

H. W. SHEEHY.
ELECTRIC RAILWAY SWITCH.
APPLICATION FILED DEC. 15, 1908.

Patented Feb. 15, 1910.

3 SHEETS—SHEET 1.

949,404.

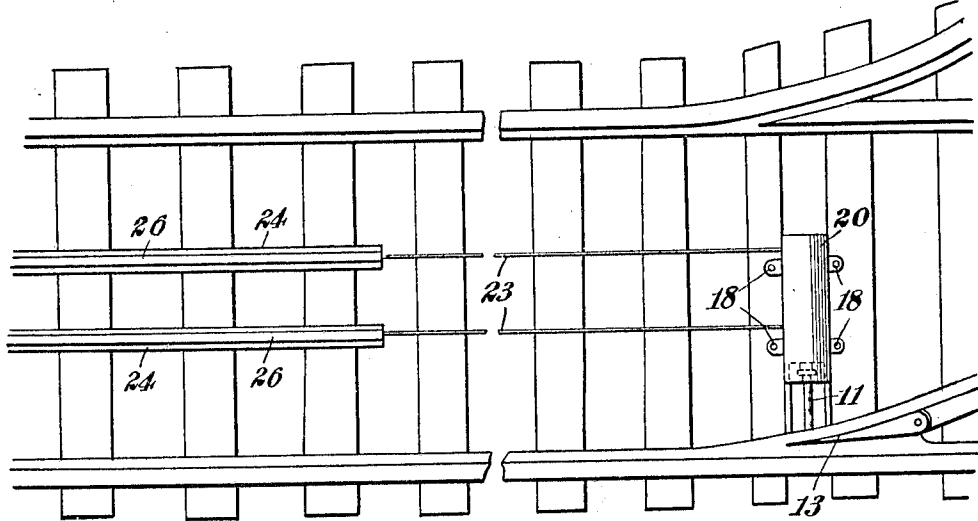


Fig. 1.

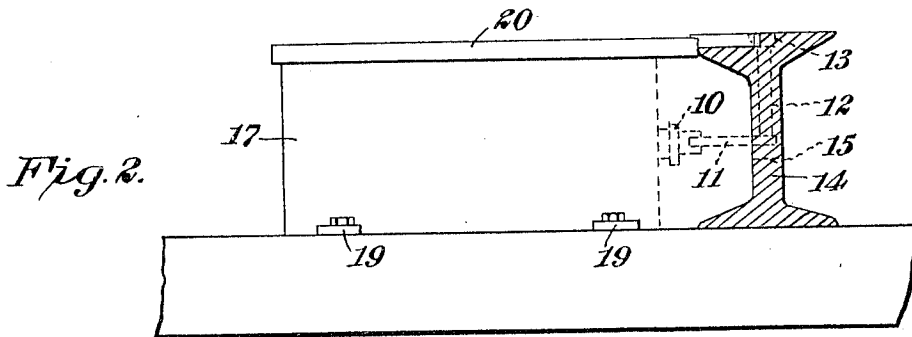


Fig. 2.

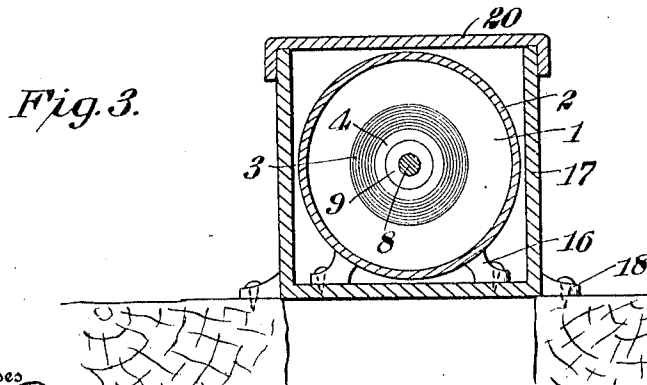


Fig. 3.

Witnesses

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3 SHEETS—SHEET 2.

