

No. 690,459.

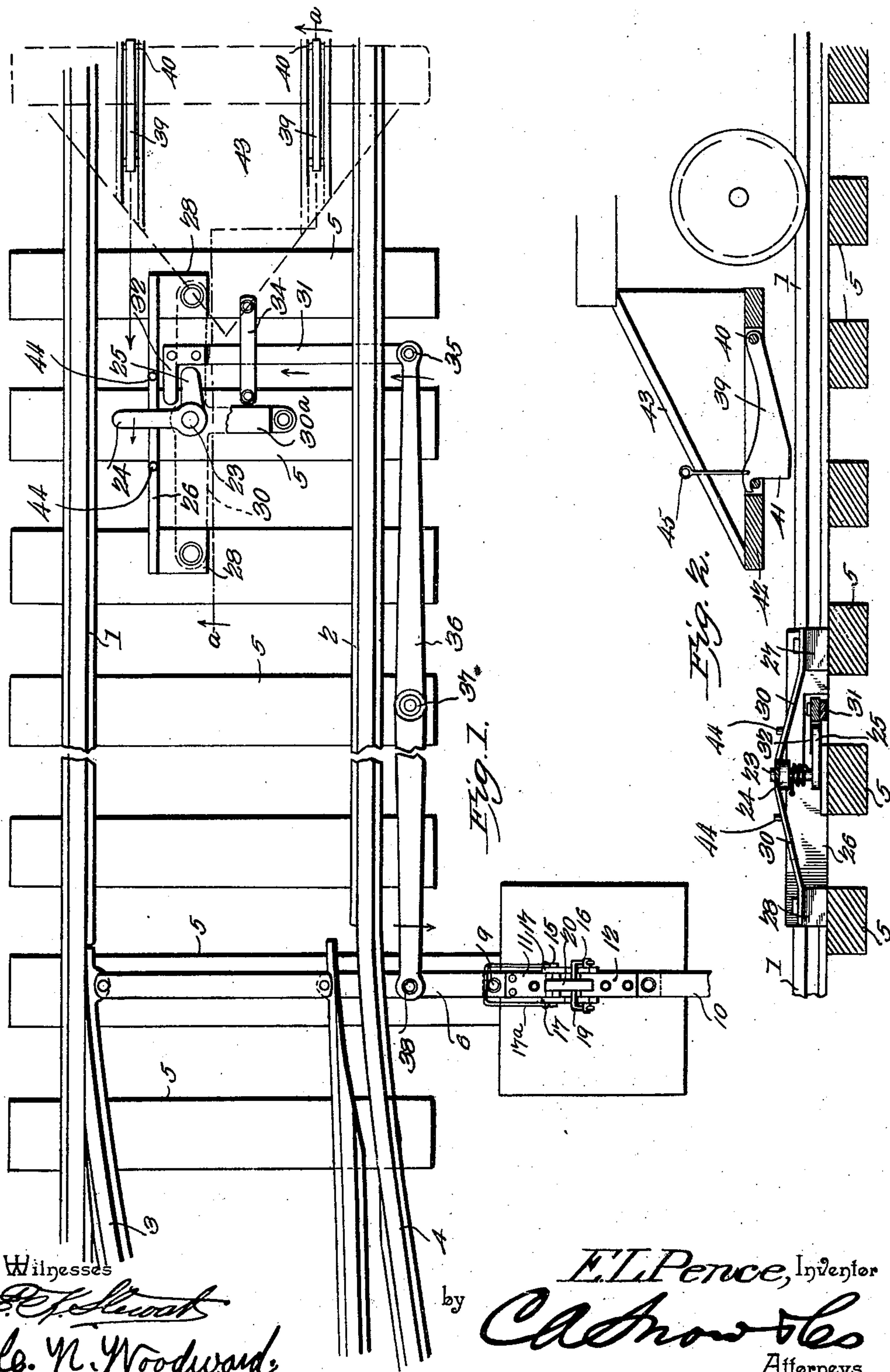
Patented Jan. 7, 1902.

E. L. PENCE.
SWITCH OPERATING DEVICE.

(Application filed July 17, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
E. L. Pence
C. H. Snow & Co.

by

E. L. Pence, Inventor
C. H. Snow & Co.
Attorneys

No. 690,459.

