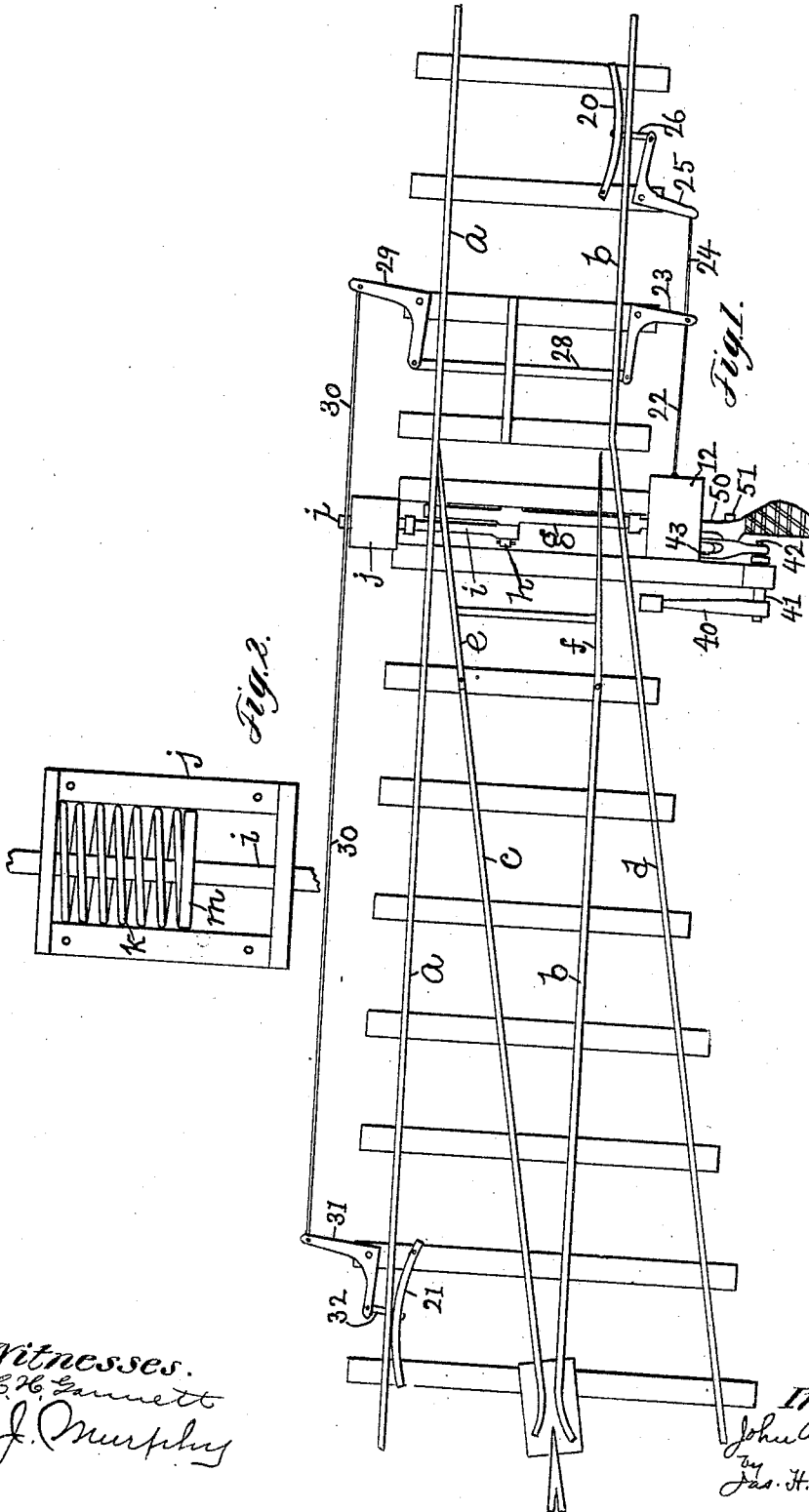


No. 819,296.

PATENTED MAY 1, 1906.

J. A. MacDONALD.
AUTOMATIC RAILWAY SWITCH.
APPLICATION FILED JAN. 17, 1906.

2 SHEETS—SHEET 1.



Witnesses.
C. H. Gammett
J. Murphy

Inventor.
John A. MacDonald
Jas. H. Churchill
att'y.

No. 819,296.

