2 Sheets—Sheet 1.

J. L. LEWIS.
Power-Press.

No. 204,158. Patented May 28, 1878.

Fig. 2

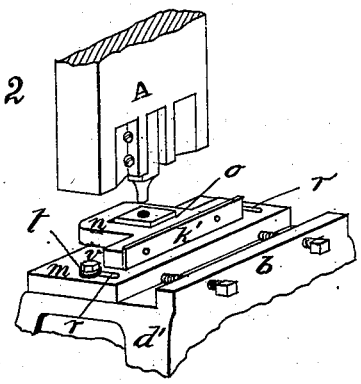
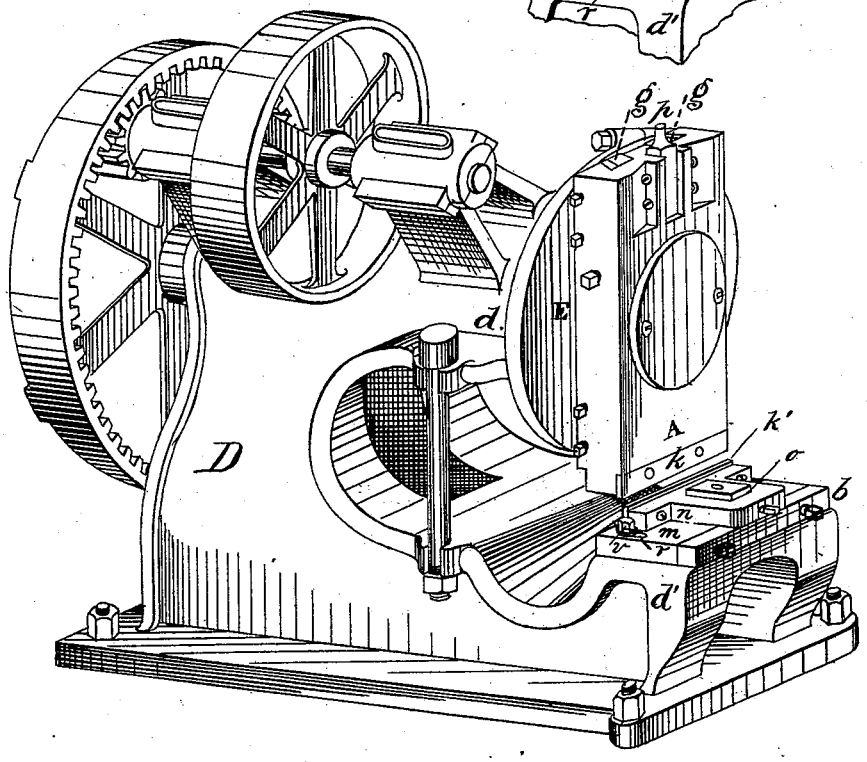


Fig. 1



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2 Sheets—Sheet 2.

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Fig. 3.

