(No Model.)

E. A. OLIVER.

COMPOUND METAL WORKING MACHINE.

No. 367,658. Patented Aug. 2, 1887.

Fig. 1.

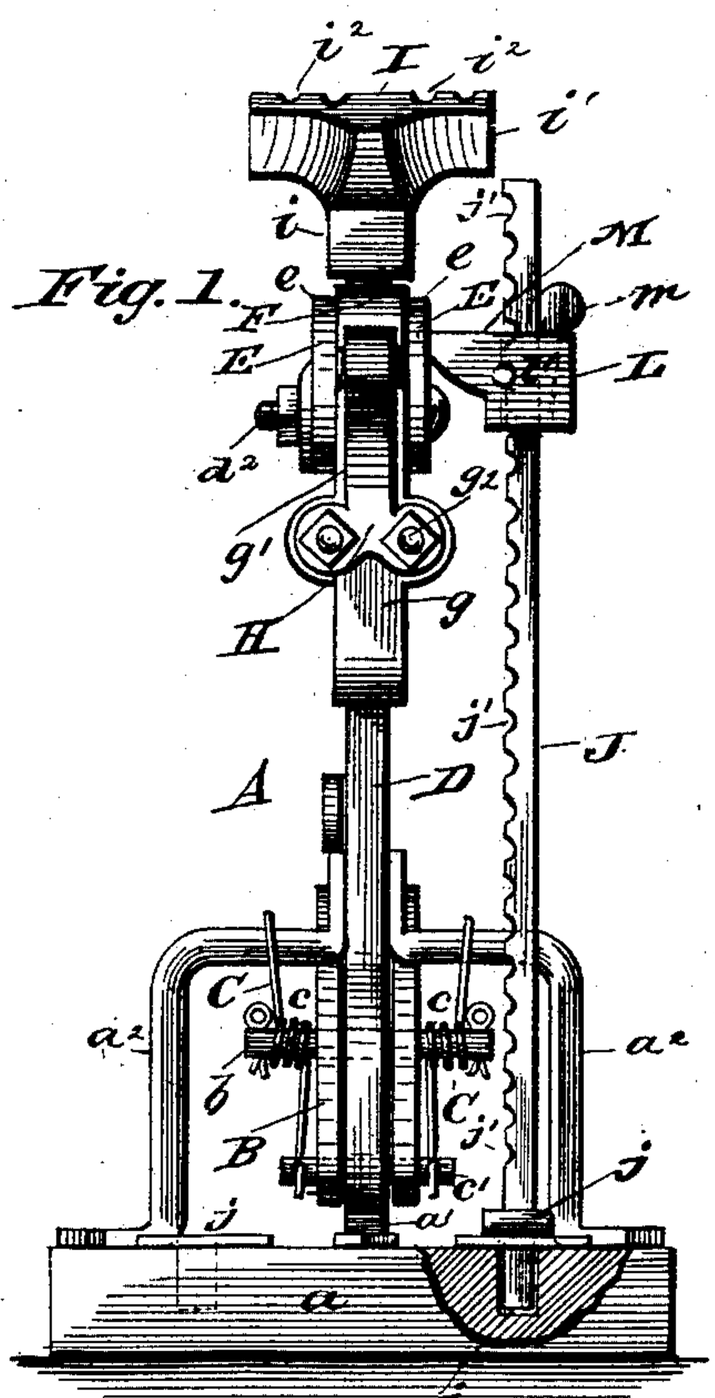


Fig. 2.

