No. 632,237. Patented Sept. 5, 1899.

R. B. CHARLTON.

PUNCH FOR SLOTTING FISH PLATES.

(Application filed Apr. 12, 1899.)

(No Model.) 2 Sheets—Sheet 1.

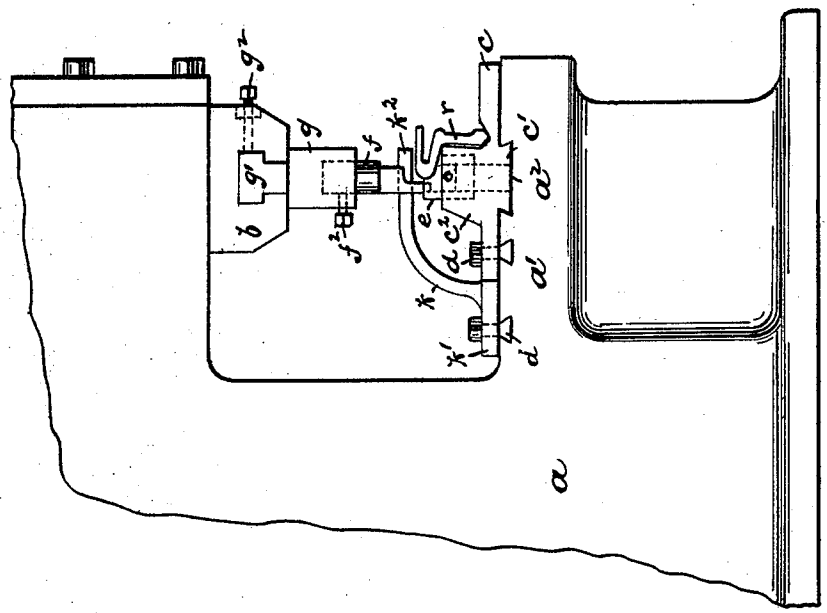


Fig. 2.

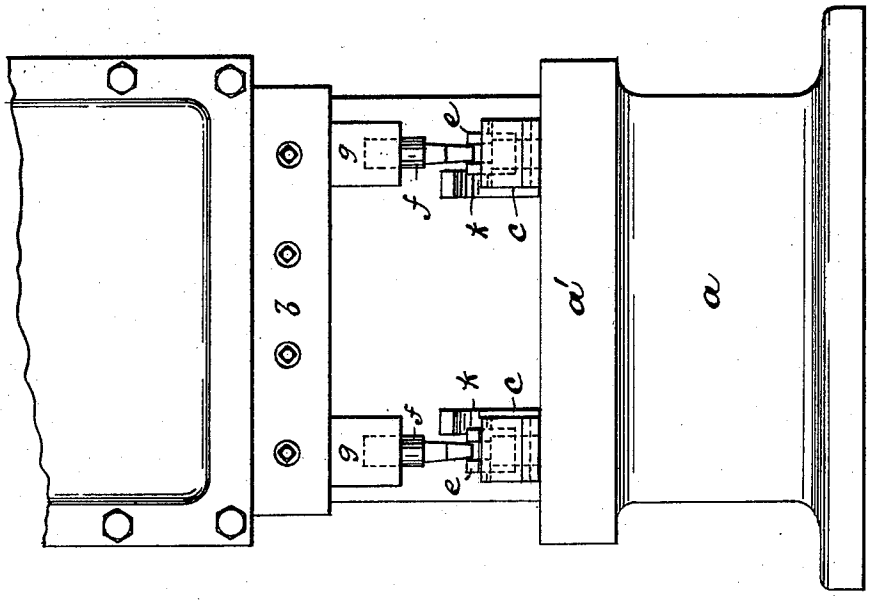


Fig. 1.

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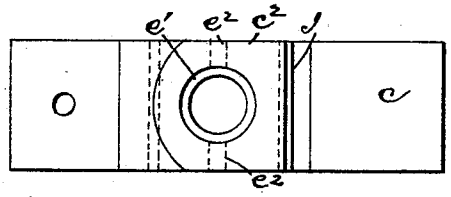


Fig. 3.



Fig. 7.

