(No Model.)

2 Sheets—Sheet 1.

C. J. MORTIMER.

RAILWAY SWITCH.

No. 517,877. Patented Apr. 10, 1894.

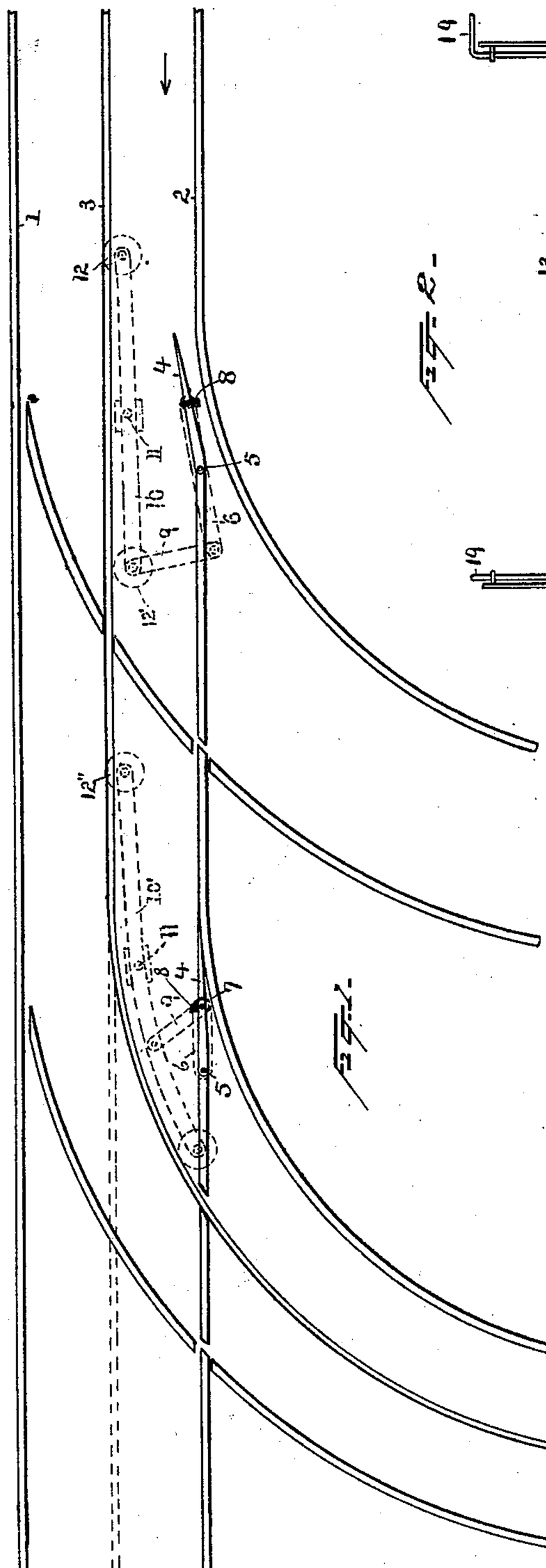

Fig. 1.

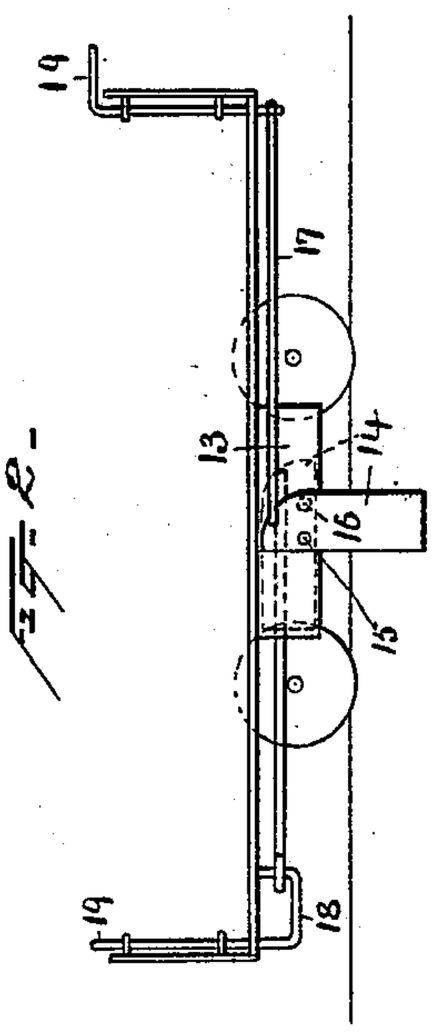

Fig. 2.

