

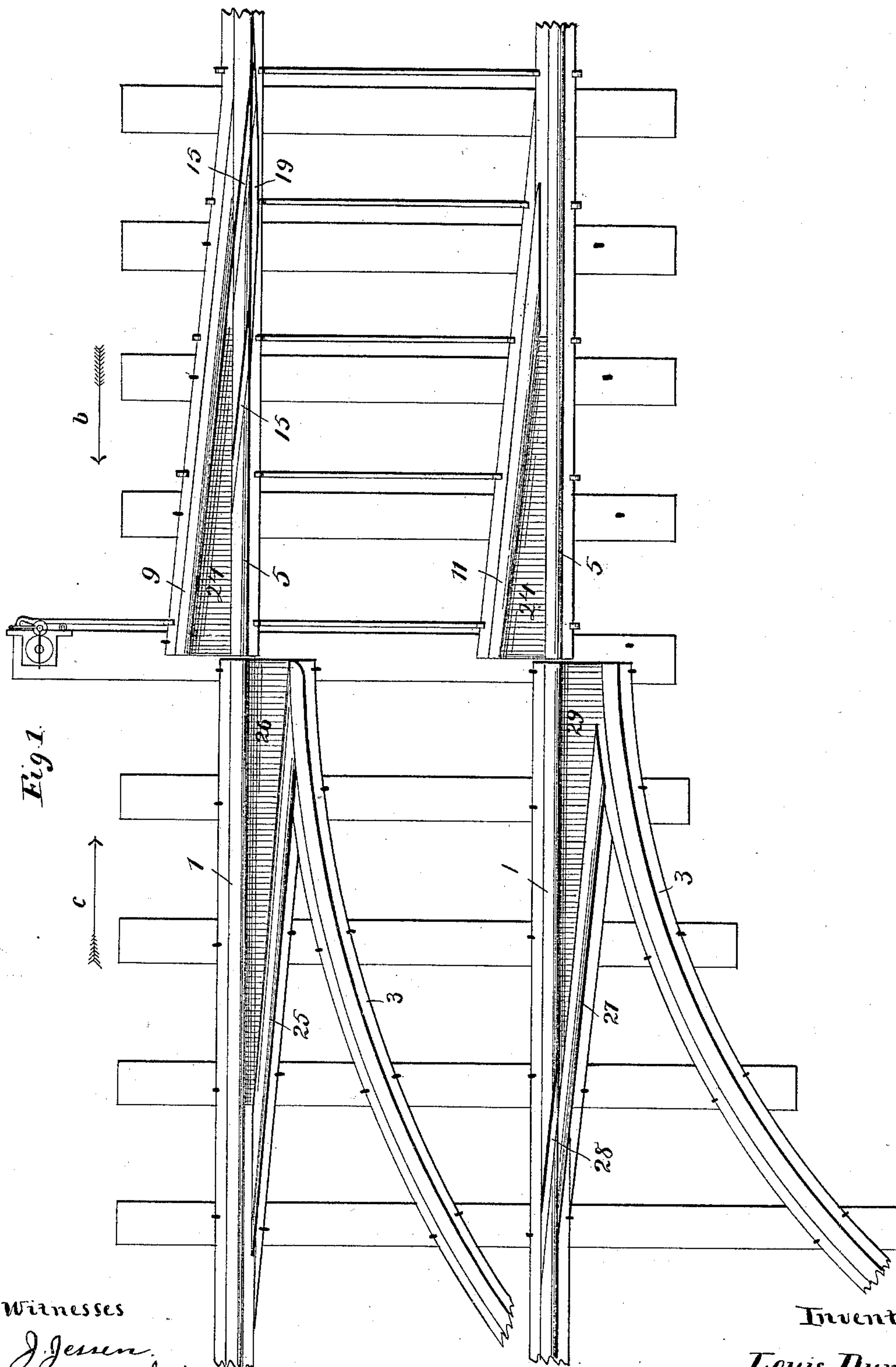
(No Model.)