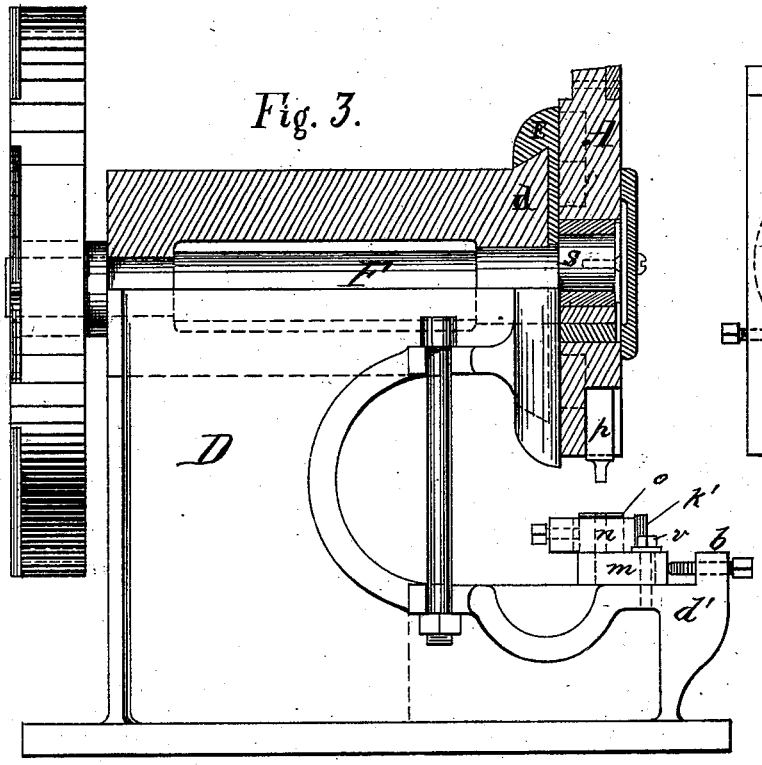


Fig. 4

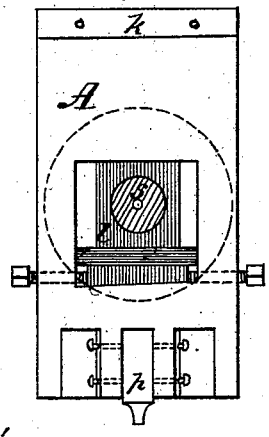


Fig. 5.

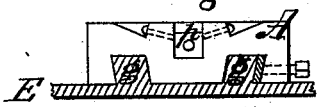


Fig. 7

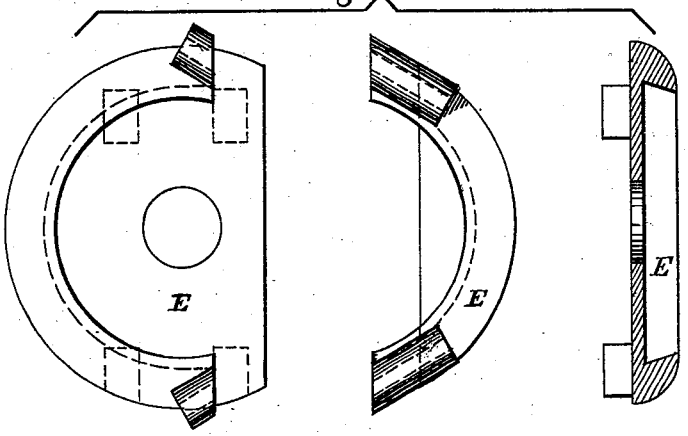
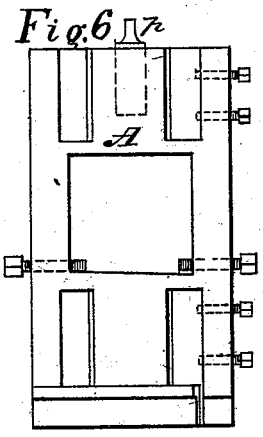


Fig. 6



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UNITED STATES PATENT OFFICE.

JOHN L. LEWIS, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN POWER-PRESSES.

Specification forming part of Letters Patent No. **204,158**, dated May 28, 1878; application filed March 22, 1878.

To all whom it may concern:

Be it known that I, J. L. LEWIS, of the city of Pittsburg, county of Allegheny, State of Pennsylvania, have invented a new and useful Improvement in Power-Presses; and I do hereby declare the following to be a full, clear, and exact description of same, reference being had to the accompanying drawings, which form part of this specification.

Figure 1 is a perspective view of the machine arranged for shearing and punching, the position being now for shearing. Fig. 2 details the position for punching. Fig. 3 is a side elevation, partly sectional, exhibiting the arrangement of drive-shaft, carrier, and plunger. Fig. 4 is a front elevation of the plunger with punch and knife. Fig. 5 is a plan view of plunger, with carrier in section. Fig. 6 is a rear view of plunger, showing grooves for the guide-pieces of carrier. Fig. 7 shows the construction of the carrier in two parts, the third view of the figure being a vertical section of the carrier.

This invention relates to that class of power-presses which are so constructed as to be capable of use either as a punch, stamp, or shear, the various functions being performed from a common drive-shaft or driving mechanism. This has been attempted in various ways to my knowledge, among which are the following: One machine has an oscillating beam or lever, whose end carries a disk provided at different points of its periphery with different tools, the bed or body having a corresponding disk with dies or other tools, and the metal being fed between the upper and lower disk. Thus a punch or stamp secured to the upper disk describes in its stroke a circle, having as its center the fulcrum-pin of the beam or lever, and cannot perform as accurate work as a reciprocating guided tool moving upon a direct line.

Another form of machine has a vertical plunger or moving head and a horizontally-rotating tool or die carrier, the various dies or tools on the horizontally-rotating head being arranged to be brought under and attached to the plunger or moving head, the rotating head carrying both upper and lower tool. This construction is complicated and very expensive when arranged for heavy work, necessitating great weight of metal, and resulting in cumbersomeness.

Another class of machine is that in which the change from one kind of work to another is effected merely by changing the dies or other tools. This machine may be said to consist of body, shaft, and reciprocating plunger, on immovable guides, the lower end being the working end. This form of machine occasions loss of time in changing tools, and is, from its principle, incapable of wide range of duty.

