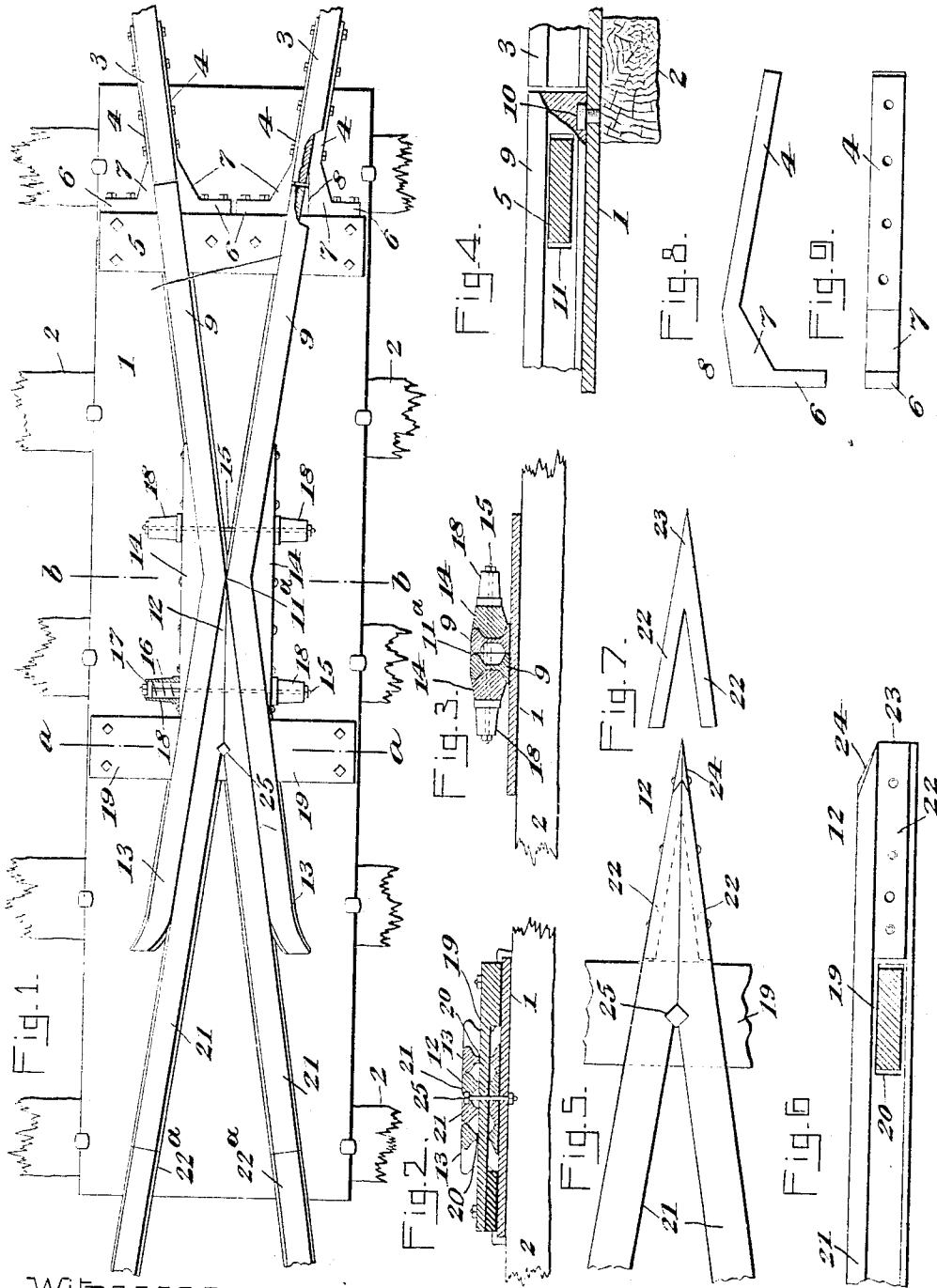


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H. & H. J. THEIS.
RAILWAY FROG.

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Witnesses.

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RAILWAY-FROG.

No. 818,717.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, HENRY THEIS and HENRY JOHN THEIS, citizens of the United States of America, and residents of Lawrenceburg, in the county of Dearborn and State of Indiana, have invented certain new and useful Improvements in Railway-Frogs, of which the following is a specification.