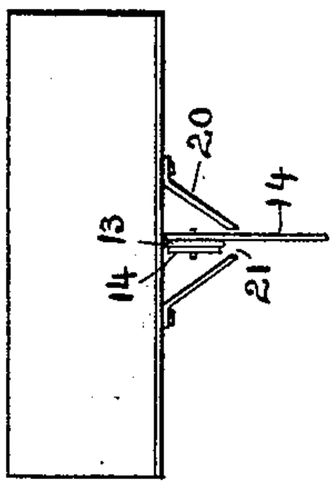

Fig. 3.

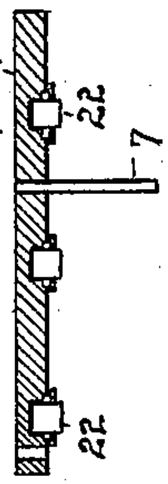

Fig. 4.

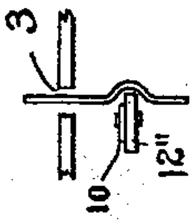

Fig. 5.

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(No Model.)

2 Sheets—Sheet 2.

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RAILWAY SWITCH.

No. 517,877. Patented Apr. 10, 1894.

Fig. 6.

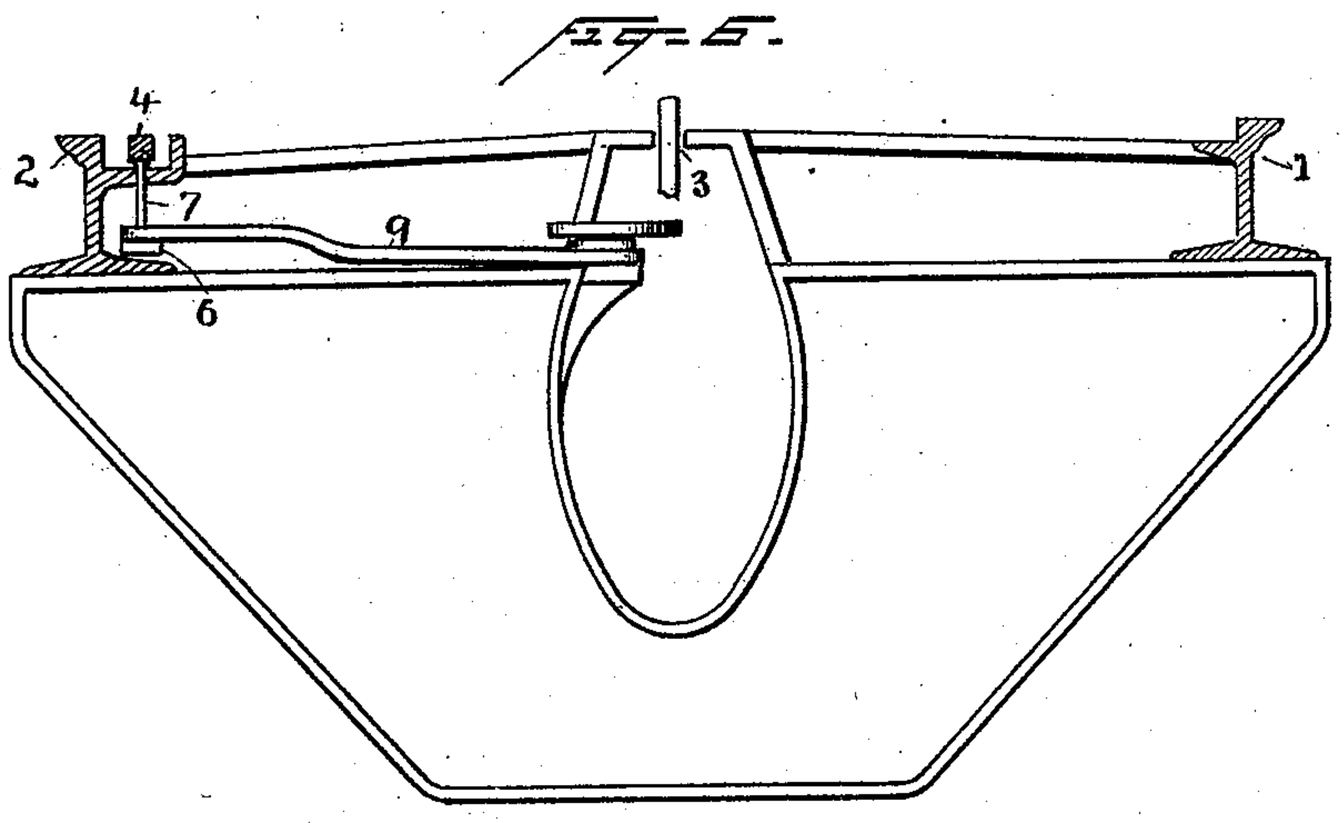


Fig. 7.

