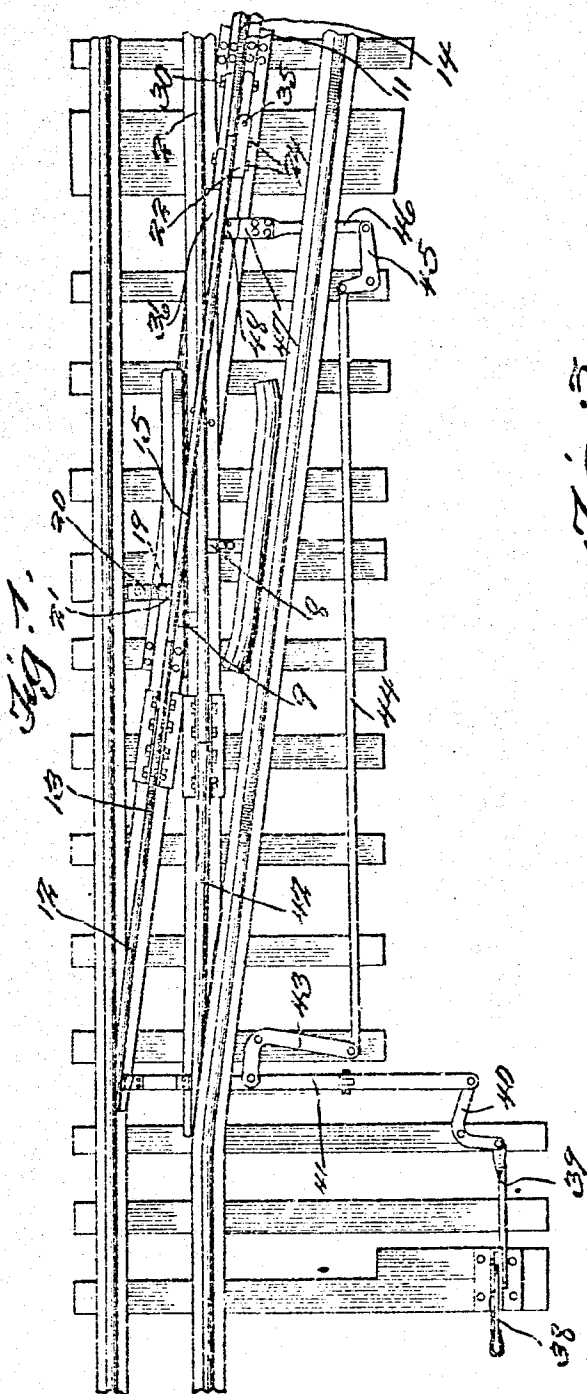


956,992.

Patented May 3, 1910.

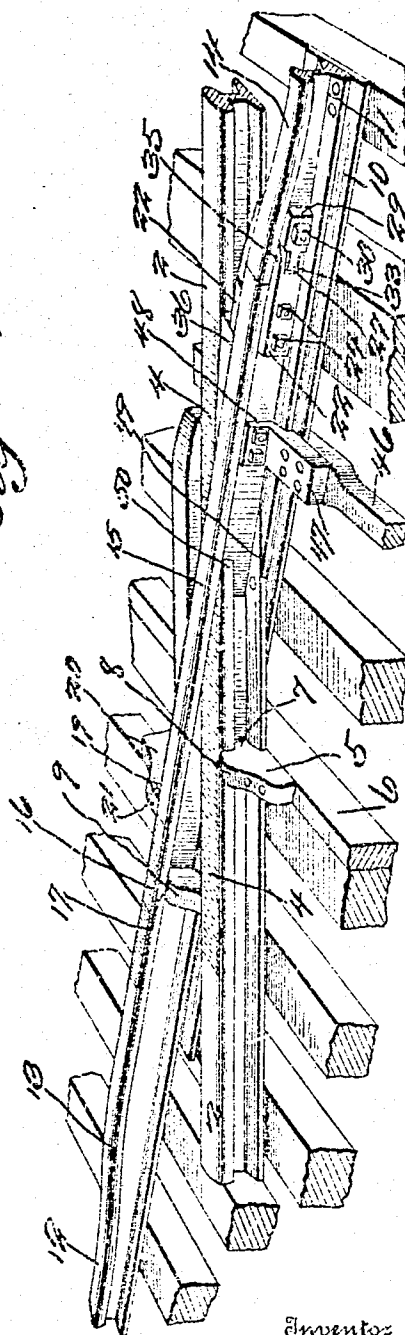
2 SHEETS—SHEET 1.



