

(No Model.)

2 Sheets—Sheet 2.

E. B. STIMPSON, Jr.
PERFORATING MACHINE.

No. 370,100.

Patented Sept. 20, 1887.

Fig. 5.

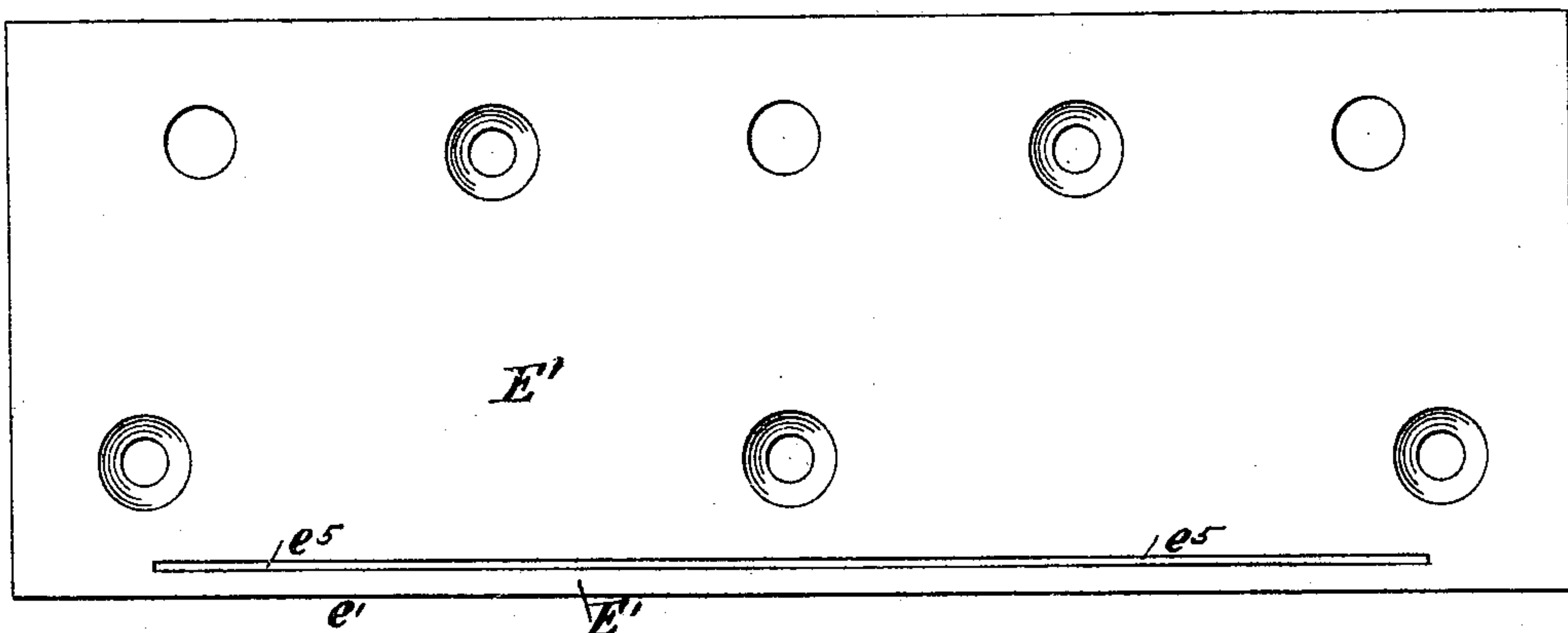


Fig. 6.

