

J. W. RICE.
 AUTOMATIC RAILROAD SWITCH.
 APPLICATION FILED MAY 28, 1910.

Patented Mar. 7, 1911

2 SHEETS-SHEET 1.

986,026.

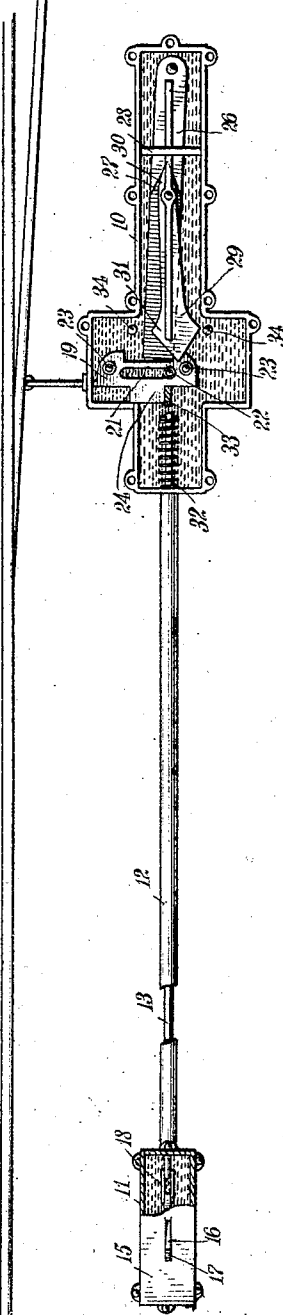


Fig. 1.

WITNESSES:

W. H. Rice
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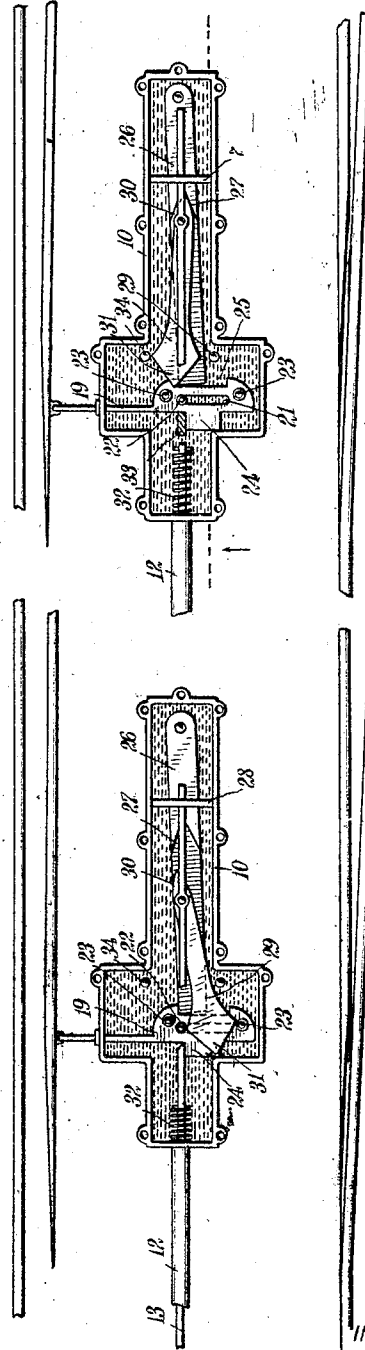


Fig. 2.

