(No Model.)

L. A. MOORE.

AUTOMATIC SWITCH FOR RAILROADS.

No. 589,093. Patented Aug. 31, 1897.

Fig. 1.

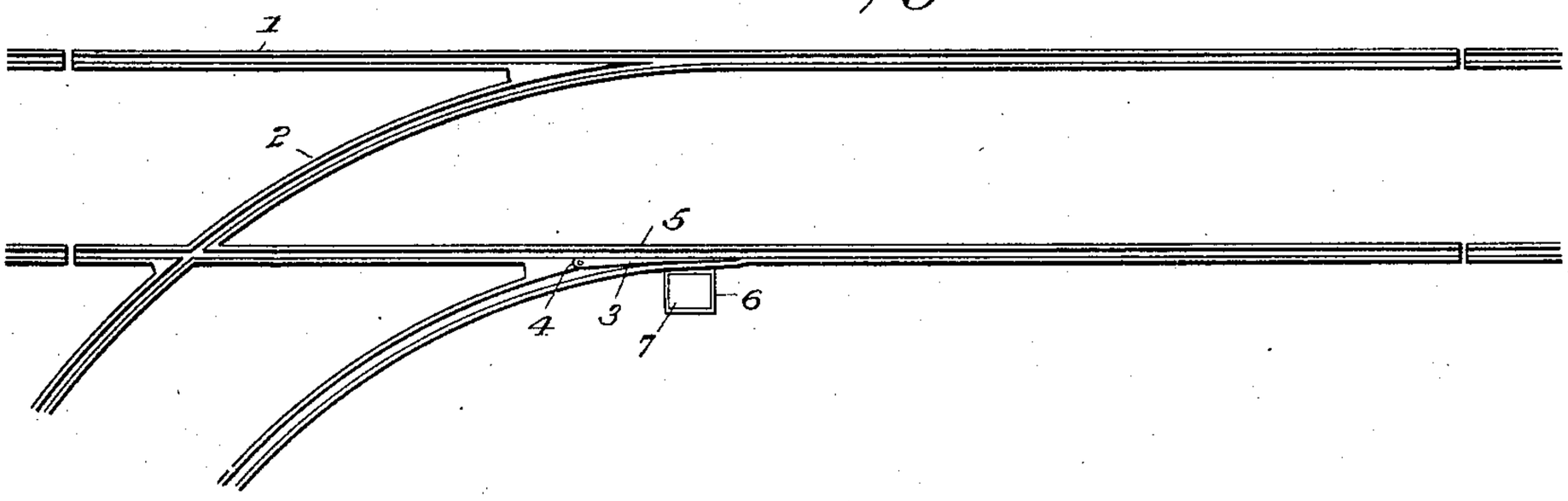


Fig. 4.

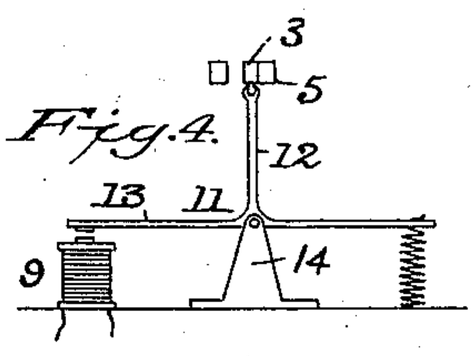


Fig. 2.

