J. S. WILLIAMS.

RAILROAD SWITCH.

No. 183,437. Patented Oct. 17, 1876.

Fig. 1.

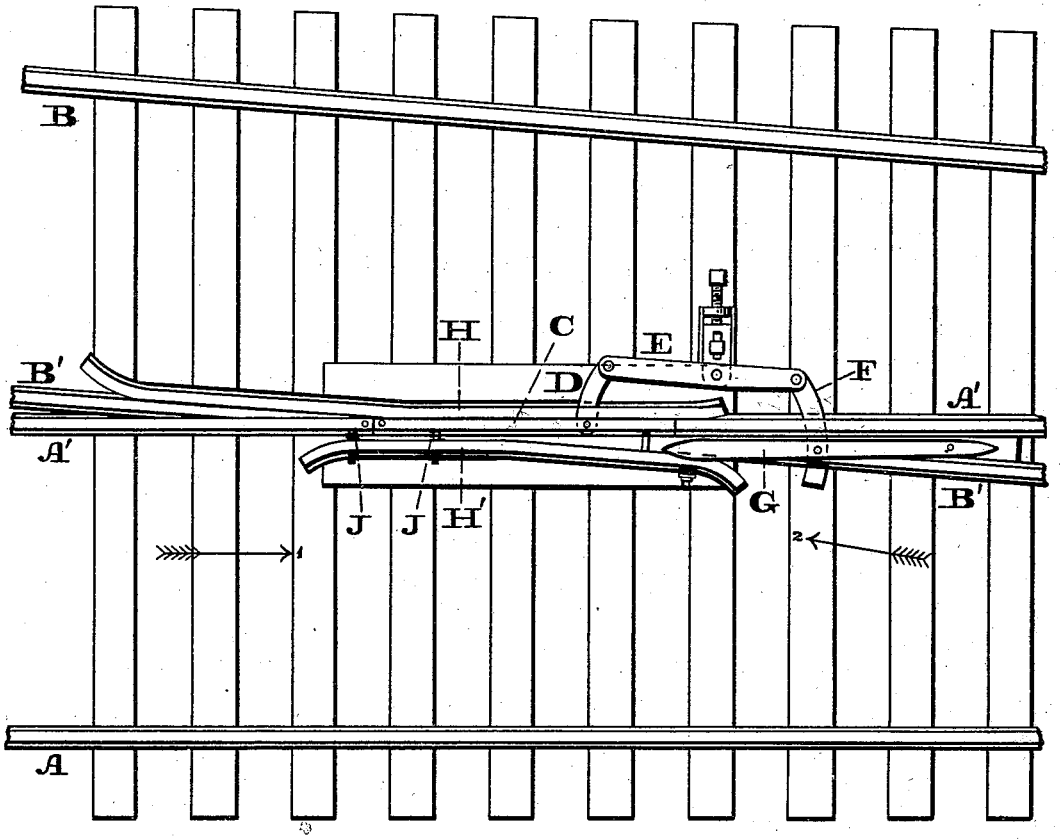


Fig. 2.

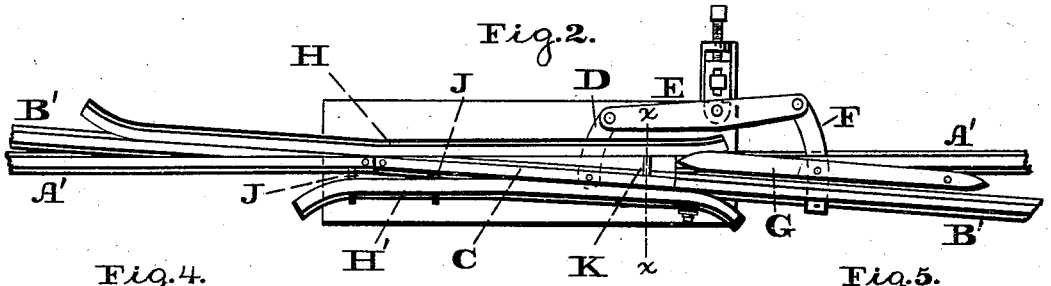


Fig. 4.