This invention relates to certain improvements in railway-frogs, and more particularly in what are termed "movable" or "spring-rail" frogs, wherein the wing-rails are adapted for movement into substantial contact with the point of the frog, so as to afford unbroken support for the wheel in passing the frog; and the object of the invention is to provide a frog of this general character of a simple and comparatively inexpensive nature and of a compact, strong, and durable construction, such as to adapt it for effective service without liability of derangement or breakage from the severe strains imposed upon it when in use.

The invention consists in certain novel features of the construction, combination, and arrangement of the several parts of the improved railway-frog whereby certain important advantages are attained and the device is rendered simpler, cheaper, and otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In the accompanying drawings, which serve to illustrate the invention, Figure 1 is a plan view showing the improved frog set in position for use upon the ties and in connection with the rails of the main line and siding or at a crossing. Fig. 2 is a transverse section taken vertically through the improved frog in the plane indicated by line *a a* in Fig. 1 and showing the means for anchoring the point and for supporting the wing-rails for movement at opposite sides of said point. Fig. 3 is a sectional view similar to Fig. 2, but taken through the frog in the plane indicated by line *b b* in Fig. 1 and showing certain features of construction to be hereinafter referred to. Fig. 4 is a fragmentary sectional view showing certain details of construction of the means for pivotally mounting the butt or swiveled end of the wing-rail. Fig. 5 is a fragmentary plan view showing certain features of construction of the point of the im-

proved frog. Fig. 6 is a side view of the point of the frog, showing certain details of construction to be hereinafter referred to. Fig. 7 is a detail view showing the V-shaped filling or brace for reinforcing and strengthening the point of the frog. Fig. 8 is a view showing detached and in plan one of the straps or fish-plates for connecting the rail ends with the base-plate of the frog; and Fig. 9 is a view similar to Fig. 8, but showing the strap or fish-plate in side elevation.

In the views, 1 represents a metal base-plate of suitable proportions to underlie and effectively support the entire frog construction, being spiked upon the ties 2 of the railway-track or otherwise supported in position.

3 3 represent the ends of tracks intersecting at the frog, and these rail ends 3 3 are lapped over upon one end of the metallic base-plate 1, so as to be securely supported in relation to the communicating ends of the respective wing-rails 9 9 and being held in position against lateral movement by straps or fish-plates 4 4, which are applied in the ordinary way to opposite sides of each rail end 3, between the ball and flange thereof, and have their opposite ends bolted or otherwise secured to one edge portion of a transverse brace or tie-bar 5, the ends of which are bolted upon the base-plate 1, while the intermediate portions thereof are passed through openings 11, produced in the webs of the wing-rails 9 adjacent to their pivotal ends, the brace or tie-bar 5 being elevated sufficiently above the base-plate 1, on which the flanges of said wing-rails 9 rest, so that said opening 11 need be cut only in the rail-webs and not in said flanges. By means of the said transverse brace or tie-bar 5 said wing-rails 9 9 are securely held in position upon the base-plate 1, while being capable of the necessary pivotal movement, the openings 11 being made large enough to permit such pivotal movement of the wing-rails, as seen in Fig. 4.

Beyond the brace or tie-bar 5 the pivotal ends of the wing-rails 9 9 are extended between the straps or fish-plates 4 4 of the respective communicating track-rails 3 3, so as to produce as close a joint therewith as is possible considering the movement needful for operation of the wing-rails, and in the under side of each such extended end is produced a socket or recess adapted to receive a

pivot stud or pin 10, securely set in the base-plate 1 of the frog and whereon the corresponding wing-rail is adapted to be moved pivotally. To accommodate such pivotal movement of the wing-rails at their pivoted extended end portions, the straps or fish-plates 4 4, between which said ends are held, are cut away or beveled on their inner surfaces, as seen at 8 in Fig. 1, and the portion of each strap or fish-plate whereat such beveled or cut-away part 8 is produced is made of increased thickness, so as to have sufficient strength to withstand strains which may be placed upon it.

The wing-rails 9 9 are inclined toward each other, as seen in Fig. 1, so as to meet, as seen at 11^a, at the apex or extreme angular part of the point 12 of the frog, said point being herein shown as formed from two rail-sections 21 21, set at inclinations corresponding with those of the wing-rails 9 9 and having flanges bolted or otherwise securely held upon the base-plate, the meeting ends of said rail-sections 21 21 being beveled upon adjacent sides, so as to fit flush upon each other and produce a miter-joint.

