(No Model.)

J. L. OSGOOD.

METAL SHEARS.

No. 346,170. Patented July 27, 1886.

Fig. 1.

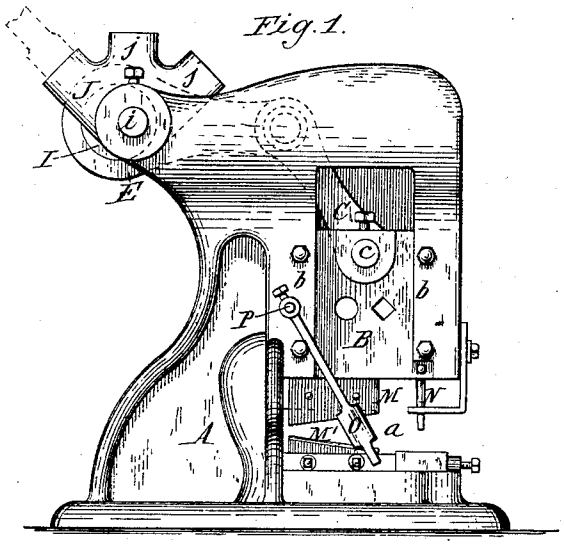


Fig. 2.

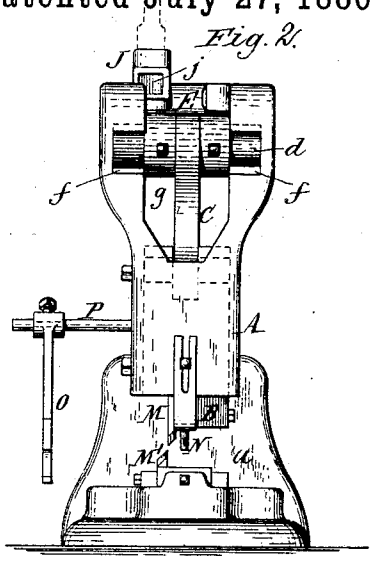


Fig. 3.

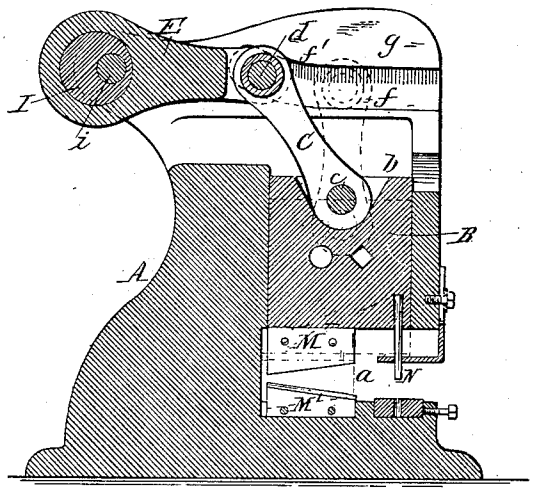


Fig. 4.

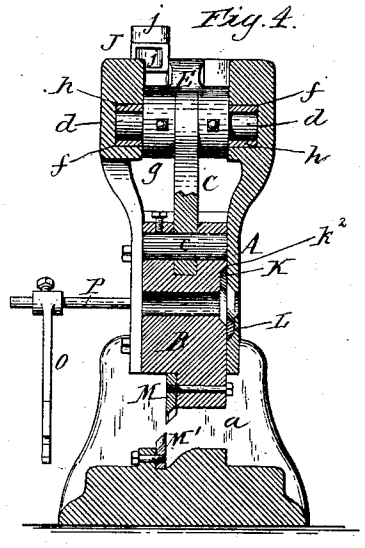


Fig. 5.

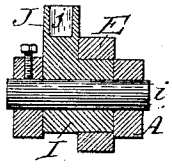


Fig. 6.

