W. H. NORMINE.

TROLLEY TRACK SWITCH DEVICE.

APPLICATION FILED DEC. 20, 1915.

1,171,748.

Patented Feb. 15, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

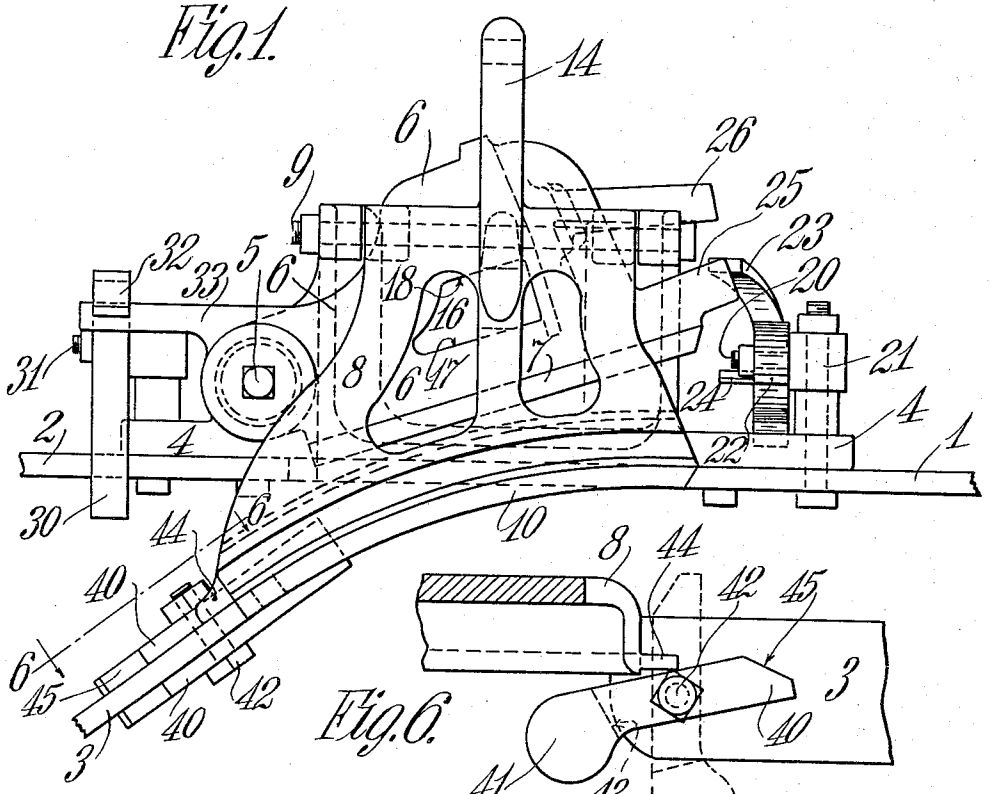
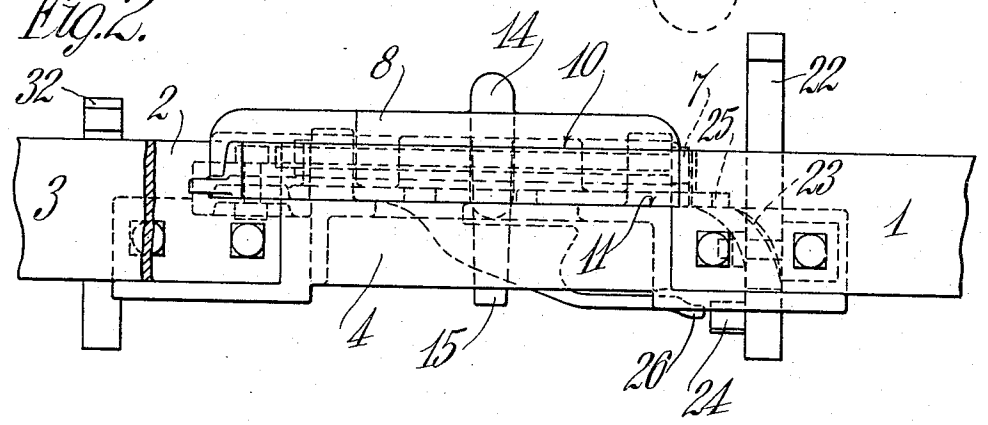


