W. J. BRADLEY.

SHEARS FOR METAL BARS.

APPLICATION FILED JAN. 18, 1912

1,127,857.

Patented Feb. 9, 1915.

3 SHEETS—SHEET 1.

Fig. 2.

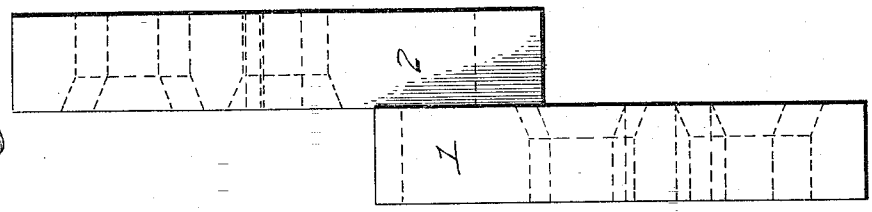
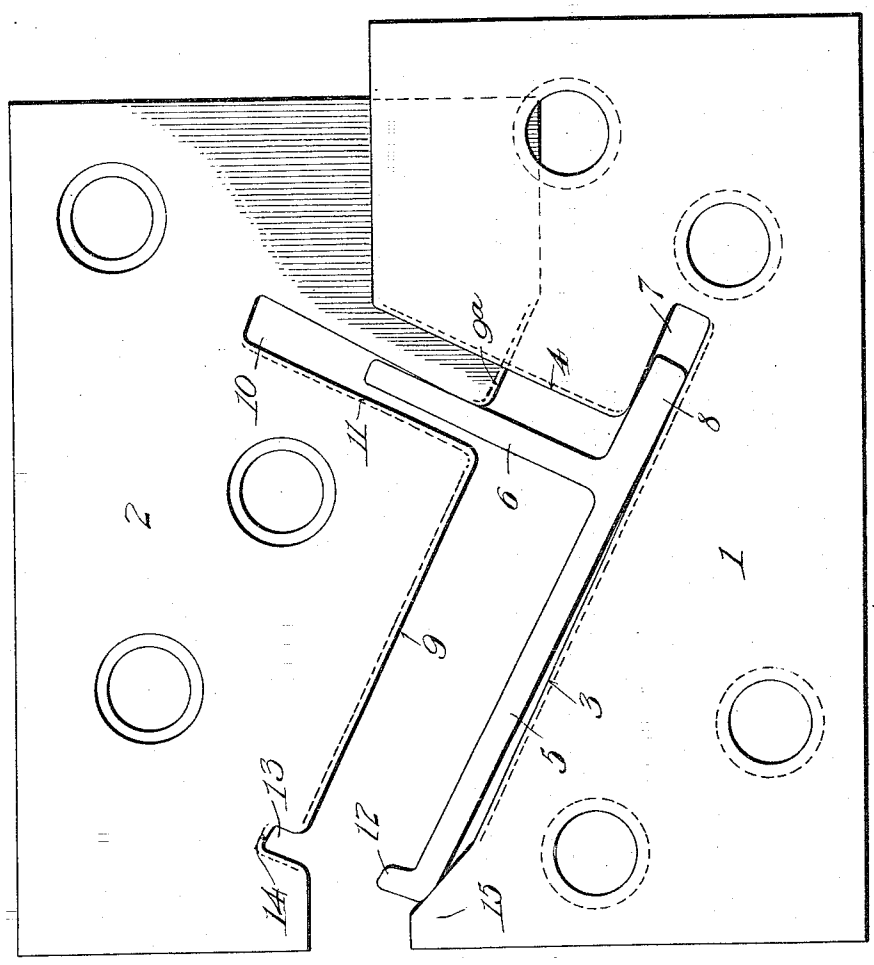


Fig. 1.



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3 SHEETS—SHEET 2.

Fig. 4.