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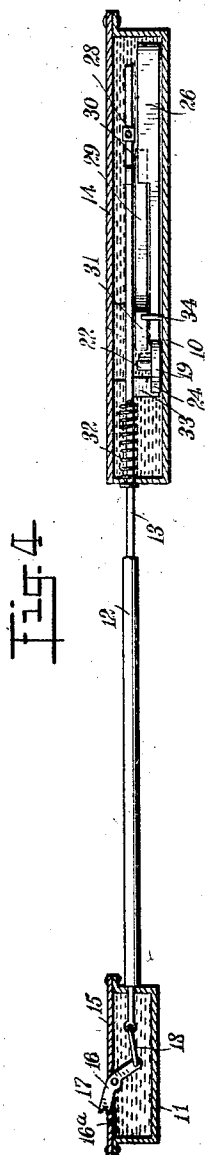


Fig. 4

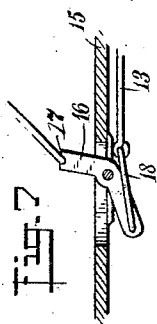


Fig. 7

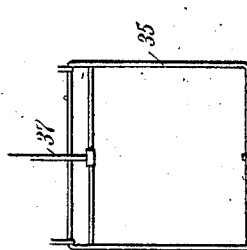


Fig. 8

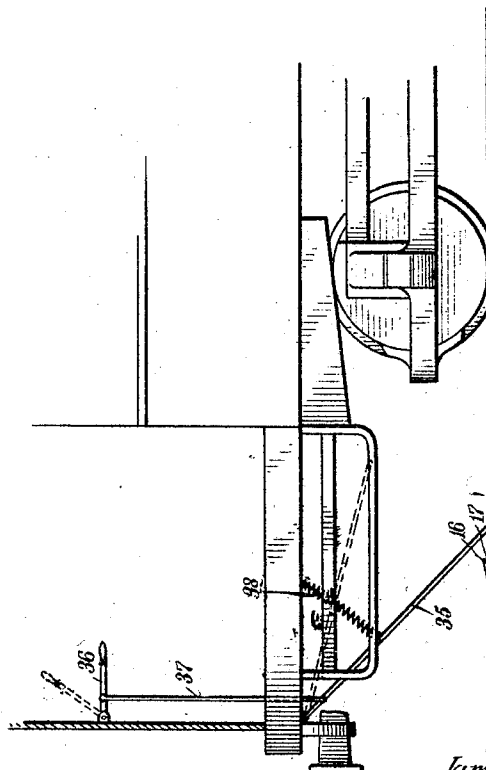


Fig. 9

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UNITED STATES PATENT OFFICE

JAMES W. RICE, OF FORT SMITH, ARKANSAS.

AUTOMATIC RAILROAD-SWITCH.

986,026.

Specification of Letters Patent.

Patented Mar. 7, 1911.

Application filed May 28, 1910. Serial No. 563,851.

To all whom it may concern:

Be it known that I, JAMES W. RICE, a citizen of the United States, and a resident of Fort Smith, in the county of Sebastian and State of Arkansas, have invented a new and Improved Automatic Railroad-Switch, of which the following is a full, clear, and exact description.

The invention is an improvement in automatic switches, more especially for street railways, and has in view a simple and effective mechanism for effecting the reverse movement of the switch, which mechanism is operable to alternately throw the switch in opposite directions by a like working of the switch bar or rod, this bar being in the nature of a pull bar, whereby it can be made relatively small with safety.

The invention further resides in means for automatically locking the switch immediately the switch has been fully thrown, and in the provision of oil-tight casings for containing the working mechanism, which keeps the parts well lubricated and prevents the switch from freezing in cold weather.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan of an automatic switch constructed in accordance with my invention, the top of the switch case being removed and the trigger case partly in horizontal section; Fig. 2 is a view similar to Fig. 1, with the trigger and trigger case omitted and showing the switch in the reverse position, with the parts of the operating mechanism as they stand immediately after the switch is thrown; Fig. 3 is a view similar to Fig. 2, with the switch locked and the parts in their normal position for this position of the switch; Fig. 4 is a side view of the switch-operating mechanism partly in central longitudinal section; Fig. 5 is a fragmentary view, partly in section, illustrating the switch tripping appliance carried by the car; Fig. 6 is a fragmentary front view of the said appliance; and Fig. 7 is a fragmentary sectional view, showing the tripping appliance in the position as it leaves the trigger.

