No. 654,607. Patented July 31, 1900.

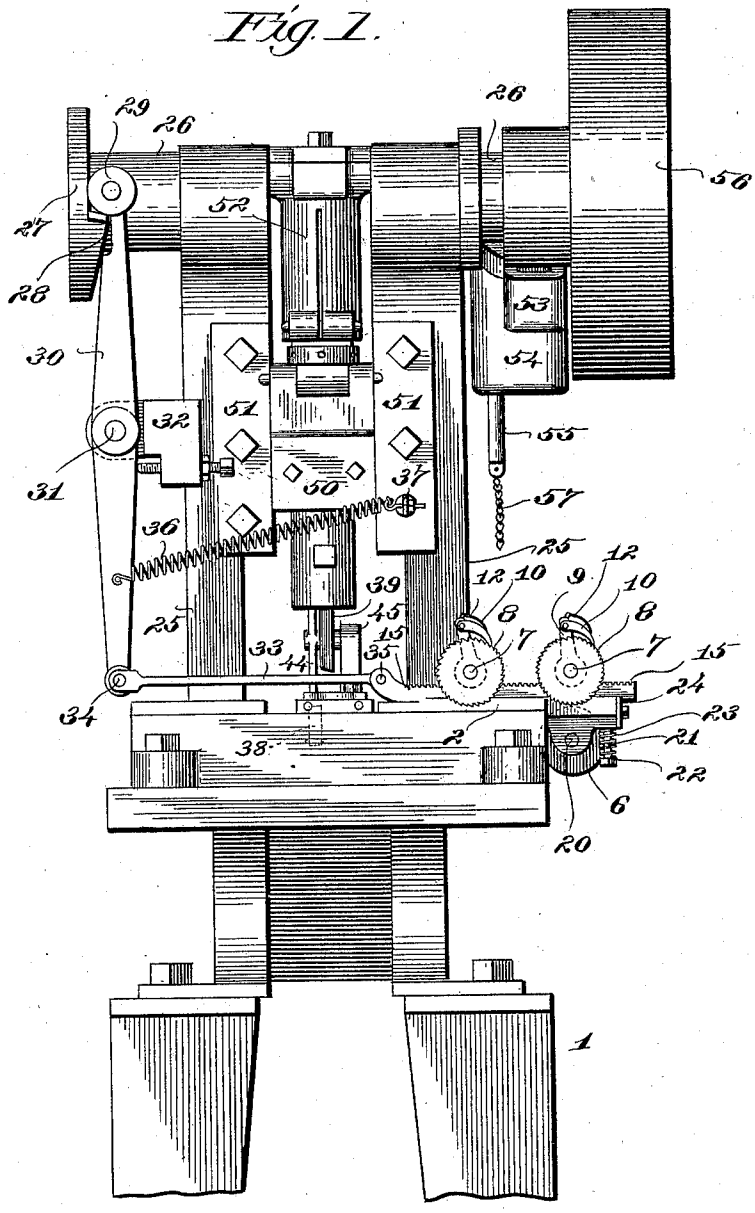
O. COLBORNE.

PUNCHING PRESS.

(Application filed Mar. 10, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



Witnesses
H. C. S. Gaither.
Glen C. Stephens

Inventor
Oliver Colborne
By Thos. R. Runnells
his Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 654,607. Patented July 31, 1900.

O. COLBORNE.

PUNCHING PRESS.

(Application filed Mar. 10, 1900.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 2.

