C. C. PETTY,

RAILROAD SWITCH.

APPLICATION FILED MAY 31, 1917.

1,247,447.

Patented Nov. 20, 1917.

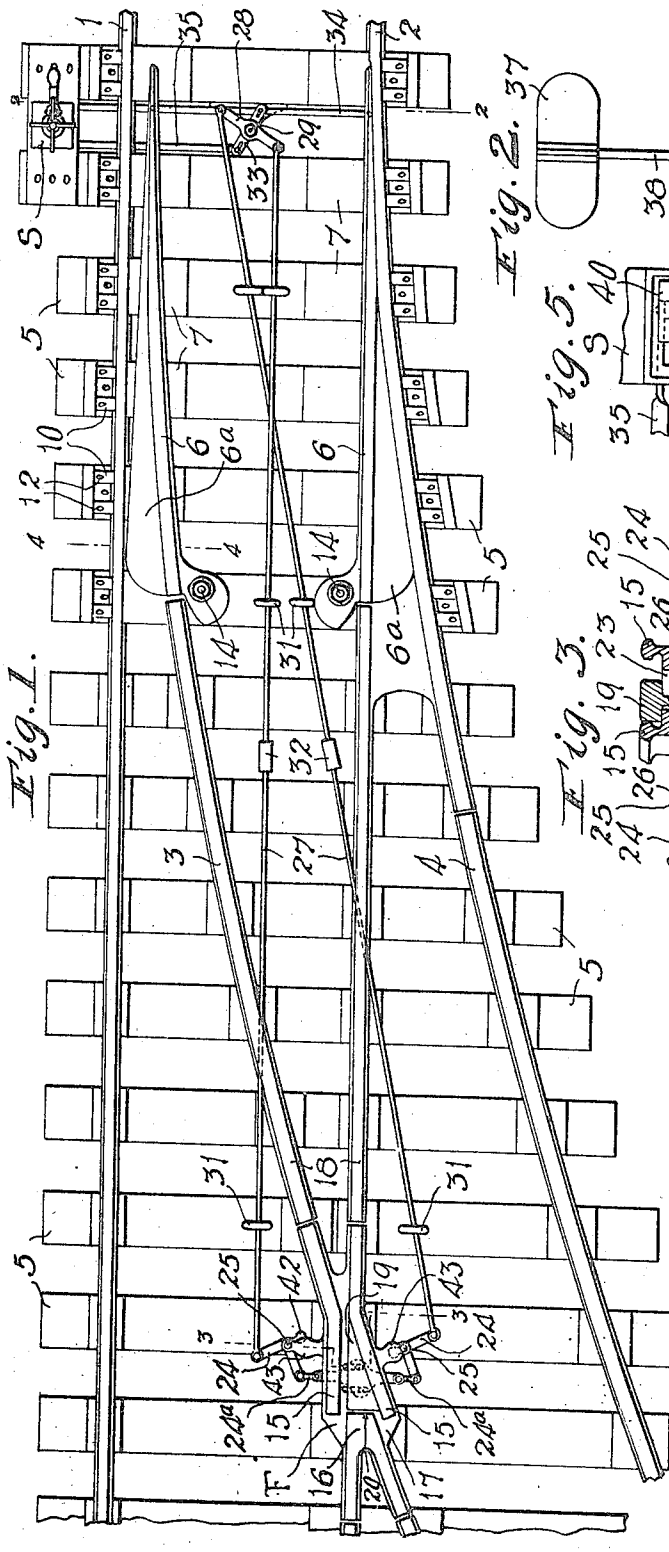


Fig. 1.