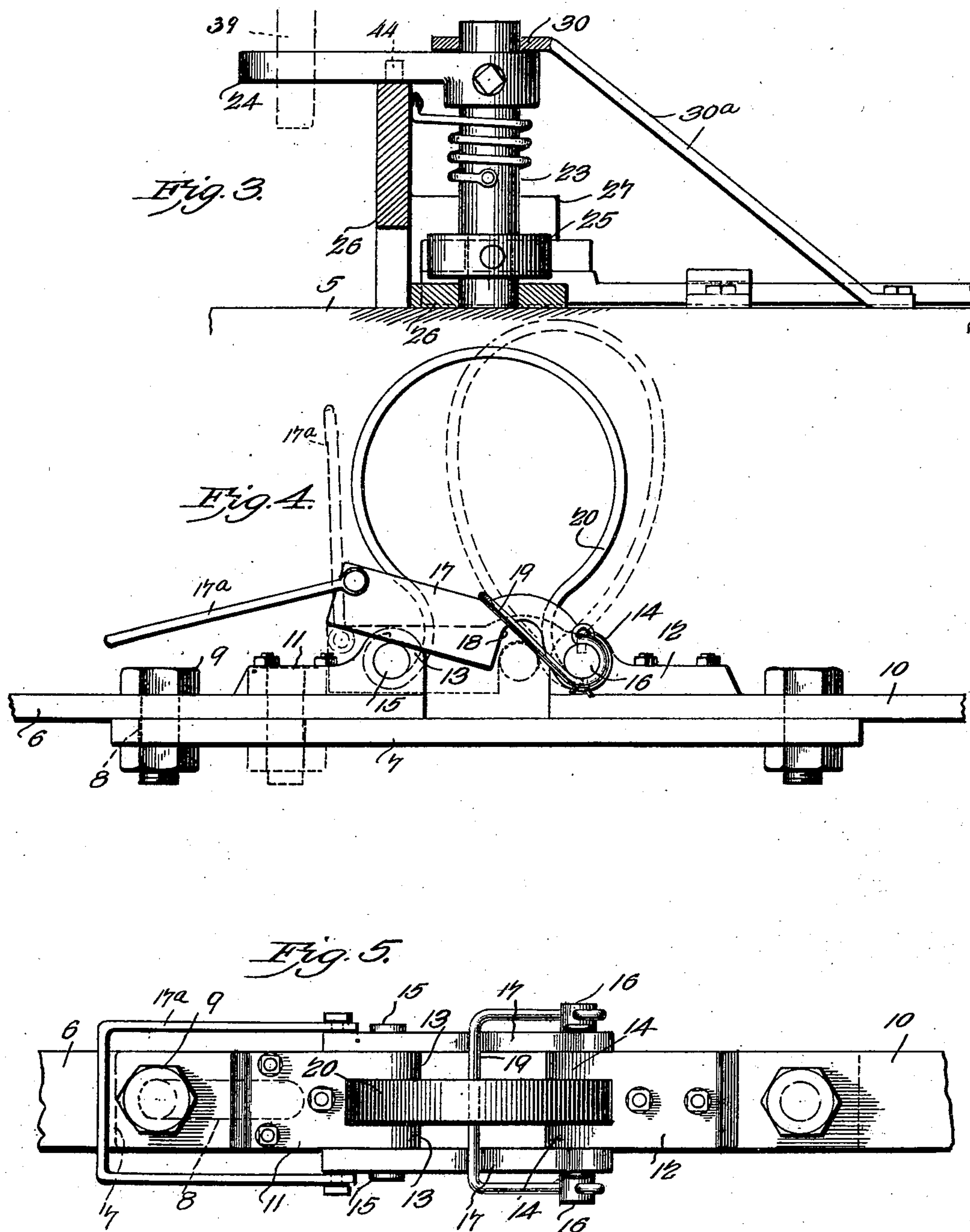
Patented Jan. 7, 1902.

E. L. PENCE.
SWITCH OPERATING DEVICE.

(Application filed July 17, 1901.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses
E. L. Pence
Q. N. Woodward

by *E. L. Pence*, Inventor
C. A. Snow
Attorneys

UNITED STATES PATENT OFFICE.

EDWARD L. PENCE, OF MEMPHIS, TENNESSEE.

SWITCH-OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 690,459, dated January 7, 1902.

Application filed July 17, 1901. Serial No. 68,643. (No model.)

To all whom it may concern:

Be it known that I, EDWARD L. PENCE, a citizen of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented a new and useful Switch-Operating Device, of which the following is a specification.

