No. 786,627. PATENTED APR. 4, 1905.

W. F. CARR.

RAILWAY FROG.

APPLICATION FILED DEC. 31, 1904.

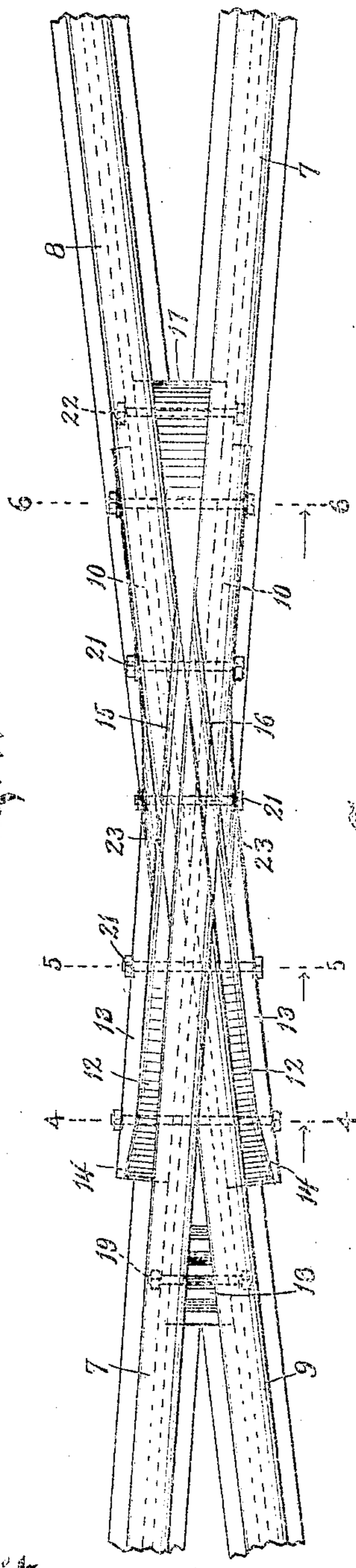

Fig. 1.

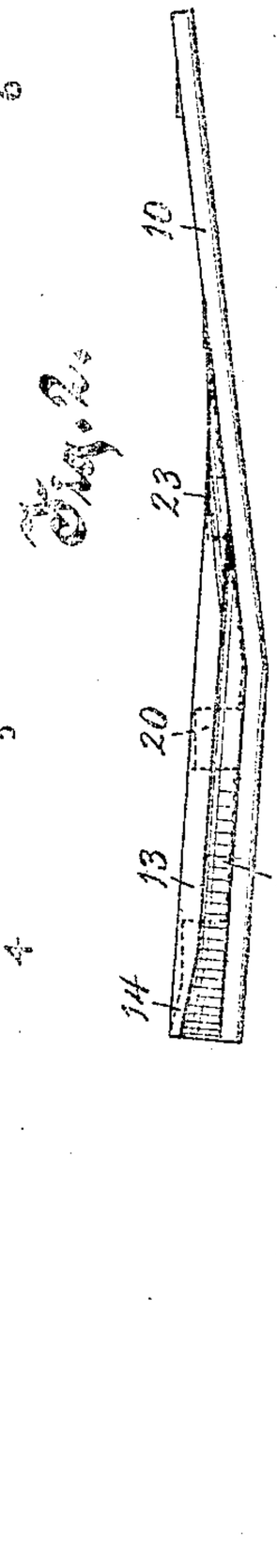

Fig. 2.

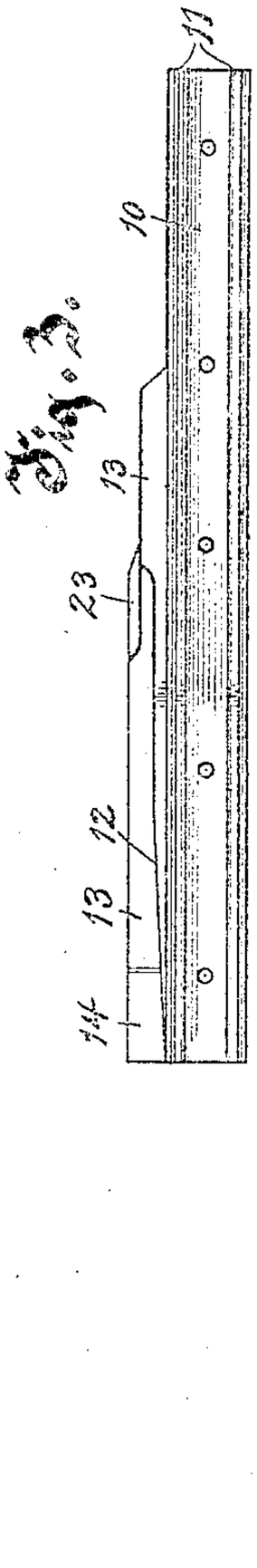

Fig. 3.

