

UNITED STATES PATENT OFFICE.

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STREET-RAILWAY SWITCHING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 747,847, dated December 22, 1903.

Application filed May 7, 1903. Serial No. 155,971. (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 Switching Mechanism, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention, which relates to railway-switches, is an improvement on the construction of switching mechanism for which I on or about the 5th day of August, 1902, filed an application for patent, Serial No. 118,460.

The nature of the present improvements will be readily understood, reference being had to the following detailed description and to the accompanying drawings, illustrating the improvements in the preferred form of embodiment, it being understood that various modifications may be made therein without departing from the spirit of invention defined by the concluding claims.

In the drawings, Figure 1 is a part plan and part vertical view of a switching mechanism embodying my present improvements. Fig. 2 is an enlarged sectional view of one of the cylinders and pistons and of the means for throwing the piston into and out of action. Fig. 3 is a view similar to Fig. 2, with certain parts in a different position.

Referring to the drawings by numerals, 1 designates one of the main-track rails, and 2 is one of the branch-track rails.

3 is the switch-tongue pivoted at 4, and 5 is the switch-throwing rail engaged by the wheel-flange and pivoted at 6. In the normal position of the rail 5 its point is in contact with the main rail, and the switch 3 is normally positioned to open the main track.

Adjacent to the rail 6 and switch-tongue is a casing 7, provided with two preferably cylindrical chambers, in one of which, 8, is slidably arranged a piston 9. A rod 10 connects the piston and the switch-tongue, said rod passing through the casing end, at which is a stuffing-box. A spring 11 is coiled around the rod and interposed between the stuffing-box and a collar 12, adjustable on the rod, the spring serving to retract the switch-point after movement in the manner presently to

be described. In the other chamber 13 of the casing is slidably arranged a piston 14, and 15 is a coiled spring interposed between the rear side of the piston and the casing end and operating to retract the piston after movement to normal position. (Shown in full lines in Fig. 1.) Centrally of the piston at its front side is a boss 16, in which is a recess 17.

A rod 18, connected at its outer end with the switch-throwing rail, passes through the casing end, at which is a stuffing-box, and the inner end of the rod loosely occupies the recess of the boss 16. The chambers rearwardly of the pistons are filled with liquid 19, and said chambers communicate with each other through a connecting-passage 20. Normally movement of the rail 5, which occurs with the traverse of each car, is not communicated to the switch-tongue, as the depth of the recess 17 is sufficient to allow full movement of the rod 18 in the throw of the rail 5 without imparting movement to the piston. If a car is to switch to the rails 2, the switch-tongue is moved to the position shown in dotted lines in the following manner: In the portion of the casing having the chamber 13 is an electromagnet 21, the upper end of which extends into said chamber, and pivoted in ears 22 is a bell-crank lever 23, one arm of which carries an armature 24 and the other arm a roller 25 in engagement with an arm 26, pivoted at one end to the boss 16. On the under side of the rod 18 is a shoulder 27. The magnet 21 is electrically connected in a manner to be energized by closing a circuit on the car, and when energized the armature is attracted and the lever 23 moved to the position shown in Fig. 3, which movement elevates the free end of the arm into the path of the shoulder 27. The piston 14 through the engagement of the elevated arm 26 and shoulder 27 is locked to the rod 18, and in the throw of the rail 5 the piston 14 is moved to the right, and through the medium of the fluid body the piston 9 is moved to the left, resulting in the setting of the tongue 3 to switch the car onto the rails 2. When the circuit is broken, the magnet is de-energized, and a spring 28 retracts the lever 23, allowing the arm 26 to drop from the path of the shoulder 27. The springs 11 and 15, re-

spectively, restore the pistons 9 and 14 to normal positions.

I claim as my invention—

5 1. In a switching mechanism, a switch-tongue, an element arranged to be moved by a car, a piston connected to the switch-tongue, a piston normally uncoupled from the element, electrically-controlled means effecting the coupling of the element and piston, and
10 means between the pistons for effecting their simultaneous movement.

15 2. In a switching mechanism, a switch-tongue, an element arranged to be moved by a car, a spring-retracted piston connected to the switch-tongue, a spring-retracted piston normally uncoupled from the element, electrically-controlled means effecting the coupling of the element and piston, and a fluid body between said pistons.

20 3. In a switching mechanism, a switch-tongue, a piston connected therewith, a switch-throwing rail, a rod extending from said rail, a piston normally uncoupled from the rod, electrically-controlled means effecting the coupling of the piston and rod, and a
25 fluid body between the pistons.

30 4. In a switching mechanism, a switch-tongue, a spring-retracted piston connected therewith, a switch-throwing rail, a spring-retracted piston, a rod pivoted at one end to said rail and having its other end normally

uncoupled from the last-named piston, a shoulder on the rod, a shoulder on the piston said shoulders being normally out of engagement, and electrically-controlled means effecting the engagement of said shoulders. 35

5. In a switching mechanism, a switch-tongue, an element arranged to be moved by a car, a rod connected with said element, a shoulder on the rod, a piston, an arm pivoted on the piston and normally out of the path of the shoulder, electrically-controlled means for moving the arm into the path of the shoulder, and fluid-pressure means between the piston and switch-tongue. 40 45

6. In a switching mechanism, the combination of a pivoted element, a rod connected therewith and having a shoulder, a piston having a recess in which the end of the rod normally slides, an arm pivoted on the piston, a spring-retracted lever in engagement with the arm and carrying an armature, and an electromagnet adapted when energized to throw the lever and move the arm into the path of the shoulder. 50 55

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

WALTER J. BELL.

Witnesses:

H. L. SHEPSTON,
A. D. BOND.