No. 666,080. Patented Jan. 15, 1901.

P. B. WILLIAMS.

ELECTRICALLY CONTROLLED AND OPERATED RAILWAY SWITCH.

(Application filed Oct. 11, 1900.)

(No Model.)

Fig. 6.

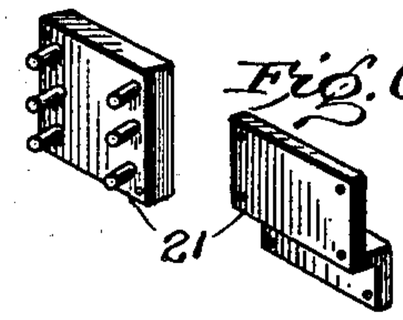


Fig. 2.

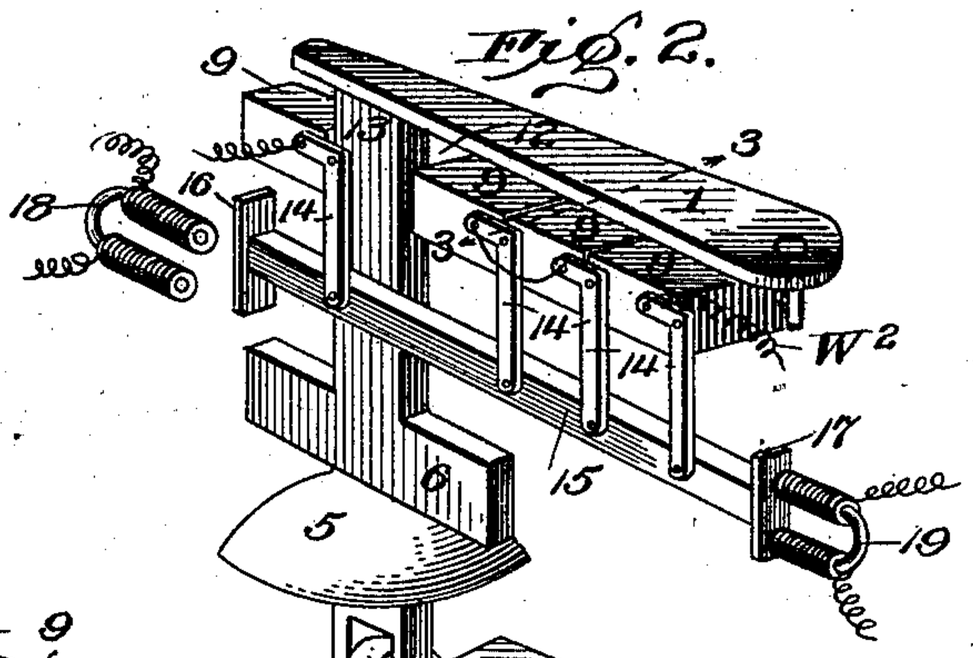


Fig. 1.