Witnesses

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m. a. Bond.

Fig. 5.



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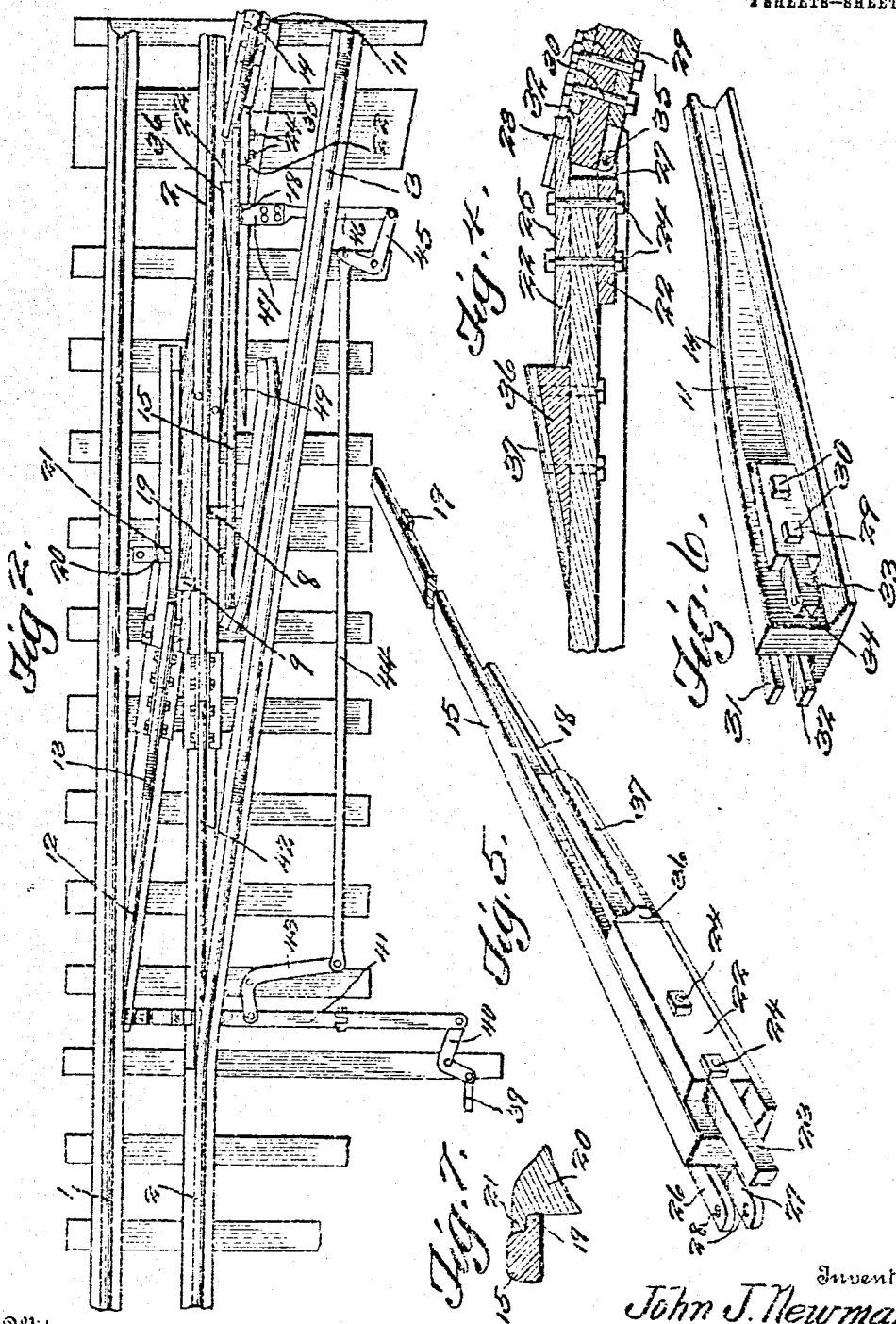
FROGLASS SWITCH.

APPLICATION FILED SEPT. 23, 1909.

956,992.

Patented May 3, 1910.

2 SHEETS—SHEET 2.



Witnesses

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US PATENT OFFICE.

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FROGLESS SWITCH.

956,992.

Specification of Letters Patent.

Patented May 3, 1910.

Application filed September 23, 1909. Serial No. 519,217.