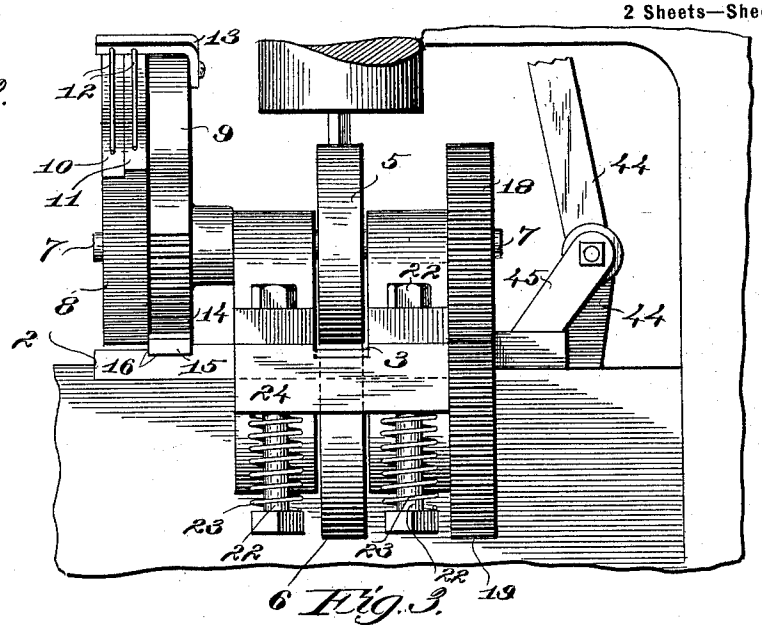


Fig. 3.

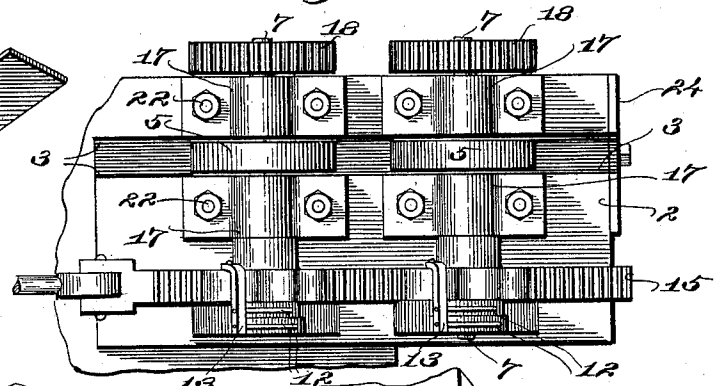


Fig. 6.

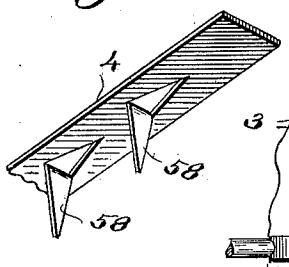
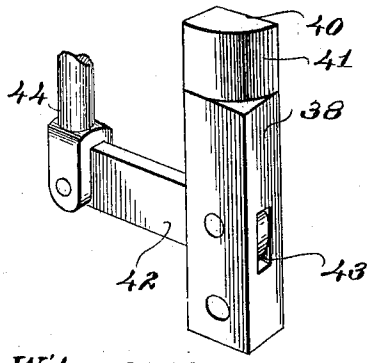


Fig. 5.



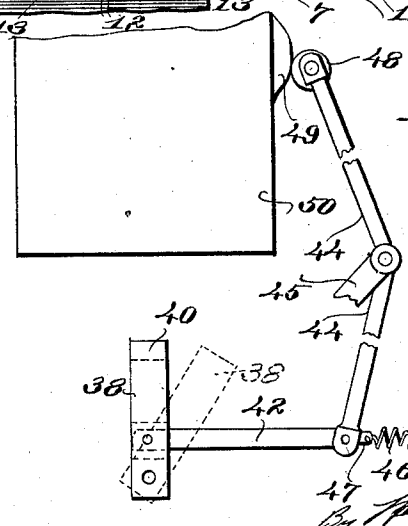


Fig. 4.

Witnesses
H. S. Gaither.
Glen C. Stephens.

Inventor
Oliver Colborne
By Thos. R. Rummler,
his Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

OLIVER COLBORNE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE INTERNATIONAL PACKAGE MACHINE COMPANY, OF SAME PLACE.

PUNCHING-PRESS.

SPECIFICATION forming part of Letters Patent No. 654,607, dated July 31, 1900.

Application filed March 10, 1900. Serial No. 8,144. (No model.)

To all whom it may concern:

Be it known that I, OLIVER COLBORNE, a citizen of the United States of America, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Punching-Presses, of which the following is a specification.

My invention relates to punching-presses for making metallic fastening-strips, and has particular reference to the feed mechanism and anvil for supporting the strips during the process of punching.

