

E. HOWARD.  
 AUTOMATIC RAILWAY SWITCH.  
 APPLICATION FILED APR. 26, 1910.

979,166.

Patented Dec. 20, 1910.

2 SHEETS—SHEET 1.

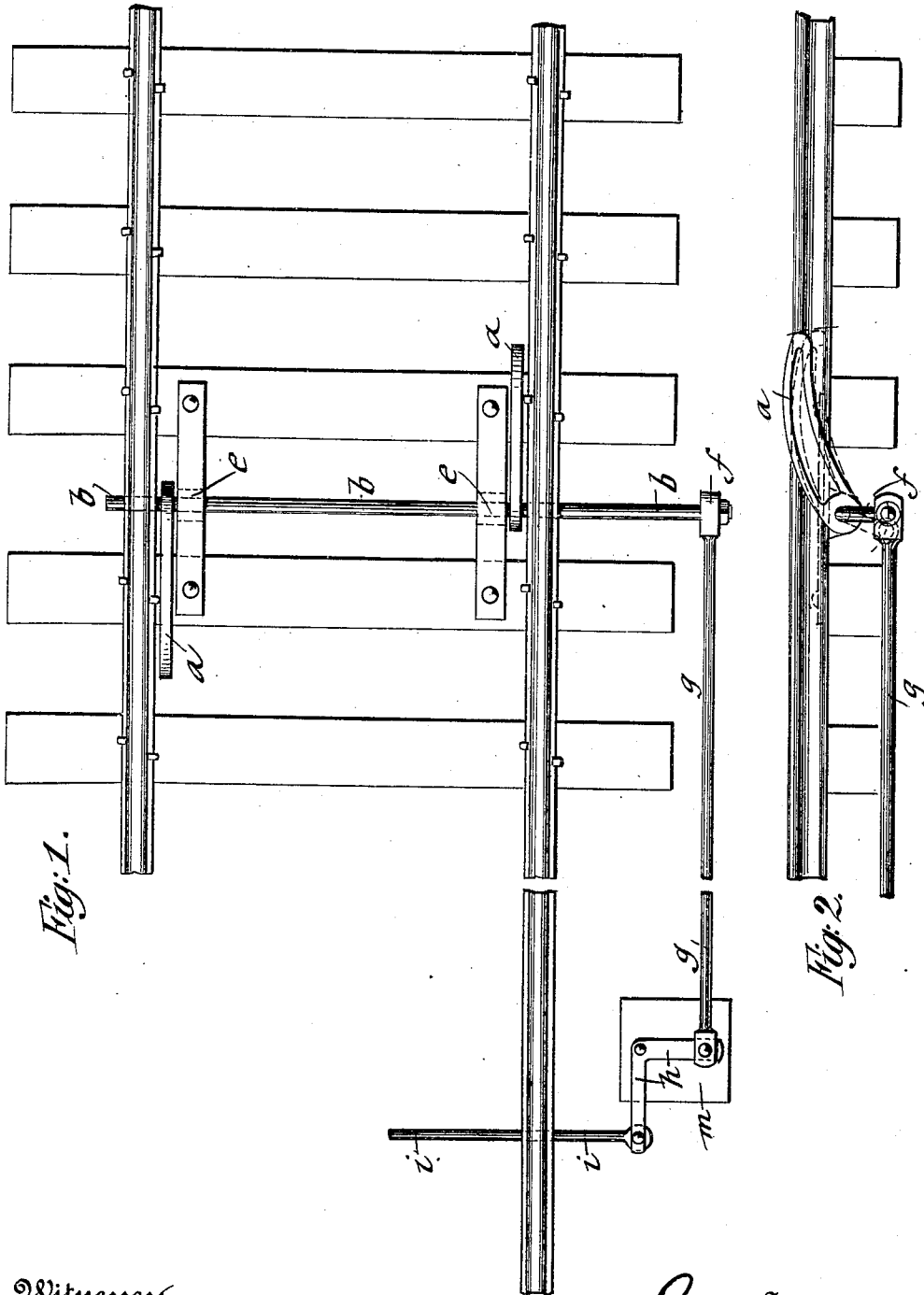


Fig. 1.

