(No Model.)

A. MACHALUP.

STREET RAILWAY SWITCH.

No. 458,790. Patented Sept. 1, 1891.

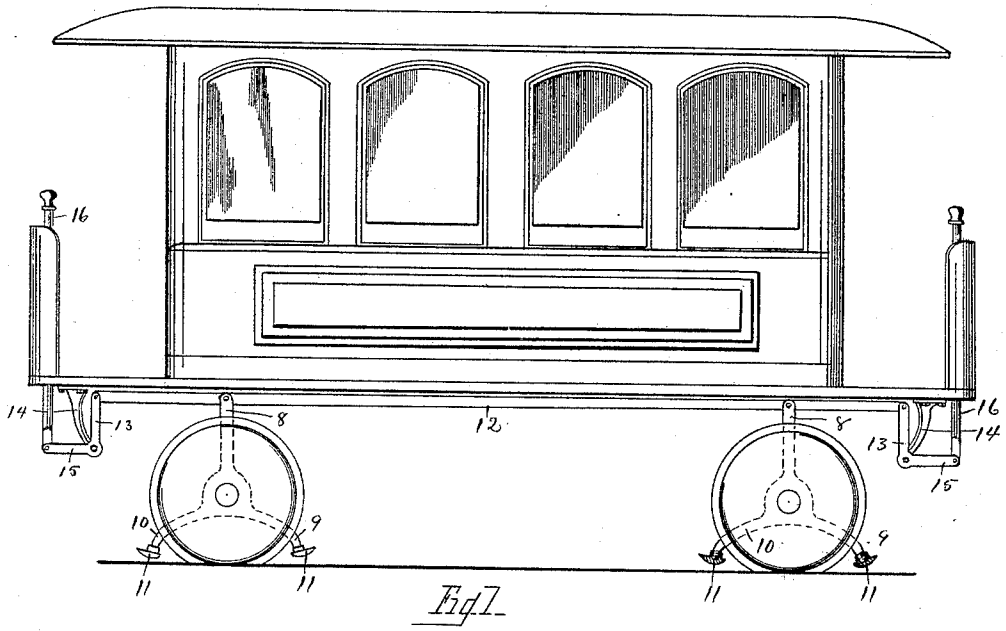

Fig 1.

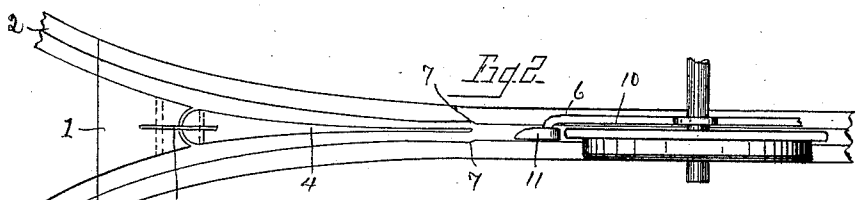

Fig 2.

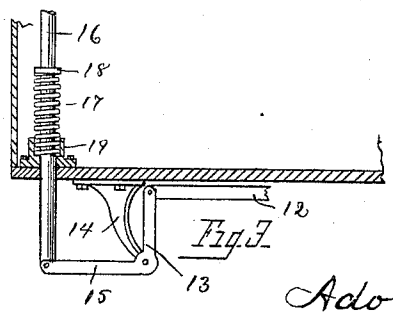

Fig 3.

WITNESSES.

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UNITED STATES PATENT OFFICE.

ADOLPH MACHALUP, OF LEIPSIC, GERMANY, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-HALF TO LEOPOLD MACHALUP AND CHRISTOPHER S. GEINER, BOTH OF TOLEDO, OHIO.

STREET-RAILWAY SWITCH.

SPECIFICATION forming part of Letters Patent No. 458,790, dated September 1, 1891.

Application filed February 13, 1891. Serial No. 381,347. (No model.)

To all whom it may concern:

Be it known that I, ADOLPH MACHALUP, a subject of the Emperor of Germany, residing at Leipsic, Kingdom of Saxony, Germany, have invented certain new and useful Improvements in Railway-Switches and Means for Automatically Opening the Same; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form part of this specification.

My invention relates to a railway-switch and means for automatically opening the same, and has especial reference to use upon street-railways.

The object of the invention is to construct a switch and operating mechanism whereby the car may be conveniently switched to either of the diverging tracks.

A further object is to construct a switch and operating mechanism whereby when the car is moved in either direction the operating mechanism may be operated to open the switch.

A further object is to provide a switch and operating mechanism that shall be inexpensive of construction and efficient in operation.

The invention consists in the parts and combination of parts hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of a car provided with my improved operating mechanism. Fig. 2 is a plan view of a switch-rail constructed in accordance with my invention, and especially adapted for coaction with my improved operating mechanism, one of the duplex levers and switch-shoes being shown in operative position to open the switch. Fig. 3 is a detail view of a portion of the car-platform, showing also the switch-post and its connection with the bell-crank for operating the switch-controlling mechanism.

As I have provided a switch-rail and connections of novel construction, and especially adapted to coact with a special form of operating mechanism, I will proceed to first describe the switch-rail and then the operating mechanism.

1 designates a frog-section, to which is secured diverging tracks 2 and 3, there being a switch-rail 4, secured at the point of the frog by means of a spring-plate 5, secured in the point of the frog and the rear end of the switch-rail, respectively, preferably by being inserted in slots formed in each, the spring-plate being of sufficient tensile strength to adjust the switch-rail into coincidence with the inclination of the frog-section after having been moved to either side to switch the car onto track 2 or permit it to pass onto track 3.

In order to form a close joint between the frog-section and the switch-rail, the point of the frog is concaved to receive the rounded end of the switch-rail, thereby preventing any jar as the wheels pass from one to the other.

