(No Model.) 2 Sheets—Sheet 1.

A. J. BATES.

MACHINE FOR MAKING FLAT METAL BARBS.

No. 305,369. Patented Sept. 16, 1884.

Fig. 1.

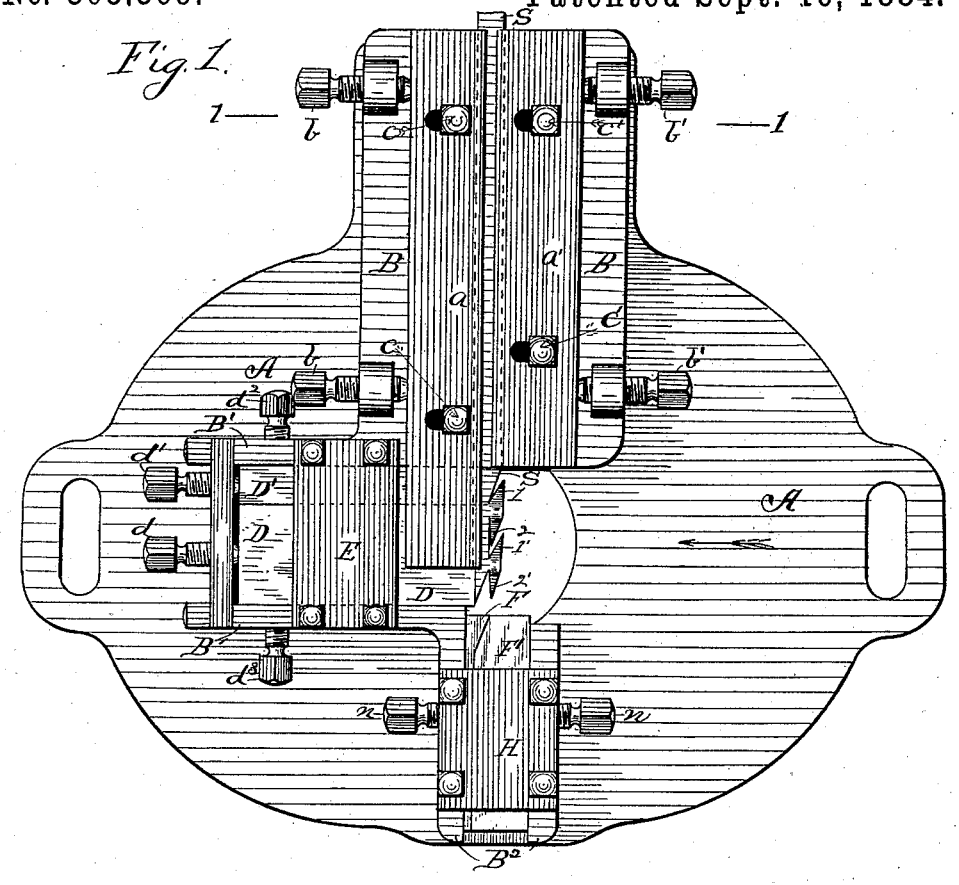


Fig. 2.

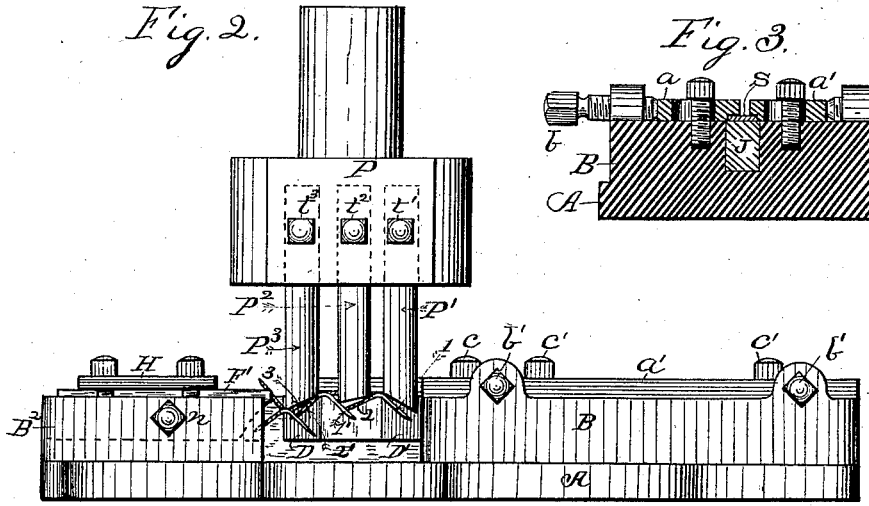
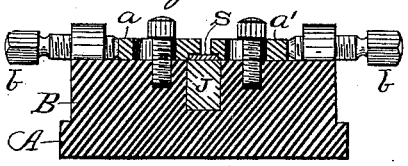


Fig. 3.



Witnesses.

Thos. H. Hutchins.

Wm. J. Hutchins.

Inventor.

Albert James Bates.

(No Model.) 2 Sheets—Sheet 2.

