

No. 775,599.

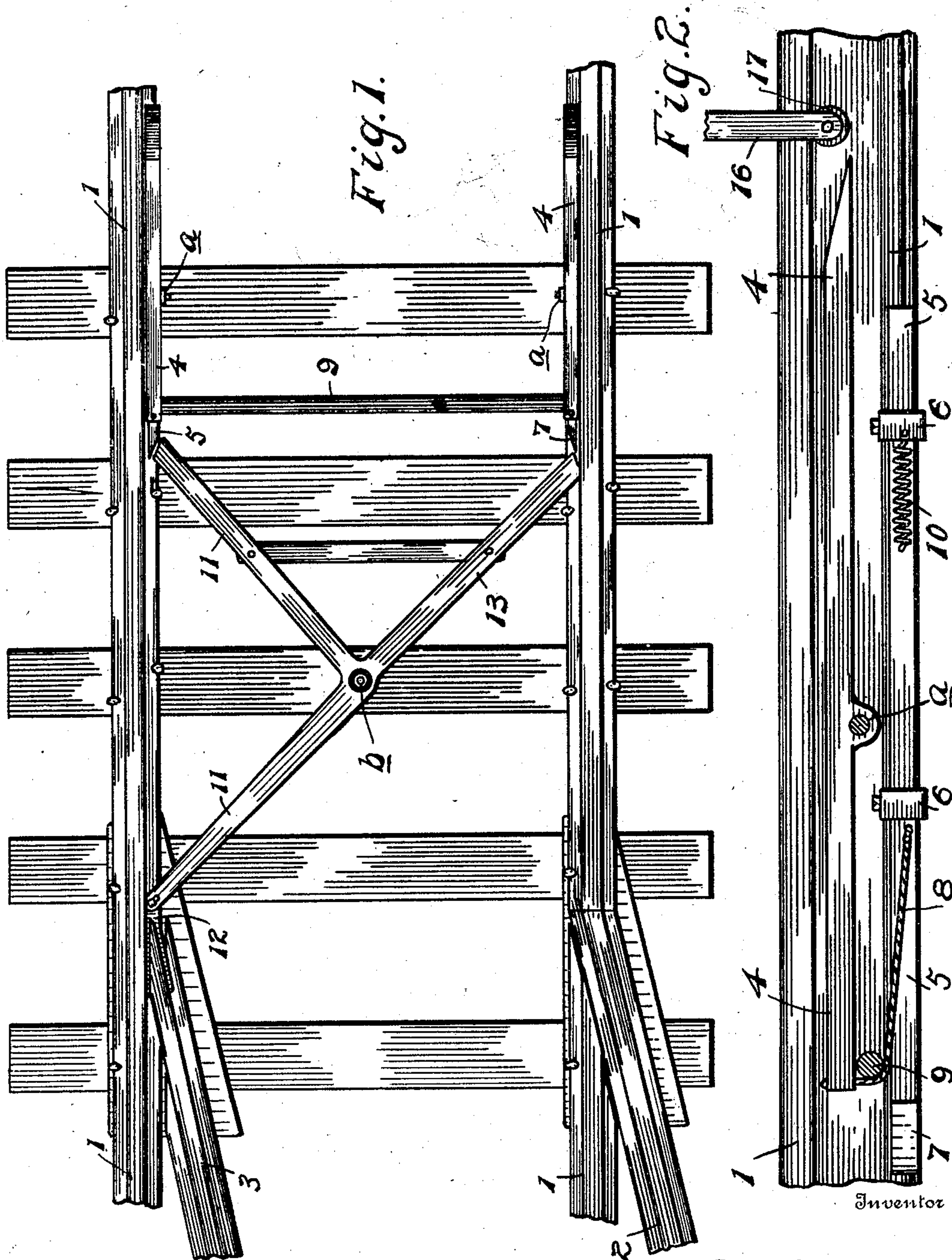
PATENTED NOV. 22, 1904.

