No. 636,916. Patented Nov. 14, 1899.

O. MERGENTHALER.

STAMPING PRESS.

(Application filed May 12, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

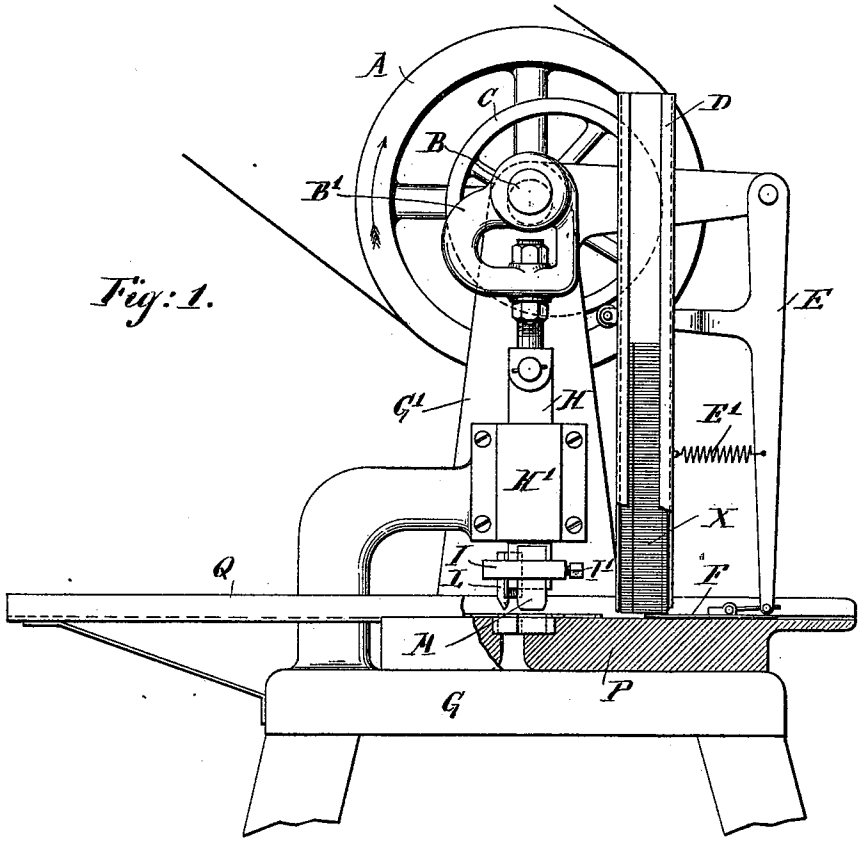


Fig. 2.

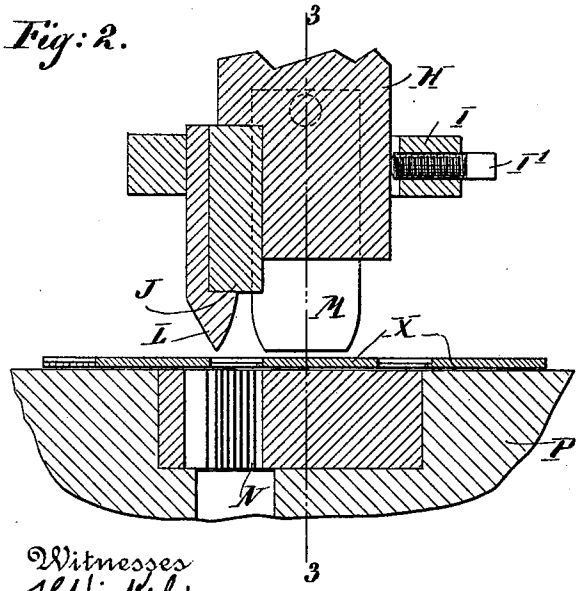
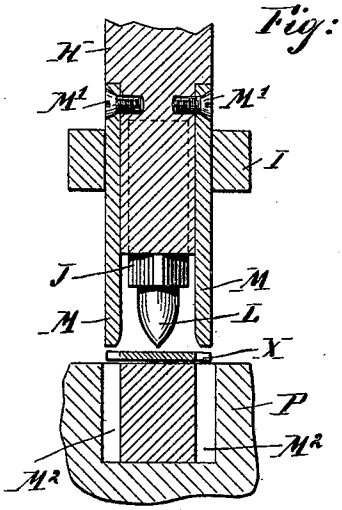


Fig. 3.



