

Ivens & Brooke,

Punching Metals.

No. 90,594.

Patented Nov. 9. 1869.

Fig. 1.

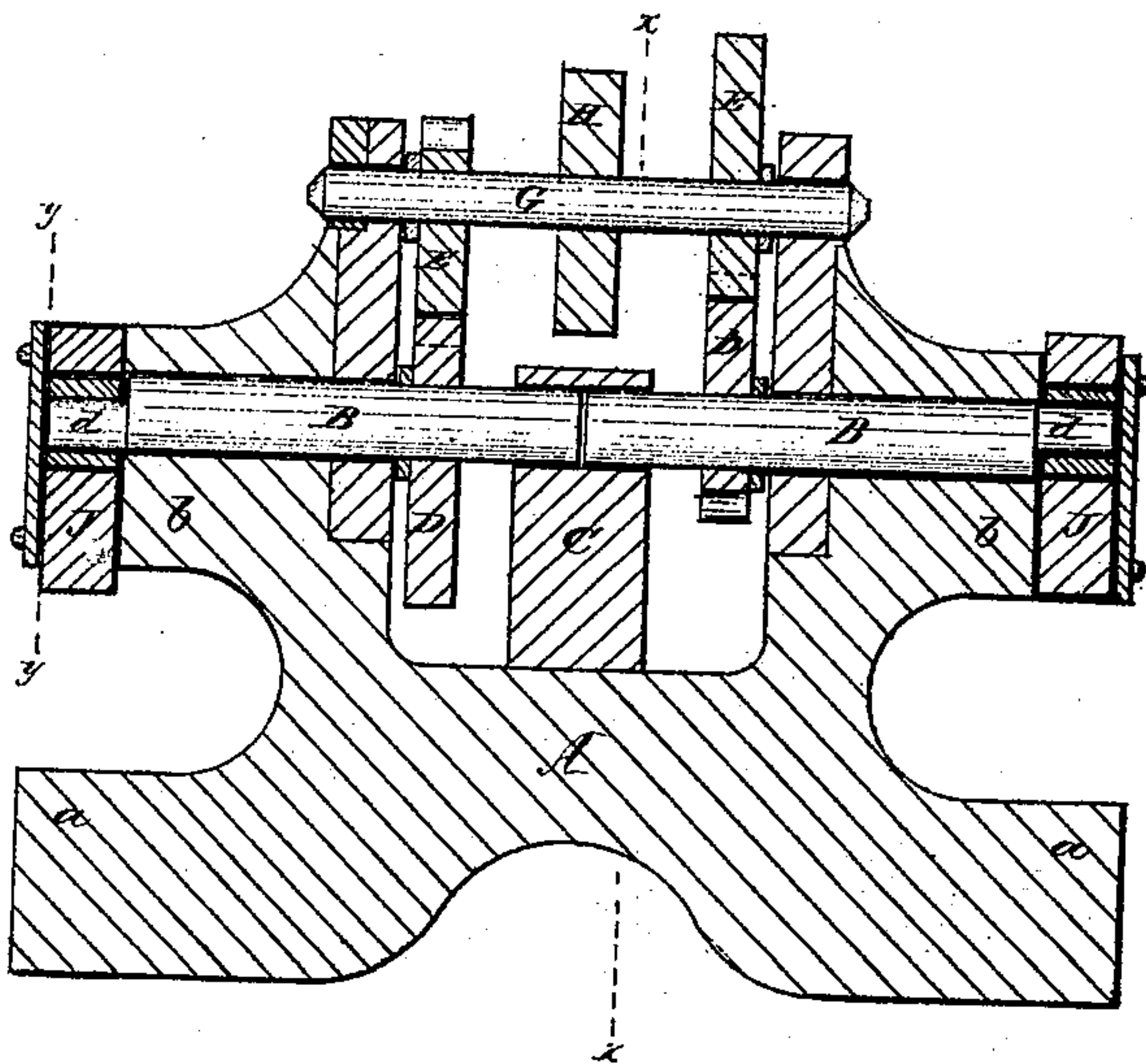


Fig. 2.

