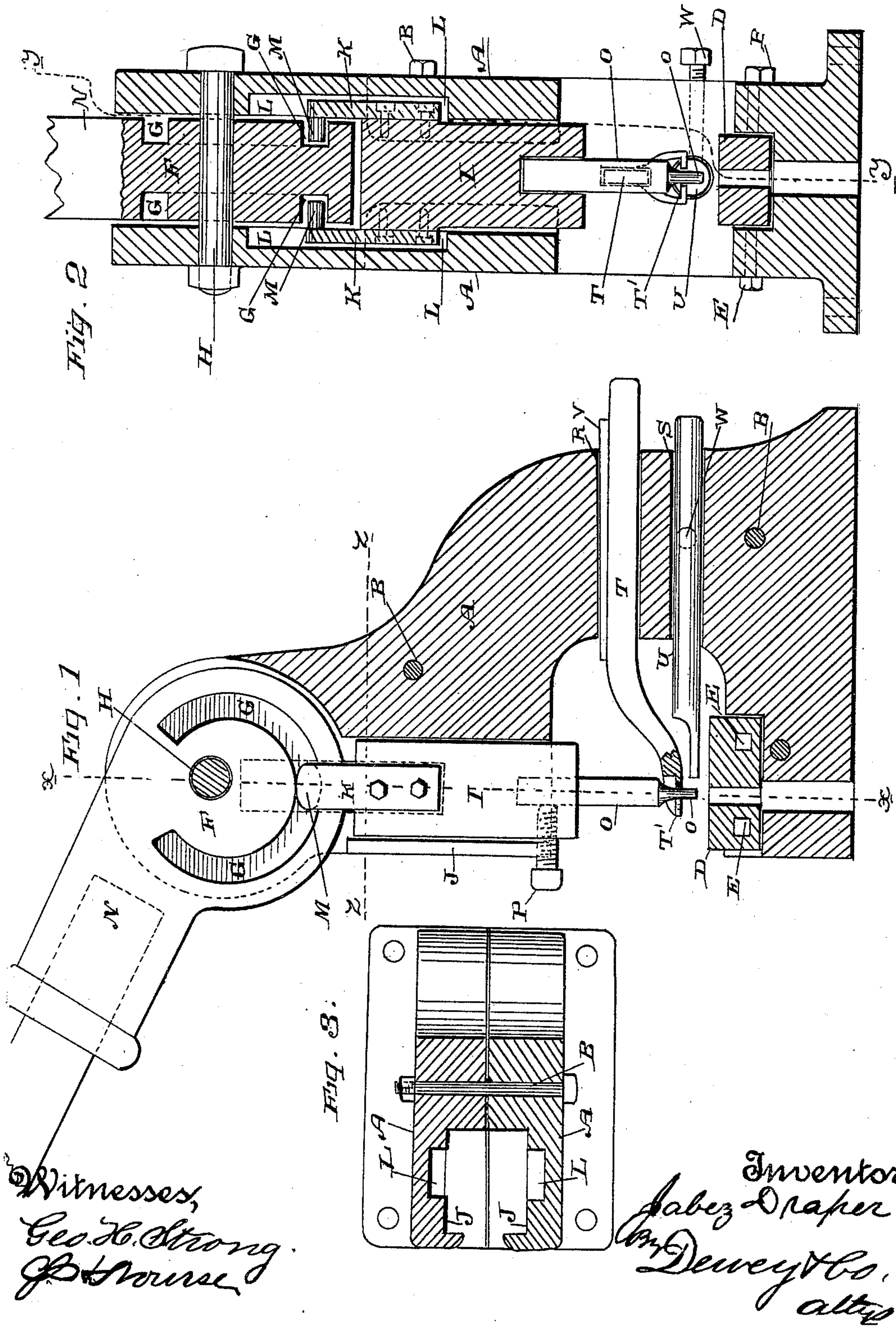


(No Model.)

J. DRAPER.
PUNCH.

No. 411,492.

