I. LAMPLUGH.

Apparatus for Shearing, Punching and Bending Metal.

No. 42,004. Patented Mar. 22, 1864.

Fig: 1.

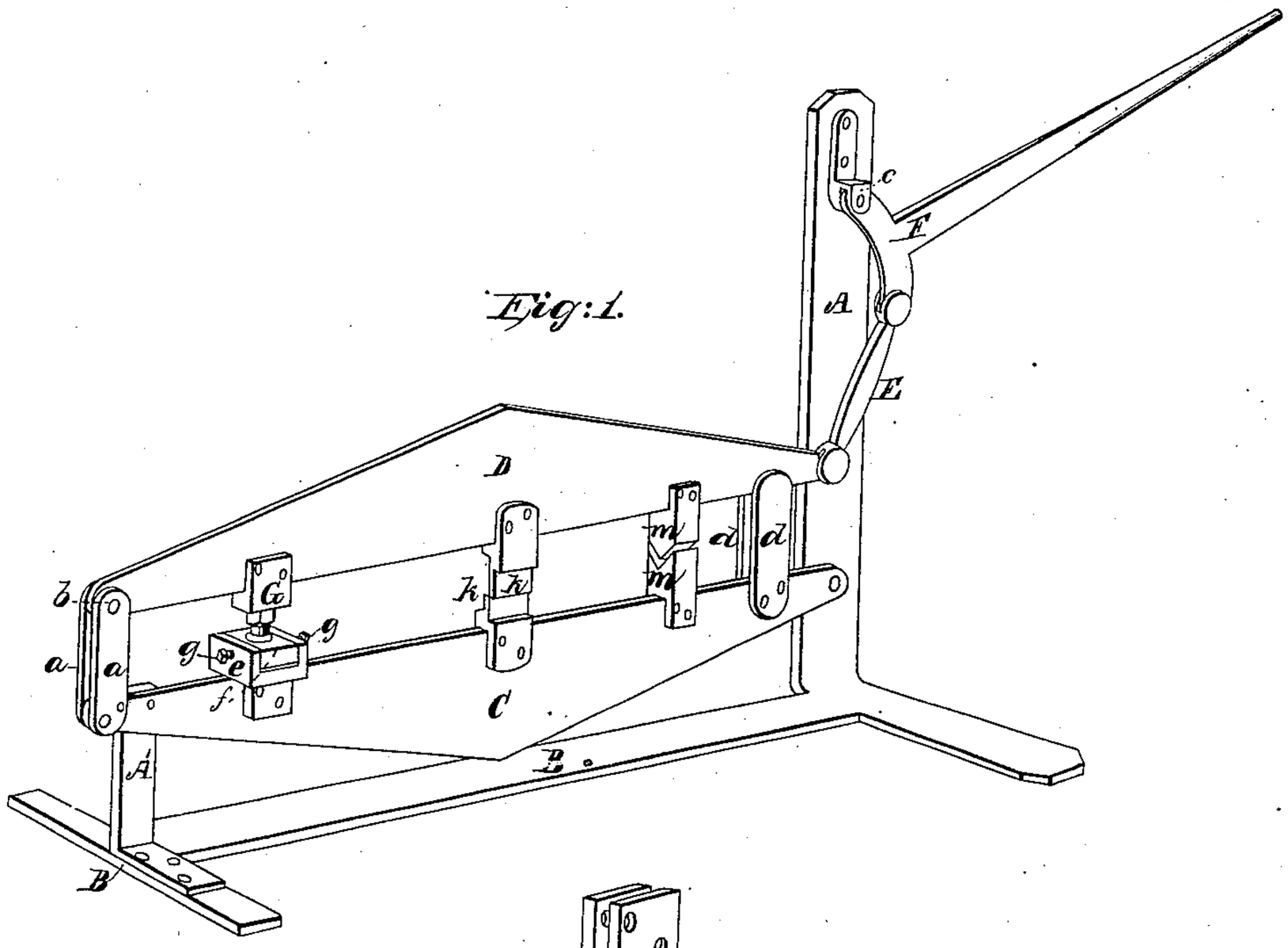


Fig: 3.

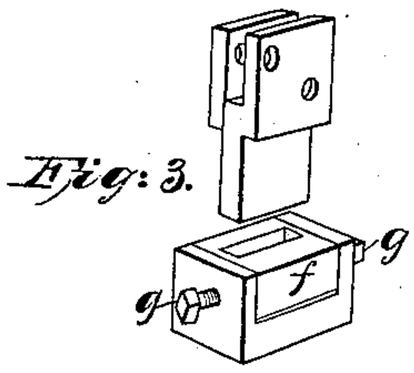


Fig: 2.