My improvement has in view simplicity, economy, strength, and adaptability to the end required; and consists in fitting a power-press with a guided reciprocating plunger or moving head, swiveled at or about its center in such manner as to swing in a vertical plane, whereby it is capable of reversal or inclination, and of having imparted to it a reciprocating motion while occupying any position within its range of sweep, so that its opposite ends, when fitted with proper dies or tools, shall be working ends, each end carrying its own tool or tools at the same time, and capable of being, at one movement of the operator's arm, brought to work in connection with lower dies or tools corresponding with those in the swiveled head, as the work to be performed may require, or capable of being instantly swung aside without stopping the machine when it is desired to examine or readjust the work.

My invention further consists in the hereinafter-described combination of the drive-shaft, its eccentric, and the plunger, whereby the plunger is reciprocated while in any position within its range of sweep; also, the combination, with the reversible tool-carrying plunger, of a reversible die and shear holder below, as hereinafter described.

Referring to the drawings, my invention more particularly is as follows:

D is the body, of the general design shown, having a circular head, *d*, and bed *d'*; and fitted so as to rotate upon the head *d* in a vertical plane is a carrier or face plate, E, the joint uniting the two being a dovetail or any other well-known form. On the face of the carrier E are guide-pieces or lugs *g*, arranged in parallel lines, preferably dovetailed in cross-section, which are fitted in corresponding

grooves in the rear of a plunger, A, fitted at one end with a knife, *k*, and at the other with a punch, *p*. Passing horizontally through body D and head *d* is the drive-shaft F, which extends through carrier E, but beyond it takes the form of an eccentric or wrist pin, *s*, which is journaled in the box *l*, which travels to and fro across the plunger A in appropriate guide-ways. By this means the revolution of drive-shaft F reciprocates the plunger A, which is guided in a direct line to its work by the guide-pieces *g* on the carrier E, and such reciprocation will continue, without regard to the position of the plunger, whether it be vertical, or swung out to incline, or up to horizontal.

As all the purposes of such a machine could not be fully effected without some provision for the ready changing or shifting of the lower tools to accord with the reversal of the plunger, I provide the following: Cast in one piece are a base-plate, *m*, and die-holder *n*, having the die-holding cavity *o* in its top, and having on its long side a shear-blade, *k'*. At right angles to the blade *k'* are slots *r* in the base-plate *m*, through which, from the bed *d'*, project bolts *t*, so that the whole may be adjusted, and then fastened down by nuts *v*. In this way the whole may be reversed by slacking the nuts *v* and lifting the device into the opposite position, it being held firmly for shearing by the flange *b* on the bed *d'*.

Motion being given the drive-shaft, the plunger reciprocates, and, as above shown, may be used for various purposes without once stopping the shaft or the reciprocation of the plunger; and, while so working, the plunger may at any time be instantly swung out of the way to allow examination or adjustment of the work under operation. This is particularly convenient in some jobs which require both shearing and punching, as, after shearing the edges, the punch can be brought to work in a few seconds, and the job completed.

The mere design of the machine is not of the essence of this invention, nor is the specific construction of the parts—as, for instance, the precise manner of joining the carrier to the circular head, or of the tools to the plunger, or of guiding the plunger in rectilinear motion, since these are all dependent upon the wishes of the manufacturer or user, and may be modified by the skilled workman.

I have shown and described what I consider the most preferable arrangement.

What I claim as my invention is as follows:

1. A power-press having a guided reciprocating plunger, swiveled at or about its center, substantially as described, whereby the plunger can be reversed or swung to any position without interference with its reciprocation.

2. The combination of a reciprocating plunger, swiveled at or about its center, with a face plate or carrier provided with guides upon its face for the movement of the plunger, and capable of revolution or partial revolution, substantially as described, and for the purpose of changing the position of the plunger and of accurately guiding the same.

3. The combination of a guided and swiveled plunger, A, with and operated by the eccentric S of the drive-shaft F, and a revoluble carrier, E, through which the said drive-shaft F passes to the plunger, said carrier rotating on the circular head *d'*, substantially as described, whereby the reciprocation of the plunger is effected while in any position it is capable of taking.

4. In a power-press having a reversible reciprocating plunger, provided with knife and punch, respectively, at its opposite ends, as shown, the combination, specifically, with the plunger and its tools, of a reversible lower tool, consisting of base-plate *m n*, having die-cavity *o* and shear-blade *k'*, arranged as described, and adjustably bolted to the bed *d'*.

JOHN L. LEWIS.

Witnesses:
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DAVID H. LENTZ.