Patented Sept. 24, 1889.



UNITED STATES PATENT OFFICE.

JABEZ DRAPER, OF STOCKTON, CALIFORNIA.

PUNCH.

SPECIFICATION forming part of Letters Patent No. 411,492, dated September 24, 1889.

Application filed February 1, 1889. Serial No. 298,381. (No model.)

To all whom it may concern:

Be it known that I, JABEZ DRAPER, of Stockton, San Joaquin county, State of California, have invented an Improvement in Punches; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in metal-punches.

It consists in certain details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a vertical section taken through dotted line $y y$ and at right angles with the fulcrum-pin of the operating-lever. Fig. 2 is a vertical section taken through $x x$ of Fig. 1. Fig. 3 is a horizontal section on the dotted line $z z$.

My invention is shown at present as especially applicable to carriage and other small work and for punching plates not exceeding one-fourth of an inch in thickness, but may be increased in size for larger work, if desired.

The standard or frame of the press is made in two halves A A, which are of similar shape and placed together so as to meet on a central plane, and these parts A A are secured together by bolts B, the bolts passing through the sides of the two sections at three points, as indicated, and when the nuts are turned up on them they will be firmly held together. In casting these two halves I form a depression or socket in each part to receive the die D, which is secured in place by set-screws E and nuts to prevent moving. The depression in which the die is secured is made of such length that the die can be reversed in it, the die having two holes of different sizes made through it, so that these two holes in the die will correspond with the different sizes of punches which are used by simply reversing the die without other adjustment.

In the upper part of the head of the frame is fitted a device by which the punch is reciprocated. It consists of a circular head F, having grooves or channels G made in each side and extending part way around, as shown in the drawings, and concentric with the outer periphery of the head F. The hole H for the fulcrum-bolt is made through the central portion of the head, inside of the

grooves G and eccentric to these grooves and to the periphery of the head.

I is a cross-head or slide fitted into guides or channels J, which are formed in the two halves of the frame A, so that this cross-head will move up or down vertically and accurately in the guides. The upper end of this cross-head moves in contact with the chilled or hardened surface of the eccentric and is forced down by it.

K K are two side bars secured to the sides of the cross-head and fitting into the corresponding slots or channels L, which are made deeper than the channels J, as shown in the section, Fig. 2, and they serve as guides within which the arms slide. At the upper ends of these arms are the inwardly-projecting studs M, which are preferably made slightly oval in shape and of such vertical diameter as to just fit into the grooves or channels G upon each side of the head F. An extension N projects from the head F, having a socket made in its outer end for the reception of the handle, by which the head is caused to rotate upon its fulcrum-pin, and by the eccentricity of the head F and the circular channels G the cross-head I is caused to rise and fall, traveling in the guides, as above described. The channels G are segmental or have stops fixed in them, which strike against the studs when the handle is thrown back just beyond a perpendicular, and thus hold it in a convenient position to be grasped and brought forward. The lower end of the cross-head I is perforated, so as to receive the shank O of the punch, which is secured in place by a set-screw, as shown at P. The smaller end of the punch is of such diameter that it passes into the corresponding hole made in the die when forced downward, the plate to be punched being laid upon the die before the punch is forced down.

Through the rear portion of the frame A and centrally between the parts thereof, I make channels, as shown at R and S of Fig. 1, and in these channels, respectively, are placed the shank T of the stripper or "pull-off," as it is termed, and the shank U of the gage by which the distance of the holes from the edge of the plate is determined. The stripper extends centrally through the channel R, and its front end is bent downward,

as shown at T', and formed so as to partially surround the lower end of the punch, and after the hole has been punched in the plate and the punch is withdrawn this device acts
5 to pull the plate off from the punch.