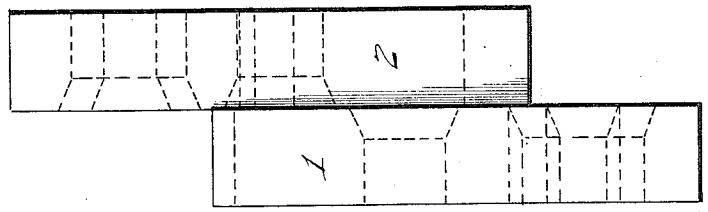
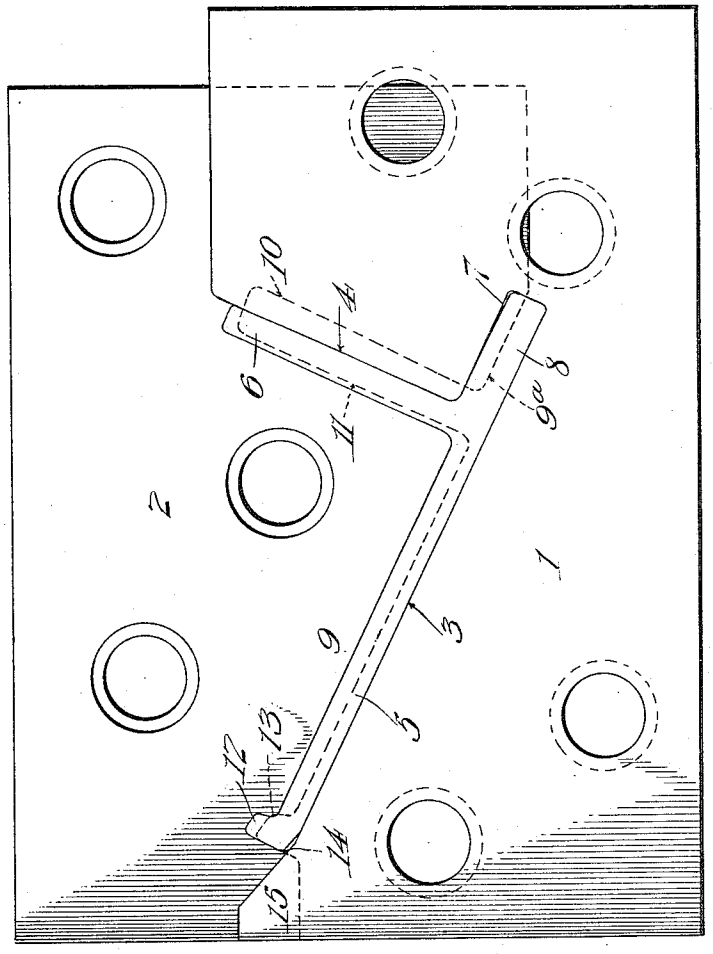


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 6.

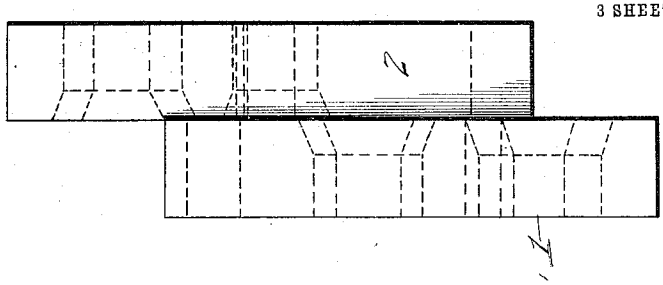
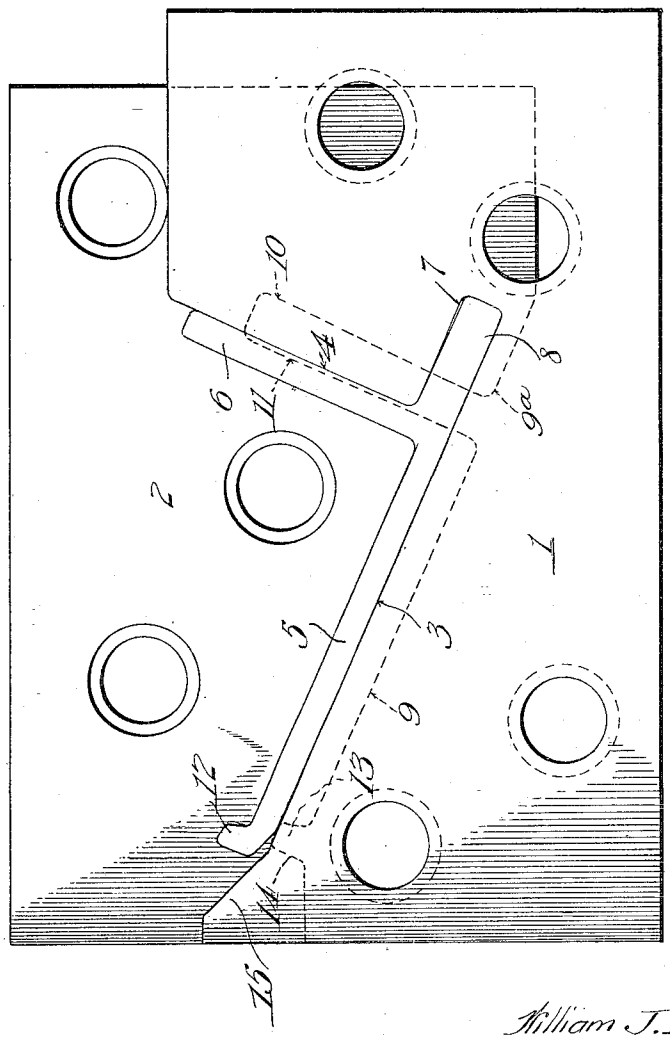


Fig. 5.