3 Sheets—Sheet 1.

L. DUNN.
SAFETY SWITCH.

No. 405,350.

Patented June 18, 1889.



Witnesses

J. J. J. J.
A. M. Gaskill

Inventor.

Louis Dunn.

By Paul & Merwin
Atty

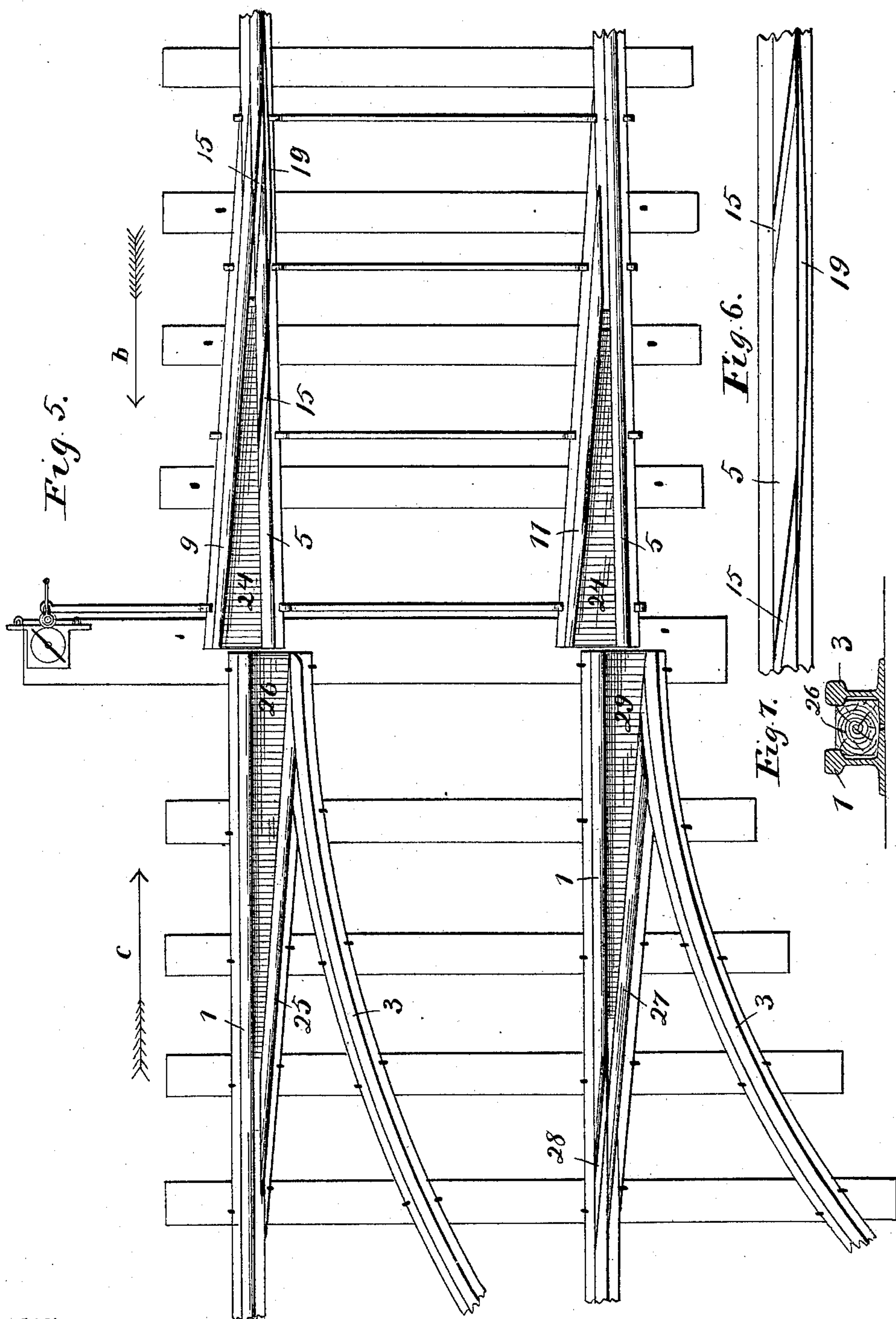
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Inventor.

