

(No Model.)

C. I. LITZENBERGER.

PUNCHING MACHINE.

No. 371,772.

Patented Oct. 18, 1887.

Fig. 1.

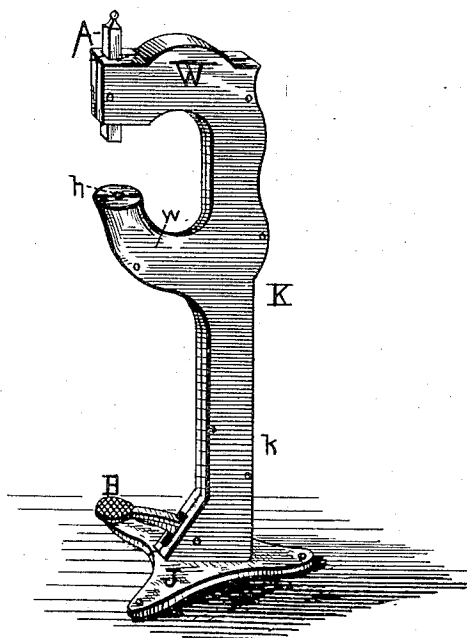
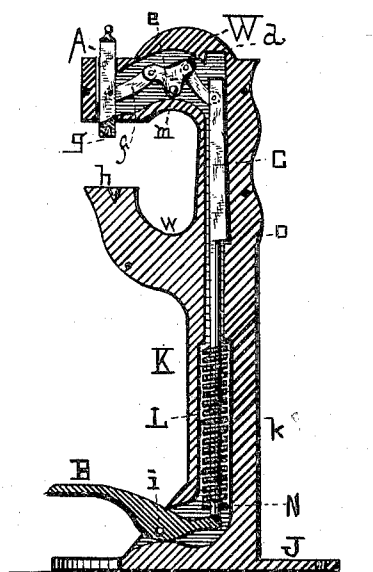


Fig. 2.



Witnesses
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CALVIN ISAAC LITZENBERGER, OF CATASAUQUA, PENNSYLVANIA.

PUNCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 371,772, dated October 18, 1887.

Application filed March 14, 1887. Serial No. 230,919. (No model.)

To all whom it may concern:

Be it known that I, CALVIN ISAAC LITZENBERGER, a citizen of the United States, residing at Catasauqua, in the county of Lehigh and State of Pennsylvania, have invented a new and useful Punching-Machine, of which the following is a specification.

Figure 1 represents a perspective view of the machine complete. Fig. 2 represents a central vertical section through the same, showing the arrangement of the working parts.

My invention relates to improvements in punching-machines, being especially designed for the use of manufacturers; and it consists in the novel construction and arrangement of parts hereinafter specified, and particularly designated in the appended claims.

Referring to the drawings by letters, K designates the supporting frame or stand of the machine. The frame K is supported at bottom upon a triangular or other suitable shaped base, J, so that the frame will be sufficiently braced to stand the strain of usage without falling over.

The frame K consists of a main vertical portion or stem, *k*, which bends over at top, forming a projecting portion, W. Below said part W, and corresponding therewith, is an upstanding arm or projection, *w*, which forms the anvil or impact-plate of the machine, upon which the material being operated upon is supported. The stem *k* is hollow, as also the portion W, as shown.

The frame K is preferably made in two similar parts or halves and bolted together, as shown.

Within the hollow interior of frame K are arranged the working parts of the machine. These consist of a pitman or rod, C, which moves vertically in the part *k* of frame K, being suitably guided therein. The lower end of rod C is operated by means of treadle B, which is pivoted on a bolt, *i*, in a suitable opening in the lower end of frame K, and has its inner end lying beneath and supporting the rod C, while its outer end is extended and is adapted to be depressed by the foot of the operator, thereby raising rod C, as is evident.

To insure the quick return of rod C to its normal position when the treadle B is released, I employ the coil-spring L, which is placed

around the lower end of rod C, being held thereon by a pin, N, and its upper end bears against a shoulder formed on the interior of frame K, as shown. In the upper portion, W, of frame K, and about centrally of the length thereof, is pivoted on a pin, *m*, in its hollow interior, and near its bottom, the lowest angle of a bell-crank lever, *e*, the upper end of the inner arm of which is connected by a link, *d*, with the upper end of rod C, so that said lever *e* will be oscillated by the movements of rod C. The upper end of the outer arm of lever *e* is connected by a link, *f*, with a vertically-moving plunger-block, A, which reciprocates in suitable guides formed in the upper and lower sides of portion W of the frame. The plunger A is of greater length than the width of portion W, so that it can be reciprocated vertically without being displaced from its guides. The points of connection of links *f* and *d* with plunger A and rod C, respectively, are about on a line with the pivot *m* of lever *e*.

The operation of these devices is as follows: When the rod C is down, the parts assume about the position shown in Fig. 2 and the plunger A is raised. Upon depressing treadle B rod C is raised, causing the outward oscillation of lever *e*, and consequently the depression of plunger A through link *f*, as is obvious. Upon the release of treadle B spring L causes the retraction of rod C, and consequently lever *e*, and the plunger A is drawn up. It is obvious that by the arrangement of lever *e*, links *f* and *d*, and rod C, I can obtain a powerful leverage upon plunger A, sufficient to enable the operator to perform very heavy work with the machine with little labor.

The plunger A is provided in its lower end, below portion W of frame K, with a tapering socket-opening, *g*, as shown, for the purpose of receiving the different tools used in punching and cutting, and the anvil-arm *w* is provided in its upper face, below plunger A, with a similar socket-opening, *h*, by which the different plates and tools for punching and cutting can be secured thereon for operating in connection with the tool on plunger A.

Having described my invention, what I claim is—

1. In a punching-machine, the combination

of the hollow supporting-frame K with the vertically-reciprocating rod C, its actuating-treadle, the plunger A, and the bell-crank lever *e*, and links *f d*, connecting said plunger 5 with rod C, all constructed and arranged substantially as and for the purpose described.

2. The combination, with the hollow main frame, treadle B, mounted thereon, and the anvil-block *w*, forming a portion thereof, of the 10 vertical rod C, reciprocated by treadle B, the bell-crank lever *e*, connected thereto by a link, *d*, and operated thereby, and the plunger A, provided with tool-socket *g*, connected to the other arm of lever *e* by a link, *f*, and operated 15 thereby, all substantially as and for the purpose described.

3. The combination of the hollow main

frame K, having upper horizontal portion, W, anvil portion *w* below the same, and the supporting-base J and the treadle B, mounted on 20 said frame, with the vertically-reciprocating rod C and its controlling-spring L, the vertically-moving plunger A, having bearings in portion W of the main frame, and the bell-crank lever *e* and links *f d*, connecting said 25 plunger with the rod C, whereby the movement of the rod C actuates the plunger, all constructed and arranged substantially as and in the manner and for the purpose described.

CALVIN ISAAC LITZENBERGER.

Witnesses:

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