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UNITED STATES PATENT OFFICE.

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SHEARS FOR METAL BARS.

1,127,857. Specification of Letters Patent. Patented Feb. 9, 1915.

Application filed January 18, 1912. Serial No. 671,938.

To all whom it may concern:

Be it known that I, WILLIAM J. BRADLEY, a citizen of the United States, residing at Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Shears for Metal Bars, of which the following is a specification.

The present invention relates to the subject of metal shearing and more particularly to an improved construction of shears for shearing metal bars of T-section or of approximately that form. To this end the invention possesses special utility in its application to the shearing of rolled rail joint bars into rail joint lengths, and is designed particularly for the purpose of effecting a practical improvement over the present method employed for shearing rail joint shoe-angles of the type that are employed in the well-known Weber rail joint. This shoe-angle of the Weber rail joint includes a rail supporting base member, an upright clamping or bolt plate member, and a spiking toe or flange that is projected outwardly from the corner of the bar where the base member and upright member intersect. In those forms of the shoe angles where the said toe is narrow and has only a slight projection from the upright member, little difficulty is experienced in evenly shearing or cutting up the lengths as they are received from the passes of the rolling mill. However, where the toe of the shoe-angle bar is so wide as to project outwardly from the upright member for quite a distance, when the ordinary shearing methods and apparatus are employed, there is a tendency to bend in the toe at the end of the piece that is sheared, this bending in and distortion becoming greater as the depth of the toe is increased.

Accordingly, the main object of the invention is to provide a novel construction of shears which will enable metal sections of this character to be effectively sheared without bending in or distorting the toe, and which will thereby save the cutting of these shoe-angles with a hot-saw, or by making two operations of a shear.

With these and other objects in view, the invention consists in certain novel combinations and details of construction as will more fully appear as the description proceeds, the novel features thereof being pointed out in the appended claims.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings, in which—

Figure 1 is a front elevation of a pair of shearing knives constructed in accordance with the invention, the said shearing knives being shown in an open position with a shoe-angle section inserted between the same. Fig. 2 is a projected edge view of the pair of shearing knives occupying the positions shown in Fig. 1. Fig. 3 is a view similar to Fig. 1, of the knives showing the position assumed thereby when acting upon the section placed therebetween. Fig. 4 is a view similar to Fig. 2, but projected from Fig. 3 and illustrating the positions of the knives as shown in Fig. 3. Fig. 5 is a view similar to Figs. 1 and 3 showing the position of the knives at the end of full stroke, after the section has been sheared. Fig. 6 is a view similar to Figs. 2 and 4, but projected from Fig. 5 to illustrate the knife positions of the latter figure.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Specifically describing the present embodiment of the invention, the numeral 1 designates the lower shearing knife, and 2 the upper shearing knife, the lower knife being usually fixed or stationary while the upper knife is mounted to move vertically. The lower knife is formed with a pair of inclined cutting edges 3 and 4 which are arranged at substantially right angles to each other, the cutting edge 3 being adapted to act from the underside of the base 5 of the shoe-angle, while the cutting edge 4 is adapted to act upon the outer side of the upright member 6 of the shoe-angle. It will also be observed that the lower blade 1 is provided at the intersection of the cutting edges 3 and 4 with a toe-holding socket 7, the base of which is arranged in substantial alinement with the cutting edge 3, and is designed to receive and support the toe 8 of the shoe-angle, the said cutting edge 3 being extended along the lower side of the said socket.

The upper knife 2 is formed with a cut-

ting edge 9 arranged parallel to the cutting edge 3 of the lower knife and adapted to cooperate therewith. An inclined slot 10 is also formed in the upper blade for the reception of the upright section 6 of the shoe-angle. The upper inclining side of this slot 10 is formed with a cutting edge 11 adapted to coöperate with the upright cutting edge 4 of the lower knife when the upper knife is forced downwardly. It will also be noted that the cutting edge 9 of the upper knife is extended on the opposite side of the slot 10, as indicated at 9a, for coöperation with the cutting edge at the lower side of the socket 7 to act upon the toe 8 of the shoe-angle. Where the toe 8 of the shoe-angle is of a greater thickness than the base member 5 thereof, (as shown in the drawings), the cutting edge 9a of the upper knife would be correspondingly offset from or out of alinement with the cutting edge 9, thereby enabling all of the cutting edges to be brought simultaneously into action when the upper knife is lowered.

