

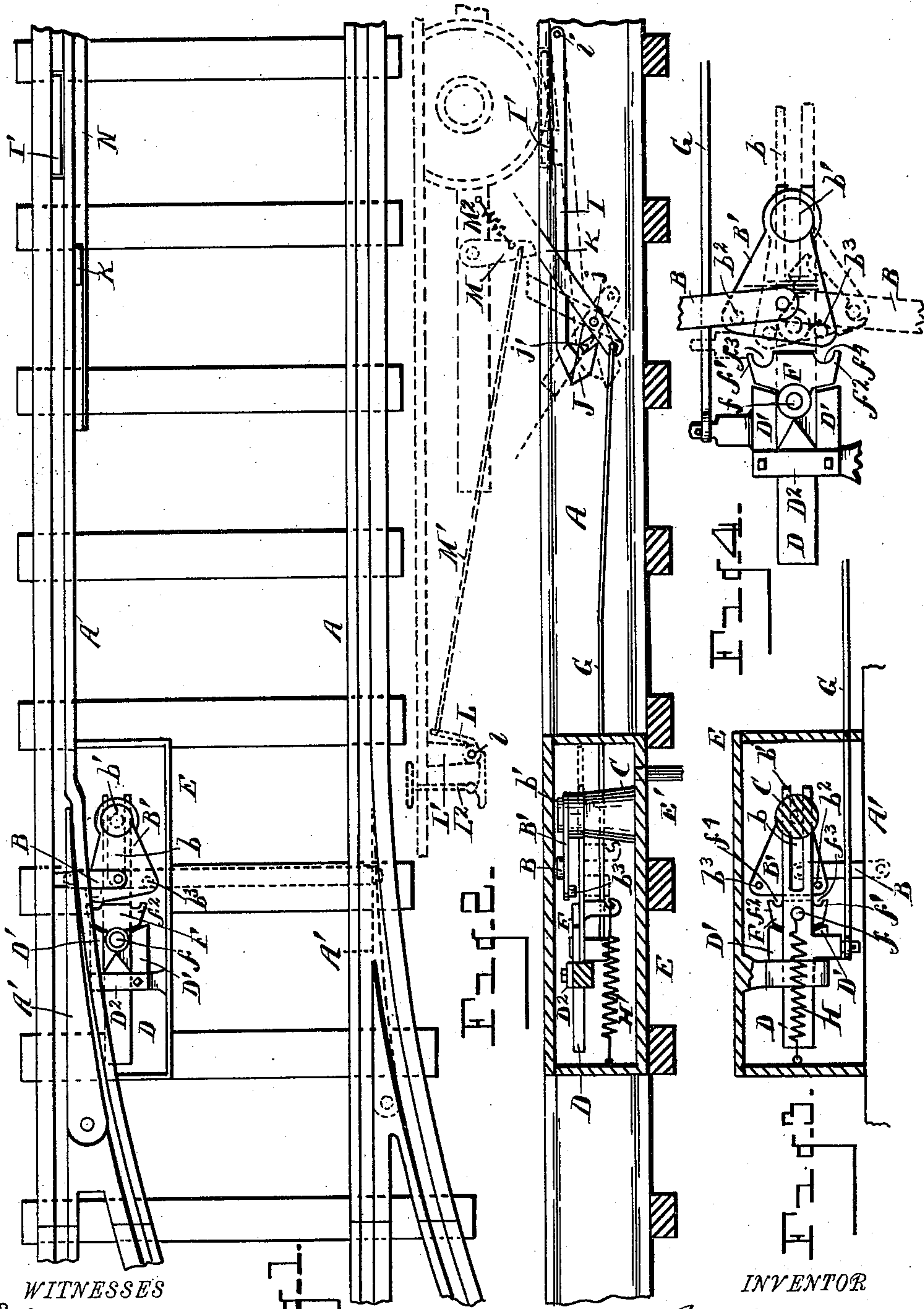
(No Model.)

W. H. ROUSTON.

SWITCH ACTUATING MECHANISM FOR RAILWAYS.

No. 601,858.

Patented Apr. 5, 1898.



WITNESSES

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# UNITED STATES PATENT OFFICE.

WILLIAM H. ROUSTON, OF DETROIT, MICHIGAN, ASSIGNOR OF ONE-HALF  
TO SAMUEL NASH, OF SAME PLACE.

## SWITCH-ACTUATING MECHANISM FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 601,858, dated April 5, 1898.

Application filed August 27, 1897. Serial No. 649,699. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. ROUSTON, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Switch-Actuating Mechanism for Railways; and I 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, which form a part of this specification.