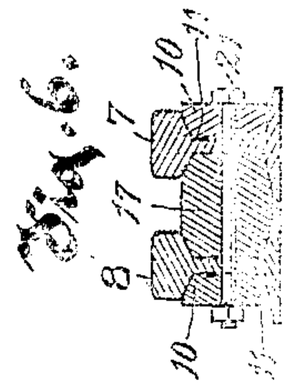

Fig. 6.

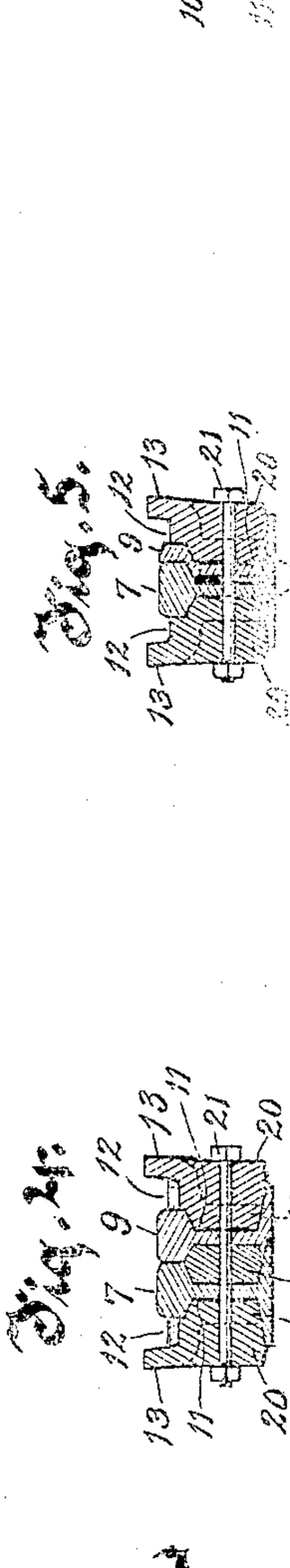

Fig. 5.

Fig. 4.

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UNITED STATES PATENT OFFICE.

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RAILWAY-FROG.

SPECIFICATION forming part of Letters Patent No. 786,627, dated April 4, 1905.

Application filed December 31, 1904. Serial No. 239,185.

To all whom it may concern:

Be it known that I, WALTER F. CARR, residing in Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Railway-Frogs, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention relates to railway-frogs designed to prevent the jar to cars in passing a railway-crossing.

The flange construction of railway-car wheels makes it necessary that in railway-crossings each rail should be split or contain a groove across its head to permit of the flanges of the wheels on the other track passing therethrough. Without means provided for the contrary, this opening in the bearing-surface of each rail-head causes the wheel traveling on the rail to pound against the far side of the opening, which pounding soon results in the destruction of the railway-frog. The most efficient method in general use for avoiding this pounding and its resulting destruction of the railway-frog is to provide inclines or risers for each track in the path of the wheel-flanges, which by reason of the said flanges riding thereon lift the wheel slightly, so as to transfer its bearing from the tread to the flange, and then these inclines or risers of the intersecting tracks cross each other on the same horizontal plane and finally decline on the other side of the intersection, so that the car-wheels are lowered and returned to their normal bearing with their treads on the heads of the rails. By this means the wheels of each track have a continuous bearing-surface with their treads held up out of engagement with the rail-heads containing the openings, and consequently there is no pounding and the life of the railway-frog is prolonged. As the railway-frog is by its very nature subjected to excessive wear and liability to derangement by constituting a common part for the intersecting tracks and because of the difficulties in firmly securing in position its comparatively delicate and inaccessible parts, it is notoriously one of the most vulnerable parts of railway construction and as at present constructed is the source of many accidents.

The railway-frog constructions by which the continuous bearing-surface for the car-wheels is preserved in the manner above mentioned usually involve numerous complicated parts which are required to be fitted and connected together and to the rail-sections; and it is the object of the present invention to simplify and materially improve upon such constructions by providing an integral frog part for attachment to the intersecting rails and possessing nearly all of the necessary features to produce the desired results without the liability of parts becoming loose.

A particular object of this invention is to provide a railway-frog in which one of the rails is left intact and constitutes what is known as a "through-rail," while the intersecting rail is divided and mitered or scarfed at its ends to fit against the through-rail, both rails having their heads grooved for the passage of the flanges of the car-wheels and all parts being rigidly bound together by means of angle-plates fitting against the webs of the intersecting rails and constituting integral risers and guards therefor, with chock-blocks held within the crotches of the intersecting rails.

