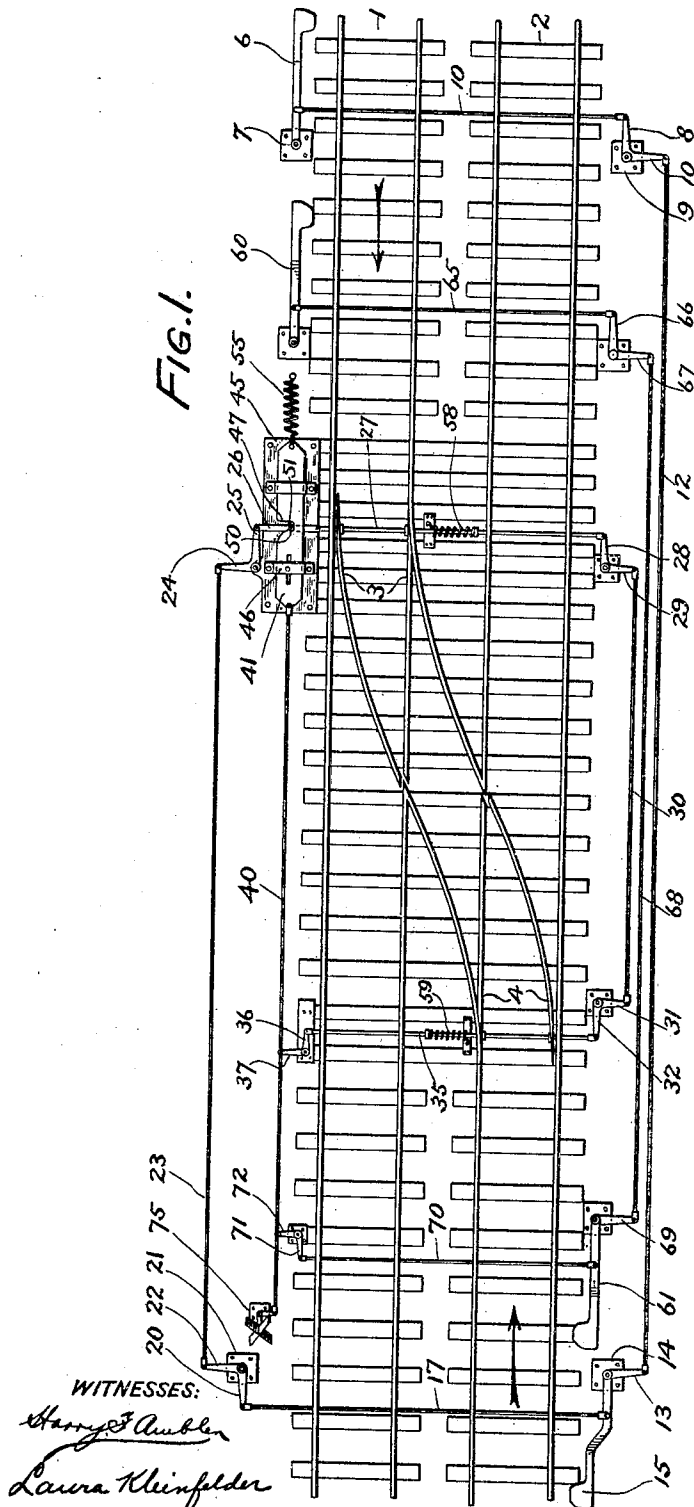


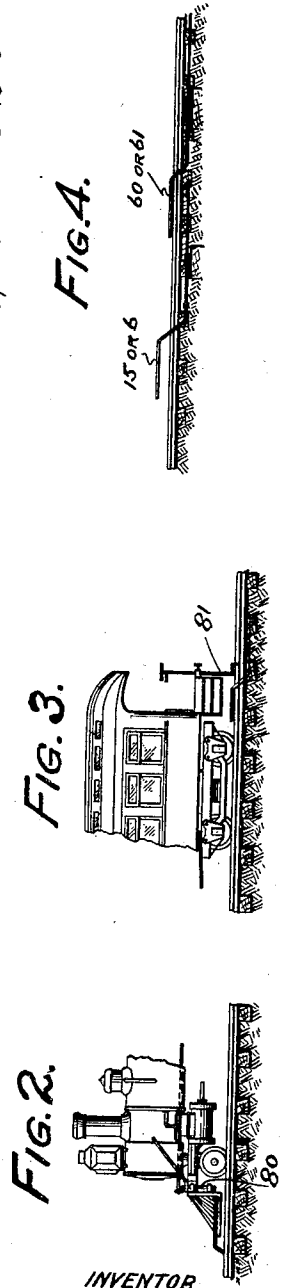
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W. H. TAYLOR.
SELF ACTING SWITCH.
APPLICATION FILED FEB. 2, 1906.