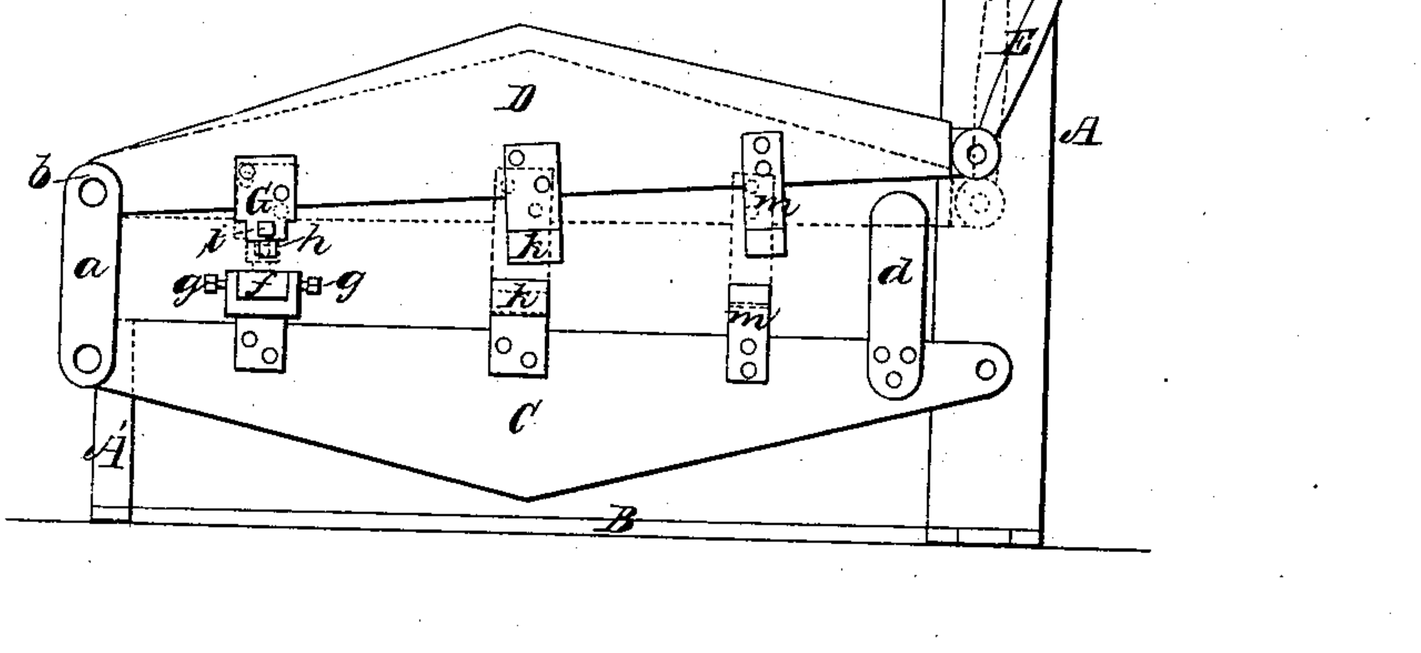
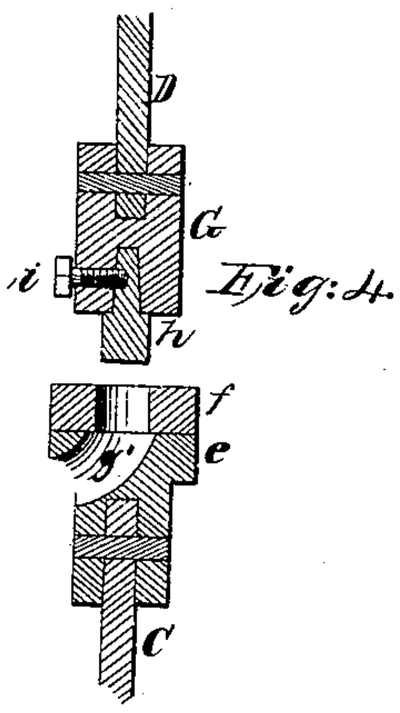


Fig: 4.



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ISAAC LAMPLUGH, OF SPRINGFIELD, ILLINOIS.

IMPROVEMENT IN APPARATUS FOR SHEARING, PUNCHING, AND BENDING METALS.

Specification forming part of Letters Patent No. **12,004**, dated March 22, 1864.

To all whom it may concern:

Be it known that I, ISAAC LAMPLUGH, of Springfield, in the county of Sangamon and State of Illinois, have invented a new and Improved Tool-Holding Frame; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of my improved machine, showing a punching-tool, "knee-bender," and shears applied to the same. Fig. 2 is a side elevation of the machine represented in Fig. 1. Fig. 3 shows the tools used for punching or slotting springs. Fig. 4 is a transverse section taken vertically through the punch and die-block of Figs. 1 and 2.

Similar letters of reference indicate corresponding parts in the several figures.

My invention relates to a new and improved frame-work for receiving and holding tools which are used for cutting, punching, and bending metal.

It consists in a frame having two single-plate jaws, one of which is fixed rigidly to standards, and the other is pivoted at one end to one of said standards and operated at the opposite end by jointed levers, as will be hereinafter described, said jaws, standards, and levers being made of single plates of metal united and arranged so as to constitute a strong and cheap frame, the jaws of which are adapted to receive the various tools which are used for punching, slotting, cutting, and bending metal, all as will be hereinafter described.