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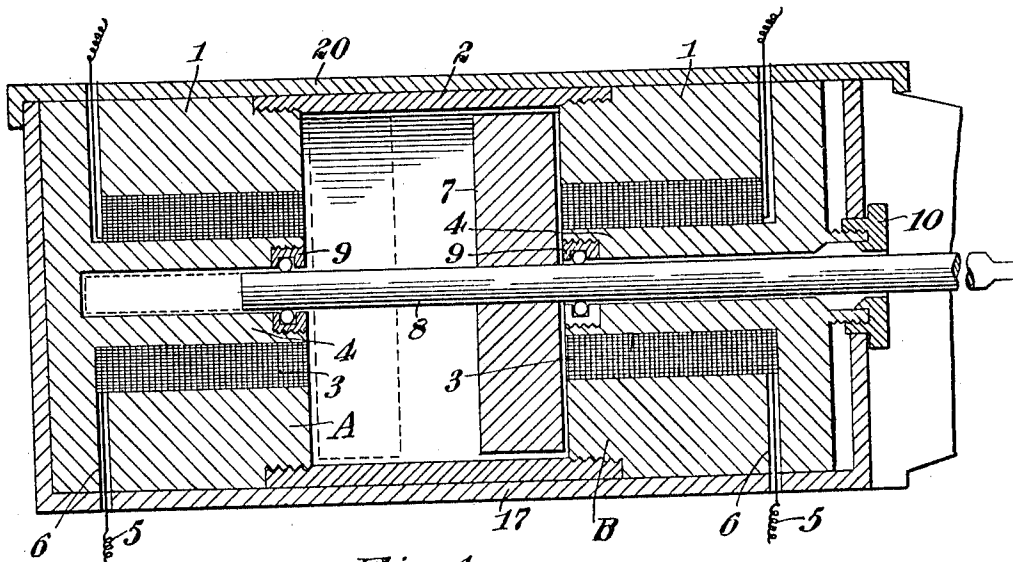


Fig. 4.

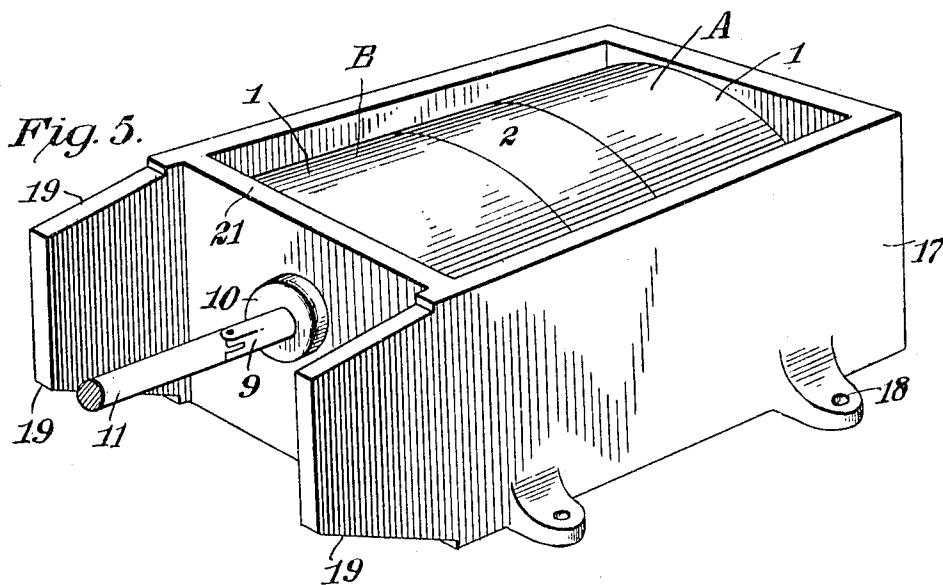


Fig. 5.

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UNITED STATES PATENT OFFICE.

HARRY W. SHEEHY, OF AKRON, OHIO.

ELECTRIC-RAILWAY SWITCH.

949,404.

Specification of Letters Patent.

Patented Feb. 15, 1910.

Application filed December 15, 1908. Serial No. 467,644.

To all whom it may concern:

Be it known that I, HARRY W. SHEEHY, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Electric-Railway Switches, of which the following is a specification.

This invention comprehends certain new and useful improvements in switch operating mechanisms for electric railways, and relates particularly to an improved construction of electrically actuated switch mechanism for street cars.

