

L. CHAPMAN.

DIES AND PUNCHES FOR FORMING THE EYES OF ADZES.

No. 172,257.

Patented Jan. 18, 1876.

fig. 1.

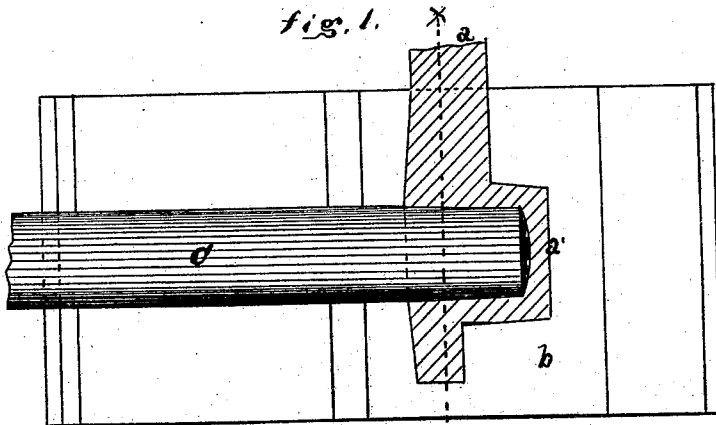


fig. 9

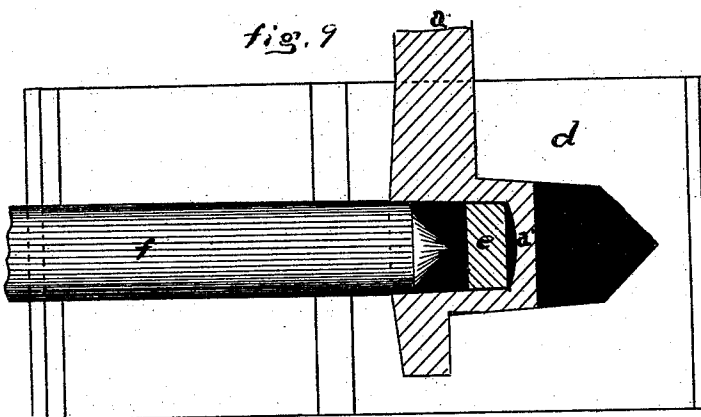
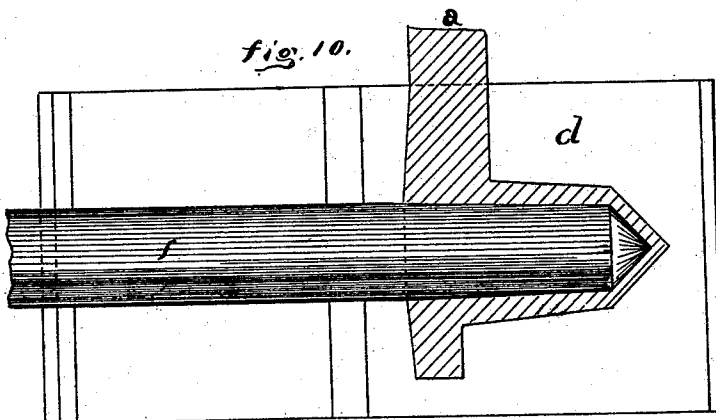


fig. 10.



Witnesses.