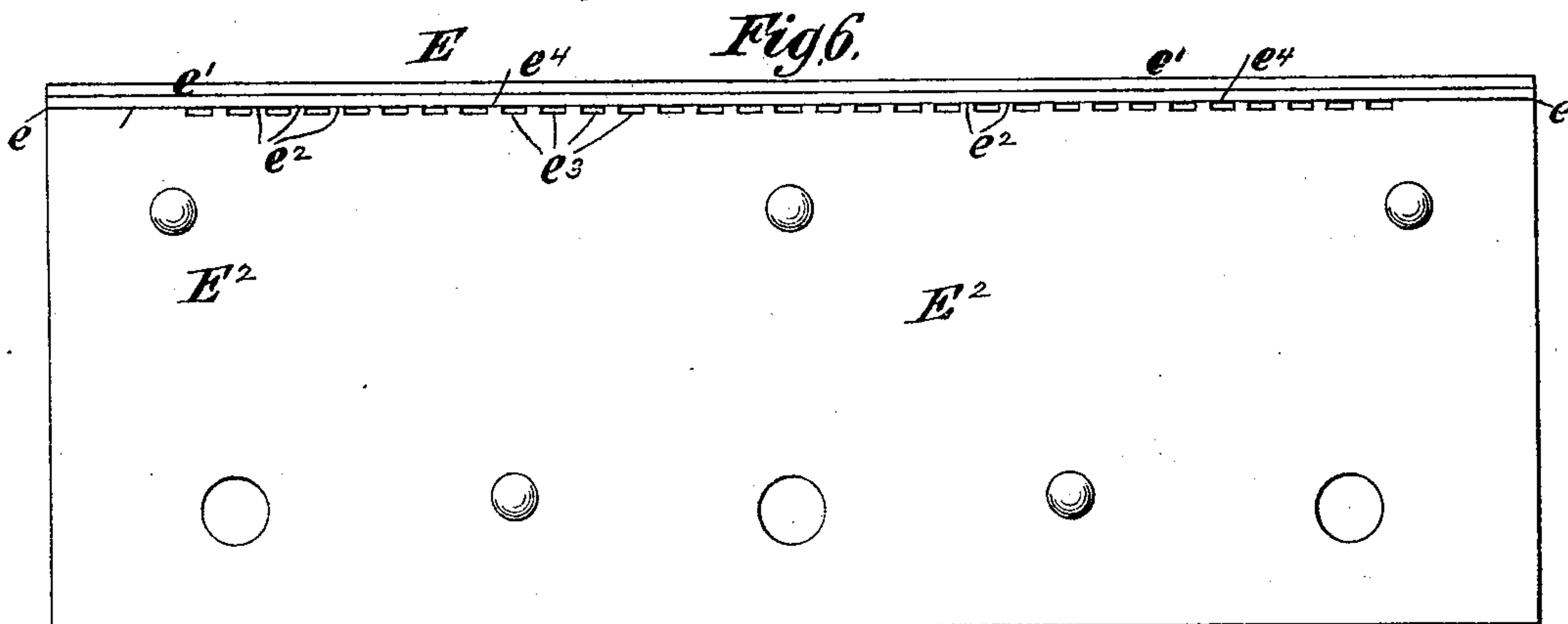


Fig. 7.

