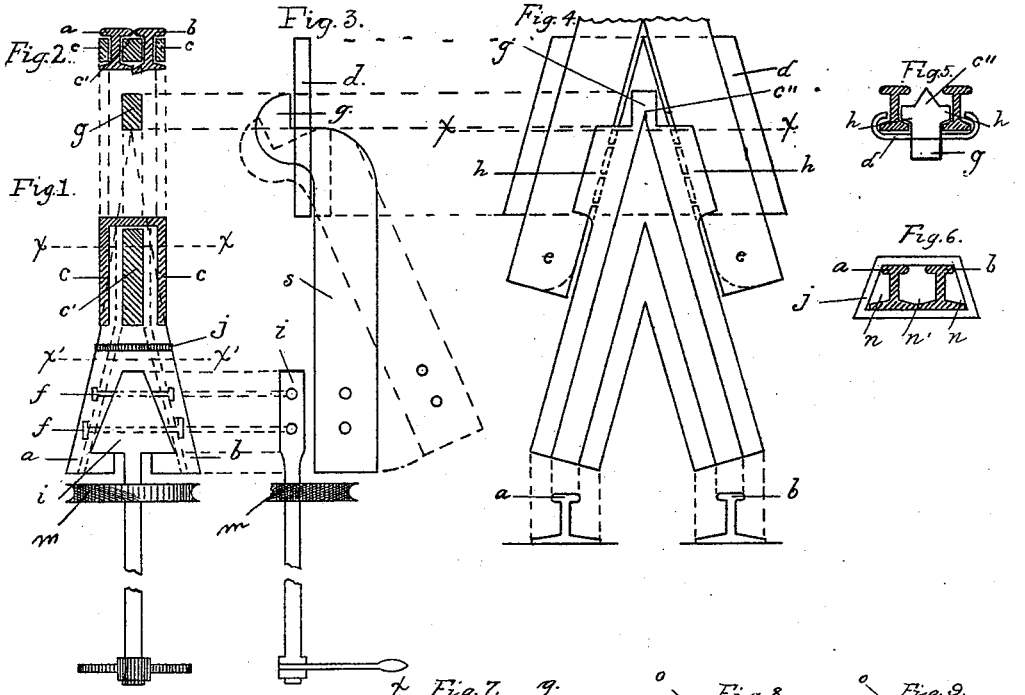
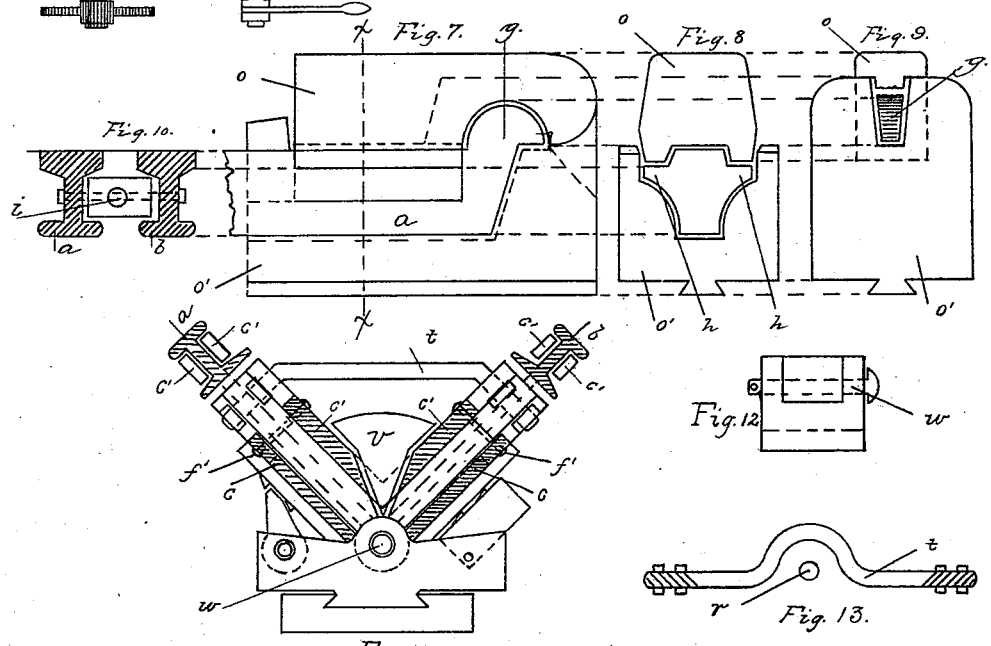
(No Model.)

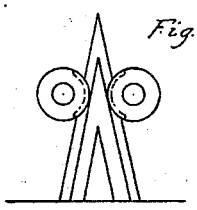
J. W. CLOSE.