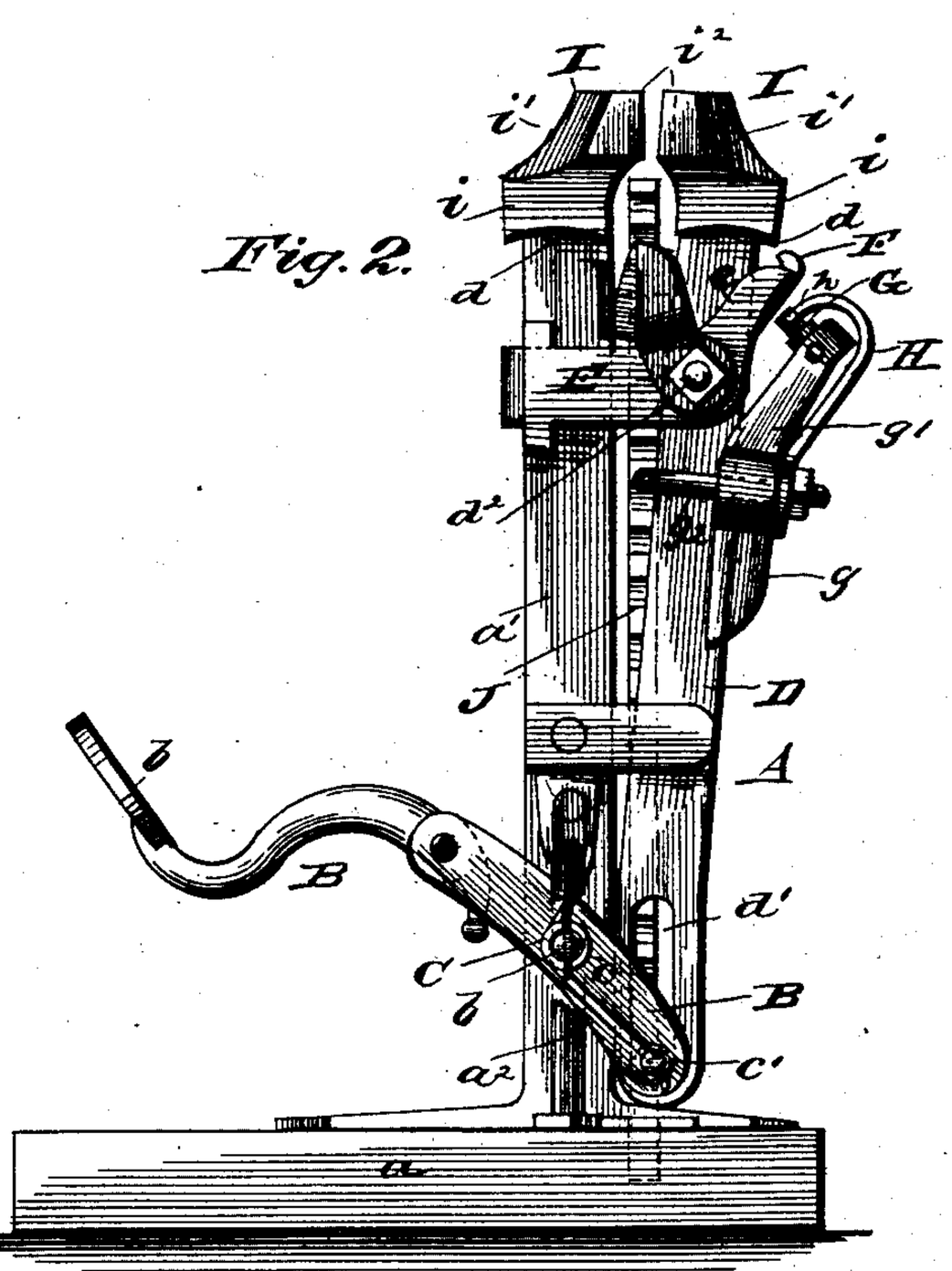


Fig. 3.