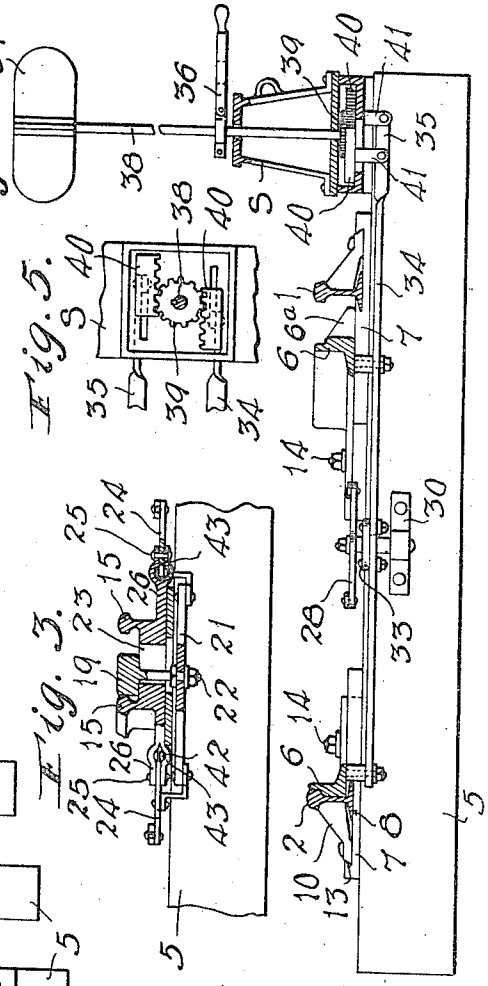


Fig. 2.

Fig. 5.

Fig. 3.

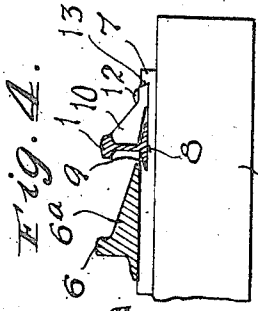


Fig. 4.

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RAILROAD-SWITCH.

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To all whom it may concern:

Be it known that I, CHRISTOPHER COLUMBUS PETTY, a citizen of the United States, residing at Miami, in the county of Dade, State of Florida, have invented a new and useful Railroad-Switch; and I do hereby 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.

The present invention relates to certain new and useful improvements in railway switches, and has for its object to provide a device of this character which embodies novel features of construction whereby the frog point is moved simultaneously with the switch points, thereby closing the flangeway of the frog which is not in use and enabling the wheels of the rolling stock to be safely guided over the frog without jolts or jars.

Further objects of the invention are to provide a railway turn-out which is comparatively simple and inexpensive in its construction, which is dependable in its operation, which will successfully withstand the heavy traffic conditions which are now found upon all of our main railroads, which will not be thrown out of gear by rail creepage, and which provides for the operation of all of the parts by a pull upon a tension member rather than by a push upon a compression member, the former being far more positive in its action, since a compression member unless made so large as to be heavy and bulky is liable to buckle and fail to operate the parts connected thereto in an emergency.

With these and other objects in view, the invention consists in certain novel combinations and arrangements of the parts as will more fully appear as the description proceeds, the novel features thereof being pointed out in the appended claims.

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

Figure 1 is a top plan view of a railway turn-out constructed in accordance with the invention.

Fig. 2 is a transverse sectional view on the line 2—2 of Fig. 1, showing the switch stand and the connections between the switch stand and the switch point.

Fig. 3 is a transverse sectional view through the frog on the line 3—3 of Fig. 1.

Fig. 4 is a transverse sectional view through the heel end of one of the switch points, on the line 4—4 of Fig. 1.

Fig. 5 is a horizontal sectional view through the switch stand, showing the gearing for operating the two rack bars which alternately slide in opposite directions.

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.

Referring to the drawings, which illustrate one embodiment of the invention, the numerals 1 and 2 designate the two rails of the main track, and 3 and 4 the corresponding rails of the siding, said rails being of any standard cross section and weight, and being supported upon the usual cross ties 5. The outside rails of the main track and siding are supported at points adjacent the switch point upon tie plates 7. These tie plates 7, as shown more clearly by Fig. 4, are considerably thicker and heavier than the ordinary tie plates, and the track rails are securely anchored upon the tie plates so that it is impossible for them to be shoved laterally out of position. The tie plates are recessed transversely at 8 to receive the bases of the rails, the inner sides of the recesses being provided with overhanging lips 9 which extend over the bases of the rails on the inner side thereof, and reach up to the webs of the rails, the outer sides of the rails being engaged by brace blocks 10 which are held rigidly in position by suitable fastening members such as the spikes 12. There are two of these brace blocks 10 for each of the tie plates 7, the inner ends of the brace blocks being flared upwardly and fitting against the rail webs and under sides of the rail heads, while the outer ends thereof bear against undercut shoulders 13 at the outer ends of the tie plates. It is thus absolutely impossible for the track rails to be spread apart or forced out of position under any ordinary traffic conditions. The switch points 6 are mounted to slide upon the tie plates 7, and obtain a firm bearing thereon, the heel ends of the switch points being pivotally mounted at 14 so that the switch points can be readily swung back and forth. The sides of the switch points 6 facing toward the respective track rails are provided

