2 Sheets--Sheet 1.

F. DEMING.

Feeding Device for Punching Machine.

No. 166,078. Patented July 27, 1875.

Fig. 1

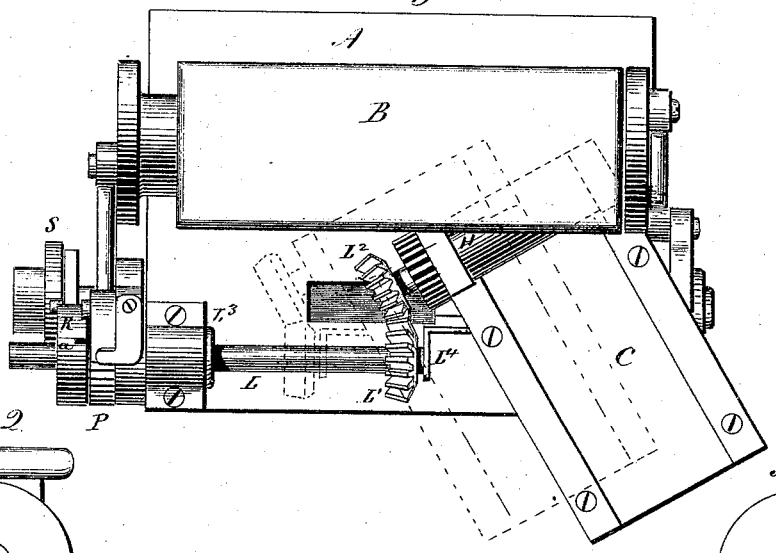


Fig. 2

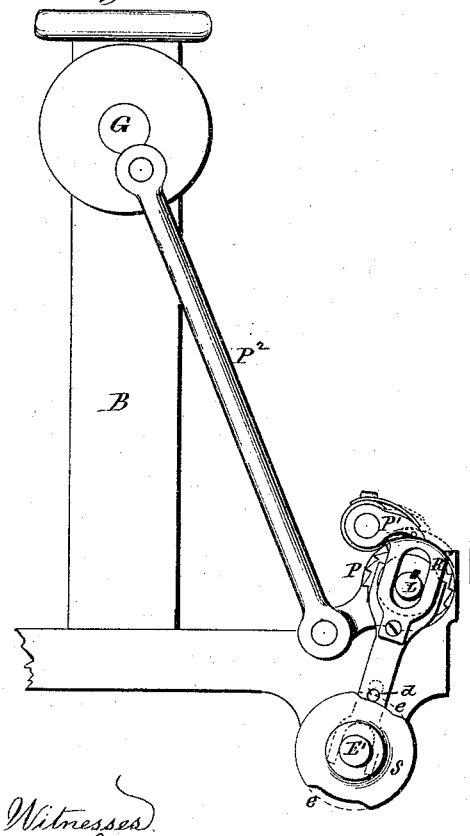
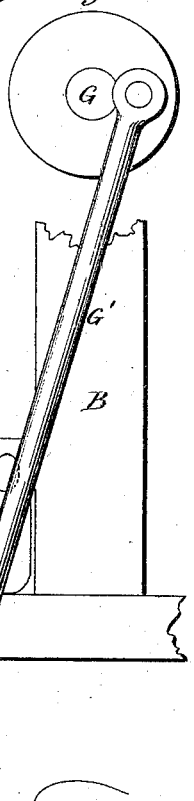


Fig. 3



Witnesses.

C. F. Shumway.

Clara Broughton.

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Inventor.
By atty.
John E. Earle

2 Sheets--Sheet 2.

F. DEMING.

Feeding Device for Punching Machine.

No. 166,078. Patented July 27, 1875.

Fig. 1.

