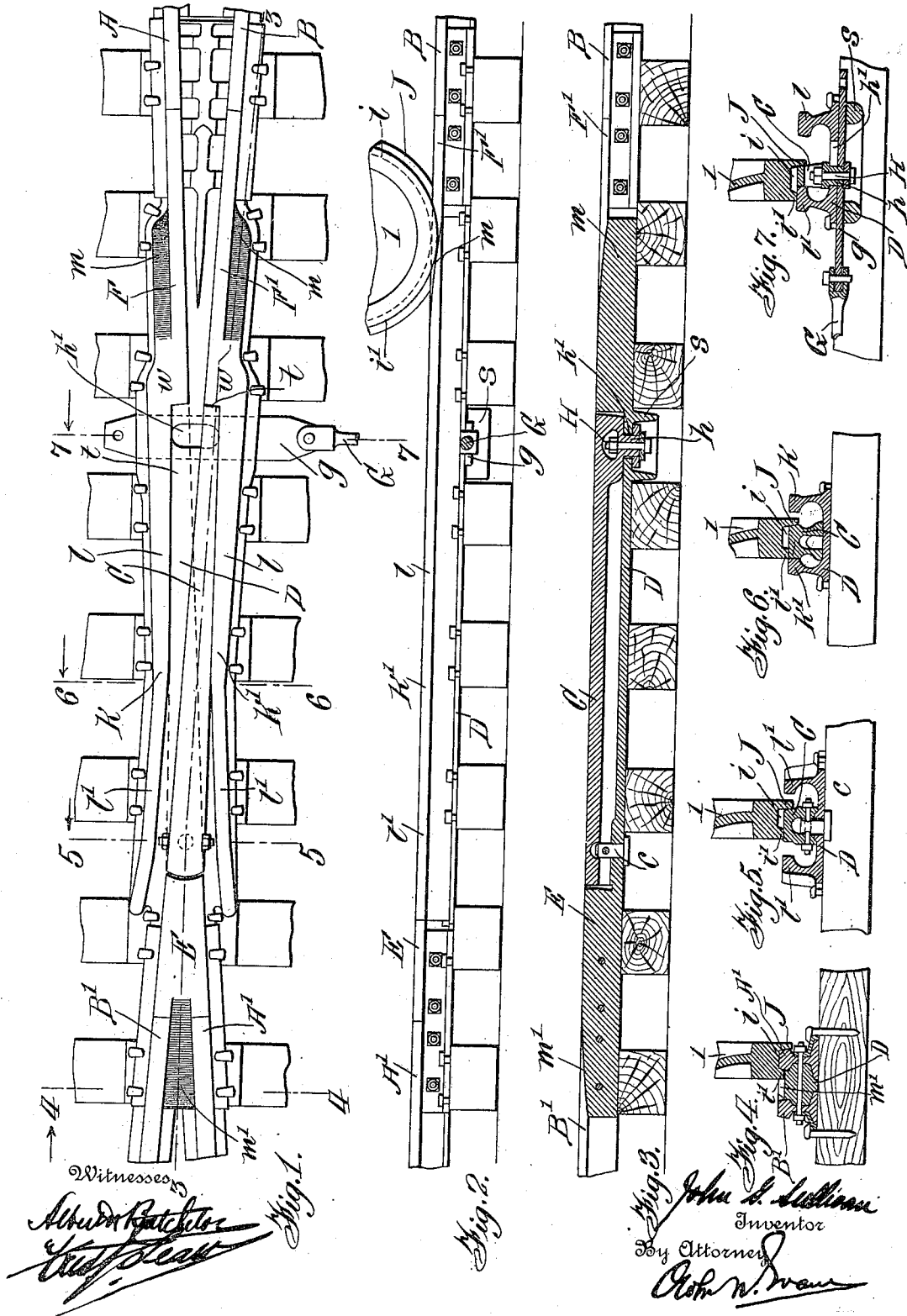


J. G. SULLIVAN.
RAILWAY FROG.
APPLICATION FILED MAR. 30, 1910.

981,495.

Patented Jan. 10, 1911.



UNITED STATES PATENT OFFICE.

JOHN G. SULLIVAN, OF MONTREAL, QUEBEC, CANADA.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN G. SULLIVAN, of the city of Montreal, in the county of Montreal, Province of Quebec, and Dominion of Canada, have invented an Improvement in Railway-Frogs; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to a railway frog of that type in which a laterally movable wedge-shaped swing rail is employed which is moved into line with one or the other of two converging main rails for properly guiding to either of such rails the wheels of the rolling stock passing over the same.