Fig. 2.

Witnesses:  
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 L. J. Murphy

Inventor  
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 By his Attorneys  
 J. C. Cooper

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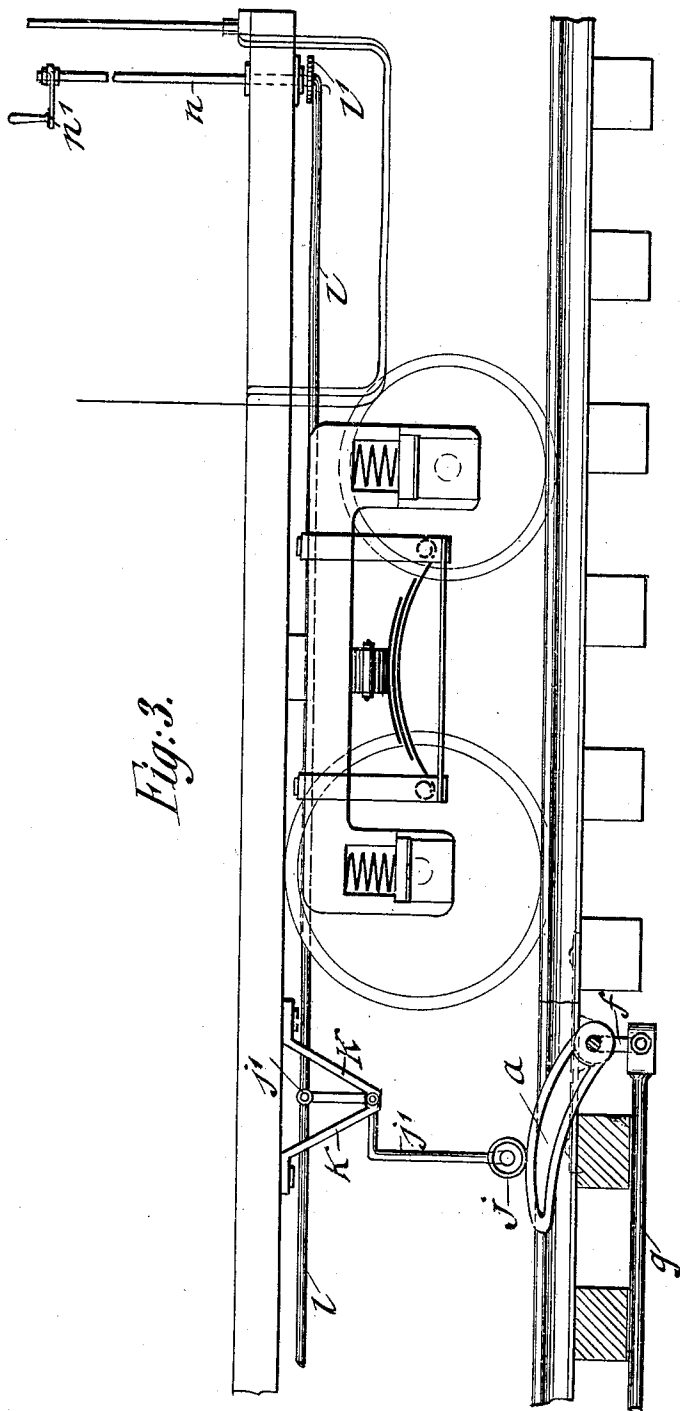


Fig. 3.

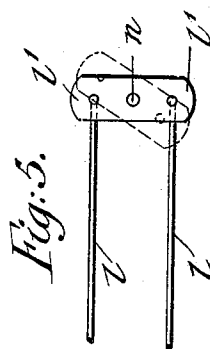


Fig. 5.

