(No Model.)

J. L. LEWIS.

MACHINE FOR PUNCHING AND SHEARING METAL.

No. 262,600. Patented Aug. 15, 1882.

Fig. 1.

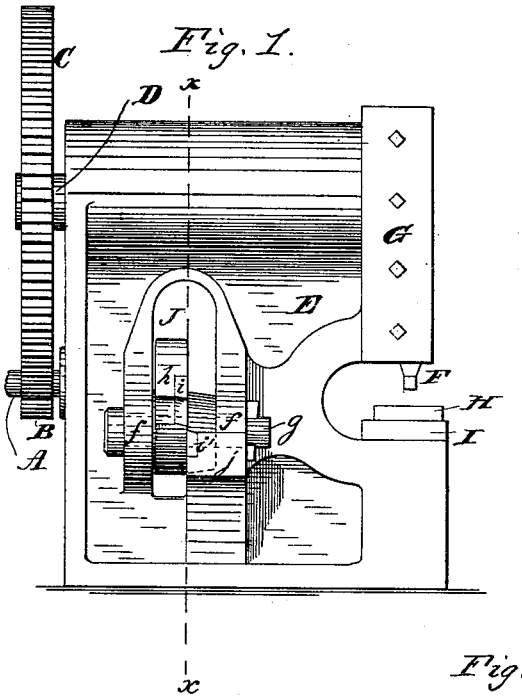


Fig. 2.

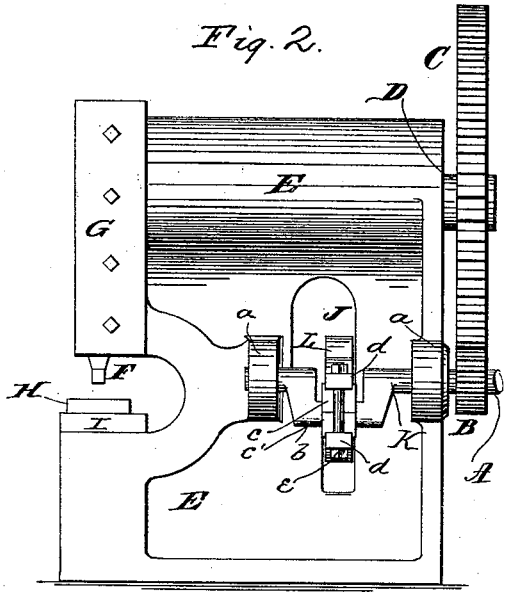
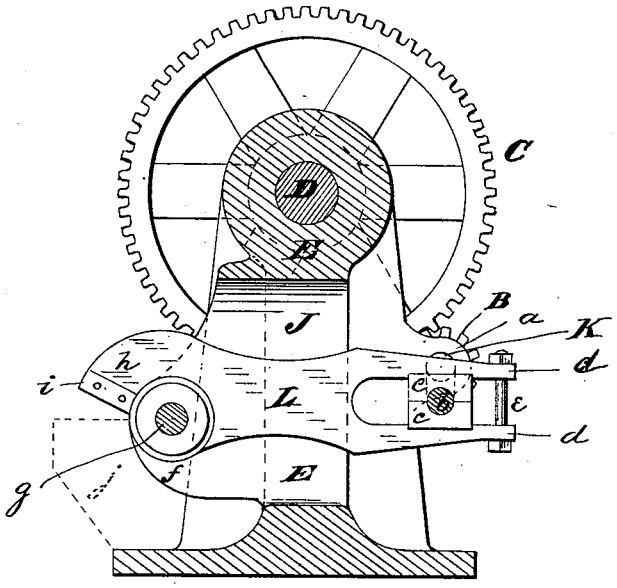


Fig. 3.



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MACHINE FOR PUNCHING AND SHEARING METAL.

SPECIFICATION forming part of Letters Patent No. 262,600, dated August 15, 1882.

Application filed February 21, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN L. LEWIS, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Combined Vertical Punch and Lever-Shear; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, in which—

Figures 1 and 2 are respectively front and rear elevations of my invention. Fig. 3 is a transverse section on line *x x* of Fig. 1.

The object of this invention is to so construct an ordinary vertical punching-machine as to render it capable of doing duty as a "bar-shear" while fulfilling its purpose as a punching-machine.

