July 20, 1943. R. W. HEWES 2,324,622

TRACK SWITCH FOR RAILROADS

Filed Jan. 29, 1942 2 Sheets-Sheet 1

FIG. 1.

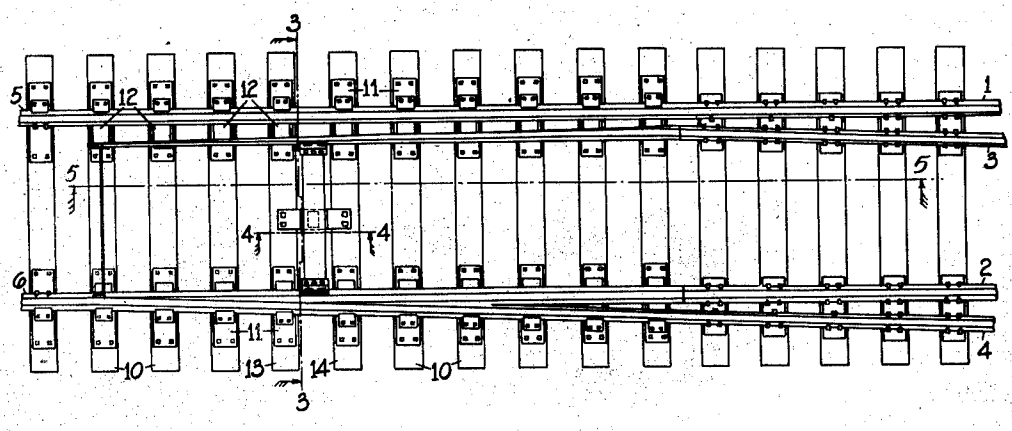


FIG. 4.

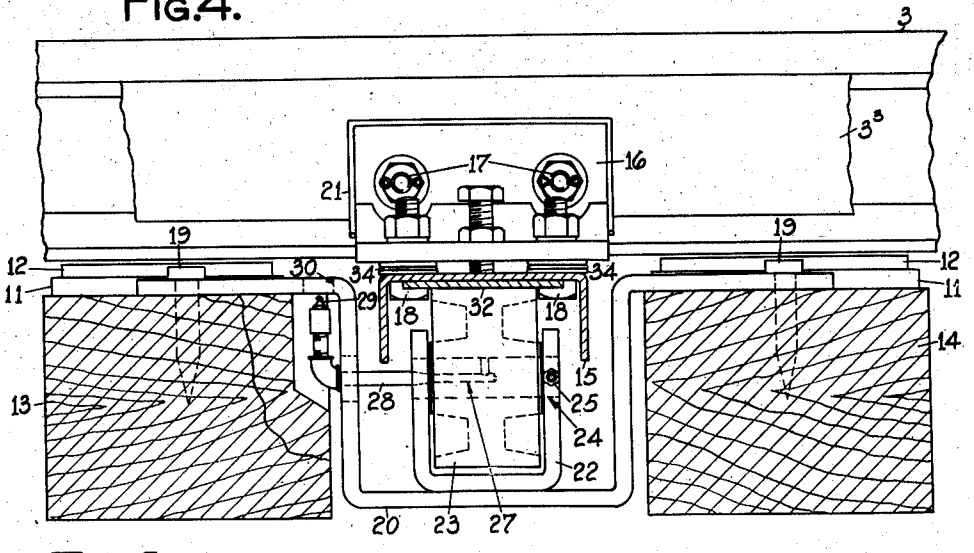
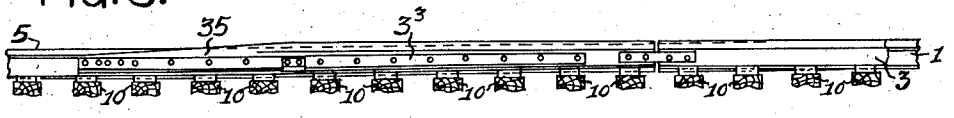


FIG. 5.