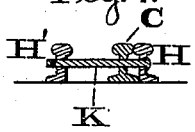


Fig. 3.

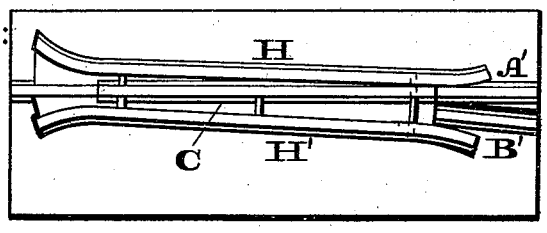
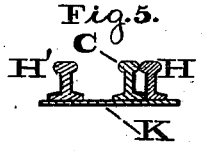


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOSEPH S. WILLIAMS, OF RIVERTON, NEW JERSEY.

IMPROVEMENT IN RAILROAD-SWITCHES.

Specification forming part of Letters Patent No. **183,437**, dated October 17, 1876; application filed August 17, 1876.

To all whom it may concern:

Be it known that I, JOSEPH S. WILLIAMS, of Riverton, in the county of Burlington and State of New Jersey, have invented a new and useful Improvement in Railroad-Switches; and I do hereby declare the following to be a clear and exact description of the nature thereof, sufficient to enable others skilled in the art to which my invention appertains to fully understand, make, and use the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figures 1 and 2 are plan views of the switch embodying my invention. Fig. 3 is a plan view of a modification. Fig. 4 is a transverse section in line *x x*, Fig. 2. Fig. 5 is a similar view of a modification.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of a crossing formed of a single length, having its axis at the butt-end at the point of union of the rails of the main and side tracks, and positively operative in either direction over the main and side tracks by the action of the car-wheels upon a connection or connections at one or both ends of the switch. It also consists of a switch-operating lever, automatically forcing the shifting rail or crossing either to the main line or side tracks. It further consists in adjusting the throw of the switch-operating lever. It also consists of plates or rails arranged adjacent to the open joints of the switch-rail and the main or side tracks, so as to break joints and afford bearings for the wheels, and yielding when desired, so that obstructions that may exist between said plates or rails and the switch-rail will not prevent the proper operation of the switch-rail, the plates or rails also forming throats to allow the flanges of the wheels to pass between the said plates and the rails. It also consists in protecting an open joint at the butt of a pivoted switch-rail by an automatically-adjustable abutment or abutments. It also consists of a spring or springs common to the movable rail and the abutments at the butt-end of the joint thereof, for causing said rail and abutments to assume their normal positions, and thus keep the main line intact. It further consists of a switch-rail held to its bed by bolts or plates passing through or sustained by rails or plates overlapping the joints of the switch-rail.

Referring to the drawings, A A′ represent the rails of the main track, and B B′ the rails of the side track. C represents a movable rail or crossing to and from the main and side tracks, and it is jointed at its butt-end at the place of union of the inner rails of the main and side tracks, and its outer or head end is adapted to form continuations of the opposite portions of the inner rails of the main and side tracks when said rail C is properly shifted. To the rail C there is connected a rod or bar, D, which is pivoted to one end of a swinging lever, E, to whose other end is pivoted a rod or bar, F, jointed to a shifting-lever, G, which extends in the direction of the length of the tracks, and is pivoted at one end to a proper bearing near the ends of the inner rails of the main and side tracks adjacent to the lever E, and in such a manner that the other end is adjacent to the head end of the switch-rail C, the width of the lever G being such that a space will be left between the side of the lever and the side of either of the adjacent rails A′ B′ relatively to the shifted position of the said lever. The lever E will be connected to a base by a sliding connection, or slotted transversely, so that provision is made for adjusting the lever relatively to the throw of the movable rail C, in order that the latter will properly meet the ends of the inner rails of the main and side tracks.

H H′ represent plates or rails, which are connected together and arranged on opposite sides of the open joints of the switch-rail and main or side tracks at the head and butt of the switch, and they lap the ends of said rail and tracks, so as to break the joints thereof, and springs J bear against the plates or rails H and the movable rail C, for purposes to be explained. Each plate or rail H or H′ may be continuous from the head and butt ends of the switch-rail C, or each end of the switch-rail may have plates or rails H H′ independent of each other.

