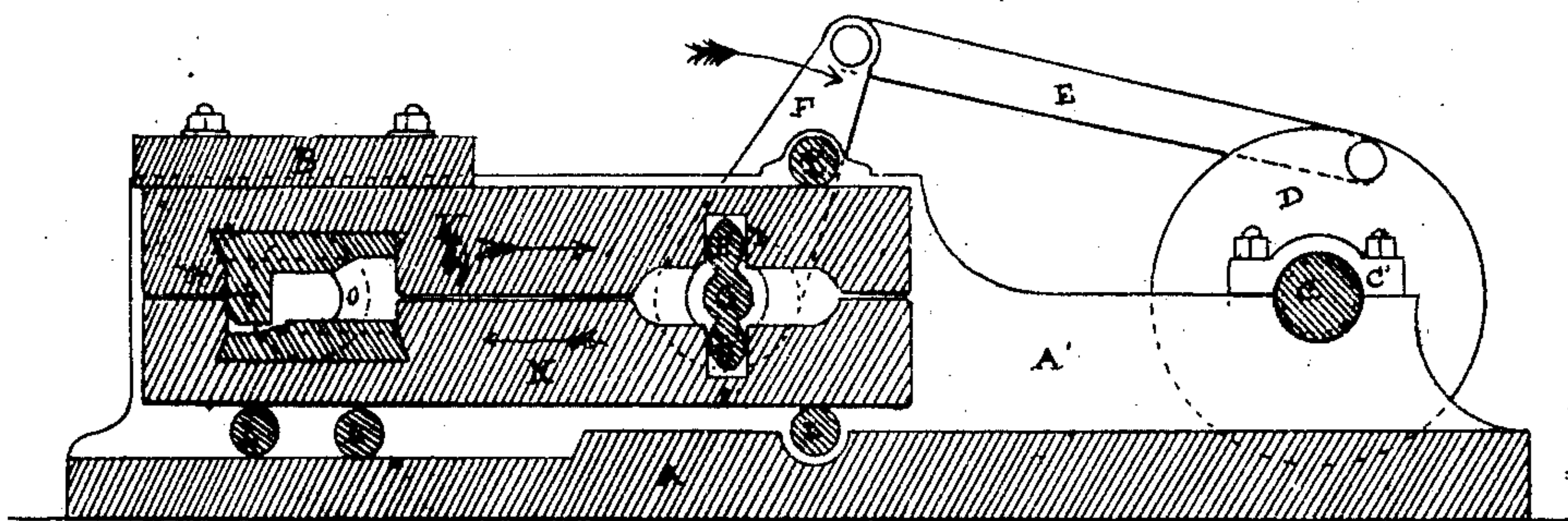
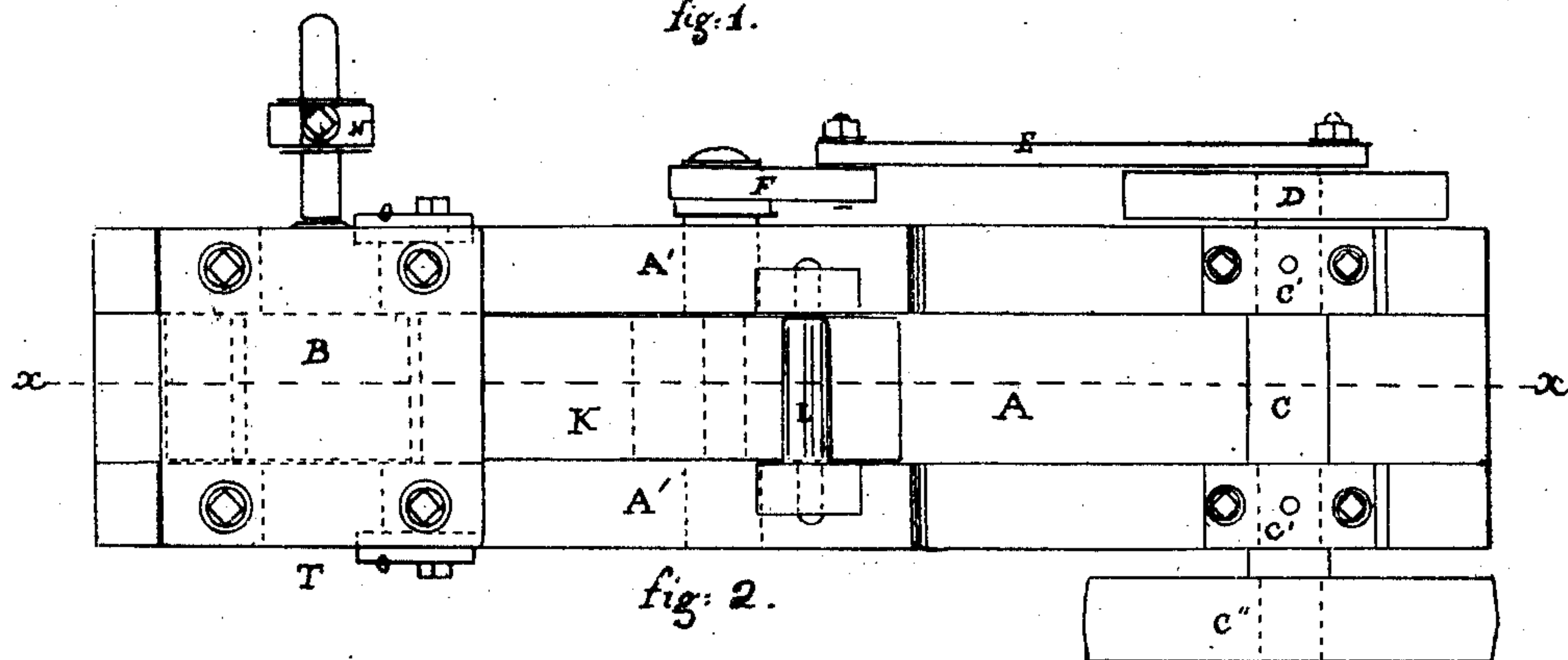