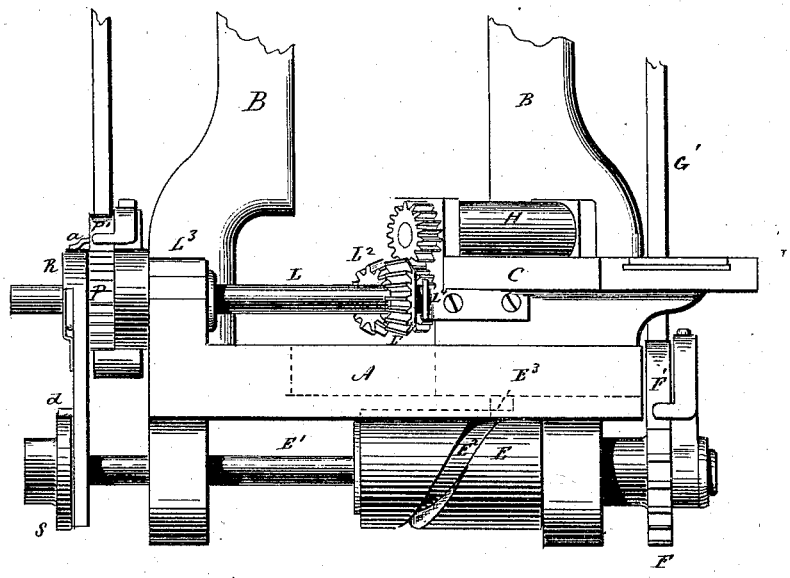
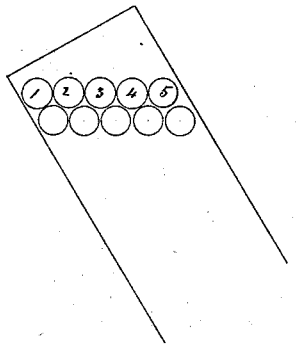


Fig. 5



Witnesses.
H. Shumway.
Clara Broughton.

Ferdinand Deming
Inventor
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UNITED STATES PATENT OFFICE.

FERDINAND DEMING, OF WATERBURY, CONNECTICUT.

IMPROVEMENT IN FEEDING DEVICES FOR PUNCHING-MACHINES.

Specification forming part of Letters Patent No. **166,078**, dated July 27, 1875; application filed April 20, 1875.

To all whom it may concern:

Be it known that I, FERDINAND DEMING, of Waterbury, in the county of New Haven and State of Connecticut, have invented a new Feed for Power-Press; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, top or plan view; Fig. 2, side view; Fig. 3, reverse side; Fig. 4, rear view; Fig. 5, diagram illustrating the method for presenting the plate to the punch so as to produce the least possible waste.

This invention relates to an attachment for power-presses, to automatically present and feed sheet metal to the punch of the press, the object being to construct the feed so that the sheet introduced into the feed will be automatically worked into the press and presented to the punch, so as to cause each successive punching to be in the nearest position to the last, so as to avoid waste of metal.

The invention consists in the combination, in a power-press, of a diagonally-guided carriage, having a reciprocating movement parallel with the press; a shaft in connection with the feeding mechanism of the said carriage; a pawl and ratchet for imparting a revolution to said shaft; a shoe and cam for interrupting the action of the said pawl, save at the two extremes of the movement of the carriage, as more fully hereinafter set forth.