INVENTOR
R. W. Hewes,
BY Neil W. Preston,
his ATTORNEY

July 20, 1943. R. W. HEWES 2,324,622

TRACK SWITCH FOR RAILROADS

Filed Jan. 29, 1942 2 Sheets-Sheet 2

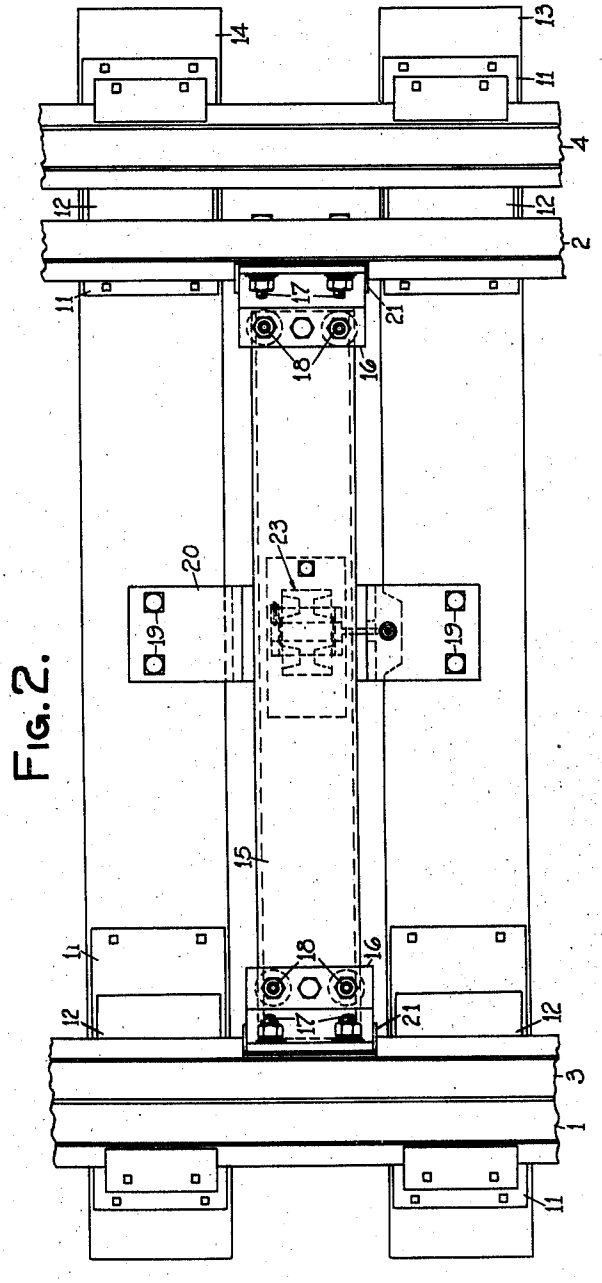


FIG. 2.

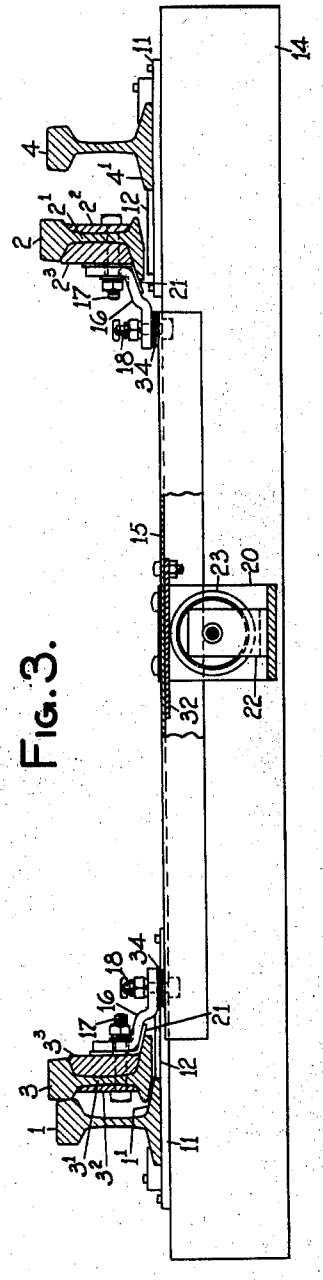


FIG. 3.

