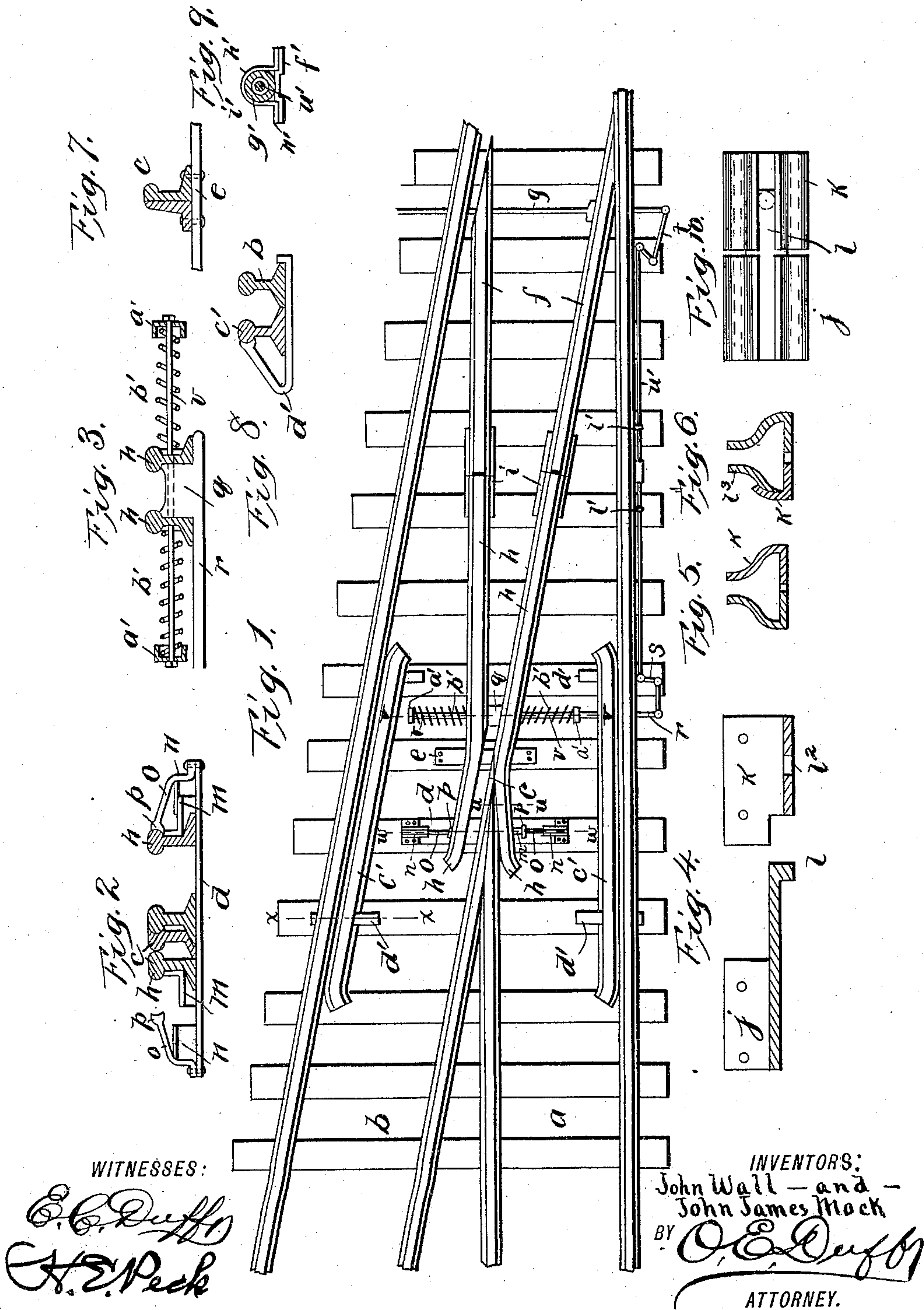


(No Model.)

J. WALL & J. J. MACK.
RAILWAY FROG.

No. 474,705.

Patented May 10, 1892.



WITNESSES:

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JOHN WALL AND JOHN J. MACK, OF TERRE HAUTE, INDIANA.

RAILWAY-FROG.