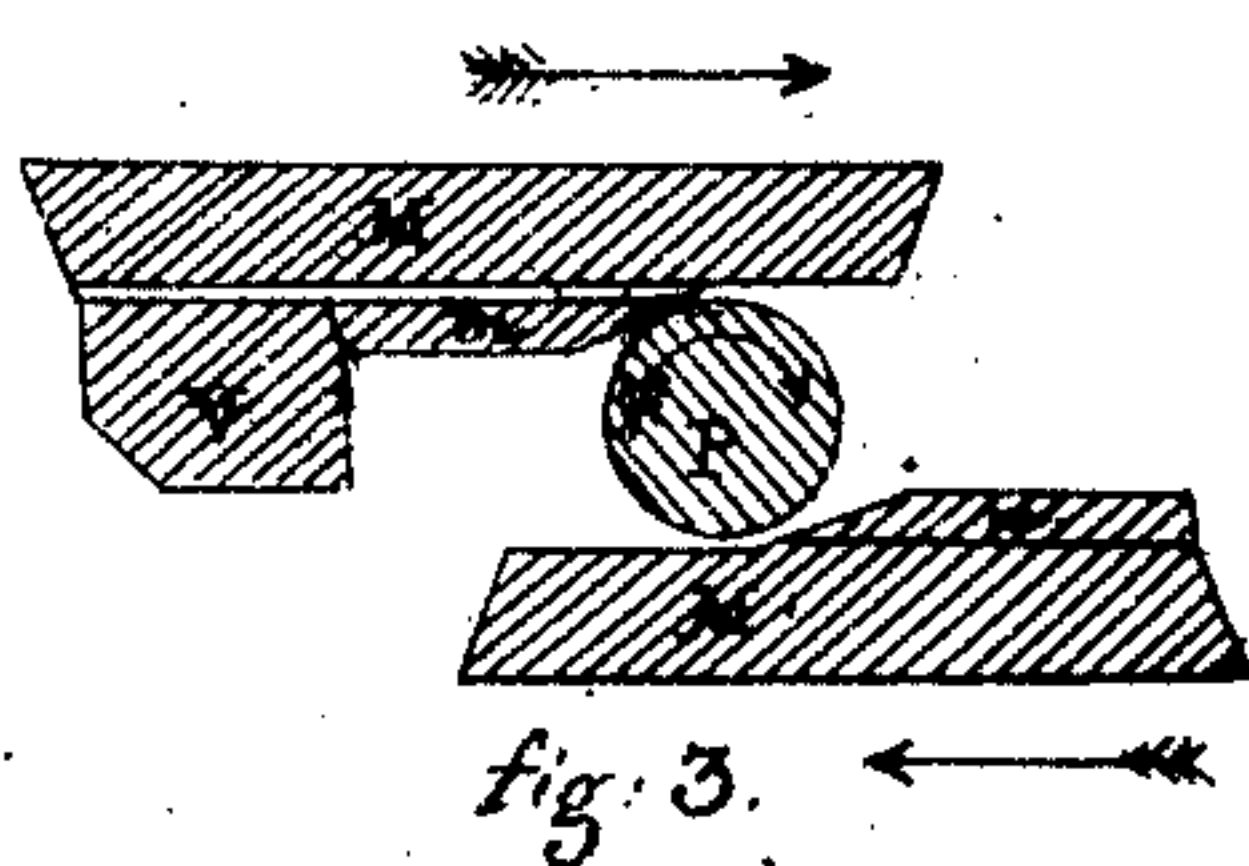
*A. Alexander.*  
*Tool for Shearing Bolts.*  
*N<sup>o</sup> 76035* *Patented Mar. 31, 1868.*