INVENTOR
R. W. Hewes,
BY
Neil H. Preston,
his ATTORNEY

Patented July 20, 1943

2,324,622

UNITED STATES PATENT OFFICE

2,324,622

TRACK SWITCH FOR RAILROADS

Ralph W. Hewes, Rochester, N. Y., assignor to General Railway Signal Company, Rochester, N. Y.

Application January 29, 1942, Serial No. 428,733

1 Claim. (Cl. 246—449)

The present invention relates to track switches for railroads and more particularly to anti-frictional supporting means for the movable switch points of such track switches.

When two tracks are to converge into a single track of a railway system the right-hand rail of one of the two converging tracks and the left-hand rail of the other of the two converging tracks are made continuous, whereas the left-hand rail of such one track and the right-hand rail of such other track terminate in pointed rails called switch points. These switch points are fastened to each other and are spaced a distance apart a little less than the normal spread between rails so that movement of these points to an extent to allow the flanges of the car wheels to pass between the switch points and their respective adjacent rails is possible at one side when the switch points assume one position and is possible at the other side when the switch points assume the other position. The rails which terminate into these switch points are movable for a considerable distance back from their pointed ends as these points are moved from one extreme position to the other. The point at which no movement of the switch point takes place is called the heel and constitutes a joint between it and the next rail to afford pivoted movement. These switch points of course rest on tie-plates secured to the top of the ties from which it is apparent that the friction between the movable switch points and the tie-plates would, without the use of the present invention, be considerable. Also, it is necessary to have these switch points rest on the tie-plates when a train passes thereover and for this reason roller supporting of the switch points if used must be such that the weight of the passing train will not rest on such rollers.

In view of the foregoing and other considerations it is proposed in accordance with the present invention to connect the switch points together by a strong and rigid tie-beam and to provide a roller support near the mid-point of such beam so that during operation of the switch points from one position to the other such roller will serve as a pivotal support to support both of the switch points, whereas upon movement of a train over the switch points since the train will only ride over one of the switch points, the particular switch point upon which the train rides will be depressed to a position where it rests entirely upon the tie-plates and ties and without materially increasing the load upon such roller since the other switch point will be lifted.

Other objects, purposes and characteristic features of the present invention will appear from the following specification when considered in the light of with the accompanying drawings in which:

Fig. 1 illustrates a railway track switch to which the present invention has been shown applied.

Fig. 2 shows an enlargement plan view of the tie-beam and roller support constituting part of the present invention.

Fig. 3 shows an enlarged side elevation taken on the line 3—3 of Fig. 1 when viewed in the direction of the arrows and with the switch points assuming the opposite position;

Fig. 4 shows an enlarged side elevation, partly in section, taken on the line 4—4 of Fig. 1 as viewed in the direction of the arrows; and

Fig. 5 is a partial longitudinal sectional elevation taken on the line 5—5 of Fig. 1 as viewed in the direction of the arrows with the switch assuming the opposite position.

Referring to Fig. 1 of the drawings the track rails 1—2 and 3—4 constitute the rails of two converging tracks which converge into the track constituting track rails 5 and 6. It will be seen that the rails 1—5 and 4—6 are continuous and are firmly fixed to the ties 10, whereas the track rails 2 and 3 constitute movable rails terminating in switch points. To the top of the ties 10 are fastened tie-plates 11 upon which the rails 1, 2, 3, 4, 5 and 6 rest. The switch points 2 and 3, however, slidably rest on riser-plates 12 (see Figs. 1 and 3) which lie on top of the tie-plates 11 and are of varying thicknesses as shown in Fig. 5. It will be seen from Fig. 3 that these riser-plates 12 serve to build up the tie-plates to a thickness permitting the switch points 2 or 3, depending on the position assumed by the switch, to ride upon the flanges 1^1 and 4^1 of the associated track rails 1 and 4, respectively, as the case may be. If desired a single stepped plate may be used instead of the two plates 11—12 shown. In order to obtain perfectly flat surfaces and to re-enforce the switch points the webs 3^1 and 2^1 of these switch points 3 and 2, respectively, are built up by reenforcing bars 3^2—3^3 and 2^2—2^3 respectively. These re-enforcing bars extend almost the full distance from the ends of the switch points toward the heels (the point where the switch points are securely fastened to the ties) thereof.

