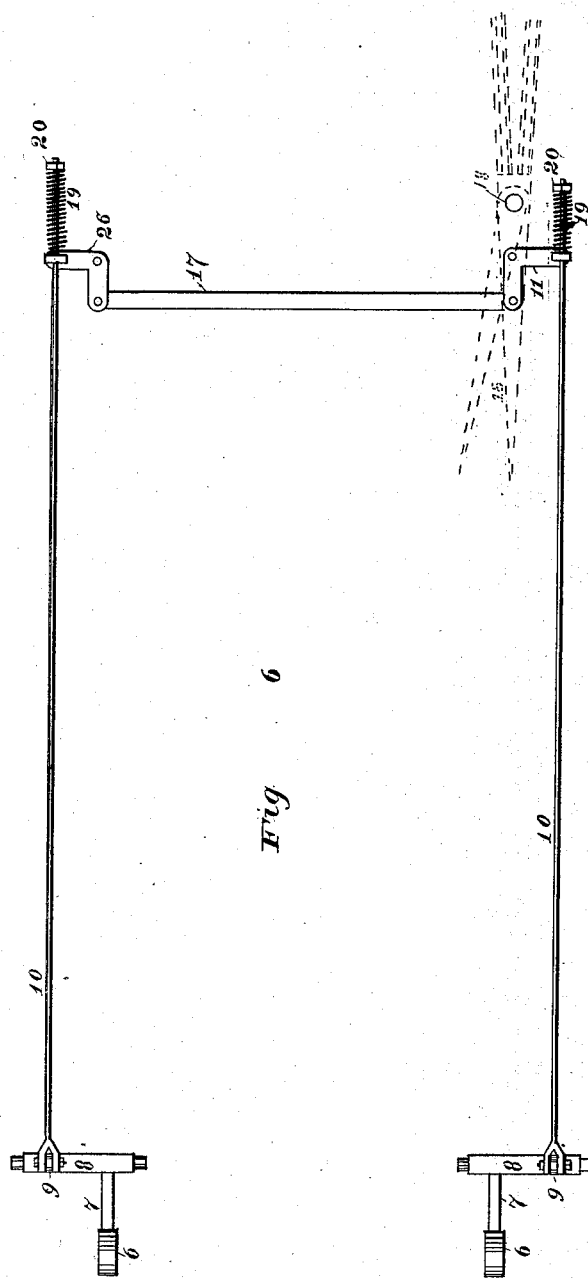
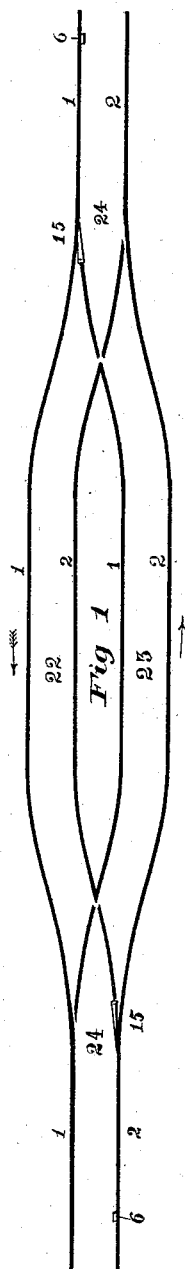


2 Sheets—Sheet 1.

# AUTOMATIC SWITCH FOR RAILROADS.

Patented June 19, 1888.



**WITNESSES:**

C. Carlton,  
Z. F. Miller.

INVENTOR:

INVENTOR  
James M. Swann.  
BY R. M. Mc Dermott

*has*  
ATTORNEY

(No Model.)

