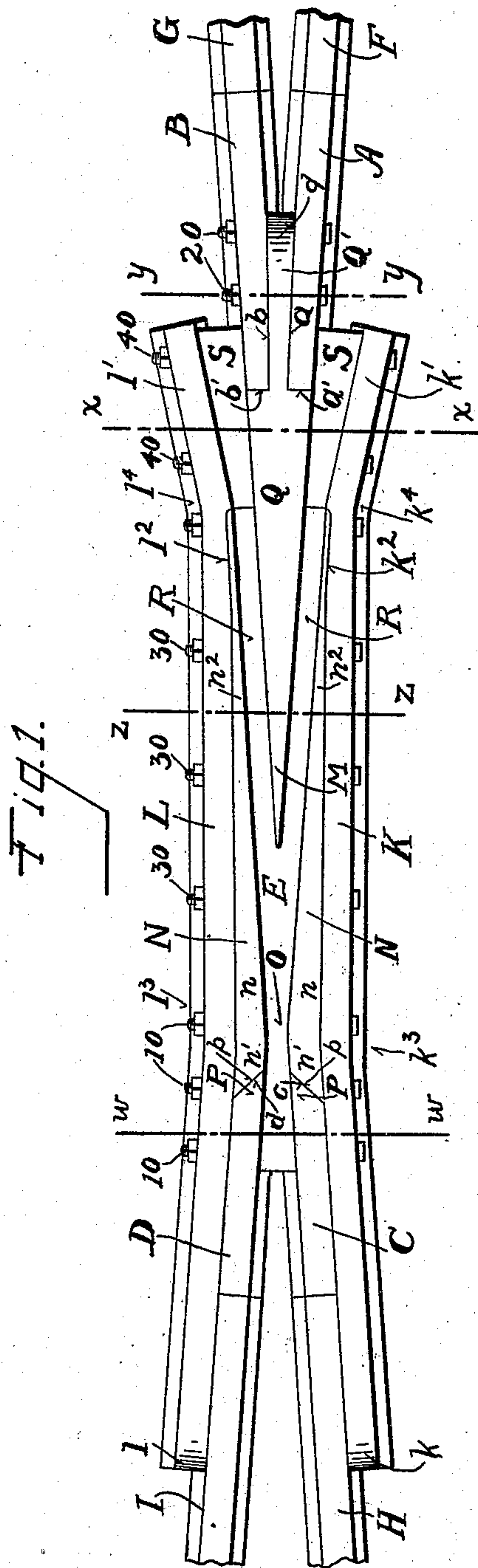


W. H. RABBE, E. W. HARDEN & M. E. DEMPSEY.  
RAILWAY FROG.

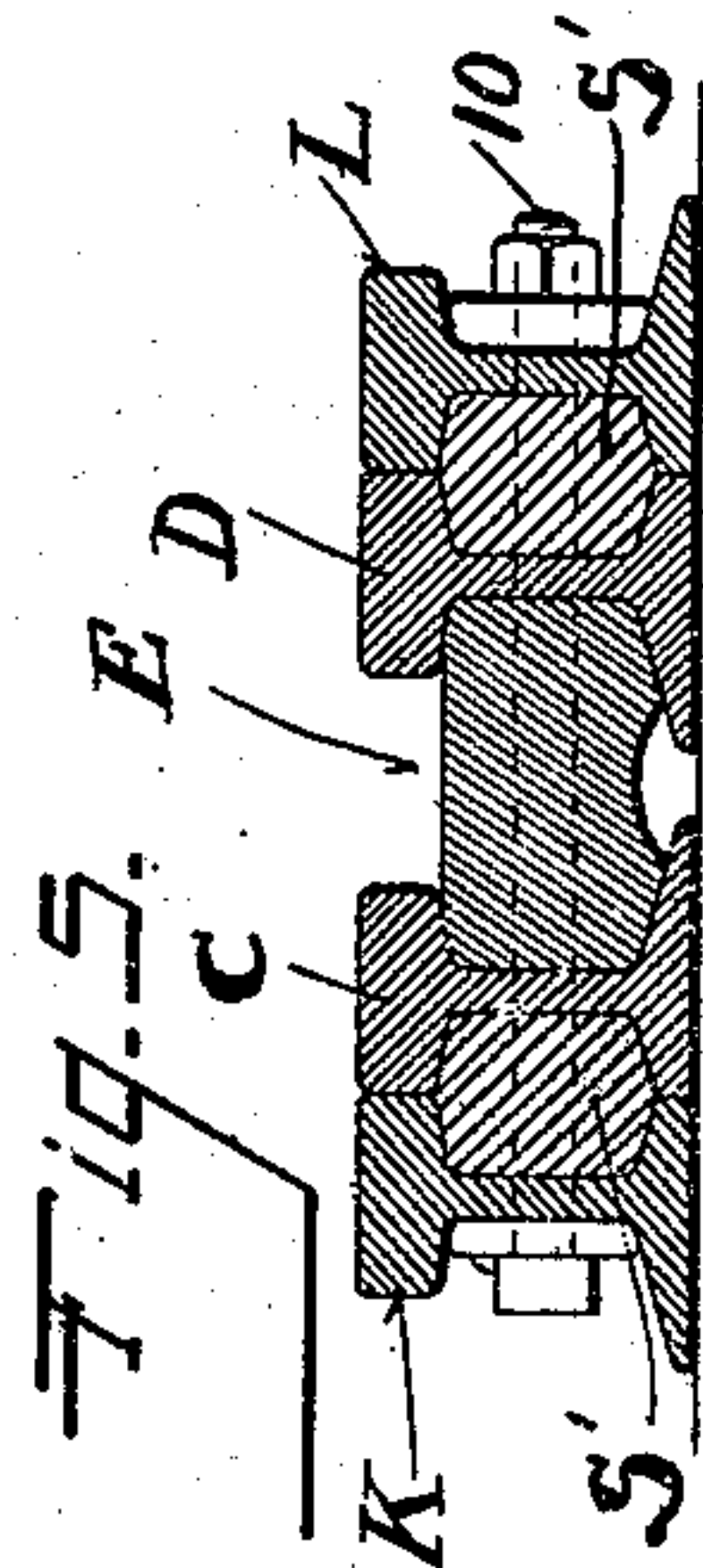