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By Paul & Merwin Attys.

UNITED STATES PATENT OFFICE.

LOUIS DUNN, OF MINNEAPOLIS, MINNESOTA.

SAFETY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 405,350, dated June 18, 1889.

Application filed December 31, 1888. Serial No. 295,071. (No model.)

To all whom it may concern:

Be it known that I, LOUIS DUNN, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented a new and useful Safety-Switch, of which the following is a specification.

The object of my invention is to provide a safety-switch for railway-tracks by means of which the derailment of trains running in either direction upon the main track is rendered impossible whatever position the switch may be in, whether set to the main track, to the switch-track, or between the two.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of a portion of a main track and side track fitted with my improved switch, the switch being set for the main track. Fig. 2 is a similar view with the switch set for the side track. Figs. 3 and 4 are details. Fig. 5 is a view similar to Figs. 1 and 2, with the switch set part way between the main and side tracks and not connecting with either. Figs. 6 and 7 are details.

In the drawings, 1 represents the rails of the main track, 3 the rails of the side track, and 5 the switch or throw rails.

Fastened to and moving with the switch-rails 5 are the branch or stub rails 9 and 11. These stub-rails are arranged on the side of the switch-rails that is farthest from the side track. The ends of the stub-rails are located at a short distance from the ends of the switch-rails, the space between the ends of the stub-rails and the ends of the switch-rails being equal to the space between the ends of the rails 1 of the main track and the ends of the rails 3 of the side track, so that when the switch-rails are set to connect with the rails 3 of the side track the stub-rails will connect with the rails of the main track, as shown in Fig. 2. The other ends of the stub-rails approach the switch-rails, the end of the rail 9, which is upon the outside of the switch-rail, being against the rail 5, and the end of the rail 11 being a short distance from the inside of the other rail 5, so as to permit the flange of a wheel to pass between the end of the rail 11 and the inner side of the switch-rail. Filling-pieces 24, preferably formed of hard wood or other suitable material, are ar-

ranged in the triangular spaces between the rails 11 and 5 and 9 and 5. These filling-pieces extend, preferably, a part of the distance from the base to the top of the rails, but leaving a sufficient portion of the rails projecting above the filling-pieces to prevent the wheels from running over the tops of the rails.

If preferred, I may arrange one or more diagonal grooves 15 in the top of the rail 5, to which the outside stub-rail 9 is connected. I also prefer to provide a guard-piece 19, which is secured to the inner side of the rail 5 at a point opposite the junction of the rail 11 with the other rail 5. This guard-piece preferably tapers toward each end, as shown particularly in Fig. 6, and it serves the purpose of crowding the trucks toward the opposite rail, so as to insure the passage of the flange of the wheels between the end of the rail 11 and the rail 5 when a train is passing over the track in the direction of the arrow *b*.

The device already described prevents derailment of a train passing on the main track in the direction of arrow *c* even though the switch does not connect with the main line, but is set to the side track, as shown in Fig. 2, or between the side track and the main track, as shown in Fig. 5. If the switch is set to connect with the side track, as shown in Fig. 2, and a train passes over the main line in the direction of arrow *c*, the wheels will pass onto the rails 9 and 11, the wheels that pass onto the rail 11 will be guided onto the switch-rail at the junction of rail 11 with that rail, and the wheels that pass onto rail 9 will pass over the top of the other switch-rail at the point of junction between the two, passing through the groove 15, where that groove is used.

Where the switch is set as shown in Fig. 5, so that it does not connect with either the side track or the main track, if a train passes over the main track in the direction of arrow *c*, the wheels will pass into the triangular spaces between the rails 9 and 11 and the switch-rails and onto the filling 24, that is arranged in those spaces. The rail 11 then serves as a guard-rail, and the wheels will pass along in these triangular spaces until the wheels on one side pass over the top of the

switch-rail in one of the grooves 15, where such grooves are used. The wheels will thus be directed onto the switch-rails 5, and derailment of trains passing in this direction 5 will be prevented.