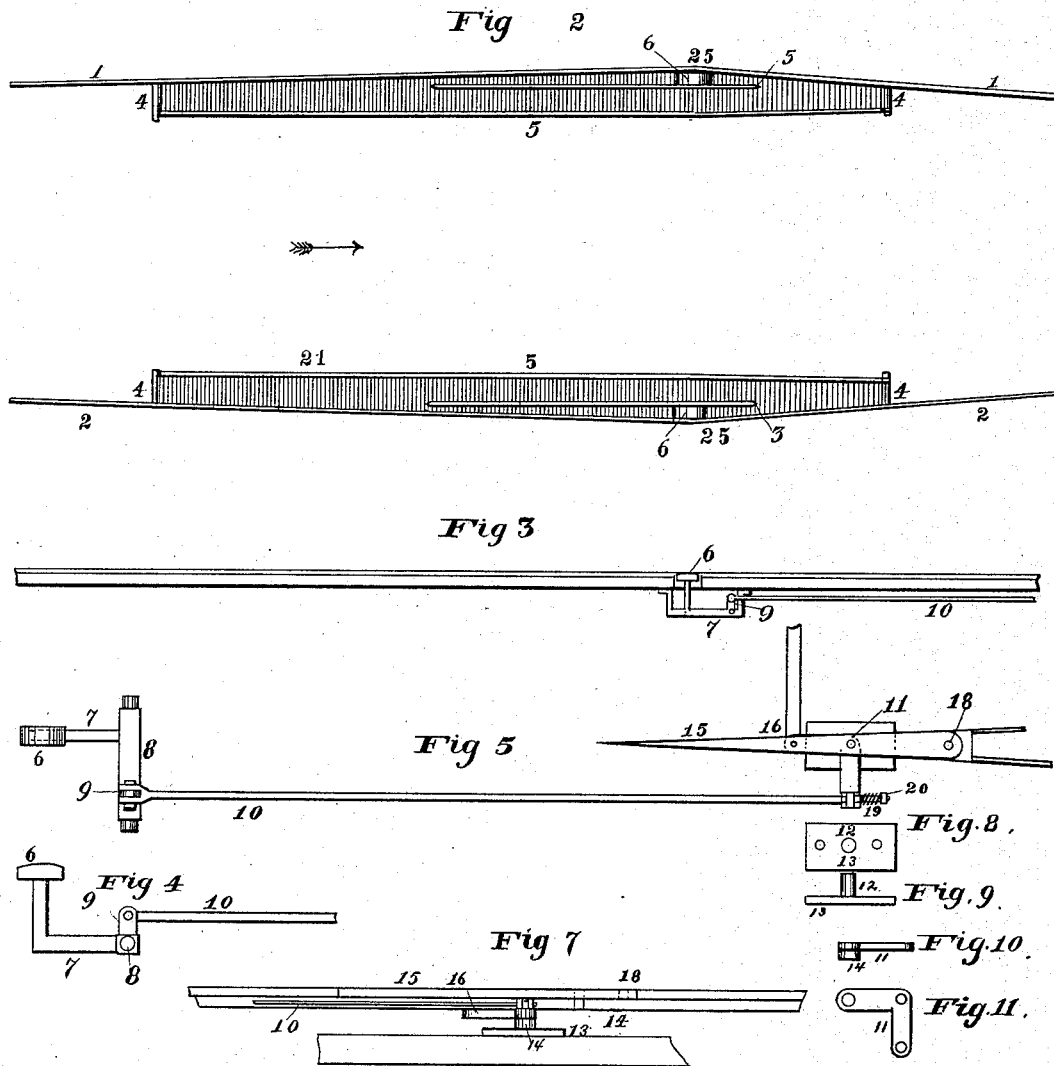
2 Sheets—Sheet 2.

J. M. SWEM.

AUTOMATIC SWITCH FOR RAILROADS.

No. 384,651.

Patented June 19, 1888.



WITNESSES:

*W. Carlton.*  
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# UNITED STATES PATENT OFFICE.

JAMES M. SWEM, OF DENVER, COLORADO, ASSIGNOR TO THE SWEM AUTOMATIC SWITCH COMPANY, OF SAME PLACE.

## AUTOMATIC SWITCH FOR RAILROADS.

SPECIFICATION forming part of Letters Patent No. 384,651, dated June 19, 1888.

Application filed November 4, 1887. Serial No. 254,257. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES M. SWEM, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Automatic Switches for Railroads; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to automatic switches for street railroads or tramways; and its object is to furnish such a switch simple and economical in construction, embodying in its construction few moving, wearing, and frictional parts, durable, and easy of and reliable in operation, to which ends it consists in the features and combinations more particularly herein-after described and claimed.

My improved switch is adapted for use with the simple "turn-outs" or passing-places of single-track railroads, where at all such points all cars going in one direction are switched in a certain direction, and also with main tracks from which proceed branch roads or tracks, and where it is desired that certain cars shall keep to the main stem and others proceed upon the branch. In both cases the operative mechanism and principle of operation are the same, the difference being that in the latter case a peculiar readjustment of the rails is used, in order that the person in charge of a car may cause the switch to be automatically operated to cause the car at will, or as desired, either to keep upon the main stem or be deflected upon the branch.