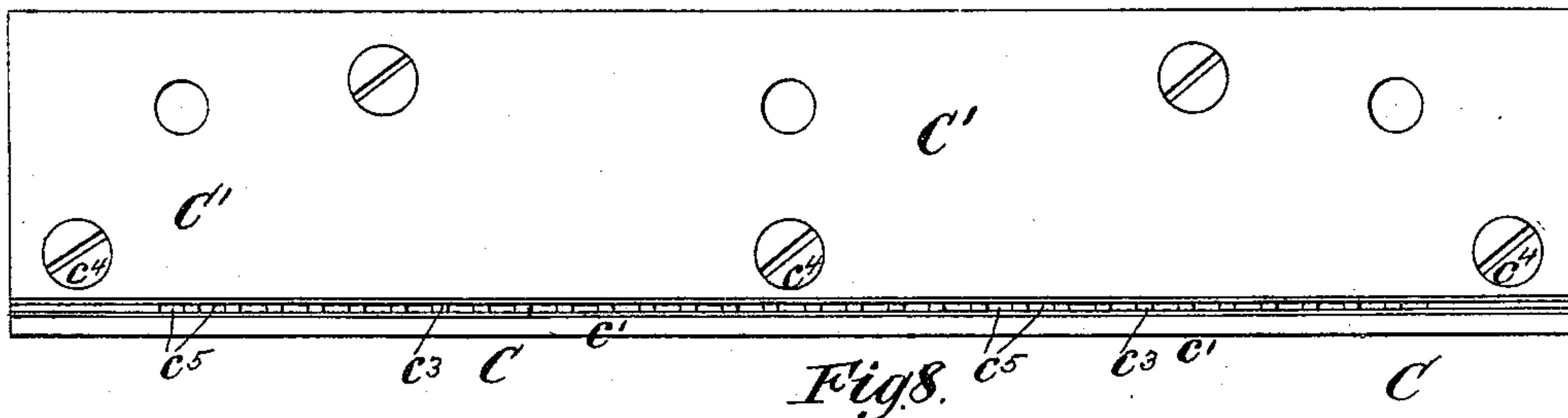
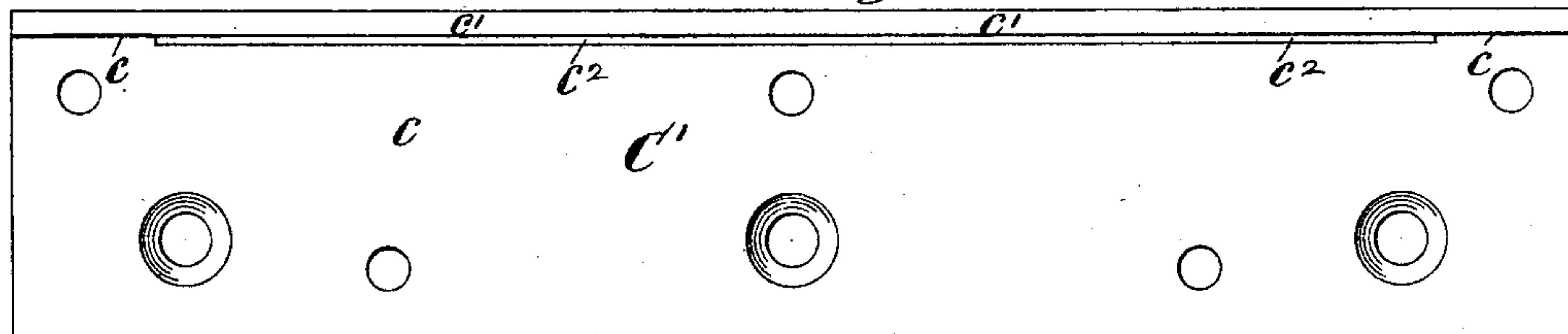


Fig. 8.



Witnesses:

O. Sundgren
E. H. Porter.

Inventor:

Edwin B. Stimpson Jr.
by his attys
Brown & Hall

UNITED STATES PATENT OFFICE.

EDWIN B. STIMPSON, JR., OF BROOKLYN, NEW YORK.

PERFORATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 370,100, dated September 20, 1887.

Application filed July 7, 1886. Serial No. 207,300. (No model.)

To all whom it may concern:

Be it known that I, EDWIN B. STIMPSON, Jr., of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Perforating-Machines, of which the following is a specification.

My invention relates particularly to machines for perforating paper with lines or rows of small holes. Where the perforations which it is desired to form are very small—say one sixty-fourth ($\frac{1}{64}$) of an inch in width, or thereabout—it is an expensive and tedious operation to make the die, the stripper, and the punch plate or holder from one piece of solid metal, through which the holes or perforations are formed; and the object of my invention is to provide dies, strippers, and punch plates or holders for machines of this class which may be constructed with the necessary fine holes or perforations to receive the punches at a less cost than heretofore, and also in such manner as to secure the necessary strength in these parts.

The invention consists in a die, stripper, or punch-plate for a perforating-machine, comprising the combination, with a body portion recessed or rabbeted upon one of its faces and slotted throughout the remainder of its thickness at one edge or wall of the recess or rabbet, of a section or strip notched at one edge and fitting in the recess or rabbet of the body portion, with its notched edge against the wall of the recess or rabbet.

The invention also consists in a punch plate or holder comprising the combination, with a body portion having in one face a rabbet or recess and slotted throughout the remainder of its thickness at one wall of the rabbet or recess, the body portion having in its opposite face a groove coincident with the slot to receive the heads of punches, of a section or strip having a notched edge and fitting in the rabbet or recess of the body portion, with its notched edge against the wall of the rabbet or recess.

In the accompanying drawings, Figure 1 is a vertical section including a part of the bed of a perforating-press and punch-head, a punch plate or holder and stripper, and a die embodying my invention. Fig. 2 is a transverse section of a die of slightly-modified form, also

embodying the invention. Fig. 3 is a plan of the die shown in Fig. 1; and Fig. 4 is a plan of the body portion of such die, the section or strip having a notched edge being removed. Fig. 5 is a plan of the stripper shown in Fig. 1, with the notched strip or section removed; and Fig. 6 is an inverted plan of the stripper with the notched section or strip in place upon the body portion. Fig. 7 is a plan of the punch-plate or punch-holder shown in Fig. 1, and Fig. 8 is an inverted plan of the body portion thereof, the notched strip or section being removed.