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SELF-ACTING SWITCH.

No. 823,310.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM H. TAYLOR, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Self-Acting Switches, of which the following is a description.

My invention relates to an improvement in railway-switches; and it has for its object to provide mechanism by means of which a switch may be opened or closed by a device upon a train or upon a car under the control of a person upon the said train or car and without stopping the same.

My improved self-acting switch is adapted to be used in connection with either steam-railway tracks or electric-railway tracks.

My invention resides in the combination and arrangement of parts as hereinafter set forth in detail and as specifically claimed in the claims appended hereto and as illustrated in the drawings, in which—

Figure 1 is a plan of the sections of two main lines, showing my switch mechanism applied thereto. Fig. 2 is a side elevation of a section of railway-track and a portion of an engine provided with means for operating the switch. Fig. 3 is a side elevation of a section of a railway-track and a portion of a car provided with means for operating the switch, and Fig. 4 is a side elevation of a section of railway-track and showing the two operating-levers upon the side of the track.

Referring to the drawings, 1 and 2 designate main tracks of a railway-line, and 3 and 4 designate switch-rails, by means of which a train may be transferred from one track to the other. The switch-rails and their connection or relation to the main tracks are of usual construction and need not be particularly referred to or illustrated in detail.

In order that the switch-rails may be moved in different directions for the purpose either of permitting a train to continue along either of the main tracks or for the purpose of directing the same from one track to another, I have connected the same to the switch mechanism which embodies my invention. Referring to this mechanism, 6 designates a lever pivoted upon any suitable support 7. The free end of the said lever is provided with a cam-shaped projection which extends laterally toward the railway-track. 10 design-

ates a connecting-rod between the said lever 6 and one arm 8 of a bell-crank lever located upon the opposite side of the railway-tracks. The said bell-crank lever is pivotally supported upon any suitable support 9. The other arm 10 of the said lever is connected to a rod 12, which extends parallel with the tracks and is connected to one arm 13 of a bell-crank lever which is pivoted upon a suitable support 14 at the sides of the tracks. The other arm of the last-mentioned bell-crank lever is provided with a lateral cam-like projection 15, which extends toward the adjacent track 2.

17 designates a rod which is connected at one end to the arm 15 of the bell-crank lever last mentioned and at its other end to an arm 20 of a bell-crank lever located upon the opposite side of the tracks and pivotally supported upon a suitable support 21. The other arm 22 of the said last-mentioned lever is connected, by means of a rod 23, to one arm 24 of a bell-crank lever, the other arm 25 of which is connected, by means of a bar 26 and a rod 27, which extends across the tracks of the railway, to an arm 28 of a bell-crank lever pivotally supported upon the opposite side of the railway-tracks. The other arm 29 of the last-mentioned bell-crank lever is connected, by means of a rod 30, extending parallel with the railway-tracks, to an arm 31 of a bell-crank lever, the other arm 32 of which is connected, by means of a bar or rod 35, extending across the tracks, to an arm 36 of a bell-crank lever located upon the other side of the tracks, and the other arm 37 of which is connected, by means of a connecting-rod 40, to a slidable switch plate or member 41. The bars 26 and 35 are respectively connected to the switch-rails 3 and 4 and are adapted to control the positions of the said switch-rails with respect to the main tracks 1 and 2 of the line.

The slidable switch plate or member 41 is supported upon a base-plate 45 and slides in guides 46 upon the said base-plate. The switch-plate is provided with a notch 47 in its outer edge, one side of which notch curves gradually outward and longitudinally of the plate to the edge of the same. The bottom of the notch or slot is provided with a seat or depression 50, in which is adapted to be seated a projection or lug 51 upon the slidable bar 26, the said projection or lug constitut-

ing a holding member for retaining the plate 41 in one position, which I term a "retracted" position.

