

L. CHAPMAN.

DIES AND PUNCHES FOR PICK EYES.

No. 172,260.

Patented Jan. 18, 1876.

fig. 2.

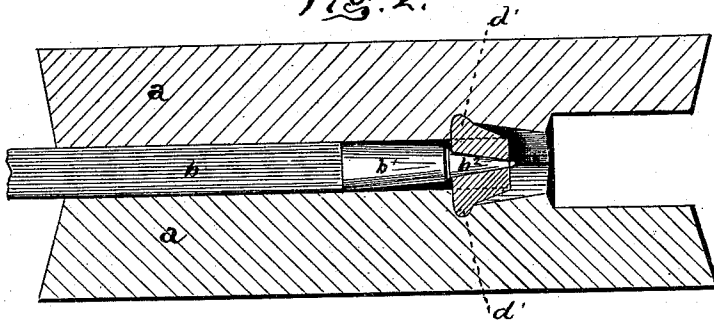


fig. 3

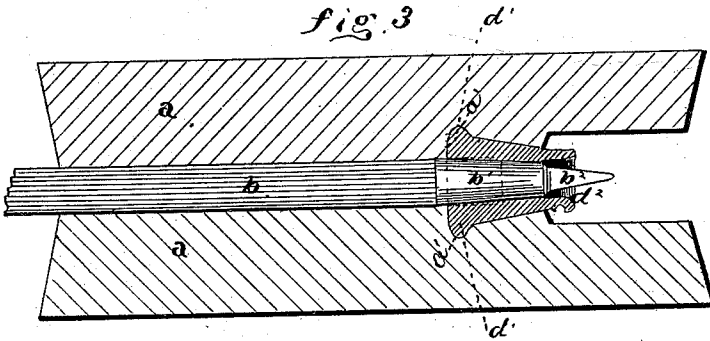
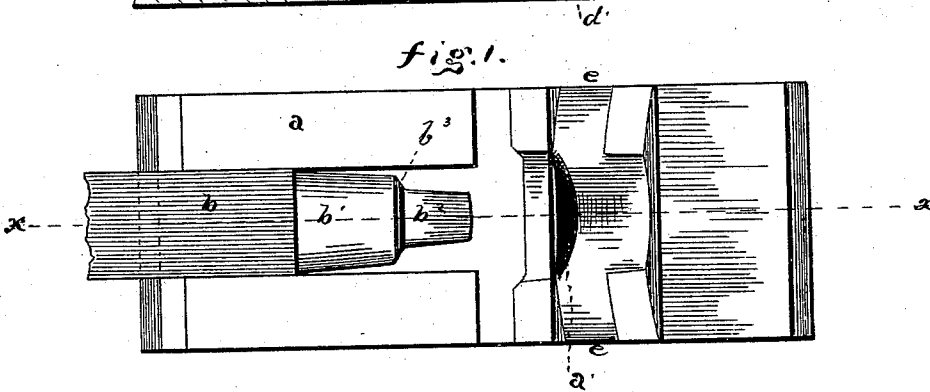


fig. 1.



Witnesses.

John Pollitt
Geo. E. Mlaw

Inventor.

Luke Chapman
By W. E. Simonds Atty.

L. CHAPMAN.

DIES, AND PUNCHES FOR PICK EYES.

No. 172,260.

Patented Jan. 18, 1876.

fig. 4.

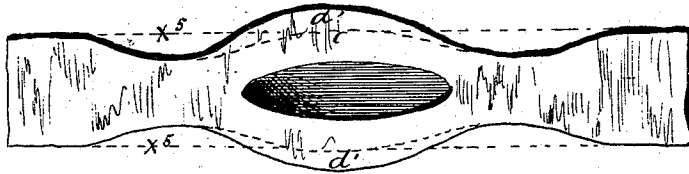


fig. 7.

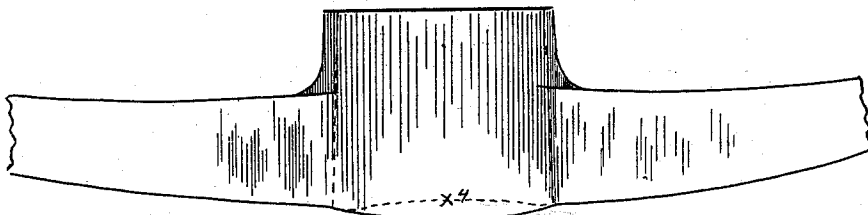


fig. 5.

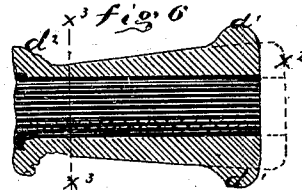
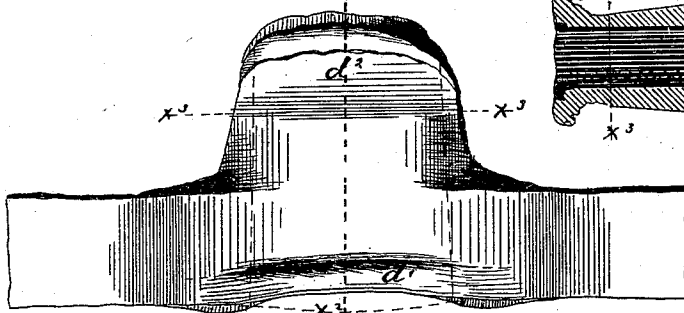
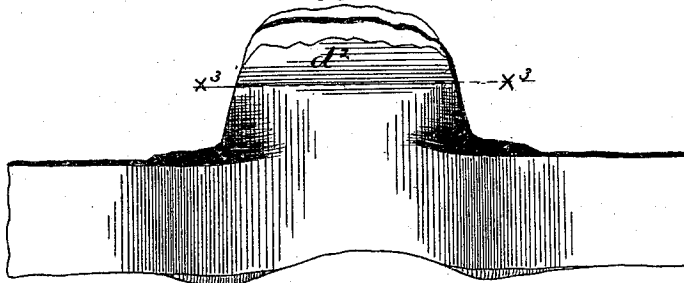


fig. 8.