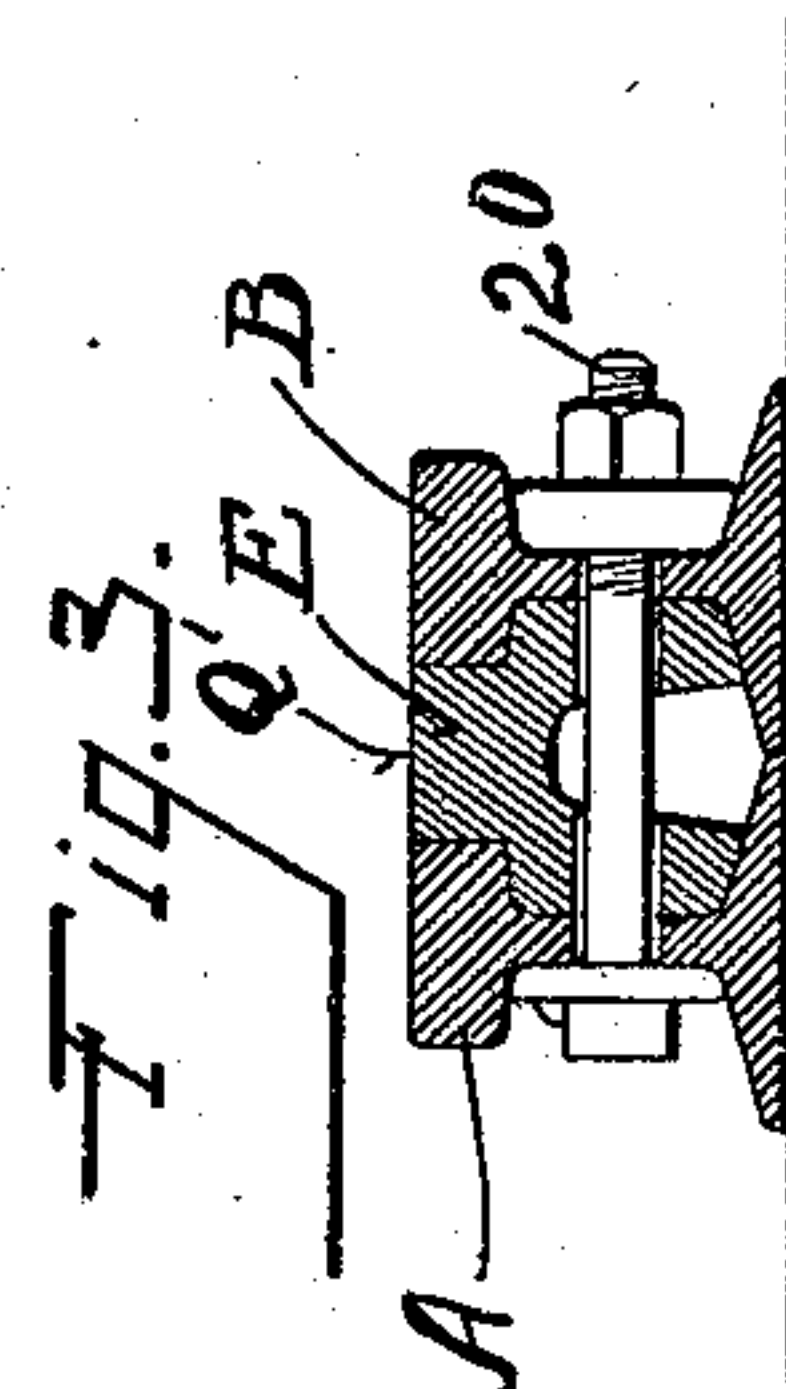
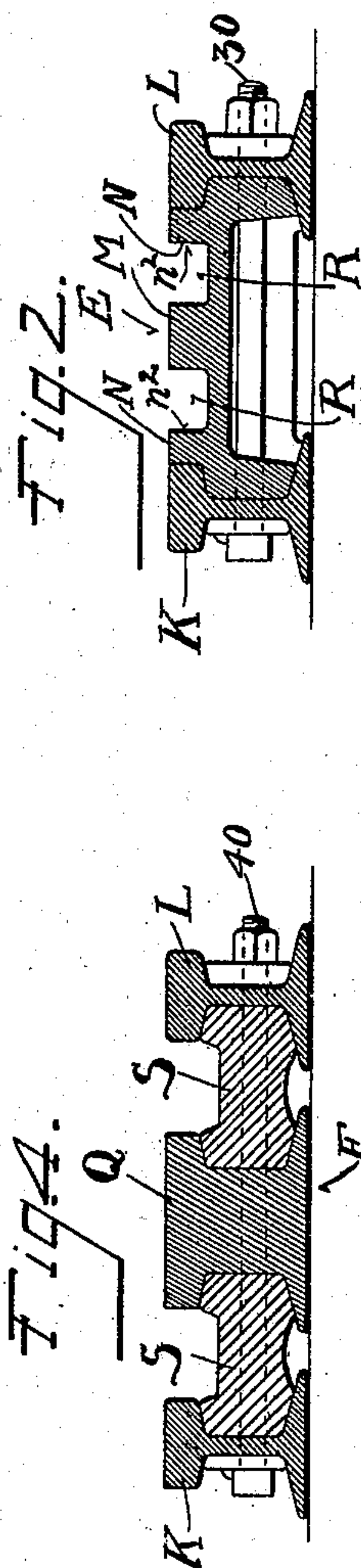
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900,422.

