No. 812,877. PATENTED FEB. 20, 1906

E. M. RANKIN.

RAILWAY FROG FOR TURN-INS AND TURNOUTS.

APPLICATION FILED AUG. 24, 1905.

Fig. 1.

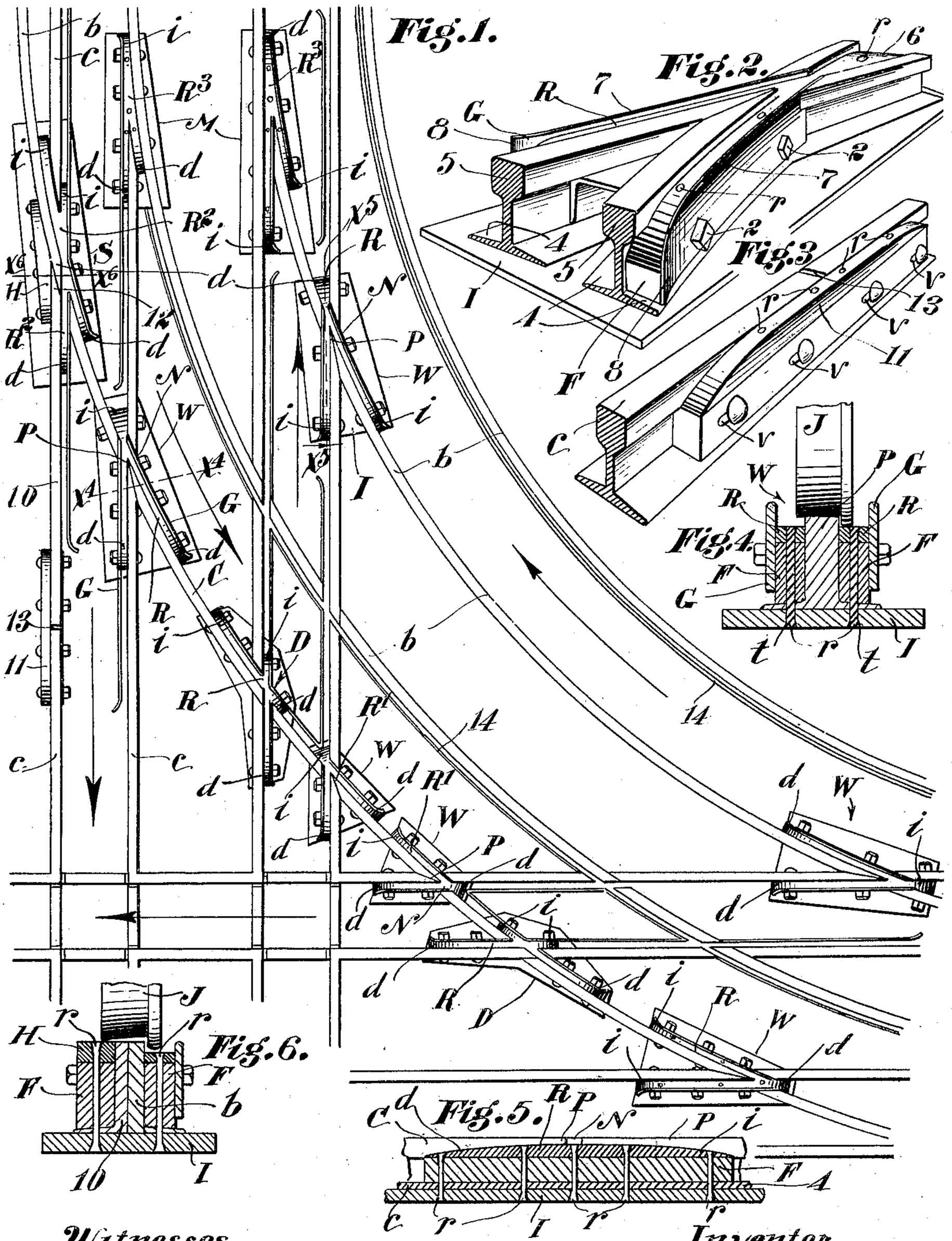

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 6.

Fig. 5.