K represents a bolt or plate, which is connected to or sustained by the plates or rails H H′ at the head end of the switch-rail. An

opening is made in the switch-rail for the passage of the bolt or plate K, which permits free motion of the rail, but holds it properly to its bed.

The operation is as follows: When the cars are running on the main track the parts are not moved, but retain their normal positions, as shown in Fig. 1. When the cars run in the direction of arrow 1 the flanges of the wheels of one side enter the throat between the plate H′ and adjacent faces of the rail A′ and rail C, thus preventing movement of said plate H′; and as the latter is connected to the plate H and the lateral pressure or bearing of the wheel is against the plate H, it is evident that the joint of the rail C is well protected. When the flanges of the wheels reach the head of the switch the lateral pressure or bearing of the wheel is against the plate H, which is connected to the plate H′, which bears against the rail B′. At the same time the pressure or bearing is against the rod or bar D, which is pivoted to one side of the swinging lever E, to whose other end is pivoted the rod or bar F, jointed to the shifting-lever G. The flanges of the wheels enter the space or throat between the lever G and rail A′, so that said lever G will be held and rendered immovable; consequently the lever E and the head end of the rail C will be rigidly held, thus protecting the rail or crossing C. The same results at the head and butt ends of the switch occur when the cars are running in the opposite direction on the main track.

When the cars are running on the side track in the direction of arrow 2, the flanges of the wheels strike the lever G and shift it to the right, thus imparting motion to the lever E, and shifting the rail C from the main rail A′ to the side rail B′, whereby the cars will pass over the rail C, and thus continue on the side track. It will be observed that the flanges enter the throat between the lever G and the rail B′, and hold said lever; and as the swinging lever E is thus rendered immovable, and the rail C bears against the plate H′, which is connected to the plate H, which overlaps the end of the main rail A′, it is evident that the rail C will be rigidly held and the crossing protected. The flanges of the wheel now reach the butt-end of the switch, and enter the throat between the plate H and the adjacent rails, said plate H yielding to form the throat, and carrying the plate H′ against the main rail A′; and as the plate H is attached to the plate H′, and the flanges of the wheels hold said plate H, it is evident that the butt-end of the switch-rail C will be securely held and the crossing protected. It is evident that the same results at the head and butt ends of the switch occur when the cars are running on the side track in the direction opposite to that shown by arrow 2. As soon as the flanges clear the movable rail C the actions of the springs J restore the rail C and plates H H′ to their normal position, as shown in Fig. 1.

A spring or springs, J′, is fitted to the plate H′ at the head end of the switch, in such a manner that the said plate H′ will occupy its proper position; but in the event that an obstruction is placed or falls between the head end of the rail C and the adjacent portion of the rail H the pressure or bearing of the wheels on the rail C will force said rail C to meet the main rail A′, the spring J′ yielding to allow the plate H to slide or move to a sufficient extent, and permit the rail C to reach its position regardless of the obstruction.

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

1. The crossing C, consisting of a single length, having its axis at the butt-end, at the point of union of the rails of the main and side tracks, and positively operative in either direction over the main and side tracks by the action of the car-wheels upon a connection or connections at one or both ends of the switch, substantially as and for the purpose set forth.

2. The switch lever or guard G, automatically forcing the shifting rail or crossing either to the main line or side track, substantially as and for the purpose set forth.

3. The swinging lever E of the shifting-lever G, and movable rail C, rendered adjustable relatively to the throw of said rail C, substantially as and for the purpose set forth.

4. The plates or rails H H′, lapping the joints of the switch-rail C and the rails A′ B′ of the main and side tracks, and connected, to leave throats, substantially as and for the purpose set forth.

5. The plates or rails H H′, automatically adjustable, substantially as and for the purpose set forth.

6. The springs J, common to the switch-rail C and plates or rails H H′, substantially as and for the purpose set forth.

7. The bolt or plate K, in combination with the plates or rails H H′ and the switch-rail C, substantially as and for the purpose set forth.

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