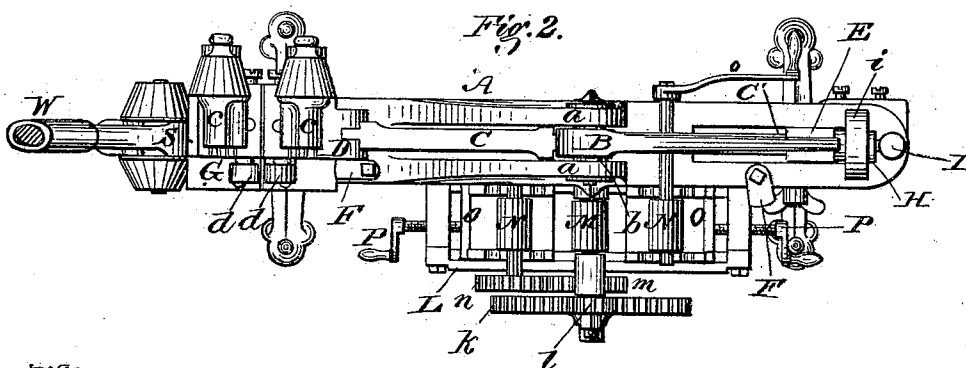
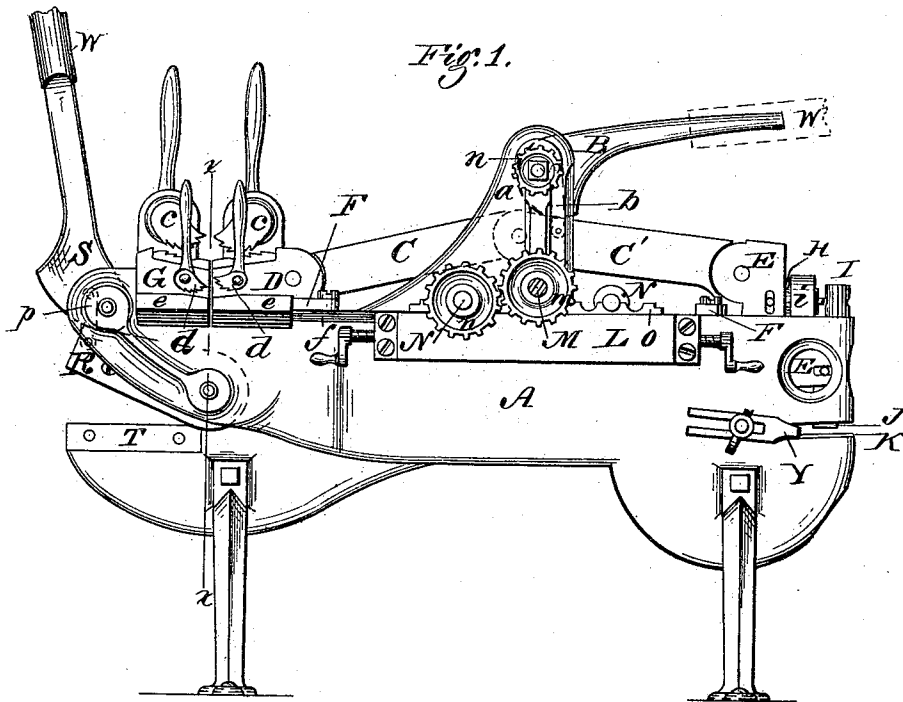


G. L. JONES.

COMPOUND METAL WORKING MACHINE.

No. 179,566.

