

(No Model.)

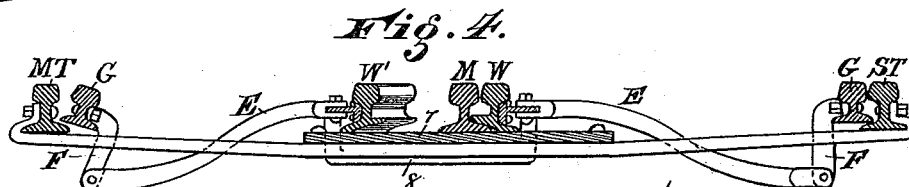
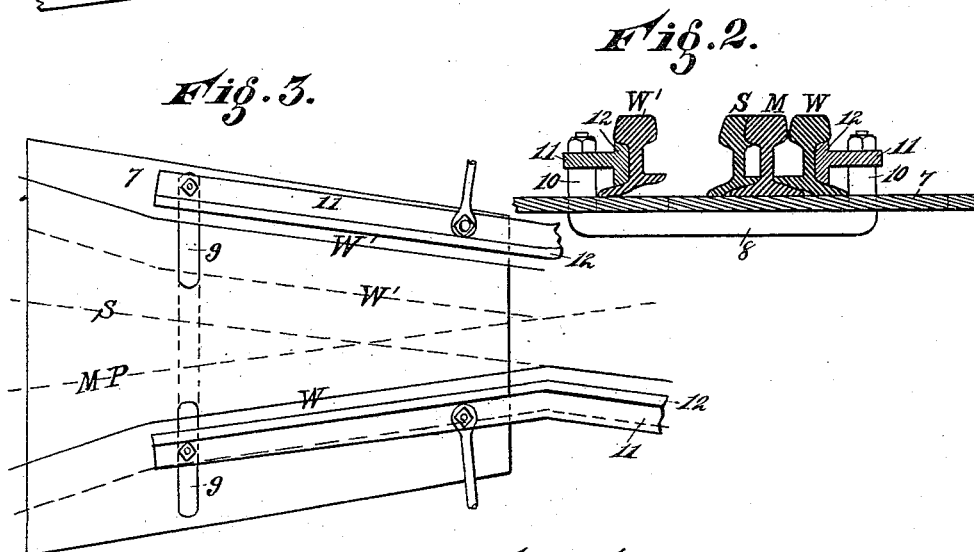
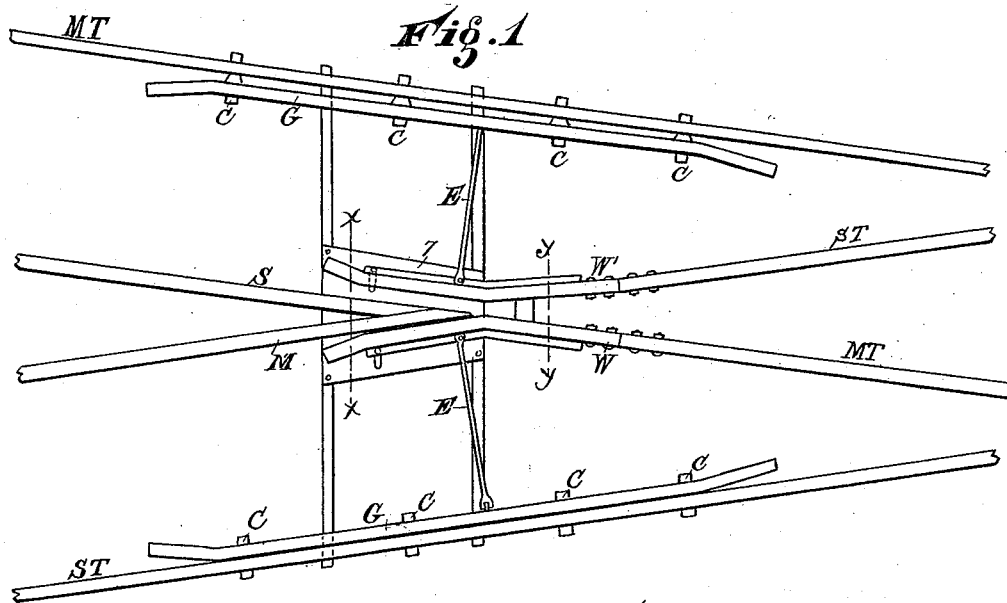
2 Sheets—Sheet 1.