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

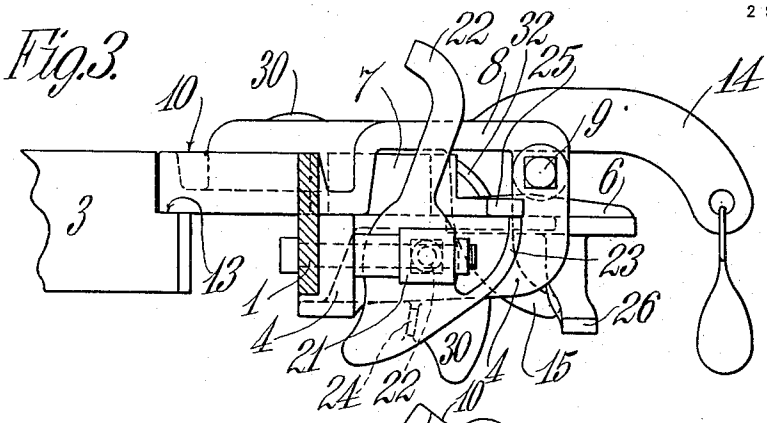


Fig. 4.

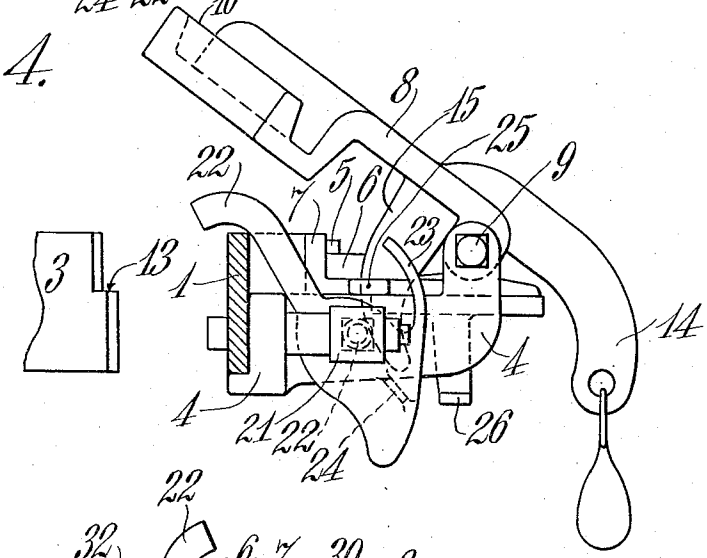
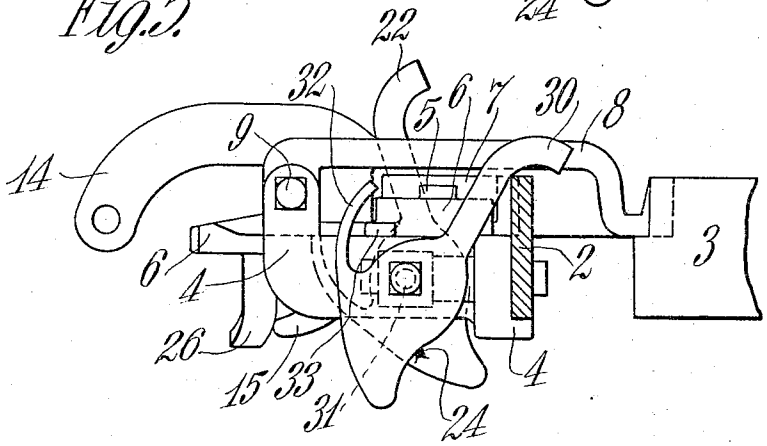


Fig. 5.



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WILLIAM H. NORMINE, OF CHICOPEE FALLS, MASSACHUSETTS, ASSIGNOR TO FISK RUBBER COMPANY, OF CHICOPEE FALLS, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

TROLLEY-TRACK SWITCH DEVICE.