Similar letters of reference designate corresponding parts in all the figures.

My invention relates only to the construction of the die, the stripper, and the punch plate or holder of a perforating-machine, and these parts may be employed in connection with any suitable machine comprising a bed or frame and a reciprocating cross-head and punch-head. For example, they may be employed in a machine such as is shown in United States Patent No. 313,383, granted March 3, 1885, to Edwin B. Stimpson.

In the drawings I have represented a portion of a vertically-reciprocating cross-head, A, to which is secured a punch-head, B, having fastened to its bottom the punch-plate or punch-holder C. The cross-head A may be reciprocated upon suitable guides upward and downward, and the punch-plate or punch-holder C is provided with a series or row of downwardly-extending punches, D, which work through a stripper, E, secured to a stationary stripper-beam, E', by bolts, and which operate in connection with a die, F, secured upon the bed or frame G to perforate paper or other analogous thin material.

My present invention relates only to the construction of the die F, the stripper E, and the punch-plate or punch-holder C.

I have here represented the punch-head B as channeled upon its front face, as shown at b, and as having fitted in such channel a locking-bar, H, and a series of keys or blocks, I, which are arranged over the heads of the punches D. The locking-bar H has upon its under side a longitudinal rib or projection, h, which may be engaged with either one of two recesses or seats, i i', in the keys or blocks I,

according to whether the latter are pushed inward into the position shown in Fig. 1 or drawn slightly outward. In machines of this class it is often desirable to leave certain of the punches inoperative, and the keys or blocks I, which are over those punches which it is desired to make inoperative, are pushed inward to the position shown in Fig. 1, so that the punches, when they are pressed downward upon the paper passing over the die F, may rise in the punch plate or holder C and fail to perforate the paper. When the keys or blocks I are drawn slightly forward from the position shown in Fig. 1, they overlap the heads of the punches D, and if the locking-bar H is pressed down upon them they hold such punches in operative position. The locking-bar H may be raised and lowered by levers H', having cam-shaped slots h', which engage the pins h² on the locking-bar, and which are fulcrumed at h³. When the levers H' are operated to lower the locking-bar H, it is pressed downward upon the keys or blocks I, and its rib or projection h will engage with the recesses or seats i' of all the keys or blocks which are pushed inward to render corresponding punches inoperative, and will also engage with the recesses or seats i of all the keys or blocks I which are pulled outward to render their corresponding punches operative. The keys or blocks I and the locking-bar H are fully described in United States Patent No. 345,189, granted July 6, 1886, to Stimpson & Stimpson.

My present invention in no wise relates to the means employed for holding down the punches and for rendering them inoperative or operative, and any device may be employed for that purpose; or the punches may be all held down and without any provision for rendering certain of them inoperative.

Referring first to the construction of the die F, (shown in Figs. 1, 3, and 4,) F' designates a body portion or straight plate or bar having in its upper face a longitudinal recess or channel, f, in which is fitted a separate section or strip, F². The remainder of the thickness of the body portion F' beyond the recess or channel f is slotted, as shown at f', in a line coincident with the inner wall, f², of the recess or channel f. The section or strip F², which is fitted in the recess or channel f, has its one edge f³ provided at short intervals with notches f⁴, which are truly parallel with each other throughout the thickness of the piece F², and this notched edge bears against the wall f² of the body portion F'. The recess or channel f and the slot f' in the body portion F' may be easily formed by planing and of a desired length in the body portion, and the notches f⁴ may be accurately and inexpensively formed in the edge of the section or strip F² by milling or otherwise. When the section F² is secured by screws f⁵ or by rivets or other means in the recess or channel f, its notched edge or wall f³ bears against

the straight and plain wall f² of the body portion F', and between the two the notches f⁴ constitute fine perforations for receiving the punches D, said perforations having their length or greatest dimension parallel with the length of the pieces F' F².

The die F, as a whole, may be secured, by screws f⁶ or otherwise, to the bed G, and in this bed is a throat or suitable large opening, h⁴, to receive the scrap removed by the punches.