F. C. WEIR.

AUTOMATIC CONTINUOUS RAIL FROG.

No. 348,078.

Patented Aug. 24, 1886.



Attest

*J. Watson Sims*  
*J. Simpson Rockwell*



**Inventor**  
*Fred C. Weir*  
by *Wood & Bond*  
*his Attorneys &c*

(No Model.)

2 Sheets—Sheet 2.

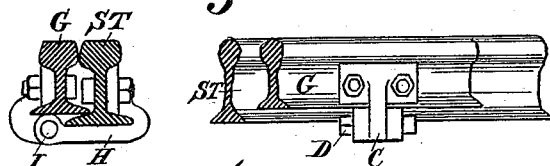
F. C. WEIR.

AUTOMATIC CONTINUOUS RAIL PROG.

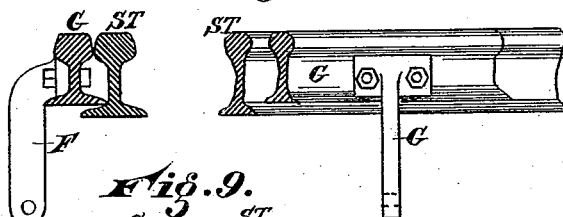
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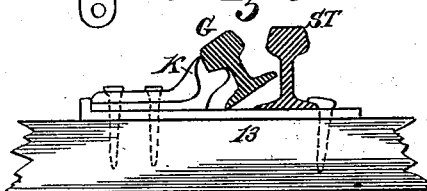
*Fig. 5.*