FORMING RAILWAY FROGS AND POINTS.

No. 455,306. Patented July 7, 1891.







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FORMING RAILWAY FROGS AND POINTS.

SPECIFICATION forming part of Letters Patent No. 455,306, dated July 7, 1891.

Application filed February 12, 1887. Serial No. 227,430. (No model.)

To all whom it may concern:

Be it known that I, JOHN WHITNEY CLOSE, a citizen of the United States of America, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in the Manufacturing of Steel Rail Points for Railway Frogs and Crossings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, of which the following is a specification.

My present invention is designed as an improvement upon the manufacture of railway-frog points for which a patent was granted me September 29, 1874, No. 155,496. Referring to the one and only claim in that patent it may be seen that its chief value consisted in the method for forming railway-frog points of cast-steel rails by "scarfing" at the proper angles the ends of the rails to be joined and filling the (inside only) spaces and channels formed between the two rails, and which is fully illustrated in Fig. 3 of the drawings in my former patent, wherein it may also be seen that most all of the inside bases and heads of the rails are "cut away" by scarfing, leaving but a meager narrow channel for the reception of any filling, and that no filling-pieces are claimed nor applied to the outside channels, while the filling-pieces used in the present improvement are of large dimensions, completely filling the spaces and channels of the rails. The large filling-pieces protect the thin flanges from wasting or burning away during the progress of heating the fagot to a molten state. Now this scarfing by cutting away of thirty (30) inches of the inside head of each rail and twelve (12) inches of the outside heads of each rail, also the inside bases or flanges of each rail are required to be scarfed by cutting away four (4) feet, making a total length of the scarfing by cutting away of thirteen (13) feet, and all of this scarfing and cutting away of hard cast-steel rail is performed with manual labor of the severest kind, with sledges and chisels upon the anvil and at an expense of not less than two-thirds (⅔) of the entire labor it costs to make the whole frog. My present invention consists in avoiding all of this very expensive cutting and scarfing of the rails with its consequent severe manual labor, which I accomplish by constructing a pile or fagot with, of, and at the ends of the rails forming the point. The pile or fagot when constructed is conveyed directly from the furnace to the steam-hammer, where at one and the same heat the fagot is forged and stamped into a frog or crossing-point of the strongest, safest, and most economical of any frog or crossing-point ever produced.

I attain the object of my invention by securing with bolts or clamps the obtuse ends of the rails forming the frog-points to a wedge porter-bar at the desired angle required for the frog-point. When thus secured, the acute ends of the rails are put into a furnace and heated the required length of the rails to form the fagot. The rails are then taken out of the furnace and a filling-piece is inserted into the space or channel formed between the two rails by the heads of the rails coming together and the flange overlapping each other. A band-clamp is then placed upon the rails where they are heated and the clamp is driven toward the obtuse end of the rails until the heated parts of the rails are bent and joined together parallel to each other and the inner flange or bases of the rails are forced to lap one over the other. In this condition of the fagot a U-shaped piece of filling is applied to the outside channels of the rails. This last operation completes the pile, which is constructed of the ends of the rails, in combination with filling-pieces.

Reference is had to the drawings, which form part of this specification, in which—

Figure 1 represents a plan view of the two rails A and B secured to a wedge porter-bar I with bolts F F and the band-clamp J at the desired angles to be welded and forged together into a frog-point. Fig. 2 is a cross-sectional view on the line X X of Fig. 1, showing the filling-pieces C C and C′ as applied to the inside channel N′ and the outside channels N N of the rails A and B. Fig. 3 is a side elevation of Fig. 4, and Fig. 4 represents a top view of the point when completed and interlocked into the flanged base-plate D and a section of the wing-rails E E. Fig. 5 is a cross-sectional view on the line X X of Fig.

4. Fig. 6 is a cross-sectional view on line X X of Fig. 1, showing the rails A and B inclosed within the band-clamp J and the channels N N and N′ of the rails A and B. Fig. 7 is a plan view of the die with the frog-point inclosed for forming or stamping the hook or crook G and the flanges H H of the frog-point. Fig. 8 is a cross-sectional view on the line X X of Fig. 7, and Fig. 9 is an end view of Fig. 7. Fig. 10 is an end view of the rails A and B, with their heads underneath, showing the position of the point when inclosed between the dies during the progress of stamping the flanges H H and the hook or crook G upon the frog-point. Fig. 11 represents a second plan of dies for welding crossing-points which are of an angle too obtuse to be welded by the ordinary method with steam-hammer, and Fig. 12 is a side view of Fig. 11 with parts removed. Fig. 13 represents a brace for securing the obtuse ends of the crossing-rails A and B together when in the progress of welding and forging, and is used as a substitute for the porter-bar I in very obtuse angle crossing-points.