22^a 22^a represent ends of track-rails, which are lapped over upon the end of the base-plate opposite to the rail ends 3 3 above referred to and which communicate with the ends of the rail-sections 21 21 of the point 12.

13 13 represent the angular ends or wings of the wing-rails, which are arranged to fit flush upon the opposite sides of the point 12 of the frog, each such end portion or wing 13 being bent or inclined at an angle to the main or body portion of its respective wing-rail 9, and 14 14 represent reinforcing blocks or parts, which are fitted upon each wing-rail 9 at the outer side of the bent or angulated part thereof in order to stiffen the structure and prevent bending of the wing-rail.

15 15 represent bars or rods which are passed transversely through perforations in the wing-rails, reinforces 14 and point 12 at opposite sides of the point of intersection or juncture of the wing-rails and point of the frog, said rods or bars 15 being of lengths such that their extremities are caused to project beyond the reinforces at opposite sides of the frog, heads or enlargements 17 being provided on their extremities and stout spiral or coil springs 16 being held upon said extended end portions with their outer ends abutting upon said nuts or enlargements 17 and their inner ends abutting upon the outer surfaces of the reinforces 14. Casings or jackets 18 are provided upon reinforces 14 and inclosing the springs 16 to prevent interference by snow or ice with the operation of the wing-rails, as will be understood. By this construction it will be evident that the tension of the springs 18 serves to hold the bent ends or wings 13 of the wing-rails up

flush upon the opposite faces of the point 12, so that the space between the parts is closed to prevent interference by snow or ice with the operation and also to prevent catching of the feet of passers-by in the frog.

19 represents a brace or tie-plate similar to the part 5 above described, but which is transversely extended upon the base-plate 1 in position to pass through openings 20 in the webs of the rail-sections 21, from which the point 12 is formed, and also in the contacting bent parts or wings 13 of the wing-rails, said plate 19 being elevated in any suitable way above the top of the base-plate 1, as shown in Fig. 2, so that the openings 20 need be cut only in the webs of the rail-sections, leaving the flanges thereof unbroken to afford the maximum of strength, together with a uniform bearing on the top of the base-plate. The openings 20 in the bent ends 13 of the wing-rails are sufficiently elongated to permit free pivotal movement of said wing-rails.

To reinforce the rail-sections 21 21 at their point of junction at the point 12 of the frog, we provide a V-shaped filling or reinforce, as shown at 23 in Figs. 5, 6, and 7, and having divergent arms 22 22 designed to fit within the spaces at the sides of the rail-sections 21, between the ball and flange portions thereof. This reinforce or filling 23 imparts great strength to the point of the frog and prevents the same from being broken down in service. 24 represents a double bevel or downward inclination provided at the juncture of the ball portions of the rail-sections 21 at the point of the frog and designed to permit the wheel-tread to ride upon said point from either wing-rail, so that damage to the point 12 of the frog in service is further prevented.

25 represents a vertically-arranged bolt or pin which is passed downward through the brace or tie-plate 19 and into the base-plate 1, so as to be securely anchored at its lower end, and the upper end of said pin or bolt is extended upward, as seen in Figs. 1, 2, and 5, so as to extend between the rail-sections 21 21 at or adjacent to their point of contact, having a head or enlargement at its upper extremity which is countersunk in the balls of said rail-sections. By this construction, since the V-shaped filling or reinforce 23 is securely bolted in place at the point 12 of the frog to prevent spreading of the rail-sections of which said point is formed, it will be seen that the pin or bolt 25 by engagement between the rail-sections serves to securely anchor the point of the frog to the base-plate and prevent lateral movement, its headed upper extremity also preventing the point 12 from springing up from the base-plate 1, whereby derailment might be caused.

In the use of the improved frog constructed as above described the wing-rails 9 9 are securely held down in relation to the base-

plate by the tie-plates or transverse braces 5 and 19 at opposite sides of the point of junction 11 of said rails with the point 12 of the frog, and said braces or tie-bars also act as guides for properly directing the lateral movement of the wing-rails and preventing unnecessary friction upon the base-plate 1 in the movement thereof. The springs 16 in their casings at opposite sides of the point of juncture at 11 of the wing-rails also insure accurate and uniform movement of said wing-rails, so that the same are permitted to be pressed away from the point 12 on the passage of the wheel-flange, the tension of the springs serving, however, to effectively press the wing-rails up flush upon the point of the frog after the passage of said flange, so that the frog may not become clogged by the packing of snow or ice between the parts, and also effectively providing against the accidental catching of the feet of passersby in the frog.