Means embodying my invention for accomplishing the results aimed at are fully shown in the accompanying drawings, in which—

Figure 1 is a plan view of a single-track railway, showing the arrangement of switches at a simple turn-out; Fig. 2, a plan view of part of a track near a switch leading to a branch road or track. Figs. 3, 4, and 7 are side views of parts of the switch-actuating mechanism; Fig. 5, a top or plan view of the switch-actuating mechanism used in Fig. 1;

Fig. 6, a top or plan view of the switch-actuating mechanism as used in Fig. 2; Figs. 8, 9, 10, and 11, details of construction of some of the parts.

In the drawings, the reference-numerals 1 2 indicate the main rails of a railroad-track, which in Fig. 1 are divided or forked, forming the two side tracks, 22 23, constituting a simple turn-out or passing-place for the cars of a single-track road. At each entrance to these side tracks is placed a single switch-point, 15, whose position determines upon which of the two side tracks an approaching car shall be shunted.

These switches are actuated by the mechanism clearly shown in Figs. 3, 4, 5, and 7, in which 6 is a button, head, or lug upon the top or free end of one member of the bent lever. (Shown in Fig. 4.) This lever in substance is a three-sided lever, two sides being in parallel planes and at substantially right angles to the other side, the side parallel to the side carrying the head 6 being somewhat shorter than the latter and projecting upwardly from a pivoted bar, 8, whose ends are supported in suitable bearings, the side at right angles to the two sides being also rigidly attached to the pivoted bar 8. This lever and bar are placed beneath the track at a suitable distance from a switch-point, 15, and so that the head 6 projects up through an aperture cut in the web of the rail, or in a special plate laid down thereat, alongside the head of the rail and in position to be acted on by the flange of a passing wheel, as shown in Figs. 1 and 2. Pivotaly connected to the shorter member, 9, of the three-sided lever 7 is a rod, 10, whose other end connects with a bell-crank lever, 11, pivoted at its angle upon a stud, 12, on a fixed plate, 13. To avoid undue friction and give free play to the arms of this lever, it has a base, 14, on its under side, lifting its arms above the plate 13; or a washer may be used on the stud 12 for the same purpose. The other end of this lever 11 is pivoted to the switch-point 15 at 16, the switch-point being pivoted in turn at 18 to a suitable base-plate. With this construction it will readily be seen (Fig. 5) that as the head 6 is depressed by a passing wheel the bar 8 is moved upon its pivots, which constitute the fulcrum of the three-sided lever 7,

and the rod 10 is pulled, turning 11 on its pivot and causing it to move the switch-point 15 upon its pivot 18. If now such switches be applied to a single-track road with turn-outs, as in Fig. 1, and that at such turn-out, each car, no matter from which way approaching, turns to the right, the switch points 15 are arranged upon the right hand as regards the direction of the approaching car, the heads or lugs 6 projecting upon the inner side of the rail, so as to be depressed by the flange of a passing wheel. As a car approaches the turn-out, its wheels depress the head 6, causing the switch-point to be thrown inwardly, leaving the track to the right open. If the next car is going in a direction opposite to that of the car, thus throwing the switch-point inwardly, its wheels strike against such switch-point and move it outwardly, closing the right-hand track, which is again opened and made free for passage by the next car coming in the proper direction.

When it is desired to send a car either to the right or left upon the main stem or upon branches, the same mechanism and principle of operation are used in connection with some additional features, as shown in Figs. 2 and 6.

In Fig. 2, 1 and 2, as before, are the main rails of a railroad-track. Near the switching-point and at or near the point where the heads 6 are to project, these rails are bent slightly outward—that is, deflected so that the gage at such point, as at 25, is greater than the normal or standard gage of the road. Within such deflected portions are placed interior guard-rails, 3 3, space being left at their ends, between them and the main rails, for the passage of a wheel. At such points it is preferable that the main rails and the guard-rails be secured upon an iron or metallic bed-plate, 4, on whose inner edge is an auxiliary guard, 5, either a rail fastened thereto or a flange made thereon. Between the main and guard rails, at or near the point 25 of greatest deflection, project the heads 6. Upon one side—say, the lower, 21, in Fig. 2—this head is connected to the switch-point in the same manner as already described, (see Fig. 5,) while, as the head 6, connected lever 7, and rod 10 on the the upper side are at a greater distance from the bell-crank lever 10, pivoted to the switch-point, the rod 10 from the upper head is connected to the lever 11 and thence to the switch-point, through an intermediate bell-crank lever, 26, and rod 17, as shown in Fig. 6. If now it is desired that an approaching car shall either keep on the main stem or turn to the right, the driver causes his car to hug the right-hand main rail, causing the wheels on the right-hand side to depress the head on that side, while the wheels on the other side ride up or within the guard-rail on that side, avoiding the head or button on such side. Thus it is seen that the switch-point is turned to open one track or the other and close one or the other at will, accordingly as the car-wheels are caused to