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Fig. 4.

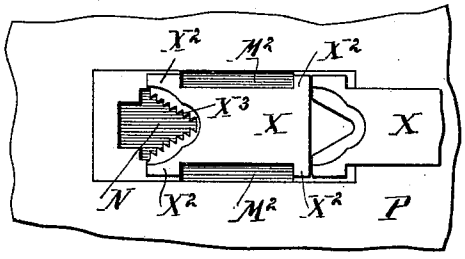


Fig. 5.

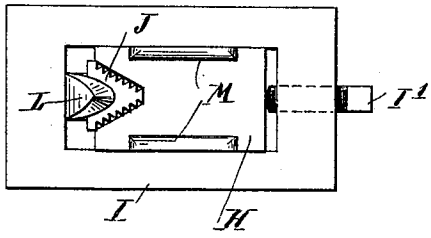


Fig. 6.

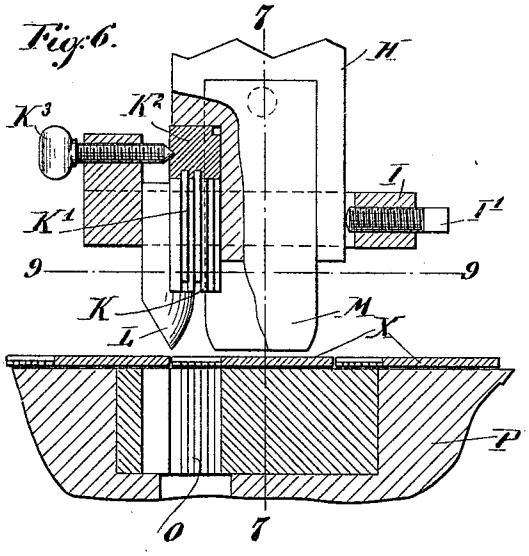


Fig. 7.

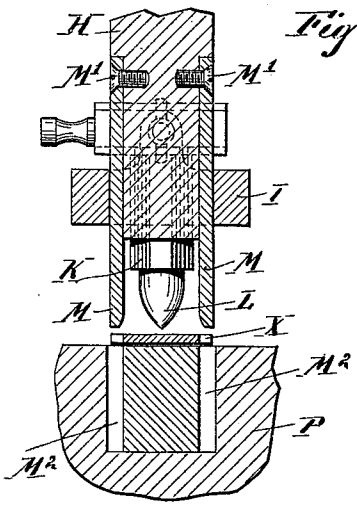


Fig. 8.

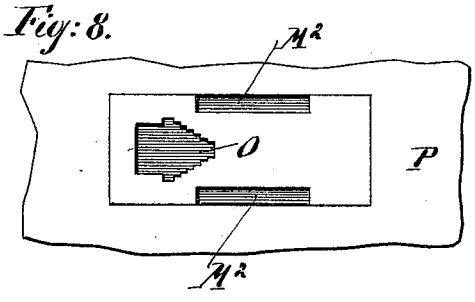


Fig. 9.

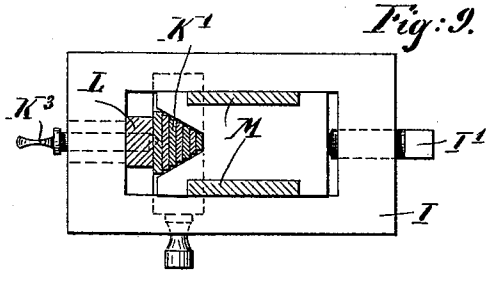
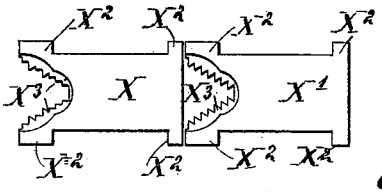


Fig. 10.



