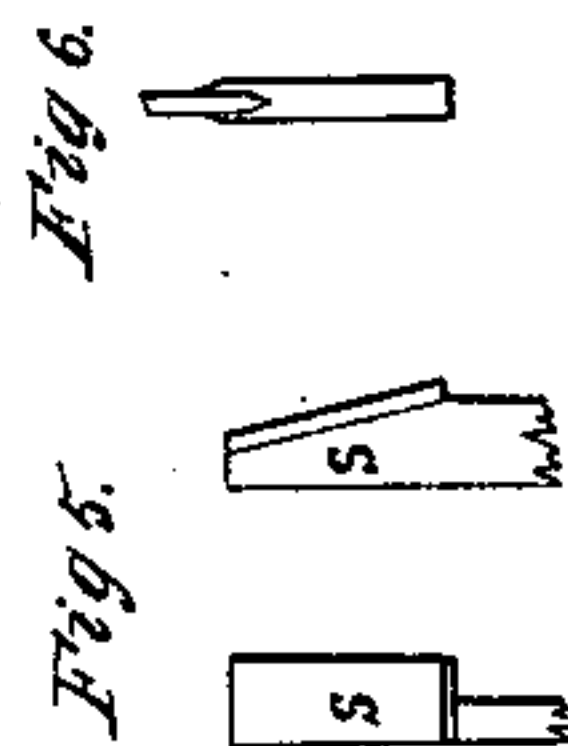