Patented Oct. 6, 1908.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

WILLIAM H. RABBE, EDWARD W. HARDEN, AND MICHAEL E. DEMPSEY, OF HAMILTON, OHIO.

## RAILWAY-FROG.

No. 900,422.

Specification of Letters Patent.

Patented Oct. 6, 1908.

Application filed April 25, 1908. Serial No. 429,243.

*To all whom it may concern:*

Be it known that we, WILLIAM H. RABBE, EDWARD W. HARDEN, and MICHAEL E. DEMPSEY, citizens of the United States, residing at Hamilton, in the county of Butler and State of Ohio, have invented certain new and useful Improvements in Railway-Frogs, of which the following is a specification.

It is the object of our invention to provide a new and improved railway frog in which the parts which would be normally subjected to the greatest wear from side-contact as well as pounding blows from the wheels of the vehicle passing thereover, shall be composed of hard metal, for instance, hardened steel, and so arranged that the continuity of the tracks shall not be interfered with and so connected with the regular trackage that danger of derangement is avoided, and an improved construction provided, and it is the further object of our invention to so combine and arrange the construction mentioned that the joints in the frog and preferably also between the frog and the continuation of the trackage may be protected from pounding stress; and the invention will be readily understood from the following description and claims, and from the drawings, in which latter:

Figure 1 is a plan view of our improved railway frog. Fig. 2 is a vertical cross-section of the same on the line  $z-z$  of Fig. 1. Fig. 3 is a vertical cross-section of the same on the line  $y-y$  of Fig. 1. Fig. 4 is a vertical cross-section of the same on the line  $x-x$  of Fig. 1; and, Fig. 5 is a vertical cross-section of the same on the line  $w-w$  of Fig. 1.