My invention has for its object novel switch-actuating mechanism for actuating switches of street and other railways; and it consists of the construction, combination, and arrangement of devices hereinafter specified and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a plan view illustrating my invention with a portion of the case or cover removed. Fig. 2 is a side elevation with portions of the cases removed. Fig. 3 is an inverted plan view of certain features. Fig. 4 is an enlarged plan view of the mechanism adjacent to the switch-point, showing the lever B' in the different positions which it assumes.

My invention is designed to provide switch-actuating mechanism for railways, of superior efficiency and utility, not liable to get out of order, and which may be readily and conveniently actuated at the will of the motor-man or driver of the car, as may be required. The desirability of a device of this sort which shall not be liable to get out of order, but which shall at all times be reliable, always effective, and ready and convenient of operation is well understood.

I carry out my invention as follows:

A represents the railway-rail, and A' a horizontally-reciprocatory switch-point of ordinary construction and arrangement. To actuate said switch-point, I connect therewith, as by a connecting-link B, a movable or oscillatory lever B', which may have any suitable support C. To actuate the lever B', I provide a reciprocatory slide D, which may slide in suitable ways D', supported in any suitable manner. The ways D' and the support C for

the lever B' may conveniently be engaged with the inclosing case E. The ways may have engaged therewith a cap D<sup>2</sup>, projecting over the slide, this cap permitting the ready engagement of the slide in place and its removal from the ways, if required. The slide is also preferably provided with a longitudinal recess (indicated at b) at its forward end to permit the slide reciprocating past the fulcrum b' of the lever B' and by means of which also the slide is further guided in its movements. Connected with the slide is a movable dog F, preferably fulcrumed to the slide, as indicated at f, so that it may oscillate laterally. This dog is constructed with two arms f' and f<sup>2</sup>, preferably forming recesses f<sup>3</sup> and f<sup>4</sup> on either side of the longitudinal center of the dog to engage the corresponding shoulders or spurs b<sup>2</sup> and b<sup>3</sup> upon the lever B', said shoulders being located on opposite sides of the longitudinal center of said lever or on opposite sides of the line drawn through the fulcrum-point longitudinally of said slide. The ways D' on either side of the slide are preferably beveled inward at their ends adjacent to the dog, the dog being so fulcrumed that it may oscillate laterally when drawn forward toward the lever B', the adjacent extremities of the ways, however, guiding the dog back into normal position whenever the dog is retracted. The dog, together with the slide, may be drawn forward by a reciprocatory rod G, which may be carried any desired distance from the switch-point along the adjacent rail. The slide may be retracted in any suitable manner, as by means of a spring H.

It will be obvious that whenever the outer end of the switch-point is thrown laterally to open or close the switch the lever B' will have a corresponding location, said lever being either carried to the left or right with the movement of the switch-point in a corresponding direction, thereby carrying its shoulders b<sup>2</sup> b<sup>3</sup> to one side or the other of a line parallel with the slide centrally through either of said recesses in the dog when the dog is in normal position. The shoulders b<sup>2</sup> b<sup>3</sup> in the lever are so located and arranged that when the switch-point is open one of the recessed arms of the dog will engage one of said shoulders when the slide is drawn toward



the lever, and when the switch-point is thrown in the opposite direction the other of said recessed arms of the dog will engage the other of said shoulders on the lever B', one recessed shoulder of the dog only being engageable on the movement of the slide with one of the shoulders of the lever B', which recessed arm, however, shall engage with the corresponding shoulder of the lever B', being entirely dependent upon the location of said lever, the location of the lever conforming to the location of the switch-point. It will be seen that whatever may be the location of the switch-point the operation of the slide with the dog engaging a corresponding shoulder of the lever B' will move the switch into the opposite direction. Thus if the switch be open a movement of the slide with its dog engaging the lever will close the switch. If the switch be closed, the movement of the slide with its dog will open the switch. A movement of the slide by the bar G always actuates the switch-point to throw said bar into the contrary position from that occupied when the slide is actuated. I would have it understood that I do not limit myself solely to this particular form and shape of the dog; but this is a convenient form of construction for engaging the shoulders upon the lever B'. If the lever B' be thrown to the left and remains temporarily in that position, obviously the next movement of the slide with its dog will so engage one of the shoulders of said lever as to throw the lever to the right, in which position the lever will remain with a corresponding position of the switch-point until the following movement of the slide, which will throw the lever B' to the left and carry the switch-point into a corresponding position. The operating-rod G is carried along the track a sufficient distance, so that the operator of the car may cause the switch to be thrown in proper season. At the extremity of said rod opposite the mechanism hereinbefore described any suitable means may be provided for actuating said rod upon the approach or passage of the car.