at the bases thereof with reinforcing flanges 6ª, said reinforcing flanges having a thickness corresponding substantially to the height of the rail webs. The edge of this reinforcing flange 6ª from the heel end of the switch point throughout substantially one-half of the length of the switch point is designed to rest squarely adjacent the web of the adjacent rail when the switch point is swung toward the rail, thereby providing a very firm bearing which enables the switch point to successively resist any thrust placed thereon. The edge of the reinforcing flange 6ª at the tapered end of the switch point is normally slightly spaced from the sides of the adjacent rail, in order that proper compensation may be made for wear of the parts after the switch stand has been in use for a considerable length of time.

Owing to the fact that the switch points obtain a firm and extended bearing upon the elevated upper surfaces of the thick tie plate 7, and are provided with the reinforcing flanges 6ª which obtain a bearing against the adjacent track rails when the switch point is operative, an extremely safe and strong construction is obtained.

The frog F is formed with wing rails 15 and a heel 16 which are preferably integral with a bed plate 17, avoiding the necessity of using the usual clamps and wedges. The usual lead rails 18 extend between the wings 15 of the frog and the heel ends of the switch points 6. The frog point 19 is bodily slidable upon the bed plate 17 of the frog, moving in a direction transverse to that of the main track, and serving to close the flange-way of the frog which is not in use, thereby enabling the wheels of the rolling stock to be positively guided over the frog without the usual jarring and jolting. The heel end of the frog point slides against a square shoulder 20 at the inner end of the frog heel 16.

Extending transversely under the bed plate 17 of the frog is a slide bar 21 which is rigidly connected in some suitable manner as by means of the bolts 22 to the frog point 19, said bolts operating within transverse slots 23 provided in the bed plate. Opposite ends of the slide bar 21 are connected by short links 24ª to bell crank levers 24 which are pivotally mounted at 25 between bifurcated bracket arms 26 which project laterally in opposite directions from the bed plate 17 of the frog. The opposite ends of the two bell crank levers 24 are connected by tension members or pull rods 27 which extend along the track and are connected to opposite ends of a cross head 28 upon the upper end of a short vertical shaft 29 which is arranged between the swinging ends of the switch points 6, being journaled upon a suitable bracket 30. Suitable guides 31 are provided for the tension members 27, and turn-buckles 32 may be interposed in the lengths of the tension members 27 for taking out any looseness therein.

The shaft 29 is provided with a second cross head 33 which is arranged at an angle to the cross head 28, one of the arms thereof being connected to a switch point operating bar 34 which extends transversely across the track and is connected to the switch points 6. The other end of the cross head 33 is connected to a second bar 35, so that the cross head 33 and shaft 29 can be rotated in either direction by a pull upon one of the members 34 or 35, it being never necessary to depend upon a shove or push to operate the switch.

The switch stand S is arranged at one side of the track in the usual manner, being provided with the usual operating lever 36 and signal 37. The vertical shaft 38 of the switch stand is provided at its lower end with a gear wheel 39 which meshes with sliding rack bars 40 arranged upon opposite sides thereof. These rack bars 40 are connected by means of depending arms 41 with the respective bars 34 and 35, and it will be obvious that by rotating the shaft 38 of the switch stand and turning the gear 39 one of the rack bars 40 will be moved in one direction and the other rack bar 40 moved in the other direction. This will result in turning the cross head 33 and short vertical shaft 29 and throwing the switch, although the movement of the switch will be brought about by that one of the bars 34 and 35 which is subjected to tension, the other one of the bars being idle. In other words, the operator always depends upon a pull upon a tension member to throw a switch, and never upon a push upon a compression member, so that there is no danger of a compression member buckling and failing to throw the switch in an emergency. The cross head 28 is rigid with the shaft 29 and cross head 33, so that the tension members 27 extending between the switch and frog will slide the frog point 19 into proper position at the same time that the switch points are moved. This movement of the frog point is also caused entirely by the action of tension members, one of the tension members 27 being idle, while the other tension member 27 is operated, each time the frog point is moved. There is thus no danger of a compression member buckling and failing to produce the proper movement of the frog point when the switch is thrown.

