

2 Sheets—Sheet 1.

No. 583,381.

Patented May, 25, 1897.

Fig.1,

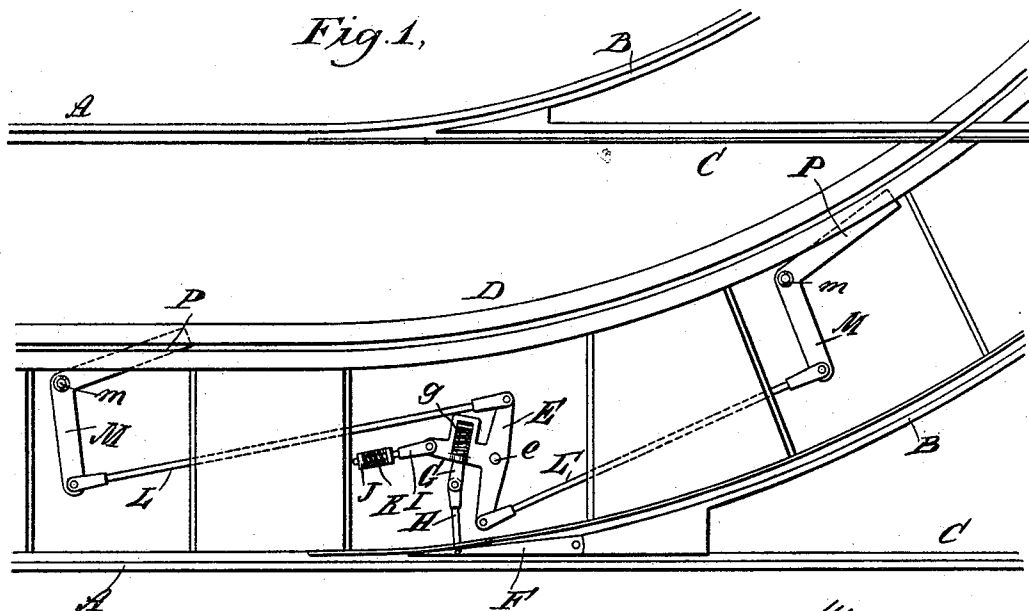


Fig. 2.

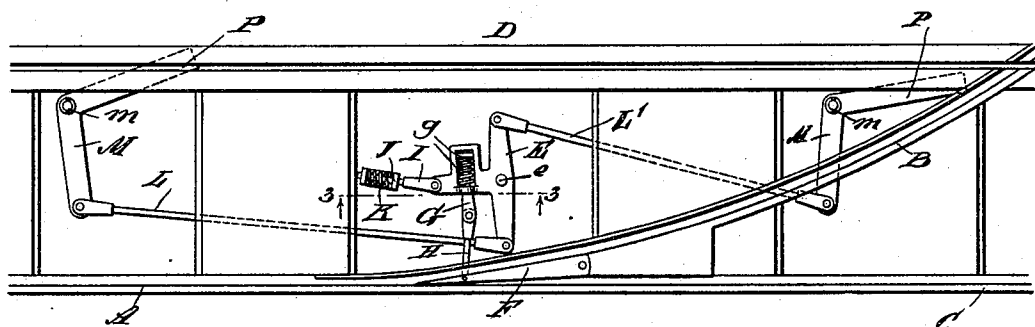
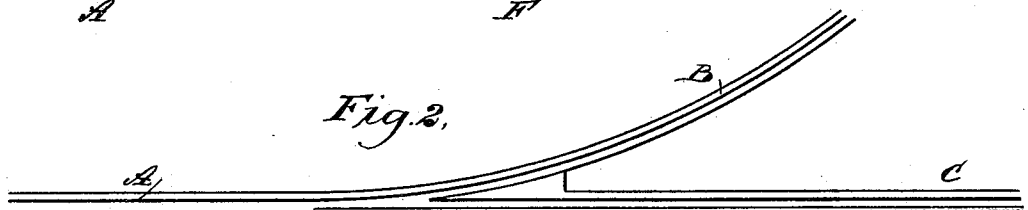
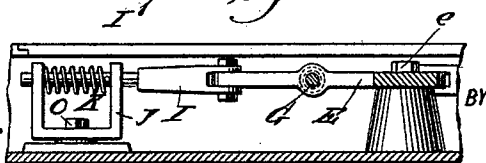


Fig. 3.