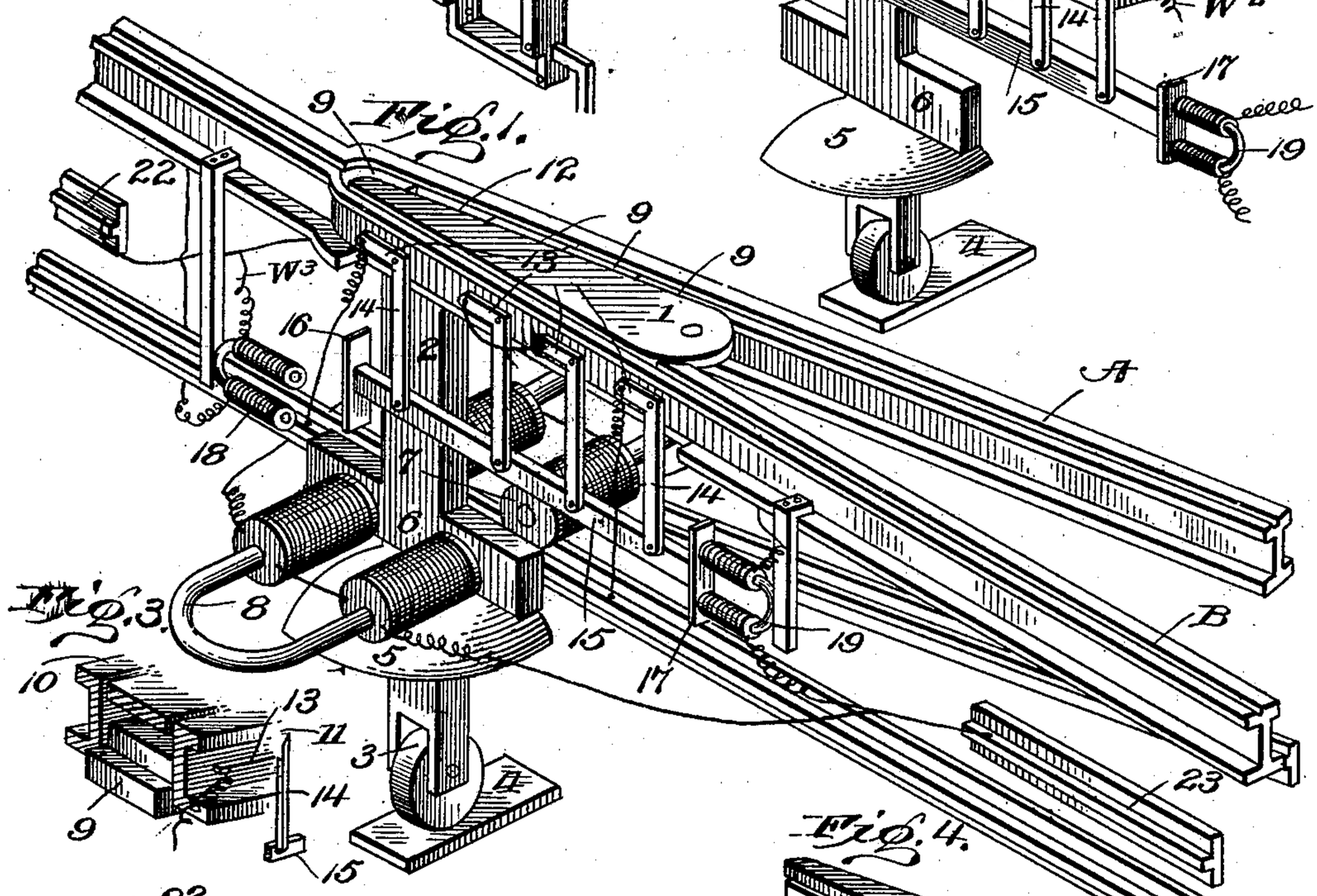


Fig. 3.

