3 Sheets—Sheet 1.

L. CHAPMAN.

DIES FOR FORMING THE EYES OF PICK-AXES.

No. 183,795. Patented Oct. 31, 1876.

Fig. 1

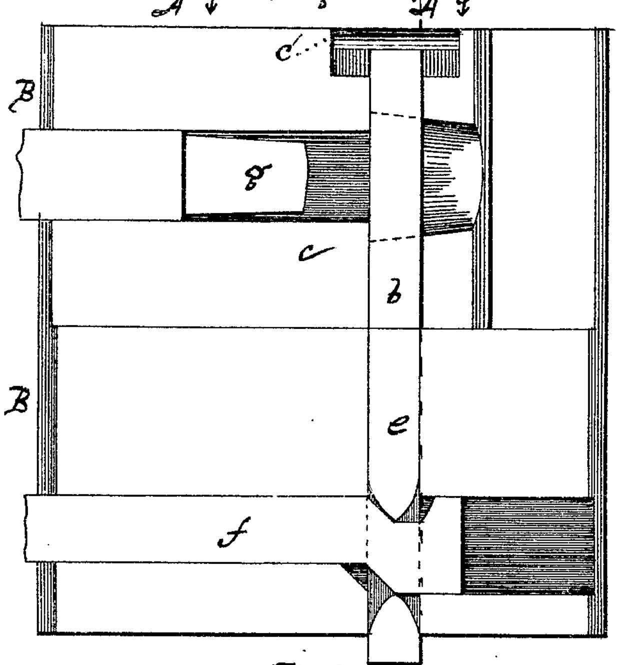


Fig. 3

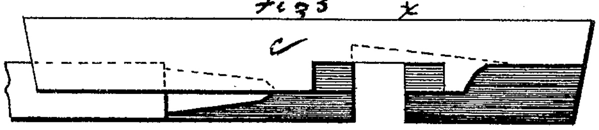


Fig. 2

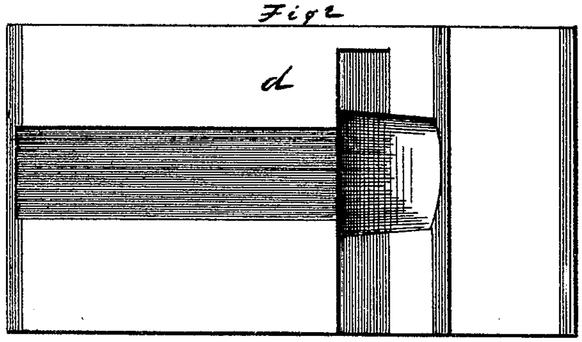


Fig. 5

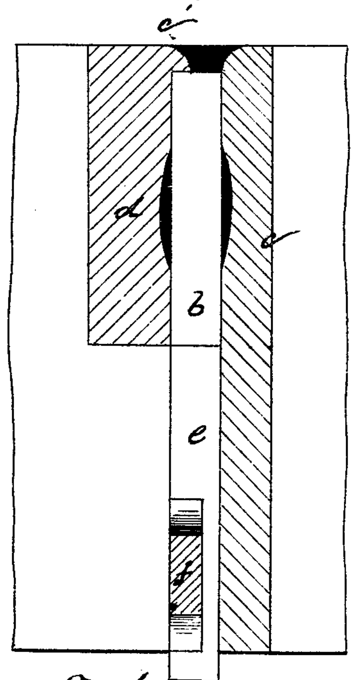
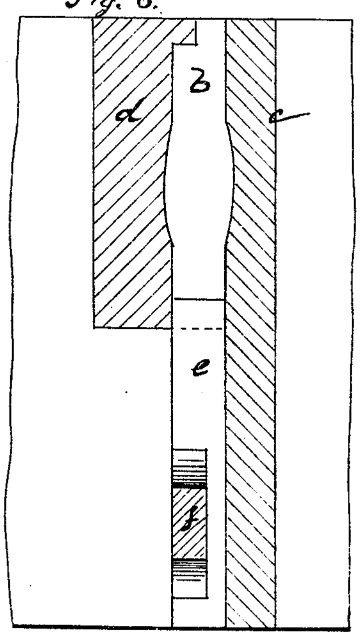


Fig. 6.



Witnesses

John Pollitt

[illegible]

Inventor

Luke Chapman

By W. E. Simonds

Atty.

3 Sheets—Sheet 2.

L. CHAPMAN.

DIES FOR FORMING THE EYES OF PICK-AXES.

No. 183,795. Patented Oct. 31, 1876.

fig. 4.