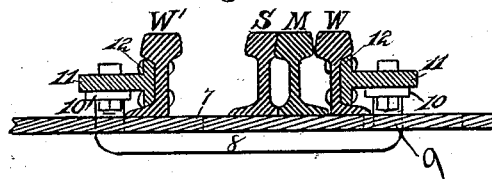
*Fig. 6.*



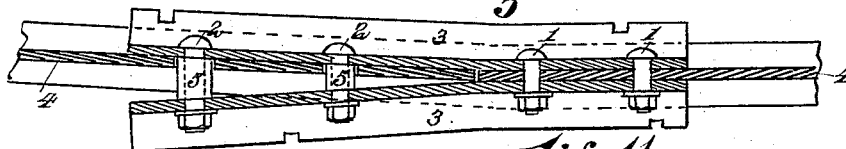
*Fig. 9.*



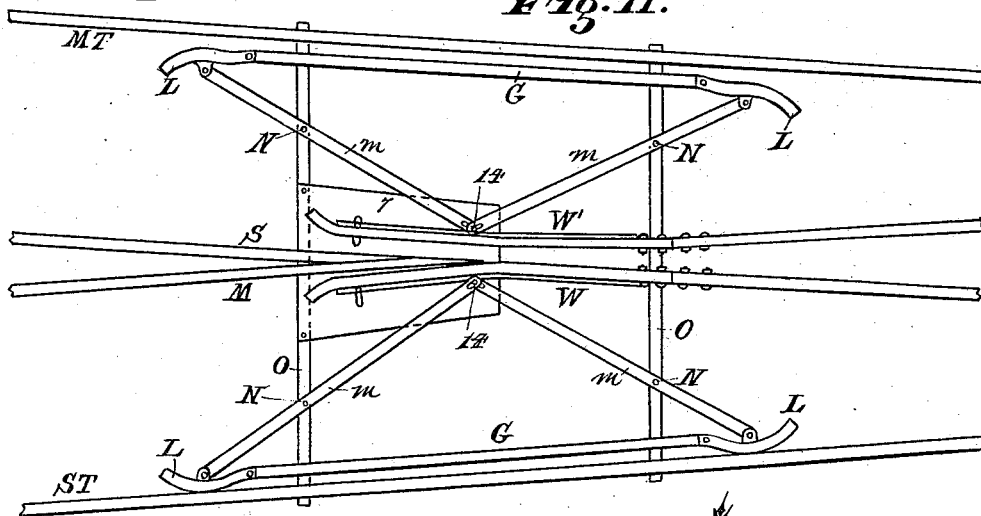
*Fig. 7.*



*Fig. 10.*



*Fig. 11.*



*Attest*

*J. Watson Sims*  
*J. Simpson Rebeck Jr.*

*Inventor*

*Frederic C. Weir*  
*by Wood & Boyd*  
*his Attorneys &c*

# UNITED STATES PATENT OFFICE.

FREDERIC C. WEIR, OF CINCINNATI, OHIO.

## AUTOMATIC CONTINUOUS RAIL-FROG.

SPECIFICATION forming part of Letters Patent No. 348,073, dated August 24, 1886.

Application filed December 21, 1885. Serial No. 136,362. (No model.)

### *To all whom it may concern:*

Be it known that I, FREDERIC C. WEIR, a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Automatic Continuous Rail-Frogs, of which the following is a specification.

My invention relates to a new railway-frog.

One of the objects of my invention is to provide a safety-frog, by furnishing automatic means of moving the wing-rails to a relative position with the point-rails in advance of the trains passing onto either the point or wing rails.

Another object of my invention is to adjust the wing-rails in a position for passing over the frog from either direction of approach to the wing or to the point rails, whereby a continuous rail-frog is obtained, automatically set by the train when it approaches in either direction, on the main track or on the side track.

The other objects of my invention relate to mechanical means for accomplishing this result, all of which will be fully set forth in the description of the accompanying drawings, making a part of this specification, in which—

Figure 1 is a top plan view of the preferred form of my improvement connected to a main and side track. Fig. 2 is a section on line *x x*, Fig. 1. Fig. 3 is a diagram in plan, showing the movement of the wing-rails. Fig. 4 is a sectional elevation of one form of the devices for moving the wing-rails. Fig. 5 is a detail view of one form of the turning rail-joints; Fig. 6, a detail view of the lever attachment to the guard-rails. Fig. 7 is a sectional elevation showing a modification of Fig. 2. Fig. 8 is a section on line *y y*, Fig. 1. Fig. 9 is a sectional elevation showing the guard-rail stop. Fig. 10 is a longitudinal cross-section through the center bolts, showing the thimble-joint connecting the wing to the main point-rail. Fig. 11 is a modification of the devices for moving the guard switch-rails.

M T, Fig. 1, represent the main-track rails; S T, say, the side-track rails.

W represents one of the wing-rails; W', the opposite wing-rail of the frog.

M represents the main point and S the short point rail, which are connected together between the wing-rails.

Fig. 1 shows the wing-rail W in line with the main point-rail and in position, making the main track a continuous rail, while the side track is shown cut off. The wing-rails are each respectively connected to the rails S T and M T by a thimble-joint, as shown in Fig. 10, which is the preferred form of joint-connection.

1 represents through-bolts passing through fish-bars 3, and bolting them to the web 4 of the main-track rail.

2 represents thimble-bolts passing through the vertical edges of the fish-plate.

5 represents thimbles, which are the requisite length to fill the space between the vertical edges of the fish-plates 3.

The holes through the web of the wing-rail for bolts 2 are sufficiently large to receive the thimbles and allow the rail to move laterally in the space between the fish-plates, so as to allow the requisite movement of each of the wing rails to and from the point-rails. In order that the wing-rails may move the requisite distance, I set them upon a plate, 7, on which plate the short and main point-rails S M also rest.