The main objects of my invention are, first, to provide improved feed mechanism having a positive intermittent action particularly adapted for feeding the blank-strips to the punch, and, second, to provide an improved support or anvil coacting with the punch and feed mechanism and arranged to permit the free passage of the teeth after same have been struck from the blank-strip by the action of the punch. I accomplish these objects by the mechanism shown in the accompanying drawings, in which—

Figure 1 is a front elevation of a machine constructed according to my invention, the lower part of the frame being broken away. Fig. 2 is an end elevation of the feed mechanism shown in Fig. 1. Fig. 3 is a top plan of said feed mechanism. Fig. 4 is a side elevation of the anvil and parts for actuating same with the other parts of the machine removed. Fig. 5 is a perspective view of the anvil, taken from a point of view in front of and toward the left of Fig. 1. Fig. 6 is a perspective view of a section of fastening-strip formed by this machine.

In the device shown the frame 1 supports a plate 2, having a groove 3 therein for receiving the blanks from which the strips 4 are formed. Said plate has apertures therein between each set of friction-rolls 5 and 6, permitting said rolls to have contact with the blank-strip which is fed through same along the groove 3. The friction-rolls 5 are tight on the shaft 7. The ratchet-wheels 8 are also tight on said shaft. The arms 9 are loosely mounted on said shaft 7 and carry the pawls 10 and 11, which are urged downwardly by the springs 12 into engagement with the ratchet-wheels 8. Said springs are supported by an arm 13, secured to the arm 9. The lower part of the arm 9 consists of a geared sector 14 for engaging the rack 15, which is slidingly seated in the groove 16 of the plate 2. The shafts 7 are journaled in bearings 17, which are mounted on the plate 2. The gear-wheels 18 are tight on the shafts 7 and mesh with the gear-wheels 19. The gear-wheels 19 and the friction-rolls 6 are tight on the shafts 20. Said shafts are journaled in bearing-blocks 21, which are vertically slidable under the plate 2. Bolts 22 are secured to the plate 2 and extend downwardly through apertures in the bearing-blocks 21. Each of said bolts has a spring 23 thereon for urging the bearing-blocks normally upward, and thereby urging the friction-rolls 6 toward their coacting rolls 5.

24 represents an end plate secured to the plate 2 and abutting the ends of the bearing-blocks 21.

The arms 25 of the frame have the shaft 26 journaled therein. The wheel 27 is tight on the shaft 26 and has thereon a cam 28 for acting against the roller 29 of the lever 30. Said lever is pivoted at 31 to the member 32 of the frame. The arm 33 is pivoted to the lower end of said lever at 34 and is pivoted to the rack 15 at 35. The spring 36 is secured at one end to the lower arm of the lever 30 and at the other end to the projection 37 of the frame. The anvil 38 has its lower end pivoted to the frame in such position that when the anvil is at the forward limit of its movement the same will stand under and immediately to the left of the punching-tool 39 and so that the punching-tool will pass down along the edge 40 of said anvil. The upper part of the anvil is cut away or beveled at 41, so as to prevent same from striking the base of the nearest tooth of the fastening-strip. The arm 42 is pivoted at one end in the recess 43 of the anvil and at the other end to the lower arm of the lever 44. Said lever is pivoted to the member 45 of the frame. The arm 42 has a spring 46, having one end secured to said frame at 47 and having the other end secured to the rear of the frame. The upper end of the lever 44 has a roller 48 for acting against the cam 49 of the rear part

of the stock or plunger 50, which carries the punching-tool 39. Said stock is vertically slidable between the guide-plates 51 and has its upper end pivoted to the member 52, which is carried by a crank on the shaft 26.

The reference-numerals 53, 54, and 55 represent parts of the clutch mechanism operating between the shaft 26 and the drive-wheel 56. Said clutch will be operated by a pedal at the lower end of the chain 57, part of which is shown in Fig. 1.

The cam 28 is located in such relation to the crank-carrying member 52 that said cam will act upon the lever 30 when the tool 39 is raised above the position of the nailing-strip. The cam 49 is located in such position on the stock 50 as to act upon the arm 44 when the tool 39 is on its downward stroke and immediately before said tool comes in contact with the metal strip 4.