A is the bed, and B the uprights, of a common power-press. The arrangement of the dies and the mechanism for operating the same between the uprights or heads may be of any known construction, and not necessary to be here described. C is the carriage, arranged upon the bed in a diagonal position, as seen in Fig. 1, the angle of the carriage being about sixty degrees from the longitudinal line of the press. This carriage is arranged upon a slide, D, the said slide being parallel to the line of the press and moving in suitable guides, so that the carriage, maintaining its diagonal position, will be moved across the press in a line parallel to the press, as denoted in broken lines, Fig. 1. The movement of this carriage must be intermittent—that is, with a rest at each operation of the punch. To do this a cam, E, is arranged beneath on a shaft, E^1, the cam constructed with a spiral groove, E^2, into which a stud, E^3, from the slide extends, so that the turning of the cam will impart a corresponding movement to the carriage. This groove runs half around the cam and returns, so that a full revolution of the cam will cause the carriage to move across the press and back. On the shaft E a ratchet-wheel, F, is arranged in which a pawl, F′, works, this pawl receiving a reciprocating movement from the driving-shaft G, through a connecting-rod, G′, as seen in Fig. 3. The extent of this reciprocation may be varied by adjusting the fulcrum or point of connection between the pawl and the driving-shaft, in substantially the usual manner for similar feeds. This will give the necessary intermittent movement to the carriage to present the sheet to the punches for successive holes in the same line, as for holes 1 2 3 4, &c., as seen in diagram, Fig. 5, these perforations or punches being in a line diagonally across the sheet, the angle of such line being the same as the angle between the carriage and the press, and so that the second row of perforations will come each between the successive perforations previously made, this angle, as before stated, being about sixty degrees, to give the least possible waste of metal. Having fed once across for the first row of perforations, an advance movement of the metal is necessary before the carriage returns to make the second row of perforations. To do this a pair of feed-rolls, H H, are arranged in the carriage, geared together so that the metal passes between these rolls, the axis of the rolls being at right angles across the carriage. These rolls are driven by a shaft, L, provided with a pinion, L^1, working into a pinion, L^2, on one of the rolls. This shaft extends through a bearing, L^3, so as to revolve freely therein, and connected with the carriage, as at L^4, so as to move longitudinally with the carriage. On this shaft is a ratchet, P, through which the shaft passes, splined to the shaft, and in connection with the bearing, so that the shaft will turn with the ratchet, but yet move longitudinally through it. This ratchet is actuated by a pawl, P^1, from the driving-shaft, through a

connecting-rod, P^2, as seen in Fig. 4, and may be adjusted to give a greater or less throw, in substantially the usual manner for adjusting the throw of pawls in other machines. The movement of this pawl will occur at each revolution of the shaft G, but the feed is only required at each extreme movement of the carriage. Therefore, to prevent the feed between these two extremes, a shoe, R, is hung beside the pawl, and from the pawl an arm, *a*, projects over the shoe, and on the shaft E' a cam, S, is arranged, upon which the lower end *d* of this shoe rests. This cam is constructed with an escapement, *e*, upon opposite sides; but between these escapements the circumference of the cam is such that the shoe will be elevated, as denoted in broken lines, Fig. 2, and thus prevent the contact of the pawl P^1 with the ratchet P. The escapement occurs at each extreme movement of the carriage, and when the shoe falls from this escapement, as seen in Fig. 2, the pawl will engage the ratchet and turn the shaft L, and through that the feed-rolls, to give the sheet the necessary forward movement to make the next row of perforations. So soon as the forward movement has occurred the shoe is raised by the cam S, to disengage the pawl from its ratchet, and when the carriage has returned to the other extreme the shoe will fall off the next escapement on the cam S and cause another advance of the sheet, as before, and, so continuing, the carriage is automatically moved across the press and the sheet advanced at the two extremes, so as to continue the automatic feeding of the sheet until it has been entirely fed through the machine.

This device has thus far been represented as driven from a longitudinal shaft; but it will be understood that the movement is to be obtained from the driving mechanism of the press, whatever may be the arrangement of the shaft, and so that the feed will occur before the descent of the punch.

I claim—

The combination, in a power-press, of the diagonal carriage C, having a reciprocating movement parallel with the press, the shaft L, in connection with the feeding mechanism of the said carriage, the pawl and ratchet P P^1, for imparting a revolution to the said shaft L, the shoe R, and the cam S, for interrupting the action of the pawl P^1, save at the two extreme movements of the carriage, substantially as specified.

FERDINAND DEMING.

Witnesses:

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CHAS. W. GILLETTE.