1,171,748. Specification of Letters Patent. Patented Feb. 15, 1916.

Application filed December 20, 1915. Serial No. 67,875.

To all whom it may concern:

Be it known that I, WILLIAM H. NORMINE, a citizen of the United States of America, residing at Chicopee Falls, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Trolley-Track Switch Devices, of which the following is a specification.

This invention relates in general to switches for overhead trolley tracks, and, more particularly, to an improved arrangement of stops automatically operable by movements of the switch to safeguard the trolley system against accidents due to careless and heedless operation. The switch itself is of the general type shown in the patent to Werner No. 571,607, granted November 17, 1896. It embodies essentially two pivoted rail sections with interengageable means between the sections whereby one thereof is actuated by movement of the other. Customarily, the main track is arranged with a gap therein, which may be bridged by one of the rail sections, and a branch track, terminating adjacent the gap, may be connected to the main track by the other rail section. Since one section is operated by movement of the other, when one section is moved part way toward its closed position, the other, necessarily, is moved part way toward its open position. In other words, during the operation of the switch, there is an interval when the gap between the main and branch tracks as well as between the main track and its prolongation is open. Although this interval is short, many accidents are caused in practice by reason of the condition above described. For example, it is the custom for an operator to propel the trolley truck along the overhead rails by hand and, as he approaches a switch, he uses one hand to propel the truck and the other to manipulate the switch. Frequently, the operator fails to correctly time the movements of his two hands with the result that the trolley truck is propelled into the gap in the main track before a switch section is completely moved into position with the result that the truck runs off the rails and frequently drops with its load upon the arm of the operator. Thus, an undesirable opportunity for accident is present which it is the object of this invention to eliminate. No doubt with careful operation and proper coördination of the hands by the operator, accidents of this class would not occur, but, in the speedy operations necessitated by modern business conditions, careful operation is the exception and not the rule. Especially is this true when the type of labor employed in work of this class is considered, which is generally unskilled labor, frequently men who have but a meager understanding of the necessity for care. It is, therefore, desirable to prevent these accidents by such modification of the switch structure as will insure fool-proof operation rather than to rely upon the operator for careful work.

Stops for trolley tracks have been used heretofore but have, so far as I am aware, been applied to the branch track and extension of the main track for the purpose of preventing accidents due to retrograde movements of the trolley truck after it has left the switch. These stops are, thus, used on the exit side of the switch as distinguished from the entrance side thereof adjacent the point of intersection of the branch track with the main rail. It will, therefore, be evident that stops so applied cannot accomplish the desired purpose since they are not encountered until after the switch has been safely passed.

It is an object of this invention to provide in a trolley track switch, having two pivoted rail sections interconnected for cooperative action and arranged so that one thereof is thrown into switching position as the other is withdrawn therefrom, a stop automatically operable from one of said sections whereby the entrance to the switch may be blocked at all times except when one of said sections is in switch forming position.

Another object of the invention is to provide in a device of the class described an automatic stop adjacent the entrance side of the switch arranged to block the track except when one rail section is in switch forming position, and other stops on the branch and main tracks respectively and on the exit

side of the switch, which stops are automatically operated by their respective rail sections to block the track when their respective sections are withdrawn from switching position.

Other objects and advantages will appear in the following description and in the annexed claims.

Referring to the accompanying drawings, wherein a single embodiment of the invention is shown for the purposes of illustration—Figure 1 is a top plan view of the switch showing the invention as applied thereto; Fig. 2 is a front elevation thereof; Fig. 3 is an end elevation looking from the right hand side of Fig. 1; Fig. 4 is a view similar to Fig. 3 with the rail sections shown as moved part way into position; Fig. 5 is an end elevation looking from the left hand side of Fig. 1; and Fig. 6 is a sectional elevational view taken on the line 6—6 of Fig. 1 and looking in the direction of the arrows.

Referring to these drawings, the switch structure, although generally similar to that shown in the above-mentioned patent, will be described in sufficient detail to permit a clear understanding of the invention.