In lieu of making the die F with the channel f in one face of the body portion F', I may form said body portion with a rabbet, f', extending inward from one edge, as shown in Fig. 2, and receiving a separate section or strip, F², with its notched edge f³ bearing against the straight and plain wall f² at the inner termination of the rabbet f'. Otherwise the die shown in Fig. 2 is constructed like that shown in Figs. 1, 3, and 4.

From the above description it will be seen that the body portion F', which serves as one integral part of the die, forms a bolster, to which the separate section or strip F² is secured, and thus the die is formed complete in two portions and without any other parts.

The stripper E is constructed in a very similar manner to the die F, and is shown in Figs. 1, 5, and 6. Said stripper comprises a body portion, E', which has a recess or rabbet, e, extending from its back nearly its entire width, leaving only a comparatively thin flange, e', at the front of the body portion. In the rabbet e is a separate section or strip, E², which has its edge e² provided at short intervals with notches e³, as shown in Fig. 6, and by this notched wall or edge of the section or strip E² bearing against the straight and plain edge or wall e⁴, at the inner side of the flange e' on the body portion E, perforations or holes are formed for the reception of the punches D, severally. The remainder of the thickness of the body portion E' beyond the depth of the rabbet e is formed with a slot, e⁵, which receives the punches D, collectively, and it may be inexpensively formed by planing. The lip or flange e' at the front of the stripper may be beveled or slanted downward, as shown in Fig. 1, so as not to obstruct the view of the punches where they pass through the paper; and the construction of the stripper, which I have described, enables me to bring the punches very near the front edge of the stripper, and the stripper need not project beyond the line of punches sufficiently to obstruct the view and prevent the line or row of perforations which are formed by the punches being readily seen.

I will now describe the construction of the punch plate or holder C, which is shown in Figs. 1, 7, and 8. It comprises a body portion, C', having in its lower face a rabbet, c, extending from the rear edge nearly to the front, leaving a thin flange or lip, c', only at the front of the punch-plate. The body portion C' is slotted, as shown at c², throughout the remainder of its thickness, and on the up-

per face coincident with the slot is formed a groove, c^3 , to receive the small heads produced upon the upper ends of the punches, and which prevent them from falling downward out of the punch plate or holder. The slot c^2 , the groove c^3 , and the rabbet c may be quickly and inexpensively produced by planing. Within the rabbet c is secured, by screws c^4 or otherwise, a separate section or strip, C^2 , having in one of its edges, at short intervals, notches c^5 , and having such notched edge bearing against the plain and straight edge which forms the inner wall of the rabbet c . The openings or sockets formed between the notched edge of the section or strip C^2 and the plain straight edge view of the wall c' severally receive the punches D and hold them at the proper distances apart, while said punches are furthermore guided in the perforations or openings of the stripper E . The punch plate or holder C may be secured, by screws c^6 or otherwise, to the punch beam or head B .

By the invention above described I am enabled to produce the die and punch-plate and stripper with holes or perforations for the reception of the punches all accurately formed, and the said parts being of such strength that the several holes or perforations in the three parts will be maintained accurately in line with each other. The notches in the edges of the several sections or strips C^2 E^2 F^2 may be formed at one operation by placing the three

sections or strips side by side in a milling-machine, and hence the spacing of the notches in the three said parts will be exactly uniform. 35

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

1. A die, stripper, or punch-plate for a perforating-machine, comprising the combination, with a body portion recessed or rabbeted upon one of its faces and slotted throughout the remainder of its thickness at one edge or wall of the recess or rabbet, of a section or strip notched at one edge and fitting in the recess or rabbet of the body portion, with its notched edge against the wall of the recess or rabbet, substantially as herein described. 40 45

2. In a punch plate or holder, the combination, with a body portion having in one face a rabbet or recess and slotted throughout the remainder of its thickness at one wall of the rabbet or recess, the body portion having in its opposite face a groove coincident with the slot to receive the heads of punches, of a section or strip having a notched edge and fitting in the rabbet or recess of the body portion, with its notched edge against the wall of the rabbet or recess, substantially as herein described. 50 55

EDWIN B. STIMPSON, JR.

Witnesses:

C. HALL,
FREDK. HAYNES.