In order to firmly hold the switch points 2 and 3 in proper substantially parallel and spaced relationship and for other reasons pointed out hereinafter these switch points are connected together by a tie-beam or channel 15 preferably

at points approximately two-fifths of the distance from the ends of the switch points to the heels thereof. The ends of this channel 15 are secured to the switch points through the medium of angle brackets or switch brackets 16 which are bolted to the switch points by bolts 17 and are bolted to the channel 15 by bolts 18. These bolts 17 preferably pass through the switch bracket 16, the webs 3^1 and 2^1 as well as through the re-enforcing bars 3^2—3^3 and 2^2—2^3 associated with the switch points 3 and 2 respectively, (see Fig. 3). This may constitute an insulated connection as conventionally illustrated by the insulation 21.

Near the middle of the tie-beam or channel 15 a U-shaped saddle 20 is preferably secured to the adjacent ties as by lag screws 19. This channel 15 is so secured to the switch points that it will lie substantially mid-way between two adjacent railway ties 13 and 14 usually constructed of hard wood, so that the saddle 20 having the lower portion of U-shape projects between these adjacent ties and below the top of these ties, as shown in Fig. 4, and so that this saddle may accommodate the inverted channel or tie-beam 15 (see Fig. 4) which may also project below the top of these ties.

Into the saddle 20 is preferably firmly secured, as by welding, a U-shaped roller fork 22 into which is pivotally mounted the roller 23 by a bearing pin 24. This bearing pin is held in position by a lock screw 25. In order to keep the roller 23 well lubricated the bearing pin 24 is drilled endwise and radially as shown at 27 to afford the passage of cup grease or oil through the lubricating pipe 28. This lubricating pipe 28 is preferably provided with a grease cup or oil cup 29 which is accessible from above the ties 13 and 14 through the opening 30 contained in the saddle 20, all as clearly shown in Fig. 4 of the drawings. To the inside of the inverted channel 15 is secured a re-enforcing or track bar 32 which may rest and ride upon the roller 23. In other words, instead of employing a roller operating over a track for providing an anti-frictional support for the switch points the track 32 rides over a fixed but pivoted roller 23, all as clearly shown in Figs. 3 and 4. This latter construction is resorted to so that dirt will not readily collect on the track 32 with which the roller 23 makes contact. In order to make the switch points 2 and 3 properly float at a slightly higher elevation than when in contact with the riser plates 12 adjustment has been provided for at the point where the switch brackets 16 are connected to the inverted channel 15. This adjustment is preferably afforded through the medium of spacing washers or shims 34, which may be inserted in number to an extent to give the proper spacing between the switch bracket 16 and the inverted channel 15 to cause proper floating of the switch points 2 and 3 slightly above the riser plates 12. It has been found in practicing the present invention that the sum of the distances between the switch points 2 and 3 and their respective riser-plates should be about one fourth of an inch. The roller 23 is preferably supported at the mid-point between fixed rails 1 and 4 so that at all times during movement of the switch points from one extreme position to the other these switch points 2 and 3 substantially counter-balance each other and cause very little friction between these switch points and the riser plates 12 over which they are supported. The extent of balance will of course vary slightly as the positions of the switch points vary.