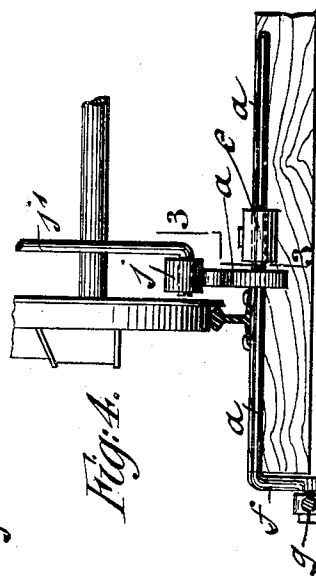


Fig. 4.

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# UNITED STATES PATENT OFFICE.

EMMETT HOWARD, OF EUGENE, OREGON, ASSIGNOR TO THE HOWARD AUTOMATIC RAILWAY SWITCH CO., OF EUGENE, OREGON, A CORPORATION OF OREGON.

## AUTOMATIC RAILWAY-SWITCH.

979,166.

Specification of Letters Patent. Patented Dec. 20, 1910.

Application filed April 26, 1910. Serial No. 557,670.

To all whom it may concern:

Be it known that I, EMMETT HOWARD, a citizen of the United States of America, residing in Eugene, in the county of Lane and State of Oregon, have invented certain new and useful Improvements in Automatic Railway-Switches, of which the following is a specification.

This invention relates to an improved automatic railway switch which is specially designed for the use of street railways so as to facilitate the setting of the switches from the main-track to the side-tracks when going in one direction or when returning in the opposite direction, so as to dispense with the setting of the switches by a special attendant or by the stepping down of the motorman for this purpose, all the operations for setting the switches being attended to automatically from the car-platform.

The invention consists of a switch-operating mechanism comprising cam-levers arranged alongside of the track and connected with a transverse shaft which turns in suitable bearing-blocks supported on the cross-ties and connected by intermediate lever mechanism with the switch-tongue, said cam-levers being curved so as to extend above the level of the heads of the track-rails and actuated by rollers which are operated by a hand-lever and shaft on the front and rear platforms of the car, and intermediate mechanism connecting said rollers with the operating shaft.

The invention consists further of certain details of construction and combinations of parts which will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a plan-view of the track showing the cam-levers arranged alongside of the track and their connection with the switch-tongue to be operated, Fig. 2 is a side-elevation of Fig. 1, Fig. 3 is a side-elevation of a car showing the mechanism for operating the cam-levers from the platforms of the car, partly in section on line 3, 3, Fig. 4, Fig. 4 is a front-elevation of the switch-tongue setting mechanism, and Fig. 5 is a detail bottom-view of the connection of the operating shaft on the car-platform with the cam-lever setting mechanism.

Similar letters of reference indicate corresponding parts throughout the several figures.

Referring to the drawings, *b* represents a horizontal shaft which extends transversely to and below the rails, and which is carried in suitable bearings on boxes *e* that are bolted or spiked to the cross-ties parallel with and inside of the track-rails. On the shaft *b* are mounted two cam-levers *a* which are located between the track-rails and the adjacent boxes *e*, one cam-lever extending in one direction and the other in opposite direction from the shaft *b*. The cam-levers *a* are curved in such a manner that their middle portions extend above the level of the rail-heads, while their outer ends are slightly below the heads of the track-rails, so that they can be operated by suitable mechanism from the car both when the car is going in one or the opposite direction over the track. The shaft *b* is extended at one side beyond the ends of the cross-ties and connected by a crank *f* with a pivot-rod *g* which extends to a sufficient length alongside of the track to a point near the switch-tongue to be operated. The opposite end of the connecting rod *g* is pivoted to an elbow-lever *h* that is supported on a plate *m* which is supported on the ends of two adjacent cross-ties, the opposite end of the elbow-lever being connected by a transverse rod *i* which extends below the track-rails across the track to the switch-tongue to be operated.

When the cam-lever *a* is pressed down on one side of the track, it opens the switch connected therewith, while the cam-lever at the opposite side is raised; but when the opposite cam-lever is pressed down, it closes the switch. The depression of either cam-lever at one side or the other of the track dispenses with the use of a bar in opening the switch when going in one direction over the track and in closing the switch, as well with the use of the wheel-flange for crowding the switch-tongue sidewise when the car is moving over the track in the opposite direction.