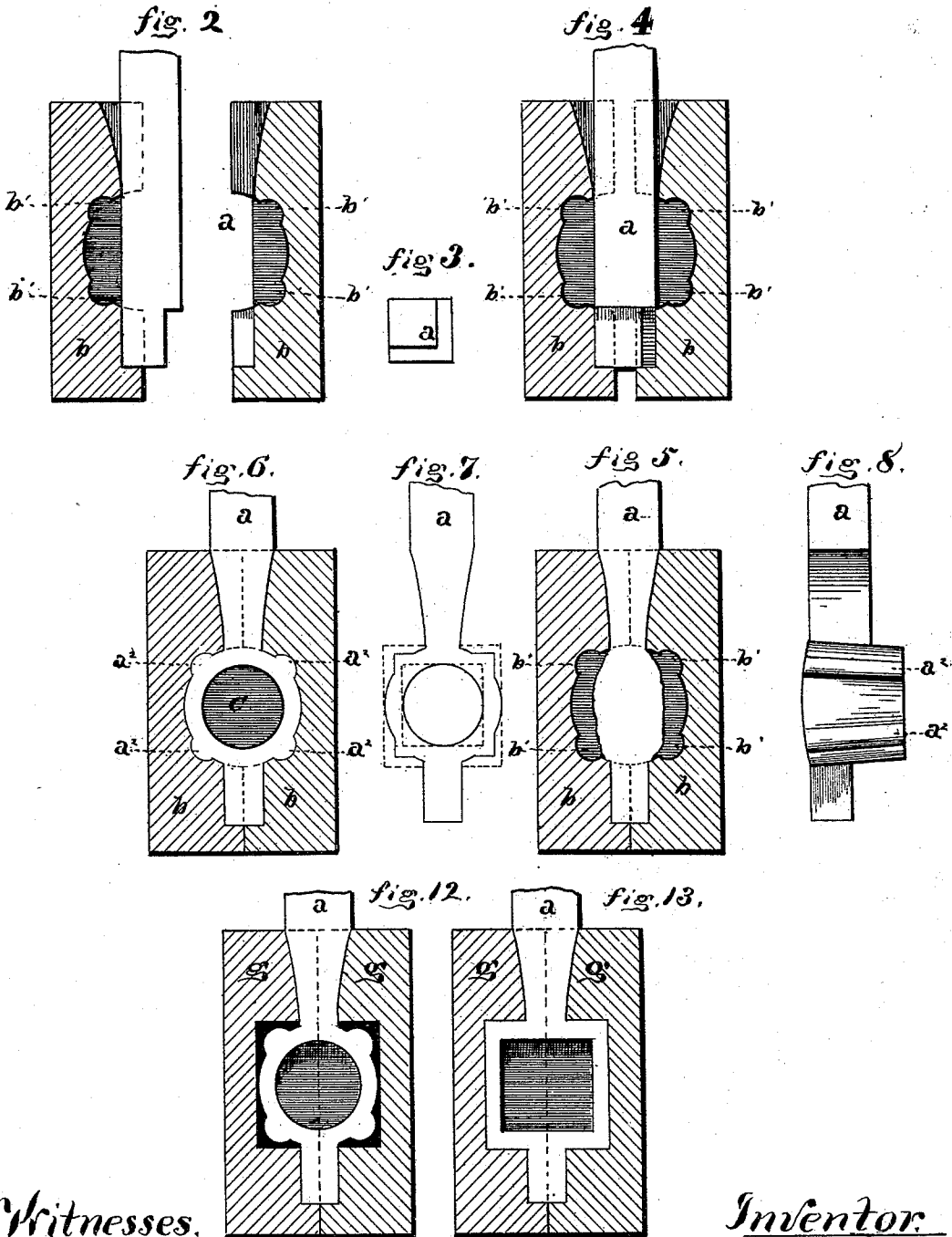
Wm. A. F. Fumman
George E. Shaw

Inventor.

Luke Chapman
By W. E. Simonds
Att'y.

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fig. 11.

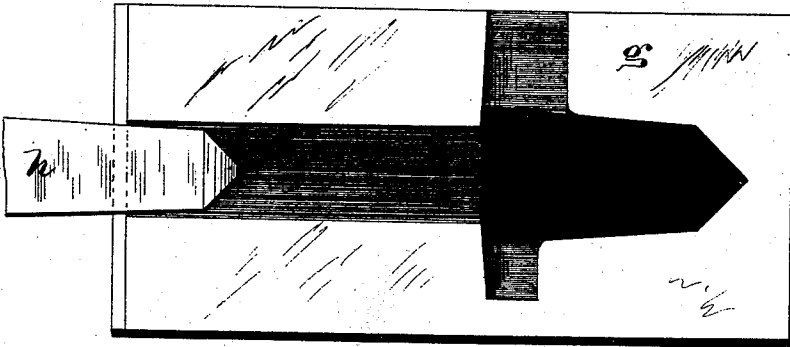


fig. 14.

