(No Model.) 2 Sheets—Sheet 1.

W. F. DURFEE.

DEVICE FOR CLAMPING AND HOLDING PLATES IN METAL SHEARING MACHINES.

No. 260,178. Patented June 27, 1882.

Figure 1

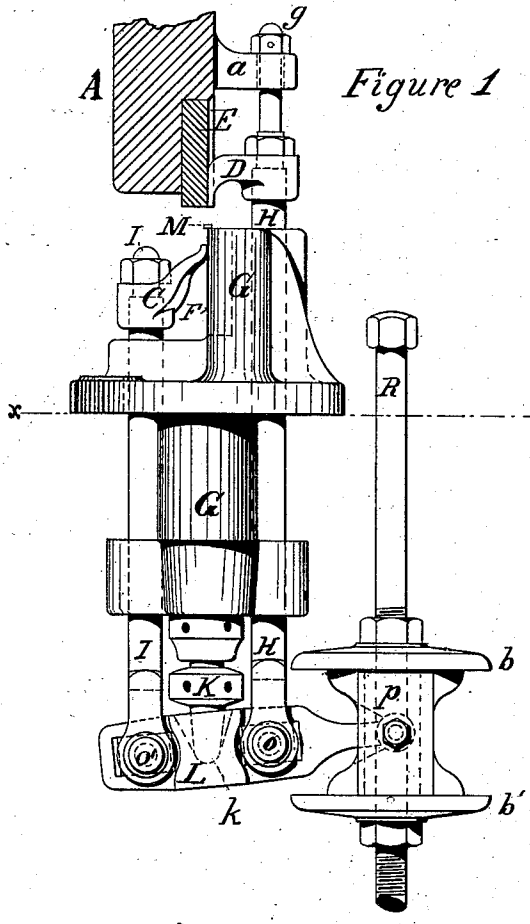


Figure 3

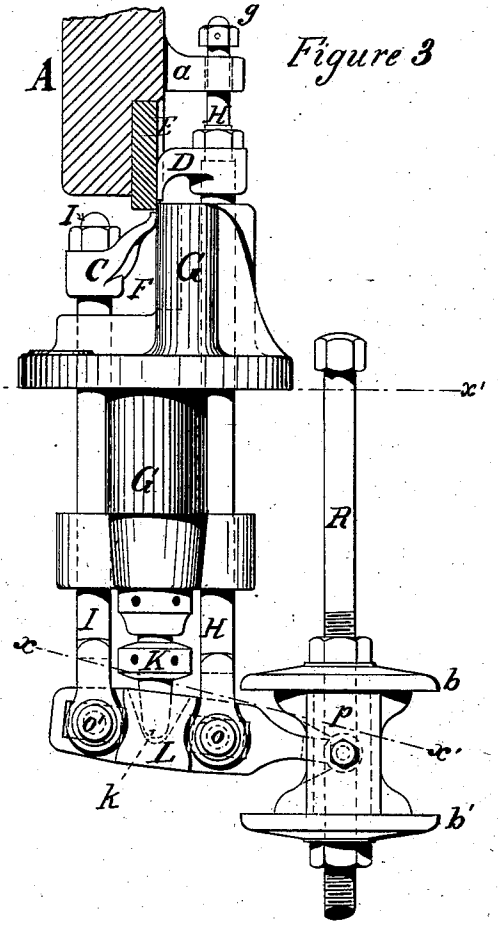


Figure 4.

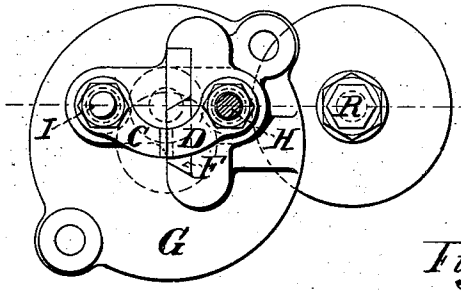


Figure 5.

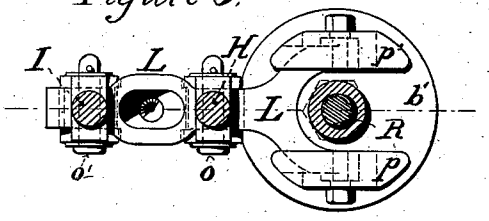
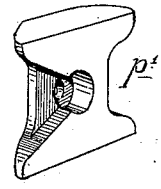


Fig. 6.



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DEVICE FOR CLAMPING AND HOLDING PLATES IN METAL SHEARING MACHINES.

No. 260,178. Patented June 27, 1882.

Figure 2.