Witnesses.

John Pollitt
George C. Nolan

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 PICK-EYES.

Specification forming part of Letters Patent No. **172,260**, dated January 18, 1876; application filed
February 24, 1875.

CASE A.

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 in Dies and Punches to be used in the manufacture of elongated eyes for pick-axes, of which the following is a specification, reference being had to the accompanying drawings, where—

Figure 1 is a view of the face of one of the two duplicate dies made use of, showing also the side of the punch made use of. Fig. 2 is a view of the two duplicate dies closed together, grasping the bar of iron or steel to be manipulated, and with the punch entered into the bar up to the first shoulder, the two dies and the bar cut in central longitudinal section on the plane indicated by the dotted line *x x*. Fig. 3 is a view the same as Fig. 2, except that the punch has entered to its whole depth. Fig. 4 is a top view of the bar after it has been subjected to the action of the dies and punches. Fig. 5 is side view of the piece shown in Fig. 4. Fig. 6 is a view of the piece shown in Figs. 4 and 5, in cross-section on the plane indicated by the dotted line *x¹ x¹* of Fig. 5. Fig. 7 is a side view, showing the shape into which the piece shown in Figs. 4, 5, and 6 is finally worked, except that the points of the pick-ax are represented as broken off. Fig. 8 is a side view, showing the effect of submitting the bar to the action of the dies and punches when certain retaining ledges or shoulders are omitted from the dies.

It has been found desirable to elongate the eyes of pick-axes—that is, to raise the eyes upon one side of the body of the tool, as shown in Fig. 7.

Planters' hoes, adzes, and some other tools and articles have similar elongated eyes. These dies and punches are intended for the making of such elongated eyes, and, though I shall describe the invention as applied to the manufacture of elongated eyes for pick-axes, I deem the invention applicable, by proper modifications in the shape of the matrix of the dies, to the manufacture of elongated eyes for other tools and articles.

The points of novelty are, first, the combination, with the die, of two punches in one—that is, a double punch—the smaller and forward punch for an opener or spreader, and the larger for completing the work, the two connected, not by an abrupt shoulder, but by an oblique or slanted shoulder; second, raising ledges or shoulders on the sides of the bar by proper recesses in the dies, so as to counteract the tendency of the bar to bend under the action of the advancing punch, and so that there may be stock left in such recesses to fill out the proper outline of the tool in subsequent manipulation.

Iron and steel are the metals intended to be worked in these dies, and the metal is properly heated before manipulation. The dies are intended to be of steel or iron.

The two dies *a a* may be corresponding duplicates, or one die may contain more of the matrix than the other, so that the punch-stock *b* will lie in the die which contains the greater part of the matrix. The bar *d* to be worked is properly heated and then grasped in the matrix *e*, the two dies being made to close together, by means of appropriate machinery, with such force and power as is requisite. The shape of the faces of the dies is of such form as to swage the bar somewhat when the dies come together, and thus force an extra amount of stock into the center of the matrix, and in the path of the punch about to advance. When the dies have properly closed together and grasped and swaged the bar, the punch comes forward to its work. This punch is really two punches in one. The foremost, *b²*, is smaller than its backer, *b¹*, and sharper, so as to easily enter the bar and spread it sidewise, and the two are connected, not by an abrupt shoulder, but by the oblique or slanted shoulder *b³*. This sidewise spreading is desirable to cause the metal to flow into and fill, partially or wholly, the recesses *a'*. This stage of the process is shown in Fig. 2. The filling of these recesses forms ledges or shoulders *d¹* on the bar, which tend to prevent the bar from unduly bending down when the larger punch *b¹* does its work. The punch still advancing,

the larger part b^1 goes through the bar, causing it to flow out and fill the matrix of the dies, the surplus metal, if any, flowing out in a scarf, d^2 , at the bottom of the die, which is afterward trimmed off. The shoulders or ledges d^1 now fulfill another useful function. They have counteracted to some extent, but not fully prevented, the bending down of the bar. Now, by sidewise manipulations under drop-presses, or other proper mechanism, these ledges furnish stock sufficient to fill out the hollow or sunken place left in the bar—say to the line x^2 , Figs. 5 and 6—bringing out the shape shown in Fig. 7. The dotted lines x^3 in Figs. 5, 6, and 8 show where the scarf is trimmed off. The dotted line x^4 , Fig. 7, shows the shape which the shoulders d^1 are made to fill out by sidewise pressure or dropping. The dotted lines x^5 , Fig. 4, denote the original width of the bar. Fig. 8 shows a side view of the bar when submitted to the action of the dies and punches, such as are shown, except that the

recesses a^1 are omitted. The bar is bent and sunken down farther, and there is no side stock left to repair this defect. By permitting the formation of the scarf d^2 I insure the proper filling of the dies, and, at the same time, avoid the nicety of adjustment of the punch in the dies, which is necessary, and practically impossible where it is attempted to let the punch pass out of the dies carrying no stock with it.

I claim as my invention—

1. The dies a , having the recesses a' , substantially as and for the purposes set forth.
2. The combination of the dies a , having the recesses a' , with the double punch $b^1 b^2$, all constructed, arranged, and designed for operation and use substantially as shown and described.

LUKE CHAPMAN.

Witnesses:

WM. EDGAR SIMONDS,
GEORGE E. NOLAN.