This invention relates to devices for operating railway-switches by the action of the passing train; and it consists in the construction, combination, and arrangement of parts, as hereinafter shown and described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a plan view, foreshortened, of a section of a railway-track and a switch with the improvement attached thereto. Fig. 2 is a detail of a portion of the apparatus in section on the line *aa* of Fig. 1. Fig. 3 is an enlarged transverse sectional detail of the trip mechanism. Fig. 4 is an enlarged side view, and Fig. 5 is an enlarged plan view, of the switch-bar-locking mechanism.

This device may be applied to any ordinary form of railway-switch, and for the purpose of illustration I have shown it in the drawings applied to an ordinary "split switch," 1 and 2 representing the main rails, 3 and 4 the switch-rails, and 5 the ties.

Connected to the "points" of the switch-rails 3 and 4 is a switch-bar 6 and extending beyond the rail 2. The outer end of the bar 6 is slidably connected to a bar 7, as by a slot 8 in the bar 7 and a bolt 9 in the bar 6 and extending through the slot, the slot being indicated by dotted lines in Figs. 4 and 5. Attached rigidly to the outer end of the bar 7 is another bar 10, in alinement with the bars 6 and 7, and to the outer or free end of the bar 10 the ordinary switch-operating means will be applied, this latter mechanism not being shown. The length of the slot 8 will equal the "throw" of the switch-points, so that the bar 6 will be free to move to a distance equal to the throw of the switch independently of the bars 7 and 10. Attached rigidly to the adjacent ends of the bars 6 and 10 are plates 11 and 12, each plate having ears 13 and 14, respectively; and each set of ears respectively supporting transverse studs 15 16. Pivoted upon the stud 16 outside the ears 13 and 14 are bars 17, each bar having a cavity 18

intermediate of its lower side, adapted to engage the ends of the stud 15 outside the ears 13 when the adjacent ends of the bars 6 and 10 are brought together. The portion of the bars 17 beyond the cavity 18 rests upon the ends of the stud 15, as shown in Fig. 3, so that when the two bars 6 and 10 are separated the bars 17 are quiescent; but when the bar 6 is forced toward the bar 10 the stud 15 will pass beneath the bars 17 and the latter will drop down with its cavities 18 engaging the stud 15, and thus "lock" the two bars 6 and 10 together. A spring 19 is arranged to keep the lock-bars 17 normally in contact with the stud 15, and thus insure their positive action and prevent accidental displacement.

20 is a flat curved spring engaging the studs 15 and 16 by its ends and exerting its force to maintain the bar 6 normally in its outward position or to keep the switch normally open.

Supported adjacent to the rails 1 and 2 at a suitable distance away from the switch-points to insure the action of the device is a mechanism adapted to be actuated by the advancing train to throw the switch when it is left open, and this mechanism consists in a preferably vertical shaft 23, having two right-angled arms 24 25, the shaft being suitably supported at its lower end by a frame 26, attached to two or more of the ties 5, as shown. The arm 25 is adapted to extend into the path of some projection upon the locomotive or other part of the train and will preferably be located between the rails and as near as possible to one of the rails 1 or 2, as shown. The frame 26 is provided at its ends with brackets 27 28, by which it is bolted to the ties 5, and will be in the form of a vertical web upon whose upper edge the arm 24 rests, the rib thereby forming a support for the arm and to prevent it from sagging downward or from being forced downward by the contact of the force which actuates it. The upper end of the shaft 23 will be supported by brace 30, as shown, the brace having a third leg 30^a, connected to one of the ties 5.

31 is a rod supported transversely of the rails 1 and 2 and with one end 32 turned off at right angles and adapted to be engaged by the arm 25, as shown in Fig. 1. The rod 31 is disposed slidably with reference to the rails 1 and 2 and retained in place by keeper

34 and pivotally connected by its outer end at 35 to one end of a long lever 36, the lever being pivoted at 37 preferably to one of the ties 5 and pivotally connected at 38 to the switch-bar 6, as shown. By this means it will be readily understood if the arm 24 be moved in the direction of the arrow in Fig. 1 the switch will be thrown by the coaction of the bar 31 32 and the lever 36 and switch-bar 6 and automatically locked closed by the locking means before described. When the switch is to be reopened, the spring 20 will instantaneously open the switch upon the release of the lock-bars 17.

15 The means employed to actuate arm 24 is shown in Figs. 1 and 2, consisting of a trip-arm 39, pivoted at 40 to some part of the framework of the moving train and with one arm 41 projecting downward into the path of arm 24, so that as the train passes the end 20 of arm 24, so that as the train passes the end 41 will engage the arm 24 and actuate the mechanism, and thereby close the switch, as above noted. The lower side of the trip-arm 39 is inclined upward and backward, as shown, 25 so that when moving in the opposite direction the trip will pass over the arm 24 without effect. The trip 39 will generally be connected into the base-frame 42 of the pilot 43 of the locomotive, as shown in Figs 1 and 2, 30 but may be located upon other parts of the locomotive or one of the cars, as may be found advantageous. The frame 26 and its attachments will be located sufficiently far from the points of the switch to give ample 35 time for the safe action of the mechanism, and this distance may be varied to suit circumstances.