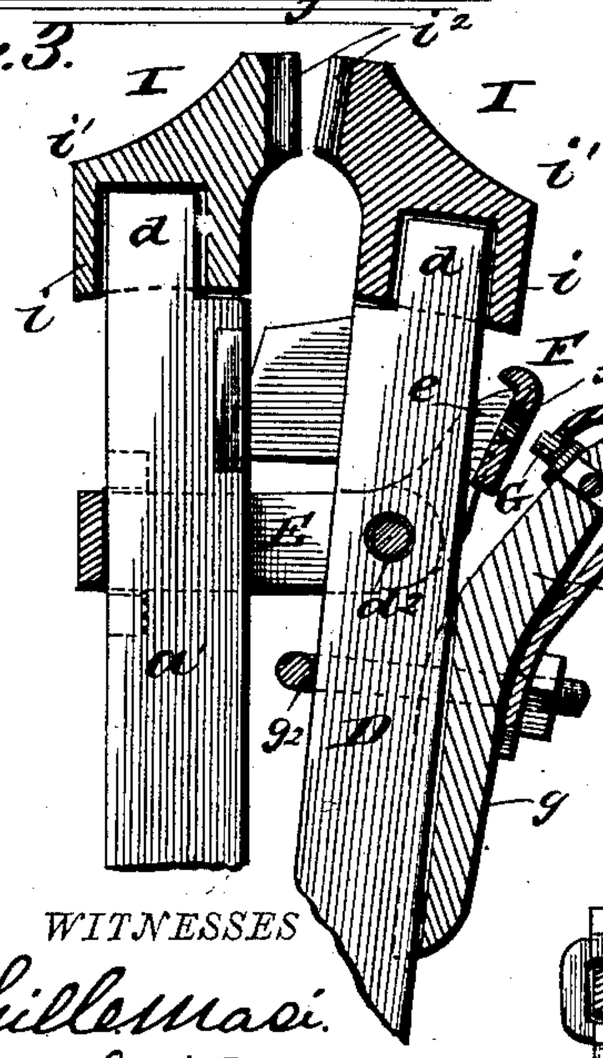


Fig. 6.

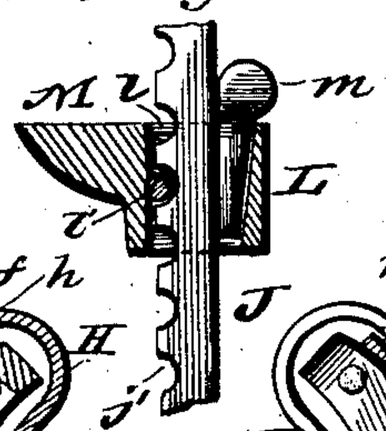


Fig. 4.

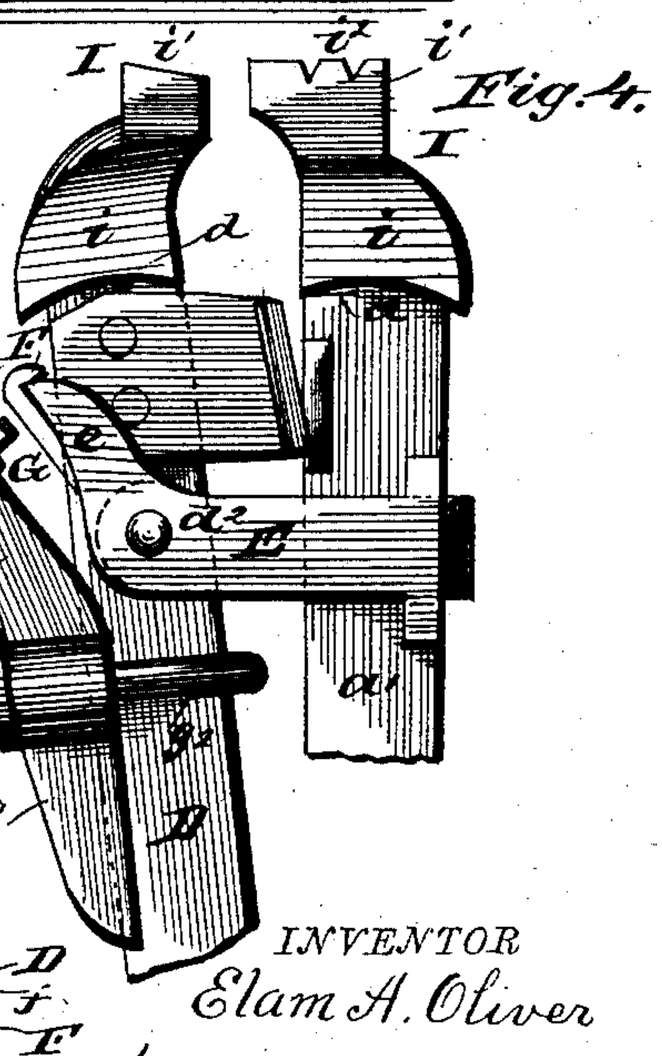
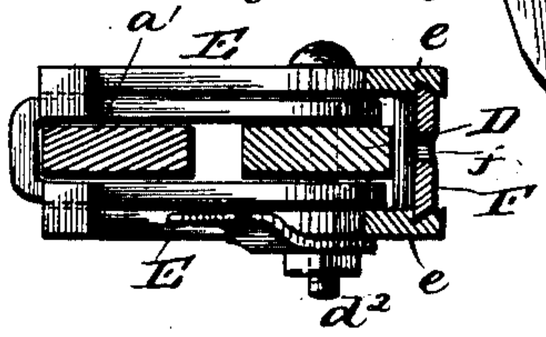


Fig. 5.



