

(No Model.)

4 Sheets—Sheet 1.

F. H. HEATH.

DIE FOR MANUFACTURING RAIL JOINTS.

No. 498,791.

Patented June 6, 1893.

Fig. 1.

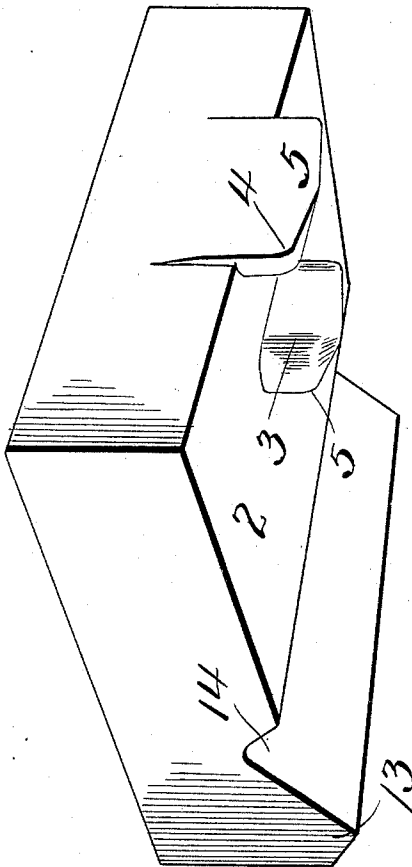
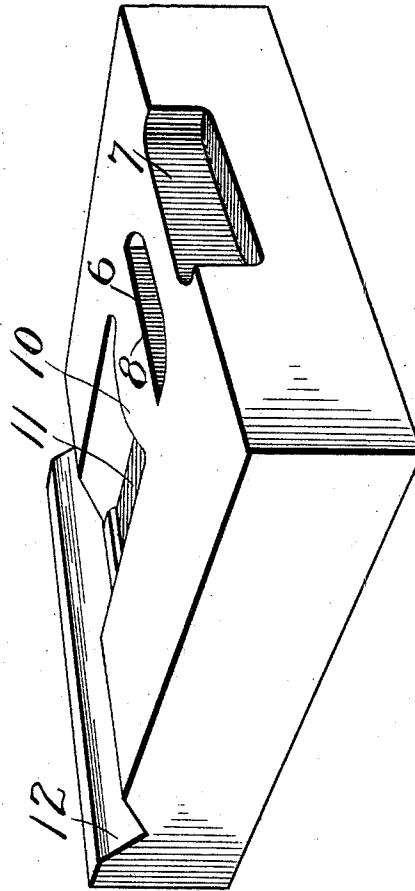


Fig. 2.



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Fig. 3.

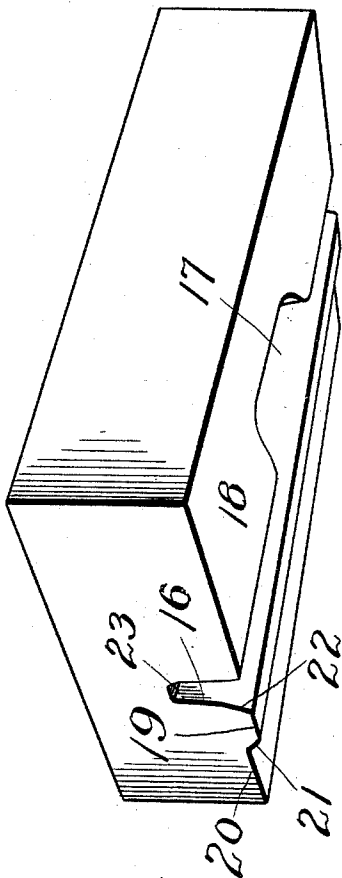
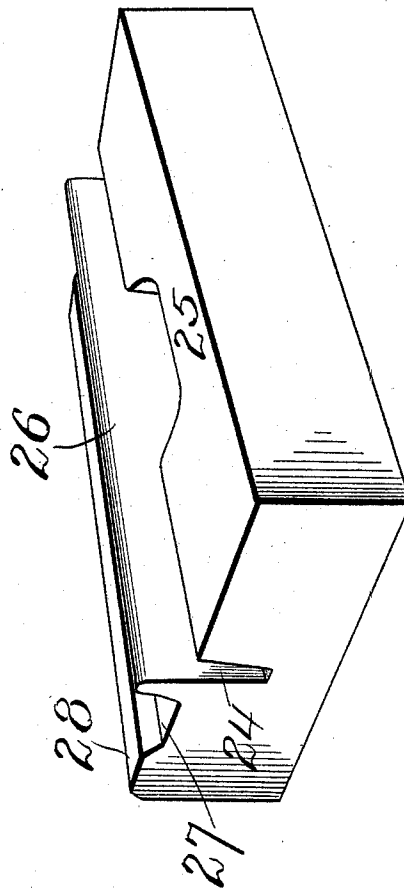


Fig. 4.



