J. T. RICHARDSON.

RAILROAD-FROG.

No. 191,470. Patented May 29, 1877.

Fig: 1.

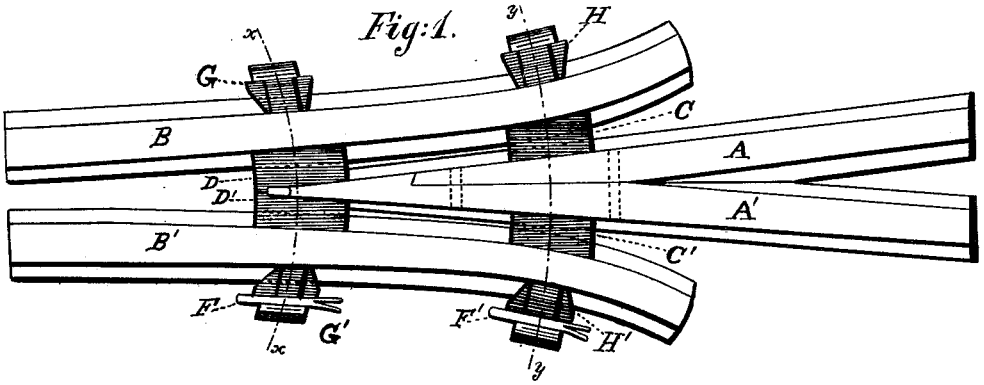


Fig: 2.

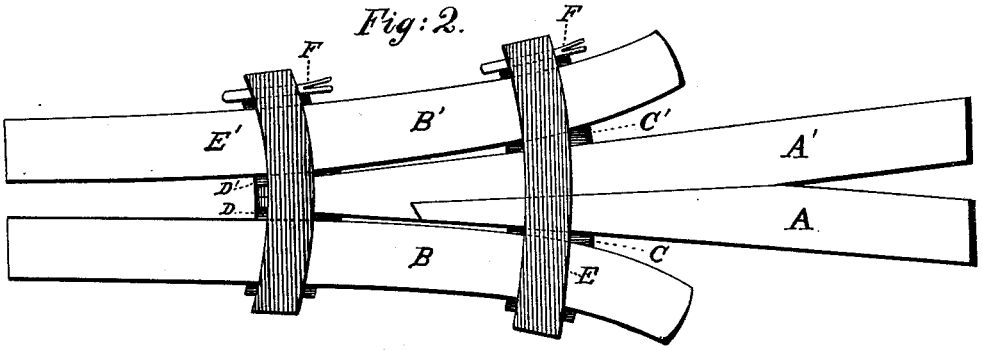


Fig: 3.

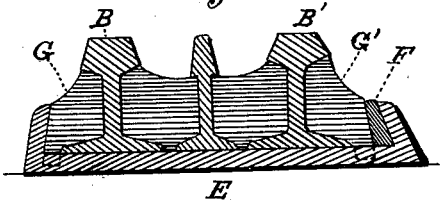


Fig: 4.

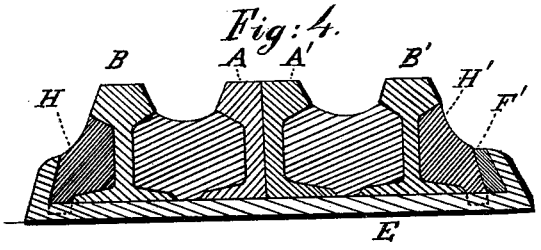


Fig: 5.

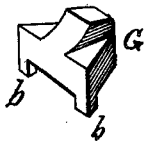


Fig: 6

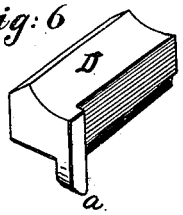


Fig: 7.

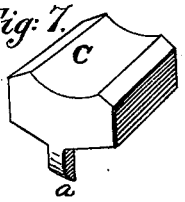
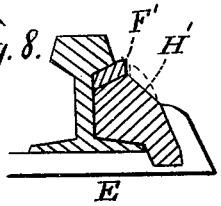


Fig: 8.



WITNESSES

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JOHN T. RICHARDSON, OF HARRISBURG, PENNSYLVANIA, ASSIGNOR TO PENNSYLVANIA STEEL COMPANY.

IMPROVEMENT IN RAILROAD-FROGS.

Specification forming part of Letters Patent No. **191,470**, dated May 29, 1877; application filed April 23, 1877.