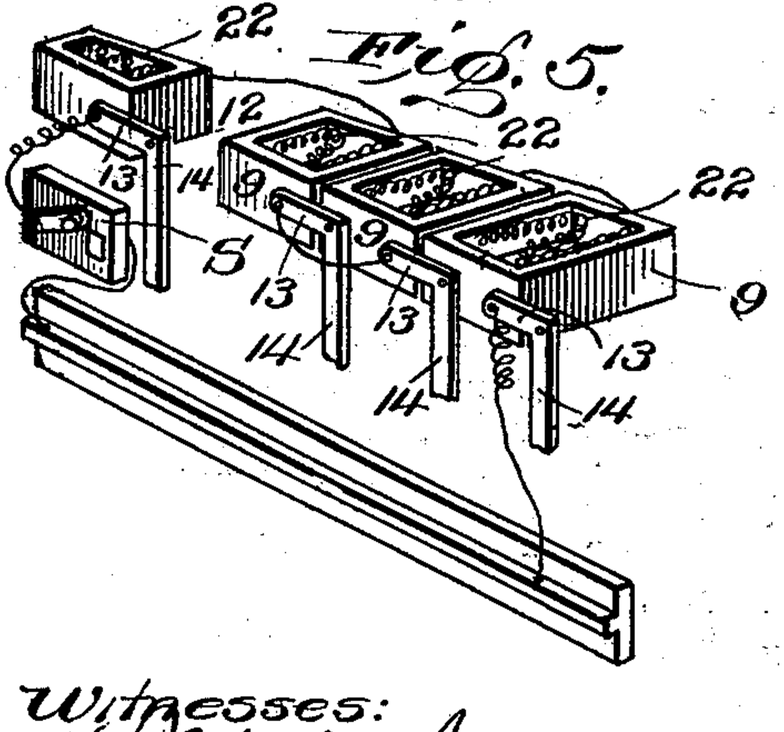
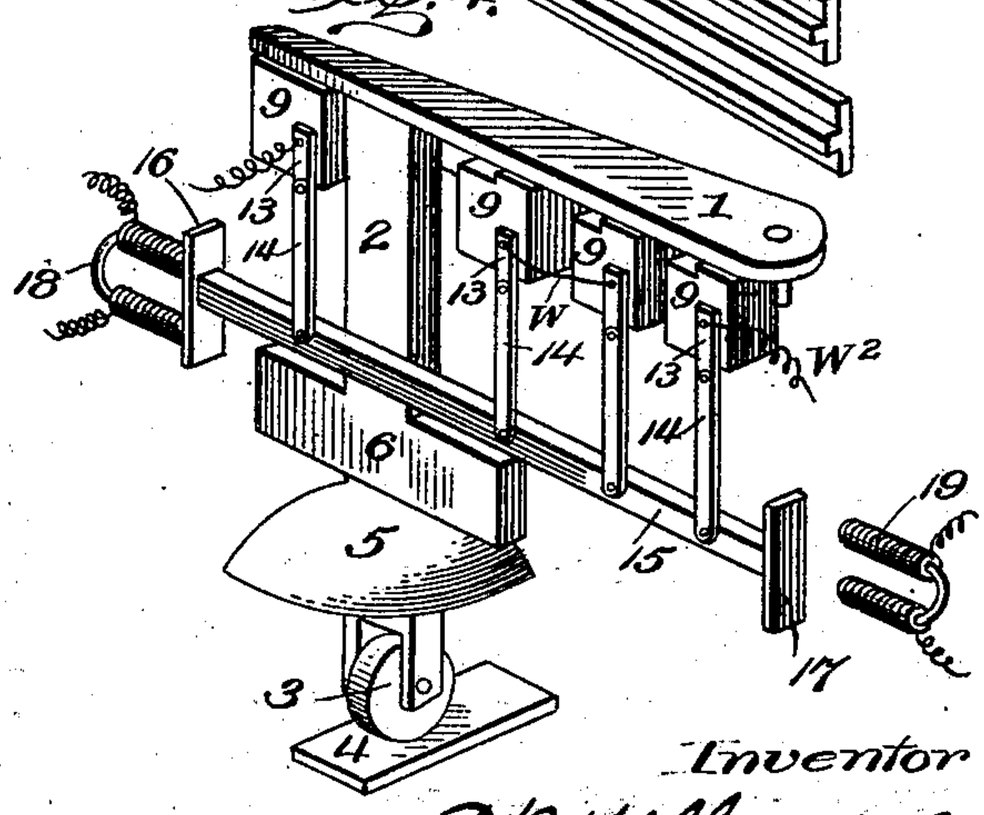


Fig. 5.

Fig. 4.



Witnesses:
H. Williams Jr.
A. H. Heyl[illegible]

Inventor
P. B. Williams.

UNITED STATES PATENT OFFICE.

PHILIP B. WILLIAMS, OF WASHINGTON, DISTRICT OF COLUMBIA.

ELECTRICALLY CONTROLLED AND OPERATED RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 666,080, dated January 15, 1901.

Application filed October 11, 1900. Serial No. 32,778. (No model.)

To all whom it may concern:

Be it known that I, PHILIP B. WILLIAMS, a citizen of the United States, residing in Washington, in the District of Columbia, have invented certain new and useful Improvements in Electrically Controlled and Operated Railway-Switches; and I do declare the following to be a full, clear, and exact description of the invention, such as 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 letters and figures of reference marked thereon, which form a part of this specification.

My invention has relation to improvements in electrically controlled and operated railway-switches of that kind or type particularly adapted for street-railways; and the object is to provide the art with a switch associated with a switch-pan, whereby all dirt or other impediments which tend to prevent the free movement of the switch-point are removed by an automatic electrically-operated mechanism.