8 represents a sliding clamp or yoke, each end of which is upturned and passes through slots 9, Fig. 3, cut in plate 7, the upper end of which is preferably turned over to form a flange, 10, which is bolted to the web 11 of a T-iron, 12, which is the preferred form of construction; but any means which will rigidly secure the clamp to the web of the wing-rails W W' may be employed. The T-iron 12 is much the preferable form of construction, and it is bent and shaped to fit the web head and flange of the wing-rails and support it nearly the entire length, as shown in plan, Fig. 1, thereby re-enforcing or strengthening the wing-rails.

In Fig. 7 the wing-rail W is shown as resting against the main point-rail for making a continuous main track, and the wing-rail W' is shown open to allow the flange of the wheels to pass freely through the frog.

When it is desired to employ the frog for passing a train from the main track onto the side track, or from the side track onto the main track, it is necessary to transpose the position of the wing-rails by opening the wing-rail W and closing the wing-rail W'. I have

illustrated these positions in Fig. 3 by lines representing the position of the head of the main point and wing rails, the full line W showing the central line of the wing-rail W when it rests against the long point-rail, as shown by the central line M P of the same, and the dotted line W' representing the central line of the wing-rail W' when resting against the main short rail, the central line of which is shown by dotted line S, and full line W' shows the central line of the wing-rail W' when it is opened, as shown in Fig. 2.

To accomplish the automatic movement of the wing-rails in advance of the tread of the train upon them and upon the point-rails, I have provided the following instrumentalities, the first of which is shown in Figs. 4, 5, 6, and a modification of the same is shown in Fig. 11: G represents a guard-rail, the outer ends of which are bent away so as to open the space between it and the main-track rail to receive the initial movement of the flange of the wheel. H represents clamp-arms engaging over the flange and passing under the flange of the main-track rail. I represents hinge-joints. C represents one member of the hinges, which is rigidly connected to the guard-rail G by bolts, the ear of which is passed between the ears of the joints I. D represents a hinge-bolt securing the members of the hinges together. These clamps and hinge-joints H I are placed at suitable intervals along the main point and guard rails, so as to secure suitable supports and uniform movement of the hinge guard-rail when it is turned from either end by the car-wheel. In this instance the guard-rail is rolled to convey motion and move the wing-rails, which is accomplished as follows: E represents a connecting-rod hinged at one end to rail W, preferably by being connected to the T-iron 12, as shown in Fig. 4. The opposite end of the connecting-rod E is hinged to an arm, F, which arm is firmly secured to the web of the guard-rail G.

When a train approaches the frog in either direction, the flange of the first wheel will pass between the guard-rail G and the main rail, and move it away from contact with the main rail. The guard-rail, turning on the centers I of the hinge, will be moved by the flange of the wheel into the position shown in Fig. 4, and the arm F and connecting-rod E will pull the wing-rail W' away from the point-rail M, and wing-rail W, being connected to wing-rail W' by a yoke, (clamp 8,) will likewise move up, so as to rest against the main point-rail M, as shown in said Fig. 4, the arms of the clamp-bar 8 moving in the slots 9, which connection allows the train to pass from the main track onto the side track, or from the side track onto the main track, the guard-rail G being opened at either end to receive the wheel, so that the wing-rail W' may be moved as the train approaches it in either direction. The opposite guard-rail G is connected to the wing-rail W by the same instrumentalities, E F, and is moved by the flange of wheels of a

train on the main-track rail approaching the guard-rail in either direction, opening the wing-rail W and closing the wing-rail W', so as to make a continuous side track.

It is not material for the purposes of this invention how the wing-rail is made to adjust itself and abut against the long point-rail. The preferred form is shown in Fig. 2, in which the inner flanges of the wing-rails are swaged up to rest upon the flanges of the point-rails, which is one form of constructing the point-rails. Another form is shown in Fig. 7, in which the flanges of the wing-rails are cut off, so as to abut against the shortened flanges of the point-rails. I have also shown the guard-rails G having less depth than the main rails, so that the flange of the guard-rails will rest upon the flange of the main rail, as shown in Figs. 5 and 6, as the preferred form of construction; but I do not wish to limit myself to the mode hereshown of bringing the head of the guard-rails to rest against the head of the track-rails.