In order to prevent the breakage of the point of the punch when withdrawing it from the plate, which is ordinarily a frequent occurrence, I have made this stripper T adjustable up or down in the channel R, which is of greater depth than the vertical thickness of the shank T, so that whatever thickness of plate may be operated upon the stripper may be moved up or down in a parallel plane and
15 not moved up or down by turning about a fulcrum-pin, which would change the angle of the lower surface by which the plate is removed from the punch. This adjustment is made by means of strips of steel or wedges, as shown at V, which are introduced into the slot R either above or below the shank T, as the thickness of the plate requires, and by thus moving the shank T up or down simultaneously throughout its whole length I preserve the lower surface of the part T' perfectly parallel with the die, so that when the plate is lifted up against it its pressure is exerted evenly upon the plate, and the punch is withdrawn in a straight line without any
25 tendency to twist so as to break itself off. No fulcrum-pin or bolt is needed to hold the shank T in place.

The gage U, by which the distance of the hole from the edge of the plate is determined, is fitted into the hole S, which is made through the meeting faces of the two sides A, half of it lying in each side, so that when the parts are put together a circular hole is formed. The cylindrical shank U passes
40 through this hole and fits therein, and is held in place by the set-screw W, screwing into one of the sides A opposite the shank U. The front end of the shank U is cut away and extends out, so that the part U' is very much thinner than the diameter of the main portion of the shank U. This is to allow it to be set forward as close as may be necessary to the punch O when the holes are to be punched very near to the edge of
50 the plate, and also through comparatively thin plates. It thus allows the gage to extend beneath the downwardly-curved portion of the stripper or pull-off T', while allowing the main portion of the shank U to be of considerable thickness. When it is necessary to punch the holes farther from the edge of the plate, the thin portion U' would not be as accurate as a gage for the plates, which might be tilted by carelessness
60 so as to slip over the top of the portion U' if it still remained in the position shown in Fig. 1. I therefore loosen the screw W and turn the shank U one-fourth of a revolution in its guiding-slot S, which presents the gage portion U' in a vertical position, or with the edges up or down, which gives it a depth equal to or greater, if desired, than the full

diameter of the shank U. This insures the gage stopping the edge of the plate and prevents the latter from slipping over it, as
70 above described. Both gage and stripper being in the central portion behind the die present no obstruction to the introduction of the plate, and they are easily adjusted, as above described.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The two-part standard or frame having the vertical guiding channels or depressions J and the deeper channels or depressions L formed in the front upper portion and the chamber in which the head of the operating-eccentric is fulcrumed, in combination with the vertically-sliding cross-head fitted in the
80 channels J and carrying the punch in its lower end, and the side bars K, fitted in the channels L and connected with the eccentric, substantially as described.

2. The circular head having the eccentric channels G made upon opposite sides, and the fulcrum bolt-hole H, made eccentric to the channels and the periphery of the head, in combination with the cross-head I, fitted in channels in the main frame, the arms K, engaging other channels in said frame, and the inwardly-projecting oval studs M at the upper ends of said arms, which fit into the channels in the head, whereby the cross-head is caused to reciprocate by the movement of the head, substantially as described.

3. The two-part frame A, with the punch-carrying cross-head and operating-eccentric, as described, in combination with the stripper or pull-off, the front end of which clasps the punch, and the shank of which is fitted to pass through the slot or channel in the frame, and the wedges or keys whereby the stripper is adjusted up or down, substantially as described.

4. The two-part frame, the vertically-moving punch-carrying cross-head, the eccentric head whereby it is actuated, and the vertical adjustable stripper or pull-off fitted in channels in the meeting faces of the two-part frame, in combination with the gage-shank U, sliding horizontally in the corresponding horizontal central hole made in the adjoining faces of the two-part frame and the locking-nut W, substantially as described.

5. The gage U, having the flattened portion U', the cylindrical shank extending through a corresponding hole in the frame, and a locking-nut whereby the front of the gage may be set horizontally or vertically and its distance from the punch regulated, substantially as herein described.

In witness whereof I have hereunto set my hand.

JABEZ DRAPER.

Witnesses:

S. H. NOURSE,
H. C. LEE.