The main rail comprises tracks 1 and 2 and the branch track is indicated at 3. These tracks may be supported by any of the well-known means (not shown) from the ceiling. The tracks 1 and 2 are bolted to the ends of a switch bracket 4 so that a gap is formed between the tracks. Pivotally connected at 5 to bracket 4 is a horizontally slidable switch member 6 which is formed with an upstanding rail section 7 adapted to fit between the rails 1 and 2 to close the gap therebetween. A second switch member 8 arranged above the member 6 is connected to the bracket 4 by a horizontal pivot 9 and has a curved rail section 10 arranged to connect the tracks 1 and 3 which section, when moved to the position shown in Figs. 1 to 3, is supported at one end by a shoulder 13 formed in the end of rail 3. An arm 14 formed integrally with the member 8 provides means for raising and lowering the latter. Also formed on member 8 is a curved depending arm 15 which extends through an opening 16 formed in the switch member 6 (Figs. 1 and 3). When the member 8 is lifted, the arm 15 engages the forward surface 17 of hole 16 and cams the member 6 into position to close the gap between rails 1 and 2. When the switch member 8 is lowered to connect tracks 1 and 3, the arm 15 acts against the rear surface 18 to withdraw the member 6 to the position shown in Fig. 1.

Pivoted at 20 to a block 21 secured to the bracket 4 adjacent the entrance side of the switch is a pawl 22 which is arranged by its weight to drop downwardly upon rail 1, as shown in Fig. 4. This pawl has a curved upstanding arm 23 (Figs. 1, 3, and 5) and an outstanding wing 24 (Fig. 2) formed thereon which are adapted to be engaged by arms 25 and 26, respectively. The latter are formed on the horizontally movable switch member 6 and extend laterally therefrom, as shown in Fig. 1. With the switch member 8 in the position shown in Fig. 1, the pawl 22 is held away from track 1 as shown in Fig. 3 by the engagement of parts 23 and 25. Obviously, as soon as the member 8 is raised a slight distance, pawl 22 will drop by gravity into the position shown in Fig. 4, wherein the rail 1 is blocked. Continued upward movement of member 8 will, however, move the switch member 6 into position to connect the tracks 1 and 2 and, just prior to this positioning of member 6, the arm 26 will engage wing 24 and raise the pawl 22 away from the track. When the member 8 is lowered, the arm 26 withdraws from wing 24 and allows the pawl 22 to again drop on the rail. Immediately before the member 8 drops into the position shown in Fig. 3, the arm 25 engages arm 23, raises the pawl 22, and finally holds it in the position shown in Fig. 3.

To block the track 2 when the rail section 7 is not in position to connect it to track 1, a pawl 30 is employed (see Fig. 5). This pawl is pivoted at 31 in a like manner to pawl 22, and its construction is identical therewith except the wing 24 is omitted. The curved arm 32 of pawl 30 is operated by an arm 33 formed on switch member 6 in a manner analogous to that already described. Thus, track 2 may be blocked until rail section 7 is thrown into position to connect tracks 1 and 2. The stop for the branch track 3 is, however, of a somewhat different type and is shown in Figs. 1 and 6 but has not been illustrated in the other figures. The stop is a substantially U-shaped member which has spaced wings 40 on either side of track 3 and a connecting portion 41 for the wings which lies below the track. The stop is pivoted at 42 to rail 3, and, when switch member 8 is raised, it assumes the dotted line position shown in Fig. 6 by reason of the weighted portion 41. Thus, track 3 may be blocked by wings 40 which cannot be turned in a counterclockwise direction on account of the abutment of a surface 43 with the underside of track 3. When, however, the member 8 is lowered, a lug 44 thereon engages the inclined surface 45 on the inner wing 40 and cams the latter downwardly into the position shown by full lines in Fig. 6.