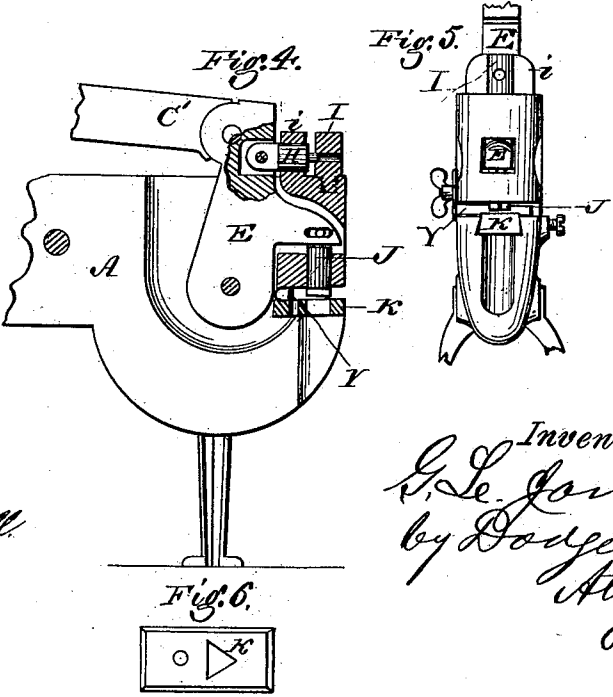
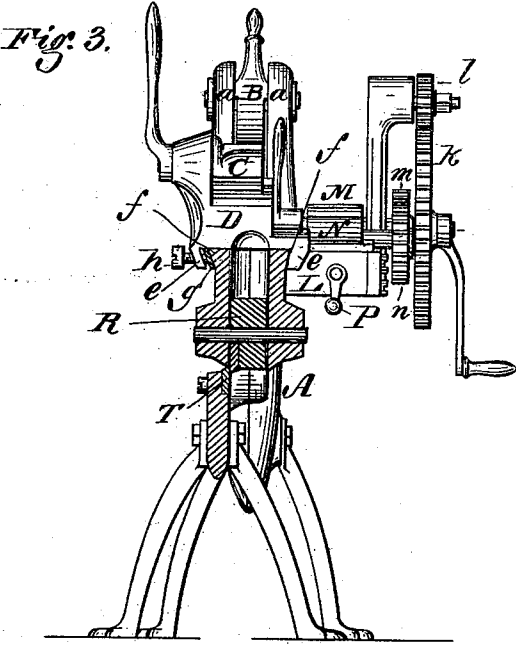
Patented July 4, 1876.



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G. L. JONES.
COMPOUND METAL WORKING MACHINE.
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GEORGE L. JONES, OF VANVILLE, WISCONSIN.

IMPROVEMENT IN COMPOUND METAL-WORKING MACHINES.

Specification forming part of Letters Patent No. **179,566**, dated July 4, 1876; application filed March 20, 1876.

To all whom it may concern:

Be it known that I, GEORGE L. JONES, of Vanville, in the county of Chippewa and State of Wisconsin, have invented certain Improvements in Compound Metal-Working Machines, of which the following is a specification:

My invention relates to improvements in the compound metal-working machine for which Letters Patent were granted to me September 2, 1873, No. 142,398, and November 17, 1874, No. 156,920; and consists in various details of construction, hereinafter fully described.

Figure 1 represents a side elevation of my machine with the main gear-wheel removed; Fig. 2, a top-plan view of the machine; Fig. 3, a cross-section on the line *xx*; Fig. 4, a vertical longitudinal section through one end of the machine; Fig. 5, an end view, showing the punches; Fig. 6, a plan view of the die-plate of the lower punch.

A represents the metal frame or body of the machine, made of an oblong form, with a vertical opening in each end, and with four supporting-legs, as shown. At its middle the frame is provided with two upright arms, *a*, between which there is pivoted an eccentric, B, provided with an operating arm or handle, and bearing upon the ends of knee-levers C C', to which it is connected by a link, *b*, as shown in Figs. 1 and 2, so that upon being turned down it depresses and straightens the levers, while upon being turned up it causes the link to raise the levers.

The levers C C' are jointed, the former to a sliding head, D, on one end of the frame, and the latter to a pivoted punch-head, E, in the opposite end of the frame, as shown in Figs. 1 and 2.

On top of the frame there are pivoted two dogs, F, by which the heads D and E can be locked fast and prevented from moving, one head being fastened, so as to form a fixed fulcrum for the levers when the other head is to be operated.

The sliding upsetting-head D operates in conjunction with a corresponding stationary head, G, each head being provided with a large eccentric, *c*, on top, for grasping large iron, tires, &c., and with a small eccentric, *d*, on

the side for grasping hub-bands, and similar small rings and bands.

The upsetting-heads D and G are held in place by depending flanges *e*, engaging over ribs *f*, formed lengthwise on the outside of the frame, as shown in Figs. 1 and 3.

The flange on one side of each head engages directly upon the corresponding rib or guide; but on the opposite side a gib or plate, *g*, is inserted between the flange and rib, and secured by screws *h*, which are inserted through the flange and seated in the gib, as clearly shown in Fig. 3.

The gibs serve as a means of keeping the heads tight on the frame, and, when removed, admit of the heads being lifted from the frame.