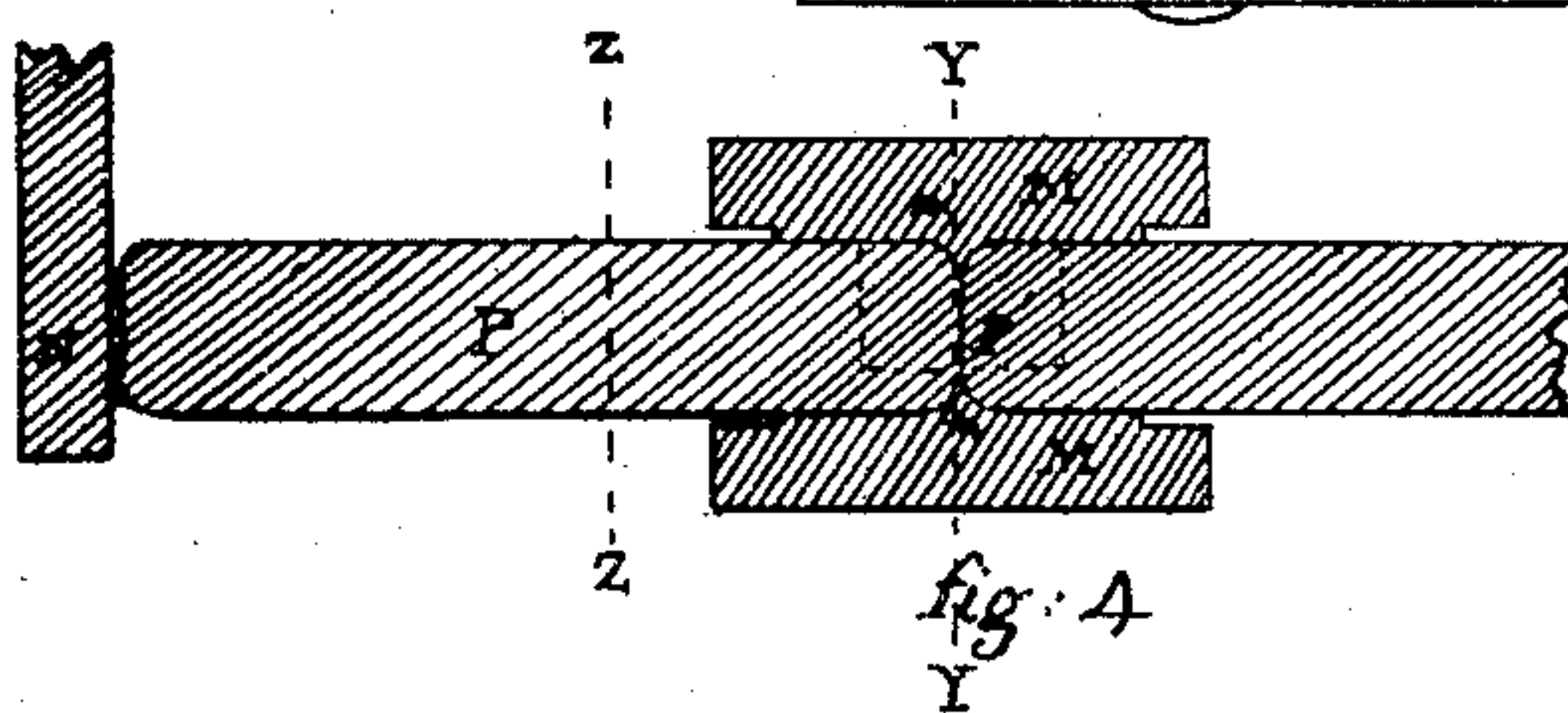
*fig. 1.*



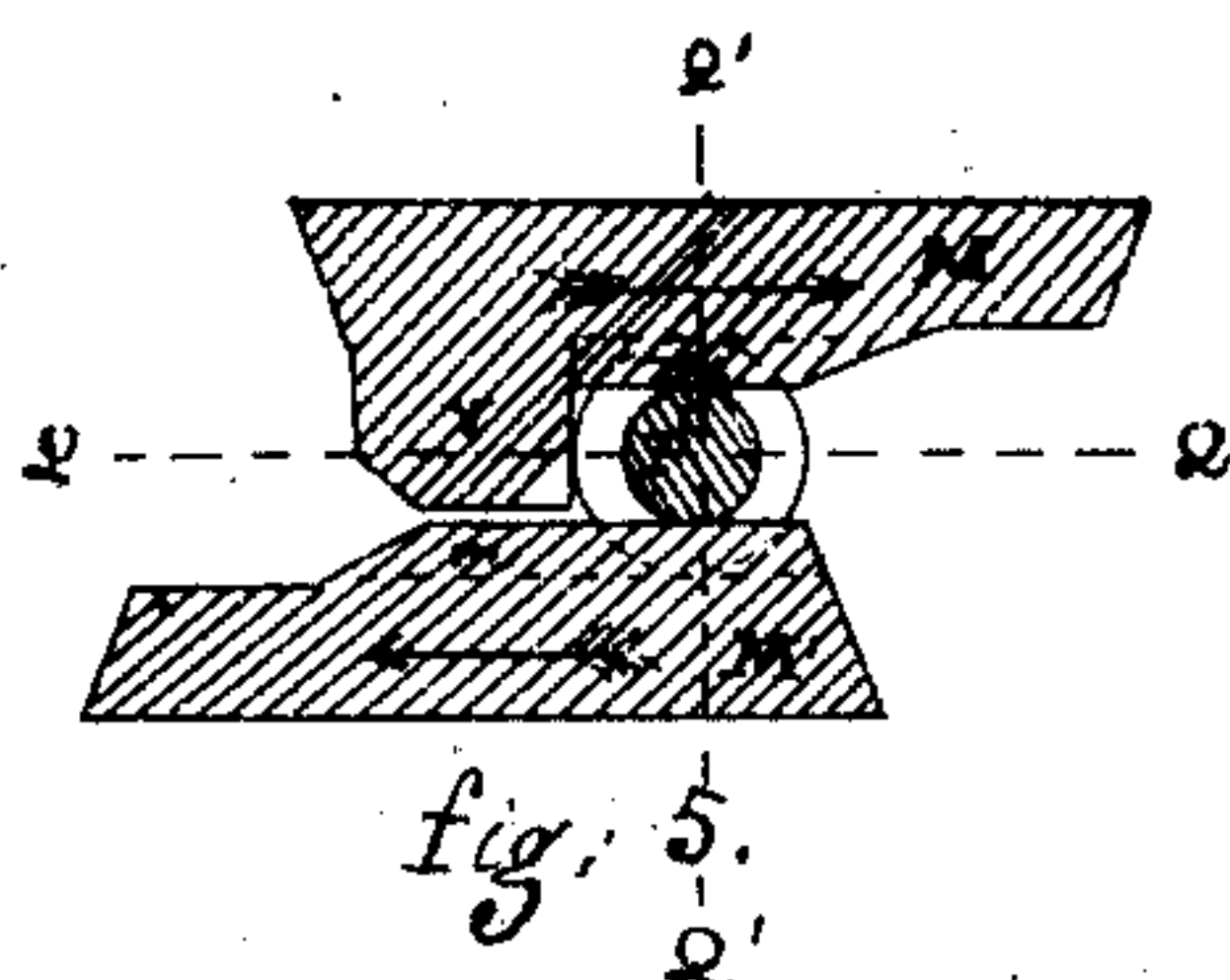
*fig. 2.*



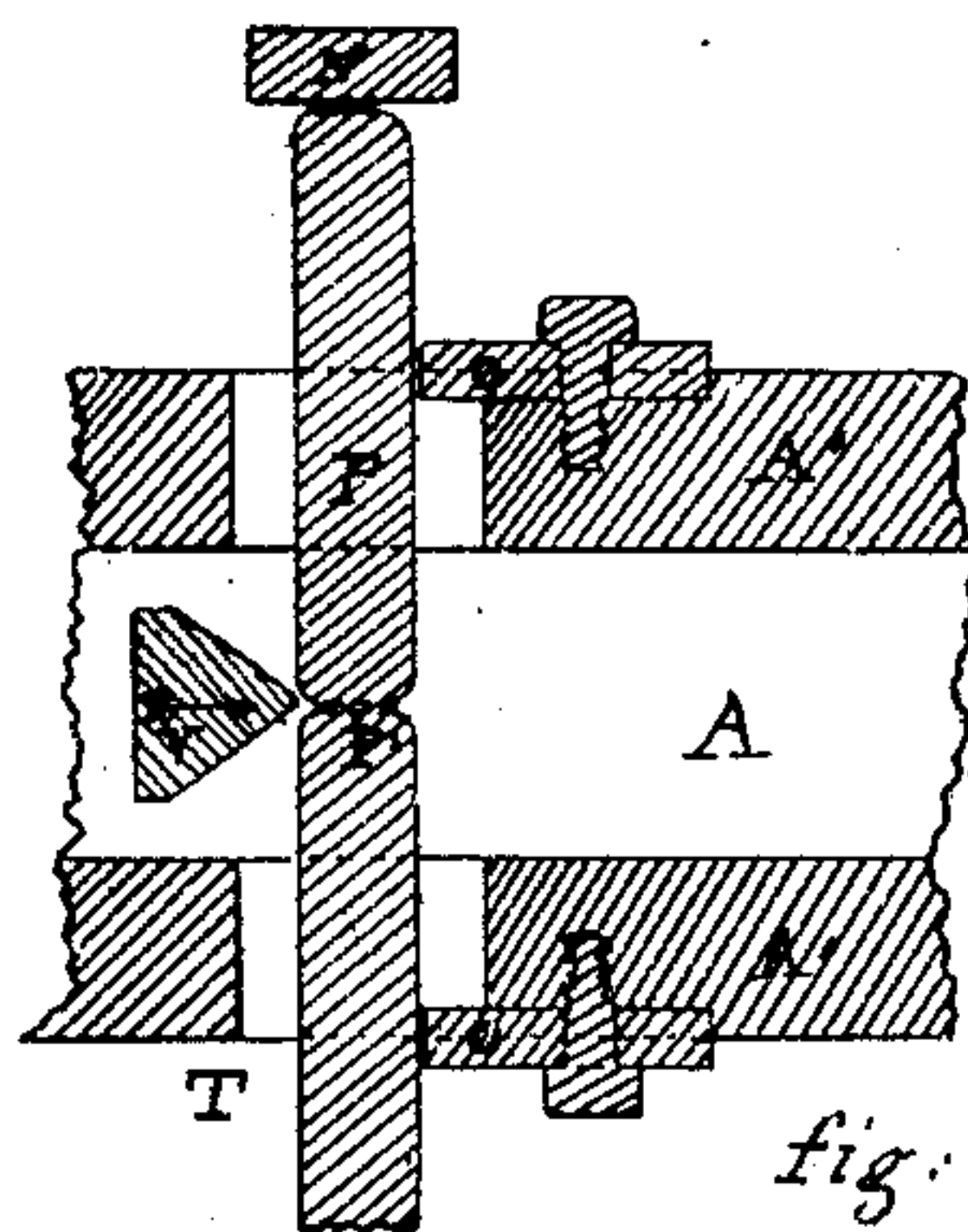
*fig. 3.*



*fig. 4.*



*fig. 5.*



*fig. 6.*

*Witnesses:*

*J. S. Snowden*

*O. S. Snowden*

*Inventor. A. Alexander*



# United States Patent Office.

ABRAM ALEXANDER, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO ALEXANDER BOLT-MANUFACTURING COMPANY, OF SAME PLACE.

*Letters Patent No. 76,035, dated March 31, 1868.*

## IMPROVED TOOL FOR SHEARING BOLTS.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, ABRAM ALEXANDER, of the city of Pittsburg, in the county of Allegheny, and State of Pennsylvania, have invented certain Improvements in Shears for Cutting Round Iron; and I do hereby declare that the following is a full and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional elevation through  $z z$  of my improved round-iron shears.

Figure 2 is a top view or plan of the same.

Figure 3 is a front view of the dies used in my improved shears, and a cross-section  $z z$  of the round iron.

Figure 4 is a cross-section of the dies through  $Q' Q'$ .

Figure 5, a longitudinal section through  $Y Y$ ; and

Figure 6 is a horizontal section through  $Q Q$ , showing how the bolt-blank is broken off from the bar by the shears.

This invention relates to the construction and use of a shears for cutting off bolt-blanks from round iron, by rolling the same between the sharp edges of dies moving in opposite directions one from the other, and in a plane at right angles with the length of the round iron, as fully described further.