The invention has for its primary object a simple, durable and efficient mechanism of this character which will be positive in its action and under the control of the motorman of the car and arranged to be actuated by him without leaving the platform, thereby avoiding the delays and consequent losses that are incident to the ordinary hand-operated switches, which require either that a switch-man be employed along the track, or that the motorman or conductor leave the platform of the car and work the switch while the car is stopped before and after it has gone through the switch.

With these and other objects in view as will more fully appear as the description proceeds, the invention consists in certain constructions, arrangements and combinations of the parts as I shall hereinafter fully describe and claim.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a top plan view illustrating the application of my invention to a track. Fig. 2 is a transverse section of one of the rails, showing the connection between the armature shaft and the switch point. Fig. 3 is a transverse section of the box containing the pair of controlling armatures. Fig. 4 is a longitudinal section thereof. Fig. 5 is a perspective view with the lid of the box removed. Fig. 6 is a side elevation of a car equipped with my improved circuit closing apparatus. Fig. 7 is an end elevation thereof, and Figs. 8 and 9 are fragmentary perspective views of the plunger.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

In carrying out my invention I place at

the curve, cross-over, switch, track intersection, or at any other point where a car is intended to travel from a main track to a branch track or another track, a pair of electro-magnets, A and B. These preferably comprise relatively soft iron castings 1 that are coupled together by a metallic sleeve 2.

3 designates the winding of the magnets, preferably protected from dampness and possible cross circuiting by the spools 4 or the like and having the leads 5 which pass through openings 6 in casings 1. The armature 7 is common to both the magnets A and B and is mounted to move in the space within the sleeve 2 between the adjacent ends of the castings A and B, this space having an extent commensurate with the amount of movement that it is intended the frog or switch point shall have.

The armature 7 is secured rigidly in any desired way to a shaft 8 which extends through the castings A and B and which is preferably mounted to run in ball bearings 9 secured in the adjacent ends of said castings. The shaft 8 is also mounted to pass through a stuffing box 10 secured to the outer end of the casting B and designed to prevent moisture from passing around the shaft into the electro magnet. The shaft 8 is pivotally connected at one end to a link 11, and said link is in turn pivotally connected to the downwardly extending lug 12 which is formed on or secured to the track or switch point 13. The rail 14 to which the track or switch point 13 is connected is formed with a transversely extending opening 15 in its end, said opening being designed to receive the lug 12 of the switch point, so that the latter may be freely moved as either one or other of the two electro-magnets A and B are energized. Preferably the electro-magnets are formed with outstanding feet 16 by which they are screwed or otherwise secured within a box 17 of sufficient strength to withstand the ordinary street traffic. The box 17 is in turn provided with corresponding feet 18 so that it may be conveniently bolted or spiked to the cross ties. One end of the box 17 is designed to fit up against the rail 14 and for this purpose is cut out on its sides at upper and lower edges to fit the base flange and ball of the rail, the cut out portions being designated 19.

20 designates the lid of the box 17 which

is placed thereon after the electro-magnets have been placed in the box, and which is disposed in a plane substantially co-incident with the plane of the tread surface of the rails. The box 17 is formed with a partition 21 near one end, said partition being formed with an opening through which the stuffing box 10 of the electro-magnets may extend.

The feed wires 22 are preferably inserted through conduits or tubing 23 extending longitudinally of the track as shown, and passing longitudinally underneath the insulating rails 24 which may be formed of wood properly creosoted, said rails having longitudinally extending grooves 25 in their lower edges for the reception of the conduits or tubing. At the proper distance from the electro-magnets, determined by the normal speed of the cars, are contact plates 26 which are secured by screws or similar fastening devices to the top surface of the rails 24, and that are electrically connected to the wires 22 through vertical openings 27 formed in said rails. The other leads of said magnet may be grounded to the rails of the track. It will thus be seen that by energizing the magnet A through its contact plate 26, the armature 7 will be moved to the left and carry the shaft 8 in the same direction to swing the switch point or frog 13 to the left, and that a corresponding energization of the magnet B will move the switch point in the opposite direction. The energization of either one magnet or the other is accomplished by parts carried by the car, preferably at the platform thereof, and under the control of the motorman, the same being brought into contact with either of the strips 26, as the car approaches the point of the track where the switch is located, one or the other of said contact plates 26 having the current introduced into it as it is desired that the car shall remain on the main track or be switched to a siding or branch track.

