2 Sheets—Sheet 1.

J. S. WILLIAMS.

RAILROAD SWITCH.

No. 183,439. Patented Oct. 17, 1876.

Fig. 1.

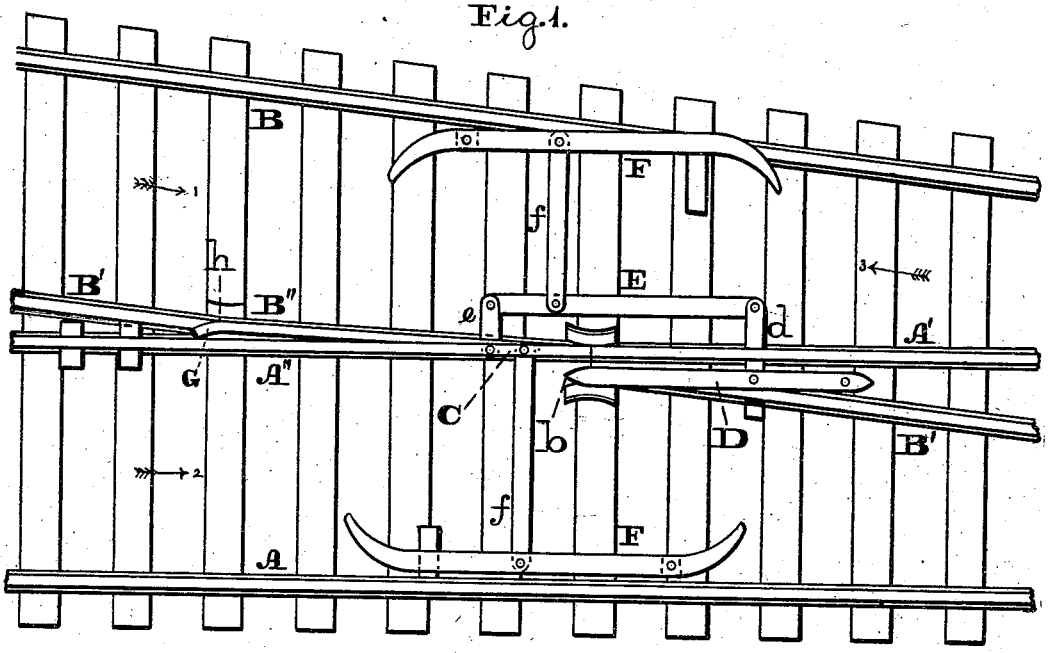


Fig. 2.

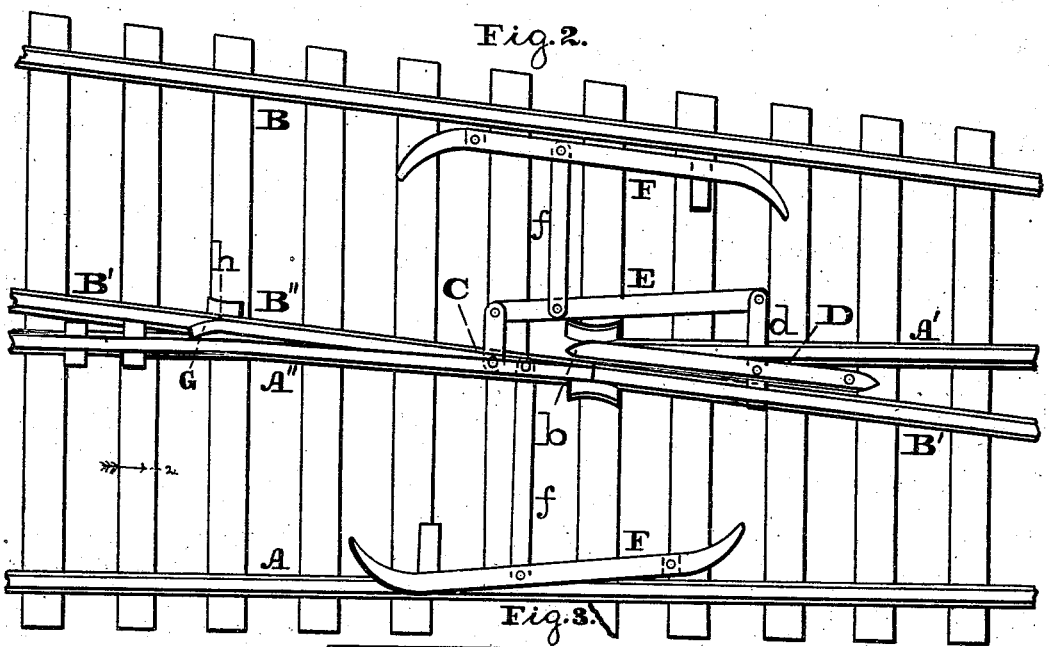


Fig. 3.