To enable others skilled in the art to make and use my invention, I will describe its construction and operation.

The two upright standards A A′ are bolted or otherwise secured to the bed B, which latter consists of a flat longitudinal plate having transverse steadying-plates projecting from and secured rigidly to its ends, as shown clearly in Fig. 1. A long triangular plate is secured at its ends to the standards A A′ in a firm and rigid manner, so that its upper edge will be in a horizontal plane. One end of this angular plate (which plate forms the lower or stationary tool-holding jaw, C) is extended out from the short standard A′, and receives on each side a narrow plate, *a*, which plates are secured rigidly to jaw C and project up a suitable distance perpendicular to its upper edge, forming two jaws for receiving and supporting the pivoted end of the upper jaw, D, as shown in Figs. 1 and 2, *b* being the pivot or fulcrum of this upper jaw. The opposite end of the jaw D is pivoted to the lower end of a rod, E, the upper end of which is again pivoted to a T-lever, F, which lever is pivoted to a fixed eye-block, *c*, that is on the long standard A. The handle portion of the lever F being very long, it will be seen that the jaw D can be brought down with great force.

The two jaws C D are constructed both alike, and their straight edges are opposite each other, and when the jaw C is brought down to the position shown in red lines, Fig. 2, the two straight edges are parallel to each other. These jaws are made of a single thickness of metal, and the necessary strength is obtained by the increased width in the center, as shown in the drawings. The two jaws C D are arranged in a vertical plane, and the upper jaw, D, is guided and kept in its proper position by means of two fixed plates, *d d*, which are located near the swinging end of jaw D. These two plates *d d*, being secured rigidly to the lower jaw C on each side of this jaw, they prevent the swinging end from being thrust out in a lateral direction, and thus destroying the perfect operation of the machine. These guiding jaws or plates *d d* are especially useful in my machine, wherein the longitudinal jaws C D are made of single plates, as above described. The straight edges of the lower jaw, C, is punched at several points to receive bolts, which are used in securing the tools for cutting, bending, or punching metal to this jaw. These tools are represented in Figs. 1 and 2 applied to the lower jaw, C. The upper jaw, D, is also punched to receive the upper portions of said tools, and when this jaw is forced down the desired result is obtained.

The punching device consists of a bed-piece, *e*, having its lower end slotted to receive the upper edge of the jaw C. This slotted end embraces the jaw C, and the bolts which are used secure the bed firmly in position. The bed *e* is slotted as shown in Figs. 1 and 3, to receive the die-block *f*, which is secured in place by means of set-screws *g g*. A hole, *g′*, is made through the die-bed *e*, to allow the punchings to escape freely from the die-block.

The die-bed *e* is in this manner constructed so that its dies can be removed at pleasure and others of a different kind secured in their place. Directly above the die-bed *e* is a punch, *h*, which may be made either round, or square, or triangular. The shank of the punch fits into a socket formed in a slotted holding portion, G, (shown in Fig. 4,) which is secured to the upper or movable jaw, D, by bolts; so that it can be removed at pleasure. The punch is secured in its holding portion G by means of a set-screw, *i*, Fig. 4.

Fig. 3 shows a "spring-slotter," which may be applied to the jaws C D in place of the punch just described. Between this punch or spring-slotting tool and the jaw-guides *d d*, I have shown two shear-plates, *k k*, applied to the jaws C D; also, two angular-faced tools, *m m*, for bending metal and forming "angles" or "knee-irons." These different tools are arranged upon the edges of the jaws C D, according to the amount of power required for each—*i. e.*, the punch-tool is located nearest the fulcrum *b*, the shears next, and the bending-tool farthest from the fulcrum, as clearly shown in Fig. 1.

It will be seen that I use only one thickness of metal for the jaws C D and the frame which supports these jaws, thus making a very light and inexpensive machine. The jaws, which require to be made very strong to resist the vertical strain, are for this purpose increased in width at the middle of their length to make up for their thinness, and by keeping the vibrating end of the upper jaw between vertical guides located near this end I prevent any lateral thrust of the jaw, and thus keep the tools in their proper relation one with the other during the vertical movement of the jaw C.

It is the peculiar construction of the single-plate machine, the manner of constructing the frame for supporting the jaws C D, with the lower ends of the standards braced by a longitudinal bar, the guides for the movable jaw, and the removable tools that constitute the gist of my invention.

I am aware that machines for doing similar work to mine have been made with double plates bolted together; but I am enabled to obtain all the requisite strength by my construction and arrangement of single plates and to readily adapt the tools to such plates.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The single-plate machine composed of the perpendicular standards A A′, longitudinal brace B, stationary jaw C, and the movable jaw D, with its guides *d d*, all combined, constructed, and arranged substantially as and for the purposes described.

2. The application of the punching, shearing, or bending tools to the single-plate jaws C D, in combination with the guides *d d*, substantially as set forth.

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Witnesses:
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