Normally—that is, when the switches are closed, so that a train passing along upon a main line would continue along said line—the projection 51 is located in the said seat and holds the slidable lock-switch plate 41 in its retracted position, where the said plate is held until the lug or projection 51 is moved out of the said seat 50, whereupon the spring 55, which is relatively heavy and strong, contracts to draw or slide the said plate 41 to the right in Fig. 1. During this movement of the plate the lug or projection 51 travels up over the inclined curved cam surface or section of the notch 47 and occasions continued movement of the sliding bar 26 and the rod 27, connected thereto, to move the switch-rails 3 so as to open the switch to direct a train from the main track 1 onto the main track 2. Associated with the rod 27 is a coiled-wire spring 58, which exercises pressure to hold the switch-rails 3 in the position shown in Fig. 1. Associated with the rod or bar 35 is a coiled-wire spring 59, which exercises pressure to hold the switch-rails 4 in the position shown in said Fig. 1.

In Fig. 1 the switch-rails 4 are shown in such position that a train traveling in the direction of the arrow upon track 1 would continue along the said track, while a train traveling in the direction of the arrow upon track 2 would also continue to move along such track. In order to return the several parts, including the switch-rails, to their positions indicated in Fig. 1 after the lug or projection 51 is displaced from the notch 47 and after the lock-switch plate 41 has been moved to the right under the influence of the spring 55, I have provided pivoted levers 60 and 61 upon opposite sides of the line. The said levers are adapted to be operated to return the several parts of the device to the position indicated in the drawings.

65 designates a rod or bar connected at one end to the lever 60 a short distance from its fulcrum and at its other end to one arm 66 of a bell-crank lever, the other arm 67 of which is connected to one end of a rod or connection 68, the other end of which is connected to an arm 69, rigidly connected and substantially at right angles to the lever 61. The lever 61 is connected, by means of a rod or bar 70, to one arm 71 of a bell-crank lever, the other arm 72 of which is connected, by means of the rod 40, to the arm 37 and to the sliding switch-plate 41.

In the operation of the device it will be understood that when either the lever 6 or the arm 15 of the bell-crank lever upon the opposite side of the track are moved outward or away from the tracks the connections between the said levers and the sliding bar 26 are such that the said bar is moved outwardly to

remove the lug or projection 51 from its seat 50, whereupon the spring 55 contracts and occasions movement of the sliding bar 26 and rod or bar 27 to close the switch-rails 3. Movement of the said bar 26 and rod or bar 27 through their connection to the switch-rails 4 occasions movement of the latter, so that both sets or pairs of switch-rails are simultaneously moved to open said switches.

In order to provide a signal to indicate whether or not the switch is open or closed, I have provided a light (indicated at 75) which is adapted to be operated by means of an extension from the rod or bar 40, connecting the said light to the lever-arm 72. Movement of the said lever-arm about its pivot occasions movement of the rod 40 and the extension thereof between the said lever-arm 72 and the said light to occasion rotation of the said light to display either a red or a white light, the means for occasioning the rotation not being shown.

In order that the switches may be controlled by some one upon the train, I have provided means upon the train for tripping or operating the several levers 6 60 61 and lever-arm 15. Any means desired may be employed for this purpose. I have shown a convenient means in Fig. 2, consisting of an upright shaft 80, journaled upon the front part of an engine, the lower end of the shaft being provided with an angular arm which is adapted to be thrown into the path of the lateral projections upon the lever 6 and lever-arm 15. I have also shown in Fig. 4 a corresponding construction consisting of an upright shaft 81, which is provided with an angular arm which is adapted to be thrown into the path of either of the levers 60 or 61.

It will be understood that the means for operating the lever 6 to open the switch, so that the car may pass from track 1 to track 2, is upon the opposite side of the car or train from that of the means for resetting or returning the switch mechanism to the position shown in Fig. 1. The last-mentioned means is adapted to strike and operate the lever 61 after the car has passed from track 1 onto the track 2. The same thing is true of the train traveling to the right upon track 2 and which is transferred to track 1. It is clear that the device for operating the lever-arm 15 so as to open the switch will be upon the opposite side of the car or train from that which will be employed to operate the lever 60 to reset or return the switch mechanism to the position shown in Fig. 1. I have located the free ends of the levers 6 and 15 and 60 and 61 at different heights—that is, in different horizontal planes—as indicated in Fig. 4 of the drawings. It will be understood that by locating the angular arms at the lower ends of the upright shafts 80 and 81 at different heights they can strike or engage only the desired one of any one of the operating-levers referred to.