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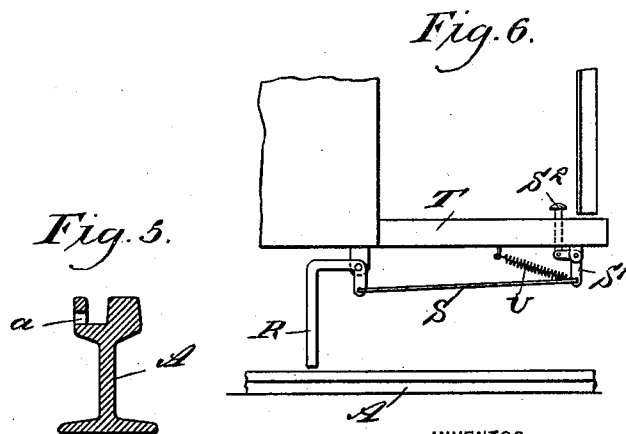
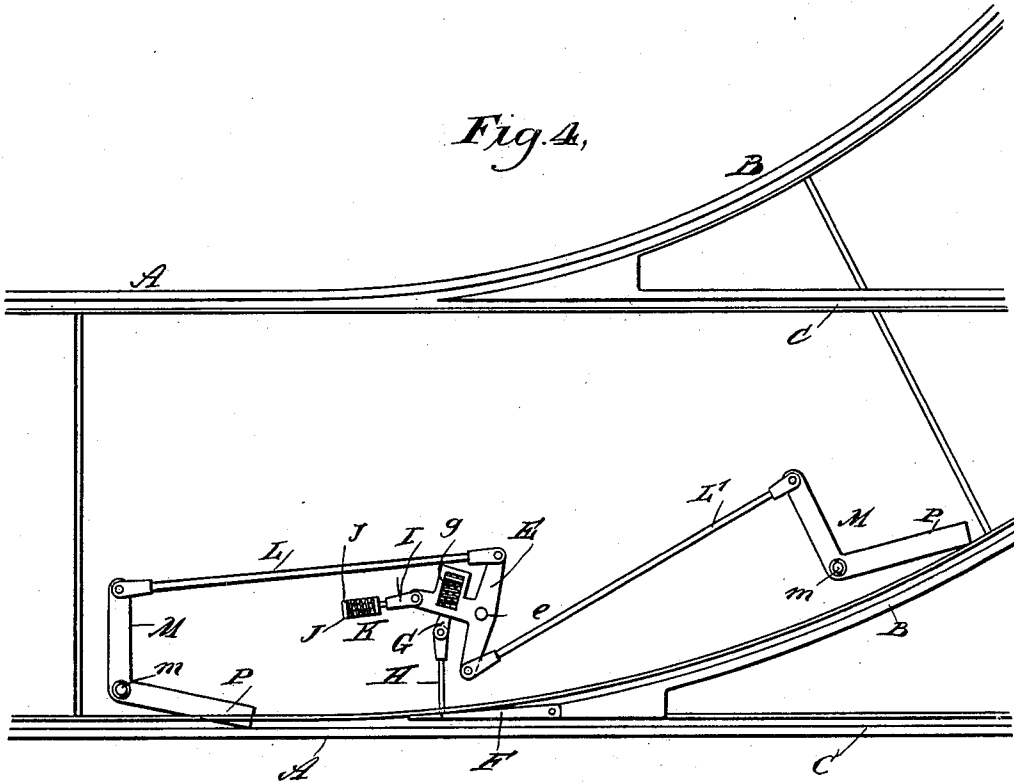
(No Model.)

2 Sheets—Sheet 2.

W. LICKSTROM.
AUTOMATIC RAILWAY SWITCH.

No. 583,381.

Patented May 25, 1897.



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WILLIAM LICKSTROM, OF NEW YORK, N. Y.

AUTOMATIC RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 583,381, dated May 25, 1897.

Application filed February 19, 1897. Serial No. 624,170. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM LICKSTROM, of New York, in the county and State of New York, have invented a new and Improved Automatic Railway-Switch, of which the following is a full, clear, and exact description.

My invention relates to improvements in railway-switches designed for use in connection with street-railways, particularly cable-railways, but which in a modified form may be used in connection with other forms of street-railways.

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 figures.

Figures 1 and 2 are plan views of the device as applied to a switch connecting a cable-track and a track operated by horses or electricity. Fig. 3 is an elevation, partly in section, on the line 3 3 in Fig. 1, showing in detail a pivoted lever for throwing the switch. Fig. 4 is a plan view of a modification adapting the device for use with railways of any kind. Fig. 5 is a sectional elevation of a special form of rail to be used in connection with the device as shown in Fig. 4; and Fig. 6 is a side elevation of one end of a car, showing a lever for operating the switch.

The object of my invention is to provide means by which the car of one line may be made to automatically throw the switch at a junction-point, and then, after passing over the switch, will automatically throw the switch to position for the other line.

The form of the device shown in Figs. 1 and 2 will first be described. In this form the rails A are those common to both lines of track, the rails B are those switched off from the straight line, and the rails C those which continue the straight line.

In Fig. 1 the curved line shown is a cable-line, having the ordinary cable-slot D in the center of the track and over the conduit.

In Fig. 2 the straight line is the cable-line, and the curved line a line operated either by horses or electricity—that is, a line not having a conduit.

The switch-point F, which is pivoted at one end, may be of any form commonly used for this purpose, and is connected near its movable end to a link or rod H, which in turn is

pivoted to a bar G, which is movable in a recess in the pivoted lever E and is retained in place by the spring *g*.