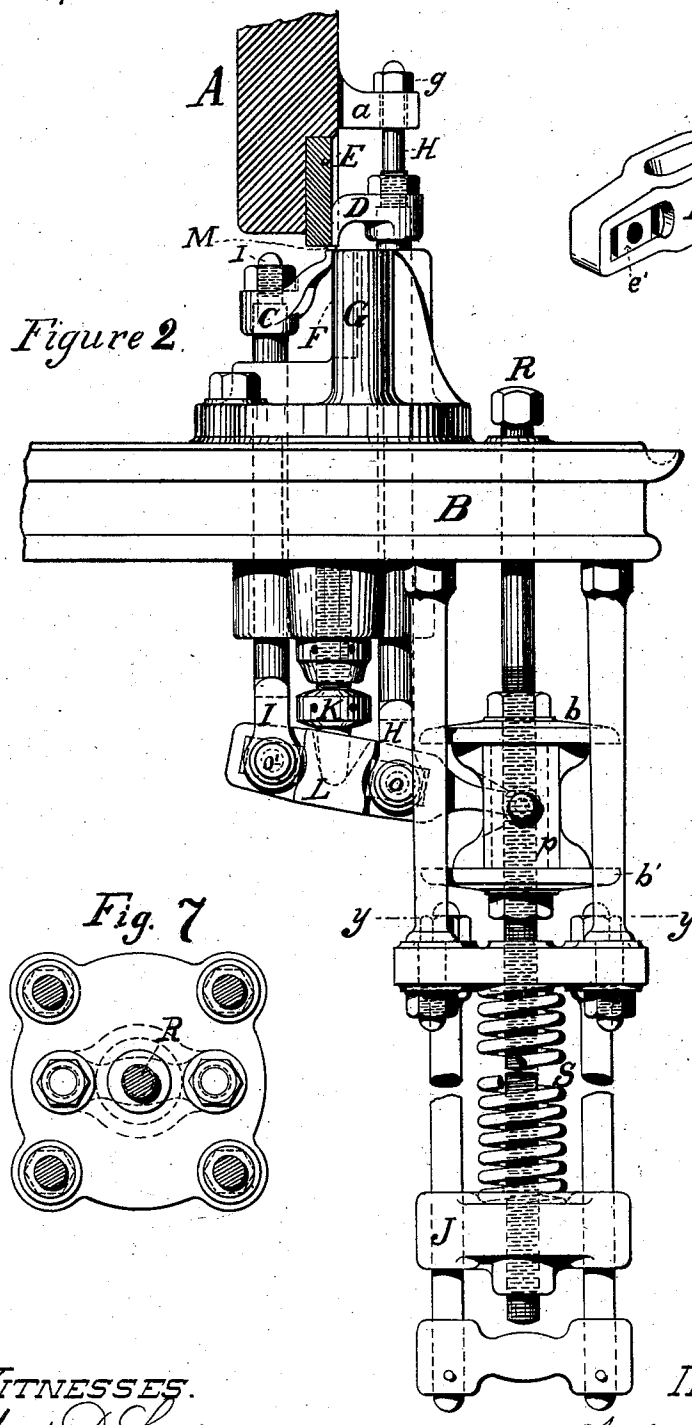


Fig. 8

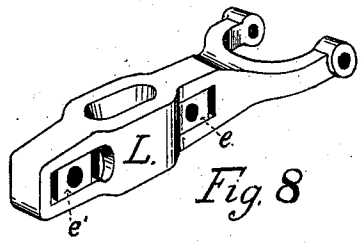


Fig. 7

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UNITED STATES PATENT OFFICE.

WILLIAM F. DURFEE, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE WHEELER & WILSON MANUFACTURING COMPANY, OF SAME PLACE.

DEVICE FOR CLAMPING AND HOLDING PLATES IN METAL-SHEARING MACHINES.

SPECIFICATION forming part of Letters Patent No. 260,178, dated June 27, 1882.

Application filed November 17, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. DURFEE, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Machinery for Holding Metal while it is being operated upon by Shears or other Cutting Mechanism, of which the following, together with the accompanying drawings, forms the specification.

Referring to said drawings, Figure 1 represents an elevation of my improved mechanism, wherein the cutting-dies E and F are separated to the full extent to receive the metal M, on which they are to operate. Fig. 2 shows the same parts in the positions they occupy when the cutting-dies are in contact with the metal M. Fig. 3 is another view of the same, showing the position of parts after the metal M has been severed. Fig. 4 is a plan view of Fig. 1, wherein the upper cutter, E, and its holder A are not shown. Fig. 5 is a horizontal section of Fig. 3, taken irregularly on the line *x x'*. Fig. 6 is a perspective view of the sliding block *p'* detached, and illustrates the construction thereof. Fig. 7 is a sectional view of Fig. 2, taken on the line *y y*. Fig. 8 is a perspective view of the bifurcated lever L detached.