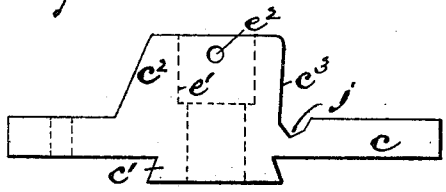


Fig. 4.

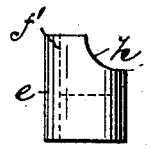


Fig. 8.

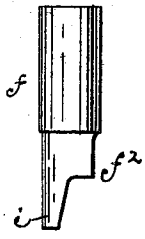


Fig. 5.

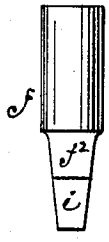


Fig. 6.

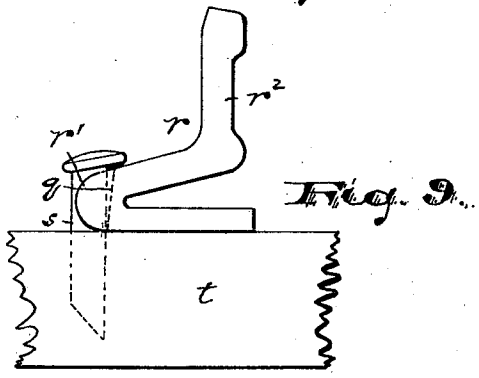
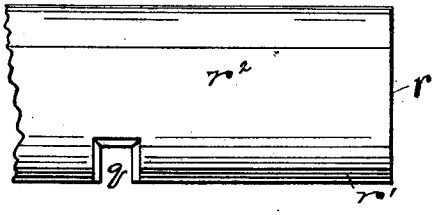


Fig. 9.

Fig. 11.



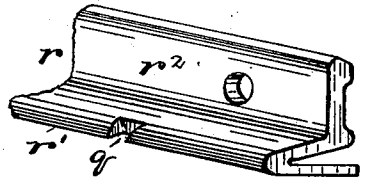


Fig. 10.

WITNESSES:

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UNITED STATES PATENT OFFICE.

RICHARD B. CHARLTON, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO THE CONTINUOUS RAIL JOINT COMPANY OF AMERICA, OF NEW JERSEY.

PUNCH FOR SLOTTING FISH-PLATES.

SPECIFICATION forming part of Letters Patent No. 632,237, dated September 5, 1899.

Application filed April 12, 1899. Serial No. 712,736. (No model.)

To all whom it may concern:

Be it known that I, RICHARD B. CHARLTON, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Punches for Slotting Fish-Plates; 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in the manufacture of fish-plates, and is more particularly designed to render the slotting of the plates to receive the spikes more practical and expeditious.

Fish-plates have heretofore been slotted in their normal position with the base downward and the clearance necessary between the punch and the die caused the slot to be of larger size at the bottom than at the top, or, in other words, the walls of the slot diverged downward, as will be understood by one skilled in the art. When, therefore, a spike was driven in said slot vertically, so that the head obtained a full bearing on the top of the fish-plate, the walls of the slot engaged the spike only at their upper edges, and lateral strain was thus brought on the spike at a point of maximum leverage or distance from the tie, producing a maximum tendency to bend or break the spike. On the other hand, if the spike was driven in an inclined position parallel to the inner wall of the slot, so as to properly engage the same, the head of the spike would not have a full bearing at its under surface on the top of the fish-plate.

The objects of the present invention are to provide an improved method of slotting fish-plates, to obtain a slotted fish-plate in which the spike shall have a full bearing on the top of the plate and at the same time receive the lateral pressure at a point next to the tie, and to secure other advantages and results, some of which may be referred to hereinafter in connection with the description of the several parts.

The invention consists in the improved method of slotting fish-plates and in the mechanism by which said slotting is done, all substantially as will be hereinafter set forth and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several views, Figure 1 is a front elevation of slotters in position for working. Fig. 2 is a side elevation of the same, showing the fish-plate held in position. Fig. 3 is a plan view of a die-block, and Fig. 4 is a side view of the same. Figs. 5 and 6 are side and front views, respectively, of a punch. Figs. 7 and 8 are a plan and a side view, respectively, of a die adapted to be held by said die-block and cooperate with said punch. Fig. 9 is an end view of a fish-plate in position on the tie and showing the relation of the spike thereto. Fig. 10 is a perspective view of a slotted fish-plate, and Fig. 11 is a plan of the same.