This balancing of one switch point against the other is desirable because in this manner it is possible to have slight up and down movement of either switch point even though the switch points as a whole are firmly non-resiliently supported near the mid-point by rigid structure including a roller. Slight up and down movement of the switch points 2 and 3, one at a time, is necessary because during the movement of a train over the track switch a tremendous additional weight will come upon one of the switch points but not upon the other. Since the switch points, when no train is present, substantially counter-balance each other they are practically entirely supported by the roller 23. It is readily seen that the movement of a train over one of the switch points will cause it to be depressed to a point where it firmly rests upon the riser plate 12, whereas the other switch point, which is not then supporting any portion of a train, is free to rise to approximately the same extent to a position ready to again counterbalance said one switch point as soon as the train has passed beyond the switch. After the train has passed the switch points will return to their original balanced position where they are substantially entirely supported by the roller bearing.

Applicant's proposed construction of anti-frictional switch point supporting means is thus rigid in nature and in spite of its rigid and sturdy construction enables the switch points to be moved up and down, one at a time, in a rather free and yieldable manner. This yielding is not due to any spring construction of the roller bearing itself but is due to the fact that even though the two switch points are firmly secured together by a tie-beam, which tie-beam is supported on a roller near its mid-point so that the weight of one switch point substantially counterbalances the weight of the other switch point, there is sufficient yielding to allow one point to move up while the other moves down. From this consideration it is also readily understood that during movement of the switch points from one extreme position to the other substantially the entire weight of both of the switch points rests upon the roller 23 which affords a substantially frictionless support for movement of the switch points, but that upon the movement of the train over the switch points, which train will always depress only one of the two switch points, enables the other switch point to rise higher as the switch point then occupied by a train is depressed against its associated riser plates, and this is accomplished without materially increasing the forces exerted upon the roller 23.

Referring to Fig. 5, which views the rails 5, 3 and 1 in an upwardly direction as viewed in Fig. 1, and with the switch points assuming the opposite position from that shown in Fig. 1, as is also the case in Fig. 3, it will be seen that the switch rail 3 is gradually raised as observed at successive points toward the point of this switch rail 3. Were it not for the chamfering of the switch rail as shown at 35 in Fig. 5 the point of the switch rail 3 would extend above the main rail 1. With this chamfering extending back only a short distance this rail 3, at the point where the cross-section of Fig. 3 is taken, does actually extend above the top of rail 1. This in itself is not new but is the usual construction of a modern track switch. In applicant's construction the switch rails do, however, extend slightly higher above the fixed rails than in switches where the present invention is not used because the roller 23 lifts

both switch points slightly above their operative position so that one may counterbalance the other, so that if a train depresses one switch point the other will be lifted.

Having thus shown and described one rather specific embodiment of applicant's invention it is desired to be understood that various changes, modifications and additions may be made to the specific construction illustrated so long as these additions and modifications do not result in a different mode or principle of operation and so long as these additions or modifications come within the scope of the present invention as defined by the following appended claim.

What I claim as new is:

A roller bearing support for railway switch points comprising, in combination with railway ties, a track switch including two double-rail tracks converging into a single double-rail track by two switch points one constituting a part of one converging double-rail track and the other constituting a part of the other converging double-rail track which converging double-rail tracks converge into a departing double-rail track and all supported on said ties, said switch points lying between the two rails of said departing double-rail track and engaging the rails of said departing double-rail track one at a time; and switch point supporting means comprising a tie-bar of inverted U-shaped cross-sectional configuration securing said switch points rigidly to each other in relatively fixed spaced relation, said supporting means including means for adjustably securing said tie-bar to said switch points, a rigid bracket supported by two adjacent ties at a point substantially midway between the rails of said departing double-rail track, a roller, means rigidly fixed to said bracket for pivotally supporting said roller on said bracket and between said adjacent ties with its axis substantially at right angles to said tie-bar and with its rolling surface living within and engaging the bottom of the U of said tie-bar for supporting said tie-bar for rolling endwise movement at a fixed distance above the bottom of said ties and in turn supporting said switch points for sidewise movement, whereby said switch points are adjustably supported substantially wholly by said roller and whereby said inverted U-shaped tie-bar also constitutes a shelter for said roller.

RALPH W. HEWES.