As heretofore constructed such swing rail frogs have been defective for the reason that after considerable use some of the wheels of locomotives, tenders, and cars, have false flanges formed in their treads by circumferential grooves worn in the latter and as a locomotive or the like with a worn wheel takes the frog, the false flange is compelled to mount the swing rail thereby causing heavy lateral strain owing to the said swing rail being engaged by the groove worn in the tire, which has the effect of rendering the true wheel flange liable to rupture with consequent derailment and wrecking of the train.

The object of this invention is to provide means for carrying the wheel, even if worn, over the swing rail of the frog, and prevent the groove from engaging with the swing rail, and this is accomplished, generally speaking, by a wheel support arranged in a position to afford a supporting surface on a level or substantially so with the top of the swing rail while its ends slope in opposite directions to act as risers upon which the false flange runs and is lifted to the supporting surface.

For full comprehension, however of my invention reference must be had to the accompanying drawings forming a part of this specification in which similar reference characters indicate the same parts and wherein—

Figure 1 is a top plan view of a railway frog embodying my invention; Fig. 2 is a side elevation thereof; Fig. 3 is a vertical longitudinal sectional view on line 3—3 Fig. 1; and Figs. 4, 5, 6, and 7 are vertical transverse sections on the correspondingly numbered lines in Fig. 1.

A, A¹, B, B¹, represent the sections of two

main rails the crossing of which is effected by a horizontally movable wedge-shaped swing rail C which is pivoted at its rear end adjacent to the front ends of the two rear main rail sections A¹, B¹ while its front end is adapted to be moved into line with either of the rear ends of the front main rail sections A, B. The swing rail is pivoted by means of a vertical pin *c* to a base D, as shown in Figs. 3 and 5. Between the pivotal end of the swing rail and the rear main rail sections A¹, B¹ the latter are provided with a single rear rail extension E which is of wedge shape and flush with the top of the swing rail and the rear rail sections A¹ and B¹, and between the opposite end of the swing rail and the main rail sections A, B are arranged two front rail extensions F, F¹ which are flush with the top of the swing rail and the front main rail sections.

The shifting of the swing rail may be effected by various means, for instance, by means which comprise a transversely movable shifting plate *g* arranged below the base and connected with a shifting rod G, and a coupling bolt H connecting such swing rail to the shifting plate and passing through a boss *h* on the swing rail and movable in a slot *h*¹ in the base, as shown in Figs. 1, 3 and 7.

In the absence of any provision to prevent it, a locomotive or car wheel 1 having a groove *i* worn in its tread or tire, so as to form a false flange *i*¹ on the side of the tread opposite the true flange J, would, upon running over the swing rail from one main rail section to its companion main rail section, engage the groove with the swing rail, so that the true and false flanges straddle and interlock with the same, thereby causing the swing rail and also the wheel to be severely strained as the wheel mounts the swing rail for the purpose of crossing it. To avoid this interlocking of the wheels with the swing rail regardless of whether the wheel runs forwardly from either of the main front rail sections A, B to the corresponding rear sections A¹, B¹ or vice-versa, the following means are provided: K, K¹ represent two auxiliary supporting rails arranged lengthwise on opposite sides of the swing rail and front rail extensions F, F¹ and each having a front part *l* parallel with its respective front extension and provided at its front end opposite the gage side of said front extension with a forwardly sloping or inclined front

lifting face or riser m , and a rear part l^1 which is parallel with the rear main rail section.

Between the rear main rail sections A^1 and B^1 and sloping or inclining downwardly from the rear rail extension E is a rear lifting face or riser m^1 , and the base has an oval reinforcement rib s inclosing the slot k^1 and accommodating the slot in which the plate g works. The supporting rails, rail extensions and lifting faces or risers are preferably cast in one piece with the base.

In order to stay the supporting rail portions l and at the same time reinforce the rail extensions F F^1 these members are united in an integral part thus presenting in effect, a pair of offset rail sections with diverging ends, located at opposite sides of the swing rail, the offsets affording chambers t in which the major portion of the swing rail closely fits when swung to either side, the wide parts w of these offset rail sections, between these chambers and the risers m , sustaining the shocks of the false flanges, and owing to my particular construction of the frog, these parts w are particularly adapted for the function as they are braced against end thrust on the swing rail by the supporting rail the latter lies against.