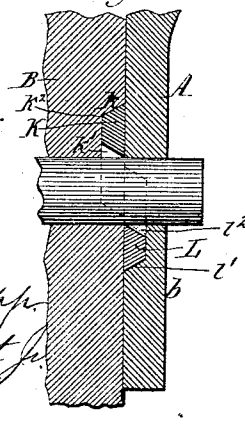


Fig. 7.

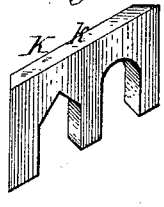
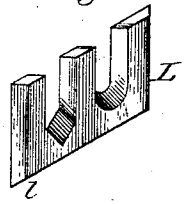


Fig. 8.



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UNITED STATES PATENT OFFICE.

J. LESTER OSGOOD, OF BUFFALO, NEW YORK, ASSIGNOR TO WILLIAM F. WENDT, OF SAME PLACE.

METAL-SHEARS.

SPECIFICATION forming part of Letters Patent No. 346,170, dated July 27, 1886.

Application filed November 16, 1885. Serial No. 182,931. (No model.)

To all whom it may concern:

Be it known that I, J. LESTER OSGOOD, of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Metal-Shears, of which the following is a specification.

This invention relates to an improvement in that class of machines in which a punching, shearing, or cutting tool is attached to a head or stock which has a reciprocating motion between suitable guides or ways.

The object of this invention is to provide a simple and powerful mechanism whereby the desired reciprocating motion is imparted to the tool-stock and to improve the means for attaching the cutting-plates to the tool-stock.

My invention consists to that end of the improvements which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a punching-machine provided with my improvements. Fig. 2 is a front elevation of the same. Fig. 3 is a vertical longitudinal section of the machine. Fig. 4 is a vertical cross-section of the same. Fig. 5 is a longitudinal sectional elevation of the eccentric-arbor and connecting parts. Fig. 6 is a vertical section of the cutter-plates and supporting parts. Figs. 7 and 8 are perspective views of the cutter-plates.

Like letters of reference refer to like parts in the several figures.

A represents the stationary frame of the machine, provided with the usual opening, *a*, in which the cutting-tools operate.

B represents the tool-stock or head, which slides between vertical ways *b*, formed in the main frame A.

C is a toggle-bar, pivoted with its lower end to the upper end of the tool-stock B by a horizontal bolt, *c*, and hung with its upper end upon a horizontal bolt or shaft, *d*.

E represents the eccentric-rod, whereby the toggle-bar C is actuated, and which straddles with its bifurcated front end the upper end of the toggle-bar. The shaft *d* is secured in the bifurcated end of the eccentric-rod E by set-screws or other suitable means, and projects with both ends into grooves *f*, which are formed in the upper portion of the frame A in both sides of a recess or cavity, *g*, in which the eccentric-rod E and toggle-bar C move. The grooves *f* guide the shaft *d* in its movements and form abutments for the toggle-bar. The ends of the shaft *d* are provided with anti-friction rollers *h*, which run in the grooves *f*.

I represents the eccentric, whereby the rod E is moved back and forth, and which turns loosely upon an arbor, *i*, secured to the upper rear portion of the main frame A.

J represents a collar formed on one side of the eccentric I and provided with one or more sockets *j*, for the insertion of a hand-lever, when the machine is to be operated by hand. When power is intended to be used, the collar J is provided with a gear-rim, and driven by a suitable gear-wheel.

In a hand-machine the eccentric E is rocked or swung back and forth, while in a power-machine it is rotated.

Upon turning the eccentric when the tool-stock is in its elevated position, as represented in Fig. 3, the upper end of the toggle-bar is forced forwardly by the eccentric-rod E, thereby moving the tool-stock B downwardly between the ways *b*. The toggle-bar finds its abutments in the grooves *f*, and the rear portions of the latter are inclined forwardly, as shown at *f'*, to facilitate the initial downward movement of the tool-stock and increase the distance through which it is moved by the toggle-bar. During the return movement of the eccentric the upper end of the toggle-bar is drawn backwardly and the tool-stock is raised. By this means a very powerful pressure is applied to the tool-stock or head-block by a single toggle-bar, rendering the machine very serviceable, and at the same time very simple and compact in construction, and not liable to get out of order.