The base member 5 of the shoe-angle shown in the drawings is provided at one edge thereof with an upwardly extending shoulder flange 12, and a corresponding holding notch 13 is formed in the upper blade 2, the bottom and upper side of the notch being formed with a cutting edge 14 adapted to act upon the flange 12. An inclined shoulder 15, upon which the shouldered edge of the shoe-angle rests, is provided upon the lower knife 1 at the upper end of the cutting edge 3. This construction provides means whereby the shoe angle is initially held out of position upon the lower knife, and is only carried to final stationary position through the movement of the upper knife thereupon.

The shoe-angle is designed to be placed in proper position between the knives when the upper knife is raised, as indicated in Fig. 1, the base member of the shoe-angle resting upon the cutting edge 3 of the lower knife, the toe 8 being partially received within the socket 7 of the lower knife, while the upright member 6 is partially received within the slot 10 of the upper knife. The shoe-angle is then out of position upon the lower knife, although, as the upper knife is forced vertically downwardly, it moves in a diagonal direction with respect to all of the cutting edges, and the shoe-angle is gradually moved diagonally on the bottom knife until it is properly seated thereon. A continued downward movement of the upper knife brings the cutting edges into operation so as to simultaneously shear all three of the arms of the T-bar or shoe, the position of the upper knife when shearing being indicated by Fig. 2. More particular attention is directed to the fact that all three arms of the bar or shoe are simultaneously and positively sheared in a direction diagonal to all of said arms, thus effecting an even shearing operation that secures a perfect severance of rail joint lengths of shoe-angles from the bar that is received from the rolling mill, and also securing even and perfect cutting off of the toe projection or flange 8 of the shoe angle without bending or distortion thereof in the slightest degree. This is especially safeguarded through the employment of the novel shearing or cutting edge 9a that operates upon the upper side of the said toe from the outside of the upright member of the shoe, that is to say, independently of the action of the cutting edges 9 and 11.

From the foregoing it is thought that the construction and operation of the herein described improvement in knives will be readily apparent without further description.

I claim:

1. A shear for shoe angles, including a pair of coöperating shearing knives, one of the knives having angularly related cutting edges and means for initially supporting the metal-shape out of position, and the other knife having cutting edges opposing those of the first knife and also provided with means for engaging the metal-shape and carrying it to its final shearing position by the closing movement of the knife.

2. In an apparatus for shearing shoe angles, and the like, including a pair of cooperating knives, the fixed knife having means for initially supporting the metal-shape out of position, and the movable knife having a slot to engage one member of the metal-shape and carry it to final shearing position by the knife movement.

3. In an apparatus for shearing shoe angles, and the like, including a pair of cooperating knives, one of the knives having an angularly disposed slot to engage the upright member of the angle and carry it into final shearing position by the movement of the knife.

4. A shear for shoe angles including a pair of coöperating shearing knives, one of the knives having angularly related cutting edges, a socket at the junction of said edges, and means for initially supporting the metal-shape out of position, and the other knife having cutting edges opposing those of the first mentioned knife and also having means for engaging the metal-shape and carrying it to its final position of rest through the closing of the knives.

5. A shear for shoe angles including a pair of coöperating shearing knives, one of the knives having angularly related cutting edges, a socket located at the junction of said edges, and an inclined abutment, said socket and said abutment being respectively engaged by opposite edge portions of the metal-shape to initially hold it out of posi-

tion, and the other knife having cutting edges opposing those of the first mentioned knife and also having means for engaging the metal-shape and carrying it to its final position of rest through the closing of the knives.

6. A shear for shoe angles including a pair of coöperating shearing knives, one of the knives having angularly related cutting edges, a socket at the junction of said edges, and an inclined abutment upon which initially rests an edge portion of the metal-shape, and the other knife having cutting edges coöperating with those of the first mentioned knife and also provided with a notch adapted to engage that part of the metal-shape which initially rests on said abutment shoulder.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

WILLIAM J. BRADLEY.

Witnesses:

JENNIE E. DONSBACH,

I. J. SHEEHEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."