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SWITCH.

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938,336.

Patented Oct. 26, 1909.

2 SHEETS—SHEET 2.

Fig. 5.

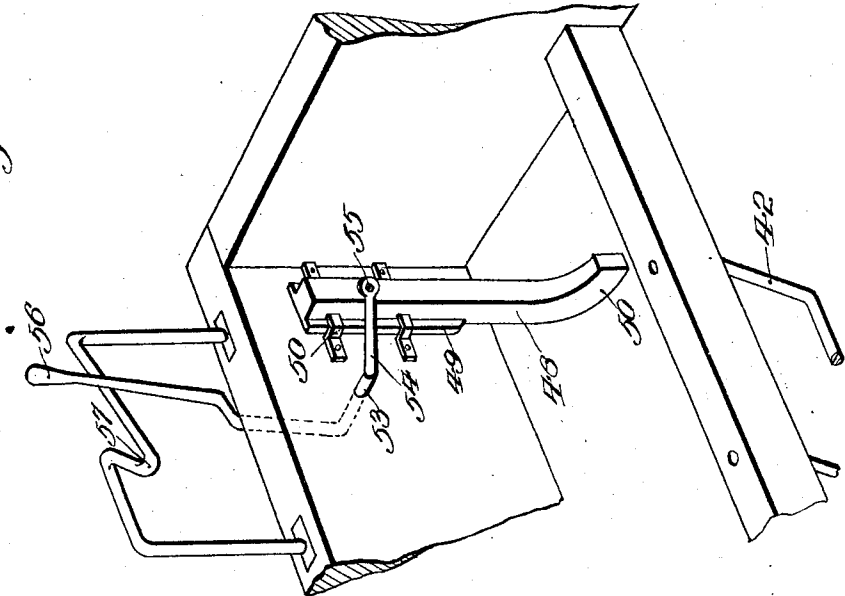
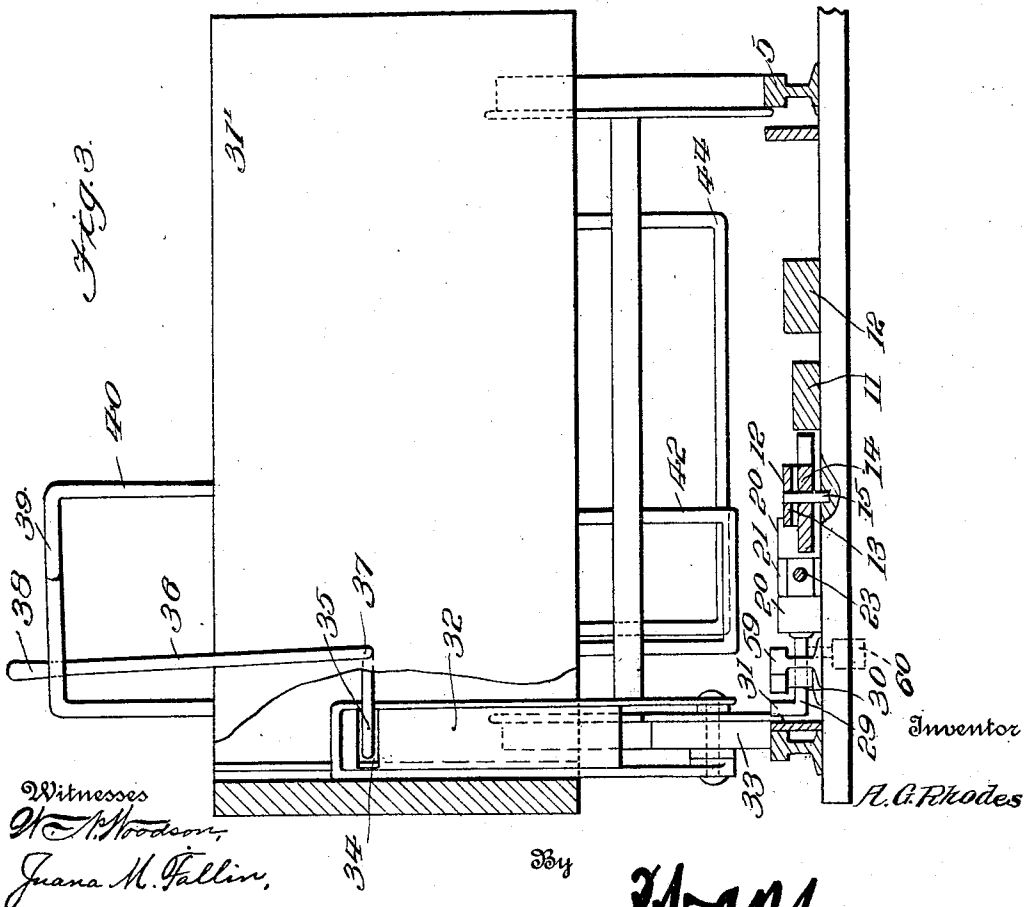


Fig. 3.