SPECIFICATION forming part of Letters Patent No. 474,705, dated May 10, 1892.

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To all whom it may concern:

Be it known that we, JOHN WALL and JOHN J. MACK, of Terre Haute, in the county of Vigo and State of Indiana, have invented certain new and useful Improvements in Railway-Frogs; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention relates to certain improvements in railway construction, and more particularly to improvements in frogs.

Our invention consists in certain novel features of construction and in combinations of parts more fully described hereinafter, and particularly pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a plan view of part of the railroad-track at the intersection of the main and side tracks. Fig. 2 is a cross-section on the line *w w*. Fig. 3 is a section of the line *v v*. Figs. 4 and 5 are respectively a side view and cross-section of the joints between the moving switch-rails and wing-rails. Fig. 6 is a cross-section of a different construction of joint between such rails. Fig. 7 is a cross-section on the line *u u*. Fig. 8 is a section on the line *x x*, Fig. 1. Fig. 9 is a section through a clamp and guide for the rod from the switch to the wing-rails of the frog. Fig. 10 is a plan view of one of the hinges or connections between a switch and wing rail.

In the drawings, reference-letter *a* indicates the main track, and *b* a side track intersecting the same.

c indicates the rigid frog-point formed by the two flattened meeting inner rails of the main and side track, and this frog-point is rigidly secured to the two guide-plates *d e* by means of rivets or other suitable devices, as shown in Fig. 7.

f indicates the two laterally-swinging switch-rails. The two switch-rails *f* are united and operated by the switch-rod *g* to throw the switch-rails to place the side track into or out of continuation with the main track.

h indicates the laterally-movable wing-rails of the frog located on opposite sides of the stationary frog-point *c*. These wing-rails form continuations of the switch-rails, each wing-rail being secured to the switch-rail of the same side by the loose joint *i*, formed of portions *j k*, secured, respectively, to the meeting ends of the rail. These two portions *j k* interlock loosely by means of the extended end provided with a hook or pivot *l*, snugly fitting in an aperture *l'* in the under side of the large portion *k*, thereby allowing independent lateral swing of the two rail-sections, but preventing longitudinal separation thereof. The two portions *j k* embrace their respective rail ends and are clamped thereto by bolts, as fish-plates or angle-bars. Each member is preferably formed integral, but, if desirable, each member can be formed as shown in Fig. 6, wherein a fish-plate *l''* is employed on one side of the rails, and the hinge-members are so bent as to extend around beneath the rail and lap over such fish-plates. The object of the loose joint is to allow a limited independent lateral play between the united wing-rails and switch-rails. These wing-rails slide sidewise on the plates *d e*, which are secured to the ties or other suitable supports.

Braces *m* are secured to the outer sides of the wing-rails and are provided with outwardly-extending horizontal bases or portions, which slide on the plate *d* under guides *n*, rigid with said plate *d*, so that the wing-rails are held down in position against upward movement or play. Braces *o* are secured at their lower outer ends rigidly to outer ends of plate *d* and extend upwardly and inwardly, and are formed enlarged or into heads at their upper ends *p* to fit the under outer edge of the tread of the wing-rails, and thereby support said wing-rails against outward tilting, as shown in Fig. 2. The wing-rails alternately engage their braces—that is, the wing-rail fitting against the frog point or tongue is away from its brace and the outer wing-rail is supported against outward movement by its brace *o*. The wing-rails are held apart and swung by the interposed block *q*, rigid with the rod *r*, extending outwardly beneath the track and secured to one arm of bell-crank *s*,

suitably pivoted beside the track and having its opposite arm connected with one arm of bell-crank lever *t* by connections *u'*, extending along beside the track, and the opposite arm of bell-crank lever *t* is pivotally connected to one end of the switch-rod *g*, so that the wing-rails are correspondingly swung with the switch-rails. A rod *v* extends horizontally and loosely through wing-rails and block *q* and extends a suitable distance on each side of the same, and on its outer ends is provided with the caps *a'*, secured thereon by nuts.