Witnesses
Wm. B. Beckham
S. Townsend

Inventor
Edmund M. Rankin
by James R. Townsend
Atty.

UNITED STATES PATENT OFFICE.

EDMUND M. RANKIN, OF LOS ANGELES, CALIFORNIA.

RAILWAY-FROG FOR TURN-INS AND TURNOUTS.

No. 812,877. Specification of Letters Patent. Patented Feb. 20, 1906.

Application filed August 24, 1905. Serial No. 275,511.

To all whom it may concern:

Be it known that I, EDMUND M. RANKIN, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Railway-Frog for Turn-Ins and Turnouts, of which the following is a specification.

My invention has for its object the prevention of all crushing and mashing of the points of rails in railway-frogs, and thereby avoiding the formation of depressions in the track which each successive car-wheel in the operation of the road makes larger.

It is also an object of my invention to do away with the necessity of renewing railroad-frogs on account of ordinary wear, also to prevent the noise attendant upon the passing of frogs by a railroad-car, and also to prevent the jar transmitted to the car on passing over a frog.

It is an object of this invention to provide against pounding of hollow-tread wheels on railway-joints at turn-ins and turnouts and elsewhere—that is to say, when the tread of a car-wheel becomes hollowed or worn next the flange by travel the outer edge of the tread thereof is liable to pound on the points and ends of the rails or frog and at the joints. I propose to avoid this difficulty by simple means.

To these ends my invention comprises a chilled-steel plate, which I prefer to call a "riser," attached to the frog in the path of the car-wheel flange and adapted by its shape to raise the tread of the wheels slightly off the frog or rail points or junctions, so that the car may have a smooth passage over the frog without touching the points.

The invention is applicable for all kinds of frogs—as, for instance, whole frogs, half frogs, double frogs, spraddle-frogs, and mate frogs—some of which will be herein illustrated.

An object of this invention is to avoid the destruction to which such frogs have heretofore been liable and to provide means whereby the life of railway-frogs may be renewed indefinitely.

I propose to take advantage of the fact that the flanges of railway-cars are hard and strong and to provide at the rail-junction in the frogs and in the path of the car-wheel flanges hard armor surfaces or risers bridging the space alongside the notches, on which surfaces the wheel-flanges will roll, gently raising the wheel sufficiently to carry it over the notches and points and gently lowering it after the notches and points have been passed. The rise and fall of the wheel need be only sufficient to insure against the tread of the wheel sinking as it passes the notches, the principle being to so construct the frogs as to support the wheel by its flange while passing the notch.

The accompanying drawings illustrate the invention.

Figure 1 is a plan view of a double-line railroad-crossing with turn-ins and turnouts and illustrating wide and narrow gage roads provided with my frog. Fig. 2 is a detail perspective view of a frog provided with a frog-riser. Fig. 3 is a detail perspective view of an outside riser in place at a joint between two rails, fragments of which are shown. Fig. 4 is a section on line x^4 x^4, Fig. 1, with a fragment of a wheel. Fig. 5 is a section lengthwise of one of the risers and fillers, showing a portion of the frog in elevation. Line x^5 in Fig. 1 indicates the line of section. Fig. 6 is a section on line x^6 x^6, Fig. 1, with fragment of hollow-tread wheel thereon.

In the drawings I have shown a turn-in and turnout at a junction of a double-track railroad, showing both narrow and standard gage tracks. In the turn-in and turnout thus formed there are whole frogs W, double frogs D, spraddle-frogs S, and mate frogs M, with risers R placed in each of them and each made of a steel plate chilled and riveted down by rivets *r* to what is called a "filler" F in each frog, so that the flanges of the car-wheels will run on the risers for the purpose of raising the wheels of the cars over all points and notches in said frogs, said wheels rolling on their flanges on the risers while passing through said frogs going in on an incline and coming out on a decline at the ends *i* and *d* of the risers.

The risers are put down on iron plate foundations I and riveted down to said foundations by rivets *r*. At the points P and notches or clearance-spaces N of any frog the top of the risers therefor will in practice be one-half inch below the level of the top of the main rail, the risers being inclined at each end, thereby causing the tread of the wheels to rise gradually above all points and notches that are to be protected, and going off with a gradual decline.