H. M. COSEY.  
SWITCH OPERATING DEVICE.

APPLICATION FILED SEPT. 23, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

H. H. Hunt,  
Will F. Miller

By

Henry M. Cosey,  
Walter N. Haskell,  
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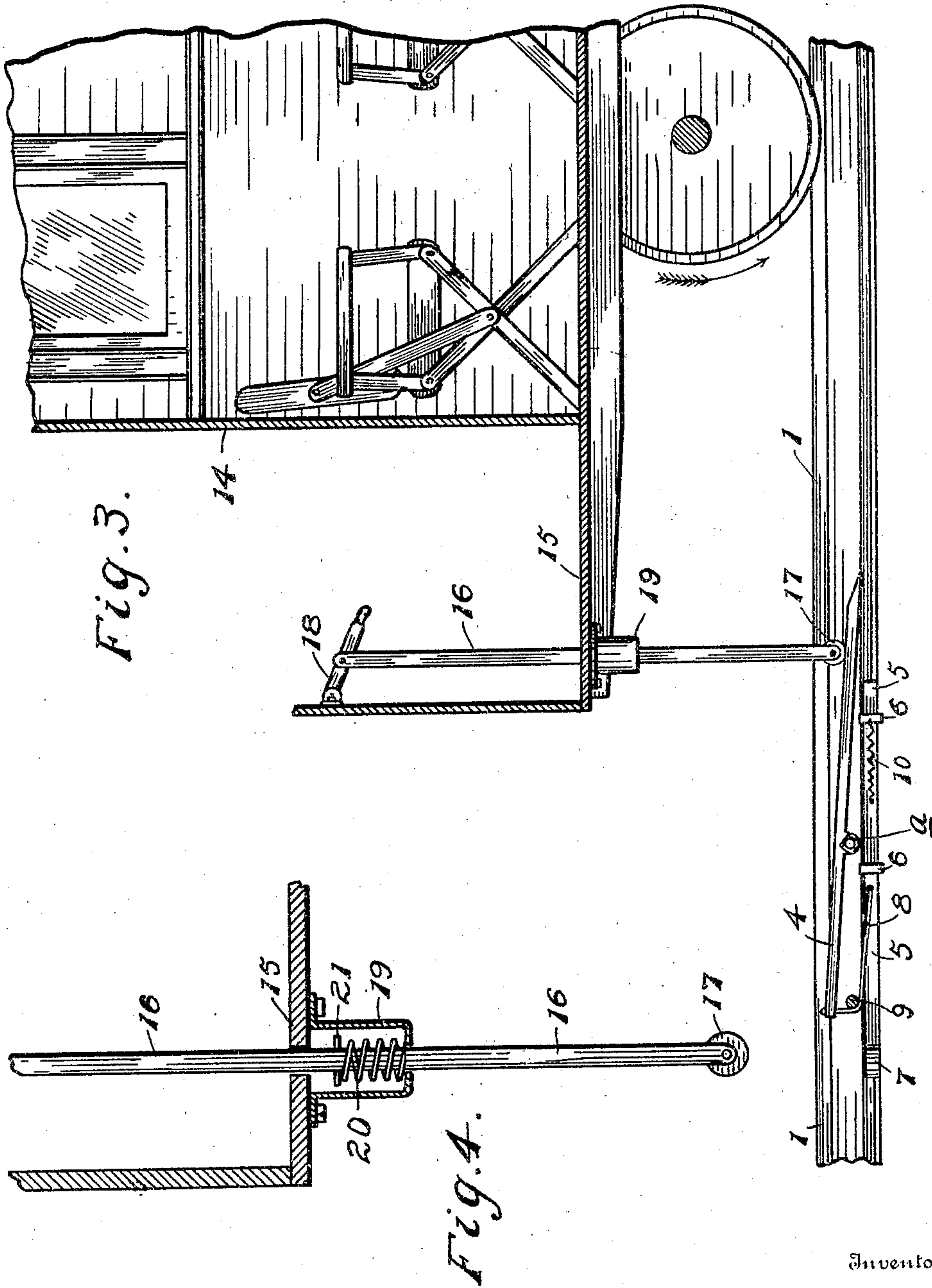
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# UNITED STATES PATENT OFFICE.

HENRY M. COSEY, OF STERLING, ILLINOIS.

## SWITCH-OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 775,599, dated November 22, 1904.

Application filed September 23, 1904. Serial No. 225,568. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY M. COSEY, a citizen of the United States, residing at Sterling, in the county of Whiteside and State of Illinois, have invented certain new and useful Improvements in Switch-Operating Devices; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention has reference to switch-operating devices, and pertains more specially to switches in tracks upon which are operated electric cars. I aim to provide a simple and positive mechanism which can be operated from a car when approaching the switch, so as to open or close the movable switch-point and permit the car to take either the right or left hand track, as may be desired.