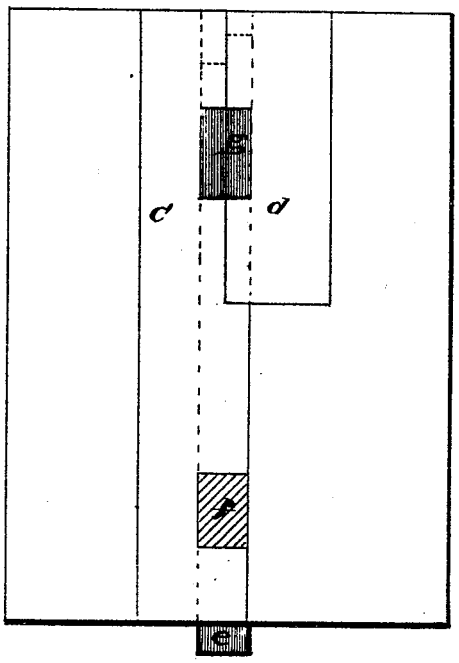


fig. 7

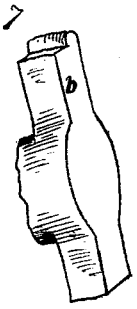
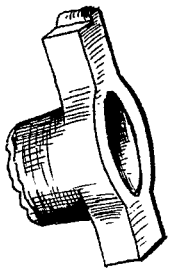


fig. 9.



Witnesses.
John Tollitt
George E. Adams

Inventor
Luke Chapman
By W. E. Simonds Atty

3 Sheets—Sheet 3.

L. CHAPMAN.

DIES FOR FORMING THE EYES OF PICK-AXES.

No. 183,795. Patented Oct. 31, 1876.

fig. 8

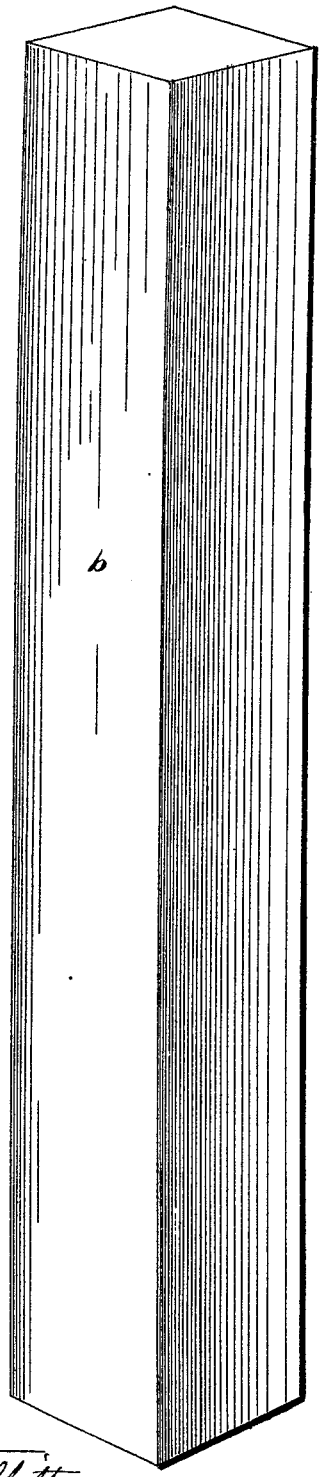
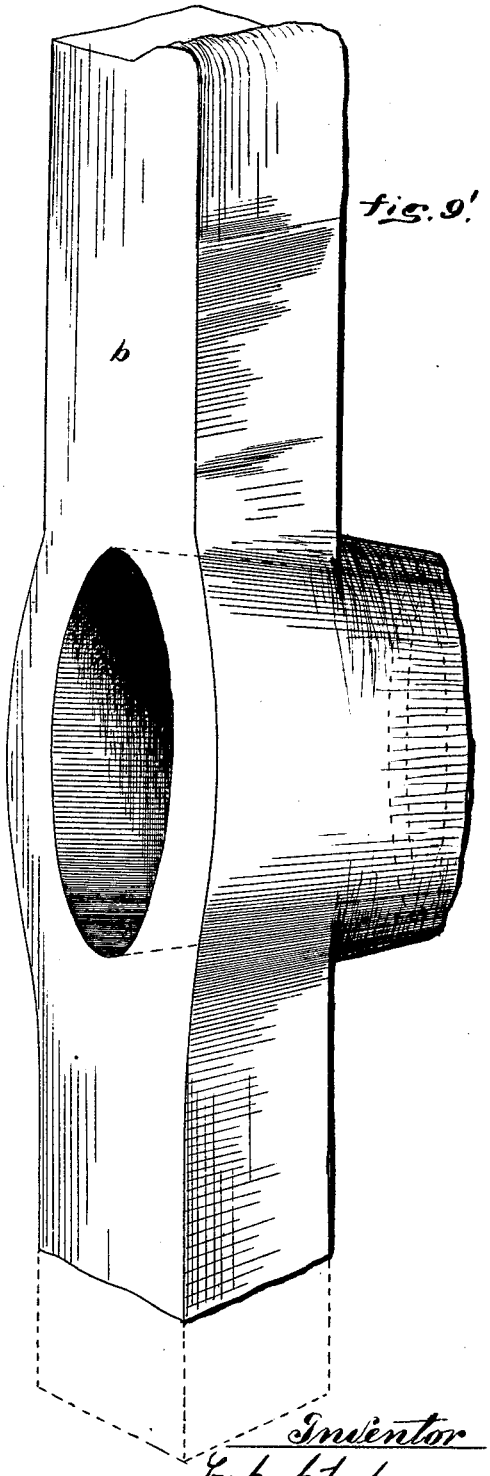