A. J. BATES.

MACHINE FOR MAKING FLAT METAL BARBS.

No. 305,369. Patented Sept. 16, 1884.

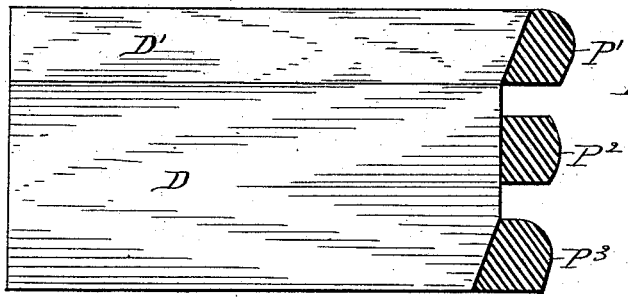


Fig. 4.

Fig. 5.

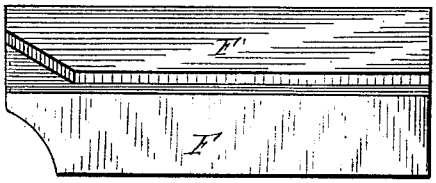


Fig. 6.

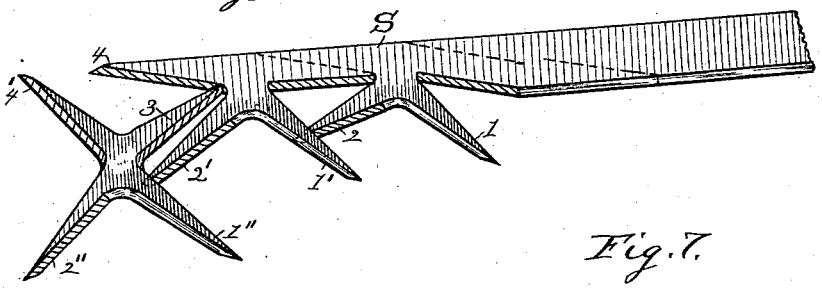
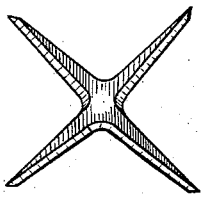


Fig. 7.



Witnesses.

Thos. H. Hutchins.

Wm. J. Hutchins.

Inventor

Albert James Bates.

UNITED STATES PATENT OFFICE.

ALBERT JAMES BATES, OF JOLIET, ILLINOIS, ASSIGNOR TO THE JOLIET BARBED WIRE COMPANY, OF SAME PLACE.

MACHINE FOR MAKING FLAT METAL BARBS.

SPECIFICATION forming part of Letters Patent No. 305,369, dated September 16, 1884.

Application filed February 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, ALBERT JAMES BATES, a citizen of the United States of America, residing at Joliet, in the county of Will and State of Illinois, have invented certain new and useful Improvements in Machines for Making Flat Metal Barbs, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a plan view on the top of the bed of the machine; Fig. 2, a side view of the bed of the machine and a side view of the punches that cut and form the barbs, looking in the direction of the arrow shown in Fig. 1; Fig. 3, a cross-sectional view of Fig. 1 on line 1; Fig. 4, a plan view on the top of the dies D and D′, and a cross-section of the three punches P′ P² P³; Fig. 5, a perspective view of forming-die F; Fig. 6, a perspective view of the barb-strip, showing the appearance of three barbs in the course of their construction; and Fig. 7, a perspective view, it being the product of the machine.

This invention relates to certain improvements in a machine for cutting and forming what is termed "flat metal barbs" for fencing purposes from a flat metal strip; and it consists in the particular form and arrangement of the punches and dies for cutting and forming the barbs.

Referring to the drawings, A represents a bed having bolt-slots at either end, as shown in Fig. 1, by means of which bolts may pass through to bolt it to the top of an ordinary press. To the upper surface of said bed is bolted a pair of guide-plates, *a* and *a′*, by means of the bolts or screws *c* and *c′*, passed through slots in said plates, so they may be moved or set to or from each other by means of the set-screws *b* and *b′*. The strip S, from which the barbs are to be made, is fed in between these two guide-plates between the punches P′ P² P³, and the dies D D′ intermittently by any suitable feed mechanism. (Not necessary to be shown.) The adjustability of these guide-plates laterally furnishes means to conduct or guide the barb-strip S properly under the punches.

D and D′ are dies that lie between the flanges B and B′, integral with the plate A, and held therein by the set-screws d^2 and d^3 that pass through said flanges. A plate, E, properly bolted on said flanges and extending from one to the other over said dies, holds them down properly in the bed A, and the set-screws *d* and *d′* are used to adjust said dies, so their cutting ends stand at the proper place under the barb-strip and punches, so that their inner ends and the punches form shears to shear the barb-strip to form the barbs.

F is a forming-die for forming one of the prods of a barb as it is finished, as will be more clearly described hereinafter, where the operation of the machine is described. This die lies between the two upturned integral flanges, B^2, of plate A, held therein and in position by the set-screws *n n* and plate H.

