T. E. VICKERS.

RAILROAD-FROG.

No. 180,395. Patented July 25, 1876.

FIG. 1.

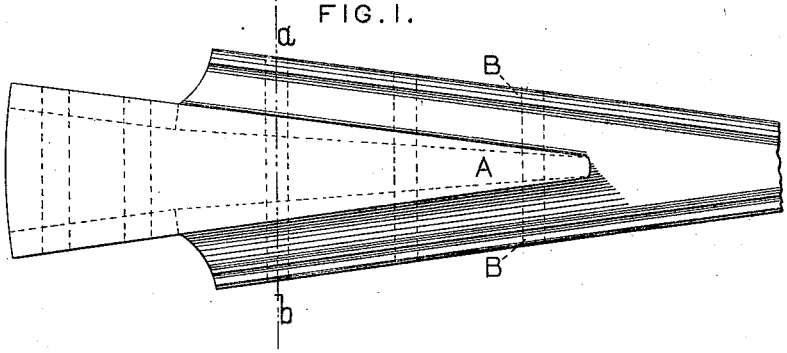


FIG. 2.

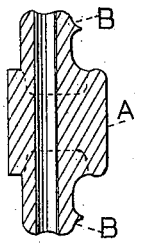


FIG. 3.

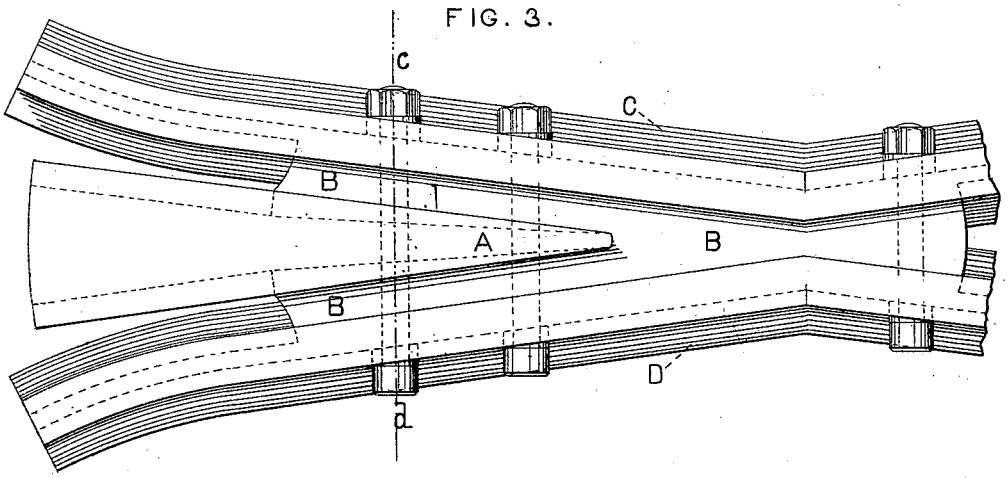
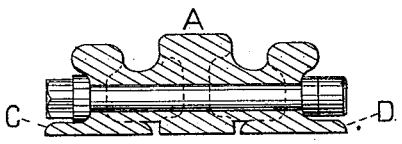


FIG. 4.



WITNESSES.

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UNITED STATES PATENT OFFICE.

THOMAS E. VICKERS, OF SHEFFIELD, ENGLAND.

IMPROVEMENT IN RAILROAD-FROGS.

Specification forming part of Letters Patent No. **180,395**, dated July 25, 1876; application filed August 5, 1875.

To all whom it may concern:

Be it known that I, THOMAS E. VICKERS, of Sheffield, England, have invented certain Improvements in the Manufacture of Railway-Frogs, of which the following is a specification:

This invention relates to the method or manner of making railway-frogs, crossings, &c.

It is well known that railway-frogs have been formed complete of one piece of metal, both by casting and forging, and they have also been built up of separate parts, as portions of the rails, and fastened together by clamps and bolts, with stay-blocks or distance-pieces between the parts, to preserve the proper relative position of the tracks; but to all these forms or methods of construction there are objections—as, for example, when the frogs are cast in one piece, the metal, even if steel be used, is not so good as when wrought, and therefore the center or point will much sooner be destroyed than when wrought, and the whole frog will thereby become useless. This trouble has in some instances attempted to be avoided by placing a wrought-steel point in or upon a cast-iron frog, and fastening it by rivets, which are liable to work loose, and permit said points to be knocked out of place. Then, if the entire frog be formed of wrought metal, either of iron or steel, the cost is very great, and a great amount of the metal is only used for the purpose of holding the center or point and the wings in proper working position. Then, again, if the frog be built up of the several parts, united together by clamps and bolts, they require constant attention to keep them in proper working order, as the several parts are always working loose. To overcome all these objections is the object of the present invention; and it consists, first, in forming the center or point of the frog of wrought-steel or other suitable metal, and then making the feathers, or spacing-ribs, or distance-pieces of cast metal, and uniting the same to the center or point by casting, as will hereafter appear; second, the invention also consists in making the wings of the frog of some wrought metal, as steel or iron, and then uniting the same to the center or point by casting a metal between them, as will hereafter appear.

Figure 1 is a plan of a center or point of a railway-frog, with its feathers or distance-pieces attached. Fig. 2 is a transverse section of the same through the line *a b*. Fig. 3 is a plan of the frog complete, or with the point and wings combined. Fig. 4 is a transverse section of the same through the line *c d*.

At A is represented the center or point of the frog, which is preferably made of steel, well wrought, so that the metal may be as nearly perfect as possible, and upon its opposite vertical sides grooves or channels are formed, to correspond to the sides of the rail, so that fish-plates may be used, if desired.

Holes may also be formed through the web of said point, through which the cast metal may run, to serve as bolts, to assist in holding the parts together more firmly, if required.

A flask or mold of the proper shape to form the feathers or distance-ribs, as at B, Fig. 1, is then provided, and a hole is left in the end of said mold, into which the wrought steel or metal point may be inserted, and held in the proper position to receive the cast metal thereon, and when the cast metal is ready to be formed the steel or wrought-metal point is heated to a full red or white heat, and is quickly inserted into said flask, and the cast-iron poured upon it, by which means the two are firmly united together and of the proper form to receive the wings, which may then be formed of pieces of rails and fastened by screw-bolts, as represented in the drawings at C and D, Figs. 3 and 4.

Another method of attaching the wings to the frog is to form holes through them, as already mentioned, for the center or point, and then to heat them at the same time that the center is heated, and insert them in a properly-shaped mold, and cast the metal between them and the center or point at the same time, and thereby unite the three parts firmly together, without the aid of clamps or bolts, and in the proper relative position to each other, ready to be laid in the track.

It is evident that instead of the channels or grooves in the sides of the center or point, ribs or projections may be formed thereon, to serve as a rough surface for assisting in holding the cast metal thereon; but the form shown in the drawings will answer as well, and will be

cheaper, as the wrought-steel is the more costly of the two metals used. It is also evident that such a method of construction is applicable to crossings, and in switches provided with points or feathers as well as frogs, and I do not wish to be therefore limited to the peculiar form here shown; but

I claim—

1. In a railway frog, switch, or crossing, the combination of a wrought-metal center or point with cast-metal feathers or distance-ribs, when united together by casting, as described.

2. In a railway-frog, the combination of wrought-metal wings with a wrought-metal point, cast-metal feathers or distance-ribs, when the same are united by the process of casting, as described.

T. EDWARD VICKERS.

Witnesses:

T. T. HIBBERT,

JOHN SWIFT.