In the drawings, Figure 1 is a plan view of a section of track in which my invention is installed. Fig. 2 is a side elevation showing the operating mechanism in detail. Fig. 3 is a similar view, together with the front end of a car, in vertical longitudinal section. Fig. 4 is an enlarged detail showing the plunger 16 and supporting mechanism.

Similar characters refer to similar parts throughout the several figures.

1 1 indicate the rails of the main track, and 2 and 3 the rails of the turnout or switch, 3 representing the usual switch-point, having free movement at the point of junction with the rail 1, so as to be permitted limited movement to and from such rail. A short plate 4 is pivotally attached to the inner side of the rail 1, as at *a*, Fig. 2, a short distance from the switch-rails, so as to be capable of a vertical tilting movement. The plate 4 is a sufficient distance below the top of the rail 1 to preclude any possibility of contact of the car-wheel with such plate in passing over the same. Beneath the plate 4 a bar 5 has longitudinal play in guides 6, secured to the flange of the rail. The front end of the bar 5 is provided with a cam-face 7. A short

cable 8 is attached at one end to the front end of the plate 4, passes under a roller 9, supported between the tracks 1, and is secured at the other end to the side of the bar 5. By this means upon the upward movement of the front end of the plate 4 the bar 5 is drawn forward a slight distance. By means of a contractile coiled spring 10, attached at one end to the bar 5 and at the other end to one of the guides 6, the forward movement of the bar is controlled and the same drawn back to its normal position, as shown in Fig. 2, when the plate 4 ceases to be operated.

11 represents a bent arm-lever pivoted centrally at the tracks, as at *b*, and having its forward arm pivotally secured to a projecting plate 12, fixed on the lower side of the rail 3 at the movable end thereof. The other end of the lever 11 is beveled and adapted to be engaged by the cam-face 7 of the bar 5 on the forward movement of such bar. The contact of the cam 7 with the rear end of the lever 11 forces such lever outwardly, swinging the front end thereof inwardly, and bringing the rail 3 into contact with the track 1.

The plate 4, bar 5, and appurtenant parts, which have hereinbefore been described in connection with one of the tracks 1, are duplicated on the inner side of the opposite track 1 in reverse positions, the bar 5 thereof being adapted to operate an arm 13 integral with the lever 11 at the pivotal point thereof.

In Fig. 3, 14 represents the front end of an ordinary street-car, 15 the platform thereof, and 16 a plunger supported in the platform and provided at its lower end with a roller 17. At its upper end the plunger 16 is loosely attached to a short lever 18, hingeably secured to the front of the car. Beneath the platform the plunger passes through a cylindrical casing 19, in which is seated an extensile coiled spring 20, impinging at its upper end a pin 21, fixed in the plunger 16. The position of the plunger 16 in the platform 15 is such that the roller 17 is just within the track 1 and adapted to pass immediately above the plate 4, being held normally out of contact therewith by means of the spring 20. When it is desired to throw the switch, the lever 18



is forced downwardly, causing the roller 17 to engage the plate 4, the rear end of which is beveled to facilitate the operation. By the impact of the roller 17 the plate 4 is forced downwardly and the front end raised, drawing the bar 5 forward and closing the switch. As soon as the track 3 is moved the plunger is permitted to return to its normal position, in which position it is held by the spring 20. The removal of the pressure upon the plate 4 permits such plate and the bar 5 to be returned to their former positions by the action of the spring 10. It will be seen, however, that the switch-point is not affected by the return movement of these parts, but remains in the position in which it is placed until further operated upon.

The operation above described relates only to the means for throwing the switch in one direction, and in order to perform the operation at either side of the track it will be necessary to equip the platform of the car with plungers 16 and controlling mechanism at each side of such platform. When the car is approaching the switch, if the switch is open, so that the car would continue along the track 1, and the operator wishes to change to the turnout-tracks, he depresses the plunger on the right-hand side of the platform. If, on the other hand, the switch is closed, and he wishes to continue along the tracks 1, the switch is thrown by operating the plunger at the left.

If, as is sometimes the case, there are two movable switch-points in use, they can be operated simultaneously by being connected by a tie-plate, or the lever 11 can be connected with the additional switch-point by an arm (not shown) extending from the pivotal point of the lever 11 to the switch-point and operated with such lever.