In the construction of my improved switch, I preferably arrange the greater portion of the working mechanism in a switch case 10, and a trigger case 11, the two cases

being connected by a pipe 12 of a suitable length, and through which is slidable a pull or operating bar 13. Each case 10 and 11 is made oil-tight, and the switch case 10 is provided with a removable cover 14, and the trigger case 11 provided with a removable cover 15, the latter being provided with a slot through which the operating arm of a trigger 16 projects, this trigger, as best shown in Figs. 4 and 7, being in the nature of a bell-crank lever having an engaging notch 17 in its outer extremity, the inner arm of the lever being operatively connected to the adjacent end of the pull bar 13, as by the link 18. The notch 17 in the trigger is retained above the top of the trigger case by a spring 16^a fastened to the cover, on which the trigger when in its normal position is adapted to rest. The switch case 10 is shown to be made relatively wider at an intermediate point to receive a switch actuating bar 19, which is slidably retained at the bottom of the case and extends through one side thereof and is operatively connected to the movable point of the switch.

That portion of the switch actuating bar within the case has a guide slot 21 extending along its length, through which passes a guide roller or pin 22 secured centrally of the switch case. At the upper face of the switch actuating bar near each end of the slot 21, operating rollers or pins 23 are provided. A locking lug 24 extends from the forward edge of the switch actuating bar, and at the rear edge of this bar a notch 25 is formed, into which projects the free end of a setting lever 26, the lever being fulcrumed to the case, and adjacent to the pivoted end portion is made relatively thicker and provided with a setting notch 27. The pull bar 13 extends substantially the full length of the case 10, and is slidably supported in one or more cross-bolts 28, arranged in the upper portion of the case, and carries at its under side a shifting lever 29, the shifting lever being fulcrumed on the pull bar to oscillate, and having a tapered or wedged end 30 back of its fulcrum, arranged to engage within the setting notch of the setting lever, and provided with a wedged or arrow head 31, adapted, when the pull bar is actuated through the trigger 16, to enter between the relatively stationary guide roller 22, which serves as an abutment, and the adjacent actuating roller or shoulder 23, and force the

switch actuating bar 19 in a direction to throw the switch. The pull bar is returned to normal position, together with the shifting lever and trigger, by a spring 32, which is shown to be arranged thereon in the case 10. The pull bar is provided with a depending locking bolt or lug 33, which is located to engage at one side of the locking lug 24 when the pull bar is returned to normal position, and lock the switch against movement. To assist the setting lever in positioning the shifting lever for the next operation of the switch, as the shifting lever is returned to normal position, stop pins 34 are placed at each side of the head of the shifting lever and limit the oscillatory movements thereof, as well as assist in directing the lever to the proper side of the abutment presented by the guide pin or roller 22.

For operating the switch, the car is provided with a tripping appliance which is adapted to be moved into and out of operative position, and comprises a tripping loop 35, supported to swing at the under side of the car, ordinarily beneath the platform, and is connected to an operating lever 36 by a link 37, the tripping loop and connected lever being normally returned to an elevated and removed position by a spring 38.

In the operation of the switch, the motorman just before the car reaches the trigger 16, depresses the lever 36, which lowers the tripping loop 35 into the path of the trigger. As the loop reaches the trigger it engages within the notch 17 and pulls the trigger over against the action of the spring 32, until the head 31 of the shifting bar 29 has been forced between the roller 22 and adjacent roller 23, to fully throw the switch, at which time the tripping loop escapes and the spring 32 returns the pull rod and connected parts to normal position, locking the actuating bar. The notch 27 in the setting lever 26, together with the stop pins 34, directs the head of the shifting lever to a position in which it will pass between the roller 22 and the opposite roller 23 of the switch actuating lever upon the next operation of the pull bar. The trigger case is placed sufficiently far from the switch to allow the motorman to conveniently see that the switch has been properly thrown before the car passes onto the switch point.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In a railroad switch, a switch-actuating bar having shoulders, an operating bar slidably supported at approximately right-angles to the switch-actuating bar, and a shifting lever fulcrumed to the operating bar to swing laterally, and having a wedge head arranged to engage with the said

shoulders in alternate order upon the forward movements of the operating bar, and move the switch-actuating bar in opposite directions.