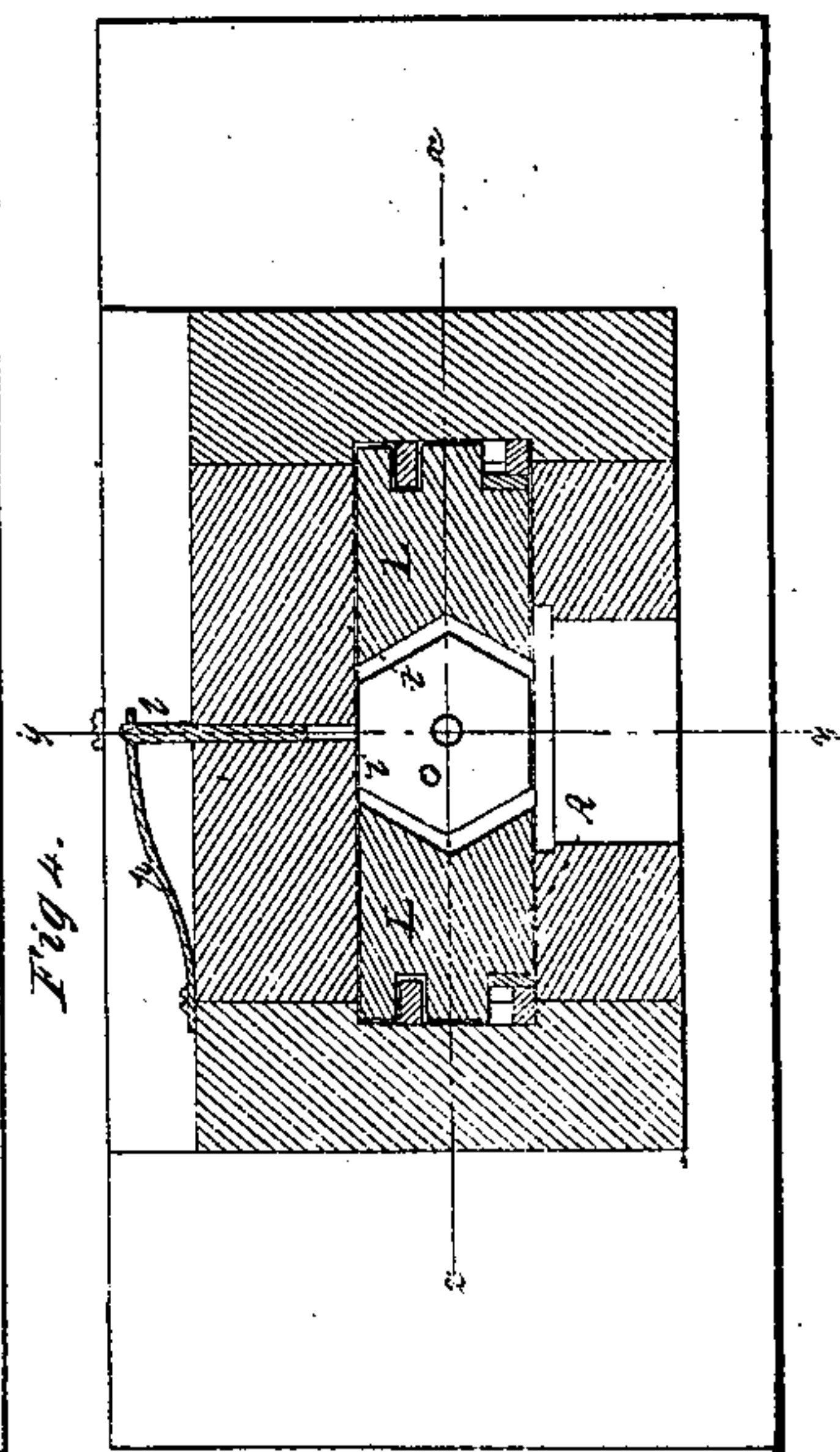
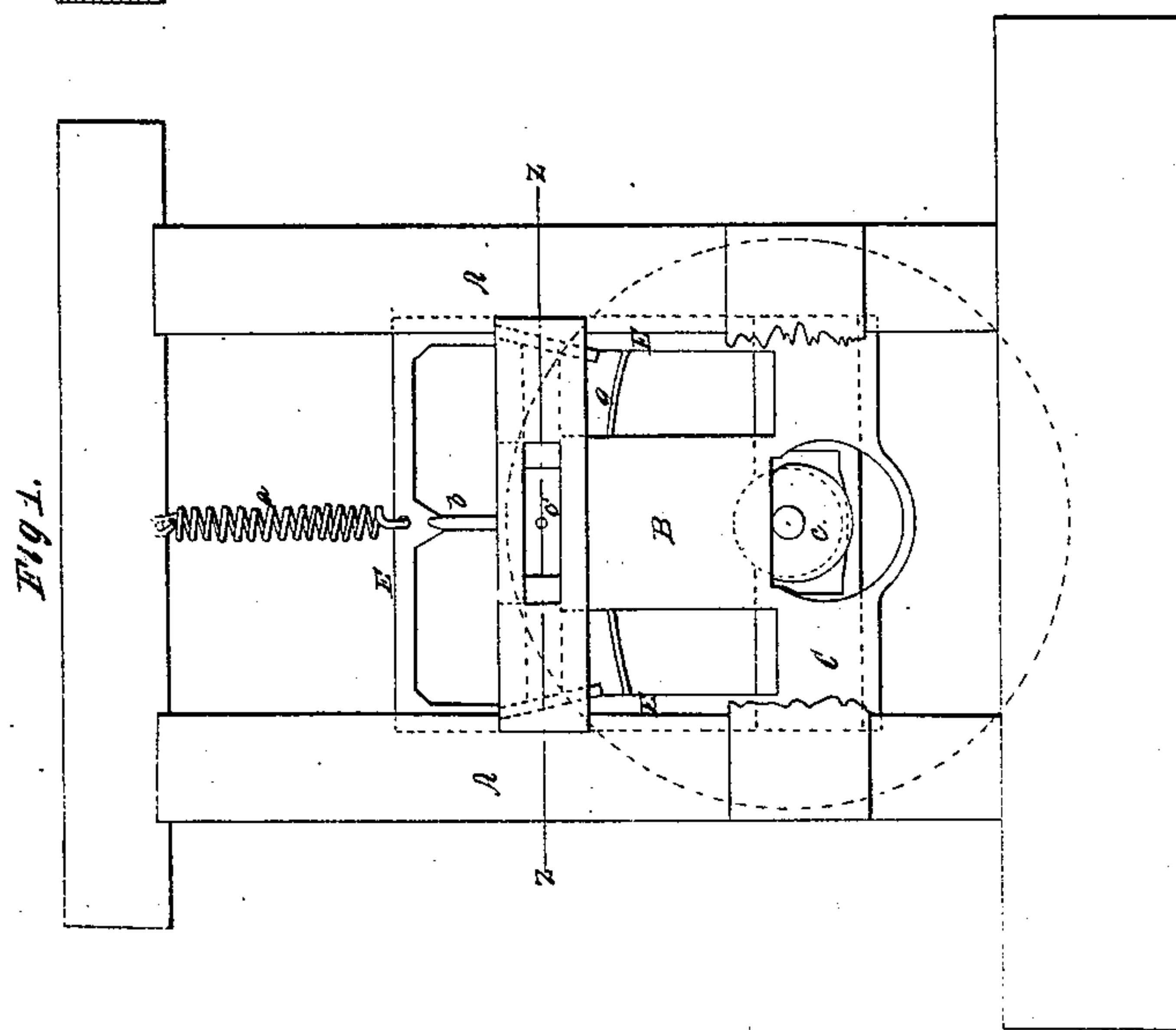