WITNESSES

Phillemasi.

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UNITED STATES PATENT OFFICE.

ELAM A. OLIVER, OF BELLEVILLE, WISCONSIN.

COMPOUND METAL-WORKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 367,658, dated August 2, 1887.

Application filed March 30, 1887. Serial No. 233,047. (No model.)

To all whom it may concern:

Be it known that I, ELAM A. OLIVER, a citizen of the United States, resident at Belleville, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Compound Metal-Working Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a representation of a front elevation. Fig. 2 is a side elevation. Fig. 3 is a detail view, partly in section. Fig. 4 is a detail view showing a modification, and Figs. 5 and 6 are detail views.

The invention relates to improvements in compound metal-working machines; and it consists, mainly, in the construction and arrangement of the detachable metal-holding jaws or heads and the combination of the same with certain other parts, hereinafter described.

It consists, further, in certain details of construction and arrangement hereinafter described, illustrated in the drawings, and pointed out in the claims hereto appended.

Referring to the drawings by letter, A designates the frame of the machine, composed of the base-plate *a* and standard *a'*, rising therefrom.

a^2 a^2 are similar arms extending out horizontally on each side from the standard, and which, bending downward, have their feet bolted to the base-plate *a*.

B is the foot-lever, provided with a suitable pedal, *b*, having its stem bifurcated, with the arms of the bifurcation passing on opposite sides of the standard a suitable distance below the arms a^2, and pivoted upon the horizontal bar *b*, secured centrally in an opening through the standard.

C C are springs, the coiled portions *c* of which surround the arms of the bar *b* on opposite sides of the standard, their upper ends bearing against the horizontal parts of the arms a^2, while their lower ends pass through openings in the corresponding arms of a pin, *c'*, secured centrally in an opening in the lever B, near the lower ends of the arms of its bifurcation.

D is an upwardly-standing bar similar to the standard *a'*, both standard and bar having their upper ends provided with similar rectangular shoulders, *d d*, for the attachment of the metal-working jaws, hereinafter described. The bar D is provided near its lower end with a longitudinal slot, *d'*, for the passage of the pin *c'*, and is pivoted, at a suitable distance below its upper end, between the horizontal arms E, secured upon the standard on opposite sides thereof, the corresponding ends of the arms being flanged to fit upon the upper and lower edges of a rectangular bracket that fits around the standard, and has arms extending on each side of the bar D. The pivotal bolt d^2 of the bar passes through openings in the arms E and in the arms of the bracket and engages with a nut to keep the parts tightly in place. The end parts, *e*, of the arms E curve outward and upward beyond the pivotal bolt, and are rabbeted on the inner side of their outer edges for the insertion of the edges of the die-plate F or the plate against which a sheet of metal is punched, the said plate F being provided with the opening *f* for the passage of the punching-die.

G is the punching-die, secured to the inner surface near the top of the outwardly-bent arm *g'* of the block *g*, which is grooved in its inner edge to fit upon the outer edge of the bar D and secured to said bar by the rectangular frame or yoke g^2, bent around the inner edge thereof, and with its threaded ends passing through suitable openings in the enlarged central portion of the block and engaging nuts on the outer side thereof.

H is a spring, the lower end of which is engaged between the said nuts and block, the ends of the yoke g^2 passing through suitable openings in the said end. The spring H extends thence upward and bends over the upper end of the arm *g'* of the block, and then extends downward on the inner side of the same, the end of the downwardly-bent part being provided with a longitudinal notch, *h*, the arms of which pass on each side of the punching-die. When the pedal is pressed down by the foot, the pin *c'* moves upward in the slot *d'*, moving the lower part of the bar D outward and its part above the pivotal bolt d^2 inward, so that the punching-die G is forced through the sheet of metal placed between it and the die-plate F and through the opening

f in the latter. When the foot is released, the arms of the spring H on each side of the notch *h* hold the metal plate inward and allow the punching-die to be withdrawn out of the hole made therein.

I I are similar metal-holding jaws, provided with sockets *i i*, that fit upon the upper ends, respectively, of the standard and of the bar D down to the shoulder *d* thereon, and with the laterally-extended head portions *i' i'*, which may be scored to hold bars or plates of metal in any direction, but are preferably provided with corresponding semicircular notches, i^2 i^2, on their meeting faces, which notches are vertical and of varying sizes to hold metal bars of different diameters.