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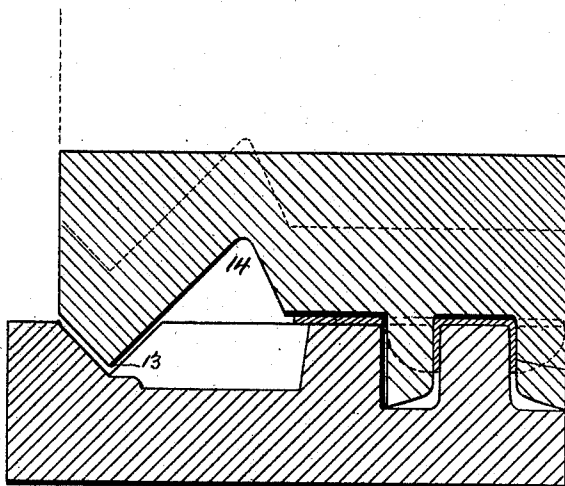


Fig. 5.

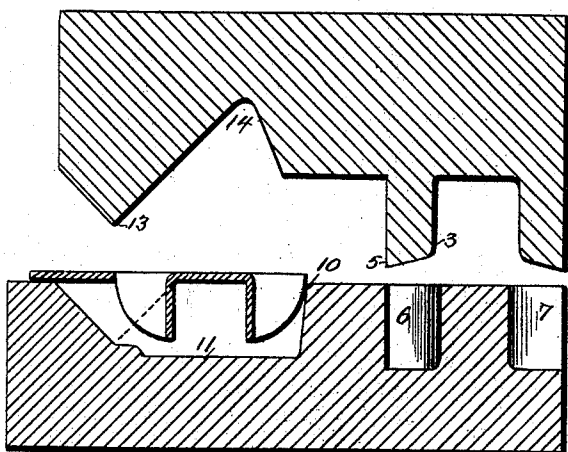


Fig. 6.

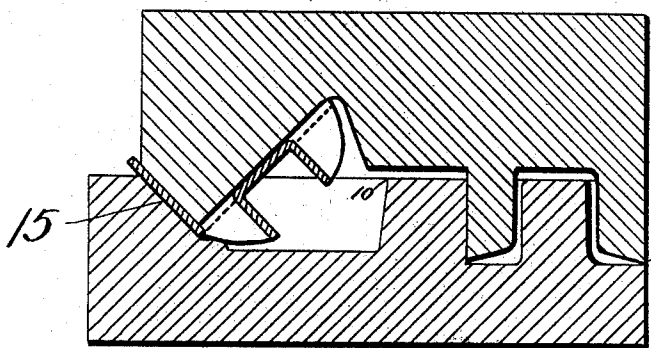


Fig. 7.

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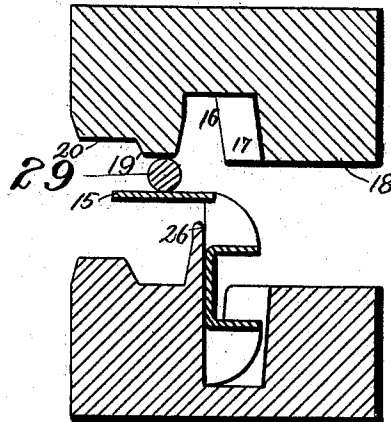


Fig. 8.

Fig. 10.

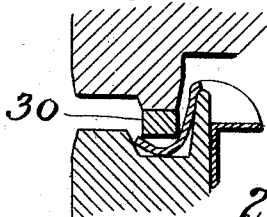


Fig. 9.