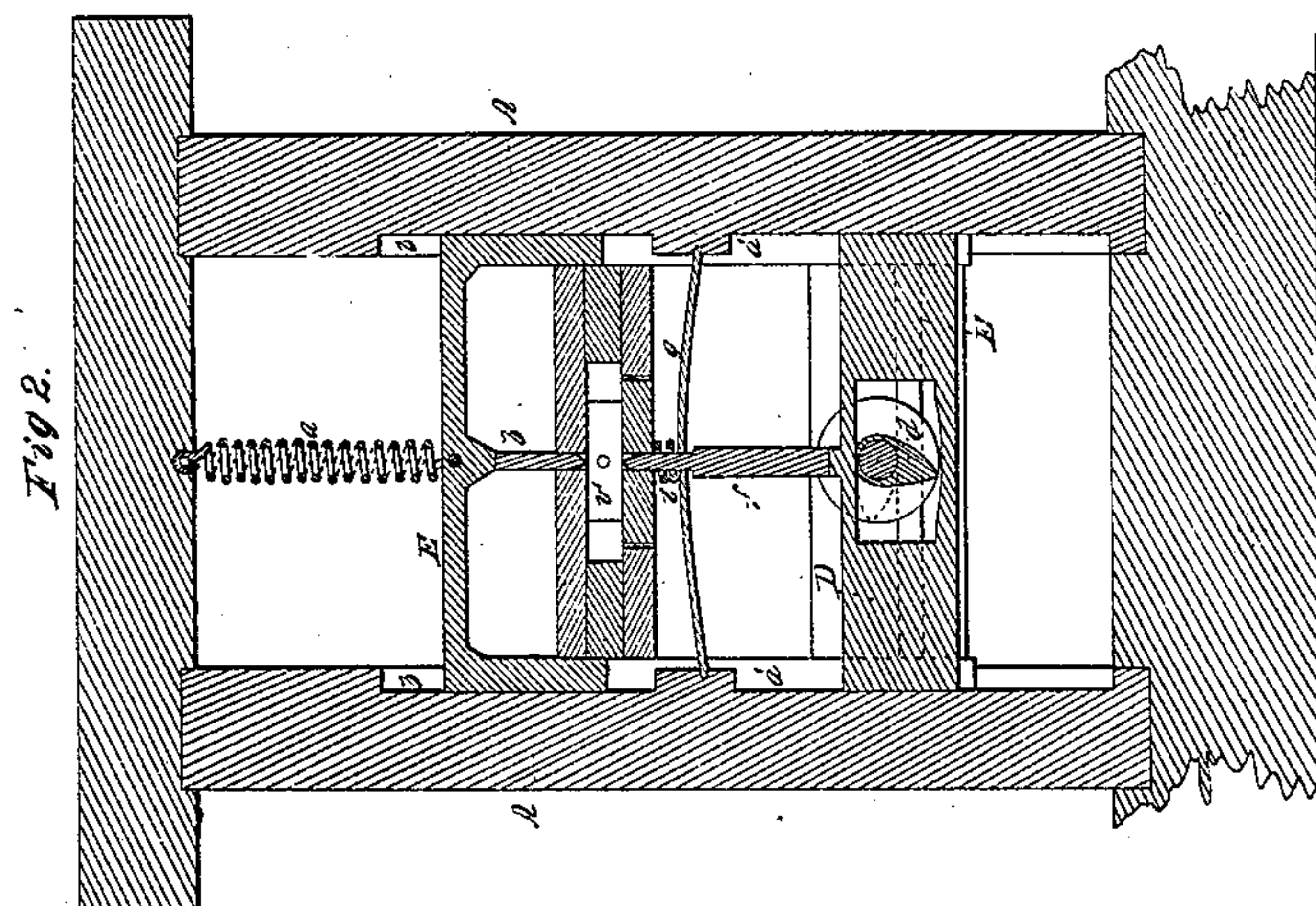
