J. C. DICKEY.

SHAPING AND PUNCHING METALS.

No. 19,498. Patented Mar. 2, 1858.

Fig. 1

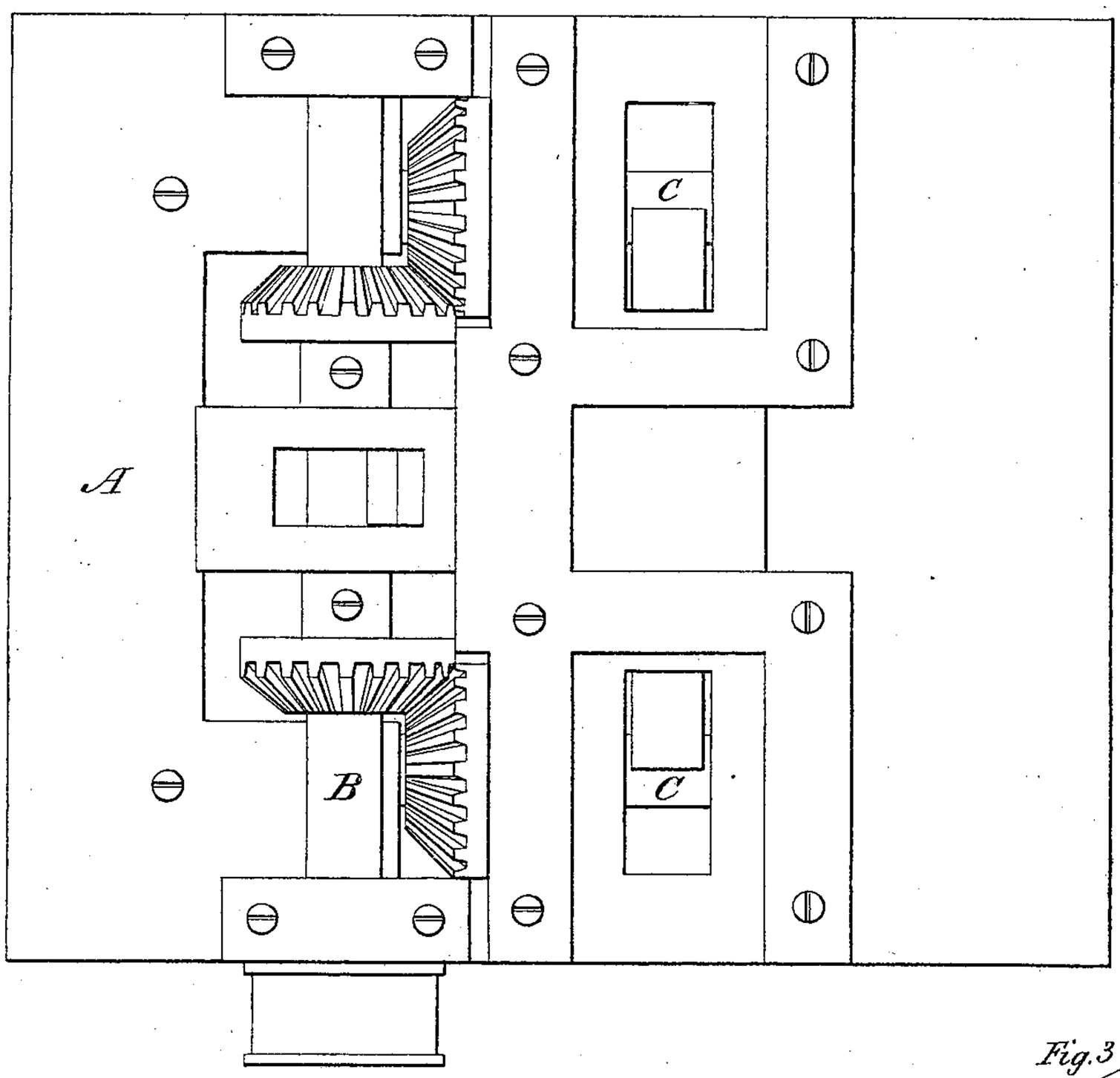


Fig. 3

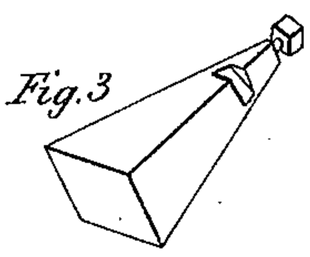
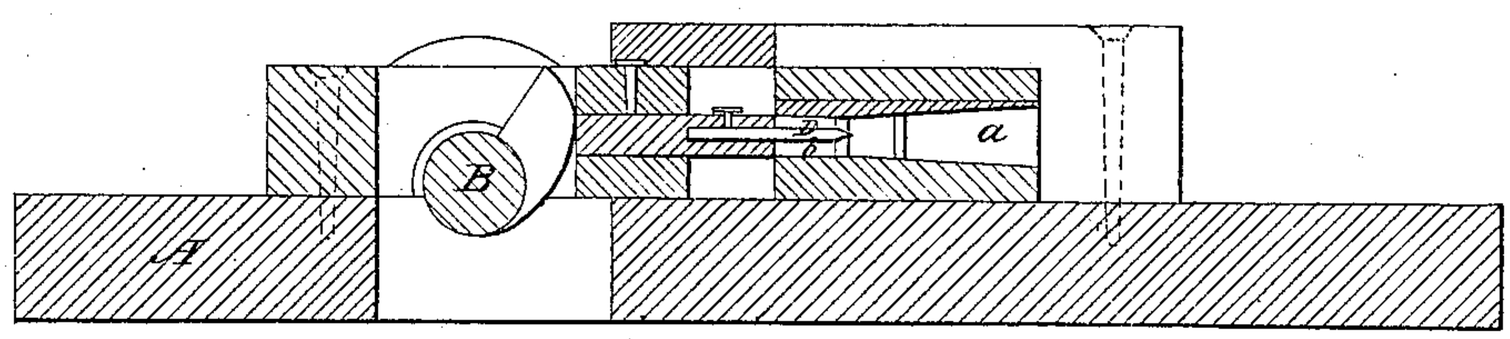