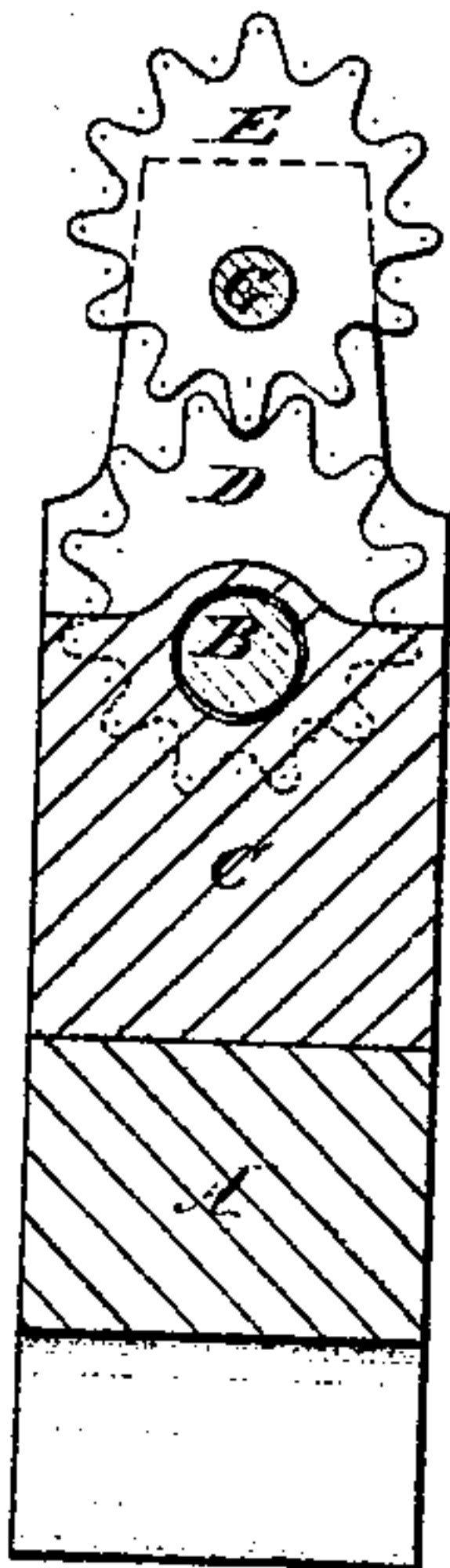
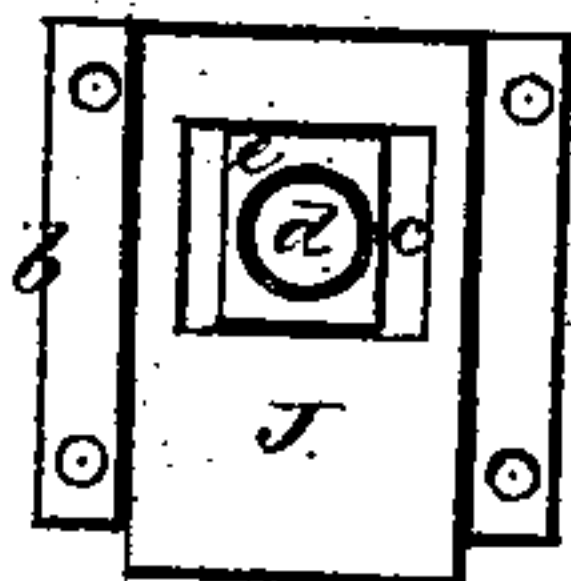


Fig. 3.



Witnesses.

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United States Patent Office.

WILLIAM H. IVENS AND WILLIAM E. BROOKE, OF TRENTON, NEW JERSEY.

Letters Patent No. 96,594, dated November 9, 1869.

IMPROVED PUNCHING AND SHEARING-MACHINE.

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

To all whom it may concern:

Be it known that we, WILLIAM H. IVENS and WILLIAM E. BROOKE, both of Trenton, in Mercer county, and State of New Jersey, have invented certain new and useful Improvements in "Punching and Shearing-Machines;" and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a central longitudinal section of a machine embracing our improvements.

Figure 2 is a transverse section of the same, taken on the line *x x* of fig. 1.

Figure 3 is an end view of the punching or shearing-head, with the face-plate removed, to show its operating-mechanism.

The same letters indicate like parts in all the figures.

The object of this invention is to produce a machine possessing great power, combined with simplicity and cheapness of construction; and

It consists in a novel arrangement and combination of mechanical devices to accomplish the desired end.

To enable others to more clearly understand the construction and operation of our machine, we describe it by referring to the drawing, in which—

A represents a solid casting, constituting the frame of the machine, and so formed as to furnish an anvil, *a*, and punch or shear, carrying jaws *b* at each side, through which latter are passed, longitudinally of the machine, the two shafts B, which meet in a pillar-block, C, in the centre.

On each of these shafts B is firmly keyed an ellip-

tical gear, D, the teeth of which mesh with those of corresponding elliptical gears E, which are firmly keyed on a common shaft, G, on which they are arranged, with the long diameter of each on opposite sides of said shaft, to which shaft, motion is communicated through a band or gear-wheel, H, from any suitable motor.

The punching or shearing-heads J have a transverse slot, *c*, fig. 3, in which the box *c* has a sliding motion communicated by the eccentric wrist *d*, and through the rotation of the shaft B, and said wrist, a vertical reciprocating motion is given to the punching or shearing-head.

The eccentric gears D are so arranged on the shafts B, with relation to the wrists *d*, that the greatest amount of leverage is applied while the dies or shears are passing through the metal to be punched or cut, and the upper gears, being arranged opposite to each other on the shaft G, will cause the one head to descend, while the other is rising, alternately.

These heads and anvils may be provided with punches, shears, and dies, as described in Letters Patent No. 94,117, granted to us, August 24, 1869.

What is here claimed as new, and desired to be secured by Letters Patent, is—

The combination of the shafts B, having eccentric wrists *d*, sliding boxes *c*, with the heads J, eccentric gears D E, and driving-shaft G, substantially as set forth.

WM. H. IVENS.
WM. E. BROOKE.

Witnesses:

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