It will be premised that in the manipulation of street-railway switch-points the accumulation of dirt and street debris in the pan at times prevents the point from being actuated with certainty and safety until the switchman removes the deposits from the pan. This deposition or accumulation of substances in the switch-pan under the switch-point is a hindrance to the positive and certain operation of the switch-points actuated by electrical appliances and devices of that type shown and described in my former Letters Patent, No. 648,092, dated April 24, 1900, and therefore the primary purpose of the present invention is to construct a switch-pan which can be dumped concurrently or simultaneously with the movement of the switch-point, and thus remove and discharge any substance from the pan which might or could prevent the throw of the point. It is also proposed to prevent the accumulation of snow and ice in the switch-pan, so that the movements of the switch-point will not be interfered with from these causes.

I attain the objects and purposes of my invention by the means and devices illustrated in the accompanying drawings, to be taken as a part hereof, and wherein—

Figure 1 is a perspective elevation of one side or rail of a street-railway track, showing the invention operatively applied thereto. Fig. 2 is a detail perspective of the device detached from the track and showing the plates or segments of the pan closed under the switch-point. Fig. 3 is a detail section taken on the line 3 3 of Fig. 2. Fig. 4 is a detail view showing the sectional bottom of the pan dumped or the sections turned to permit the dirt to drop out and through the spaces between the sections. Fig. 5 shows details of the parts composing the boxes of the pan, with the covers removed to show the heating-coils therein. Fig. 6 illustrates in detail the respective parts of the sections or boxes composing the bottom of the switch-pan.

In Fig. 1 is illustrated a section or portion of a street-railway track, but one rail being shown, which is provided with a switch-point to direct the car onto a deflected or switch rail. But one half of the track is shown, that being deemed sufficient to demonstrate the application of my invention, the other rails, (not shown,) it will be understood, being provided with duplicate appliances or devices for operating the other switch-point and also equipped with a duplicate improved switch-pan.

Referring to the drawings, A designates a main or straight track-rail of the road-bed, and B designates a deflected or switch rail, and at the junction of these rails is pivotally secured the switch-point 1, arranged to have a lateral swinging movement to switch the car to and from the respective rails or tracks. Near the front end of the switch-point is formed or secured a depending bar 2, constituting the support for the switch-point and formed with a forked or bifurcated lower end in which is journaled a roller 3, adapted to travel on a short rail or plate 4, suitably arranged and secured in the conduit. To prevent the dirt from falling down on the roller 3 and plate 4, a hood 5 is secured about and on the bar 2, the hood being of such diameter that it will carry the dirt clear of the roller and plate.

On the bar 2 at the proper place is fixed an armature 6, having proper movement between the poles of oppositely-arranged electromagnets 7 8, whereby the switch-point is operated

by electrical connections with the track-circuits and extra circuit-rails, as is fully described in my heretofore-cited Letters Patent, No. 648,092.

It will be perceived that in my present invention the usual plate or bottom of the switch-pan is dispensed with and the switch at its front end is carried on and supported by the vertical bar, having a roller journaled in its lower end, this utilization and adaptation of the armature-bar as a support for the switch-point being the construction differing from that shown and described in my former patent cited.

The bottom of my new switch-pan is composed of a determined and requisite number of sections or blocks 9, pivotally supported between the walls 10 11 of the switch-pan, as seen in Fig. 3 of the drawings, having their contiguous and abutting sides formed with interengaging flanges and coincident recesses, as shown, constituting lapped joints when the blocks are disposed in normal position and relation, as seen in Fig. 2 of the drawings. A sufficient space, as 12, is left between the end block and the next adjacent block to afford room for the movements of the supporting-bar carrying the armature which operates the switch. The end block consists of a rectangular oblong piece, as shown. To each of these blocks is pivotally secured a short arm 13, having its free or outer end jointed to the upper end of a pull-rod 14, the two constituting a bell-crank lever when in normal position, and to the lower ends of the pull-rods is pivotally connected a bar 15, common to all the rods 14, and on the respective ends of the bar 15 are secured armatures 16 17. The blocks 9 are disposed far enough below the under face of the switch-point to permit them to make a quarter-turn on their pivots and then stand as indicated in Fig. 4 of the drawings, in which position it will be seen they are separated to afford ample spaces between them for any and all dirt, &c., to fall into the conduit below.

