

(No Model.)

2 Sheets—Sheet 1.

J. CUDLIP.
AUTOMATIC RAILROAD SWITCH.

No. 591,821.

Patented Oct. 19, 1897.

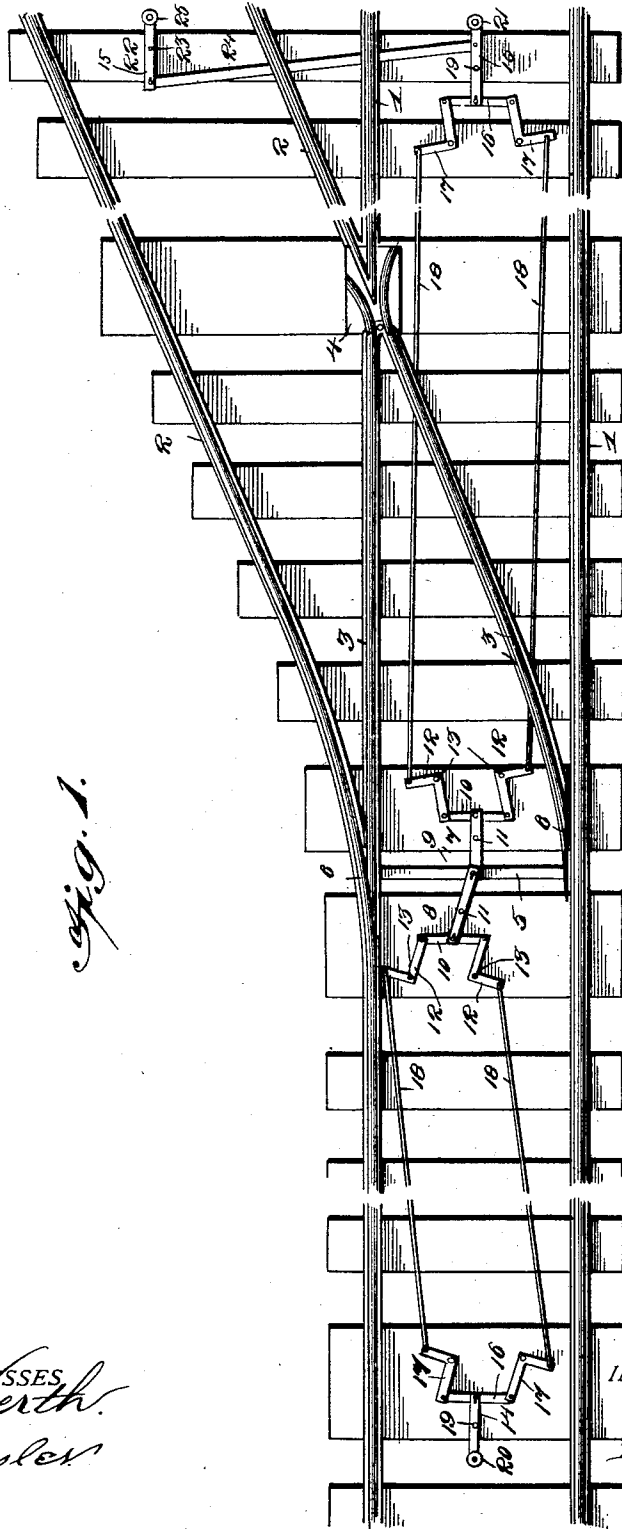


Fig. 1.

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JOHN CUDLIP, OF NESQUEHONING, PENNSYLVANIA.

AUTOMATIC RAILROAD-SWITCH.

SPECIFICATION forming part of Letters Patent No. 591,821, dated October 19, 1897.

Application filed January 15, 1897. Serial No. 619,377. (No model.)

To all whom it may concern:

Be it known that I, JOHN CUDLIP, a citizen of the United States, residing at Nesquehoning, in the county of Carbon and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Railroad-Switches; and I do hereby 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.

This invention relates to improvements in automatic railway-switches, and has for its object the production of simple and efficient switch-actuating mechanism designed to be operated by a moving vehicle—as, for instance, an engine.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of my switch and its switch-actuating mechanism and so much of the track as is necessary to illustrate the application thereof. Fig. 2 is a similar view showing the switch in the opposite position; and Fig. 3 is a perspective view of the switch-trip mechanism carried by the engine, showing one of the trip-levers in operative relation therewith.

Referring to the numerals on the drawings, 1 indicates the main-line rails, 2 the branch rails, and 3 the pivoted switch-rails, supported, as shown, upon the switch-block 4.

5 indicates a tie-bar connecting the switch-points 6 of the switch-rails 3 and designed to insure their proper relative movement.

7 and 8 indicate a pair of throwing-levers loosely pivoted at their adjacent extremities to the bolt 9, located at the center of the tie-bar and at their opposite extremities to the connecting-bars 10. The levers 7 and 8 are medially pivoted, as at 11, to one of the ties of the road-bed, and it will be observed that reciprocation of one of the connecting-rods 10 in one direction or the other will cause the oscillation of one of the throwing-levers 8 and will cause the switch-rails to be shifted in a manner well understood in the art.

12 indicates oppositely-disposed bell-crank levers pivoted to the road-bed at the juncture of their arms, as indicated at 13, and to the opposite extremities of the connecting-rods 10.