Means is preferably provided for locking the frog point 19 yieldably at either limit of its movement. For this purpose the elbow portions of the bell crank levers 24 are shown as provided with laterally projecting split spring heads 42 which are adapted to snap into corresponding sockets 43 provided between the arms of the bi-

furcated brackets 26 when the frog point reaches the limit of its movement, thereby preventing accidental movement thereof. These two spring heads 43 are so arranged, as indicated more clearly by Figs. 1 and 3, so that one of them is in operative position when the frog point is at one limit of its movement, the other spring head being in operative position when the frog point is at the other limit of its movement. These split spring heads do not interfere in any manner with the proper operation of the frog point, but prevent accidental movement thereof and serve to hold it firmly in operative position.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In combination with a main track and a siding, switch points, a frog formed with a movable frog point for closing the flange-way not in use, lead rails between the frog and the switch points, a rock shaft mounted between the switch points and provided with a pair of cross heads arranged at angles to each other, one of the cross heads being operatively connected to the switch points for throwing the switch, a pair of tension members connected to the ends of the opposite cross head and extending along the track, said tension members being operatively connected to the frog point and one tension member being provided for moving the frog point in each direction, and means connected to the first mentioned cross head for oscillating the rock shaft.

2. In combination with a main track and a siding, switch points, a frog formed with a movable frog point for closing the flange-way not in use, lead rails between the frog and the switch points, a rock shaft mounted between the switch points and provided with a pair of cross heads arranged at angles to each other, one of the cross heads being operatively connected to the switch points for throwing the switch, a pair of tension members connected to the ends of the opposite cross head and extending along the track, said tension members being operatively connected to the frog point and one tension member being provided for moving the frog point in each direction, a switch stand formed with bars mounted to move in opposite directions, and tension members connecting the respective bars to the ends of the first mentioned cross head.

3. In combination with a main track and a siding, switch points, a frog formed with a movable frog point for closing the flange-way not in use, lead rails between the frog and the switch points, a rock shaft arranged between the switch points and provided with a pair of cross heads disposed at angles to each other, one of the cross heads being operatively connected to the switch points for throwing the switch, a pair of tension members connected to the ends of the opposite cross head and extending along the track, said tension members being operatively connected to the frog point and one of them being provided for moving the frog point in each direction, a switch stand including a main gear wheel having oppositely sliding rack bars meshing with opposite sides thereof, and tension members connecting the respective rack bars to the ends of the first mentioned cross head.

4. In combination with a main track and a siding, switch points, a frog formed with a sliding frog point adapted to close the flange-way not in use, said frog having lateral arms projecting from opposite sides thereof and said arms being formed with sockets, lead rails between the frog and the switch points, operating levers pivotally mounted upon the laterally projecting arms of the frog and operatively connected to the frog point for sliding the same back and forth, resilient heads projecting from the operating levers and adapted alternately to snap into the sockets of the arms to lock the frog point at either limit of its movement, a pair of tension members connected to the respective operating levers and extending along the track, one of the tension members being provided for sliding the frog point in each direction, and the said tension members being operatively connected to the switch points to provide for a simultaneous movement of the frog point and switch points, and means for throwing the switch.

5. In combination with a main track and a siding, switch points, a frog formed with a sliding frog adapted to close the flange-way not in use, said frog being provided with laterally projecting arms which are formed with sockets, lead rails between the frog and the switch points, operating levers pivotally mounted upon the laterally projecting arms of the frog and operatively connected to the frog point for moving it back and forth, resilient heads projecting from the operating levers and adapted alternately to snap into the socket of the arms to lock the frog point at either limit of its movement, a rock shaft provided between the switch points and operatively connected thereto, a cross head rigid with the rock shaft, tension members extending along the track and connecting the opposite ends of the cross head to the respective operating levers, one of the tension members being provided for moving the frog point in each direction, and means for operating the rock shaft to throw the switch.

6. In combination with a main track and a siding, of switch points, a frog formed with a movable frog point for closing the flange-way not in use, lead rails between the frog

and the switch points, a vertical rock shaft arranged between the switch points and provided with a cross head, said rock shaft being operatively connected to the switch points, and to the frog point, a switch stand including a vertical operating shaft having a gear wheel thereon which meshes upon opposite sides thereof with alternately reciprocating rack bars, and tension members connecting the respective rack bars to the opposite ends of the before mentioned cross head.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHRISTOPHER COLUMBUS PETTY.

Witnesses:
Z. T. MERRITT,
J. B. HAWKINS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."