A B C D represent stub-rails as part of the frog, between the inner ends of which the block E of the frog is located. This block is of hard metal, for instance, hardened steel, and for convenience we shall hereinafter refer to the same as the hard-block. Ordinary continuation-rails F G H I of the trackage are arranged to abut and be secured to the outer ends of the stub-rails, the outer ends of the said continuation-rails being shown broken away.

K and L are reinforce-rails at the outer portions of the frog and in the form shown also act as riser-rails at the toe-end of the frog as shown at  $k\ l$ , and as wing or guard rails at the heel-end of the frog as shown at  $k'\ l'$ .

The hard-block comprises the point M, and gage-faces N N, these gage-faces pro-

jecting opposite the point, as shown at  $n$ , and also extending preferably beyond the throat O of the frog, as shown at  $n'$ , so that the hard-block will protect the frog against the side-contact wear of the flanges of wheels at said throat passing over the frog in both directions on both tracks. The reinforce-rails, acting as riser-rails, protect the joints between the hard-block and the stub-rails C D from pounding stress. To further protect these joints I prefer to form the hard-block with recesses P P, shown beveled, for receiving the ends  $c\ d$  of the rails C D, also shown beveled, so that the joints  $p\ p$  may be at an angle to the rotary axes of the wheels passing thereover. Bolts 10 pass through the parts.

The point-part of the hard-block is preferably spear-shaped, comprising the head Q and the shank Q', which latter at its outer or heel-end is formed with a riser-face  $q$ , the rest of the spear-shaped point-part however being preferably of the height of the rails so that the wheels may ride thereon and be supported thereby. The inner ends of the stub-rails A B are shown beveled at their inner faces as at  $a\ b$ , the shank also forming a filling-block between said stub-rails. Bolts 20 pass through the same. The hard-block as shown also comprises outer walls  $n^2\ n^2$ , shown as continuations of the side gage-faces N N, between which and the toe the grooves R R for accommodating the flanges of the wheels are located. The reinforce-rails are at their inner faces provided with tapering recesses  $k^2\ l^2$  for accommodating the side walls  $n^2\ n^2$  of the hard-block, the hard-block adjacent said side walls also forming a filling block between said reinforce-rails, bolts 30 securing the parts together. At the toe-end of said hard-block the reinforce-rails are respectively provided with slight curves  $k^3\ l^3$ , which, being slight and long, may be formed without drawing the temper from the rails, and at the heel-end of said hard-block they are provided with a spreading bend  $k^4\ l^4$  for forming the wings  $k'\ l'$  or guard-rails, it being understood that these reinforce-rails at their heel-ends do not serve as supporting rails for the wheels but as guard-rails acting sidewardly against the flanges of the wheels for directing said flanges properly into the grooves R R. Filling blocks S S are located between the wing-ends of said reinforce-rails and the heel of said hard-block preferably spanning the joints  $a'\ b'$  between said hard-block and the



stub-rails A B, bolts 40 holding the parts in place.

It will be noted that in our improved construction we provide a hardened wheel-supporting block against which the ends of the track-rails abut without subjecting said track-rails to bending stress, it being understood that in practice any material, acute, short or sharp bending of the rails at the frogs can only be successfully accomplished by heating said rails and consequently drawing the temper of the rails, it being further understood that these rails under latest methods of manufacture have temper imparted to them in manufacture which is destroyed upon the heating of the rails for the purpose of so bending the same. We avoid this objection in our improved construction and further provide a frog in which the joints are protected by riser-rails, and in our improved construction we further protect the joints between the toe-ends of the stub-rails of the frog and the continuation-rails of the trackage joining therewith, by a combined riser and reinforce-rail, providing an especially strong and safe construction.

It will be understood that the riser portions of our improved frog act upon the outer portions of the treads of the wheels which are usually in practice of slightly greater diameter than those portions of the treads adjacent to the flanges of said wheels, owing to the wear which in practice takes place upon railway wheels adjacent to said flanges occasioned by riding on the regular trackage of the railway. Filling-blocks S' S' are shown between the rails C K and the rails D L.

It is of course obvious that changes may be made from the construction herein shown and described without departing from the spirit or scope of our invention.

Having thus fully described our invention what we claim as new and desire to secure by Letters Patent is:

1. A railway frog comprising a hard-block having a point thereon and a combined riser, reinforce and guard-rail at the side thereof said last-named rail having a downwardly sloping riser-face at its riser-end.

