L. CHAPMAN.

DIES AND PUNCHES FOR FORMING THE EYES OF ADZES.

No. 172,254. Patented Jan. 18, 1876.

fig. 2

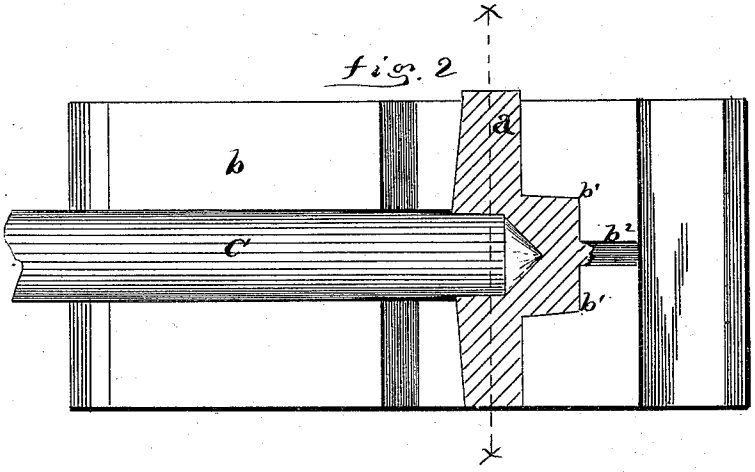


fig. 1

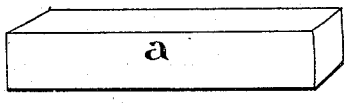


fig. 3

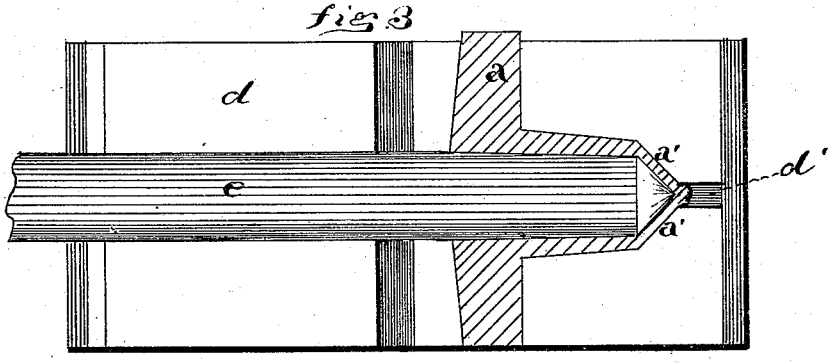
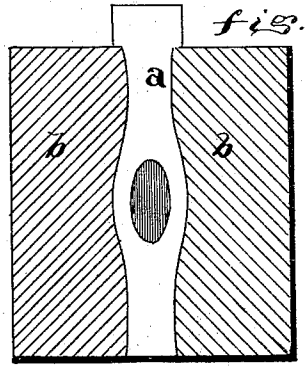


fig. 4



Witnesses.
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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. **172,254**, dated January 18, 1876; application filed February 24, 1875.

CASE G.

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 Socket and Punches for Producing Elongated or Socket Eyes on Pickaxes, reference being had to the accompanying drawings, where—

Figure 1 is a view, showing the approximate shape of the bar or stock to be operated on by the dies and punches. Fig. 2 is a face view of one of the two duplicate dies forming the first set made use of, showing the stock-bar inserted and operated on. Fig. 3 is a face view of one of the two duplicate dies forming the second set made use of, showing the stock inserted and operated on. Fig. 4 is a view in cross-section of the first set of dies closed together, stock inserted, and operated on, the plane of the section indicated by the dotted lines *x x*. A cross-section of the second set of dies on the same plane appears substantially the same.

The invention consists in the combination of two sets of dies and punches, the first set being much like the last, except that it but partially effects the elongation of the eye; each set of dies having a small orifice at the bottom of the matrix, less in cross-area than the cross-area of the punches, through which superfluous metal may escape.

The bar of stock *a* is properly heated, and grasped by the dies *b b*, which close together face to face, being moved by appropriate machinery, and grasp the bar, and the shape of the matrix and of the bar are, by preference, so proportioned that the dies upset the bar somewhat, and force an extra amount of stock into the matrix of the dies. Being thus grasped, the punch *c*, moved by appropriate machinery, moves forward to its work, as represented in Figs. 2 and 4, partially punching and elongating the eye, filling the matrix of the dies, the shoulders b^1 preventing the free escape of the metal before the advancing action of the punch, but the orifice b^2 allowing the escape of any surplus metal. This orifice b^2 is less in cross-area than a cross-section of the punch, so that the punch cannot push forward of itself and out of the matrix any considerable amount of metal; but the purpose of the orifice is to allow the escape of superfluous metal after the matrix is thoroughly filled. The punch now retreats, the dies open, the stock is taken out, again heated, and placed in the second set of dies *d*, which close together and grasp the stock. These dies have a deeper matrix for the further elongation of the eye, and the punch *e* has a longer motion than the punch *c*. Being thus grasped, the punch *e* moves forward to its work, as represented in Fig. 3, still further elongating the eye, leaving the cap-web *a'* just forward of the punch.

These dies have shoulders similar to b^2, but on a more open angle, and have a similar orifice, *d'*, for allowing the escape of surplus metal. This orifice *d'* is less in cross-area than the punch for these dies, for the same reason as in the first set of dies.

The punch now retreats, the dies open, the stock is taken out, the cap-web is sawed off, and we have a pickax-poll, which is afterward, by common processes, worked into the finished shape of a pickax.

I claim as my invention—

Dies *b b*, having escape-orifice b^2, of less cross-area than the punch, and punch *c*, in combination with dies *d d*, having escape-orifice *d'*, of less cross-area than the punch, when both punches are designed to move the stock in the same direction.

LUKE CHAPMAN.

Witnesses:

WM. EDGAR SIMONDS,

GEORGE E. NOLAN.