The stationary head G is supported and held from sliding by bearing against a shoulder or enlargement formed on one end of the frame, while the sliding head D is sustained, when not in action, against the pushing force of the levers by bearing against the head G.

The pivoted punch-head E is united at its upper end, by a slot-and-pin connection, with a horizontal punch, H, sliding through a guide, *i*, on the frame, and entering a die in a steel post, I, which will be screwed or otherwise firmly secured to the main frame, as shown in Figs. 1, 2, and 4.

As shown in Figs. 1 and 4, the punch-head E is formed with a lateral arm, to which there is connected, by a pin and slot, a second punch, J, supported vertically in a guide in the frame, and entering at its lower end a die-plate, K, which is seated in a dovetail bearing in the frame, and secured by screws, as shown in Figs. 4 and 5, so that it can be readily removed and adjusted.

As shown in Fig. 6, the die-plate is provided with two dies or holes, one for a round punch and the other for a triangular saw-gumming punch or tool, the two punches being made interchangeable, so that one or the other may be readily inserted, as required.

For the purpose of bending tire and other iron I form on the side of the main frame a secondary frame, L, and mount in the latter a roll, M, at the middle, and two movable rolls, N, at the ends, each movable roll being seated

in a small sliding frame, O, which is held and advanced by a hand-screw, P, mounted in the end of the frame L, as shown in Figs. 1, 2, and 3, so that by turning the screws and advancing the side rolls toward the middle one the machine can be readily adjusted to give the iron any required curvature. The middle roll M has its journal provided with a square end to receive an operating crank, as shown in Fig. 3, and is also provided with a large gear-wheel, *k*, gearing into a small pinion, *l*, through which motion is applied by means of a crank, when operating upon heavy iron, requiring increased power. The middle roll is also provided with a gear-wheel, *m*, to act upon and turn a pinion, *n*, secured to one of the rolls N, as shown in Figs. 1, 2, and 3. The other roll N is provided with a journal extending across the machine, and provided with a crank, *o*, by which it can be turned by a second operator standing behind the machine, when very heavy iron is being bent. At that end of the main frame on which the upsetting-heads are mounted there is a vertical opening containing a pivoted shear-blade, R, and an eccentric lever, S, bearing thereon, and connected therewith by a link, *p*, as shown in Figs. 1, 2, and 3, so that upon depressing the lever it forces down the blade, and that on raising it the link raises the blade. The blade R operates in connection with a corresponding blade, T, supported by an arm formed for the purpose on the end of the main frame, as shown in Fig. 1.

In order to render the machine compact the levers B and S are operated by an extension arm or handle, W, made of gas-pipe, so as to combine lightness, strength, and cheapness, and made attachable, so that it can be applied to either lever at will.

In order to facilitate the manipulation of the iron under the punch, an adjustable slotted guide, Y, secured by a thumb-screw, is arranged as shown in Figs. 1 and 4.

By the construction above described I produce a simple, compact, and efficient machine, capable of performing the various operations of upsetting; punching, shearing, and bending iron in a convenient and satisfactory manner.

By mounting the sliding upsetting-heads and the shear both at the same end of the machine, placing the shear inside of the frame, and clasping the sliding heads over the outside of the frame, I am enabled to place the shear underneath the heads, thereby avoiding the necessity of extending the frame beyond the heads, in the usual manner, to receive the shear. I am thus enabled to materially reduce the length of the frame, and thereby the size, weight, and cost of the machine, while retaining all the original points of excellence.

Having thus described my invention, what I claim is—

1. In combination with the main frame A, the movable heads D and E, and toggle-levers C C', the locking-dogs F, mounted on the main frame, as and for the purpose described.

2. The combination, in a compound metal-working machine, of the knee-levers C C', connected at one end to the sliding upsetting-head D, and at the other to the pivoted head E, the latter provided with the horizontal punch H, sliding through the rigid guide *i*, and entering the steel post I, and also with the vertical punch J, entering the die K, as shown.

3. As an improvement in the machines described in the patents hereinbefore referred to, the arrangement of the sliding upsetting-heads, mounted on top of the frame near one end, and clasping over its exterior, and the shear-blades R and T at the extremity of the frame, underneath said heads, or nearly so, substantially as shown and described.

4. The compound metal-working machine, consisting of the main frame A, provided with the levers C C', eccentric B, punch-head E, punches E' and J, upsetting-heads D and G, shear R T, eccentric S, and upsetting devices M N O P, all combined and arranged to operate in one machine, as shown and described.

GEORGE L. JONES.

Witnesses:

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