(Model.)

2 Sheets—Sheet 1.

J. LONG.

PUNCHING MACHINE.

No. 247,465. Patented Sept. 20, 1881.

Fig. 1.

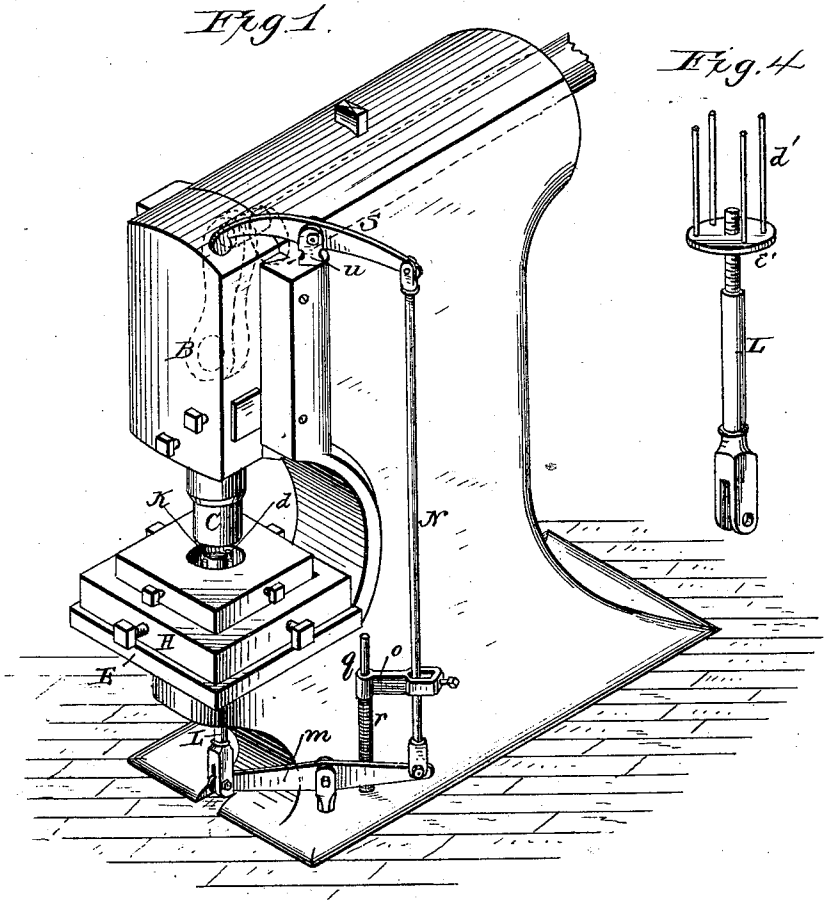

Fig. 4.

Witnesses,
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(Model.)

2 Sheets—Sheet 2.

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PUNCHING MACHINE.

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Fig. 3.

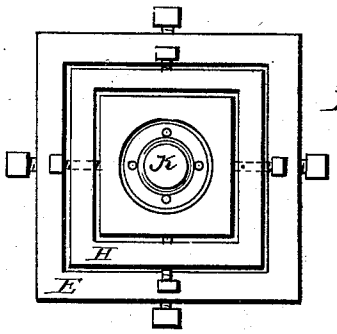
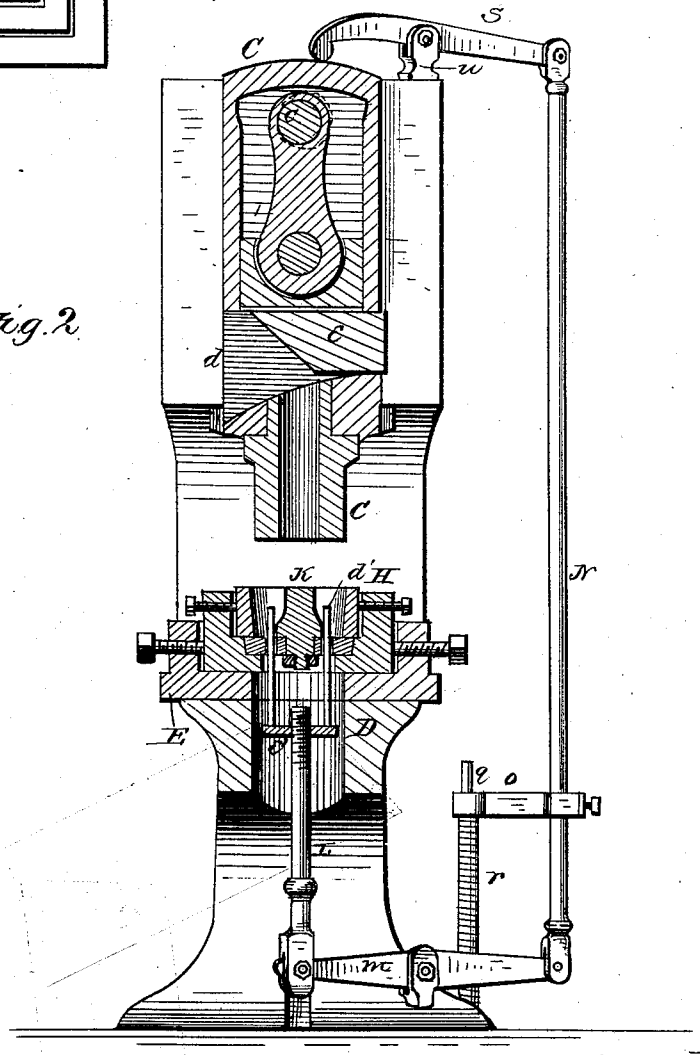


Fig. 2.