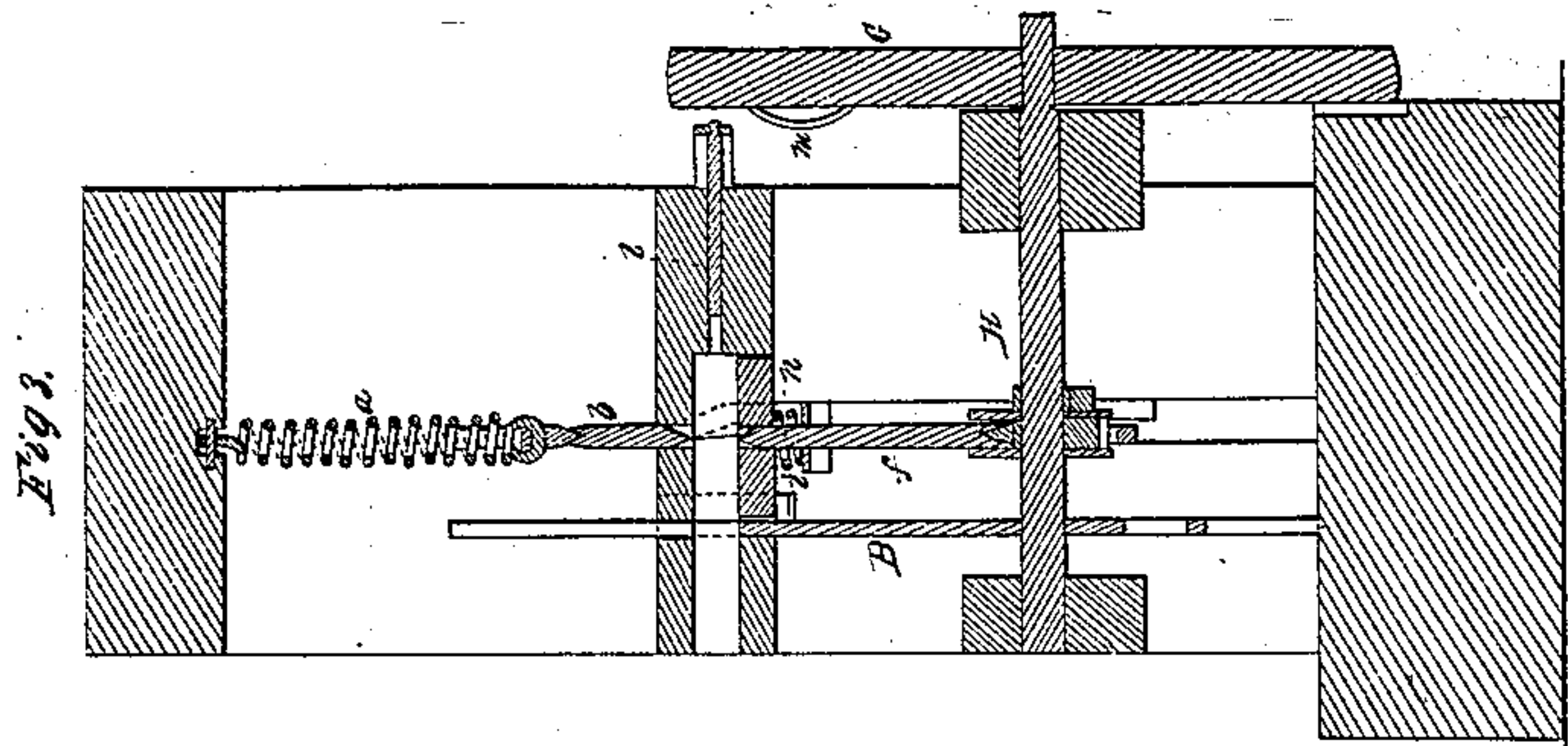