The operation of the device is as follows: When the tool-point is at the upper part of its stroke, the rack 15 will be pulled toward the left through the action of the arm 33, lever 30, and cam 28. This will serve to turn the shaft 7, through the action of the arms 9 and their pawls, upon the ratchet-wheels 8. The rack 15, meshing with the sector 14, will swing the upper part of the arms 9 toward the right, and thus turn the shaft 7 through said ratchet-wheels, as above described. When the cam 28 has passed below the roller 29, the spring 36 will act upon the arm 30 so as to return the rack 15 to its former position toward the right. This will swing the upper ends of the arms 9 toward the left and in proper position to again turn the shafts 7 when the arm 30 is again acted upon by the cam 28. It will be seen that whenever the rack 15 is pulled toward the left a blank-strip of metal inserted in the groove 3 will be carried toward the left by the action of the friction-rolls 5 and 6.

Referring to Fig. 4, the spring 46 will normally hold the anvil in the tilted position shown by the dotted lines. Immediately after the strip of metal has been fed toward the left the tool 39 will descend upon said strip. The cam 49 through the lever 44 and arm 42 will throw the anvil 38 forward and under said metal strip. The anvil will now support said strip while the tool 39 descends to the lower limit of its stroke, cutting through the strip 4 to form one of the teeth 58. When the tool is at its upward stroke, free from the strip 4, the cam 49 will be above the roller 48 and thus permit the spring 46 to again withdraw the anvil 38. The cam 28 will then again act upon the rack 15, so as to feed the strip 4 while the anvil is at its former position.

It will be understood that the details of construction shown may be altered in numerous ways without departing from the spirit of my invention. I therefore do not confine myself to such details except as hereinafter limited in the claims.

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

1. In a punching-press for making fastening-strips of the class described, the combination of a supporting-frame, a driving-shaft journaled therein, a reciprocating plunger operated by said shaft and carrying a punch, an intermittent feeder operated by said shaft for forwarding said strips to the punch, a movable anvil coacting with said punch at the side of the path of the punch, and mechanism for withdrawing the anvil from said strip after each descent and withdrawal of the punch and before the succeeding feed of said strip, substantially as described.

2. In a punching-press for making fastening-strips of the class described, the combination of a supporting-frame, a driving-shaft journaled therein, a reciprocating plunger operated by said shaft and carrying a punch, an intermittent feeder operated by said shaft for forwarding said strips to the punch, a movable anvil coacting with said punch, a cam on said plunger, and an arm controlling the movement of the anvil and operated by said cam, substantially as described.

3. In a punching-press for making fastening-strips of the class described, the combination of a supporting-frame, a driving-shaft journaled therein, a reciprocating plunger operated by said shaft and carrying a punch, an intermittent feeder operated by said shaft for forwarding said strips to the punch, an anvil coacting with said punch and pivoted to the frame under the path of said strip, a spring normally withdrawing the anvil from said path, a lever pivoted to the frame and to said anvil, and a cam on said plunger acting against the lever for urging the anvil toward said strip, substantially as described.

4. In a punching-press for making fastening-strips of the class described, the combination of a supporting-frame, a driving-shaft journaled therein, a reciprocating plunger operated by said shaft and carrying a punch, an intermittent feeder operated by said shaft for forwarding said strips to the punch, said feeder comprising a pair of feed-rolls journaled in the frame, a ratchet-wheel revolving with said feed-rolls, an oscillating toothed sector carrying a pawl engaging the ratchet-wheel, a rack slidable in the frame and meshing with said sector, a cam on said shaft, and an arm controlling the movement of the rack and operated by said cam; and a movable anvil coacting with said punch and feeder, substantially as described.

5. In a punching-press for making fastening-strips of the class described, the combination of a supporting-frame, a driving-shaft journaled therein, a reciprocating plunger operated by said shaft and carrying a punch, an intermittent feeder operated by said shaft for forwarding said strips to the punch, said feeder comprising a pair of feed-rolls journaled in the frame, a ratchet-wheel revolving with said feed-rolls, an oscillating toothed sector carrying a pawl engaging the ratchet-wheel, a rack slidable in the frame and mesh-

ing with said sector, a cam on said shaft, a lever pivoted to the frame and to said rack and having one end in contact with said cam for moving the rack forward, and a spring opposing the action of said cam; and a movable anvil coacting with said punch and feeder, substantially as described.

Signed by me at Chicago, Illinois, this 7th day of March, 1900.

OLIVER COLBORNE.

Witnesses:
J. F. ROWLEY,
WM. R. RUMMLER.