With the above and other objects in view the invention consists in the device, its parts, and combinations of parts, as herein set forth, and their equivalents.

Referring to the accompanying drawings, in which like characters of reference indicate the same parts in the several views, Figure 1 is a plan view of a railway-frog constructed in accordance with this invention. Fig. 2 is a plan view of one of the angle-plates forming a part thereof. Fig. 3 is a side elevation of said angle-plate. Fig. 4 is a transverse sectional view of the railway-frog, taken on the line 4 4 of Fig. 1. Fig. 5 is a similar view taken on the line 5 5 of Fig. 1, and Fig. 6 is also a similar view taken on the line 6 6 of Fig. 1.

In the drawings, 7 represents one of the rails of a railway-crossing, which is left intact and constitutes the through-rail, and 8 and 9, respectively, represent the two adjacent ends of the intersecting rail. The ends

of the sections 8 and 9 of the intersecting rail are mitered to the angle of intersection of the crossing with their sectional contour such that they exactly fit against the irregular sides of the through-rail 7, and consequently bear full against said through-rail throughout their end surface. A pair of angle-plates are provided to fit against the opposite sides of the rail intersection, and said angle-plates are practically identical, except that they are made in reverse, so that when applied to the opposite sides of the rail intersection the several parts of each stand directly opposite their counterparts of the other. Each angle-plate comprises a main vertical portion 10, which is shaped to the angle of the crossing and is adapted to fit against the webs of the intersecting rails between their head and foot flanges in a manner similar to a fish-plate, the bearing-surface thereof being provided with a pair of parallel spaced flanges or beads 11 to leave a clearance-space between the webs of the rails and the upright portion 10. One end of the angle-plate has a laterally-extending bearing-surface 12, which is inclined from its extremity to a point midway thereof, where it continues on a horizontal plane, and this bearing-surface constitutes the riser upon which the flange of the car-wheel rides to lift it and remove its tread from the head of the track-rail. At the outside edge of the bearing-surface 12 is an upstanding flange 13, forming a guard for the flange of the car-wheel and causing the riser 12 to lie in a groove between the guard-flange 13 and the head of the rail, the approach to said groove being flaring by reason of the end of the guard-flange 13 being tapering at 14.

The heads of the rails 8 and 9 are provided with grooves 15 and 16, respectively, extending obliquely thereacross in continuation of the grooves formed by the risers 12 of the respective angle-plates, and the bottom surfaces of these grooves 15 and 16 are in the same plane with the horizontal portions of said risers 12. The car-wheels in crossing the intersecting rails ride on their flanges in the said grooves 15 or 16, as the case may be, with their treads held up out of engagement with the heads of the rails and are consequently unaffected by the grooves 15 and 16, which interrupt the bearing-surface on the said heads of the rails.

A chock-block 17 is secured in the crotch of the intersecting rails and tightly fits in the space between them, with the upper surface of its pointed end forming a continuation of the bottom bearing-surfaces of both of the grooves 15 and 16 and declining therefrom, so that the flanges of the car-wheels as they pass out of either of the grooves 15 or 16 ride downwardly on the upper surface of said chock-block until the treads of said wheels are again brought into their natural bearing on the heads of the rails.

Both of the angle-plates, as shown, have their corresponding parts opposite each other, as the cars on the intersecting tracks are intended to approach from the same general direction, and at this approach end of the frog a chock-block 18 is fitted into the crotch between the intersecting rails and secured in position by a bolt 19 passing through the webs of said rails and through the chock-block. The angle-plates are further provided at intervals with integral lugs or bosses 20, which project outwardly from the upright portions 10, and along the portion thereof where the guard-flanges 13 extend these lugs project to approximately the vertical plane of the outer edges of said guard-flanges.

All of the associated parts of the frog are bound together by bolts 21, which pass through the chock-blocks, the webs of the intersecting rails, the upright portions 10 of the angle-plates, and the lugs 20, the latter having their outer surfaces so shaped that the heads and nuts of the bolts 21 fit thereagainst. The chock-block 17 is further secured in position by a bolt 22 passing through it and the webs of the intersecting rails. In this manner all of the parts are most rigidly secured together, and each bears upon and supports the others against the possibility of slipping out of their respective positions.

As the tread of the car-wheels may extend beyond the outer edge of the rail-head, each guard-flange 13 is cut away at its inner end where it bears against the head of the intersecting rail to form a rounded way 23, in which the edge of the wheel-tread may pass without engaging the guard-flange.