All of the parts of the device are designed to be of metal of suitable strength to insure durability thereof. It will be seen that the device can be operated from the car while the same is in motion. By this means the necessity of employing a switch-tender or operating the switch with a rod from the front of the car is done away with.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. A switch-operating device, comprising a short plate, pivoted to the side of the rail, so as to be permitted a vertical rocking movement; a slide-bar, supported beneath said plate, at the base of the rail; means for converting the rocking movement of said plate into a reciprocating movement in said bar; means for suitably actuating said plate from the platform of a car, while in motion, to rock the same; and means for imparting the reciprocating movement of said bar to the movable switch-point, to operate the same, substantially as shown and set forth.

2. A device of the class named, comprising a reciprocating bar, supported on the inner side of the rail, at the base thereof; a short plate pivoted to the inner face of the rail, just above said bar; a roller, suitably supported between the forward ends of said bar and plate; a cable, attached to the forward end of said plate, passing beneath said roller, and secured to said bar in rear of the roller; means for suitably actuating said plate from the platform of the car, while in motion, to rock the same; and means for imparting the movement of the reciprocating bar to the movable switch-point, to operate the same, substantially as set forth.

3. In a switch-operating device, the combination of the plate 4, pivotally secured to the side of the rail, so as to be capable of a vertical rocking movement; the slide-bar 5, supported beneath said plate, at the base of the rail; the cable 8, connecting the front end of the plate with said bar; and the roller 9, around which such cable is adapted to operate, substantially as shown and described.

4. In a switch-operating device, the combination of the lever 11, loosely attached at its front end to the switch-point; the slide-bar 5, adapted to engage the rear end of the lever 11; the plate 4, pivotally secured to the side of the rail, above the bar 5; the cable 8, connecting the front end of the plate 4 with the bar 5; the roller 9, supported between the forward ends of the plate 4 and bar 5, beneath which the cable 8 passes; and means for suitably actuating the plate 4 from the platform of a car, while in motion, to rock such plate, substantially as shown and set forth.

5. In a device of the class named, the combination of the lever 11, loosely attached at its front end to the movable switch-point; the slide-bar 5 adapted to engage the rear end of the lever 11; the plate 4, pivotally secured to the side of the rail, above the bar 5; the cable 8, connecting the front end of the plate 4 and the bar 5; the roller 9, supported between the front ends of the plate 4 and bar 5, beneath which roller the cable 8 passes; the plunger 16, supported in the front platform of the car; and means for suitably operating the plunger 16, to rock the plate 4, substantially as shown.

6. In a device of the class named, the combination of the lever 11, having its forward end loosely secured to the movable switch-point; the arm 13, fixed to the lever 11; the slide-bar 5, engaging the rear end of the lever 11; means for suitably actuating the bar 5; a similar bar 5, engaging the free end of the arm 13; and means for actuating such other bar, substantially as set forth.

7. In a switch-operating device, the combination of a pair of plates 4, supported on the inner sides of the rails, so as to be capable of vertical rocking movement, independently of each other; a pair of slide-bars 5, supported on the inner sides of the rails 1, at the bases



thereof; means for converting the rocking movement of the plates 4 into a reciprocating movement in the bars 5; the lever 11, engaged by one of the bars 5 at its rear end, and loosely  
5 attached to the switch-point 3 at its forward end; the arm 13, rigidly secured to the lever 11, and engaged at its free end by the other bar 5; and means for actuating either of the plates 4, at will, from the platform of the car,  
10 while in motion, substantially as shown and described.

8. In a device of the class named, the combination of the plate 4, pivoted to the side of the rail, so as to be capable of a vertical rock-  
15 ing movement; the lever 11, pivoted centrally of the tracks, so as to be swung horizontally, the front end of the lever being loosely attached to the movable switch-point; means for converting the vertical movement of the  
20 plate 4 into a horizontal movement in the lever 11; and means for suitably actuating the plate 4, to rock the same, substantially as shown and set forth.

9. In a switch-actuating device, the combination of the lever 11, pivoted between the  
25 rails, and loosely attached at its forward end to the movable switch-point; the slide-bar 5, supported against the rail, at the base thereof; the plate 4, pivotally secured to the rail  
30 above the bar 5; the cable 8, connecting the forward end of the plate 4 with the bar 5; the roller 9, supported between the front ends of the plate 4 and bar 5, beneath which roller the  
35 cable 8 passes; plunger 16, provided at its lower end with the roller 17; lever 18, by which the plunger 16 is controlled; and the  
40 spring 20, supported to the platform of the car, and holding the plunger 16 normally out of engagement with the plate 4, substantially as set forth.

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

HENRY M. COSEY.

Witnesses:

J. W. McDONALD,  
R. B. McNEIL.