

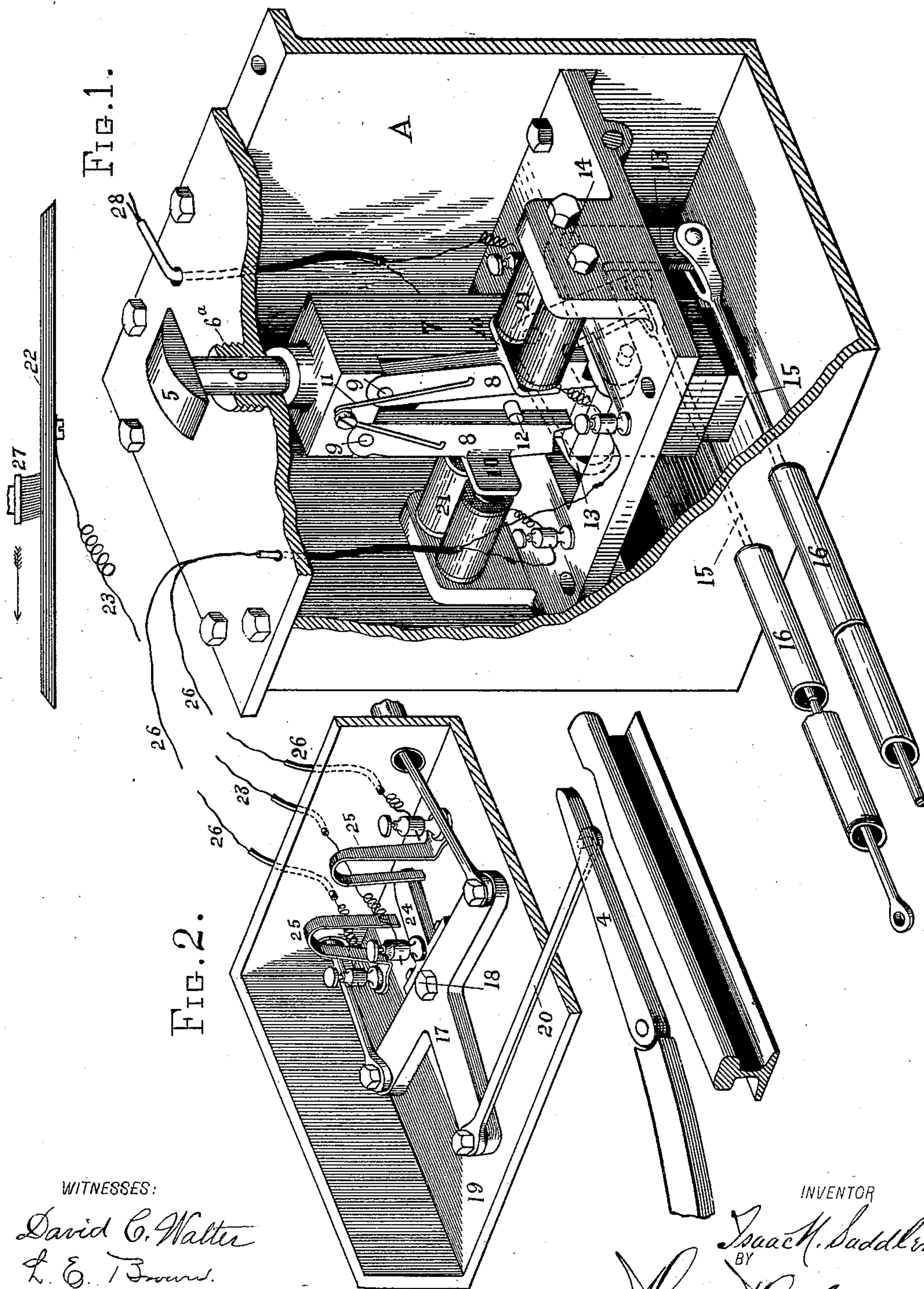
(No Model.)

2 Sheets—Sheet 1.

I. N. SADDLER.  
RAILWAY SWITCH.

No. 543,705.

Patented July 30, 1895.



WITNESSES:

David C. Walter  
L. E. Brown.