I shall now describe the parts that are carried by the car for this actuation of the switch point or frog. Secured preferably to each platform 28 to the car and close to the dashboard 29 thereof, is a transversely extending plate 30 formed near each end with an opening 31 extending therethrough and through the platform. In each of said openings, a pair of vertically disposed bars 32 is mounted for a vertical movement, the bars of each pair being held in spaced relation to each other and being secured at their lower ends in an insulating block 33 of fiber or the like, said block being formed with side recesses 34 in which the lower ends of the bars 32 fit and in which they are secured by transverse bolts as shown. The other sides of said box 33 are also recessed as indicated at 35 for the reception of the side plates 36 of a fork 37 in which a contact

wheel 38 is journaled, said contact wheel being designed to engage and roll along the contact strip 26 when the bars 32 are moved downwardly or depressed by the foot of the motorman. The upper ends of the bars 32 of each pair fit within recesses 39 formed in the opposite sides of a bearing block 40, the two bearing blocks for the respective pairs of bars, preferably displaying designations such as S and M to indicate which pair of bars is to be depressed so that the switch may be operated for the car to travel to the siding or along the main track. Washers 41 are bolted or riveted to the respective pairs of bars 32 intermediate of the ends thereof, said washers being formed with holes 42 through which the bars extend, and expansion springs 43 encircle the bars between the washers 42 and the lower ends of tubes 44 that are secured to and that depend from the plate 30. By this means the bars are held at the upper limit of their movement and are depressed against the action of the springs 43.

45 designates braces that are secured to the platform 28 and the respective tubes 44 so as to impart rigidity to the structure of the switch operating mechanism.

The blocks 40 are preferably formed with downwardly facing sockets 46 in which the cross bar of a substantially T-shaped locking device 47 is engaged, said locking device being pivotally mounted at its lower end in ears 48 formed on and projecting upwardly from the plate 30. By this means the two circuit closing devices or plungers that are constituted by the two pairs of bars 32 may be held locked at the upper limit of their movement so that such device for the rear platform, say, may not be depressed accidentally by passengers riding on said platform. It is to be understood that the locking device of the front platform where the motorman stands, is to be moved to the released position so that the motorman may depress either of the circuit closing devices as he approaches the switch. The current conductors 49 for the respective circuit closing devices may be secured at one end to the wheel carrying forks 37 and may pass upwardly through the insulating blocks 50 to a knife switch or the like 51 by means of which they may be connected to the trolley harp or trolley wire.

From the foregoing description in connection with the accompanying drawings, it is evident that when the motorman of a car of an electric street railway system equipped with my invention, approaches a switch to be operated, he may depress either one of the two circuit closing devices, as the occasion may require, so as to close the circuit to the electro-magnet A or B through the engagement of the wheel 38 with the contact strip 26, thereby energizing the re-

quired magnet and moving the switch point or frog to the desired position.

Having thus described the invention, what is claimed as new is:

5 1. In an electric railway system, the combination with a switch point, and electro-magnets arranged for controlling the movements thereof, of circuit closing devices for the electro-magnets, said devices consisting
10 of vertically movable plungers, each of which embodies a pair of spaced bars, supports in which said bars are adapted to move, brackets secured to the upper ends of said bars, blocks formed on opposite sides
15 of the recesses in which the lower ends of said bars are secured, the said blocks being formed with other recesses, forks having side plates secured in said last named recesses, wheels journaled in said forks, and
20 springs encircling said bars and designed to move the same upwardly.

2. In an electric railway system, in combination with a switch point and electro-magnets arranged to control the movements
25 of such switch point, of circuit closing de-

vices for said electro-magnets, said devices consisting of vertically movable plungers, a plate designed to be secured to the platform of the car and formed with openings through which said plungers extend down- 30 wardly below the platform, washers secured to said plungers intermediate of the ends thereof, springs bearing expansively upon said washers, tubes secured to and depending from said plate and inclosing a portion 35 of said washers, the springs bearing also against the bottoms of said tubes, brackets secured to the upper ends of said plungers, the said plate being formed with ears, and a T shaped locking device pivoted between 40 said ears and designed to engage the inner sides of said brackets whereby to lock the plungers against downward movement.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY W. SHEEHY.

Witnesses:

CHARLES HERBERICH,
WALTER HERBERICH.