hug and keep open one or the other of the rails 1 2.

The construction thus shown and described furnishes a reliably and readily operated automatic switch, which, it will be seen, is composed of very few parts—two levers and a connecting-rod—so that it is economical in first cost, simple in construction, and with few bearings to wear and cause frictional resistance.

It might sometimes happen that the switch-point 15 would be restrained from movement by the lodgment of dirt or stones, &c., between it and the sides of the bed, and that therefore a disastrous or breaking strain be put upon the connected parts. To avoid danger of breakage under such conditions, the rod 10 may be prolonged beyond its junction with 11, a spring, 19, being coiled on such extension, a nut, 20, being placed on the extension, by which the tension of the spring is so regulated that normally it shall be sufficient to cause the movement of the switch-point under ordinary circumstances, but if unusual resistance is met, the spring 19 will yield, preventing damage to the levers or rod.

I am aware that is not new to operate a switch by a system of levers connected thereto and to springs or levers projecting between the rails to be acted on by an extra wheel upon the locomotive or car, and having lateral motion on its shaft, and also that it is not new to combine with an ordinary manually-operated switch a system of levers and a projecting head, the latter to be thrown into position to be struck by a passing wheel when the switch is manually operated, so that the switch may be restored to the safety position by the passing train if the operator has forgotten or neglected to so restore it; hence I do not claim such organizations; but

What I do claim is—

1. The combination of a switch-point, the bell-crank lever, pivoted as described, the three-sided lever and pivoted bar, the connecting-rod and spring, and adjusting-nut upon the extension of the connecting-rod, substantially as set forth.

2. The combination of the main rail of a track deflected outwardly at or near the switching-point, an interior guard-rail at such point of enlarged gage, a head or lug of a lever projecting between the main and guard rails at such point, and adapted to be acted on by a passing wheel, and switching mechanism, substantially such as described, controlled thereby, substantially as set forth.

3. The combination of the main rail of a track, a guard-rail at or near a switching-point, a bed-plate common to both rails, a three-sided lever having its outer end projecting as a head or lug through such bed-plate and between the main and guard rails, a switch-point, a bell-crank lever pivoted thereto, and a rod connecting the two levers, substantially as set forth.

4. The combination of a main rail deflected outwardly at or near a switching-point, an interior guard-rail thereat, a bed-plate common to both rails, a three-sided lever, as described, 5 having its head projecting upwardly through such bed-plate and between the main and guard rails, and adapted to be acted on by a passing wheel, a switch-tongue, a bell-crank lever pivoted thereto, and a rod connecting 10 the two levers, substantially as set forth.

5. The combination of the main rail of a track deflected outwardly near a switching-point, interior guard-rails thereat, and duplicate switching mechanisms, one on either 15 side, each consisting of a three-sided lever, as described, having a head projecting upwardly between the main and guard rails, and adapted to be acted on by a passing wheel, rods connected thereto at one end and at the 20 other to one arm of a double bell-crank lever,

the latter being connected by its central arm to the switch-point, and the single switch-point, substantially as set forth.

6. The combination of the main rail of a track, an interior guard-rail, the right-angled 25 lever 7, having head 6 projecting upwardly between such rails, pivoted bar 8, to which lever 7 is attached, having upright arm 9, the bell-crank lever 11, pivoted at its angle to a fixed base, and at one end to the switch-point 30 and at the other to the connecting-rod 10, the connecting-rod pivoted to the arm 9 and lever 11, and the switch-point, all arranged and operating substantially as set forth.

In testimony whereof I affix my signature in 35 presence of two witnesses.

JAMES M. SWEM.

Witnesses:

R. M. McDERMOTT,  
B. L. POLLOCK.