

W. G. HOWELL.

MANUFACTURE OF AXES.

No. 188,799.

Patented March 27, 1877.

Fig. 4.

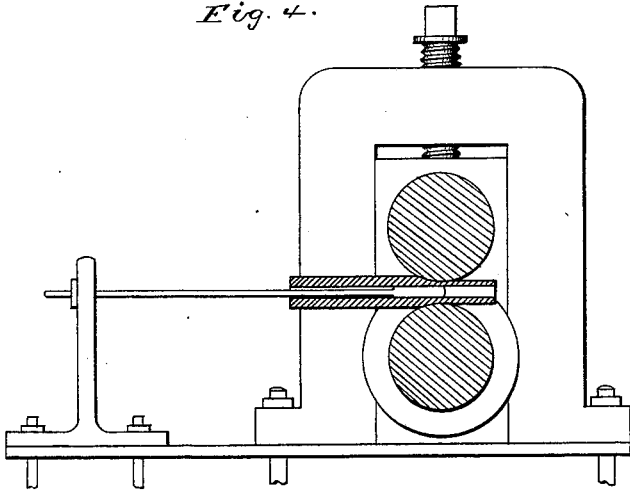


Fig. 1.

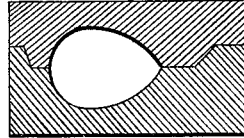


Fig. 2.

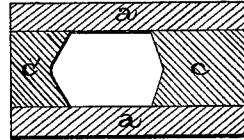


Fig. 5.

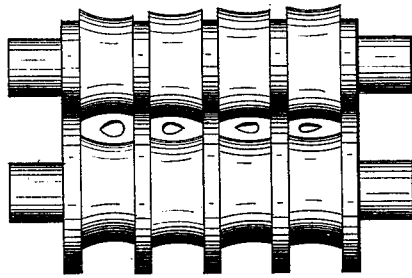
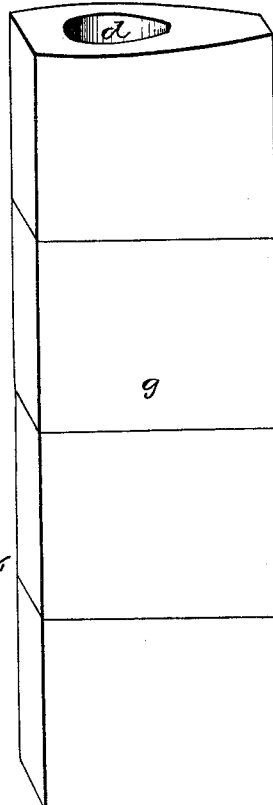


Fig. 3.



WITNESSES.

*J. W. Garner*  
*Frank M. Burnham.*

INVENTOR.

*W. G. Howell,*  
*per*  
*F. A. Lehmann,*  
*att'y.*

# UNITED STATES PATENT OFFICE

WILLIAM G. HOWELL, OF TROY, NEW YORK.

## IMPROVEMENT IN THE MANUFACTURE OF AXES.

Specification forming part of Letters Patent No. **188,799**, dated March 27, 1877; application filed January 25, 1877.

*To all whom it may concern:*

Be it known that I, WM. G. HOWELL, of Troy, in the county of Rensselaer and State of New York, 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in the manufacture of axes; and it consists in forming a pile from a number of bars, which are then rolled into one continuous bar, from which the polls are cut, having the eyes perfectly formed, as will be more fully described hereinafter.

Figures 1 and 2 are vertical cross-sections of the pile, showing the manner of building them. Fig. 3 is a perspective of the bar that is rolled from the pile. Figs. 4 and 5 are views of the rolls in which the bar is formed.

I first take bars of iron or steel, or both together, that have been rolled into suitable form and shape, and build my pile. This pile may be formed of two pieces, which have the half of the eye formed in each of them, and so shaped that they fit tightly together, and cannot become displaced while being rolled, as shown in Fig. 1. Instead of being formed of two pieces, this pile may be formed of four, as shown in Fig. 2—two plates, *a*, and the two bars, *c c'*, which separate the plates, the bars

having their inside edges made more or less concave, so as to conform to the shape of the eye *d*. The bar *c'*, which forms the back of the ax, may be of steel, while all the other three may be of iron, and thus the ax be made more than ordinarily strong at this point, so as to be specially adapted for hammering of all kinds.

After the pile has been formed it is heated in the usual way, placed on a mandrel, and passed between the shaping-rollers. In these rollers I prefer to use four or more grooves, each one of which reduces the pile a certain degree, until it at length forms the long bar *g*, in which the eye is perfectly formed without any further punching. This bar is then cut, in the usual manner, into blanks or polls, which are ready to be finished into perfect axes.

Having thus described my invention, I claim—

1. As a new article of manufacture, a bar, *g*, from which the ax-polls are to be cut, having the eye *d* perfectly formed, substantially as shown.

2. A pile for making axes, consisting of the two plates, *a*, and the intermediate bars *c c'*, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand.

WILLIAM G. HOWELL.

Witnesses:

THOS. S. HUXTABLE,  
JOHN HOWELL.