From the foregoing it will be seen that a railway-frog constructed in accordance with this invention is adapted to receive the flange of a car-wheel approaching it on either track-rail, the flange of the car-wheel passing onto the riser 12, guided thereto by means of the tapering edge 14 of the guard-flange 13 and riding up the inclined portion of said riser to lift the tread of the car-wheel from engagement with the head of the rail. The car-wheel then passes over the intersecting rail upon its flange, which rides on the continuous surfaces of the riser, the bottom portion of the groove 15 or 16, as the case may be, and the chock-block 17, on which it is lowered by traveling down the declining surface of said chock-block until the tread again bears on the head of the rail.

The upright portion 10, the riser 12, and the guard-flange 13 being made integral, there is no possibility of their becoming loose from each other, and the two angle-plates forming opposite sides of the frog with the other parts clamped therebetween by means of bolts 21 passing entirely through the frog from one angle-plate to the other produces a most rigid structure, thoroughly braced and supported at every point and not liable to become loose or

have its parts slipped from position, so that the most desired objects for a railway-frog of this type are accomplished thereby.

It is obvious that the railway-frog embodying this invention is not necessarily constructed of the form of rail shown, but that other forms of rails may be equally well adopted in its construction.

While the frog member is herein termed an "angle-plate," it is obvious that it may and preferably does constitute a casting.

What I claim as my invention is—

1. A railway-frog comprising intersecting rails, and angle-plates fitting against the sides of the intersecting rails provided with integral risers and integral upstanding guard-flanges, said intersecting rails having grooves formed in their heads in alinement with the risers.

2. A railway-frog comprising intersecting rails, angle-plates fitting against the sides of the intersecting rails and provided with integral risers and integral guard-flanges, and bolts passing through the opposite angle-plates and the intervening intersecting rails.

3. A railway-frog comprising intersecting rails, angle-plates fitting against the webs of said rails at their intersection and having integral risers and integral guard-flanges, chock-blocks fitted in the crotches of the intersecting rails, and bolts passing through the angle-plates on the opposite sides of the intersection of the rails and through the intervening rails and chock-blocks.

4. A railway-frog comprising intersecting rails, angle-plates fitting against the webs of the rails at their intersection and having integral risers and integral guard-flanges and integral lugs, chock-blocks fitting into the crotches of the intersecting rails, and bolts passing through the lugs of the opposite angle-plates and the intervening rails and chock-blocks.

5. A railway-frog comprising a through-rail, an intersecting rail formed in sections mitered to fit against the through-rail, angle-plates adapted to fit against the sides of the rails at their intersection and formed with integral inclined risers and integral upstanding guard-flanges, said rails having grooves formed in their heads in alinement with the risers and with their bottom surfaces flush with the surfaces of the risers.

6. A railway-frog comprising a pair of intersecting rails, one of said rails being a through-rail and the other rail being formed in sections with the ends mitered to fit against the opposite sides of the through-rail, angle-plates fitting against the webs of the rails at their intersection, integral risers formed on one end of the angle-plates with an inclined surface and a horizontal surface, integral guard-flanges on the angle-plates upstanding from the sides of the risers, integral lugs on the angle-plates, chock-blocks fitting in the crotches of the intersecting rails, and bolts passing through the lugs of the opposite side plates and through the intervening rails and chock-blocks, said rails having grooves formed in their heads in extension of the risers with their bearing-surfaces flush with the horizontal surfaces of the risers, and one of the chock-blocks having its surface inclined and forming a continuation of the bearing-surface of the grooves of both rails, said guard-flanges having cut-away portions where they meet the rail-heads to allow of the passage of the car-wheel tread.

7. A railway-frog member comprising an angle-plate adapted to fit against the sides of intersecting rails, an integral riser projecting from one side thereof, and an integral guard-flange upstanding from the side of the riser.

8. A railway-frog member comprising an angle-plate adapted to fit against the webs of intersecting rails, an integral riser projecting laterally from one end of the angle-plate and having an inclined surface and a horizontal surface, and an integral guard-flange on the side of the riser.

9. A railway-frog member comprising an angle-plate adapted to fit against the webs of intersecting rails, an integral riser projecting laterally from one end of the angle-plate, and an integral guard-flange upstanding from the side of the riser and having its end tapered to cause the approach of said riser to be flaring.

10. A railway-frog member comprising an angle-plate adapted to fit against the webs of the intersecting rails, an integral riser projecting laterally from one end of the angle-plate, and an integral guard-flange upstanding from the side of the riser and having a cut-away portion where it meets the head of one of the intersection rails to permit of the passage of a car-wheel tread.

11. A railway-frog member comprising an angle-plate, an integral riser projecting laterally from one end thereof, an integral guard-flange upstanding from the side of the riser, and integral lugs formed on the angle-plate having faces to receive connecting-bolts which pass entirely through the railway-frog.

In testimony whereof I affix my signature in presence of two witnesses.

WALTER F. CARR.

Witnesses:
R. S. C. CALDWELL,
ANNA F. SCHMIDTBAUER.