PATENTED MAY 1, 1906.

J. A. MACDONALD.
AUTOMATIC RAILWAY SWITCH.

APPLICATION FILED JAN. 17, 1906.

2 SHEETS—SHEET 2.

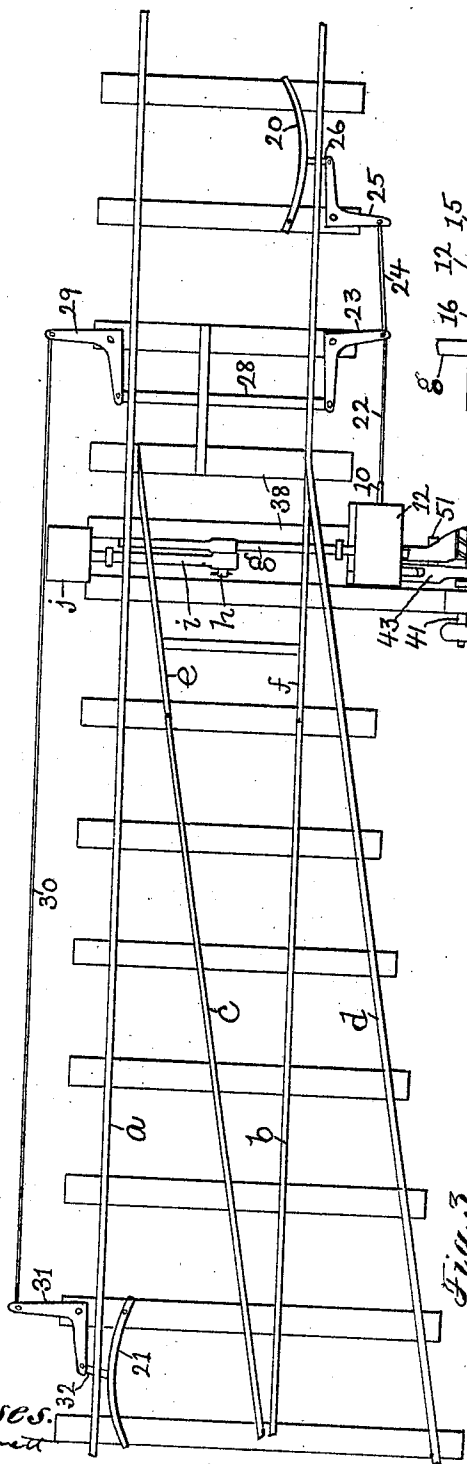


Fig. 3.

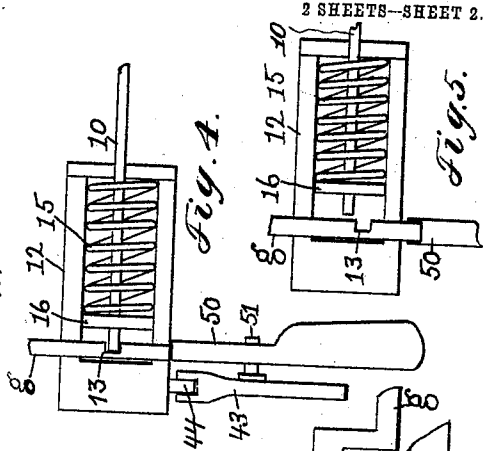


Fig. 4.

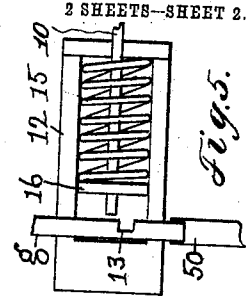


Fig. 5.

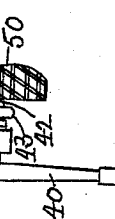


Fig. 6.

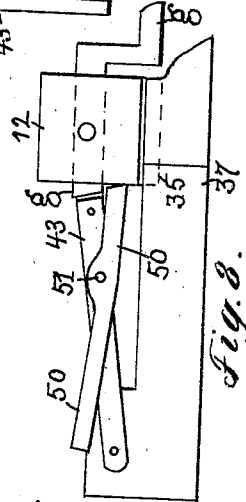


Fig. 7.