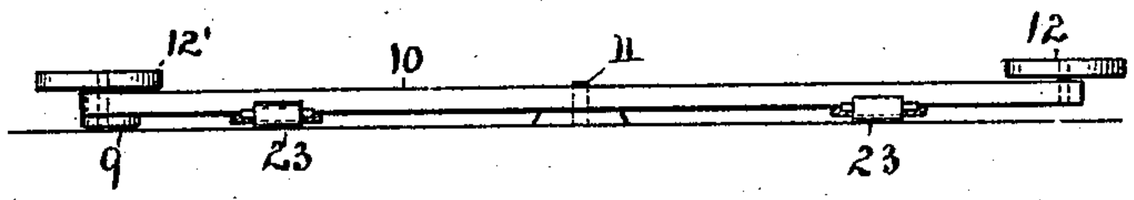
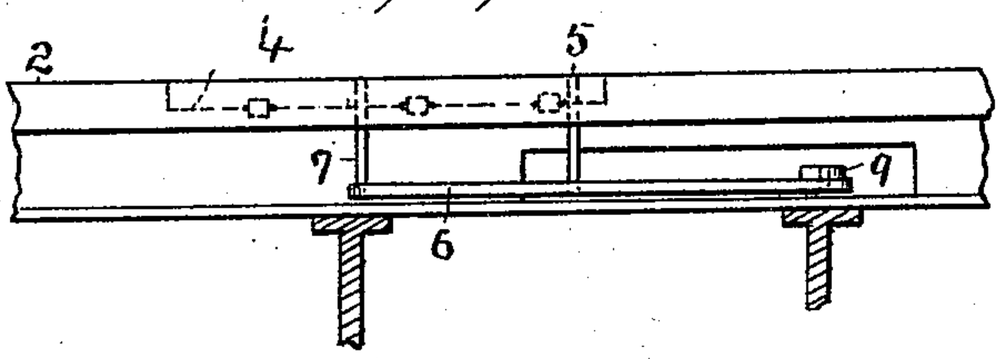


Fig. 8.



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UNITED STATES PATENT OFFICE.

CHARLES J. MORTIMER, OF NEW YORK, N. Y.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 517,877, dated April 10, 1894.

Application filed January 9, 1893. Serial No. 457,768. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. MORTIMER, a citizen of the United States, residing at New York, in the county and State of New York, have invented a certain new and useful Improvement in Railway-Switches, of which the following is a specification.

My invention relates to switches for street railways, which are operated by devices carried by the cars moving along the railway, and it is particularly designed for cable railways or railways on which part of the cars are propelled by cable and part by horses or other power.

It has been heretofore proposed to operate switches by devices carried by cars traveling along a road, and it has been proposed to operate them by devices moved by arms depending from the cars into a cable conduit slot. My invention is designed to simplify and improve devices of this character, and the invention consists in the improvements and combinations hereinafter more fully described and set forth in the claims.

In the accompanying drawings, Figure 1 is a plan view of a section of a straight track and two branch tracks, with the improved switching devices in place; Fig. 2 a side view of a part of a horse-car adapted to be used on the track and being provided with means for operating the switches; Fig. 3 a detail view of the switch operating devices at right angles to the view in Fig. 2; Fig. 4 a section of the switch point or rail with an improvement applied thereto; Fig. 5 an elevation of a portion of the switch lever and a grip arm carried by a car which is not to change the normal position of the switch; Fig. 6 a cross section of the road-bed; Fig. 7 a view showing the switch lever; and Fig. 8 a view showing the lever 6 and its connection to the switch point 4.

The track shown in Fig. 1 is supposed to be a track on which cars travel in the direction of the arrow.

1, 2 are the rails, and 3 is the slot of a conduit, through which the grip-arm of an ordinary cable car (or a similar contact arm on an electric car) extends, and in which it travels.

4 are switch points or rails, pivoted at 5 and adapted to be moved into line with rail 2 or away from the same, as clearly indicated in the drawings.

6 is a bar or plate below the surface of the roadway, having a bearing at the pivot 5, and carrying a pin 7, which extends up through an elongated slot 8 in the surface plate or roadway and connects with the switch-point 4. Said slot 8 is of sufficient length to allow the switch-point and pin 7 to move the necessary distance to open and close the switch. At one end of the bar 6 is a link 9, which extends to and connects with the long bar or lever 10, which is centrally pivoted at 11. At each end of this lever is an anti-friction roller 12. The lever 10 is so located and arranged that when one roller projects across the slot 3, the other roller will be retracted therefrom, and when the first mentioned roller is moved back, the latter roller will be moved forward across the slot. The lever 10′ at the second switch differs from the lever at the first switch only in being slightly curved to conform to the shape of the road, but at this switch the connection between said lever and the switch-point is different from that above described. At this switch, which is normally closed, instead of being normally open as is the first switch, the link 9 is connected directly to the pin 7. The levers 10 and 10′ are preferably provided with rollers 23 to facilitate the movement thereof.