6 designates a guard-rail extending from some distance in front of the switch-rail to beyond the connection of the same with the frog, the guard-rail and rail 3 being recessed at 7, respectively, to allow the end of the switch-rail to move therein when moved to either side, the rail 3 and guard 6 being separated at the point 7 a sufficient distance to allow the wheel-flange to pass when the switch-rail is moved to one side.

I will now describe the mechanism for operating the switch, it being understood that the mechanism described may be put upon one side of the car, or upon both sides, if necessary. I will therefore describe the mechanism as applied to one side of the car.

8 designates a lever journaled upon the car-axle, and having depending arms 9 and 10, upon which are secured switch-shoes 11. In order to removably secure the switch-shoes upon arms 9 and 10 to allow of interchangeability of the shoes, the ends of the arms are preferably screw-threaded and the perforations in the shoes interiorly screw-threaded, whereby the shoes are run upon the arms. Arms 9 and 10, respectively, are of a length to cause one of the same to contact with the switch-lever when depressed by rocking the lever 8 upon the car-axle in the proper direction.

12 designates a bar running longitudinally of and beneath the car, and having secured at each end a bell-crank lever 13, journaled at the angle in a bracket 14, the outer end 15 of each bell-crank lever projecting below and in parallel relation with the bar 12, and having pivotally secured thereto a switch-post 16, which extends vertically through the car-platform, and is provided with a coiled spring 17, secured upon the switch-post, preferably by means of abutting against a collar 18, the lower end of the spring resting in a socketed journal-box 19, the tension of the spring being such as to raise the switch-post sufficiently to cause the arm 15 of the bell-crank lever to normally be in horizontal alignment with the bar 12, thereby causing lever 8 (which is pivotally secured to the bar 12) to project vertically, and cause the arms 9 and 10 thereof to be out of contact with the rail or switch-rail.

From the above description the operation will be apparent. The switch-rail normally projecting in the path of travel of the wheel-flange, a car approaching the same and designed to be switched upon track 3 is provided with a switch-shoe having the point of inclination in a direction to pass beneath rail 3 and the point of the switch-rail and urge the same into recess 7 in guard-rail 6, thereby allowing the car to pass upon rail 3. Should the following car be designed to be switched upon rail 2, arms 9 and 10 are provided with switch-shoes 11, having an inclination in inverse order to that just described, thereby causing the point of the shoe to enter between the switch-rail and the guard-rail 6, and urge the point of the shoe into the depressions 7 of rail 3, causing the flange to contact with the switch-rail and move the car upon rail 2.

Having described the operation and effect of projecting the switch-shoe in the path of the switch-rail, I will now describe the means by which this result is effected. The driver or motor-man desiring to switch the car upon the approach of the same toward the switch-rail, depresses the switch-post 16, (the spiral springs 17 being compressed in the operation,) thereby depressing the arms 15 of the bell-crank lever and causing the arms at right angles thereto to draw the bar 12 toward the front of the car, thereby depressing the front arm of the lever 8 sufficiently to project said arm to cause the same to contact with the switch-rail. As soon as the car has responded to the action of the switch-rail and moved upon the track desired the operator ceases his pressure upon the switch-post, allowing the spring 7 to expand and cause the parts to assume a normal position.

It will be observed that the mechanism just described for operating bar 12 and lever 8 is duplicated upon the car, whereby each end is provided with a switch-post and bell-crank-lever connection to allow the car to be run and operated in either direction, and also to prevent the rear wheels being switched off in case of a spring-actuated switch. The switch-shoes 11 being detachably secured to the switch-arms 9 and 10, respectively, and oppositely inclined, are therefore interchangeable, as, for illustration, should the car be designed to be switched upon rail 3, the inclination of the front shoe would be such as to move the switch-rail toward guard 6, the switch-shoe of the opposite lever being correspondingly inclined. Should it, however, be desired to run the car upon rail 2, the shoes are removed and the rear shoes placed upon the front arm, and that formerly upon the front arm secured upon the rear arm, thereby operating to run the car upon rail 2. The removability of the shoe is also of great value when it is desired to substitute a new one for one worn out.

It will be seen that the switch connection with the diverging tracks is inexpensive of construction and positive of action, and that the coactive mechanism can be readily attached to any car with but slight expense.

What I claim is—

1. The combination, with the front and rear rocking levers provided with arms carrying switch-shoes, of the connecting-bar and the lever or levers for operating said bar.

2. In combination with diverging rails, a connecting frog-section, a switch-rail movably secured thereto by means of a spring-plate, a car mounted upon the track, provided with a lever having oppositely-inclined switch-arms adapted when rocked in either direction to operate the switch-rail, and mechanism upon the car for operating the lever.

3. In combination with a spring-actuated switch-rail, a car provided with a triangular-shaped switch-lever and pivotally secured to the horizontal bar below the car, bell-crank levers secured at each end of the bar and pivotally secured to the car, and a spring-actuated post adapted to be depressed and cause one of the angles of the lever to operate the switch-rail.

4. A spring-actuated switch-rail, in combination with a car having journaled upon each axle thereof a lever provided with oppositely-inclined switch-arms, switch-shoes removably secured thereon, and mechanism arranged upon each end of the car for projecting the switch-arm upon each axle to cause the same to contact with the switch-rail irrespective of the direction of the travel of the car.

5. The combination, with a rocking lever provided with arms arranged upon opposite sides of an axle, said arms carrying shoes at their lower ends, of levers connected with the rocking lever to operate the same.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

ADOLPH MACHALUP.

Witnesses:

JULIUS MARGUER,

CARL BORNGRAEBER.