INVENTOR

Isaac H. Saddler

BY

Arthur Hall  
ATTORNEY

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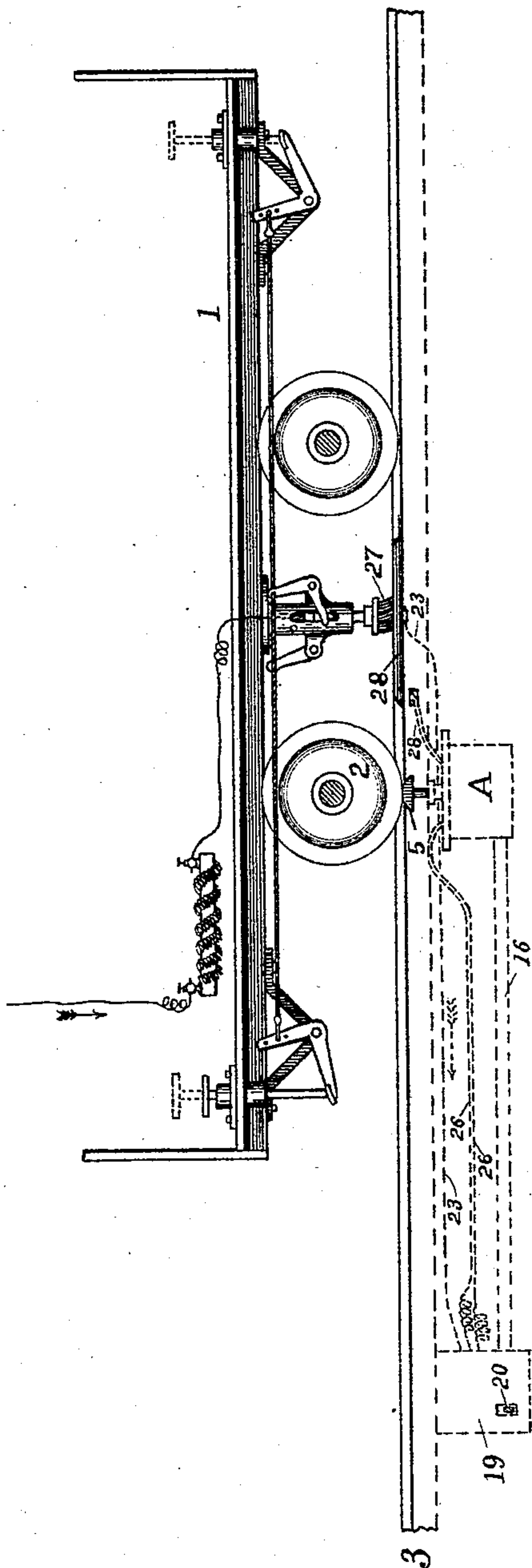
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BY *Ronan Hall* ATTORNEY



# UNITED STATES PATENT OFFICE.

ISAAC N. SADDLER, OF PERRYSBURG, OHIO.

## RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 543,705, dated July 30, 1895.

Application filed April 22, 1895. Serial No. 546,689. (No model.)

*To all whom it may concern:*

Be it known that I, ISAAC N. SADDLER, a citizen of the United States, residing at Perrysburg, Wood county, Ohio, have invented certain new and useful Improvements in Railway-Switches, of which the following is a specification.

My invention relates to and its object is to provide a switching mechanism by which the switch-point shall be operated by the weight of the passing car, and in which the switch-point is connected with the switch-throwing mechanism by means of electricity at the will of the operator upon the car. I attain these objects by means of the mechanism hereinafter described and shown and illustrated in the accompanying drawings, made part hereof, in which—

Figure 1 is a perspective view of part of my device, hereinafter referred to, in place in its case with part of the case broken away; Fig. 2, a perspective view of another part of the same with a portion of its case removed; and Fig. 3 is a side elevation of a portion of a car in operative relation with my switch-throwing device, as hereinafter described.

In the drawings, 1 is the car, provided with the usual wheels 2, running upon the track-rails 3.

4 is a pivoted switch-point or suitable rail, by means of which a car may be caused to travel from one track to another.

5 is a block or shoe which is located inside the rail at such point as to be engaged and depressed by the flange of the car-wheel as it passes. This block or shoe, by its shank 6, is connected to a vertically-reciprocating block 7, which by means of a spring (not shown in the drawings) is held normally elevated. The block 7 is provided with latches or detents 8, pivoted at their upper end, as at 9, each carrying an armature 10. A spring 11 holds the latches or detents 8 normally pressed toward each other and against stop 12.

13 13 are bell-crank levers pivoted on either side of block 7, as at 14, these parts being indicated by dotted lines, in part, in Fig. 1.

When the detents 8 are held in normal position they reciprocate idly with the block 7 in its vertical movement; but when either of the detents is swung outwardly on its pivot 9 its notched lower end engages the horizon-

tal arm of the contiguous bell-crank lever 13. To these bell-crank levers are pivoted rods 15, which pass through tubes 16 to double bell-crank lever 17, pivoted, as at 18, in box 19. To the double bell-crank lever 17 the switch-point 4 is pivotally connected by means of rod 20.

21 21 are electromagnets secured in such position that their poles are presented to the armatures 10 upon the latches or detents 8.

22 is a flat strip of metal laid midway between and parallel to the rails of the track, its upper surface being exposed and flush with the surface of the ground. This strip of metal, which is an electrical conductor, is connected by wire 23 to a binding-post on electrical switch-bar 24, forming part of double bell-crank lever 17, but suitably insulated therefrom.