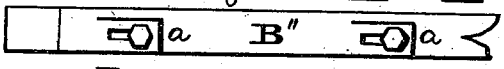
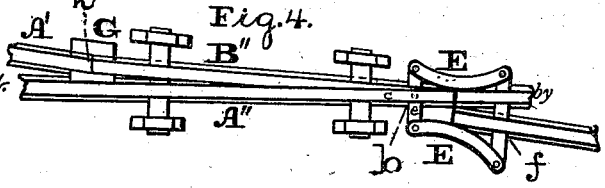


Fig. 4.



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2 Sheets—Sheet 2.

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RAILROAD SWITCH.

No. 183,439. Patented Oct. 17, 1876.

Fig. 5.

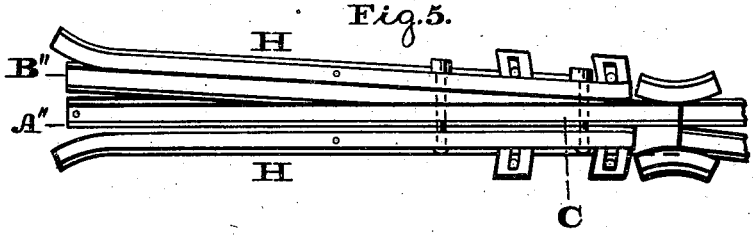


Fig. 6.

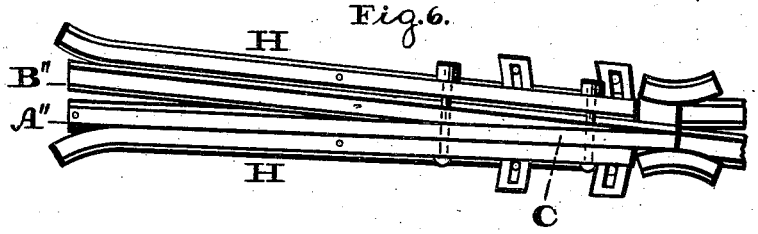


Fig. 7.

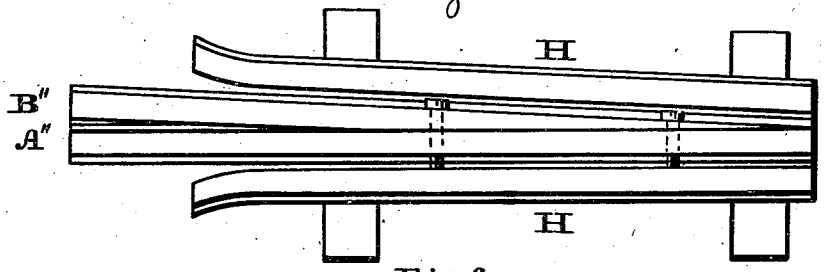


Fig. 8.

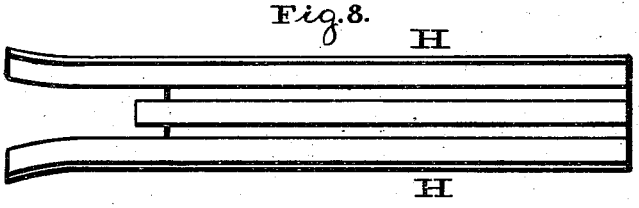
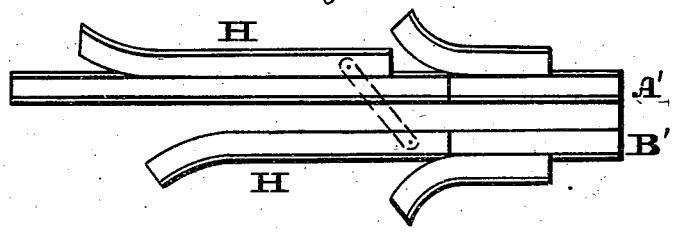


Fig. 9.



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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. **183,439**, dated October 17, 1876; application filed August 16, 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-Crossings; 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, 2, 4, 5, 6, 7, 8, 9 are face views of the casing embodying my invention. Fig. 3 is a side elevation of a portion thereof.

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

My invention consists of a frogless crossing formed of two connected lengths and having its axis at the butt-end, said crossing forming a solid rail-bearing with either of the rails of the main and side tracks, and positively and automatically operative therewith by the action of the car-wheels in either direction without shifting any rail outside of the gage of the main line.

It also consists of a plate or rail to take the bearing of the wheels at the opening joints of the switch-rail.

It also consists of a switch-rail of the main line, or in connection with the side-line rails, with plates or rails nearly parallel with the sides of the rail or rails, or slightly curved, so as to cover the head of the rail of the main or side track, and cause the flange of the wheels to pass between the main and side track rails at the head of the switch, besides defining the course of the wheels approaching the head of the switch.

