W. ACHESON.

Rolls for Making Ax-Blanks.

No. 199,393. **Patented Jan. 22, 1878.**

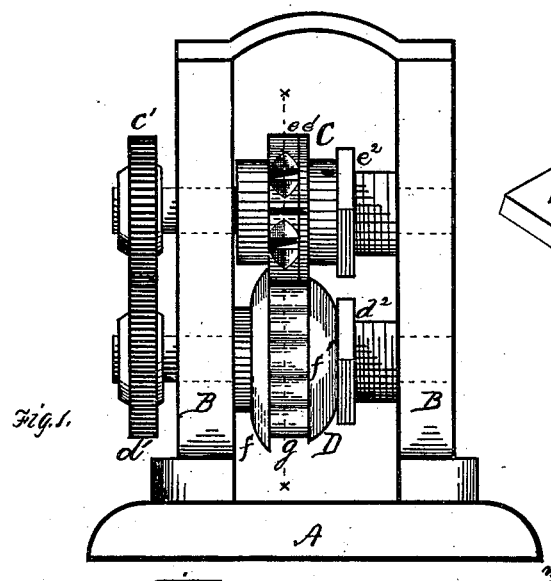

Fig. 1.

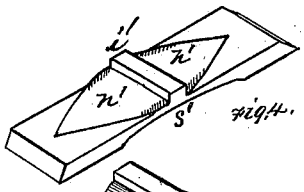

Fig. 4.

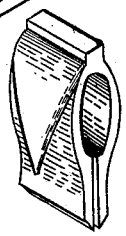

Fig. 5.

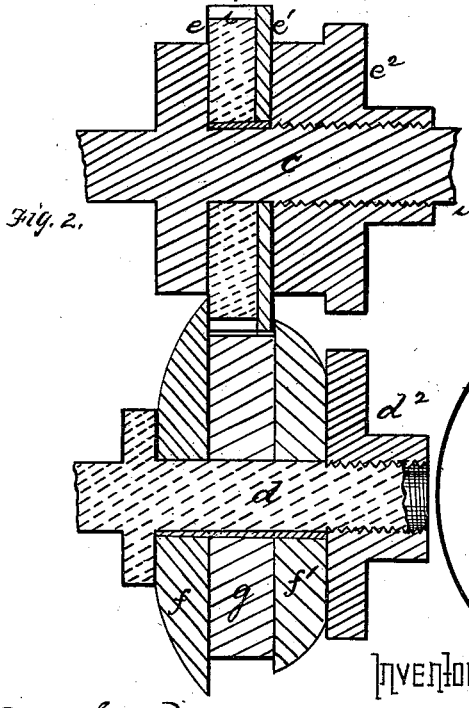

Fig. 2.

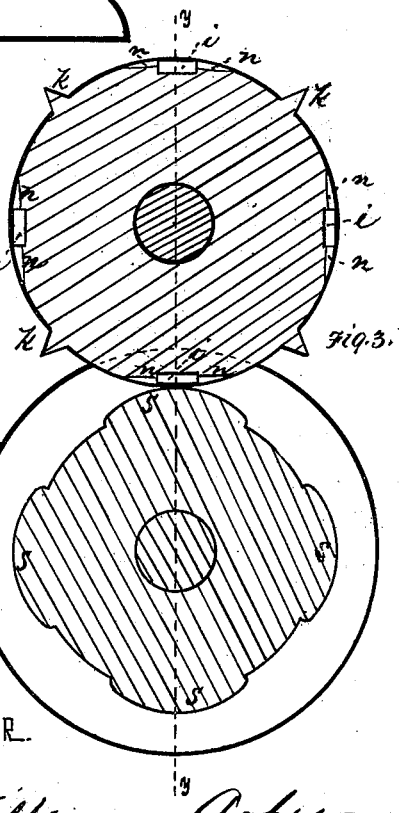

Fig. 3.

Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM ACHESON, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO HIMSELF, THOMAS REES, AND JAMES BOYD, OF SAME PLACE.

IMPROVEMENT IN ROLLS FOR MAKING AX-BLANKS.

Specification forming part of Letters Patent No. **199,393**, dated January 22, 1878; application filed November 28, 1877.

To all whom it may concern:

Be it known that I, WILLIAM ACHESON, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Manufacture of Ax-Blanks; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a front elevation. Fig. 2 is a longitudinal central section of the rolls detached. Fig. 3 is a transverse section of the same. Figs. 4 and 5 are views of the blank.

Like letters refer to like parts wherever they occur.