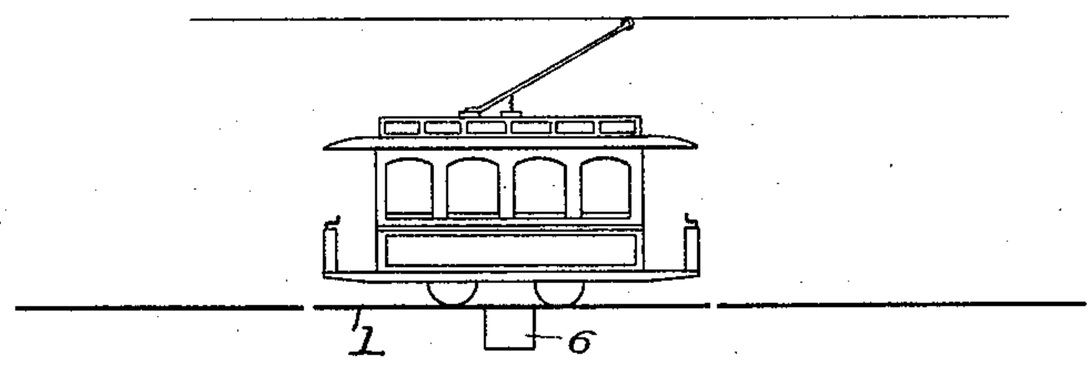
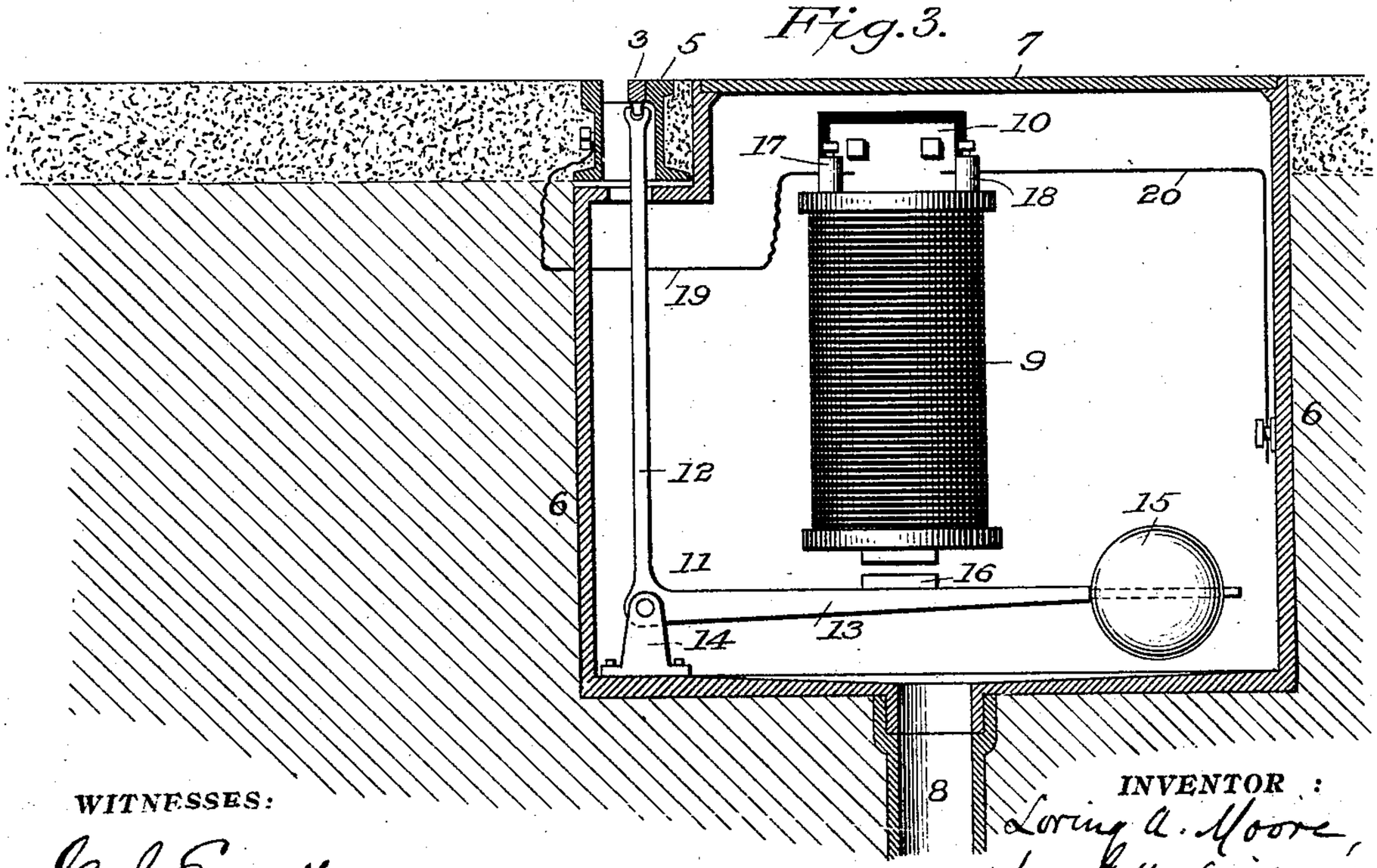


Fig. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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AUTOMATIC SWITCH FOR RAILROADS.

SPECIFICATION forming part of Letters Patent No. 589,093, dated August 31, 1897.

Application filed April 10, 1897. Serial No. 631,568. (No model.)

To all whom it may concern:

Be it known that I, LORING A. MOORE, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Automatic Switches for Railroads, of which the following is a specification, reference being had to the accompanying drawings and to the numerals of reference marked thereon.

This invention has reference to an automatic switch for railroads, more particularly such over which cars are propelled by electricity.

The object of this invention is to provide a simple and positive device adapted to automatically move the switch-point of a railway-switch by the same electric current which drives the motor of the car, the current being temporarily diverted from the rails, by which it returns to the generator, to a suitably-disposed electromagnet, through the attraction of which a lever attached to the switch-point is caused to move, thereby shifting the said point and causing the car to be diverted from the main track onto the turnout.

Referring to the drawings, Figure 1 is a plan view of a railway-track, showing a switch-point and turnout. Fig. 2 is an elevation of the track with a car thereon connected to an overhead conductor. Fig. 3 is a section on line 3 3 of Fig. 1. Fig. 4 shows a modification of the switch-operating mechanism.