fig. 9



Witnesses
John Pollitt
George Ed. Nolan

Inventor
Luke Chapman
By W. E. Simmds
Atty.

UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN DIES FOR FORMING THE EYES OF PICKAXES.

Specification forming part of Letters Patent No. **183,795**, dated October 31, 1876; application filed February 24, 1875.

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 for Pickaxes, Adzes, Hammers, and other tools and articles having similar 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 dies made use of, which, as I prefer to make the die stationary, I will herein term the stationary die, (though both dies can be made movable if desired.) Fig. 2 is a face view of the other part of the die, which, as I intend to have it movable, I will herein term the movable die. Fig. 3 is (what I will call) a top view of the stationary die, supposing the observer to be at A and looking in the direction indicated by the arrows *a*. Fig. 4 is an end view of the two dies closed together (from the point B.) Fig. 5 is a view of the two dies closed together in cross-section on the plane indicated by the dotted line *x x*, Fig. 1, not, however, dividing the upsetting-plunger. Fig. 6 is a view the same as Fig. 5, except that the upsetting-plunger has upset the stock-bar. Fig. 7 is a view of the forging formed by these dies and the upsetting-plunger, supposed to be removed from the dies before being operated upon by the piercing-punch. Fig. 8 is an enlarged view of the stock-bar before being operated upon by these dies and punch. Fig. 9 is a view of the same bar after being operated upon by these dies and punch.

These dies and punches are intended for producing elongated or socket eyes upon pickaxes, the piece shown in Fig. 9 being a pickax "pole," the ends thereof being afterward, and by common processes, drawn out into pickax shape.

The features of novelty are, first, so constructing and using a die or dies that longitudinal or endwise pressure on the properly-heated stock-bar will upset it, and cause it to fill, partially or wholly, according to adjustment, the matrix of the dies; and, second, in connecting, with dies and punch or plunger thus used, the use of a punch for punching the hole for the eye, and, if desired, at the same time elongating the eye.

These dies and these processes, by proper modifications in the shape of the matrix of the dies, can be used for the production of elongated or socket eyes upon hammers, adzes, and other tools and articles generally, having similar elongated or socket eyes, and though I only show dies and punches for producing elongated or socket eyes upon a pickax-pole, I desire and intend my claim to cover the use of dies and punches which produce socket-eyes upon other tools and articles generally, in substantially the same manner, with exceptions in the shapes of the matrices and punches.

The stock-bar *b* is properly heated and laid into the stationary die *c*, as shown in Fig. 1. The die *d* being movable, and worked by proper machinery and power, then closes upon the bar *b*, as shown in Figs. 4 and 5, one end of the bar resting against the shoulder *c'*. The upsetting-plunger *e*, its motion given by the cam-bar *f*, now moves forward to the position shown in Fig. 6, exerting a longitudinal or endwise pressure on the bar *b*, and upsetting it and partially or wholly (according to the length of motion given to plunger *e*) filling the matrix of the dies. The forging produced up to this point, if now removed from the dies, would appear substantially as shown in Fig. 7, and this product is, in itself, valuable. The piercing punch *g* now moves forward, punching the eye, and, if the matrix is of the shape substantially as shown, elongating it. Plunger *e* and punch *g* now retreat, the dies open, and the forging is taken out, having an appearance substantially as shown in Fig. 9.

Whether one die is stationary and the other movable, or whether both are movable, is not essential.

I claim as my invention—

1. The combination of the dies *c d*, plunger *e*, cam-bar *f*, and shoulder *c'*, substantially as and for the purpose specified.

2. In combination, dies *c d*, and plunger *e* for upsetting the stock by endwise pressure, and the transverse punch *g*, all substantially as shown and described.

LUKE CHAPMAN.

Witnesses:

WM. E. SIMONDS,

GEO. E. NOLAN.