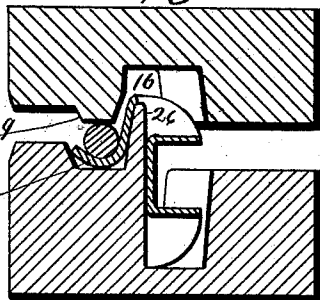


Fig. 11.

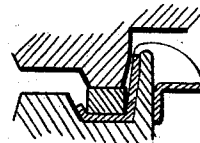


Fig. 12.

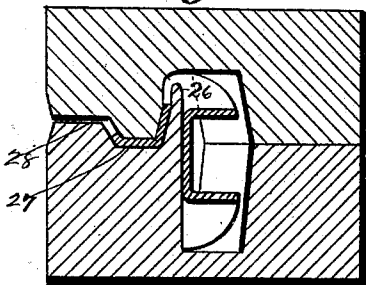


Fig. 13.

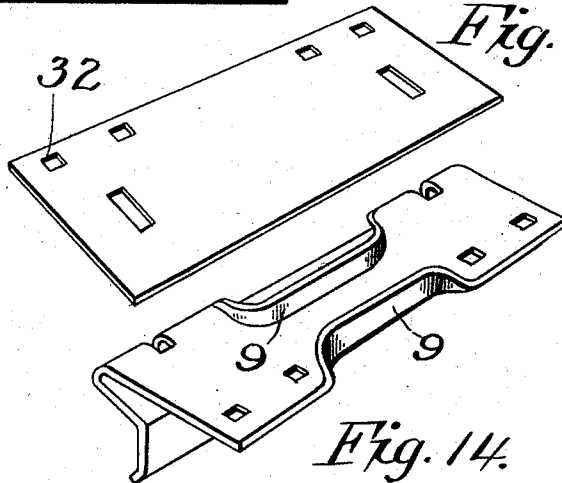


Fig. 14.

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UNITED STATES PATENT OFFICE.

FREDERICK H. HEATH, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO THE
HEATH RAIL JOINT COMPANY, OF SAME PLACE.

DIE FOR MANUFACTURING RAIL-JOINTS.

SPECIFICATION forming part of Letters Patent No. 498,791, dated June 6, 1893.

Application filed December 2, 1892. Serial No. 453,820. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK H. HEATH, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain Improvements in Dies for Manufacturing Rail-Joints, of which the following is a specification.

My invention relates to means for economically and rapidly forming or shaping rail joint plates, and especially to means for manufacturing them from wrought metal; and the object of the invention is to provide suitable dies by means of which a flatsheet of wrought iron or steel may be formed into a joint consisting of a tie-plate and an integral angle bar, and further to provide dies for punching and bending portions of the tie-plate to form integral depending trusses, which correspond in function to the central truss and the diagonal extensions thereof, as set forth in Patent No. 479,129 granted May 3, A. D. 1892, to me. These trusses and in fact the whole angle bar shown in said patent are of cast iron or steel, while the joint which I manufacture with the dies constituting this invention is composed of thick sheet metal and possesses the same or greater strength than the cast article, with a much lighter weight.

The invention consists in certain dies of the constructions hereinafter described and particularly pointed out in the claims, and the invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view of the male die used in the first two operations upon the sheet of metal. Fig. 2 is a perspective view of a corresponding female die. Figs. 3 and 4 are perspective views of the dies employed for completing the formation of the joint. Fig. 5 is a cross-section showing the dies of Figs. 1 and 2 brought together upon the plate to press down the middle parts thereof to form the trusses. Fig. 6 is a similar cross-section showing the upper die raised and the plate shifted to receive the second blow. Fig. 7 shows the completion of the second operation. Fig. 8 shows in cross-section the dies of Figs. 4 and 3 and the incomplete joint arranged therein. Fig. 9 is a similar cross-section show-

ing the dies in place after one of the intermediate operations in which a round templet is used. Fig. 10 shows the next intermediate operation with a square templet. Fig. 11 shows the same operation completed. Fig. 12 is a cross-section showing the position of the dies at the completion of the third operation, from which the rail-joint is taken out in readiness to be punched. Fig. 13 shows the plate as it appears before bending or punching. Fig. 14 is a perspective view showing the appearance of the joint when finally removed from the second pair of dies, but before the bolt holes are punched in the angle-bar.

