

(No Model.)

S. H. BROWN.
MANUFACTURE OF AXES.

No. 461,418.

Patented Oct. 20, 1891.

Fig. 2.

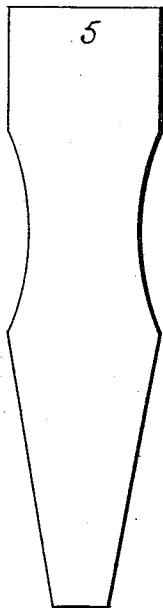


Fig. 3.

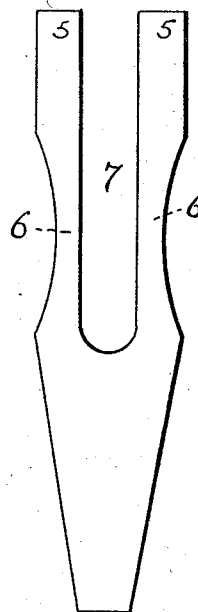


Fig. 4.

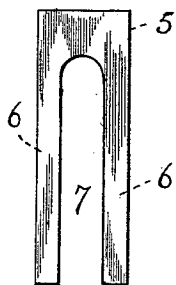


Fig. 5.

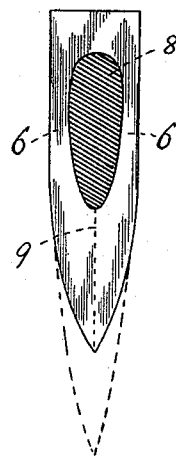
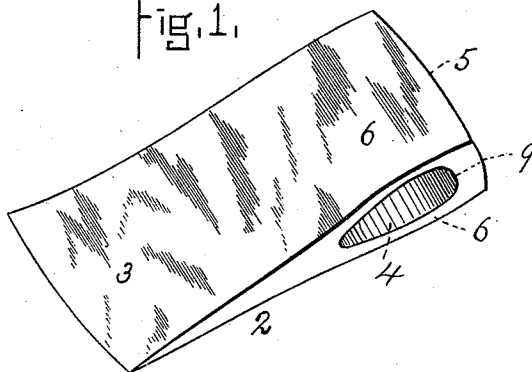


Fig. 1.



Witnesses.

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by H. E. Long, Atty.

UNITED STATES PATENT OFFICE.

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MANUFACTURE OF AXES.

SPECIFICATION forming part of Letters Patent No. 461,418, dated October 20, 1891.

Application filed January 5, 1891. Serial No. 376,754. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL H. BROWN, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in the Manufacture of Axes; 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 figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in the manufacture of axes, particularly that part which pertains to the formation of the aperture or eye in the head of the ax and adapted to contain the handle.

The gist of my invention is embodied in the separation of the ax-blank or ax-poll blank longitudinally, this separation being produced by a removal of a certain portion of the material composing the blank. The two portions so formed are now spread apart, a "mandrel" or "pin," so called, is inserted between them, and the ends are then brought together about said mandrel and welded to close the opening and form the rear end as an integral part of the ax-blank or ax-poll blank. The term "ax-blank" refers to a solid steel ax, while the term "ax-poll blank" refers to an ax in which the head is of iron or homogeneous steel and the cutting-edge is of superior tool-steel welded thereupon. By this method no disturbance of the molecules of the metal occurs and the strength of the same is not injured, while the removal of a portion of the blank reduces said blank to the proper dimensions at certain specified points. It will be seen, as hereinafter described, that my process is adapted for use at either end of the ax-poll blank and equally applicable either to an ax-poll blank in which the steel is overcoated upon the blank or inserted into the blank.

The drawings represent, in Figure 1, a perspective view of an ax embodying my improved process of manufacture. Fig. 2 is a plan of a blank adapted to be opened at the rear end. Fig. 3 is a similar view with the separation made. Fig. 4 is an end view of an

ax-poll blank opened at the front end. Fig. 5 shows the same with the eye completed and the blank ready for the overcoating of steel while the mandrel is still in place.

In said drawings, 2 represents an ax completed after my improved process, in which the blade is shown at 3, the eye at 4, the rear portion of the head at 5, and the sides or walls of the eye or handle-aperture at 6 6.

In Fig. 2 is a blank made of a specified form and concaved on either side for a distance equal to the length of the eye, or thereabout, in order to remove some of the superfluous metal not required to form the side walls of the said eye.

In Fig. 3 is shown a blank in process with a divisional separation or slot 7. This is created by milling, sawing, or otherwise removing a certain portion of the blank either in a cold or hot state. After removal of the material and this separation of the sides of the ax-blank or ax-poll blank in the manner described, which is effected without change in its general shape, the blank is heated, the side walls 6 6 are spread apart, and a "mandrel" or "pin" 8, so called, of a size slightly smaller than the finished eye of the ax, is now introduced. The parts 6 6 are now bent and worked to make them conform snugly about the mandrel, when the now-open ends at a proper heat are closed upon each other and welded together, making a seam, (indicated for purposes of illustration at 9.) In this way the rear end is rendered homogeneous and the metal retains its full strength about the eye, while at the same time the cost of manufacture is reduced.

In Figs. 4 and 5 this improved process of manufacture is shown, wherein the saw-cut or divisional aperture 7 is made in the front end of the blank. The mandrel is then placed in position and the side walls of the eye are brought together at their ends and welded. In Fig. 5 I have shown the steel portion in dotted lines as scarfed and overlapping the front end of the ax-poll blank, termed "overcoating."

In Fig. 4 the ax-poll blank is shown as rectangular, while the removal of material in the act of creating the aperture or separating the sides of the blank removes enough stock to give the requisite dimensions or thickness to

the side walls. Hence no previous cutting or shaping of the blank is required. This is a matter of much importance.

What I desire to claim is--

- 5 1. The method of making axes, as herein described, which consists in creating a slit or aperture longitudinally at the rear end of the ax-blank or ax-poll blank by removal in
10 part of the material composing said blank, but without changing its form, then introducing a mandrel or pin of the shape of the eye within the slit or aperture so created, causing the sides of the ax-blank or ax-poll blank to conform to said mandrel, and finally welding the
15 extremities of said sides together to render the end of the head again homogeneous, substantially as set forth and explained.

2. The method of making axes, as described, consisting, first, in creating a longitudinal

slit or aperture in the front end of the ax-poll 20 blank by removing the material composing said blank in that portion by milling or sawing, but without changing the form of the said blank; secondly, inserting a mandrel or pin of the shape of the eye within said slit, causing the now-separated sides of the ax-poll 25 blank to conform to the mandrel in shape; thirdly, welding the ends of the blank together, and, finally, welding the blade to the ax-poll blank, substantially as specified and 30 stated.

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

SAMUEL H. BROWN.

Witnesses:

FRANCIS C. STANWOOD,
H. E. LODGE.