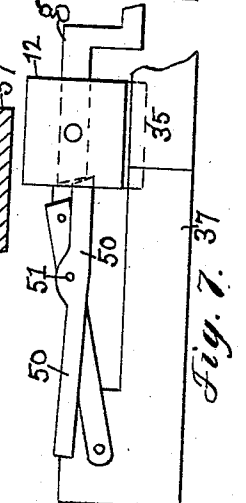


Fig. 8.

Witnesses.
B. W. Bennett
J. Murphy

Inventor.
John A. MacDonald
by Jas. H. Churchill
att'y.

UNITED STATES PATENT OFFICE.

JOHN A. MACDONALD, OF MALDEN, MASSACHUSETTS, ASSIGNOR TO
FRANK L. WELLS, OF BOSTON, MASSACHUSETTS.

AUTOMATIC RAILWAY-SWITCH.

No. 819,296.

Specification of Letters Patent.

Patented May 1, 1906.

Application filed January 17, 1906. Serial No. 296,478.

To all whom it may concern:

Be it known that I, JOHN A. MACDONALD, a citizen of the United States, residing in Malden, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Automatic Railway-Switches, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to railway-switches of that class known as "automatic," and has for its object to provide a switch of the class described which is automatically moved from its opened to its closed position by means which is rendered active by a train, yet which switch is capable of being manually operated to do ordinary switching, as will be described. For this purpose the switch has its operating bar or rod acted upon by a spring which normally keeps the switch in its closed position and which when the switch is in its opened position is rendered inoperative to close the switch by a suitable lock or device operatively connected with an actuating device preferably located between the rails of the main track and adapted to be engaged by a part of a train, preferably a car-wheel, and moved so as to unlock the spring and permit it to move the switch into its closed position. Provision is made for maintaining the spring inoperative to close the switch when it is desired to do ordinary switching, notwithstanding that the automatic device between the main-line tracks is actuated by the wheels of a car approaching the switch. These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a plan view of an automatic switch embodying this invention, the track-switch being shown in its opened position; Fig. 2, a detail to be referred to; Fig. 3, a plan view of the automatic switch shown in Fig. 1, with the track-switch in its closed position; Figs. 4 to 8, inclusive, details, to be referred to of the switch mechanism shown in Fig. 1.

Referring to the drawings, *a b* represent the rails of the main-line track; *c d*, the rails of the branch or siding; and *e f*, the switch-rails, all of which may be of any usual or suitable construction.

The switch-rails *e f* are connected by a bar *g*, located below the rails of the track and having pivoted to it, as at *h*, an actuating bar

or rod *i*, which extends into a box or casing *j*, containing a spring *k*, (see Fig. 2,) which acts against the rear wall of the box or casing *j*, and a cross-bar or piston *m*, attached to the rod *i*. The spring *k* acts to move the actuating-bar *i* in the direction to close the switch, and when the switch is in its opened position (shown in Fig. 1) the said spring is compressed, as represented in Fig. 2. The spring *k* is maintained in its compressed position by a locking device, herein shown as a bolt or rod 10, extended into a box or casing 12, located on the side of the main track opposite to the spring-containing box *j*.

The bolt or rod 10 coöperates with a notch or recess 13 in the switch-bar *g*, which latter extends across the box 12 through suitable openings in its sides. The bolt or locking bar or rod 10 is normally engaged with the recess or notch 13 in the switch-bar (see Fig. 4) by means of a spring 15 within the box or casing 12, which spring acts against a cross-bar or piston 16, attached to the bolt 10. The bolt or locking-bar 10 is adapted to be withdrawn from engagement with the switch-bar *g* by devices located on the main-line track and preferably between the rails thereof at both sides of the switch.

In the present instance the devices shown are located between the rails of the main-line track and consists of curved levers 20 21, each of which is pivoted to a tie or other suitable support and operatively connected with the locking-bolt 10, which may be accomplished as herein shown and as will now be described.

Referring to Fig. 1, the locking-bolt 10 is joined by a rod 22 to one arm of a bell-crank lever 23, which is also connected by a rod 24 to an arm of a second bell-crank lever 25, which has its other arm joined by the rod 26 to the lever 20, located at one side of the switch. The bell-crank lever 23 is joined by a connecting-bar 28 to a bell-crank lever 29, located at the opposite side of the main line, and this lever is joined by a rod 30 to a bell-crank lever 31, located on the opposite side of the switch and joined by the rod 32 to the lever 21, located between the rails of the main-line track. When the locking bolt or bar 10 is in engagement with the switch-bar *g*, the releasing devices for the bolt—in the present instance, the levers 20 21—are maintained in close proximity to the rail of the main-line track, as shown in Fig. 1, by the spring 15.