To all whom it may concern:

Be it known that I, JOHN J. NEWMAN, a citizen of the United States of America, and resident of Rockwood, in the county of Somerset and State of Pennsylvania, have invented certain new and useful Improvements in Frogless Switches, of which the following is a specification.

This invention relates to certain new and useful improvements in railway switches, and more particularly to that class of railway switches known as "frogless switches."

The present invention has for its objects among others to provide an improved device of this general character which shall obviate the objections to prior constructions of this nature, and to provide means whereby the switch tongue shall be held down to its proper place when in operative position, and also to provide a switch tongue which shall have no joint, projection bolt-head or the like upon its upper surface. The rail and the switch tongue are integral with each other.

I provide a wedge carried by the switch tongue to prevent the rail from being shoved over by pressure thereon. The top surface of the switch tongue and the top surface of the stub rail are preferably case-hardened at their adjacent ends; so also is the upper face of the main rail over which the switch tongue moves to increase the life of these parts where the greatest wear comes.

I provide a plate to connect the lead rail with the side track inner rail so as to make a continuous rail and provide the greatest amount of rigidity where such is required.

I provide a novel form of joint between the switch tongue and the adjacent rail and also provide braces to insure that the switch tongue shall be thrown to its proper place even if it has become sprung from any cause.

The switch tongue is raised about two and three-quarters of an inch, the ends of the adjacent rails being gradually raised to meet this elevation, so as to insure against breakage and allow of the flange of the wheel being at all times elevated from and out of contact with the tread of the main rail at this point. The outside switch rail is raised correspondingly.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be specifically defined by the appended claims.

The invention, in its preferred form, is

clearly illustrated in the accompanying drawings, which, with the numerals of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a top plan with the switch set for the siding. Fig. 2 is a similar view with the parts in their other position. Fig. 3 is a perspective view, on an enlarged scale, showing the switch tongue and adjacent parts. Fig. 4 is a horizontal longitudinal section through the parts at the joint, showing also the wedge on the switch tongue. Fig. 5 is a perspective view of the switch tongue. Fig. 6 is a perspective view of the cooperating parts of the joint. Fig. 7 is a detail showing the means for holding down the end of the switch tongue.

Like numerals of reference indicate like parts throughout the several views.

Referring to the drawings, 1 and 2 designate the main track rails and 3 the outside or stationary siding rail, these being of usual construction, except as hereinafter specified. The main track rail 2 is unbraced or continuous at the point of crossing, and for a portion of its length, for a greater or less distance at the point where the switch rail moves over the same, has its upper or tread surface case hardened, as shown at 4 in Fig. 3, so as to increase the rise thereof and enable it to better sustain the wear to which it is subjected. The rails are suitably braced and secured to the ties in any of the well-known ways.

5 is a brace located at a point somewhat near the free end of the switch tongue, being secured to a tie or to an additional or supplemental supporting member 6, the said brace having a lip or tongue portion 7 extending inwardly between the base and tread of the rail, as seen clearly in Fig. 3, so as to better brace the rail and securely hold it against displacement. The upper face of this brace is rounded, as seen at 8, for contact therewith of the under face of the switch tongue, as the latter is moved so as to insure its being thrown to proper position even should the switch tongue become sprung from any cause. 9 is an additional riser brace having rounded upper surface for the same purpose, this latter brace being disposed near the free end of the switch tongue, as seen clearly in Fig. 3. These braces 5 and 9 have their rounded portions above the tread of the rail, as seen clearly in Fig. 3, so as to insure the switch tongue be-

ing thrown to proper position at all times regardless of whether it be sprung or not.

10 is a metallic plate of requisite thickness to give the required rigidity. It is firmly secured in position and extends diagonally beneath the main track rail 2 and connects the lead rail with the inner rail 11 of the side track, extending beneath the inner main track rail 2, so as to make practically a continuous rail and a continuous unbroken support for the parts between the lead rail and the inner side track rail. The ends of the lead rail 12 and of the inner side track rail 11 are provided with a gradual rise or elevation, as seen at 13 and 14 respectively, the switch tongue 15 being elevated above the tread of the main track rail 2 over which it moves, about $2\frac{3}{4}$ inches so as to insure against breakage and allow of the passage of the flange of the wheel without contact with the main track rail 2 at the point of crossing the same. The top surface of the free end of the switch tongue is case hardened, as shown at 16 in Fig. 3, and the adjacent end of the lead rail 12 is correspondingly case hardened, as shown at 17, in said Fig. 3, for the same purpose as the case hardening of the top surface of the main track rail 2 as above described.