Separate dies may be provided for the first and second operations respectively but I prefer to employ the compound dies shown in Figs. 1 and 2, where it will be seen that the upper die has a plain under-surface 2 from which the heads 3 and 4 project. The inner sides of these heads are nicely rounded to prevent cutting of the metal while their outer sides 5 especially of the head 3 are sharp and form the cutting edges. The lower die is provided with the sockets 6 and 7 to receive the heads 3 and 4 and larger than the same by the thickness of the metal to be worked. The socket 6 is provided with the straight cutting edge 8 between which, and the cutting edge of the head 3, the middle portion of the plate is sheared. When the dies are brought together it will be seen that the trusses 9 will be made upon the under side of the plate with nicely curved ends merging into the same. These trusses being parallel and perpendicular to the plate greatly strengthen the middle part of the tie-plate portion. These trusses extend between the ties when the joint is used and the wide flat ends of the plate form ample bearing surfaces upon the ties and with the middle part a firm flat chair for the rail or rails. After the trusses are stamped the dies are separated and the plate raised and moved over into the position shown in Fig. 6, the outer truss being brought back against the curved shoulder 10 of the large depression 11 adapted to receive both trusses, the shoulder 10 thus serving as a guide.

The lower die is provided with a wide V-groove 12 while the upper part is provided with a V-shaped projection 13 and back of

the same is a V-groove 14 to accommodate the outer edge of the joint when the dies are brought together, at which time, as indicated in Fig. 7, the plate portion will be tilted and the wide edge 15 of the plate bent at right angles thereto. This flange or edge is wide enough to form the angle-bar and is shaped in dies of the form shown in Figs. 3 and 4. The upper die of this pair is provided with a deep long groove 16 and the pocket 17 formed in the under surface 18. The rib 19 is formed by cutting back the surface 18 to make the ledge 20. The sides 21 and 22 of the rib are beveled to correspond with the pitch of a rail base and tread. The inner part 23 of the side 22 is carried out perpendicular with the surface 18.

The lower die is provided with a deep groove 24 and a pocket 25 and these grooves and pockets of the two dies are of sufficient depth and width to just admit an incomplete joint when set on edge. The long narrow projection 26 is adapted to extend into the slot or groove 16 as shown in Fig. 12 and a groove 27 and ridge-seat 28 are provided in the lower die to correspond with the parts 19 and 20 of the upper die. When the joint is first placed in the lower die the flange 15 projects out over the rib 26 and the hollow 27. A round templet 29 is placed upon the top of this flange and the upper die brought forcibly down to turn down the flange and through the round templet to draw over the plate and the ends of the inner truss giving them the temporary shape shown in Fig. 9, the dies being then separated and a square templet 30 used to square the corners of the part lying in the groove 27. After this operation the templet is removed and the upper die forced firmly down to finally shape the angle bar. The slanting shoulder of the groove strikes the plate against the rib 26. The sides of the groove 16 and of the ridge 26 being parallel the outer and lower part of the angle-bar will be made parallel with the other or tie-plate portion of the joint. The rail spike holes 32 are usually punched in the sheet while flat,

while the bolt holes for the fish-plate bolts are made in the vertical part of the angle-bar after the completion of all operations.

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

1. The herein-described dies for punching the trusses from a sheet of metal consisting of the surface blocks one of said blocks provided with the parallel heads 3 and 4, having the rounded inner sides, the head 3 provided with the shearing edge, and the lower block provided with similarly shaped pockets 6 and 7, the former having a shearing edge 8, substantially as described.

2. The herein-described compound dies consisting of the block provided with the puncher heads 3 and 4, the former of which has the shearing edge 5, said block provided with the V-projection and with the groove 14, and the other block having the truss pockets 6 and 7, the former having the shearing edge 8, said block provided with the V-groove 12 and with the depression 11 having the curved shoulder 10, substantially as described.

3. The herein-described dies, one provided with the deep groove 16, the truss pocket 17 and the rib 19, and the other having a similar groove 24, and pocket 25, and also a projecting rib 26, and a groove 27, as and for the purpose specified.

4. The herein-described dies one of which is provided with a deep groove 16 having the perpendicular and the inclined walls 23 and 22, the projection 19, and the pocket 17, and the other block provided with the narrower groove 24 and the truss pocket 25, the forming rib 26, the groove 27, and the shoulder 28 substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand this 28th day of November, A. D. 1892.

FREDERICK H. HEATH.

In presence of—

FRED S. LYON,
C. G. HAWLEY.