Stiff springs *b'* are interposed and compressed between the caps *a'* and the wing-rails, forming and holding the same yieldingly against the block *q*. The object of these springs is to yieldingly hold the wing-rails of the frog in their normal position, but so that they can be thrown from their normal position by the wheels of a train entering the frog from a side for which it has not been previously set. For instance, if a frog and switch be thrown to place, a side track in continuation of the main track, and the train should move along the main track toward the right, the wheels of the train would engage the wing-rail pressed against the frog-point and would throw said wing-rail away from said point against compression of its spring *b'* sufficiently to allow the wheels to pass. The spring *b'* immediately returns all parts to their normal position and the train is passed.

c' indicates the guard-rails along the inner sides of the outer rails of the main track and side track, respectively, on the opposite sides of the frog. These guard-rails are secured against overturning or tilting by means of braces *d'*, consisting of a base or horizontal portion, upon which the track-rail and the guard-rail rest, and which extends inwardly beyond the track-rail and guard-rail and then extends upwardly at an acute angle and is provided with an enlarged shouldered head or end resting beneath and engaging the lower outer corner of the tread of the guard-wheel, as clearly shown in Fig. 8. This brace is formed in one piece and is of great strength and firmly holds the said guard-rail and is of substantially the same construction and operating on the same principle as braces *o* for the wing-rails of the frog.

Suitable guides *i'* are provided for the connecting-rod *u'*, consisting of the plate *f'*, secured on the tie, the tube *g'*, through which the rod *u'* loosely passes, and the U-shaped clamping block or clip *h'*, encircling the tube *g'* and having lateral ends secured upon the plate *f'*. A suitable number of these guides *i'* are provided for the rod *u'*, as shown in Fig. 1 and as shown in detail in Fig. 9.

The many and great advantages of this construction are obvious, and its simplicity, cheapness, and durability is evident to all railroad men. It provides a continuous rail for both main and side tracks, and the wheels

do not have to operate the frog, except in cases of emergency when the cars pass over one track when the switch and frog are set for another track. When this occurs, there is no wreck or damage to the cars, as hereinbefore set forth, as the springs allow the rails to open and close for the passage of the wheels.

It is evident that various changes might be resorted to in the form, construction, and arrangement of the parts described without departing from the spirit and scope of our invention. Hence we do not wish to limit ourselves to exactly what is herein shown and set forth, but consider ourselves entitled to all such changes and modifications as fall within the spirit and scope of our invention.

What we claim is—

1. In a frog, the combination of the stationary frog-point, the movable wing-rails, the plates upon which said wing-rails move, braces secured to the wing-rails, provided with the outwardly-extending portions, and rigid guides on the plates, under which said portions slide.

2. In a frog, the combination of the frog-point and the movable wing-rails, means for holding the wing-rails in their normal position, and the rigid upwardly-extending braces to engage the outer sides of the wing-rails and prevent them tilting outwardly.

3. In combination, two rails in continuation of each other and the loose joint at the meeting ends of said rails, consisting of the two members partially embracing and rigidly secured to their respective rail ends, one member provided with a portion extending horizontally into the other member beneath the rail and provided with a vertical projection entering a bottom aperture in the other member, substantially as described.

4. In combination, a laterally-movable rail, a rigid upwardly-extending brace to engage the outer side of the head of the rail and prevent outward tilting thereof, a brace secured to the outer side of the rail, having an outwardly-extending horizontal base, and a rigidly-secured guide, under which said base slides, substantially as described.

5. The combination, with the switch-rails and means for throwing the same, of the stationary frog-point, the laterally-movable wing-rails on opposite sides thereof, a block separating said rails and against which they loosely bear, connections from said block to the switch-rails, constructed and arranged to throw the wing-rails, together with the switch-rails, as described, the springs yieldingly holding the wing-rails against said block, so that they can be separately forced out, and means to support said springs, substantially as described.

6. The combination of the switch-rails, a switch-rod to throw the same, a stationary frog-point, the laterally-movable wing-rails

on opposite sides thereof, an interposed block separating said wing-rails, springs yieldingly holding them in position, an outwardly-extending rod rigid with said block, and levers
5 and connecting-rods connecting the switch-rod and said outwardly-extending rod to swing the wing-rails with the switch-rails, substantially as described.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

JOHN WALL.
JOHN J. MACK.

Witnesses:

ELLIS H. WILVERT,
JOHN F. MILLER.