The invention is especially adapted to that class of punching-machines in which a pinion on the driving-shaft gives motion, through a large spur-wheel, to a horizontal shaft passing through the body of the machine, and by the rotation of an eccentric on the said shaft a punch is slowly reciprocated vertically. Such a machine is illustrated in the drawings, where A is the driving-shaft, rotating a small pinion, B, which in turn imparts a slow rotary motion to the large spur-wheel C, mounted on horizontal shaft D, which passes through the upper part of the body E, and by means of an eccentric on its other end gives a vertically-reciprocating movement to a punch, F, which works in slides in the head G of the machine. Under the head G is the die-block H, resting on the anvil I, which is integral with the body E.

With more or less modification, the foregoing illustrates in a general way the whole class of vertical punching-machines in ordinary use, in which the shafts A D are employed, and to which class this improvement relates.

My invention consists in constructing such a punching-machine with a lever-shear arranged transversely in the body of the punching-machine, so as to move in a plane perpendicular to the axis of the eccentric shafts; further, in locating said lever-shear so that its jaw will be at one side and its tail at the opposite side of the body of the punching-machine; and, finally, in the construction and combination of parts, all substantially as hereinafter described and claimed.

I form the body E with the transverse opening J, and cast or bolt thereon the two bearings *a a*, in which is journaled the continuation or extension K of the driving-shaft A. Extension K is formed with the crank *b*, which works in the brasses *c c*, which slide in the space or slot between the forks *d d* of the shear-lever L, said forks being re-enforced by the tie-bolt *e*, as shown. Lever L passes through opening J to the other side of the body E, where it is journaled in bearings *f f* by the bolt *g*, as shown. It has the upper jaw, *h*, which carries a knife, *i*. The lower knife, *i'*, is attached to the lower jaw, *j*, which projects from the body E a suitable distance for that purpose. While the punch F is reciprocating slowly the crank *b* of shaft A is imparting a rapid but powerful vibratory movement to the lever L, and thus the shear is rapidly operated.

Extension K may be coupled to shaft A by an adjustable coupling or clutch, so that it may be thrown out of use at any time.

It is obvious that a pitman may be used instead of the direct-acting crank *b*.

I am aware that hand punching-machines have been made with a lever-shear at one side; but such are not applicable to power-presses, for the reason that the latter require momentum and are designed for heavy work, of which a hand-press is incapable. To power-presses alone operated by a rotating shaft my present invention relates.

I am also aware that broadly a compound power-press operating a punch and a shear is not new; but in my knowledge all such, as well as compound hand-presses, have the shear propelled directly from the same source, and the punch is operated by the shear-lever, or vice versa, and both are so located that they can be used only one at a time, except for such purposes as require a punch and cut to be given simultaneously. My invention is entirely different from these. I aim to secure the slow reciprocating movement necessary in a vertical punch, and at the same time provide a quick and powerful action for the lever-shear, and I locate the latter and arrange it

so that it can be used simultaneously with the punch without any interference therewith. These objects I effect by arranging the shear-lever transversely, as described, and operating it from the rapidly-rotating main shaft. The results reached can be obtained in none but a transverse arrangement of the lever-shear, so that its movement will be in a plane perpendicular to the axis of the eccentric or punching shaft.

I claim as my invention—

1. In a vertical power punching-machine having a main driving-shaft operating a punching or eccentric shaft and revolving at a higher speed than said eccentric shaft, the combination, with such punching-machine and main driving-shaft, of a lever-shear arranged to vibrate in a plane perpendicular to the axis of said eccentric shaft and operated directly by said driving-shaft, substantially as described, whereby the punch may be slowly operated in the usual manner, and the shear may be rapidly operated independently but simultaneously therewith.

2. In a vertical power punching-machine having a main driving-shaft operating a punching or eccentric shaft and revolving at a higher speed than said eccentric shaft, the combination, with said punching-machine and such main driving-shaft, of a lever-shear arranged transversely in the body of the punching-machine, having its cutting-jaw at one side and its tail at the other side of the body of the punching-machine, and an intermediate fulcrum, substantially as described, whereby an extended lever may be used and sufficient power and momentum developed for heavy work.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JOHN L. LEWIS.

Witnesses:
THOMAS J. PATTERSON,
T. J. MCTIGHE.