Witnesses
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SWITCH.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALBERTUS G. RHODES, citizen of the United States, residing at Santa Maria, in the county of Santa Barbara and State of California, have invented certain new and useful Improvements in Switches, of which the following is a specification.

This invention relates to railroad switches.

The object of the invention is to provide a railroad switch of simple construction capable of being readily operated by a motorman, conductor, or other person, from a moving car.

A further object of the invention is to provide an automatic switch which may be operated by mechanism positioned on a car to return the switch rails to normal position.

A further object of the invention is to provide a switch capable of being readily connected to any track bed and which will, when in use, give efficient service.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions, and minor details of construction may be resorted to within the scope of the appended claims.

For a full understanding of the invention and the merits thereof, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a top plan view of an automatic switch constructed in accordance with my invention; Fig. 2 is a side elevation of the same; Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 1 and looking in the direction of the arrow; Fig. 4 is a detail perspective view of the operating cam detached; and, Fig. 5 is a perspective view of a modified form of tappet.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The improved switch forming the subject matter of the present invention is shown by way of illustration in connection with a section of railroad track, in which 5 designates the main rails mounted on the cross ties 6, 7 the siding, and 8 the movable switch rails. The switch rails 8 are connected by spaced transverse bars 9 and 10, to one of which is rigidly secured in any suitable manner a laterally extending arm 11.

Extending longitudinally of the track and

secured in any suitable manner to some of the cross ties 6, are spaced bars 12 one of which has its intermediate portion cut away to form a recess 13 adapted to receive an actuating cam 14. The cam 14 is pivotally mounted at 15 on one of the cross ties 6 and is provided with a laterally extending arm 16 to which is pivotally connected at 17, rigidly united intersecting loops 18 and 19.

Disposed in advance of the bar 12 are spaced longitudinal bars 20 between which is pivotally mounted an actuating member or lever 21. Pivotaly mounted on the short end of the actuating member or lever 21 is a loop 22 to which is pivotally connected one end of a rod 23, the opposite end of which is provided with a hooked terminal having pivotal connection with the loop 18 of the actuating cam 14. A similar rod 24 is pivotally connected with the loop 19 of the actuating cam, said rod being extended longitudinally between the switch rails 8 for pivotal connection with the crank arm 25 of a rock shaft 26. The rock shaft 26 is journaled in suitable bearings carried by a pair of transverse bars 27, the inner end of the rock shaft being bent upwardly to form an operating lever 28.

Disposed at right angles to the actuating member or lever 21 is a trip lever 29, the latter being journaled in suitable bearings 30 and having its opposite ends bent at right angles to each other to form angularly disposed fingers 31, one of which extends beneath the actuating member 21, while the other extends into the path of movement of an operating device on the car, indicated at 31'. The function of the trip lever 29 is to elevate the free end of the actuating member 21, so that the latter will be engaged by the operating mechanism on the car, and through the medium of the rod 23 and cam 14, move the switch to open position, so as to permit the car to pass on to the siding.

The mechanism on the car employed for operating the actuating lever 21 comprises a bar 32, slidably mounted on the front portion of the car at one side of the latter and having its lower end bifurcated for the reception of a roller 33. The upper end of the bar 32 is provided with a slot or recess 34 which receives the crank arm 35 of a lever 36. The lever 36 is pivotally mounted at 37 on the body of the car, while the handle 38 thereof is adapted to engage a depression or offset portion 39 formed in a

keeper 40, thereby to lock or support the roller 33 in elevated position.

Extending transversely across the body of the car is a bar 41 having a loop 42 depending therefrom and adapted to engage the actuating member 21 when the latter is elevated by the trip lever 29 and depress said actuating lever, so as to cause the same to assume a position between the bars 20. Disposed in spaced relation to the bar 41 is a similar transverse bar 43, and journaled in suitable bearings on the bar 43 is an auxiliary loop 44. One end of the loop 44 is extended longitudinally beyond the adjacent side of the car and provided with an angular terminal 45 for engagement with a wrench or other operating tool, while the other end thereof is provided with a ratchet wheel 46, which latter is engaged by a suitable pawl 47 mounted on the side of the car, as shown. Thus it will be seen that by positioning a tool on the squared terminal 45 of the loop 44 and rotating said tool, the loop may be raised or lowered, said loop being locked in adjusted position by means of the pawl and ratchet mechanism, above described. The function of the loop 44 is to engage the lever 28 and return the same to normal or lowered position as the car enters the siding 7, the loop 44 being made longer than the loop 42, so that the loop 44 will engage the operating lever 28 to effect the depression thereof, as stated.