I also provide in connection with the rails 1 of the main track stub-rails 25 and 27. The rail 25 extends from the outer side of the rail of the side track that is between the two rails 10 of the main track to within a short distance of the inside of one of the rails of the main track, a space being left for the passage of a wheel-flange between the end of rail 25 and the inside of rail 1.

15 The rail 27 is arranged with a space between its point and the inside of the other rail of the side track and extends to the outside of the other rail of the main track, against which it fits. A groove 28 is preferably formed in the 20 top of the rail 1 at the junction of the rail 27. The triangular spaces between the rails 27 and 25 and the rails 1 are preferably provided with hard-wood fillings 26 and 29, which extend to within a short distance of the top of 25 the rails.

If the switch is partially thrown, so that the switch-rails do not connect with either the side track or the main track, the wheels of a train passing in the direction of arrow *b* will 30 pass into the triangular spaces between the rails 25 and 27 and 1 and onto the fillings 26 and 29. The wheels which were in the space between the rails 27 and the rail 1 of the main track will be directed back onto the rail 1, passing over the top of that rail through the groove 35 28, where such groove is used. The wheels at the other side of the cars will be guided by the rail 25 onto the other rail of the main track.

40 It will thus be seen that it is impossible for a train running in either direction upon the main track to be derailed.

I prefer to cut away a portion of the ball of the rail 11 on the side toward the rail 5, as 45 shown in Fig. 5, so as to increase the space between the ends of the rails 5 and 11, and thereby to insure catching the wheels between the rails 11 and 5, even though the switch-rails have been moved very little and 50 almost connect with the rails of the side track. I also prefer to cut away the inner side of the end of the inner rail of the side track, and thereby to bring the end of the rail nearly to a point, so as to insure the passage of wheels 55 moving in the direction of arrow *b*, Fig. 5, either onto the side track or into the space between rails 25 and 1. If this rail is not

cut away, and the switch is moved not more than the width of the top of the rails from full connection with the side track, and a train 60 passes in the direction of arrow *b*, the flange of the wheel might strike directly against the end of the rail of the side track and be derailed.

It will be obvious that the invention is ap- 65 plicable to a three-way switch, and that by duplicating the safety-rails on the switch a guard may be formed for the side track, so as to prevent derailment of trains running from the side track. 70

The invention may also be applied where two main tracks come together onto a single track.

I also prefer to provide a series of spikes which will prevent the switch-rails from be- 75 ing thrown too far in either direction.

I claim as my invention—

1. The combination, with the rails of the main and side tracks and the switch-rails, of the stationary rails 25 and 27, arranged be- 80 tween the rails of the side and main tracks and extending from the rails of the side track toward the rails of the main track, and adapted to guide onto the main track a train passing into the space between the main and side 85 tracks, substantially as described.

2. The combination, with the movable switch-rails, of the rails 3 and 1, with either of which said switch is adapted to connect, of the rail 25, extending from the outer side of 90 one of the rails 3 to the inner side of the corresponding rail 1, and the rail 27, extending from the inner side of the other rail 3 to the outer side of the other rail 1, substantially as described. 95

3. The combination, with the rails 3 and 1, one of the said rails 1 being provided with the groove 28, of the rails 25 and 27, extending from said rails 3 to said rails 1, as described, and the switch adapted to connect 100 with either said rails 3 or 1, substantially as described.

4. The combination, with the switch-rails 5, provided with the branch rails 9 and 11, of the rails 3 and 1, and the branch rails 25 and 105 27, extending from said rails 3 to said rails 1, all substantially as described.

In testimony whereof I have hereunto set my hand this 26th day of December, 1888.

LOUIS DUNN.

In presence of—

A. C. PAUL,
A. M. GASKILL.