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UNITED STATES PATENT OFFICE.

OTTMAR MERGENTHALER, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE OTT. MERGENTHALER COMPANY, OF SAME PLACE.

STAMPING-PRESS.

SPECIFICATION forming part of Letters Patent No. 636,916, dated November 14, 1899.

Application filed May 12, 1898. Serial No. 680,502. (No model.)

To all whom it may concern:

Be it known that I, OTTMAR MERGENTHALER, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Stamping-Presses, of which the following is a specification.

My invention relates to stamping-presses, and more particularly to that class of stamping-presses in which blanks to be operated upon are stored in a magazine, from which they are fed one by one to reciprocating dies, which operate upon the blanks successively.

My invention is illustrated, for the purposes of this application, as employed in connection with the manufacture of matrices for linotype-machines—such, for example, as those shown and described in Letters Patent of the United States Nos. 436,531 and 436,532, granted to me on the 16th day of September, 1890. The invention is, however, capable of more general application, and I desire to protect it for all uses and purposes to which it may be applicable.

My invention comprises a female die and a reciprocating plunger coöperating therewith, and it relates chiefly to the construction of the plunger, which is provided with guides for accurately centering the work and a recess or opening in which the male die is accurately located with respect to the guides. By having the die and guides both attached in fixed relation to the plunger the impression is produced uniformly in the same position upon the blanks. The die is removable from the plunger and can be readily repaired or renewed. The guides are also removable. As the recesses or sockets for the guides and die are formed in the plunger and not subject to wear, it follows that the guides and die when in place will always bear the same relation to each other, and the accurate punching of the blanks will thus be secured.

The invention further relates to a novel punch, which is built up of several sections, and to other details of construction and arrangement.

My invention consists in the construction and combination of the parts hereinafter to be described in the specification and finally pointed out in the claims.

Referring to the drawings, Figure 1 is a view, partly in section, showing the general organization of a stamping-press to which my invention may be applied. Fig. 2 is a longitudinal sectional view of a portion of the plunger, showing the centering-blades, the finger, and the die and also showing the female die. Fig. 3 is a similar transverse vertical section. Fig. 4 is a detail view showing the female die with a blank in position thereon. Fig. 5 is a bottom view of the plunger, showing the centering-blades, the die, and the finger. Fig. 6 is a detail view, partly broken away, similar to Fig. 2, showing the employment of a built-up die instead of a solid die. Fig. 7 is a sectional detail view, similar to Fig. 3, showing the employment of the built-up die and taken substantially on the line 7 7 in Fig. 6. Fig. 8 is a detail view of the female die, similar to Fig. 4, as employed in connection with the built-up die. Fig. 9 is a sectional view looking upward, taken substantially on the line 9 9 in Fig. 6. Fig. 10 is a view of the blanks to be operated upon.

The general organization of the press is or may be of any ordinary construction.

For the purpose of illustrating the application of my invention I have shown a form of press as indicated generally in Fig. 1 of the drawings. The press is provided with a frame G, which may be of any desired construction, provided only that it has sufficient strength and rigidity to sustain the operating parts. Mounted in the bracket G′ on the frame is the main shaft B, to which motion is imparted in the customary manner by means of the band-wheel A, mounted thereon. Eccentrically journaled on the shaft B, as shown in dotted lines, is the collar or bracket B′, which is pivoted to the press-plunger H, suitably guided in the guide H′ on the bracket G′. The plunger H has secured to it the die J, as well as other parts hereinafter to be described, and it will be seen that the rotation of the shaft B effects the vertical reciprocation of the plunger H, together with the attached parts, in the manner well understood in the