Assuming that the swing rail is moved so that it is in line with the main rail section B , B^1 , as shown in Fig. 1, and a wheel having a groove worn in its tread so as to form a false flange, as above described, is running forwardly from the rail section B to the rail section B^1 , the false flange of this wheel upon engaging the front riser or incline m of the guard rail K^1 , as shown in Fig. 2, will be lifted thereby onto the top of the latter, as shown in Fig. 7, then running over the swing rail, as shown in Figs. 6 and 5, over the rear rail extension; and finally down the rear incline m^1 as shown in Fig. 4. It will be noted that by this means the wheel is prevented from dropping astride of the swing rail which would prevent the wheel mounting the swing rail for the purpose crossing the same except with great difficulty. With my invention, however, the false flange is caused to mount and be supported by the rail portions K and K^1 , and thereby avoids dangerous strains which would be liable to result in breakage and accidents. The same effect is produced when the wheel travels in the opposite direction.

When the swing rail is in line with the rail sections A , A^1 and a worn wheel on the right hand side of a car is running forwardly over the swing rail from the main rail A to the main rail A^1 , the false flange thereof engages successively with and rides up the front incline m adjacent to the rail A , traverses the auxiliary rail K , swing rail,

rear rail extension E , and rear incline or riser m^1 , thus preventing the grooved wheel from straddling the swing rail and subjecting the same or the flange of the wheel to dangerous strains. The same effect is produced when a right hand wheel of a car runs in the opposite direction.

My improved railway frog is comparatively simple in construction, its cost is low and the same can be installed without materially departing from the general practice now prevailing in railway construction.

What I claim is as follows:—

1. In a railway frog the combination with intersecting main rail sections and a movable frog rail, of means disposed so as to have the frog rail lie in close contact therewith when in either extreme lateral position, such means being constructed to support false flanges on the tires of wheels crossing the same.

2. In a railway frog the combination with intersecting main rail sections, and a swing rail coacting therewith, of supporting rails located at opposite sides of the swing rail and forming with the swing rail a continuous supporting surface for false flanges extending from each main rail section over the entire frog to the corresponding main rail section.

3. In a railway frog the combination with converging rail sections, of a casting comprising intersecting rail sections and supporting rails; and a swing rail pivoted to the casting between the supporting rails, of a pair of supporting rails located at opposite sides of the swing rail, and risers leading to the said supporting rails.

4. In a railway frog the combination with intersecting rail sections and a swing rail coacting with the said rail sections; of supporting rails presenting chambers adapted to receive the swing rail; means operating said swing rail laterally between the supporting rails; and risers leading to the said supporting rails.

5. The combination with intersecting main rail sections and a movable rail coacting therewith, of a pair of supporting rails located at opposite sides of the movable rail and forming with the movable rail a continuous supporting surface for false flanges extending from each main rail section over the entire frog to the corresponding main rail section, the said supporting rails presenting chambers adapted to receive the movable rail at its extreme positions.

6. The combination with intersecting rail sections and a movable rail coacting therewith, of a pair of fixed off-set rail members located at opposite sides and extending throughout the length of the movable rail and presenting chambers adapted to receive the movable rail at its extreme positions.

7. The combination with intersecting rail

sections and a movable rail coacting there-
with, of a pair of rail members located at
opposite sides of the movable rail and pre-
senting chambers adapted to receive the
movable rail at its extreme positions; and
risers lying in the direction of the said
chambers.

8. The combination with intersecting rail
sections and a movable rail coacting there-
with, of a pair of rail members located at
opposite sides of the movable rail at its ex-
treme positions; and risers lying in the
direction of the said chambers, and rein-
forced portions between the said risers and
chambers.

9. The combination with intersecting rail
sections and a movable rail coacting there-
with, of a pair of rail members located at
opposite sides of the movable rail and pre-
senting chambers adapted to receive the
movable rail at its extreme positions; and
having as integral parts risers lying in the
direction of the said chambers.

10. The combination with intersecting rail

sections and a movable rail coacting there-
with, of a pair of rail members located at
opposite sides of the movable rail and pre-
senting chambers adapted to receive the
movable rail at its extreme positions and
having as integral parts risers lying in the
direction of the rail portions at the side of
the said chambers, and reinforced portions
between the said risers and chambers.

11. In a railway frog, a casting compris-
ing off-set integral supporting rail members
K, K¹ presenting component portions L, L¹,
w, E, F and F¹, and risers m, m, m¹, and a
base uniting the said integral rail members,
and a swing rail pivoted to the base and co-
acting with the said off-set rails.

In testimony whereof, I have signed my
name to this specification, in the presence of
two subscribing witnesses.

JOHN G. SULLIVAN.

Witnesses:

WILLIAM P. McFEAT,
J. A. O'KEEFE.