J is a bar or staff rectangular in cross-section, and with its lower end fitting into either of the sockets *j j*, made at suitable points in the base-plate $a^{\times}$ on each side of the standard *a'*. The said staff is provided on its inner side with the transverse adjusting-notches *j' j'* at equal distances apart and semicircular in cross-section.

L is an adjusting-block having a vertical opening, *l*, which fits upon the staff J, and has a transverse rib, *l'*, that is adapted to enter any one of the said notches, being semicircular in cross-section to fit therein. The upper portion of the block L is extended inwardly toward the standard, and has its upper surface, M, horizontal when the block is adjusted in proper position. *m* is a key of suitable size to be passed between the staff J and the outer part of the opening *l*, so as to lock the block L in place with its rib *l'* in any desired one of the adjusting-notches *j'*. The said staff and block are intended to gage the length of a bolt. The block also supports the lower end of the bolt, while its upper part is grasped between the proper vertical notches, i^2 i^2, of the jaws I, and is shaped into a head by a hammer, which may be either in the hands of the operator, who forces the jaws together upon the stem of the bolt by pressing his foot on the treadle, or may be actuated by suitable mechanism. The staff J is prevented from entering the socket too far or being unsteady therein by the circumferential collar *j*.

The machine as described is a compact, reliable, durable, and effective compound metal-working machine, and is not liable to have its parts broken or to need frequent repairing.

I am aware that the standard, the bar D, the bifurcated lever with its pedal, and the springs C are not new, and such I do not claim, broadly, as the said elements are shown in patents granted to me July 21, 1885, and January 20, 1885, numbered, respectively, 322,847 and 311,083.

Having described my invention, I claim—

1. In a compound metal-working machine, the combination, with the standard and bar D, each provided on its edge, near its upper end, with a shoulder, *d*, the bar being pivoted at a suitable point to the arms E, secured to and standing outward from the standard, and with the lever B, pivoted on the standard and provided with a pin, *c'*, moving in the slot *d'* of the bar D, and the springs C C, substantially as described, of the metal-holding jaws I, provided with sockets *i*, to fit down on the upper ends of the standard and bar D down to the shoulders *d*, and with the laterally-extended heads *i' i'*, having on their meeting surfaces the vertical corresponding grooves, i^2 i^2, semicircular in cross-section and of varying sizes to grasp bolts or rods of different diameters, substantially as specified.

2. In a metal-working machine, the combination of the vertical standard and the pivotal bar D, each provided with similar shoulders on their edges, near their upper ends, and means, substantially as described, to turn the upper end of the bar D to and from the upper ends of the standards, of metal-holding jaws I, provided with sockets to fit on the upper ends of said standard and bar D and bear down to the shoulders thereon, and the vertical semicircular grooves i^2 on the meeting faces of their laterally-extended heads, the sockets *j*, made in the base-plate of the main frame, the staff J, with its lower end in one of said sockets, and provided with the collar j^2 and adjusting-notches *j'*, the adjusting-block L, provided with the opening *l*, rib *l'*, and horizontal upper surface, M, and the locking key *m*, substantially as specified.

3. In a metal-working machine, the combination, with the standard *a*, the arms E, secured thereto, the bar D, pivoted on said arms, and mechanism, substantially as described, whereby the upper end of said bar is moved to or from the upper end of the standard, of the die-plate F, secured between the outer parts, *e*, of the arms E, and provided with the opening *f*, the punching-die G, secured to the block *g*, attached to the outer edge of the bar D, the spring H, with its lower end secured to the outer side of said block *g*, curving over the upper arm of the same, and provided with a notch, *i*, in the end of its bent-down portion, the arms of which notch pass on each side of the punching-die, substantially as specified.

4. In a metal-working machine, the combination, with the standard and pivoted bar D, of the die-plate F, provided with the opening *f*, the punching-die G, the spring H, provided with the notch *h*, the block *g*, notched on its inner edge to fit upon the outer edge of the bar D, and the yoke g^2, passing around the bar D, and having its threaded ends passing through suitable openings in the enlarged central portion of the block *g* and engaged by nuts to hold the blocks in place, substantially as specified.

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

ELAM A. OLIVER.

Witnesses:

CHAS. W. DERRICKSON,

K. W. MARKS.