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UNITED STATES PATENT OFFICE.

JAMES LONG, OF PACKERTON, PENNSYLVANIA.

PUNCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 247,465, dated September 20, 1881.

Application filed May 12, 1881. (Model.)

To all whom it may concern:

Be it known that I, JAMES LONG, a citizen of the United States of America, residing at Packerton, in the county of Carbon and State of Pennsylvania, have invented certain new and useful Improvements in Punching-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a perspective view of the improved punch. Fig. 2 is a vertical sectional view, showing the operative parts. Fig. 3 is a plan view of the die-block. Fig. 4 is a perspective view of the means for discharging the washer from the die-block.

This invention, which relates to the class of punching-machines, is designed as an improvement more especially upon the punching-machine shown and described in Letters Patent No. 115,156, dated May 23, 1871.

My improvement will first be described, and then pointed out in the claims.

The accompanying drawings show a punching-press similar to that seen in Letters Patent granted to me and E. R. Brown, dated May 23, 1871, No. 115,156.

The letter B represents a vertical reciprocating cross-head, carrying at its lower end the tubular punch C, and which derives its motion from eccentric-pin *c*, on the front end of the driving-shaft, working in a slot in the cross-head. The lower end of this cross-head is formed with a transverse recess or chamber, *d*, with which the upper end of the tubular punch C communicates, for the purpose hereinafter stated. At one end of this transverse recess is secured, by means of a set-screw, a block, *e*, having its inner face or end beveled or inclined and adjusted over the tubular punch, so as to divert outwardly the burrs or wads that are fed up from the tubular punch and discharge them at one side of the machine. The object and advantages of having this block adjustable are that the inclined face may be set in relation to the opening or passage of the interchangeable punch, so as to allow the ejection of wads of different thickness. For example, wads of, say, one-eighth of an inch thickness may be ejected when the base of the incline registers with the opening through the punch. Then, to eject wads of one-fourth of an inch thickness, the block should be drawn back far enough to allow the wad to pass above the opposite line of the opening.

The letter D represents the die-bed of the frame, having arranged upon its upper surface a rectangular frame, E, provided with adjusting or set screws. Arranged within this frame is the die-block H, with adjusting or set screws above the plane of the outer frame, E, for setting or adjusting the die. The bottom of this die-block H is closed, but is formed with a central recess or cavity and four openings, equidistant from the center, for the passage of four prongs or rods, hereinafter described.

The letter K represents a burr or wad punch constructed with an enlarged base, and having in the periphery at the base four notches or recesses, to coincide with the four openings in the bottom of the die-block, as indicated in Fig. 2 of the drawings. This wad-punch, which is centrally located within the die-block, is secured in position by means of the screw-threaded shank and a nut.

The means for discharging the finished washer from the die is arranged below the upper surface of the die-bed, and consists of four prongs or rods, *d'*, attached firmly to a collar or button, *e'*, having a central opening screw-threaded to engage with the screw-threads on the upper end of the rod L, attached to a lever at the base of the press. These four prongs or rods, which can be adjusted on the rod L by means of collar *e'* to any desired height, are passed vertically through the four openings in the die-block, so as to surround the central washer-punch located within the said die-block. These prongs are reciprocated vertically within the die-block, and upon their upward movement discharge the punched washer from the annular recess, and carry it above the upper face of the die, from whence it may be brushed off by hand or otherwise. This four-prong discharger descends in concert with the punch and rises as the latter ascends, so as to fulfill its proper office or function as a clearer.

The mechanism employed, and that I prefer

to employ for giving to the four-prong discharger its necessary movement, consists of the following devices, to wit: The lever S, having its fulcrum at *u*, and arranged to bear or rest upon the upper end of the reciprocating cross-head; the vertical rod N, connected to the outer end of the lever S and to the outer end of the lever *m*, which latter is connected at its inner end to the vertical rod L, carrying the four-prong discharger; also, the arm *o*, attached to the vertical rod N, working on and over a guide-rod, *q*, so as to bear on and be borne up by a coiled spring, *r*, arranged around the rod *q*, as shown in Fig. 1 of the drawings.

The mode of fitting, changing, and adjusting the dies is substantially the same as described in the Letters Patent hereinbefore referred to.

By making the punch C interchangeable by means of the set-screws and constructing the die-block H with a detachable wad-punch I am enabled to remove wads of different diameters from the washers, so as to adapt the washers to different-sized bolts.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a punching-machine, a cross-head, B, carrying at its lower end the tubular punch C, and having formed therein, immediately above the upper end of the tubular punch, a transverse chamber, *d*, and an adjustable block *e*, having its inner face or end beveled or inclined for the purpose of casting or discharging the wads or burrs of the washers that are fed upwardly through the tubular punch outwardly at one side of the machine, substantially as described.

2. In a punching-machine, the combination of the vertical forked rod L, screw-threaded at its upper end, the adjustable collar *e'*, and the four prongs or rods *d'*, arranged equally distant from the center, as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES LONG.

Witnesses:
JNO. S. LENTZ,
GEO. W. NUSBAUM.