A. BUERKLE.

Improvement in Machines for Manufacturing Picks, and Similar Tools.

No. 113,977. Patented April 25, 1871.

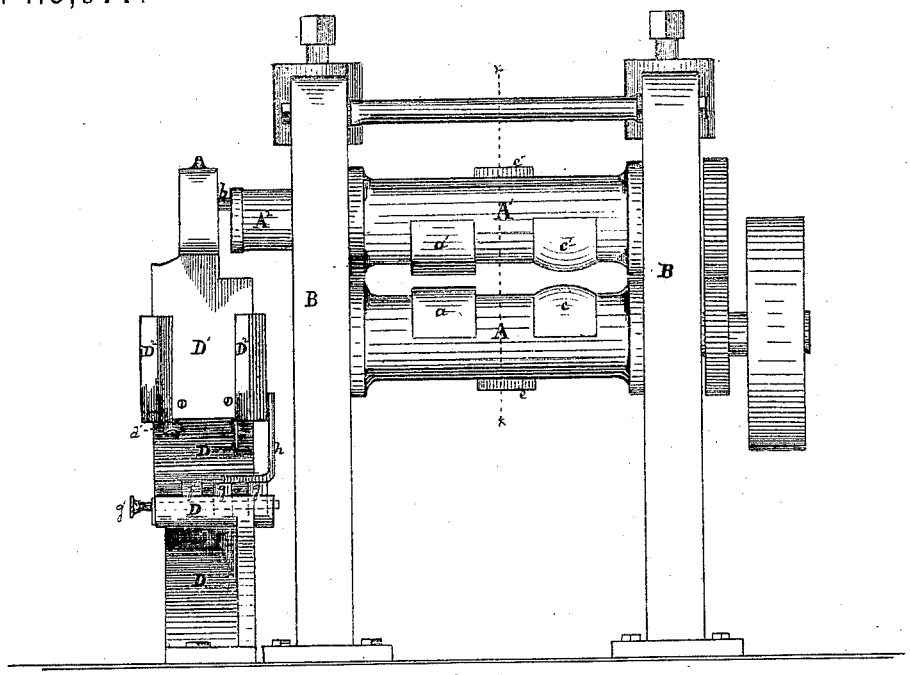

FIG. I.

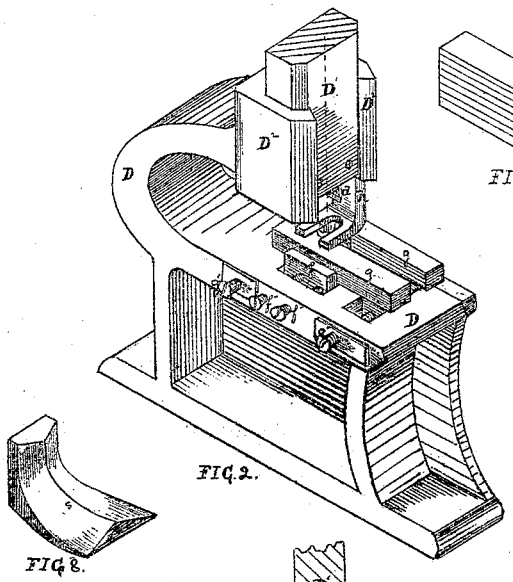

FIG. 2.

FIG. 8.

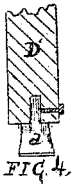

FIG. 4.

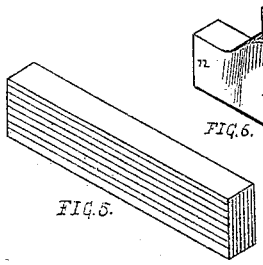

FIG. 5.

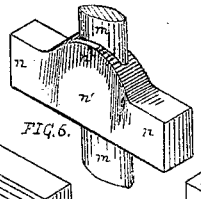

FIG. 6.

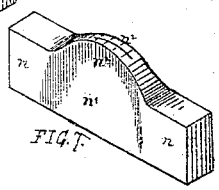

FIG. 7.

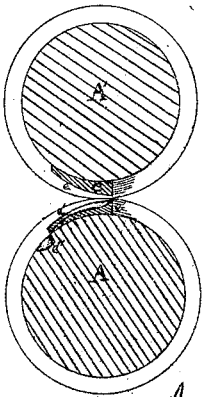

FIG. 3.

Witnesses:

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UNITED STATES PATENT OFFICE.

AUGUSTUS BUERKLE, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR MANUFACTURING PICKS AND SIMILAR TOOLS.

Specification forming part of Letters Patent No. **113,977**, dated April 25, 1871.

