail and having its other end bent to one side, and a bell-crank lever connected at one arm to the tongue and intermediately pivoted to the aforesaid lever, a rod loosely connecting the ends of the levers, and a spring interposed between the ends of the levers.

7. A switching mechanism comprising a switch-tongue, a switch-throwing rail, a lever operatively connected with the tongue and rail, means for rendering the lever active or inactive to throw the tongue, an electric circuit including a lamp, and a circuit-closer operated by the movement of said means.

8. A switching mechanism comprising a switch-tongue, a switch-throwing rail, a lever operatively connected with the tongue and

5 rail, a magnet, an armature-lever adapted to be moved to provide a fulcrum for the lever, an electric circuit including a lamp and a stationary contact, and a yielding contact carried by the armature-lever and arranged to engage the other contact in the movement of the armature-lever.

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

WALTER J. BELL.

Witnesses:

E. L. KENNEY,
HENRIETTA L. SHEPSTON.