Referring to the drawings, A A′ represent the rails of the main track, and B B′ the rails of the side track. C represents the movable crossing to and from the main and side tracks, which consists of a length, A″, of the rail A′ of the main track, and of the rail B″ of the side track, connected together and having common lateral or transverse motions, so as to form communication with either the main track and side track at the head end of the crossing. The length A″ of the rail A′ is held securely at one end, so that the inherent elasticity of said rail is rendered available for permitting the rail to be moved in one direction, and afterward return to its normal position. The lengths A″ B″ are fitted together by a sliding connection, *a*, as more clearly shown in the side view, Fig. 3, whereby the crossing of which said rails is composed will move with ease, and without severity or strain of the lengths against each other. D represents a longitudinally-extending elevated plate, which is pivoted at one end to a proper bearing between the lengths A′ B′, so that its other end, *b*, will extend over or overlap the rails at the head end of the crossing, and said end *b* is pointed or tapering, curved or angular, as shown in Figs. 1 and 2. To the plate D there is pivoted a bar, *d*, to which is pivoted a swinging arm or lever, E, which, by means of a bar, *e*, is connected to the movable crossing C, whereby there is communication between said crossing C and the plate D. To the lever E and crossing C there are pivoted bars *f*, whose outer ends are pivoted to guards F, which are pivoted adjacent to the rails A and B, respectively.

Referring to Fig. 4, E E represent two rocking levers, which are arranged on opposite sides of the joint at the head end of the crossing, and the ends of said levers have pivoted to them bars *e f*. The bar *e* has pivoted to it the crossing C, and the bar *f* passes through and is guided by the rails A′ B′. *h* represents the joint between the rail B″ of the crossing and the adjacent length B′. A plate, G, is fitted to the two rails at said joint, so that as said joint opens, due to the sliding portion of the rail B″ of the crossing C, the plate G will take the bearing of the wheels of the cars and keep the rail in proper position.

Referring to Figs. 1 and 2, *h* represents a joint between the rails B″ of the crossing C, and the adjacent portion of the side rail B′, and said joint is diagonal or curved, with a lapping or bearing portion, G, so that the sliding motion of the rail B″ is permitted, and there is no strain at the connection of the two rails of the crossing, said portion G taking the bearing of the wheels of the cars and keeping the rail in proper position. H represents plates or rails which are located adjacent to,

and extend nearly parallel with, the sides of the main rail and side rail; or said plates or rails may be slightly curved, and they serve to cover the head of the rail of the main or side track. The plates or rails also cause the flange of the wheels to pass between the main and side track rail at the head of the switch. The plates or rails also form automatically-operative guards, for defining the course of the wheels approaching the head of the switch.

When the cars are running in the direction of arrow 1 on the side track, the wheels press against the crossing C, so that it is moved and registers with the rail B′, as shown in Fig. 2, whereby the cars pass the crossing. As soon as the cars clear the crossing, the latter, owing to its spring, returns to its first position, leaving the main line intact.

Should the cars run on the main track in the direction of arrow 2, and for some reason the parts are in position shown in Fig. 2, the wheels of the cars press against the crossing, so as to force it to its normal position, and cause it to register with the main-line track.

Should the cars run in the opposite direction, or, as shown by arrows 3, if they are on the side track, the wheels will press against the plate D and move it, so that by means of the communicating-lever E the crossing will be moved to register or communicate with the side track.

Should the cars run on the main track, the proper position of the crossing will be insured, as the wheels of the cars will bear against the plate D and force the crossing in line with the main track.

It will be seen that there is obviated a frog at the crossing, and that there is provided a solid rail-bearing for the main line, and a solid continuity of the crossing with either the main or side tracks.

Should it occur that when the cars are running in the direction of arrows 1, and the crossing C is not fully in position, the end *b* of the plate D will likewise be somewhat out of position, insomuch that the sides of said end *b* present themselves, so that the wheels will strike said end and force the bar fully to its position, and consequently fully shift the crossing, which features will also be found advantageous where there is a difference in the gage of cars.

In Fig. 9 the guards shift forward, so as to cover the head of the rails of the main or side track, as the case may be, and direct the course of the wheels.

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

1. The frogless crossing C, consisting of the two connected lengths A″ B″, and having its axis at the butt-end, said crossing forming a solid rail-bearing with either of the rails A′ B′, and positively and automatically operative therewith by the action of the car-wheels in either direction, without shifting any rail outside of the gage of the main line, substantially as set forth.

2. The bearing G at the opening joint of the switch-rail, substantially as and for the purpose set forth.

3. The plates or rails H, covering the head of the rail of the main or side track, and defining the course of the wheels approaching the head of the switch, substantially as and for the purpose set forth.

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Witnesses:
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