There are guard-rails G for holding the wheels in place while passing over the frogs

on the risers, and there are guard-rails opposite all frogs.

Spraddle-frogs S and risers R are located where a broad-gage track leaves the narrow-gage track. In the drawings whole-frog risers are marked R, double-frog risers are marked R′, spraddle-frog risers are marked R^2, and mate-frog risers R^3.

The fillers F are constructed to rest on flanges 4 of the rails, respectively, as shown more particularly in Fig. 2, and the risers may be made to fit underneath the tread 5 of the rail. On the ends of the risers R are the inclined and declined portions *i* and *d*, which serve to gradually raise and lower the wheels J, which pass over the respective frogs.

The risers are provided on their outsides with guard-flanges 7, which are flared outward at their outer ends, as at 8. In the plan view these flanges are in some places shown as a continuation of the customary guard-rails, where such continuation is convenient.

The risers R are made in such shape in ground plan as to fit the respective frogs for which they are intended, and thus, as will be seen from Fig. 1, the risers may be of various shapes, lengths, and sizes to meet the requirements of the respective frogs. The risers of different forms are indicated by the character R with an exponent.

In passing over the frogs the flanges of the car-wheels run onto the risers and are gradually lifted by the inclined portion *i* of the riser until the treads of the wheels are clear of the rails and are held in this position until the frog around which this particular riser is placed is passed, when the wheel is gradually let down by the declined portion *d* on the further end of the riser.

Riser R^2 is placed in Fig. 1 at the frog caused by the crossing of wide-gage rails *b* and narrow-gage rails *c*. On the outside of the frog is placed the helper or auxiliary riser H, upon which the tread of the wheels passing over such frog bear in case such wheels happen to be hollow, as at J′, Fig. 6. A section 10 of rail *c* is connected with the main portion of rail *c* by a second auxiliary riser 11. Section 10 forms an adjustment for frog *d*, around which riser R^2 is placed, so that the points at rail-junction 12 of section 10 need not be forced so far into the frog as to necessitate wheels passing over the frog jamming the point of the section. Auxiliary riser 11 verges over the gap 13 between section 10 and main rail *c*. I have shown but one frog equipped with the adjusting-section and auxiliary risers; but other frogs which are of a shape to allow of such provision may be provided with such adjustment also.

In general I have shown risers in connection only with frogs on the outside rails, and in ordinary practice they will be used on that rail only on account of the difficulty of placing the risers inside the guard-rails 14, attached to the inside of the rails; but I do not limit myself to risers secured to and operating on the outside rail, as they are just as applicable to the inside as the outside rails.

The risers may be applied in frogs now in use, as well as in other frogs. To apply the invention to frogs now in use, the risers will be made of appropriate shapes and applied to their appropriate frogs, respectively, whereupon the workman will drill rivet-holes *t* through the risers, fillers, rail-flanges, and foundation, and then drive rivets *r* into place. To remove the risers, the rivets will be driven down through the rivet-holes, thus releasing the detachable risers, whereupon they may be replaced with new ones having rivet-holes drilled to correspond to those of the detached worn riser.

The joint 13 between a main rail *c* and a frog-section 10 is desirably made with a space, as indicated in Fig. 3, to take up the expansion, and in such cases the bolt-holes *b* in the filler will be oblong, as indicated in Fig. 3.

In Fig. 1 large arrows indicate the direction of car travel on the different tracks.

What I claim is—

1. A railway-frog provided with a foundation, a filler and a riser, and with rivet-holes therethrough, and rivets in said holes detachably fastening the parts together.

2. A railway-frog comprising rail-junctions and rail ends, risers adapted to protect said junctions and ends fastened to the inside of the rails, and an auxiliary riser fastened to the outside of the rails at the junction or ends.

3. A railway-frog comprising two intersecting rails, a riser secured at said intersection on the inside of said rails, an auxiliary riser on the outside of said rails at the intersection thereof, a clearance-space being in one of said rails, and an outside riser secured at said clearance-space.

In testimony whereof I have hereunto set my hand, at Los Angeles, California, this 18th day of August, 1905.

EDMUND M. RANKIN.

In presence of—

JAMES R. TOWNSEND,
JULIA TOWNSEND.