The operation of the device is as follows: As the car approaches the switch, the motorman, conductor, or other attendant, operates the lever 36, so as to lower the roller or tappet 33, which roller or tappet will engage one of the fingers 31 of the trip lever 29, thus imparting a rocking movement thereto and causing the other trip finger 31 to bear against and elevate the free end of the actuating lever 21. As the car moves forward in the direction of the switch, the loop 42 will engage the projecting end of the actuating lever 21 and move the latter on its pivotal axis in the direction of the switch rails, and thence downwardly between the bars 20. As the actuating member 21 is moved in the direction of the switch rails, the rod 23 will partially rotate the cam 14, thereby causing the peripheral edge thereof to bear against the arm 11 and thus move the switch rails 8 to open position, so as to permit the car to pass on to the siding 7. As the cam 14 is rotated, the rod 24 will be moved longitudinally, so as to cause the lever 28 to assume a substantially vertical position, said lever being depressed by the rear loop 44 as the car enters the siding, in the manner before stated. Of course, it is to be understood that when the lever 28 is depressed by engagement with the loop 44, the cam 14 will be moved in the opposite direction, so as to return the actuating lever

21 to normal position and in doing so close the switch, so that the next car may continue to travel on the main rails, or operate the actuating member 21 to enter the siding, as desired. When several of said cars are connected to form a train, the long loop 44 on the forward car will be swung upwardly into inoperative position, while the loop 44 on the rear car will be swung downwardly into the path of the lever 28, so that said lever will be actuated to return the switch to normal or closed position after the passage of the last car.

In Fig. 5 of the drawings there is illustrated a modified form of the invention in which the tappet is preferably in the form of a bar 48 having laterally extending flanges 49 and a curved terminal 50, the latter being adapted to engage one of the fingers on the trip lever 29 to effect the elevation of the actuating member 21. Suitable guides or keepers 51 are secured to the body of the car and disposed in overlapped relation to lateral guide flanges 49 formed on the bar 48, thus to assist in guiding the latter in its vertical movement. As a means for raising and lowering the bar 48 there is provided a lever 53 having one end thereof journaled on the car and provided with a terminal arm 54 for pivotal connection at 55 with the bar 48, and its other end extended to form a handle 56, the latter being adapted to engage an offset portion 57 in a loop or keeper 58 for the purpose of supporting the bar 48 in elevated position, and out of the path of the trip lever. A guard rail 59 is preferably disposed at the trip lever 29 in order to prevent the wheels of vehicles from bearing against and actuating said trip lever. It will here be noted that the intermediate portion of the trip lever 29 is provided with a depending weight 60 for automatically returning the fingers of said trip lever to normal position after the latter have been engaged by the mechanism mounted on the car.

While the device is shown and described in connection with a right hand switch, it will of course be understood that the same may be used with equally good results in connection with a left hand switch by merely changing the position of the tappets.

Having thus described the invention what is claimed as new is:

1. The combination with the main rails, siding, and switch rails, of a bar connecting the switch rails and provided with an arm, a cam adapted to bear against the arm, an actuating lever operatively connected with the cam, and a trip lever for moving the actuating member into the path of travel of a car, said member being actuated by the car to open the switch.

2. The combination with the main rails,

siding, and switch rails, of an actuating member pivotally mounted between the main rails and operatively connected with the switch rails, and a trip lever having oppositely disposed angular fingers, one of which is normally extended beneath and adapted to bear against the actuating lever for elevating the latter, and the other finger being disposed in the path of movement of a car.

3. The combination with the main rails, siding, and switch rails, of an actuating lever pivotally mounted between the main rails and operatively connected with the switch rails, a trip lever journaled near the actuating lever and having its central portion weighted and its opposite ends provided with angularly disposed fingers, one of which normally extends into the path of movement of a car, and the other being adapted to bear against and elevate the actuating lever when the first mentioned finger is engaged by said car.