In order to limit the movement of the guard-rails, I have provided chairs K, as shown in Fig. 9, which are bolted onto the ties 13, and the upper end of the chairs shaped to receive the head of the guard-rail G, so as to limit its movement, and to take the shock off of the connecting-rod E and its jointed connection with the wing-rails.

Another means of moving the wing-rails by the guard-rails G' is shown in Fig. 11, in which L represents levers pivoted to each end of the guard-rails. m m represents levers, one end of which is pivoted to the levers L, moving on a fulcrum, N, pivoted to the cross-tie O, which extends under the rails and connects the outer side-track rail with the outer main-track rail. The inner ends of these levers m are slotted to receive a pivot, 14, which pivot or center hinges the levers m m to the wing-rail W. The wing-rail W' is similarly connected to levers L, attached to the opposite guard-rail, G.

In Fig. 11 the guard-rail G is shown as open, and the wing-rail W is shown as resting against the point-rail S. When a train approaches the frog from the main track or from the side track, it will operate either one of the levers L, moving the connecting levers m m, open the wing-rail W, and close the wing-rail W', to allow the train to pass upon the side track, or from the side track onto the main track.

It is obvious that the ordinary hand-switch may be connected to the wing-rails W W', so as to move them by hand and set them for a train, if desired.

I do not wish to limit my movable guard-rail and devices for connecting it to a movable or switch rail to the use of a railroad-frog, as this part of my invention is adapted to be used with the ordinary switch-rail.

I claim—

1. A railway-frog composed of the movable wing-rails connected together so as to move in unison, guard-rails hinged adjacent to the

outer main rails on the inside thereof, so as to be rocked on their hinges by the flange of a car-wheel, and lever-connections between said wing and guard rails, whereby said wing-rails are set by the movement of the guard-rails, substantially as described.

2. In combination with a main-track rail, a hinged guard-rail, G, set outside of and connected to a frog-rail by lever and hinge connections, whereby the flange of the car-wheel rocks or moves the guard-rail on its hinges and by the lever and hinge connection sets the frog-rail in advance of the train passing over the rail so moved, substantially as described.

3. In combination with a main-track rail, a moving guard-rail set adjacent to the main rail, with its ends extending beyond the ends of the wing-rails of a frog, to which it is connected by levers hinged to said guard and wing rails, both of which are moved by the wheels before they reach said wing-rail, substantially as described.

4. A frog having fixed point and movable wing rails upon either side, jointed to the main-track rails and operated automatically by guard-rails adjacent to the main rail, said wing and guard rails being connected by hinge and lever connections, substantially as herein specified.

5. In combination with the movable wing-rails W and W', the T-iron support 12, bolted

to the flange of the wing-rails, and the clamp-yoke 8, bolted thereto, substantially as herein specified.

6. In combination with a main-track rail, the guard-rail G, connected thereto by a hinge-joint, I, so as to be automatically rocked to switch the movable rail of a frog or switch in advance of the train, substantially as herein specified.

7. The combination, with the main-track rail, of a guard-rail, G, hinged thereto, the lever E, connected with the frog-rail, and with the crank-arm F of the guard-rail, for automatically moving the wing-rail when the guard-rail is rocked by the flanges of the train-wheels, substantially as described.

8. In combination with the rocking guard-rail G, the chair-support K, for limiting the outward movement of the guard-rails, substantially as herein specified.

9. In combination with the main rail, the guard-rail G, hinged to the clamp H, secured to the main rail, substantially as herein specified.

In testimony whereof I have hereunto set my hand.

FREDERIC C. WEIR.

Witnesses:

ROBERT ZAHNER,  
M. E. MILLIKAN.