#### *Description.*

A is a strong bed-plate, having two side-pieces,  $A'$  and  $A'$ , capped by the piece B, which is strongly bolted to the two sides of the machine. C is a shaft, mounted in proper journals  $c'$  and  $c'$  in the sides  $A' A'$ , and receiving its rotary motion from any suitable gearings—in my drawings, through the pulley  $c''$ . D is a crank, made fast on the shaft C. E is a pitman, connecting the crank, D, to the vibrating-arm or beam F. The beam F is fast to an oscillating-shaft, G, to which are also fastened the two fingers or cogs H and H', which are properly fitted in suitable notches I I' in the bars K and K'. The bars K and K' are fitted in between the two pieces  $A'$  and  $A'$ , so as to slide freely in a longitudinal direction, and, by proper guides and slides, are made to work true, and keep moving in a plane parallel to the longitudinal axis of the machine.

In order to diminish the friction, the rollers L L L, &c., may be employed; but, for small machines, the pieces K and K' can be made to slide directly on slides fast to the piece A and B. The two fingers H H' being fitted, as already described, in notches of the pieces K and K', when the arm or beam F causes the shaft G to rock backward and forward, the two pieces, K and K', will receive a sliding motion in opposite direction one from the other, as indicated by the arrows in fig. 1.

M M' are steel dies, having the shape indicated clearly by the figs. 3, 4, and 5 in my drawings; both dies, M and M', having a longitudinal raised edge or ribs,  $m m'$ , sloping down at one end. These ribs are sharp, and their sides or slopes are gradually rounding down to the flat surface of the dies M and M', as seen in the section, fig. 4. The die M has, besides, a projection, V, having a vertical edge in or about in a line with the raised ribs  $m m'$ , (see figs. 1, 3, 5, and 6.) The dies M and M' are fastened to the sliding-pieces K and K', in such a manner as to be one over the other, with their raised ribs  $m m'$  as near as possible opposite each other on the line Y Y, fig. 4. The thickness of the dies M and M' is varied, or is raised by "fillers," to suit the size of the round iron which is to be cut by the shears, so that the said round iron will enter freely between the dies, when they lie as represented in fig. 3, and that, when the dies are moved in the direction of the arrows, (fig. 3,) the flat surfaces of the dies M and M' will fit tight, slightly crushing the iron, so as to roll it perfectly round between the flat surfaces of the said dies, in the same time that the raised sharp ribs  $m$  and  $m'$  will, by penetrating in the iron, form an indenture or groove all around the iron, and reduce its strength, as seen by P'. The part V of the die M now comes in contact with the round iron bar, (see fig. 6,) and, as it continues to move forward in the direction of the small arrow, (fig. 6,) and that the iron bar comes to a bearing on the stationary guides O and O, the bar gives way at the point P', which has been weakened by the dies, as stated above.

N is a guide, against which the end of the rod of round iron is pushed, and is made adjustable in its distance from the dies M and M', so as to determine the length of the bolt-blanks or pins to be cut on the shears.

*Operation.*

The shears being put in motion, that is, the two pieces K and K' being made to slide one on the other, as explained in the description, the workman watches the moment when the dies are in the position represented in fig. 3. The bar of round iron to be cut is introduced briskly in the hole of the frame-piece A' at T, and pushed in until it butts against the guide N, when the dies, by moving in the direction of the arrows, figs. 3 and 5, cut off a blank, and, as soon as the dies are again in the position of fig. 3, the bar is again pushed forward, so as to cut a new blank, so that, at each revolution of the shaft C, one bolt-blank is cut off from the bar, and the ends of the said bolt-blanks are rounded and smoothed in the proper place for cutting the thread of the bolt from the action of the dies M and M', as already described.

*Claims.*

1. In tools for cutting round iron bars, the combination of the crank D, pitman E, lever F, cogs H H', with the pieces K K', dies M and M', and suitable frame A A' B, arranged substantially in the manner, and operating as set forth.

2. The sliding pieces K and K', carrying sharp-edged steel dies, constructed as described, for indenting or grooving round iron rods for cutting the same, all arranged and operating substantially as specified.

3. The dies M and M', having sharp ridges *m m'*, and the projection V, when used for grooving and breaking round iron, in the manner substantially as described.

A. ALEXANDER. [L. s.]

## Witnesses:

JOHN MORROW,  
SAMUEL McELHANY,  
JOS. SNOWDEN.