Fig. 2



Witnesses:

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UNITED STATES PATENT OFFICE.

JULIUS C. DICKEY, OF SARATOGA SPRINGS, NEW YORK.

SHAPING AND PUNCHING METALS.

Specification of Letters Patent No. 19,498, dated March 2, 1858.

To all whom it may concern:

Be it known that I, JULIUS C. DICKEY, of Saratoga Springs, in the county of Saratoga and State of New York, have invented a new and Improved Mode of Constructing Machines for Shaping and Punching Metals; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification.

The nature of my invention consists in making a machine for shaping and punching metals, by making a shaft with a cam attached and securing a cog wheel to the shaft on both sides of the cam to fit cog wheels on the ends of side shafts, which also have cams on them to close and open the dies; the cam on the main shaft being for the purpose of propelling the punch which perforates the metal; the whole being secured to a suitable frame, and made of iron; 2d, reducing a bar of iron to any desired size before it is formed into nuts or other articles by means of a conical die; 3d, the combination of a conical die with a die in which the article to be made is perforated and completed.

Figure 1 shows a top view, and Fig. 2 a vertical cross section of one half of the dies and the punch. This figure also represents a section of the drawing in Fig. 3, and in Fig. 3 *c* represents the end of the conical die *a*.

In Fig. 1 A is the frame, B the main shaft, and C, C the side shafts.

In Fig. 2, A, is the frame, B, the main shaft, D, the punch, *b* the finishing die, and *a* the conical die.

I construct my machine by making the main shaft B, with a cam attached, which cam works in a slot in a frame to which the punch D, is secured. The punch is secured in a piece of metal which forms one side of the die *b* by means of a set screw; and this piece of metal is secured in the frame which surrounds the cam by means of a set screw, or in any other convenient manner. There may be also secured to the frame which secures the shafts to the main frame A, a spring to force the nut from the punch if found necessary. I secure also to the main shaft B, on each side of the cam by means of a set screw or any other convenient mode a cog wheel; which cog wheels work in cog wheels secured to the ends of the side shafts C, C. The cog wheels on the main shaft B, are made adjustable so as to fit the cog wheels on the ends of the side shafts C, C, when it is necessary to bring them closer together to fit the dies; and by which means dies of different sizes can be used. The cams on the side shafts C, C, work in slots in the dies *a* and *b*. The shafts, dies and punch frame may be secured to the main frame A, in any convenient or desirable manner, so as to have them perform their different offices.

One half of the dies *a* and *b* are made in one piece of metal; and one half of the conical die projects over the other half as shown in Fig. 2, the die *b* being parted on the under side in the center of the die, or it may be parted on one side if desirable.

The object of the conical die is to reduce a bar of iron to any desired size, so as to make a wrought nut or other article; and it may be made in various ways and accomplish the purpose for which it is made; and secured to machines of various constructions. Near its smallest end there is a projection which forms a recess in the bar of iron when the dies are closed; this recess being the size of the metal which separates the die *a* from the die *b* and the metal between the projection and the die *b* being the quantity required to make the article manufactured. There is also an opening between the dies *a* and *b* when the dies are closed just large enough to admit the punch. The finishing die *b* may be made square or otherwise to suit the article to be made.

Operation: When a bar of iron is properly heated it is forced through the conical die *a* into the die *b*, until it comes in contact with the punch; and as the shafts revolve the dies are closed upon the bar, and the metal which separates the die *a* from the die *b*, is forced into the recess formed in the bar by the projections in the conical die; and the surplus metal is forced out of the conical die onto the bar; the end of the bar representing the drawing in Fig. 3, before the nut is perforated; after which the punch is forced through the nut by the cam on the main shaft B, passing through the opening in the metal which separates the die *a* from the die *b* into the die *a*. When the dies are parted and the punch forced back the nut

falls through a hole in the frame, and the bar of iron is turned over and forced into the dies to make another nut, as before stated. The thickness of the bar on the sides on which the recesses are formed is less than on the opposite sides, so that there is no difficulty when the bar is turned over in forcing it through the dies to the punch.

Some of the articles I contemplate making with this machine are metallic screw-nuts, ax polls, hammers, &c.

What I claim as my invention and desire to secure by Letters Patent, is—

The conical die *a* in combination with the finishing die *b*, and punch D, when constructed and operating in the manner and for the purposes set forth.

JULIUS C. DICKEY.

Witnesses:

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