The pressing down of the cam-levers at one side or the other of the track is accomplished by rollers *j*, one for each cam-lever and vertically above the same. Each roller *j* is supported on the lower end of an angular roller-bar *j'*, which is fulcrumed in bearings of a hanger *k* that is attached to the car-bottom, one on each side of the same, as shown in Fig. 3. The upper ends of the angular roller-bars *j'* are pivotally

connected with longitudinal connecting rods 7 which are pivoted at their opposite ends to a transverse bar 7<sup>1</sup> that is attached at its center to an upright operating shaft *n* 5 that is supported in suitable neck and step-bearings on the car-platform, said operating shaft being provided at its upper end with a hand-lever *n*<sup>1</sup> by which the operating shaft and cross-bar are turned from 10 their normal position to the right or left hand side, according as the actuating roller on one side or the other of the track is to be actuated.

For opening the switch, the hand lever 15 *n*<sup>1</sup> is moved to one side, so that the operating bar is turned into inclined position to the axis of the car, as shown in dotted lines in Fig. 5. This lowers the roller at one side, presses the corresponding cam-lever in downward direction and raises the 20 operating roller at the opposite side. To close the switch, the hand-lever is moved toward the opposite side, whereby the roller at that side is raised and the roller at the 25 opposite side lowered. When the switches are to remain closed, the roller-operating mechanism is retained in the normal or median position, without moving the hand-lever and operating bar to either side, where- 30 by both rollers are raised sufficiently so as to pass over the curved portions of the cam-levers without actuating the same. By the mechanism described for actuating the rollers, the motorman can operate the 35 switch-tongue at the right or left hand of the track, coming or going, by turning the lever from the central or neutral position to either the left or right hand side, as required, so that he can readily open or close 40 the switches without stopping the car, getting down and setting the switch-tongue. When the car returns over the track, the operation of setting the switches is accomplished from the platform at the opposite 45 end of the car, the actuating mechanism being operated by a second upright shaft, operating bar and connecting rod from the platform at the opposite end of the car.

By the switch-operating mechanism described, located along the track and on the 50 car, the switches at one or the other side of the track connecting with tracks at either side of the main-track can be conveniently operated from the car without reducing the 55 speed of the same and without the employment of special employees for manually setting the switch-tongues, the construction of

the switch-operating mechanism being very simple and effective, easily operated from either end of the car and not liable to get 60 out of order.

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

1. In an automatic railway switch, the 65 combination of, a cross-shaft extending transversely of the track below the track-rails, blocks supported on the cross-ties, bearings for said cross-shaft supported on said blocks, curved cam-levers extending 70 laterally and approximately horizontally from the cross-shaft in opposite directions to each other, hangers projecting downwardly from the bottom of the car and provided with bearings, angular roller bars 75 fulcrumed in said bearings, a roller at the bottom of each bar and adapted to engage said cam-levers respectively, upright operating shafts at the ends of the car, a transverse bar at the lower end of each upright shaft, 80 and longitudinal connecting rods connecting each end of each transverse bar with the upper end of one of the angular bars respectively.

2. In an automatic railway switch, the 85 combination of, a cross-shaft extending transversely of the track below the track-rails, blocks supported on the cross-ties between the rails, bearings for said cross-shaft supported on the lower face of said blocks, 90 curved cam-levers extending laterally and approximately horizontally from the cross-shaft in opposite directions to each other and adjacent to and parallel to the inside face of each rail respectively, hangers projecting 95 downwardly from the bottom of the car and provided with bearings, angular roller bars fulcrumed intermediately of their ends in said bearings, a roller at the bottom of each bar and adapted each to engage one of said 100 cam-levers respectively, upright operating shafts at the ends of the car, a transverse bar at the lower end of each upright shaft, and longitudinal connecting rods connecting 105 each end of each transverse bar with the upper end of one of the angular bars respectively.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses. 110

EMMETT HOWARD.

Witnesses:

LOUIS E. BEAN,  
MAE GIBSON.