art. The blanks X to be acted upon or stamped may be stored in series in the magazine D, from which they are severally fed to the stamping mechanism by means of the reciprocating slide F, which rests and is guided within the channel Q and which enters the magazine D from its rear side, effecting the feed of the blanks X one by one from the said magazine along the channel Q and under the stamping mechanism. The reciprocating action of the feed-slide F may be secured by means of the lever E, pivoted to the bracket G'. The spring E', attached to the lever E, effects the inward movement of the feed-slide F, this action of the spring being, however, resisted and controlled by the cam C, which is fast upon the main shaft B and acts upon a roller on the lever E, the said cam being so shaped and timed as to permit the consecutive delivery of the blanks X at the proper time to bring them one by one under the stamping mechanism. The parts so far described may, however, be of any suitable construction and form no part of my present invention.

The male die J is attached to the reciprocating plunger H, and I have shown it in Figs. 2, 3, and 5 as set into a recess in the plunger H. By means of the collar I, which surrounds the plunger H and die J, the parts are held against lateral displacement by the set-screw I', which projects through the collar I and may be turned up to abut against the plunger H. Also attached to the plunger H by means of the collar I is the finger L, which is beveled at its lower extremity and projects to some extent below the die J for the purpose of acting upon the blank last operated upon and of positively and certainly removing it from under the die J in its succeeding downward movement.

The advantage in the employment of the finger L will be readily apparent from an inspection of Fig. 2, wherein it will be seen that the blanks X rest in the channel Q, abutting each against the next in the series, and consequently in close proximity. Accordingly I have provided the finger L for the purpose of removing the blank a slight distance from the path of the die in the descent of the plunger H. In Fig. 10 I have shown the blanks X which are to be operated upon in the press, and it will be seen that the formation of the finger L permits its descent between the teeth X^3 of the blank X then in position to be operated upon without disturbing this position, at the same time effecting a slight forward movement of the blank already operated upon.

The form of die shown in Figs. 2, 3, and 5 is designed to punch out the teeth X^3 of the blank X, and in order to secure great accuracy and nicety in this operation I have further provided the plunger H with centering-blades M M, which are attached to the plunger H in any suitable manner—as, for instance, by the screws M' M'—and project for some distance below the die J. It will be noticed that the blanks X are formed with the shoulders X^2, between which it is intended that the centering-blades M shall pass. The lower corners of the centering-blades M M are slightly rounded to permit of the free entrance of the centering-blades between the shoulders X^2, and it will be apparent that in the descent of the plunger H the blades M M will enter between these shoulders and center and firmly hold the blank X in exact position to be operated upon by the die J. It will be understood, of course, that the platen P is formed with a corresponding female die N, so as to permit of the exact entrance of the male die J and the finger L, and is also provided with the recesses M^2 for the reception of the centering-blades M M. This is clearly shown in Fig. 4, wherein I have shown a blank X with its teeth X^3 punched out by the action of the press and a second blank X in readiness to be moved into proper position for a similar operation.

As before stated, the press is adapted to be employed in connection with the solid die J and also with a somewhat similar die which is built up from separate blades. In other words, I employ the solid die J for punching out all of the teeth X^3, as clearly shown in Fig. 4; but it is necessary in the manufacture of matrices to further remove certain of these teeth in order to secure the necessary distributing-combinations. This is clearly shown in Fig. 10, in which the blank X is shown as provided with irregular teeth X^3, as the combination requires, and the second blank X' is shown as provided with all the teeth X^3 intact—that is to say, before any of the individual teeth have been removed therefrom. It is obvious that a separate and distinct punch must be employed for each combination to remove certain of the teeth X^3, and to avoid the expense and inconvenience of providing a considerable number of solid dies for this purpose I employ the form of die K, which is best shown in Figs. 6, 7, and 9. This die consists of the block K^2, provided with the separate blades K', which are set firmly and rigidly therein. It will be obvious that any form and combination of blades K' may be set into the block K^2, and thereby the character of the combination may be varied at will. The die K is set into a recess in the plunger H in the same manner as the die J and is held against lateral displacement therein by the collar I and the set-screw I'. A set-screw K^3, passing through the collar I and impinging against the block K^2, may also be employed to hold the parts firmly in position. This construction and arrangement is clearly shown in Figs. 6, 7, and 9, the arrangement of the finger L and centering-blades M M being exactly similar to that employed in connection with the solid die J. The platen P is also similarly

provided with the recesses M^2 for the reception of the centering-blades M and with the female die O for the reception of the finger L and die K, as best shown in Fig. 8, the sole difference being the formation of the female die O in a slightly different form from the female die N. (Shown in Fig. 4.)