14 and 15 indicate, respectively, what I will

term “tripping-levers” medially pivoted between the main rails 1 and between the branch rails 2 upon opposite sides of the switch and connected with the bell-crank levers 12, as by connecting-bars 16, bell-crank levers 17, similar in construction and arrangement with the bell-crank levers 12, and through switch-operating wires 18, connecting the extremities of the bell-crank levers 17 with the levers 12 adjacent to the switch. The levers 14 and 15 are medially pivoted, as at 19, and are provided upon their upper extremities opposite their connections with the cross-bars 16 with rollers 20 and 21, designed to receive the impact of suitable tripping mechanism carried by the engine for the purpose of swinging the tripping-levers and actuating the switch through the intermediate mechanism.

22 indicates a third trip-lever medially pivoted, as at 23, between the branch rails 2 and opposite to the trip-lever 15 and connected therewith through a comparatively heavy trip-lever connecting-rod 24 and provided with an impact-roller 25 similar to the rollers 20 and 21, carried by the other switch-levers.

The objects of my invention subordinate to the general object heretofore stated are, first, to provide switch-actuating mechanism which will not be violently jarred by the impact of the tripping mechanism carried upon the engine; second, to provide means whereby light and inexpensive connecting-wires may be employed in lieu of the expensive and comparatively heavy connecting-rods ordinarily employed, and, third, to provide tripping mechanism upon the engine which will yield slightly when brought into contact with the switch-actuating mechanism for the twofold purpose of preventing violent shock to the tripping mechanism or to the switch-actuating mechanism.

By reference to the drawings it will be seen that if either of the trip-levers is swung upon its pivot it will cause a direct pull upon one or the other of the connecting-wires 18 for the purpose of actuating the switch, the opposite wire being slacked sufficiently to permit the movement required. If, now, the trip-levers are actuated in the opposite direction, the switch will not be actuated by a push exerted through the connecting piece or wire, but will be operated by a direct pull

upon the opposite wire. The peculiar arrangement of the bell-crank levers, trip-levers, and throwing-levers described enables the switch to be thrown in either direction 5 and from any switch-lever by a direct pull upon the connecting-wire as distinguished from the ordinary push-and-pull or reciprocatory connection, and I shall now proceed to a description of the trip mechanism carried 10 by the locomotive or other vehicle and designed to actuate the trip-lever in the proper direction at the will of the engineer or other operator.

26 and 27 indicate a pair of cam-supporting brackets provided with vertical ways 28 and 29, designed for the reception of terminal flanges 30, projecting from the opposite extremities of tripping-cams 31 and 32, carried, respectively, by the brackets 26 and 27 20 and yieldingly urged in opposite directions by springs 33. The cams 31 and 32 are provided with angular faces designed, as illustrated in Fig. 3 of the drawings, to be brought into contact with the rollers carried upon the 25 trip-levers in a manner to be described.

34 and 35 indicate, respectively, a pair of bell-crank levers suitably mounted upon the frame of the engine and connected, as by connecting-rods 36, with the trip-cams 31 30 and 32.

37 indicates a cam-actuating lever pivoted as at 38 and connected upon opposite sides of its pivot with the bell-crank levers 34 and 35 through connecting-rods 39.

35 It will be observed that by means of the mechanism just described the actuating-lever 37 when moved in one direction will cause the elevation of one of the trip-cams and the depression of the other, and that when it is 40 moved in the opposite direction the reverse movement of the cams is effected. Thus when the engine approaches the switch the engineer by throwing the lever 37 in the proper direction will depress the proper trip-cam and will 45 cause its angle or cam face to impinge against the roller 20, for instance, for the purpose of throwing the trip-lever 14 in the proper direction to cause the switch-rails 3 to be shifted as it is desired to pass from the main track to 50 the branch rails or to continue upon the main line.

It will be apparent that by reason of the employment of yielding trip-blocks the shock

incident to the impact of the trip-cams against the rollers will be reduced to a minimum and 55 that the danger of breaking or disengaging the parts will thus be practically eliminated.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is— 60

1. The combination with a pair of movable switch-rails, of a tie-bar, a switch-throwing lever pivoted upon the road-bed and to the tie-bar, a connecting-bar pivoted to the free extremity of the switch-throwing lever, oppositely-disposed bell-crank levers pivoted to 65 the opposite extremities of the connecting-bar, connecting-wires secured to the bell-crank levers, a second pair of oppositely-disposed bell-crank levers secured to the connecting-wires, a connecting-bar connected with said last-named bell-crank levers, and a 70 trip-lever pivoted to said connecting-bar and provided with a roller at its extremity, substantially as described. 75

2. The combination with a pair of movable switch-rails, of a tie-bar, switch-throwing levers 7 and 8, connecting-bars 10, bell-crank levers 12 connected to the opposite ends of each of the connecting-bars, connecting-wires 18 80 connected to each of the bell-crank levers, bell-crank levers 17 connected with said wires, connecting-bars 16 connecting the last-named bell-crank levers, trip-levers 14 and 15 connected with the connecting-bars 16, a trip-lever 22 connected with the trip-lever 15 through 85 a connecting-bar 24 and rollers carried at the extremities of the trip-levers 14, 15, and 22, substantially as specified.

3. In tripping mechanism designed to be 90 carried by a vehicle, the combination with a plurality of cam-brackets, of a plurality of trip-cams, springs designed to yieldingly retain the cams, a cam-actuating lever, and a plurality of bell-crank levers operatively connected with the cam-actuating lever and with 95 each of the trip-cams, substantially as specified.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses. 100

JOHN CUDLIP.

Witnesses:

J. H. SCHNEIDER,
JOHN L. POTTEIGER.