4. The combination with the main rails, siding, and switch rails, of an arm carried by the switch rails, a cam adapted to engage the arm, a pivoted actuating lever operatively connected with the cam, a rock bar also operatively connected with the cam, and a trip lever for moving the actuating lever to elevated position into the path of movement of a car.

5. The combination with the main rails, siding, and switch rails, of a bar connecting the switch rails and provided with a laterally extending arm, a cam adapted to bear against the arm and provided with intersecting loops, an actuating lever pivotally mounted between the main rails and operatively connected with one of the loops, a rocking bar operatively connected with the other loop and provided with a terminal lever, and a trip lever disposed beneath the actuating lever and actuated by engagement with a car to elevate said actuating lever.

6. The combination with the main rails, siding, and switch rails, of a bar connecting the switch rails and provided with a lateral arm, a cam adapted to bear against said arm and provided with an extension, intersecting loops pivotally mounted on the extension, an actuating lever pivotally mounted between the main rails, a rod forming a connection between the pivoted end of the actuating lever and one of said loops, a rock bar having one end thereof provided with an angular arm and its other end extended to form a lever, a rod forming a pivotal connection between the crank arm and other loop, and a trip lever journaled near the actuating lever and operable by a car to elevate the actuating member into the path of said car.

7. The combination with the main rails, siding, and switch rails, of a transverse bar connecting the switch rails and provided

with a laterally extending arm, a longitudinal bar having a recess formed therein, a cam pivotally mounted in said recess and adapted to bear against the bar, intersecting loops pivotally mounted on the cam, an actuating lever pivotally mounted between the main rails, a loop pivotally mounted on one end of the actuating lever, a rod forming a pivotal connection between the loop of the actuating member and one of the loops carried by the cam, a rock shaft having an angularly disposed lever, a rod forming a pivotal connection between the rock shaft and the other loop of the cam, and a trip lever having angularly disposed fingers, one of which is extended into the path of movement of a car, and the other finger being arranged beneath the actuating lever and adapted to elevate the latter into the path of movement of the car when the other finger is engaged by said car.

8. The combination with the main rails, siding, and switch rails, of a cam for operating the switch rails, an actuating member operatively connected with the cam, a rock shaft also operatively connected with the cam and provided with an angularly disposed lever, a trip lever having one end thereof extending beneath the actuating lever and the other end disposed in the path of movement of a car and adapted to be actuated by the latter for elevating the actuating member, and a guard rail arranged above the trip lever.

9. The combination with the main rails, siding, and switch rails, of a cam co-acting with the switch rails, an actuating lever pivotally mounted between the main rails and operatively connected with the cam, a rock shaft having an angularly disposed lever also pivotally connected with the cam, a trip lever having oppositely disposed fingers, one of which is extended into the path of movement of a car and the other disposed beneath the actuating lever and adapted to elevate the latter when the trip lever is oscillated, and a weight depending from the trip lever for returning the fingers to normal position.

10. The combination with the main rails, siding, and switch rails, of an actuating lever operatively connected with the switch, a trip lever having one end thereof disposed beneath the actuating lever and its other end arranged near the main rails, a car having a tappet depending therefrom and adapted to engage one end of the trip lever for elevating the actuating lever, and means carried by the car at the rear of the tappet for operating the actuating lever to effect the movement of the switch.

11. The combination with the main rails, siding, and switch rails, of an actuating lever operatively connected with the switch rails, a trip lever disposed beneath the actu-

ating lever, a car having a tappet adapted to engage one end of the trip lever for elevating the actuating lever, and a loop depending from the car and adapted to engage the
5 actuating lever for operating the latter to effect the movement of the switch.

12. The combination with the main rails, siding, and switch rails, of an actuating lever operatively connected with the switch
10 rails, a second lever also operatively connected with the switch rails, a trip lever disposed beneath the actuating lever, a car having means for successively engaging the
15 trip lever and actuating lever to operate the latter and effect the closing of the switch, and other means mounted on the car and adapted to engage the said second lever for moving the switch in the reverse direction.

13. The combination with the main rails,
20 siding, and switch rails, of an actuating

lever operatively connected with the switch rails, a second lever also operatively connected with the switch rails, a trip lever extending beneath the actuating lever, a car having a tappet adapted to engage the trip
25 lever for operating the latter to elevate the actuating lever, a stationary loop depending from the car and adapted to engage the actuating lever for moving the switch in one direction, and a pivoted loop spaced from
30 the stationary loop and adapted to engage the second lever for returning the switch to normal position.

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

ALBERTUS G. RHODES. [L. S.]

Witnesses:

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