To all whom it may concern:

Be it known that I, JOHN T. RICHARDSON, of the city of Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Railway-Frogs; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a plan view of my improved railway-frog; Fig. 2, a plan view of the bottom of the frog; Fig. 3, a transverse vertical section taken in the line *x x* of Fig. 1; Fig. 4, a transverse vertical section taken in the line *y y* of Fig. 1; Fig. 5, a perspective view of one of the brace-blocks. Figs. 6 and 7 are perspective views of the throat-pieces, and Fig. 8 a vertical section, showing a modification of the brace-block key.

Like letters in all the figures of the drawing indicate like parts.

This invention relates to a railway-frog having brace-blocks made to fit and bear against the under side of the head and the base of the rail, in combination with binding-bars, keys, and throat-pieces, so as to dispense with bolts, thus securing economy and durability in the construction, and permitting any part of the frog to be taken out when worn, and replaced when the frog is in the track, as will be hereinafter more fully explained.

A A′ are the inner or point rails, converging and forming a point, which may be made by welding the rails together, dovetailing, or in any other manner. B B′ are the outer or wing rails bent to the required curves. Between the rails are throat-pieces C C′ and D D′, of a size requisite to maintain the required space (called the "throat") between the rails of the frog. These pieces are of a shape to fit the rails, bearing principally on the upper side of the base and the under side of the head of the rail. The throat-pieces C C′ have the same shape on each side, and are located near the heel of the point. The throat-pieces D D′, located at the end of the point, have each on one side the same shape as pieces C C′, but on the opposite side they are shaped to fit the tapered end of the point, and bear solidly on the same, with a portion extending in front of the point. These throat-pieces are not fastened to any other part of the frog, but are provided with lugs *a*, which project down alongside of the edges of the binding-bars E E′, and thus prevent the throat-pieces from working out backward. Beneath the rails, and directly under the throat-pieces, are the binding-bars E E′, the ends of which are turned up to an angle to suit the bevel of the keys F F′ and brace-blocks G and H. G G′ and H H′ are the brace-blocks made to fit the rails, bearing only and equally on the upper surface of the bases and the under side of the heads of the rails. Each of the brace-blocks is provided with lugs *b*, which project down alongside of the binding-bars, and prevent the braces from working out. Brace-blocks G and H have their sides beveled, to fit accurately to the flanged ends of the binding-bars, and the brace-blocks G′ and H′ have their sides beveled to suit the bevel of the keys F and F′. The keys F F′ are tapered longitudinally, split a portion of their length, and made with sides of unequal bevel, the greater thickness of the key being below, the outer sides having the greater angle, to fit the end of the binding-bars, this preventing the keys from working out laterally. When the keys are driven in to the required extent the split ends are spread open, thus preventing the keys from working out longitudinally.

It is obvious, with the brace-blocks bearing solidly against the base and the under side of the head of the rail and the flanged ends of the bars on the one side, and the interposition of the beveled keys on the other between the blocks and flanged ends to tighten or wedge the whole up, that the parts of the frog will be held rigidly in place, and strictly in a vertical as well as in a horizontal line, and the strain will therefore be equal on all the parts.

When in use this frog is laid upon the cross-ties, in the usual manner, with the binding-bars between the cross-ties, the usual spikes

being driven into the ties against the rails to confine the frog in place, the ends of the rails of the frog being secured to the track-rails by chairs or any desired form of joint-splices.

It is obvious that, from the peculiar construction of this frog, whenever any part shall become worn the split keys can be closed together and driven out, which will loosen all the parts, and permit any part to be removed, when the parts may again be fastened together by the binding-bars, keys, and brace-blocks, the frog remaining upon the ties and in place, thus effecting a great saving in the time and expense of repairs.

A modification of the brace-block and key is seen in Fig. 8, the brace-block being so made that the key can be inserted and driven between the under side of the head of the rail and the top of the block, thus producing an equivalent effect; and the block can be made with a flange, as seen in dotted lines, to retain the key laterally.

Having thus fully described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The combination of brace-blocks, made to fit and bear against the under side of the head and the base of the rail, and beveled keys driven between and against the blocks and flanged ends of the binding-bars, substantially as and for the purpose set forth.

2. A railway-frog having brace-blocks provided with lugs, in combination with beveled keys and the binding bars and rails of the frog, substantially as and for the purpose set forth.

3. The brace-blocks and beveled keys, having split ends, in combination with the rails and binding-bars, constructed substantially in the manner and for the purpose as shown and described.

4. The brace-blocks and throat-pieces, provided with lugs, in combination with the rails and binding-bars, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

JOHN T. RICHARDSON.

Witnesses:

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B. FRANK SCHEFFER.