The switch tongue 15 and rail portion 18 are integral and the switch tongue near its free end is provided with a lateral projection 19 below the upper surface thereof, as seen clearly in Figs. 5 and 7, while 20 is a brace having an overlapping flange 21 beneath which the projection 19 of the switch tongue is adapted to engage when the switch tongue is moved into its operative position, as seen in Figs. 3 and 7. This serves to prevent upward rising of the tongue after the latter has been moved into its operative position over the main track rail 2.

The switch tongue is pivotally connected with the adjacent end of the rail 11 and, while this connection may be of any suitable form of construction, I have shown in the present instance what I consider the preferable means of forming this connection. It comprises a plate 22 securely bolted to one side of the rail portion of the switch tongue, said plate having a central longitudinal projecting portion 23 which extends beyond the end of the rail portion, as seen clearly in Fig. 5. Upon the opposite side of this end portion of the switch tongue and secured preferably by the same bolts 24 that secure the plate 22 in position, is a plate 25 having its portion extended beyond the end of the switch tongue rail bifurcated to form the arms 26 and 27, as seen best in Fig. 5. These arms are provided near their free ends with the openings 28 for a purpose which will soon be described.

29 is a block or plate secured to the rail 11 by suitable means as bolts 30, while upon the

opposite side are the upper and lower arms 31 and 32 which project beyond the end of the rail, as seen best in Fig. 6, the same being secured to the end of the rail by the bolts 30, as seen clearly in Fig. 4. The plate 29 has a central longitudinal extension 33 having a vertical opening 34, and when the parts are assembled in juxtaposed position, a pivot bolt 35 is passed vertically through the openings 28 and 34 of the arms 26 and 27 and the extension 33 respectively, the switch tongue turning upon said pivot bolt. When the tongue is thrown into operative position, the interengaging parts 23, 31 and 32, and 33 and 26 and 27 form an exceedingly strong and efficient means of connection between the parts and one that serves to prevent undue lateral strain or breakage of the parts.

36 is a wedge secured to the face of the switch tongue rail adjacent the inner rail 2 of the main track, and this wedge is provided with the central longitudinal rib 37 which is adapted to engage the space between the base and tread of the rail and to contact with the web thereof. When the switch tongue is in operative position, this wedge serves to tightly fill the space between the converging ends or portions of the side tongue and adjacent rail and serves further to brace the switch tongue and prevent its being pushed to an abnormal position in use.

The switch tongue and the movable switch rails may be moved in any of the conventional ways, but, as this forms no part of the present invention, a detail description thereof does not seem necessary. In the present instance, I have shown an operating lever 38 connected by rod 39 with the bell crank lever 40, which, in turn, actuates the transverse member 41 connected with the movable point rail 42, and operatively connected with the member 41 is the bell crank lever 43 which, in turn, is connected by the rod 44 with the bell crank lever 45 connected with and designed to operate the transverse sliding member 46, to which is firmly secured a brace 47 having the vertical flange 48 secured to the switch tongue rail adjacent its pivot, so as to give the requisite strength at this point.

The parts not herein specifically mentioned are, it is to be understood, of any of the conventional forms, or the improvements as hereinafter set forth in the claims may be used in conjunction with any well-known or approved forms of said parts. The outside switch rail should be raised to correspond to the elevation of the switch tongue at the point mentioned, for obvious reasons.

It is to be noted that the switch point moves over the tread of the main track rail 2, which is continuous at the point of crossing and which is firmly secured to the strengthening base plate 10. The base and

web of the rail portion of the switch tongue are beveled and tapered, as seen at 49 and 50 respectively.

From the above, it will be seen that I have devised a very simple, yet efficient, strong, durable and reliable frogless switch, and, while the structural embodiment of the invention as herein disclosed is what I at the present time consider preferable, it is evident that the same is subject to changes, variations and modifications in the proportions, relative arrangement and details, and I, therefore, do not wish to be restricted to the particular construction herein disclosed, but reserve the right to make such changes, variations and modifications as come properly within the scope of the protection prayed.

What is claimed as new is:—

1. In a railway switch, the main track rail, a switch tongue, a siding rail, and a plate extending beneath the two and secured to the same to give rigidity thereto, said plate extending diagonally and beyond the joint between the switch tongue and the inner side track rail, said switch tongue being provided with a vertical faced wedge extended laterally beyond the edge of the tongue.