Suitably mounted below the track and within the conduit are electromagnets 18 19, placed adjacent to the armatures 16 17 and arranged preferably on different planes of elevation, so that when the device is in the position shown in Fig. 2 the blocks are held by the contact of the armature 17 in engagement with the magnet 19, and when this magnet 19 is deënergized and the magnet 18, which is on the lower plane, is energized the armature 16, with the bar, will be drawn down, as shown in Fig. 4 of the drawings, the movement tilting or rotating the blocks a quarter-turn, as indicated.

In order that the blocks 9 may serve the function or purpose of heaters to melt any snow or ice lodged in the pan, and thus insure the free movement of the switch-point, they are made hollow and composed of a casing or box 20, having closures 21 secured thereto, and in the boxes are arranged heating-coils 22. The heating-coils 22 are coupled by wires w and the circuit completed by means of wires w' w^2, connected to the circuit-rail in the conduit. In one of the wires, as w', is interposed a switch s, by which the circuit through the pan-blocks may be made and broken. The magnet 18 has metallic connection with the extra circuit-rail 22 by wire w^3, and the magnet 19 similar connection to extra circuit-rail 23, the plates on the plow not shown, and the circuit-wires which operate the switch-point magnets do not form a part of this present invention, but they are fully shown and described in my former Letters Patent cited, and they complete the circuit.

As shown in Figs. 1 and 2 of the drawings, the blocks constituting the bottom of the switch-pan are in normal position, having been so moved by the action of armature 17, which, after the car has passed extra circuit-rail 23, becomes deënergized and inactive; but the blocks with the bar maintain the position shown in these figures by statical inertia. When in this position and a car approaching from the direction of the arrow, the plow is equipped to actuate the switch-point through the extra circuit-rail and its connections with the magnets 7 and 8 and the armature 6, and at the same time the magnet 18 is energized and pulls down the armature 16, with the bar 15, tilting the boxes, as indicated in Fig. 4 of the drawings. After the car has passed the switch, contact is made with extra circuit-rail 23, and magnet 19 is energized, which draws up the armature 17, with bar 15, which movement, through the lever connections, restores the blocks to normal or closed position.

What I claim is—

1. A switch-pan for street-railways, composed of tilting blocks arranged below the switch-point, means substantially as described for tilting the blocks, and an electrical circuit to operate the tilting mechanism, substantially as specified.

2. A switch-pan for street-railways, composed of tilting blocks having lapped joints and arranged below the switch-point, means substantially as described for tilting the blocks, and an electrical circuit to operate the tilting mechanism, substantially as specified.

3. The combination with a switch-point and the seat in the track wherein the point is mounted, of a plurality of tilting blocks pivotally mounted between the walls of the said seat, levers connected to the blocks, a bar connecting the lower ends of the levers, armatures on the ends of the bar, electromagnets adjacent to the armatures, and electric circuits to energize the magnets, substantially as described.

4. The combination with the switch-point and the seat in the track wherein the point is mounted, of a plurality of hollow boxes or blocks pivotally mounted between the walls

of the switch-point seat, heating-coils in the boxes, and electric circuits connected to the heating-coils, substantially as described.

5. The combination with a switch-point and a depending support movable therewith, and the seat in the track wherein the point is mounted, of a plurality of boxes or blocks pivotally mounted between the walls of the switch-point seat, heating-coils in the boxes, and electric-circuit wires connected to the heating-coils, substantially as described.

6. The combination with a switch-point, of suitably-supported blocks mounted to turn on their axes and constituting the bottom of the switch-pan, levers connected to the blocks, a bar connecting the lower ends of the levers, armatures on the ends of the bar, and electromagnets arranged on different planes of elevation, and electric-circuit wires to energize the magnets.

7. The combination with a switch-point and the switch-pan, of a plurality of tiltable blocks constituting the bottom of the switch-pan, and electrically-operated levers to tilt the boxes and to restore them to normal position, substantially as specified.

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

PHILIP B. WILLIAMS.

Witnesses:

J. E. WATERS,

D. B. MCCARY.