2. In a railroad switch, a switch actuating bar, a setting lever operatively engaged with the switch actuating bar, an operating bar, and an oscillatory shifting lever operatively arranged with respect to the setting lever and located to engage the switch-actuating bar and alternately force it in opposite directions under the action of the pull bar.

3. In a railroad switch, a switch actuating bar, an abutment, projections carried by the switch actuating bar at each side of the abutment, an operating bar, an oscillatory shifting lever carried by the operating bar, having a wedge-shaped head, and a setting device arranged to direct the head of the shifting lever between the abutment and the adjacent projection of the actuating lever, operatively connected to the switch-actuating bar and having a limited movement independent thereof.

4. In a railroad switch, a switch actuating bar having a guide slot, a fixed guide pin passing through the slot, projections carried by the actuating lever at each side of the pin, an operating bar, an oscillatory shifting lever carried by the bar, having a wedge-shaped head, and a setting lever operatively engaged with the switch actuating bar and arranged to direct the point of the shifting lever between the guide pin and the adjacent projection of the actuating lever.

5. In a railroad switch, a switch actuating bar, an operating bar, an abutment, an oscillatory shifting lever carried by the operating bar, and a setting lever arranged to alternately direct the shifting bar into engagement with the actuating bar at the opposite sides of the abutment fulcrumed adjacent to one end and operatively engaged at the other end with the actuating bar.

6. In a railroad switch, a switch actuating bar, an operating bar slidable at approximately right-angles to the actuating bar, a guide roller for the switch actuating bar, an oscillatory shifting lever carried by the operating bar and having a wedge head, and a setting lever operatively engaged with the actuating bar and arranged to alternately direct the point of the shifting lever into engagement with the switch actuating bar at the opposite sides of the guide roller.

7. In a railroad switch, a switch actuating bar, a guide roller, rollers carried by the switch actuating bar at each side of the guide roller, an operating bar, an oscillatory shifting lever carried by the operating bar, having tapering end portions, and a setting lever operatively engaged with the actuating bar and having a notch arranged to engage one of the wedge ends of the

shifting lever and direct the other wedge end thereof between the guide roller and the adjacent roller of the switch actuating bar.

8. In a railroad switch, a switch actuating bar, an operating bar, a shifting bar for the switch actuating bar, carried by the operating bar, and a locking bolt carried by the switch actuating bar after each operation of the switch.

9. In a railroad switch, an operating bar, a switch actuating bar, a shifting lever carried by the operating bar and arranged to engage with the actuating bar and alternately move it in opposite directions, and a locking bolt arranged to engage with the actuating bar and lock the latter against movement upon the return movement of the shifting lever.

10. In a railroad switch, a switch-actuating bar, an operating bar, a shifting bar for the switch-actuating bar, fulcrumed to the operating bar, means normally retracting the shifting bar from the switch-actuating bar,

and a locking bolt carried by the operating bar and forced into engagement with the switch-actuating bar by the said means.

11. In a railroad switch, a case, a switch-actuating bar slidable in the case and having a slot extending along its length, a pin fixed relatively to the case and passing through the said slot, pins arranged at each side of the first-mentioned pin and carried by the switch-actuating bar, an operating bar, a shifting lever fulcrumed to the operating bar, and a setting lever to direct the shifting lever between the first-mentioned pin and each of the last-mentioned pins in alternate order, operatively engaged by the switch-actuating bar.

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

JAMES W. RICE.

Witnesses:

J. D. LIGHTER,
GEO. T. WILLIAMS.