The lever E, as shown in the drawings, is a bell-crank lever pivoted at *e* in any suitable manner, and the bar G is connected to one of the arms of this lever. Upon opposite sides of the lever E are connected two rods L and L', which at their opposite ends are connected to two bell-crank levers M, which are pivoted at *m* close to one side of the cable-line. The length of the rods L and L' is such that when the arm P of one of the levers M projects across the conduit-slot the corresponding arm P of the other lever M lies alongside of the slot, but does not project across the same.

As the cable-car comes along the grip passing through the slot will engage the arm P and force it to one side. This will swing the lever E upon its pivot and throw the arm P of the opposite lever M across the conduit-slot at a slight angle. Through the connection of the switch-point F to the lever E the switch-point will also be thrown, so as to turn the car upon the cable-track. As shown in Fig. 1, this would turn the car upon the curved track. As shown in Fig. 2, however, where the conditions are reversed, the car would be continued upon the straight track. As the car passes the switch the grip will engage the second one of the levers M and force the arm P thereof to one side. This arm P would be transversely carried across the line of the slot by the action of the grip upon the other arm P. In this way the device will be thrown back to the position shown in Figs. 1 and 2. In case a car of a different character—that is, one not using the conduit—should come along, the switch being normally held in the position to turn the car off the cable-track, the car will not interfere with the switch in any way.

In order to hold the switch firmly in either position to which it may be set, I have connected a rod or link I to one arm of the lever E. This rod passes through a pivoted guide J, which is a bar bent in U shape and pivoted at O in the center of its bottom member. Between the two arms of the guide J is placed a spiral spring K, which surrounds the rod I, and said rod I is provided with a pin I', which

engages one end of the spring. The location of this pivoted guide is such that when the switch-point F is in either position the rod I assumes an angle with the line running from its connection to the lever to the pivot of the lever—that is, the rod I and the arm of the lever E to which it is connected form a toggle-joint. The spring thus resists the throwing of the lever during the first part of its motion and assists it during the latter part of the motion. It thus acts to hold the switch in whatever position it may be placed.

Figs. 4, 5, and 6 show a modified form of construction adapting my device for use in connection with any kind of railway. In this modification one of the rails is formed as shown in Fig. 5. This is a guard-rail—that is, has a groove on its upper surface for the reception of the flange of the wheel. The inner wall of this groove has a slot *a* formed therein and extending a short distance longitudinally of the track. Through this slot *a* the ends P of the lever M project. The projecting ends of the levers P are engaged to force them to one side by a bar or lever R, which is dropped from the car for this purpose. This bar is pivoted to the under side of the car-platform T or the car-body and connected by rod S with a bell-crank lever S', which is operated by a rod S², projecting through the floor of the platform and operated by the foot. These levers are returned by the spring U. The end of the lever R enters the groove in the rail and presses the arm P outward.

Although I have described my device as being particularly adapted for use in cable and other conduit railways, it is adapted for use with any form of railway. The form shown in Figs. 1 and 2 is especially adapted for use with railways in which a conduit is used and a grip or similar device connected to the car passes through the slot into the conduit. The modification shown in Figs. 4, 5, and 6 is of course applicable to any form of railway.

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

1. A switch-operating mechanism for conduit-railways comprising a horizontal lever pivoted near the switch, connections therefrom to the switch, levers pivoted on each side of the switch and having an arm adapted

to be engaged by the grip, and connections from these levers to the switch-throwing lever, substantially as described.

2. A switch-operating mechanism for railways comprising a pivoted shifting-lever, a link connecting the same to the switch, a spring on one end of said link forming a yielding connection, a spring-held bar pivoted to the shifting-lever so as to swing each side of the center, two horizontally-pivoted levers located on each side of the switch and adapted to be engaged and moved sidewise by an arm attached to the car, and connections from said levers to the switch-throwing lever, substantially as described.

3. A switch-operating mechanism for conduit-railways, consisting of a horizontal bell-crank lever, pivoted near the switch, connections therefrom to the switch, a bell-crank lever pivoted alongside of the conduit upon each side of the switch, and adapted to have one arm thrown at an angle across the conduit-slots, and connections from each of these bell-crank levers to opposite ends of the switch-throwing lever, substantially as described.

4. A switch-operating mechanism for conduit-railways, consisting of a horizontal bell-crank lever pivoted near the switch, connections therefrom to the switch, a link pivoted to said switch-operating lever, a spring acting longitudinally of said link, and a pivoted guide therefor, located so that the spring acts against the switch-operating lever at the beginning of its swing and assists it during the latter part of the swing, substantially as described.

5. A switch-operating mechanism for railways, comprising a shifting-lever connected to the switch to throw it, a spring-held link pivoted to said lever so as to form one end of a toggle-joint and acting to hold the lever in either extreme position, a slotted rail, and levers pivoted on each side of the switch having each an arm adapted to be placed across the slot in the rail and connected to the switch-operating mechanism, and an arm fixed to the car and adapted to enter said slot and engage the levers to throw the switch, substantially as described.

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Witnesses:

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