Similar letters refer to similar parts throughout the several views.

In the said drawings, Fig. 1 represents a plan view of the fagot constructed of filling-pieces C C and C′, in combination with the rails A and B, which form the angle of the frog-point by being secured to the wedge porter-bar I with the bolts F F and the band-clamp J, as seen in Fig. 6.

Fig. 2 is a cross-sectional view on line X′ X′ of Fig. 1, showing the filling-pieces C C and C′ placed in the channels N N and N′, Fig. 6, of the rails A and B, and the position of the bases or flanges H H of the rail lapping one over the other in the construction of the fagot, as seen in Fig. 2. To the porter-bar I secure the sheave M to facilitate the handling of the fagot when it is suspended to a crane during the progress of forging the point.

Fig. 3 is a side view of Fig. 1, showing the frog-point S forged with the hook or crook G and connected into the base-plate D, which I accomplished by raising the obtuse ends of the point-rails, as represented by the dotted lines, and when the ends of the rails are lowered to a level with the wing-rails the flanges H H clamp and firmly secure both the point and the wing-rails to the base-plate, and thereby preserve the level of all the rails of the frog and definitely secure each and all parts of the frog in their respective positions, and as represented in Fig. 4 and Fig. 5, which is a cross-sectional view on the line X X of Fig. 4.

In the operation of reducing and forging the fagot into its extreme point, and when the fagot has been drawn in a sharp point (as represented by the dotted lines in Fig. 1) and to the angle required, the point is then placed into the dies O and O′, Fig. 7, with the heads of the rails A and B down, as seen in Fig. 10, with the pressure of a steam-hammer or other power of sufficient force applied to the upper die O, and the hook C is bent to form the desired shape and which corresponds with the shape of the dies, (as also represented in Fig. 7;) and the flanges H H are formed at one and the same operation and in the same manner and as seen in Fig. 8, which is a sectional view on the line X X of Fig. 7; and Fig. 9 is an end view of Fig. 7, with that portion of the upper die O which forms the hook *g* removed. When the angle of a crossing frog-point—say an angle of forty-five degrees and similar to that represented resting on the die, Fig. 11—a crossing-point of such an obtuse angle could not be forged and manufactured under a steam-hammer horizontally or secured to a porter-bar and manipulated by the usual method of forging with steam-hammers. I therefore substitute the curved brace represented in Fig. 13 for securing the ends of the rails A and B at the required angles in place of the wedge (porter-bar 1) and bolts F F, as seen in Fig. 1, and the acute ends of the rails A and B are secured at the required angle by the outside filling-piece C C, which is bent to correspond to the angle of the point and secured with rivets F F, Fig. 11, which, as may be seen, pass through both the web of the rail A and B and the ends of the inside filling-pieces C′ C′, therewith securing all of the filling-pieces to the rails, except the one central **V**-shaped piece, and which is placed in its position in the furnace, and when the fagot is heated to a molten or welding degree the **V**-piece will naturally fuse to the other parts of the fagot; but if it should not a few blows or punches with an iron bar or a ram would make it readily adhere to the other parts of the fagot. In this progress of the work the molten mass is placed upon the **V**-shaped dies, which are set to the requisite angle, when the hammer may be set in motion, which operation forces the **V** or central piece of filling into the center of the fagot, welding and blending all into one solid mass of steel and iron, thereby producing a crossing frog-point of unequaled strength, safety, and economy.

Referring to Fig. 13, the curve or offset at the middle of the brace T is so constructed that the brace may not interfere with the operation of the hammer R, and the brace is secured with nuts to the rails A and B, as seen in Fig. 11, and to accommodate crossing points of several different angles I make the die in two parts and hinge them together at W.

Fig. 14 represents a machine provided with eccentrically-recessed rollers, by which rails forming a frog-point may be welded together. The form of frog-hook to connect the point with bed-plate, the machine, Fig. 14, with eccentric recessed rollers for rolling out point, the manner of forging crossing frog-point, Fig. 11, and the dies herein described I intend to make the subject of application for patents in the future.

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

The method of constructing a fagot of and with the ends of the rails A and B, which form the point of a railway frog or crossing point, in combination with the filling-pieces C C and C′ C′, when made into a pile or fagot for being forged or rolled into point for railway frogs and crossings, substantially in the manner specified.

In testimony that I claim the foregoing I have hereunto set my hand this 10th day of March, 1885.

JOHN WHITNEY CLOSE.

Witnesses:
JOHN C. POST,
OSCAR E. YATES.