My invention relates to the manufacture of ax-blanks, and to rolls for producing the same; and consists in the combination of two rolls, one provided with a series of transverse and longitudinal grooves and the other with a series of cams or projections, the whole adapted to produce a blank with poll or head and re-enforced eye; and also, in combining with a pair of rolls, having grooves for forming the poll or head and cams or projections for forming the eye of an ax-blank, a series of knives for scarfing the blanks.

I will now proceed to describe my invention, so that others skilled in the art to which it appertains may apply the same.

In the drawing, A represents a suitable bed, on which are erected housings B B, with brasses or journal-boxes and housing-screws of any approved form. In said housings are journaled two rolls, C D, adapted for forming my blank. These rolls are perfectly formed, as follows: For each roll is provided a shaft, *c d*, supplied at its outer end with gear or pinions *c' d'*, meshing together so as to cause the shafts to move in unison. Upon shaft *c* are placed two collars or rings, *e e'*, which are forced against a shoulder thereon, and secured by means of a nut, e^2, which has either a right or left hand thread to suit the direction of the rolls. Of these collars or rings, the one *e* is of such width as is desired for the poll or head of the ax, and is provided with one or more sunken dies or grooves, *i*, which form transverse ribs or beads on the blanks, and on either side of groove *i* are depressions *n*, which render the transverse grooves of less depth and accommodate the draft of the roll, so that a full poll may be formed, and the depressions *n* also form longitudinal projections on the blank to strengthen the eye of the finished ax. The ring e' is plain, and its width will depend upon the extent to which the width of the cheeks and bit are to exceed the poll. These devices will constitute a tongued roll.

Upon shaft *d* are slipped first a ring or flange, *f*, forming one side of a groove, then the die-ring *g*, forming the bottom of the groove, and finally a third ring or flange, *f'*, forming the opposite side of the groove, the whole being adjusted and secured by a nut, d^2, which has either a right or left hand thread to suit the direction of the rolls, as before specified. The die-ring *g* has, at regular intervals upon its periphery, one or more oval or cam-shaped projections, *s*, corresponding in number to the number of grooves *i* in its fellow, and arranged with relation thereto so as to both press the metal into *i* to form the poll and depress the reverse side of the blank to form the eye of the ax. These devices will constitute the grooved roll.

On either roll, but preferably upon the tongue formed by *e e'*, are secured knives *k*, arranged between each series of grooves, *n i n*, for the purpose of scarfing the blanks, thus facilitating the subsequent welding on of the bit.

Being provided with rolls having the characteristic grooves *n i n* and projections *s*, I properly heat a suitable sized bar the width of the transversely-grooved ring or collar *e*, and pass it between the rolls, holding it on ring *e* by a suitable guide. After the poll is formed, the surplus metal is forced over on ring or collar e', forming the cheeks, the bar being thus shaped into a series of blanks like that shown in Fig. 4—that is, with a transverse rib, *i'*, and two longitudinal swells, *n' n'*, upon one surface and a concavity, *s'*, upon the opposite face—which blank can be subsequently bent upon a suitable mandrel, welded, and the bit inserted in the usual manner. If the knives *k* have been employed, the blanks will be scarfed; but if the knives have been

omitted, the bar will have to be subsequently cut and scarfed, adding that much to the labor of manufacturing.

The construction specifically set forth and shown is believed to be the best, first, because the die-rings or collars *e* and *g* can be readily changed for producing different-sized blanks; and, secondly, because, by varying the width of die-ring *e* and plain ring e^1, the poll or head may be made as much narrower than the bit as desired; but I do not desire to be understood as limiting myself to such construction, for the flanges or side rings *f f'* may be dispensed with, and vertical rolls running on each side of the rings *e* e^1 *g* may be substituted, to form the groove or channel for the passage of the bar, as in some well-known forms of mill for producing horseshoe-bar.

The advantages of my invention are that the blanks are formed scarfed by a continuous operation, with a single heat, much more rapidly and perfectly than by any former method, and at a much less expense. The blank produced also enables a more perfect ax to be formed, and one having a much stronger eye than those made from the present form of blank.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine for forming ax-blanks, the combination of two rolls, one having a tongue grooved transversely to form the poll and the other having an eccentric projection to form the eye of the blank, the tongued roll being provided with knives for scarfing the blanks, substantially as specified.

2. In a machine for forming ax-blanks, the combination of two rolls, one of said rolls provided with the grooves *n i n*, substantially as and for the purpose specified.

3. In a machine for forming ax-blanks, the combination of two rolls, one provided with two detachable rings or collars, forming a tongue, one of said collars being grooved transversely, substantially as and for the purpose specified.

In testimony whereof I, the said WILLIAM ACHESON, have hereunto set my hand.

WILLIAM ACHESON.

Witnesses:
F. W. RITTER, Jr.
JAMES I. KAY.