25 25 are contact-pieces adapted to be alternately engaged by electrical switch 24 as it is thrown from side to side. Contact-pieces 25 are connected through wires 26 to the magnets 21. The current by which the electrical part of my apparatus is actuated is introduced through plate 22 by means of a brush 27 on the car, which brush is provided with suitable means for raising and lowering the same at the will of the operator at either end of the car, and which is in electrical connection with the trolley-wire or other source of electrical energy. The circuit is completed by means of wires 28 leading from the magnets 21 to the track-wire, rail, or to ground.

The operation of my device is as follows: When the switch-point is set for the desired track and is not to be used, the car passes over the device, the only action produced being the depression of shoe 5 and block 7, which are forced down by the pressure of the flanges of the wheels of the passing car, the block and shoe resuming their normal position after the car passes; but when the switch is to be thrown, as the car approaches the switch, the brush 27 is lowered so that it sweeps along plate 22, sending a current through wires 23 and 26 and electrical switch 24 25 to one of the electromagnets 21. The magnet which is in circuit now pulls upon its armature 10, attached to detent 8, drawing the lower part of the latch or detent outward toward the magnet, so that the lower end of the detent will



engage the horizontal arm of the neighboring bell-crank lever 13. The flange of the car-wheel at this instant engages and depresses the block 7, which carries with it the detent 5 8, which engages the bell-crank lever 13, throwing the bell-crank lever and its attached rod 15, which in turn throws bell-crank lever 17 and its attached rod 20 and the switch-point 4. By the throw of bell-crank lever 17 10 electrical switch 24 is thrown to the opposite contact-piece 25, the brush 27 in the meantime having left plate 22 and the circuit being broken. The contact now made between switch 24 and contact-piece 25 leads to the 15 magnet opposite from the one which has just acted, and the next car which passes, and which closes the circuit, will cause the switch to be thrown in the direction opposite to that just described. It will be seen that the arrangement of the electrical switch 24 25, and 20 its connection with the electromagnets 21, are such that closing the circuit and applying the weight of the car will invariably throw the switch-point in a direction opposite to its last 25 throw, so that it will be necessary for the operator to lower brush 27 only when he desires to change the switch. This convenient arrangement is not interfered with by the fact that my switch may be operated by hand in 30 the usual way.

In practice I dispose my magnetically-controlled detent and vertically-reciprocating rod or block 7 within a water-tight box A, the stem 6 of the block or rod 7 passing through 35 the upper part of the case A through a stuffing-box 6<sup>a</sup>. The lever 17 and the electrical switch are likewise disposed in a water-tight iron box 19, the two boxes being connected by tubes 16, screwed at each end into screw-threaded openings in the boxes, through which 40 tubes pass the connecting-rods 15. Rod 20 also passes out from box 19 through a tube (not shown in the drawings) suitably protected against the admission of water. Thus 45 it will be seen that my apparatus cannot be rendered inoperative by becoming wet or by freezing up.

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

50 1. In a railway switch, a contact-piece or shoe adapted to be engaged and actuated by a car, a switch-point or rail, and means inter-

mediate said contact-piece or shoe and said switch-point or rail adapted to open and to close said switch, in combination with electro- 55 magnets and an electrical switch adapted to throw said contact-piece into engagement alternately with the switch opening mechanism and the switch-closing mechanism, substantially as and for the purpose specified. 60

2. In a railway switch, means for throwing the switch-point or rail by the weight of a car, in combination with a normally open electric circuit, magnets in said circuit adapted to control said switch-throwing mechanism, an electric switch in said circuit controlled by said 65 switch-throwing mechanism and means upon said car for closing said circuit at will, substantially as and for the purpose specified.

3. In a railway switch, means for throwing 70 the switch-point or rail by the weight of a passing car, in combination with a normally open electric circuit, magnets in said circuit adapted to control said switch-throwing mechanism, an electric switch in said circuit controlled by said switch-throwing mechanism, 75 a contact-piece or plate (22) in said circuit, and a brush (27) upon said car adapted to engage said contact plate, and to close said circuit and to keep said circuit closed during a 80 definite movement of the car, substantially as and for the purpose specified.

4. In a railway switch, a contact-piece or shoe adapted to be engaged and actuated by a passing car, means for holding said contact- 85 piece normally in operative position, detents on said contact-piece, means for holding said detents normally in inoperative position, bell-crank levers adapted to be engaged by said detents, a switch-point or rail, and suitable 90 connections intermediate said switch-point or rail and said bell-crank levers, in combination with a normally open electric circuit, electromagnets in said circuit adapted to throw said detents into engagement with said bell-crank 95 levers, means on said car for opening and closing said circuit, and an electric switch in said circuit whereby said electro-magnets are energized alternately, substantially as and for the purpose specified.

ISAAC N. SADDLER.

In presence of—

WILLIAM P. TYLER,  
L. E. BROWN.