With the arrangement of devices described, every cable car that comes along the line will first move the roller 12, back from the slot, thereby closing the first switch-point 4. Just after the car passes the switch-point, the grip-arm will strike the roller 12′, which is at this time forward across the slot, and move it back to the position shown in the drawings, thus leaving the switch in the position which it first occupied. As the car approaches the second switch, it will strike wheel 12″, moving it back and opening the second switch-point 4, thereby allowing the car to turn onto the second branch, and the switch will then be re-set, as already indicated.

In dotted lines, I have indicated a conduit slot extending directly along the straight track beyond the second curve. If it is desired to have any of the cable cars continue on the straight track, their grip-arms will be

so bent or formed as to pass by roller 12'', without striking it, as indicated in Fig. 5. The switch-levers 10 and 10' would then be placed at different depths below the surface of the road, so that a car having a curved grip-arm would by means of the straight portion of the arm operate the first switch in order to pass the first curve; but the second switch-lever will be in line with the curved portion of the grip-arm and the car will pass on without changing the position of the second switch. This can also be accomplished by changing the position of the rollers 12, that is, one may be above and another below the levers 10, and thus avoid placing the switch levers at different heights.

When horse-cars travel in part on the same track with the cable cars, they should be provided with means for operating the switches. In the present case, it is supposed that some of the horse-cars turn onto the first branch and some of the horse-cars continue on the straight line by the second branch. Evidently, cars turning onto the first branch do not need any switch operating device, but those cars which continue on the straight track must have means for closing the switch-point 4. On the bottom of such cars I secure a downwardly extending plate 13, on opposite sides of which I pivot oppositely extending arms 14 of the general shape shown in Fig. 2, the front arm in said figure being pivoted at 15, and the rear arm being pivoted at 16. From each of these arms extends a connecting rod 17, one to each end of the car, being connected to a crank 18 having an operating handle 19. The two arms 14 are provided so that the car can run either end forward. With the front arm down as shown in Fig. 2, the car is supposed to be moving toward the right. The arms 14 are thinner than the width of the conduit slot, so as to pass into it readily. On the bottom of the car is preferably placed a guard 20, having a slot 21, a little narrower than the cable slot and standing directly over it, so as to guide the arms 14 into the slot.

Heretofore the automatic operation of switch-points has been interfered with, and many times rendered impossible, by the sticking of the point, due to frost or ice, owing to the fact that the switch-points or rails usually lie directly on the supporting plate, so that the whole under surface of the switch-point is in contact with such plate. I prefer to provide the switch-points on their lower sides with several small rollers 22, at suitable distances apart. These rollers form bearing points for the switch rail, and make its movement easier, at the same time raising the lower surface from actual contact with the supporting plate, so that there will be less surface contact and sticking or freezing in place of the switch rail is avoided, or the danger thereof largely reduced.

The main advantage of my switch operating mechanism over that heretofore used is in its simplicity, there being no complicated mechanism to get out of order or to fail to operate, but a simple pivoted lever having a direct operating connection with the switch point is utilized for moving the switches in both directions.

What I claim is—

1. The combination with a railway switch point or rail, of a centrally pivoted lever, an arm connected to said switch point, a link connecting said lever and arm, and an arm carried by a car adapted to strike both ends of said lever to open and close the switch or vice versa, substantially as set forth.

2. The combination with a railway switch point or rail, of a centrally pivoted lever, another centrally pivoted lever one end of which is connected with the switch point and the other with the first named lever, and an arm carried by a car adapted to strike both ends of the first named lever to open and close the switch, or vice versa, substantially as set forth.

3. The combination, in a switch operating device, of the pivoted lever 10, having means at each end adapted to be struck by an operating arm carried by a car, of the switch point or rail 4, the plate 6 having a bearing at the rail pivot and connected to the rail in advance of its pivot, and link 9 connected to said plate and to the lever 10, substantially as described.

4. The combination with a railway car, of an arm carried by said car for operating a switch of the character herein described, said arm being formed in one plane to operate certain switch points and deflected out of that plane to avoid operating other switch points, substantially as described.

5. The combination with a car, of a grip-arm adapted to travel along a conduit slot and having a bend or depression in line with a switch operating device extending across the conduit slot, whereby such arm is adapted to pass the switch operating device without moving it, substantially as described.

This specification signed and witnessed this 5th day of January, 1892.

CHAS. J. MORTIMER.

Witnesses:
E. A. MACCLEAN,
GEORGE B. CROUK.