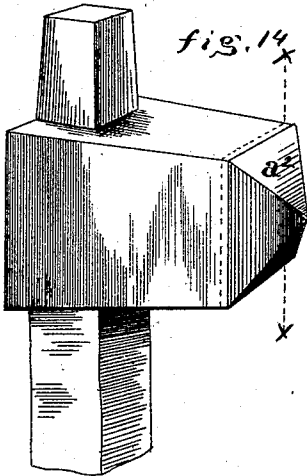
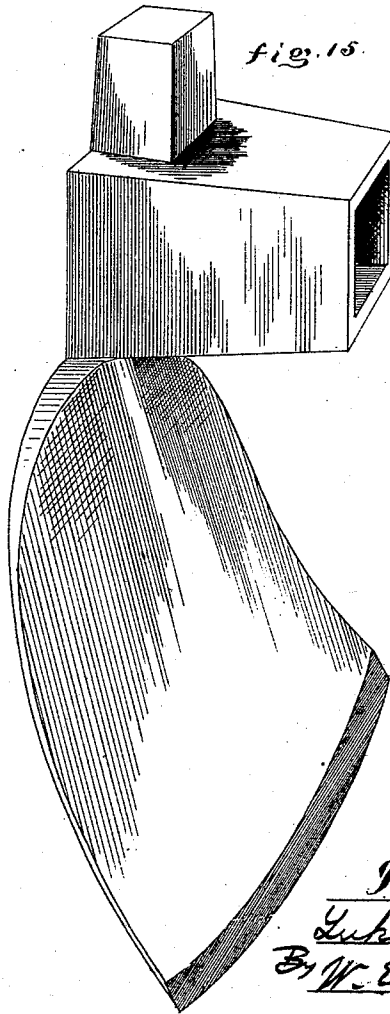


fig. 15.



Witnesses.

John Pollitt
George A. Shaw

Inventor

Luke Chapman
By *W. E. Simonds*
Atty.

UNITED STATES PATENT OFFICE.

LUKE CHAPMAN, OF COLLINSVILLE, CONNECTICUT, ASSIGNOR TO THE
COLLINS COMPANY, OF SAME PLACE.

IMPROVEMENT IN DIES AND PUNCHES FOR FORMING THE EYES OF ADZES.

Specification forming part of Letters Patent No. **172,257**, dated January 18, 1876; application filed
February 24, 1875.

CASE C.

To all whom it may concern:

Be it known that I, LUKE CHAPMAN, of Collinsville, in the county of Hartford and State of Connecticut, have invented certain new and useful improvements pertaining to the manufacture of elongated eyes (square or angular in cross-section) for adzes and other tools and articles having elongated eyes, of which the following is a specification, reference being had to the accompanying drawings, where—

Figure 1 is a face view of one of the two duplicate dies forming the first set, to the action of which the stock or bar of metal is submitted. Fig. 2 is a view of the first set of dies, in cross-section, showing the stock inserted, ready to commence operation. Fig. 3 is a view of the end of the bar as formed or manipulated before insertion into the first set of dies. Fig. 4 is a view the same as Fig. 2, except that the dies are nearly closed together. Fig. 5 is a view the same as Fig. 4, except that the dies are wholly closed. Fig. 6 is a view similar to Fig. 5, after the punch has done its work, as shown in Fig. 1. Fig. 7 is a view illustrating a modification of these dies. Fig. 8 is a side view of the forging formed by the first set of dies. Fig. 9 is a face view of one of the two duplicate-dies forming the second set, showing the product of the first set inserted and ready to be operated upon. Fig. 10 is a view the same as Fig. 9, except that the punch has moved down and done its work. Fig. 11 is a face view of one of the two duplicate dies forming the third set. Fig. 12 is a view, in cross-section, of the third set, with the product of the second set inserted ready to be operated upon. Fig. 13 is a view the same as Fig. 12, except that the punch has moved down and done its work. Fig. 14 is a view of the forging which is the product of the third set of dies. Fig. 15 is a view of the finished adz with a square-shaped elongated eye.