2. In a railway switch, the main track rail, the siding rail, a switch tongue, a rail integral therewith, and a plate extending beneath the same and disposed diagonally with one end beyond the joint between the switch tongue and the inner side track rail, said switch tongue being provided with a vertical faced wedge extended laterally beyond the edge of the tongue.

3. In a railway switch, a switch tongue provided with a vertical faced wedge extended laterally beyond the edge of the tongue to engage the adjacent rail to prevent lateral movement of the switch tongue.

4. In a railway switch, a switch tongue and rail in one piece and a vertical faced wedge carried by the tongue and projected laterally beyond the side thereof to engage the adjacent rail to prevent lateral movement of the switch tongue.

5. In a railway switch, a switch tongue and rail in one piece with unbroken upper surface, the base and web of the rail portion thereof being beveled and tapered, and a wedge carried by the side of said tongue and projected laterally beyond the edge thereof.

6. In a railway switch, a switch tongue and rail in one piece with unbroken upper surface, the base and web of the rail portion thereof being beveled and tapered, and a wedge carried by the side of said tongue and projected laterally beyond the edge thereof, the upper surface of the switch tongue adjacent its free end being case hardened.

7. In a railway switch, a switch tongue having a lateral lip, and a brace having a

lateral portion beneath which said lip engages to prevent rising of the switch tongue when in operative position, the engaging surfaces between said lip and lateral portion being parallel and in horizontal planes.

8. In a railway switch, the combination with the switch tongue, of a brace having a rounded portion extended above the tread of the rail for engagement by the switch tongue to insure the latter being thrown to position.

9. In a railway switch, a switch tongue and rail in one integral piece with unbroken upper surface from its joint to its free end, and a vertical faced wedge carried by the side of said tongue and projecting laterally beyond the side of said tongue.

10. In a railway switch, a switch tongue and rail in one integral piece with unbroken upper surface from its joint to its free end, and a wedge carried by the side of said tongue and projecting laterally beyond the side of said tongue, combined with an outside switch rail, said switch rail and switch tongue both being elevated to clear the flange of the wheel from the main rail.

11. In a railway switch, a switch tongue and rail in one integral piece, a wedge on the side of the tongue projected laterally beyond the side thereof, and a laterally projecting lip adjacent the free end of the tongue.

12. In a railway switch, a switch tongue and rail in one integral piece, a wedge on the side of the tongue projected laterally beyond the side thereof, and a laterally projecting lip adjacent the free end of the tongue and disposed at a distance from the upper face thereof.

13. In a railway switch, a switch tongue and rail in one integral piece with unbroken upper surface from its joint to its free end, and a vertical faced wedge carried by the side of said tongue and projecting laterally beyond the side of said tongue, combined with an outside switch rail, said switch rail and switch tongue both being elevated to clear the flange of the wheel from the main rail, and joint members extended beyond the end of said tongue.

14. In a railway switch, a switch tongue and rail in one integral piece, a wedge on the side of the tongue projected laterally beyond the side thereof, a laterally projecting lip adjacent the free end of the tongue, and joint members extended beyond the end of said tongue.

15. In a railway switch, a joint member comprising interengaging members on one side of the switch tongue with a pivot connecting the same at their overlapped points, and interengaging portions upon the opposite side of the tongue, the latter being free and disconnected from each other and separable as the tongue is moved on its pivot.

16. In a railway switch, a rail having
upon one side a joint member within the
length of the rail, spaced members on the op-
posite side of the rail extending beyond the
5 end of the rail and a switch tongue having
coöperating separated joint members upon
opposite sides and extended beyond the end
of said tongue.

17. In a railway switch, a rail having
10 upon one side a joint member within the
length of the rail, spaced members on the
opposite side of the rail extending beyond
the end of the rail, a switch tongue having
coöperating separated joint members upon
15 opposite sides and extended beyond the end
of said tongue, and a wedge on the side of

said tongue projected beyond the side face
thereof.

18. In a railway switch, a switch tongue
and rail in one piece, the base and web of the 20
rail portion thereof being beveled and tapered,
a lateral projection adjacent the free
end of the tongue, and a wedge on the side
of the tongue between said projection and its
other end and extended laterally beyond the 25
side wall of the tongue.

Signed by me at Somerset this 22 day of
September 1909.

JOHN J. NEWMAN.

Witnesses:

FRANK A. HOLBERT,
CHAS. H. EALY.