The trip-arm 23 24 may be located outside the rails, if required, and the connecting 40 means between the bars 6 and 31 may be modified without affecting my invention or its mode of operation or the results produced.

The frame 26 will be provided with stops 44, preferably covered with rubber, to limit 45 the throw of the lever-arm 24 and prevent its being thrown too far around. The trip 39 will preferably be provided with a lifting-rod, as at 45, by which the trip may be lifted when not required.

50 The outer or free ends of the lock-bars 17 will be connected by a loop or bail 17^a to afford means whereby the bars may be readily elevated when required. The loop will be long enough to enable a bar to be inserted beneath it across the top of the flat spring 20, 55 thus using the spring as a fulcrum to enable the lock-bars to be forcefully elevated.

What is claimed is—

60 1. In a switch-operating apparatus, a switch, a switch-bar connected to the "points" of said switch, yieldable means for maintaining said points in one of their positions, a lever-arm projecting into the path of the moving train, a bar slidably disposed in relation to said lever-arm and adapted to be actuated thereby, 5 means including locking mechanism connecting said slidable bar to said switch-bar, and

means upon the moving train for actuating said lever-arm, whereby the switch will be actuated in advance of the moving train, substantially as and for the purpose described. 75

2. In a switch-operating apparatus, a switch, a switch-bar connected to the "points" of said switch, yieldable means for maintaining said points in one of their positions, means for 75 locking said switch when thrown, a lever-arm projecting into the path of the moving train, a bar slidably disposed in relation to said lever-arm and adapted to be actuated thereby, means including automatically-operating 80 locking mechanism connecting said slidable bar to said switch-bar, and means upon the moving train for actuating said lever-arm, whereby the switch will be actuated in advance of the moving train, substantially as 85 shown and described.

3. In a switch-operating apparatus, a switch, a switch-bar connected to the switch-points and formed in two slidably-disposed parts with a spring adapted to keep said parts normally separated, a locking means disposed to 90 lock said separated parts together when closed, means adapted to be actuated by the passing train to operate said slidable member of said switch-bar, whereby said switch 95 may be thrown in advance of the moving train and locked in its thrown position, substantially as shown and described.

4. In a switch-operating apparatus, a switch, a switch-bar section connected by one end to 100 the switch-points, a coupling-bar connected slidably to the opposite end of said switch-bar section, a second switch-bar section connected to the opposite end of said coupling-bar section, a spring disposed to maintain said slid- 105 able section in its extended position, a locking means connected to said sectional switch-bar and adapted to automatically lock said slidable section in its closed relation to said second switch-bar section, and means adapted 110 to be actuated by the passing train to operate said slidable section to throw the switch in advance of the train and lock the switch in the position thrown, substantially as shown and described. 115

5. In a switch-operating apparatus, a switch, means for maintaining said switch in one of its positions, a shaft revolvably supported adjacent to the path of the moving train, an arm connected to said shaft and projecting 120 into the path of the moving train, a second arm connected to said shaft, a bar slidably supported with relation to said lever-arms and shaft and with a right-angled projection adapted to be engaged by said second arm, 125 and means whereby said slidable bar may actuate said switch when operated and lock the switch in the position to which it is thrown, substantially as shown and described.

6. In a switch-operating apparatus, a switch, 130 automatically-operating means for maintaining said switch in open position, a shaft revolvably supported adjacent to the path of the moving train, an arm connected to said shaft

and projecting into the path of the moving train, a guard disposed to be engaged by said arm to afford support thereto, means whereby the movement of said lever-arm closes the switch, and automatically-operating means for locking the switch in its closed position, substantially as shown and described.

7. In a switch-operating apparatus, a switch, a spring for maintaining said switch in one of its positions, a shaft revolubly supported adjacent to the path of the moving train, an arm connected to said shaft and projecting into the path of the moving train, a bar in-

cluding locking mechanism connecting the lever-arm and the switch, a trip-lever pivoted by one end to said train and adapted when depressed to engage said lever-arm, substantially as shown and described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

EDWARD L. PENCE.

Witnesses:

HUNSDON CARY,
W. A. SPRAK.