G. Haseltine,

Making Nuts and Washers.

N^o 17,876.

Patented July 28, 1857.



UNITED STATES PATENT OFFICE.

GEORGE HASELTINE, OF WASHINGTON, DISTRICT OF COLUMBIA.

MACHINE FOR PUNCHING AND SHAPING METALS.

Specification of Letters Patent No. 17,876, dated July 28, 1857.

To all whom it may concern:

Be it known that I, GEORGE HASELTINE, of Washington, in the District of Columbia, have invented a new and Improved Machine for Punching and Shaping Metals; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a front view. Fig. 4 a horizontal section through the line $z z$ Fig. 1. Fig. 2 a vertical section through the line $x x$ Fig. 4. Fig. 3 a vertical section through the line $y y$ Fig. 4. Fig. 5 represents the wedge cams $s s$ Fig. 1. Fig. 6 a disk punch.

The same letters represent like parts in each of the figures.

A, A, Figs. 1 and 2 represent the frame of the machine.

B Fig. 1 is a movable plate. C Fig. 1 is the frame to which the plate B, Fig. 1 is attached. c Fig. 1 is the cam which moves the frame C Fig. 1. The slides $e e$ Fig. 1 connect the wedge cams $s s$ Fig. 1 with the said frame C. c' Fig. 1 is the open side of the die box.

D, Fig. 2 is the frame to which is fixed the mandrel f . d , Fig. 2 is the cam which operates the said frame D. $a' a'$ Fig. 2 are the grooves, in which the frame E E Figs. 1 and 2, moves. h , Fig. 2 is the cam which gives the downward movement to the said frame E E. a Figs. 1, 2 and 3 is the spring which gives the upward movement to the said frame E, E. b Figs. 1, 2, and 3, is the upper punch which is attached to the said frame E, E. h Figs. 2 and 3 is the lower punch which is attached to the mandrel f Figs. 2 and 3. g Fig. 2 is the bed on which rests the spring i Figs. 1 and 2. On the said spring i rests the bottom of the die box. l Figs. 3 and 4 is a rod which is moved in one direction by the cam in Fig. 3 and in the opposite direction by the spring p , Fig. 4. v' Figs. 2 and 4 is a side of the die box, opposite the open side c' Fig. 1. H, Fig. 3 is the shaft to which the cam c Fig. 1 and the cams d and k Fig. 2 are fixed. G, Fig. 3 is a wheel hung on the said shaft H. L L Fig. 4 are the horizontal dies, $t t$ are the sides of the grooves in which the said dies move. S, S, Fig. 5 are a side and front view of the wedge cams s, s , Fig. 1. Fig. 6 is a disk punch.

The nature of my invention.—My invention consists in the employment of dies and

punches, so arranged and operated that the required metal is cut from the bar or rod, shaped and punched without waste of material and the completed article discharged from the die box at every revolution of the shaft.

The machine represented by the drawings is designed especially for the manufacture of "metallic screw-nuts" of any equal number of sides. But by changing the form of the die box merely my invention is equally adapted for the manufacture of all similar articles. The articles I have especially in view are ax polls and hammers. And my invention is chiefly designed for the manufacture of articles which require both shaping and punching, but a machine may be constructed as to be easily adapted to either of these processes separately.

My object is to make articles of any number of sides from ordinary hexagonal pieces of metal and to perforate them when desired, without any waste of material, the completed article weighing the same as the said pieces of metal of which the article is made.

Construction and operation.—The frame A, A, Figs. 1 and 2, may be constructed of any material, having sufficient strength, and of any form which is found convenient. It may be placed in a horizontal as well as a vertical position. I make use of the ordinary mechanical devices for operating the parts which need no description. These devices may be varied without changing the character of my invention, but they should be so constructed and related to each other as to perform properly the operations required.

The bar or rod of metal being properly heated is fed into the die box O Fig. 4 by hand through the open side c Fig. 1. O Fig. 4 is a die box with six lateral surfaces and the ordinary flat or square bar is used. The dies L L Fig. 4 are slightly withdrawn to admit a bar of sufficient width to form the article required. The bar is fed into the die box through the side c Fig. 1 till the end strikes the opposite side of the die box v' Fig. 2. Then the plate B Fig. 1, advances and cuts the quantity of metal required from the bar. The said plate B, also forms a side of the die box while the metal is being shaped and punched. As soon as the bar is severed then the dies L L Fig. 4 advance giving in connection with the other sides of die box the required number of sides to the

article being shaped. The plate B Fig. 1 and the wedge cams *s s* Figs. 1 and 5 are operated by the cam *c* Fig. 1. The motion of the dies L L Fig. 4 which is produced by the wedge cams *s s* Fig. 1, should commence, at or about the time the plate B, Fig. 1, has severed the bar of metal. The cam *c* Fig. 1 should be so formed that the saw plate B and the dies L L Fig. 4, will immediately recede on the completion, of the article being formed. The prolongation of the line of the plate B Fig. 1 and the prolongation of the side of the die box opposite *v'* Fig. 2 form the sides of the groove *t t* Fig. 4.