The improved railway-frog constructed according to our invention is of a comparatively simple and inexpensive nature and is especially well adapted for use by reason of the accuracy of operation of the wing-rails afforded by it and also by reason of the strength and stability of the structure and the non-liability of either the wing-rails or point of the frog springing up from the base-plate, so as to cause derailment of trains passing the frog. The arrangement of the rail ends adjoining the pivotal ends of the wing-rails and the provision of the straps or fish-plates for securing said rail ends in place and bridging the joints between the same and the wing-rails is also especially simple and desirable as affording increased strength and security without materially increased cost.

It will also be obvious from the above description that the improved frog constructed according to our invention is capable of some modification without material departure from the principles and spirit of the invention, and for this reason we do not desire to be understood as limiting ourselves to the precise form and arrangement of the several parts of the device herein set forth in carrying out our invention in practice.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a railway-frog, the combination of a base-plate, a point supported thereon, wing-rails mounted for movement on the base-plate toward and from the point, rail ends adjacent to the ends of the wing-rails and straps connecting the rail ends with the base-plate and bridging the joint between said rail ends and the wing-rails.

2. In a railway-frog, the combination of a base-plate, a point supported thereon, wing-rails pivotally held on the base-plate with bent ends movable toward and from the

point, rail ends lapped on the base-plate adjacent to the pivotal ends of the wing-rails and straps connecting said rail ends with the base-plate and bridging the joint between said rail ends and the wing-rails and having beveled inner surfaces adjacent to and permitting pivotal movement of the wing-rails.

3. In a railway-frog, the combination of a base-plate, a point supported thereon, wing-rails each having at one end a detachable pivotal connection with the base-plate and having its opposite end bent and movable toward and from the point and means, independent of the detachable pivot connection of each wing-rail with the base-plate for holding said wing-rail pressed on said base-plate.

4. In a railway-frog, the combination of a base-plate, a point supported thereon, wing-rails each having at one end a socket in its under side and having its opposite end bent and movable toward and from the point, pivot-studs on the base-plate and engaged in the sockets at the under sides of the wing-rails and means carried by the base-plate and independent of said studs and having engagement with the wing-rails to hold the same upon the base-plate with their sockets engaged with said studs.

5. In a railway-frog, the combination of a base-plate, a point supported thereon, wing-rails each having a socket in the under side of one end and having its opposite end bent and movable toward and from the point, pivot-studs on the base-plate and engaged in the sockets at the ends of the wing-rails, a brace transversely extended upon the base-plate with its central portion elevated above the surface thereof, said wing-rails having perforations in their webs and said brace being passed through said perforations to guide the wing-rails in their movement and retain them on the base-plate with their sockets engaged with said studs.

6. In a railway-frog, the combination of a base-plate, a point supported thereon, wing-rails pivotally mounted on the base-plate with bent ends movable toward and from the point, reinforces held on the outer sides of the wing-rails opposite the bends therein and spring devices for pressing the wing-rails in contact with the point.

7. In a railway-frog, the combination of a base-plate, a point supported thereon, wing-rails pivoted on the base-plate with bent ends movable toward and from the point and spring devices for pressing the wing-rails into contact with the point and located at different points along the length of the wing-rails at opposite sides of the point of juncture with the point of the frog.

8. A railway-frog having a point formed from rail-sections having beveled faces fitted flush on each other and provided with a V-shaped filling or reinforce the arms of which are set into the spaces at opposite sides of

said rail-sections between their ball-and-flange portions.

5 9. A railway-frog having a point formed from rail-sections jointed together in combination with a base-plate and a pin or bolt anchored in said base-plate and having its upper end extended between said rail-sections and provided with an enlargement engaged therewith to hold said sections from spring-
10 ing up above the base-plate.

10 10. In a railway-frog, the combination of a base-plate, a point supported thereon and having divergent rail-sections, wing-rails movable on the base-plate and having bent
15 ends at opposite sides of the point, said rail-sections of the point and said wing-rails hav-

ing alined openings in their webs, a tie-plate the ends of which are supported on the base-plate and the central part of which is elevated above the base-plate and passed 20 through the alined openings in the rail-sections of the point and in the wing-rails and a pin or bolt anchored in the tie-plate with its upper end extended between the rail-sections of the point and provided with an enlarge- 25 ment engaged therewith to hold said point from springing up above the base-plate.

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