The operation of my improved mechanism is substantially as follows, to wit: In Fig. 1 the metal M to be cut is represented as lying upon the lower cutting-die, F, of a cutting-press (said die being shown within its holder G by broken lines in Figs. 1, 2, and 3) in proper position to be acted upon by the upper cutting-die, E, which, descending, allows the upper pressure-finger, D, to follow it in obedience to the action of the spring S, transmitted through the plates *b b'*, blocks *p p'*, lever L, and rod H, to which rod the said pressure-finger D is rigidly attached, the upper extremity of said rod H being free to pass through a projecting arm, *a*, attached to the gate A of a cutting-press, which gate carries the upper cutting-die, E, aforesaid. While the upper pressure-finger, D, is descending, the lower pressure-finger, C, is ascending from the same cause (the action of the spring S) as produced the descent of the upper pressure-finger, the finger C having a similar connection to the spring S aforesaid by means of the rod I, (to which the finger C is attached,) lever L, &c., as is provided for the aforesaid upper pressure-finger, D. The lever L aforesaid is shown in perspective by Fig. 8. It is provided with two sliding blocks, *e e'*, which are free to move in the direction of the length of the lever, and they carry the pins *o o'*, to which are attached respectively the lower ends of the vertical rods H and I, these rods being guided in holes through the top, and the projections at the bottom of the lower die-holder, G, pass freely through the base or frame B of the cutting-press. (See Fig. 2.) The lever L is bifurcated at its right-hand extremity, and the end of each branch thereof carries a sliding block, *p* or *p'*, as shown in Figs. 3 and 5, one of which sliding blocks is shown detached by Fig. 6. When the machine is in action these sliding blocks move horizontally between the circular plates *b b'*, and by the action of the lever L give to these circular plates and the rod R, to which they are attached, a vertical reciprocating movement. It will be seen that by the peculiar construction and arrangement of the lever L, blocks *p p'*, plates *b b'*, and rod R the tension of the spring S may be varied at pleasure by turning the rod R (whose lower extremity screws into and through the movable block J, Fig. 2, on whose upper surface the lower end of the spring S rests) by means of a wrench applied to its upper end, which is formed for the purpose. When the upper die, E, has made so much of its downward movement as to cause it to come in contact with the upper surface of the metal M, then, as a result of the movements of the two pressure-fingers D and C, hereinbefore described, they will be respectively in contact with the upper and under surfaces of the metal M, but will not be exactly opposite one another, though their adjacent edges will lie in the same vertical plane—viz., the plane in which the metal is to be divided by the further descent of the upper die, E, which in its descent severs the metal, and at the same time confines the piece cut off between the under side of the die E and the top of the lower pressure-finger, C, which pressure-finger is forced downward by the die aforesaid, and causes the lever L (on which the vertical rod I acts) to change its center of motion from the

stationary fulcrum at the point *k* to the pin *o*, as shown in Fig. 3, thus compressing the spring S and causing an increased pressure upon the metal remaining under the upper pressure-finger, D.

The effect of the operations herein described is to cause both the piece cut off from the rod of metal M and the end of the rod itself to remain straight, and also to prevent the tendency of the metal to overturn and draw between the adjacent vertical faces of the cutting-dies E and F.

Immediately after completing its downward movement the upper cutter, E, starts on its upward course, and when it has arrived in the position shown by Fig. 2 the arm *a* comes in contact with the under side of the nut *g* and lifts the rod H and pressure-finger D, thus compressing the spring S, and by causing the lever L to turn about the fulcrum *k* it draws the lower pressure-finger, C, downward. At the conclusion of the upward movement of the upper die, E, affairs are in the position represented in Fig. 1, at which time the piece of metal M can be adjusted for a new operation.

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

1. In a machine for holding and cutting metals, the combination, with the vertically-reciprocating cutter-holder A and lower die-holder, G, of the rods H I, having clamping-fingers D C, arranged to bear upon the opposite sides of the metal to be cut, and the lever L, connected to the lower ends of the said rods and adapted to operate the same for the purpose of clamping and unclamping the metal, substantially as described.

2. In a machine for holding metal while being cut, the combination of the die-holders A G, the rods H I, having clamping-fingers C D, the bifurcated lever L, connected to the lower ends of said rods and provided with sliding blocks *p p'* and *e e'*, the latter having pins *o o'*, the rod R, having circular plates *b b'*, and the spring S, all arranged to operate substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM F. DURFEE.

Witnesses:
ALBERT R. LACEY,
GEORGE TERRY.