The bolt-containing box 12 is bodily movable and for this purpose is provided with a rib 35 on its under side, (see Fig. 6,) which is dovetailed into a guiding-groove in a support 37, attached to the ties or sleepers 38. The box 12 is operatively connected with the usual hand-switch now commonly employed and which is represented in Figs. 1 and 3 as a crank or arm 40 on a rock-shaft 41, having a second crank 42, joined by a connecting-rod 43 to a lug 44 on the box 12. It will thus be seen that when the bolt 10 is engaged with the notch 13 in the switch-bar *g* the latter is positively connected with the hand switch-lever 40, so that by operating the latter and turning it from the position shown in Fig. 3 into that shown in Fig. 1 the switch may be opened. It will also be seen that as thus far described the connection of the hand-operated switch-lever 40 with the switch-bar is dependent upon the engagement of the bolt 10 with the switch-bar *g*. Consequently if the switch should be left by the operator in its opened position it would be automatically returned to its closed position by a wheel of a train approaching the switch from either direction engaging either of the levers 20 21 and moving it into the position shown in Fig. 2, thereby withdrawing the bolt 10 from engagement with the switch-bar *g* and permitting the spring *k* to move the switch into its closed position shown in Fig. 3.

To permit ordinary switching to be done with an automatic switch in which the operation of the switch is entirely automatic and to enable the bolt-releasing devices 20 21 to be located between the rails of the main track and be operated by the wheels of a car, is one of the features of the present invention, and this result is accomplished by providing mechanism which controls the operation of the switch-bar independently of the locking-bolt, and which mechanism becomes inoperative as soon as it is released by the switchman. In the present instance I have provided for this purpose a lever 50, which is designed to be operated by the foot of the operator and is pivoted at 51 to the connecting-bar 43, and when depressed said lever is elevated from the position shown in Fig. 8 to that shown in Fig. 7, in which latter position the free end of the lever is in the path of movement of the switch-bar and prevents the latter being operated by its spring *k* to close the switch, when the wheels of the cars operate the automatic device or lever 20 as the said cars approach the switch to enter the branch track or siding. As a result, a flying switch may be made, for in this case the rear cars which are to be run on the branch can be uncoupled from the front part of the train at some distance from the switch, and after the front part of the train has passed the switch the switchman throws the switch into its open position and then places his foot

on the lever 50, so as to elevate the free end of the same and bring it into the position shown in Fig. 7. As a result, when the wheels of the cars which are to be run onto the branch strike the lever 20 the latter is operated and the bolt 10 is withdrawn from engagement with the switch-bar *g*, but the switch is not closed by the spring *k*, because the foot-lever 50 prevents movement of the switch-bar *g*.

Assume that the flying switch has been made and the switchman forgets to close the switch and leaves it in its opened position. In this case the front wheel of the locomotive or car of the next train approaching the switch from either direction operates the lever 20 or 21 and releases the bolt 10, thereby permitting the spring *k* to throw the switch into its closed position, the movement of the switch-bar *g* being in this case unopposed by the lever 50, which resumed its normal position (shown in Fig. 8) as soon as the switchman removed his foot therefrom.

I have shown one construction of apparatus embodying this invention, but I do not desire to limit my invention in this respect.

I claim—

1. The combination with a railway-switch, of means for automatically moving said switch from its opened into its closed position, means for controlling said switch-operating means, said controlling means being automatically operated by a train, and a manually-operated device coöperating with the said switch to hold the latter in its opened position and render said controlling means ineffective upon the switch, substantially as described.

2. The combination with a railway-switch, of means for automatically moving said switch from its opened into its closed position, means located along the main line of the track for controlling said switch-operating means, said controlling means being operated by a train, and a device coöperating with the said switch to hold the latter in its opened position and render said controlling device ineffective upon the switch, substantially as described.

3. In a railway-switch, in combination, a switch-bar, a spring to move said bar to close the switch, a switch-lever, means to lock said bar to said lever to permit the switch to be manually operated, a device operated by a train to unlock said switch-bar, and means to prevent the spring from moving the switch-bar to close the switch when said bar is unlocked, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN A. MACDONALD.

Witnesses:

JAS. H. CHURCHILL,
J. MURPHY.