The mechanism to actuate the operating-rod G herewith shown and described consists of a lever I, fulcrumed at one extremity, as indicated at *i*, said lever being provided intermediate its ends with a shoulder I', projecting upward, preferably through a portion of the rail and into a groove of the rail, as shown, so that the flange of the car-wheel moving toward the switch will strike said shoulder and depress said lever I. The end of the lever opposite the fulcrum-point engages a lever J, fulcrumed upon a pin *j*, upon which pin is also fulcrumed an additional lever K, connected at its lower end with the operating-rod G, the upper end of the lever K projecting normally upward adjacent to the inner edge of the rail, but normally out of the way. The lever J is formed with a shoulder *j'*, bearing upon the lower end of

the lever K, whereby when the lever I bears downward upon the outer end of the lever J its shoulder *j'*, bearing against the lower end of the lever K, will tilt the lever K and throw its upper end forward and above the upper surface of the rail adjacent thereto, so that the lever K may readily be engaged by any suitable operating device carried by the car.

My invention contemplates having the car provided with any suitable device to be depressed by the motorman or driver when he wishes to throw the switch. For example, the car may be provided with a bell-crank lever L, pivoted, as at *l*, to a bracket or arm L', one end of the bell-crank being provided with a push-bar L<sup>2</sup>, extending upward through the platform of the car adjacent to the motorman or driver, so that he may readily, by pressure upon said rod with his foot, actuate said bell-crank. Upon the truck of the car is also fulcrumed a lever M, connected with the bell-crank by a rod M', whereby when the bell-crank is actuated the lever M will be thrown down to engage the lever K, which has been moved up into position to be engaged by the lever M. The lever M may be retracted in any suitable manner, as by a retracting-spring M<sup>2</sup>. When the lever M has been thrown down, so as to contact with the upper end of the lever K, the movement of the car will force the lever K forward, pulling the rod G in a corresponding direction until the upper end of the lever K has been forced over sufficiently for the lever M to ride over and past the lever K. This movement of the lever K will obviously, by means of a connecting-rod G, actuate the slide D and said dog, whereby the dog, engaging with the lever B', as above specified, will throw the switch into a contrary position from that occupied when the driver or motorman threw down the lever M, carried by the car. The levers I, J, and K may be provided with an inclosing case N. It is obvious that all parts of the mechanism are readily accessible in case it may be required to renew or repair the same—as, for instance, should the spring to retract the slide be required to be renewed.

It will be observable also that the mechanism hereinbefore described in no manner prevents the operation of the switch-point by hand should it be desired or required, inasmuch as the switch-point may be as easily actuated independent of said mechanism as in ordinary switch-bars. The rod G may be carried such a distance that a motorman or driver can readily see whether the switch has been thrown or not.

The device is obviously very simple, economical, and durable.

Should the switch-point be located in connection with the rail adjacent to the mechanism shown in Figs. 2 and 4, of course a short connecting-link B will be required, extending in the corresponding direction from the lever B'. Should the switch-point, however, be located on the opposite side of the track, the



connecting-lever B would be led in a corresponding direction from the lever B', as indicated in dotted lines in Fig. 2.

The inclosed case E may set snugly up against the adjacent rail, the cover portion fitting up against the rail, so that dirt and snow will be effectually excluded, while a suitable drainage-pipe (indicated at E') will prevent the accumulation of water within the case.

It will be obvious that when the switch-point is located midway between its open and closed positions, as when an impediment might get between the point and the adjacent portion of the rail, the reciprocatory dog will ride between the depending shoulders of the lever without actuating the lever at all, the dog simply riding under the lever between said shoulders. It is obvious that the fulcrum of the lever is fixed and that the opposite end of the lever swings in the arc of a circle, while the dog is both reciprocatory and laterally oscillatory. The guides or ways D' are fixed and give positive direction to the dog on its return into normal position.

What I claim as my invention is—

1. A railway-switch-actuating device having in combination a switch-point, a reciprocatory dog, mechanism connected with said switch-point actuated by said dog to shift the point, and means located at a distance from the point actuated by a moving car to actuate said dog, substantially as set forth.

2. A railway-switch-actuating device having in combination a switch-point, a reciprocatory and oscillatory dog, and a movable lever connected with the switch-point actuated by the dog, said lever having a fixed fulcrum, for the purpose set forth.

3. A railway-switch-actuating device having in combination a switch-point, a reciprocatory and oscillatory dog, an oscillatory lever fulcrumed independently of the point, and means connecting said lever with the switch-bar, said lever engageable by the dog to throw the switch-point in the opposite direction from the position occupied, for the purpose set forth.