The dies L L Fig. 4 move in grooves of which *t t* Fig. 4 are the sides. The dies L L Fig. 4 are constructed with two faces each but these may be indefinitely increased as required. I design these said dies to form all the sides of the article being shaped less four.

Either the top or the bottom of the die box should be yielding. The drawings show the bottom yielding and the top stationary. In case the plate B Fig. 1 cuts the bar by an upward action as shown then the top should be stationary. But the said plate B may be operated in an opposite direction or horizontally as is found most convenient.

The required number of sides having been given to the article in the die box by the dies L L Fig. 4, these dies remain stationary while the operation of punching is performed, if a perforation is desired; if not the said dies immediately recede as well as the plate B, Fig. 1, and the article is discharged from the die box. If found desirable however, the motion or action of the punches may precede the action of the dies L L Fig. 4 or their actions may be simultaneous. I prefer first shaping the exterior.

I make use of two punches *b* and *n* Figs. 2 and 3, which are operated in opposite directions by the cams *h* and *i*, Fig. 2. For making metallic screw nuts I use two cylindrical pointed punches or one may be a disk punch as seen in Fig. 6. In making ax polls and hammers I use punches corresponding with the shape of the required perforation but one at least should taper at the end which enters the metal. The said punches *b* and *n* enter the metal consecutively or with unequal velocities; so that one does its work and retires while the other completes the perforation. Where two pointed punches are used one passes nearly through and then recedes while the other enters from the opposite side and proceeds as far as necessary to complete the perforation. In this manner the perforation is perfected without leaving any bur on the surfaces or causing any waste of material. In case a disk punch is used in connection with a pointed one then the former should precede the latter in its action. The punches by

their action, do not increase the number of sides given to the article by the dies L L Fig. 4, but the metal which is displaced by the punches must enlarge those sides or some portion of them. To accommodate the die box to this enlargement and especially to prevent any straining of the machine in case a surplus of metal is fed into the die box one or more sides of the die box should be slightly yielding. In the drawings the bottom O Fig. 4 rests on the spring in Figs. 2 and 3. The dies L L Fig. 4 may be yielding if more convenient or more desirable.

The article when completed is forced out of the box O Fig. 4 through the side it was admitted, by the rod *l* Figs. 3 and 4, which is operated by the cam *m* on the wheel G, Fig. 3 in connection with the spring *p* Fig. 4, the plate B Fig. 1 and also the dies L L Fig. 4 and in some cases the top or bottom of the box, having receded and left the article free.

It may be necessary to withdraw the bottom of the die box when the under surface of the article shaped is irregular, which is done by means of a cam on the shaft H Fig. 3 but not shown in the drawings.

I do not confine myself to this mode of discharging the manufactured articles as it may be more convenient to discharge them on the opposite side or through the bottom of the box.

In manufacturing screw nuts, I make use of a sunken die for forming the under surface of the nuts of such a form as to produce on the nuts a slight circular elevation, of such width as may be desirable, to avoid the labor of turning off the under surfaces of the corners, which is now frequently done.

In case I desire to manufacture articles of the same number of sides and of the same general form as the metal used, then the dies L L, Fig. 4 may be made stationary for the time. If a machine is designed entirely for the manufacture of ordinary four sided screw nuts, then stationary sides of the box may take the places of the dies L L, Fig. 4.

I have said that the plate B Fig. 1, which forms one side of the die box, while the article is being shaped and punched, and the plate forming the opposite side of the die box should both extend beyond the limits of the box and form two sides of the groove, in which groove the dies L L Fig. 4 move. The thickness of the dies L L Fig. 4 is the same or nearly the same as the height of the box, before the metal is introduced. In case the top or bottom of the die box is yielding as described, then the top or bottom may recede beyond the upper or lower surfaces of the dies L L, Fig. 4.

The top or bottom of the die box should be stationary while the metal is shaped and punched, and the plate forming said stationary top or bottom also extends beyond the limits of the die box and forms an additional

side of the groove in which the dies L L Fig. 4 move. The said dies should be made so as to completely fill the groove, three sides of which at least are formed by the extension
5 of the sides of the die box as before described.

Having thus fully described the construction and operation of my invention, what I claim as new and desire to secure by Letters Patent is

10 1. I claim the punch *b* in connection with

the punch *n* constructed and operated as described.

2. I claim the movable dies L L, when used in combination with two punches *b*, *n* for the purpose and in the manner substantially as 15 set forth.

GEORGE HASELTINE.

Witnesses:

THOS. J. O'NEAL,

ALEXANDER S. STEUART.