These dies are designed for forming elongated eyes, square in cross-section, for adzes or other tools or articles having similar eyes. Adzes and other similar tools and articles are usually made of iron or steel or iron and steel. The metal to be operated upon by these dies

is to be properly heated before being operated upon.

The bar of metal *a*, of appropriate size, is cut into lengths containing stock sufficient for the purpose designed. One end is worked into the shape shown in Figs. 2, 3, and 4. The bar is then heated and inserted, as shown in Fig. 2. The dies *b b*, which are worked by appropriate machinery, then come together side-wise, as shown in Fig. 5, pinching the bar, upsetting it somewhat, and causing it to partially fill the matrix of the dies *b b*. The punch *c* now moves forward to its work, as shown in Figs. 1 and 6, causing the metal to fill the matrix of the die, and leaving the web *a'* just forward of the punch. The eye, as so far formed, is substantially circular in cross-section, with the addition of the four corner-stock lugs *a''*, which are formed by and in the four corner-stock recesses *b'*. This forging, the product of the first set of dies, is shown in side view in Fig. 8. This forging is again heated and placed in the second set of dies *d d*, (which being duplicates, only one of them is shown in the drawings, and that in Figs. 9 and 10, the cross-section of which is precisely similar to first set,) which come together sidewise, under pressure, and grasp the stock. Into the hole formed by the punch *c* is dropped the heated additional stock-piece *e*, before the stock or bar is submitted to this second set of dies. The punch *f* now advances to its work, as shown in Fig. 10, merging the piece *e* with the stock, and elongating the eye to a still greater extent. The product of this second set of dies is again heated and grasped in the third set of dies *g g*, as shown in Fig. 12. The punch *h* now advances to its work, making a square eye of what was before a round one, as shown in Fig. 13, the corner-stock lugs furnishing the metal to fully fill out the corners. The product of this third set of dies is shown in Fig. 14. The cap-web *a''* is now removed, and the forging of the eye is substantially completed. The dotted line *xx* shows where the cap-web is sawed off. This forging is finally worked into the finished shape shown in Fig. 15.

It is not essential that the corner-stock lugs

shown be semicircular in outward outline, and I show in Fig. 7 a modification when they are made right-angular, and these corner-stock lugs can be used in the production of eyes angular in cross-section, other than square, as, for instance, eyes of diamond shape in cross-section.

It is perfectly obvious that this process and these dies are applicable, by obvious modifications, to the production of square-sectioned or angular-sectioned elongated eyes for other tools and articles than adzes, and I mean my claim to cover them broadly for all such purposes; and these corner-stock recesses can be made use of in a solid die, not partable, as well as in partable dies.

The blank is made smallest at one end before submission to the dies, so as to have this part of about the same size as the head of the tool which it finally forms, while the body of the blank is larger, in order to afford the requisite amount of stock for the eye. I prefer it to be on or next one side or corner of the bar for two reasons: first, by appliances that I have in use it is easier to make it thus; and, second, when the small part is made centrally of the bar, I find an increased tendency in the

metal to flow out at the joint between the dies, under the action of the punch. Though the metal is thrown slightly out of its axial center at first in the matrix of the dies, this proves to be of no consequence in actual practice.

I claim as my invention—

1. Dies *b b*, having the corner-stock recesses *b'*, in combination with the non-angular punch *c*, when constructed, arranged, and designed for operation and use substantially as shown and described.

2. The dies *d d*, having the corner-stock recesses *b'*, and otherwise shaped as shown, in combination with the non-angular and pointed punch *f*, when constructed, arranged, and designed for operation and use substantially as shown and described.

3. In combination with the dies *b b*, having the corner-stock recesses *b'* and the punch *c*, the squaring-dies *g g*, and the squaring-punch *h*, when the whole is constructed for use as described.

LUKE CHAPMAN.

Witnesses:

WM. EDGAR SIMONDS,
GEORGE E. NOLAN.