In said drawings, a indicates the frame of any usual construction common in punches and presses and having the bed a' and ram b, adapted to move vertically toward and from said bed in any ordinary way. Upon said bed a' is a die-block c, firmly secured in place by means of a dovetailed downward extension c' at the base, which lies in a corresponding recess a^2 in the bed. Bolts d further secure the die-block in place. Said die-block has near its middle an upper extension c^2, centrally bored out to permit any material punched out to drop therethrough and having the upper part of this central bore enlarged, as at e', to form a seat for the die e. Said die is formed to sit in the seat e' and be held by set-screws, as at e^2, the die being provided with an opening f', through which the punch f passes. Said punch f has its lower end shaped to accord with the shape of the slot to be punched out and at its upper end fits into a holder g, having a T-headed extension g', by which it is secured to the ram b, set-screws f^2 g^2 holding said die in the holder and holder in the ram in any ordinary manner.

I have shown my construction adapted to slotting the particular style of fish-plate represented by United States Patent No. 427,017,

and accordingly the die e is recessed at one side, as at h, to afford a rest for the upper surface of the doubled flange r' of the fish-plate r, (shown in Figs. 9, 10, and 11,) and the punch at one side of its cutting-face has a downward extension or projection i, adapted to enter the opening f' in the die before the cutting begins to prevent the punch slipping off the inclined surface to be punched, all as is common in the art. The vertical portion r^2 of the fish-plate in its inverted position lies against the outside face c^3 of the upward extension of the die-block, and a recess j is formed in the block c to receive the top of the fish-plate and enable the same to be held more firmly in place during the operation of slotting. A stripper k holds the fish-plate in place and prevents the same from tipping more than the desired amount. Said stripper comprises a foot k', adapted to be bolted to the bed a' of the machine, and a curved arm k^2, extending forwardly to engage the fish-plate. The extremity of said arm rests upon the fish-plate with sufficient pressure to serve as a stop for the same, and it is thus evident that any desired taper or incline can be given to the inner wall of the slot by changing the position in which the plate is held while being slotted.

My improved method of slotting consists in slotting the fish-plate with its base upward or in an inverted position, so that the punch will engage the base of the plate first and emerge at the top of the flange. By this method the flaring or increase in cross-sectional area of the slot, due to the clearance necessary between the die and punch, is from the bottom of the flange upward, as illustrated in Figs. 9, 10, and 11. Thus the slot q more readily receives the spike s, which in practice enlarges more or less toward the head, and, what is more important, the fish-plate bears against said spike on all sides at the point of maximum strength to resist lateral strain, which point is close to the tie t. This is true whether the spike is driven exactly perpendicular or not, and both a firm bearing of the head on the top of the fish-plate and the spike against the sides of the slot may thus be secured, which has heretofore been impossible.

It is evident that my method of slotting is equally applicable to other forms of fish-plates than the one shown in said United States Patent No. 427,017, and I do not wish to be limited thereto.

Having thus described the invention, what I claim as new is—

1. The combination with a punch for slotting fish-plates, and a die, of a die-block adapted to support the fish-plate in inverted position and having an upward extension providing a seat for the die, and having a vertical side providing a rest for the vertical web of the fish-plate, the die-block being recessed at the base of said upward extension and receiving the normally upper edge of said web when the fish-plate is in its inverted position to be punched, substantially as set forth.

2. The combination with a coöperating die and punch for slotting fish-plates, of a die-block having a centrally-perforated upper extension c^2, adapted to hold the die, the outer front face of said extension forming a plane rest c^3, for the vertical web r^2, of the fish-plate and the base of said die-block having a depression j, at the foot of said rest c^3, which receives the edge of said vertical web and prevents forward displacement of the web of the fish-plate away from said rest in the act of slotting, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 3d day of April, 1899.

RICHARD B. CHARLTON.

Witnesses:
H. W. HASKELL,
P. H. ESTES.