2. A railway frog comprising a hard-block provided with a point and opposing gage-faces adjacent thereto and a reinforce-rail at each side of said hard-block constructed as a riser-rail at its toe-end and as a wing-rail at its heel-end, each of said reinforce-rails having a downwardly sloping riser-face at its riser-end.

3. In combination, in a railway frog, a hard-block having a point and gage-face walls thereon, said gage-face walls extending beyond said point past the point of greatest convergence between said gage-face walls at the throat of said block, rails whose inner ends abut against said gage-face walls, and reinforce-rails spanning the joint between

said first-named rails and gage-face walls, substantially as described.

4. In combination, in a railway frog, a hard-block having a point and gage-face walls thereon, said gage-face walls extending beyond said point past the point of greatest convergence between said gage-face walls at the throat of said block, said hard-block having an extension beyond said gage-face walls, rails at the respective sides of said extension, the inner ends of said rails abutting against said gage-face walls, said extension acting as a filling-block between said rails, and a reinforce-rail at each side of said hard-block spanning the joints between said first-named rails and hard-block, substantially as described.

5. In combination, in a railway frog, a hard-block having a point and gage-face walls thereon, said gage-face walls extending beyond said point past the point of greatest convergence between said gage-face walls at the throat of said block, said hard-block having an extension beyond said gage-face walls, stub-rails at the respective sides of said extension, the inner ends of said stub-rails abutting against said gage-face walls, said extension acting as a filling-block between said stub-rails, and a reinforce-rail at each side of said hard-block spanning the joints between said stub-rails and hard-block, said reinforce-rails extending forwardly beyond said stub-rails for spanning the joints between said stub-rails and the continuation-rails of the trackage next said frog, substantially as described.

6. In a railway frog, the combination of a hard-block having a point and gage-face walls in advance of said point and an extension in advance of said gage-face walls, stub-rails abutting against said gage-face walls and located at the sides of said extension, and reinforce-rails at the respective sides of said hard-block and stub-rails and spanning the joints between said hard-block and stub-rails and extending forwardly for spanning the joints between said stub-rails and the continuation-rails of the trackage, said reinforce-rails having riser-portions in advance of said last-named joints.

7. In a railway frog, the combination of a hard-block having a point-part and side-walls forming flange-grooves therebetween, the base of said point-part being provided with rail-receiving offsets, the toe-end of said hard-block having rail-receiving offsets, and reinforce-rails located alongside said hard-block and having tread-riser portions at their toe-ends and wing-portions at their heel-ends, the inner faces of said reinforce-rails being provided with recesses receiving the heel-ends of said side-walls, substantially as described.

8. In combination, in a railway frog, a hard-block having a point and gage-face



walls thereon, rails in line with the trackage rails at the ends of said gage-face walls, and a combined riser, reinforce and guard-rail at each of the sides of said hard-block and first-named rails, said combined riser, reinforce and guard-rails spanning the joints between said first-named rails and hard-block at the said ends of said gage-face walls, and each of said combined riser, reinforce and guard-rails having a downwardly sloping riser-face at its riser-end, which riser-ends are in advance of said joints.

9. In a railway frog, the combination of a hard-block comprising a point and side walls having flange-grooves therebetween, rails at each end of said hard-block and reinforce-rails secured at the outer sides of said hard-block and first-named rails and formed as riser-rails at their toe-ends and as wing-rails at their heel-ends.

10. In a railway frog, the combination of a hard-block comprising a point and side walls having flange-grooves therebetween, stub-rails at each end of said hard-block and reinforce-rails secured at the outer sides of said hard-block and stub-rails and formed as riser-rails at their toe-ends and as wing-rails at their heel-ends, said reinforce-rails spanning the joints between said stub-rails and

said hard-block at the respective ends of said hard-block, said reinforce-rails extending forwardly beyond said stub-rails at the toe-end of said hard-block for protecting the joint between said forward ends of said stub-rails and the continuation-rails of the trackage.

11. In a railway frog, the combination of a hard-block comprising a point and side walls having flange-grooves therebetween, stub-rails at each end of said hard-block, and reinforce-rails secured at the outer sides of said hard-block and stub-rails and formed as riser-rails at their toe-ends and as wing-rails at their heel-ends, said hard-block having a rearwardly extending shank acting as a separator piece for the stub-rails at the heel-end of said hard-block and formed as a heel-riser at its heel-end, substantially as described.

In testimony whereof, we have subscribed our names hereto in the presence of two subscribing witnesses.

WILLIAM H. RABBE.  
EDWARD W. HARDEN.  
MICHAEL E. DEMPSEY.

Witnesses:

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GEO. REMP.