Having now described the construction and arrangement of the various parts of my invention, the operation of the press will be understood to proceed in the following manner: The blanks X are stored in series in the magazine D, and the plunger H is supplied with either the solid die J or the built-up die K, according to the character of the work to be performed. Motion is then imparted to the main shaft B, effecting the reciprocation of the plunger H and the stamping out of the blanks X in the manner previously described. The operation of the cam C and the spring E′ effects the reciprocation of the slide F, thereby removing one blank X at a time from the magazine D and advancing them in series through the guide Q by reason of their impingement one against another. When the blank X is brought into approximately accurate position under the plunger H, the centering-blades M enter between the shoulders X^2 and center and firmly hold the blank in position to be properly acted upon by the die J or K in the further descent of the plunger H. After the blank has been acted upon by the die the plunger ascends, carrying the centering-blades M M and the die out of engagement with the blank, whereupon the reciprocating slide F again moves inward, carrying another blank X from the magazine D along the guideway Q, and thereby moving the entire series and removing the blank X already operated upon from over the female die N or O and substituting for it a fresh die in position to be operated upon. At the next descent of the plunger H the finger L, entering the female die, engages by its beveled edge the blank X already operated upon and moves it forward along the guide Q a sufficient distance to insure its removal from under the die. The operation of the parts then continues in the manner described.

It will be seen that by my construction the guides for centering the work and the die will always maintain the same relation to each other and to the plunger and that either the solid or the composite die may be removed for sharpening or renewal and replaced in exactly the same position with respect to the guides. This is very important in connection with work which requires mathematical accuracy, such as that illustrated in the drawings. The tapering recess in the plunger in which the die rests serves to accurately center and locate the sections of the composite die with respect to each other as well as to accurately locate the die as a whole with respect to the guides.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In a stamping-press, the combination with a reciprocating die, of a finger attached thereto and adapted to move the blank just operated upon away from the die, substantially as described.

2. In a stamping-press, the combination with a reciprocating die and devices for intermittently feeding blanks to said die, of a finger movable with the die and having an inclined face adapted to move the blank last operated upon away from the die as the latter descends, substantially as described.

3. In a stamping-press, the combination with the reciprocating plunger and the die attached thereto, of centering plates or pieces attached to the plunger, the operative ends of said centering-pieces being separated and adapted to engage with opposite sides of the blank and center the same for the die, substantially as described.

4. In a stamping-press, the combination with the reciprocating plunger and the die attached thereto, of a pair of centering-plates attached to opposite sides of said plunger, the lower ends of said plates extending below said die and being adapted to engage with opposite sides of the blank and center the same for the die, substantially as described.

5. In a stamping-press, the combination with the reciprocating plunger and the die attached thereto, of centering-plates arranged to engage with opposite sides of a blank and center the same for the die, and a finger carried by said plunger and adapted to move the preceding blank away from the die as the die descends.

6. In a stamping-press, the combination with the reciprocating plunger having a die and a pair of centering-plates attached thereto, of a platen having a corresponding female die, and recesses for said centering-plates, substantially as described.

7. In a stamping-press, the combination with the reciprocating plunger, of a pair of guides connected to said plunger and adapted to engage a blank on opposite sides to center the same, a die comprising a series of separable parts, and means for clamping the parts of said die together and to the plunger, substantially as described and for the purpose set forth.

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

OTT. MERGENTHALER.

Witnesses:

WILLIAM H. BERRY,

MURRAY HANSON.