The bed-plate A has an elevated or thickened portion, B, as shown in Fig. 3, on the top of which the guide-plates *a a′* rest, so as to furnish means for providing said bed-plate A with a channel for the reception of a steel plate, J, (shown in cross-section in Fig. 3,) for the barb-strip to slide on. When this plate J is worn it may be replaced with another, and thus save the bed-plate A from being worn out by the passage over it of the barb-strip S.

The barb-strip S is represented in Fig. 1 as it would appear immediately after the punches have ascended after having descended to form a barb. In Fig. 2 the punches are shown just in the act of forming a barb; and Fig. 6 is a perspective view of the barb-strip as it is shown in Fig. 2, a barb having just been formed. It will be observed that on each descent of the three punches one barb is finished and drops, and two others are in process of being formed, so that three barbs are being acted upon at once. In Fig. 2 the position of the punches is shown relatively with the dies D D′ and the barb-strip.

The punches P′ P² P³ are set vertically at the inner end of the dies D D′, as shown in Fig. 4, near enough thereto so they form cutting-edges between them and the upper corners of the said dies, in the nature of shears. The form of the punches in cross-section is shown in said figure, which also shows how these punches and dies set with relation to each other. The lower

ends of the punches are beveled, as shown in Fig. 2, so their lower point will begin to cut first, for the reasons hereinafter stated. As the barb-strip S is fed in between said punches and dies on the top of and across said dies, it is supported by them and projects over their ends far enough, so when the punches descend they shear it up into barbs in the manner and form shown in Figs. 2, 6, 7, the uncut portion of said strip being supported by said dies while the punches thus operate. These punches are set in the chuck P by means of set-screws t' t^2 t^3. Said chuck attaches to a stem which attaches to a reciprocating head above, being a part of the machine, but not necessary to be shown.

The operation of the machine is as follows: When the punches descend, the punch P′ shears prod 1, commencing at its point at the outer edge of the strip S and shearing inward. Punch P^2 shears prod 2, commencing at its point and shearing toward the body of the barb, and punch P^3 shears prod 3 from prod 4, as shown in Fig. 6, a former descent of the punches having formed prods 1′, 2′, 1″, and 2″. When the punches descend they bend prods 1, 2, 3′, and 4′ downward, as shown in Figs 1 and 6. When the punches ascend, a barb has been severed and drops, formed as shown in Figs. 6 and 7. When a finished barb drops the barb-strip is fed forward, so the next descent of the punches will cut on the dotted line shown in Fig. 6. As the strip S is fed forward the prod 4′ is driven forward, so it will lie on the top of the die F and behind the vertical offset F′ on the top of said die, which offset holds the barb in place while the punches are descending, and, as punch P^3 descends, supports prod 4′, so as to bend it upward, as shown in Fig. 2, in consequence of said punch forcing the center or body of the barb downward, as shown in said figure. Until prod 3 is entirely sheared loose from prod 4 it supports that side of the barb, so the nose of said punch may so form the barb. When the punch P^3 has descended far enough to shear prod 3 loose from prod 4, of course the barb then drops, formed as shown in Fig. 7, finished for use.

Heretofore, in order to punch the prods out in the form shown, it has been usual to use punches triangular in shape in cross-section, especially where only one barb at a time was being formed. Punches thus formed will break at the acute angles, and thus spoil them for any further use. In this case the punches have no angles acute enough to be in any or much danger of breaking, and they are so set and arranged with relation to each other and with the barb-strip that the weakest part of the punches is used to cut near the points of the prods where it will cut the easiest, and by setting the three punches in a train, as shown, and setting them to shear in the way and direction stated to have several barbs in the process of being formed, it becomes possible to use strong punches of the form shown. Looking at Fig. 6, when punch P^2 descends it does not bend prod 2 down quite as far as is necessary, because prod 1′ is in the way. When the strip S is fed forward again, prod 2 becomes prod 2′, and the heel of punch P^3 at its next descent carries it downward to its proper angle, as shown in said figure.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows, to wit:

1. In combination with the bed-plate A, the dies D, D′, and F, adjustable guide-plates a and a', and punches P′, P^2, and P^3, and means for operating them, all adapted to operate as and for the purpose set forth.

2. In the machine described for forming flat metal barbs, the combination of the dies D, D′, and F, and punches P′, P^2, and P^3, arranged in a train to simultaneously sever the prods of a series of barbs and at each stroke of the punches form a finished barb, as set forth.

3. In the machine described for forming flat metal barbs, the combination of the dies D D′ and punches P′, P^2, and P^3, and means for operating them, and arranged in relation to each other to simultaneously sever the prods of a series of barbs at each stroke of the punches, in the manner set forth.

4. In the machine for forming flat metal barbs, the combination of the punches P′ P^2 P^3 and dies D D′, adapted to shear the prods of the barbs, substantially as set forth.

ALBERT JAMES BATES.

Witnesses:
WM. J. HUTCHINS,
J. D. STEVENS.