To all whom it may concern:

Be it known that I, AUGUSTUS BUERKLE, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Machine for Manufacturing Picks, Mattocks, and similar Tools; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—

Figure 1 is a rear elevation of my improved machine. Fig. 2 is a detached view, in perspective, of the devices on the end of the machine in Fig. 1, for making an eye in the pick-blank and forcing a mandrel therein. Fig. 3 is an enlarged sectional view through the rolls in the line $x\ x$, Fig. 1. Fig. 4 is a side view of the punch attached to its driving-block; and Figs. 5 to 8 are separate detached views of pick and mattock blanks in various stages of manufacture.

Like letters of reference indicate like parts in each.

My invention relates to the construction and arrangement of rolls and dies and co-operating punch and ram, for the more perfect and speedy manufacture of picks, mattocks, and similar implements, as hereinafter set forth.

To enable others skilled in the art to make and use my improvement, I will proceed to describe its construction and mode of operation.

The cylindrical rolls A A^1 are of any known suitable construction, and are mounted in the usual housings B. In these rolls I arrange, first, a pair of plain cam-faced dies, $a\ a'$; second, a pair of convex cam-faced dies, $c\ c'$; and, third, a pair of cam-faced dies—one, e, plain, and the other, e', concave. The neck A^2 of the roll A^1 projects beyond the housing, and by a wrist, b, eccentrically arranged thereon, or by other equivalent device for securing a reciprocating motion, it is connected with the vertically-moved block D^1, the latter playing in slides D^2, which are supported by the foundation or frame D. In the lower end of this block D^1, I fix a punch, d, of the size and form desired for the eye of the pick, and also a ram, d'. On the foundation D, directly under the punch d, I arrange a pair of jaws, $g\ g$, and adjust them to or from each other by right-and-left-hand screws g', so that, moving uniformly to or from a central line in the plane of the punch d, they may clamp the blank in the proper position for punching. A little to one side of the direction of the path of the ram d', I arrange a guide, f, and make it adjustable by means of screws f'. The blank for the pick, of the proper form and size, as illustrated in Fig. 5, is then placed on its edge between the jaws $g\ g$, and the latter are made to clamp it securely. A downward stroke of the block D^1 forces the punch d through the blank and opens or makes the eye. One result of this is the spreading apart of the sides of the eye thus punched; and to make room for such spreading I cut away the inner faces of the jaws $g\ g$, as shown in Fig. 2, adjacent to the path of the punch. The stripper h holds the blank in place till the punch d is withdrawn. The blank is then placed against the gage f. One end of a mandrel, m, Fig. 6, is inserted in the eye, and the other placed under the ram d'. A downward stroke of the block D and ram d' then forces the mandrel m through the eye of the blank.

In the manufacture of picks it is desirable that the sides n^1 of the eye should be drawn out, as at n^2, Fig. 6. This has heretofore been done under the trip-hammer, which is a slow and laborious mode of operating. These extensions or ears n^2 cannot be rolled by passing the blank through endwise between dies, since the metal in that case would be drawn lengthwise of the blank as well as spread laterally, and the object in view is simply to spread it laterally. To accomplish this I feed the blank n (it still carrying the mandrel m) edgewise in between the cam-faced dies $a\ a'$, so that the dies, biting the sides n^1 of the eye with increasing force from one edge of the blank to the other, shall draw out the extensions or ears n^2, as shown in Fig. 6. The remaining work on the pick is then done in the usual way.

If it be desired to roll out the ears n^2 without the use of a mandrel, m, I punch the eye, as before described, and run the blank edgewise through between the convex cam-faced

dies $c\ c'$, by which the extensions n^2 will be drawn out, as shown in Fig. 7. The necessity for using convex-faced dies in this case arises from the absence of the mandrel. The first action of these dies will be to press the sides n^1 together. The latter may be afterward opened by a mandrel.

The dies $e\ e'$ are designed for rolling the blades of mattocks. The die e has a plain face, to form the lower face of the mattock-blade, and the other, e', is concave, so as to form the upper convex face, s, Fig. 8. These dies, like the others, are cam-faced from their bases to the opposite or thicker ends, as shown. The mattock is brought by a trip-hammer approximately to the form shown, and then finished by being passed through between the dies $e\ e'$.

To provide room for the head of the mattock, so that it will not become misshaped by passing through between the rolls, I make a cavity or depression, e'', in the lower roll, at the base end of the die e', of suitable form and size for the purpose. In this way the finishing is done cheaper and better than by the ordinary means.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The arrangement of the punch d, stripper h, jaws $g\ g$, and right-and-left-hand adjusting-screw g', substantially as described.

2. The adjustable gage f, in combination with the ram d' and mandrel m, substantially as set forth.

3. The dies $c\ c'$, cam-faced in the direction of their motion, and convex-faced in the direction of the axial line of the rolls, such convexity being uniform from the middle of each die to its outer edge, substantially as set forth.

4. The dies $e\ e'\ e''$, of the form and arrangement substantially as described.

In testimony whereof I, the said AUGUSTUS BUERKLE, have hereunto set my hand.

AUGUSTUS BUERKLE.

Witnesses:

A. S. NICHOLSON,

JAMES I. KAY.