In illustrating my invention I have shown it applied to two main tracks arranged side by side; but it is understood that the same may be used in connection with a single main track and a short switch-line, in which case the operating-levers 61 and lever-arm 15 may be omitted.

Having thus described my invention, I claim—

10 1. In a switch mechanism, in combination, a lever, a slidable plate having a cam-section upon one edge thereof, means interposed between the said lever and the said slidable plate for controlling the position of the latter, and means interposed between the said
15 cam-section and the switch-rails, whereby movement of the said plate occasions movement of the said rails.

2. In a switch mechanism, in combination,
20 a lever, a switch-plate having a notch in one edge thereof, one side of which notch forms a cam, switch-rails, a lug or projection adapted to be seated in the said notch, means for connecting the said lug or projection to the said
25 switch-rails, and means connecting the said lever and the said lug or projection, whereby the latter may be removed from its seat in the said notch to permit movement of the switch-plate in a direction to bring the cam
30 into engagement with the said lug or projection to occasion movement of the said switch-rails.

3. In a switch mechanism, in combination, a lever, a slidable switch-plate having a notch
35 provided with a seat in one of its edges, switch-rails, means adapted to be seated in the said seat for the purpose of holding the switch-plate in a retracted position, means for connecting the said lever to the last-mentioned means, and a connecting-rod between
40 the switch-rails and the means for holding the switch-plate in retracted position.

4. In a switch mechanism, in combination, a lever, switch-rails, a switch-plate having a
45 notch provided with a seat in one edge thereof, one side of the said notch being inclined, means interposed between the said lever and the said switch-plate for controlling the same, and means interposed between the said
50 switch-plate and the said switch-rails, whereby upon movement of the switch-plate in one direction the said switch-rails are moved in a direction to open the switch.

5. In a switch mechanism, in combination,
55 a lever, a slidable switch-plate provided with a notch in one edge thereof, the said notch having a seat and one side of the said notch being inclined, a movable bar provided with a lug or projection adapted to be moved into
60 and out of the said seat, means for connecting the said lever to the said bar, a spring connected to the said switch-plate which is

adapted to occasion movement of the said plate in one direction, and means connecting the said bar and the said switch-rails, where-
65 by movement of the said bar occasions movement of the said rails.

6. In a switch mechanism, in combination, a lever, a switch-plate provided with a notch
70 in one edge thereof, one side of which is inclined longitudinally of the plate to the edge thereof, means connecting the said lever to the said switch-plate, whereby when the said lever is moved in one direction a pull is exerted upon the said switch-plate to occasion
75 movement thereof, means adapted to engage the said switch-plate to hold it in retracted position, a second lever, means connecting the said second lever to the means for holding the said switch-plate in retracted position,
80 whereby when the said second lever is moved in one direction the said holding means is moved out of its seat in the said notch, and a spring adapted to occasion movement of the said switch-plate when the said holding
85 means is moved out of its seat.

7. In a switch mechanism, in combination, a movable plate or member having a cam surface or section upon an edge thereof, movable means adapted to engage the said member
90 to hold it in retracted position, the said movable means being also adapted to engage the said cam surface or section, the switch-rails, and means connecting the said movable means and the said rails, whereby relative
95 movement between the said movable means and the said movable plate or member occasions or permits movement of the said rails.

8. In a switch mechanism, in combination, a movable plate or member having a cam
100 surface or section upon one edge thereof, and the said member also having a seat therein, means constantly exerting a force upon the plate or member to move it in one direction, means adapted to be located in the said seat
105 to hold the said plate or member in retracted position in opposition to said force, means for removing the holding means from the said seat to permit movement of the said plate or member to move the cam surface or section
110 into engagement with the said holding means, switch-rails, and means connecting the said rails to the said holding means, whereby movement of the latter in relation to the said cam surface or section occasions movement
115 of the said rails.

In testimony that I claim the foregoing as my invention I have hereunto signed my name this 29th day of January, A. D. 1906.

WILLIAM H. TAYLOR.

In presence of—

HARRY F. AMBLER,
LAURA KLEINFELDER.