K and L represent the cutter-plates or knives, which are attached, respectively, to the head-block or tool-stock B and the main frame A, and which are employed for cutting bars. The knife K has its upper edge, *k*, inclined backwardly, and the recess *k'* in the tool-stock in which the knife K is seated has its upper edge, *k²*, similarly inclined, so that the downward pressure of the head-block on the knife K tends to throw the cut-

ting-edge of the knife forward and toward the stationary knife L. The latter has its lower edge, l, inclined backwardly, and the lower edge, l', of its seat l^2 in the frame A similarly inclined, so that the downward pressure which the bar being cut exerts upon the stationary knife L tends to throw the cutting-edge of the latter backward and toward the movable knife K. By this means the cutting-edges of both knives are retained at all times in a good working position without requiring any attention or adjustment. The plates K and L are loosely fitted in the recesses k' l^2 in the adjacent sides of the head-block B and frame A, respectively. The plates K and L are respectively provided with angular notches k^3 l^3, and half-round notches k^4 l^4, by which square or round bars are cut. The frame A is provided with openings l^5 in line with the notches l^3 l^4, and of sufficient size to receive the bars to be cut. The head-block B is provided with similar horizontal openings k^5, in line with the notches k^3 k^4, and extending through the head-block. When the latter is elevated, the openings k^5 register with the openings l^5 and the notches in the plates K L. The bar to be cut is then inserted in the proper opening and the head-block is depressed, thereby cutting the bar. The knife K is held in the recess of the head-block by contact with the frame A, and the knife L is held in the recess of the frame A by contact with the head-block.

M represents the shearing-blade secured to the sliding tool-stock B, and M' is the stationary blade secured to the frame A below the tool-stock.

N represents the punch secured to the tool-stock.

O represents a gage-arm, which is pivoted to a horizontal arm, P, secured to the main frame A, in line with the cutting-edge of the stationary knife L, or nearly so. This gage can be swung on the arm P, and be placed opposite the bar-cutters K L or the shears M M', as may be desired. The gage can be adjusted on the arm P toward and from the frame A, to regulate the length of the bars or plates which are cut.

I claim as my invention—

1. The combination, with the main frame A, of a sliding tool-stock, B, a toggle-bar, C, connected at one end with the tool-stock, an eccentric, I, and rod E, connected with the opposite end of the toggle-bar, and stationary guides f, in which the upper end of the toggle-bar finds its abutment, substantially as set forth.

2. The combination, with the main frame A, provided with grooves f, of a sliding tool-stock, B, a toggle-bar, C, connected at one end with the tool-stock and eccentric I, and rod E, a shaft, d, connecting the opposite end of the toggle-bar with the eccentric-rod and moving in the grooves f, substantially as set forth.

3. The combination, with the main frame A, provided with grooves f, having inclined rear portions, f', of a sliding tool-stock, B, and a toggle-bar, C, and an eccentric and rod, I E, substantially as set forth.

4. The combination, with the sliding tool-stock B, provided with a knife-seat, k', having an inclined upper edge, k^2, of a knife, K, having an inclined upper edge, k, a frame, A, whereby said knife is confined in its seat, and an opposing knife, substantially as set forth.

5. The combination, with the main frame A, provided with a knife seat, l^2, having an inclined lower edge, l', of a knife, L, having an inclined lower edge, l, a head-block, B, whereby said knife is held in its seat, and an opposing knife, substantially as set forth.

6. In a shearing-machine, the combination, with a knife-holder constructed with a seat for the knife, said seat having an inclined back, of a knife having a similar inclined back arranged loosely in said recess, and an opposing knife, whereby the inclined back of the seat bearing against the inclined back of the loose knife presses the loose knife toward the opposing knife, substantially as set forth.

Witness my hand this 2d day of March, 1885.

J. LESTER OSGOOD.

Witnesses:
CARL F. GEYER,
OSCAR SCHAUB.