In operation, with the parts in the position shown in Figs. 1 to 3, as the operator

moves his trolley truck along the track 1 and wishes to continue along the straight track, he pulls the arm 14. If, carelessly, he should continue to propel the truck before the switch rail 7 had been moved into position, the truck will be stopped by pawl 22 which, as described, always lies on track 1 as shown in Fig. 4 during the interval of operation of the switch. From Fig. 4, it will be clearly apparent that, if the pawl 22 were not used, the truck could run off rail 1 as the rail 2 has not been moved into position and as rail 10 is lifted sufficiently to permit the passage of the truck wheels thereinunder. If the truck leaves rail 1 in this manner, it will drop upon the surface 11 of bracket 4 and very likely roll from this surface and drop either upon the arm of the operator or directly to the floor with sufficient damage in either case. The stops 30 and 40 act in an obvious manner to prevent the truck running off the track from retrograde movements. Thus, an automatically operable stop has been provided for a trolley track switch, which is arranged to block the entrance side of the switch when either switch rail is improperly positioned.

It is recognized that various modifications may be made in the particular embodiment described for illustrative purposes without departing from the scope of the invention which is defined by the annexed claims rather than the foregoing detailed description.

What I claim is:—

1. The combination with an interrupted main line track and a branch line track, of switch members one thereof arranged to connect the interrupted main line sections and the other to connect the main line with the branch track, said members arranged so that an actuation of one causes a movement of the other, a device pivoted to the main line track adjacent the common intersection of both said members therewith, said device arranged to drop on said track by gravity and means on one of said members to raise and hold the device away from said track when either of said members is positioned to connect said tracks.

2. The combination with an interrupted main line track and a branch track of switch members one thereof arranged to connect the interrupted main track and the other to connect the main line with the branch track, said members arranged so that as one member is thrown into connecting position the other is withdrawn therefrom, a stop pivoted to the main track on the exit side of the switch, and arranged normally to block the track, means on one of said members operable to retract said stop when the member is positioned to connect the interrupted main track, a second stop pivoted to the branch track and arranged normally to block the latter, means on the other of said members to retract the stop when the member is positioned to connect the main and branch tracks, and a protective device pivoted to the main track adjacent the common intersection of both said members therewith and arranged to drop by gravity upon said track, two actuating members formed on said device, and a finger for each of said actuating members formed on one of said switch members, said fingers arranged alternately to engage its respective actuating member whereby, when one switch member is withdrawn from connecting position, the said device may drop into locking position upon the main track and remain in such position until the other switch member is thrown into connecting position.

3. A switch for trolley tracks, comprising in combination, a frame, two pivoted switch members adapted to connect an interrupted main line track and the main line track to a branch track respectively, said members arranged so that as one thereof is thrown into connecting position, the other is withdrawn therefrom, a stop device pivoted to the frame adjacent the common intersection of said members with the main track, and arranged to drop by gravity into blocking position on the main track, a pair of actuating arms formed on said device, and fingers formed on one of said switch members and engageable with said arms, all constructed and arranged so that one of said fingers engages its respective arm on said device to hold the latter away from the track when one switch member is in connecting position and the other finger engages the other arm to raise the device when the other member is in connecting position, whereby during the transition of said members the main track may be blocked.

4. A switch for trolley tracks, comprising, in combination, a frame, two switch members pivoted thereto and adapted respectively to connect interrupted main track sections and to connect a main track to a branch track, said members arranged so that as one thereof is moved into position to connect its tracks the other is withdrawn from connecting position, a pawl pivoted to the frame adjacent the entrance side of said switch members and arranged to drop by gravity upon the main track to block the latter, two actuating arms on said pawl, a finger for each arm formed on one of said switch members, one finger arranged when one switch member is in connecting position to hold the pawl away from the track and the other finger arranged when the other member is in connecting position to hold the pawl away from the track, said fingers arranged to alternately engage their respective arms, whereby as one member is withdrawn from connecting position the

pawl may drop on the track and remain so positioned until the other member is thrown into connecting position.

5. The combination with an interrupted main line track, of a branch line track, switch members arranged respectively to connect the interrupted main line track and the latter to the branch line track, a stop adjacent the intersection of the main and branch line tracks and arranged when in one position to block the former, and mechanism operable by movement of either said members to move the stop to blocking position during the interval of operation of either said members.

WILLIAM H. NORMINE.

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