Similar numerals indicate similar parts on the various figures.

The main track 1 is provided with a turnout 2 and a switch-point 3, by means of which cars moving on the track may be switched from the main line onto the turnout. The switch-point 3 is pivoted at 4 within the depression of a grooved rail-section 5, and adapted to move laterally therein in a well-known manner.

Placed in the ground at one side of the rail-section 5 is an iron box 6, its removable cover 7 being flush with the surface of the track. The top of the box at the side nearest the rail-section is cut away to allow the box to extend a short distance under the rail, as seen in Fig. 3. A pipe 8, opening into the bottom of the box 6, is connected to a sewer or other drain for carrying off any water that may enter the box.

Secured within the box 6 is an electromagnet 9, fastened to a bracket 10, which is in turn bolted to the side of the box. A bell-crank lever 11, having a vertical arm 12 and a horizontal arm 13, is pivoted to a support 14, formed integral with or attached to the bottom, within the box. The vertical arm 12 extends upwardly from the pivot through openings formed in the top of the box and the rail-section 5 to the switch-point 3, to which it is pivotally attached, as indicated. As the arm 12 vibrates the switch-point 3 is moved laterally in the groove of the rail-section 5, thus opening the switch either to the main line or the turnout, as desired.

The horizontal arm 13 of the bell-crank lever 11 is provided on its end with a weight 15, or a spring may be used in lieu thereof, which tends constantly to keep the arm 13 in its lowermost position, thereby maintaining the switch-point open to the main line. The arm 13, which extends beneath the electromagnet 9, has an armature 16 secured thereto in the field of the electromagnet. The size of the magnet is such that when energized its attractive force will easily overcome the weight 15 and any friction between the parts.

A conductor 19 connects the rail 5 to a binding-post 17, to which one end of the magnet-wire is secured, while from the binding-post 18, attached, to the opposite end of the magnet-wire, a similar conductor 20 passes to the earth. The switch-point and a length of track in excess of the wheel-base of the car, extending in either direction from the switch-point, are insulated from the remaining track, as indicated in Figs. 1 and 2, for a purpose hereinafter referred to.

In operating my device let the parts be assumed to be in the normal position shown in Fig 3. If an approaching car is to leave the main line for the turnout, the electric current used for driving the motors, shown in Fig. 2 as received from an overhead conductor, and which returns to the generator by way of the rails is cut off therefrom as soon as the car passes onto the insulated section. The current is thereby diverted through the magnet 9 to ground and back to the generator. This energizes the magnet 9, attracting the armature 16, which causes the bell-crank lever 11 to rock on its pivot and throw the

switch-point 5 open to the turnout. This will remain open until the car has passed off the insulated section. The magnet then becomes deënergized and the weight 15 will operate the bell-crank lever, which will return the switch-point to its normal position—that is, open to the main line. If the car is to continue on the main line, the operating-circuit is cut off from the car in the usual manner before reaching the insulated section, the inertia of the moving car being sufficient to carry it over to the main-line track at the other end of the said insulated section.

It will be seen from the above description that the movements of the switch-point are entirely automatic and independent of any attachments secured to the car to engage either with the switch-point, or devices on or near the rails by which the switch-point is moved. No arms or levers are used by which additional work is thrown upon the trainmen. The device is simple, effective and positive, not easily deranged, and quickly repaired. It is adapted to be applied to existing roads with little or no additional expense.

Various modifications in the form and construction of the parts will readily suggest themselves to those skilled in the art, and may be substituted for the arrangement of parts shown in the drawings, provided the principle of shifting the switch-point of a railroad-track by mechanism operated through the medium of the electric current which drives the motors for propelling the car be retained.

Having thus described my invention, I claim—

1. In an electrical railway-switch, the combination of an insulated track-section, a movable switch-point forming a part thereof, an inclosing case beneath the insulated track-section, a weighted elbow-lever pivoted within the case, engaging the switch-point and tending to keep the switch open at all times to the main line, an electromagnet arranged in position to attract an armature on the elbow-lever and close the switch to the main line when an electric circuit is completed through the magnet, and electrical connections between the insulated track-section, the magnet and the ground, substantially as described.

2. In an electrical railway-switch, the combination of an insulated track-section, a movable switch-point forming a part thereof, an elbow-lever pivoted beneath the switch-point the upright arm of which lever engages the said switch-point toward its vibrating end, the horizontal arm of the aforesaid elbow-lever being weighted and provided with an armature, an electromagnet arranged above the horizontal arm to attract the armature thereon, and electrical connections between the insulated track-section, the magnet and the ground, substantially as described.

In testimony whereof I have hereunto set my hand and affixed my seal this 20th day of March, 1897.

LORING A. MOORE. [L. S.]

Witnesses:
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