4. A railway-switch-actuating mechanism having in combination a horizontally-oscillatory switch-point, a horizontally-oscillatory lever having a fixed fulcrum, a device connecting the switch-point with said lever, a reciprocatory and oscillatory mechanical device to engage said lever to throw the lever and actuate the switch-point, and additional means actuated by a moving car at a point distant from the switch-point to actuate said reciprocatory and oscillatory device, for the purpose set forth.

5. A railway-switch-actuating device having in combination a switch-point, an oscillatory lever connected therewith fulcrumed independently of the switch-point, a reciprocatory slide, and an oscillatory dog carried by said slide to engage said lever, for the purpose set forth.

6. A railway-switch-actuating mechanism having in combination a switch-point, a lever connected therewith fulcrumed independently of the point, and a reciprocatory and oscillatory device to engage said lever to move the switch-point into the opposite position from that occupied, for the purpose set forth.

7. A railway-switch-actuating mechanism having in combination a switch-point, a lever connected therewith, a slide, an oscillatory dog carried by the slide to actuate said lever, said lever provided with vertically-extended shoulders, one of which is engageable by said dog to throw the switch-point into an opposite position from that occupied, for the purpose set forth.

8. A railway-switch-actuating mechanism having in combination a switch-point, a reciprocatory slide, a laterally-oscillatory dog carried by said slide, means to retract said dog into normal position when the slide is retracted, and a device connected with the switch-point actuated by said dog to throw the switch-point into opposite position from that occupied, for the purpose set forth.

9. A railway-switch-actuating mechanism having in combination a switch-point, an oscillatory lever connected therewith, a reciprocatory slide, ways in which said slide reciprocates, and an oscillatory dog carried by said slide engageable with said lever to throw the switch-point into opposite position from that occupied, said ways adjacent to the dog constructed to guide the dog into normal position when the slide is retracted, for the purpose set forth.

10. A railway-switch-actuating mechanism having in combination a switch-point, a lever connected therewith fulcrumed independently of the point, a reciprocatory slide, an oscillatory dog carried by the slide to engage said lever, an operating-rod connected with said slide to force the slide toward the lever, and means to retract the slide, for the purpose set forth.

11. In a switch-actuating mechanism, the combination with a switch-point, of a lever connected therewith, a reciprocatory slide provided with means to engage said lever and throw the switch-point into the opposite position from that occupied, a rod connected with said slide, and a lever connected with the opposite end of said rod, said lever engageable by a device carried by a car, for the purpose set forth.

12. A railway-switch-actuating device having in combination a switch-point, a lever connected therewith fulcrumed independently of said point, mechanism to shift the position of said lever to actuate the point, a rod connected with said mechanism, a lever connected with said rod, a lever provided with a shoulder engageable by a car-wheel to throw the first-named lever into position, and means carried by a car to engage the first-named lever, for the purpose set forth.

13. A railway-switch-actuating mechanism



having in combination a switch-point, a lever having a fixed fulcrum, mechanism to throw the lever into position opposite to that occupied to actuate the point, a rod G, and levers I, J and K arranged, substantially as and in the manner set forth.

14. A railway-switch-actuating mechanism having in combination a switch-point, a lever having a fixed fulcrum independent of the point, of mechanism connected therewith to throw the point into position opposite to that occupied, an operating-rod connected with said mechanism, and means engageable by a car to actuate said rod, substantially as set forth.

15. A railway-switch-actuating device having in combination a switch-point, a reciprocatory and laterally - oscillatory dog, and means connected with the switch-point actuated by said dog to shift the point, substantially as set forth.

16. A railway-switch-actuating device having in combination a switch-point, a reciprocatory and oscillatory dog, fixed guides or ways in which said dog reciprocates, and means connected with the switch-point actuated by said dog to shift the point, substantially as set forth.

17. A railway-switch-actuating device hav-

ing in combination a switch-point, a reciprocatory dog, and a lever connected with the switch-bar actuated by the dog, said lever fulcrumed at one end and swinging at the end adjacent to the dog in the arc of a circle, substantially as set forth.

18. A railway-switch-actuating device having in combination a switch-point, a reciprocatory and oscillatory dog, fixed guides or ways in which said dog reciprocates, and means connected with the switch-point actuated by the dog to shift the point, said fixed guides or ways directing the dog in its reciprocation, and oscillating the dog back into normal position when retracted, substantially as set forth.

19. In a railway-switch-actuating device, the combination of a switch-point, a reciprocatory dog, a lever connected with the switch-bar actuated by the dog, said dog when the switch-point is intermediate the adjacent rails capable of reciprocation without actuating said lever, substantially as set forth.

In testimony whereof I sign this specification in the presence of two witnesses.

WILLIAM H. ROUSTON.

Witnesses:

N. S. WRIGHT,  
MARY HICKEY.