

(No Model.)

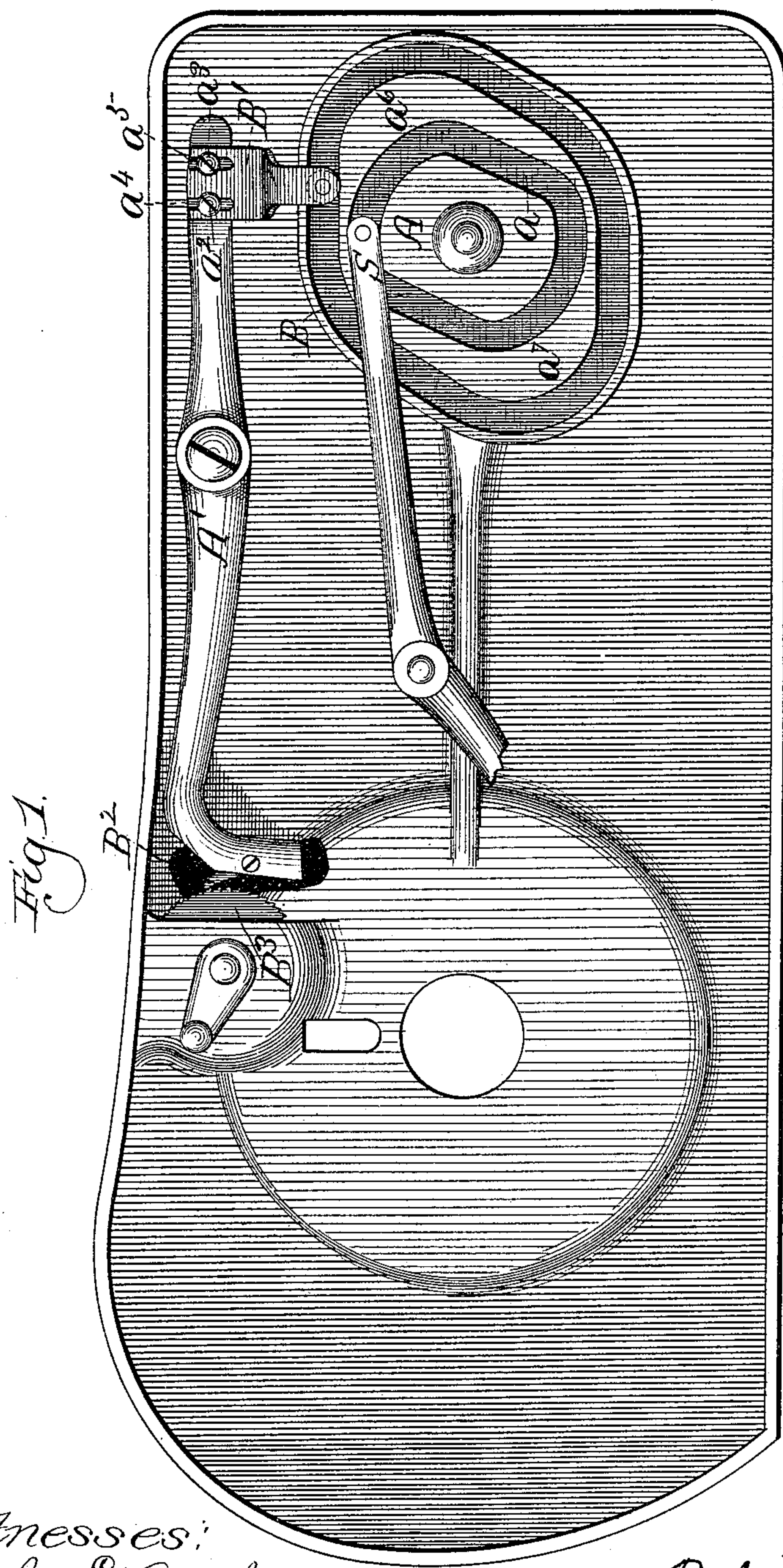
3 Sheets—Sheet 1.

J. L. WALSH.

BUTTON HOLE SEWING MACHINE.

No. 332,122.

Patented Dec. 8, 1885.



Witnesses:

*Chas. E. Gaylord.*  
*L. M. Freeman.*

Inventor:

*John L. Walsh.*  
*By C. B. Coupland & Co.*  
*attys.*

(No Model.)

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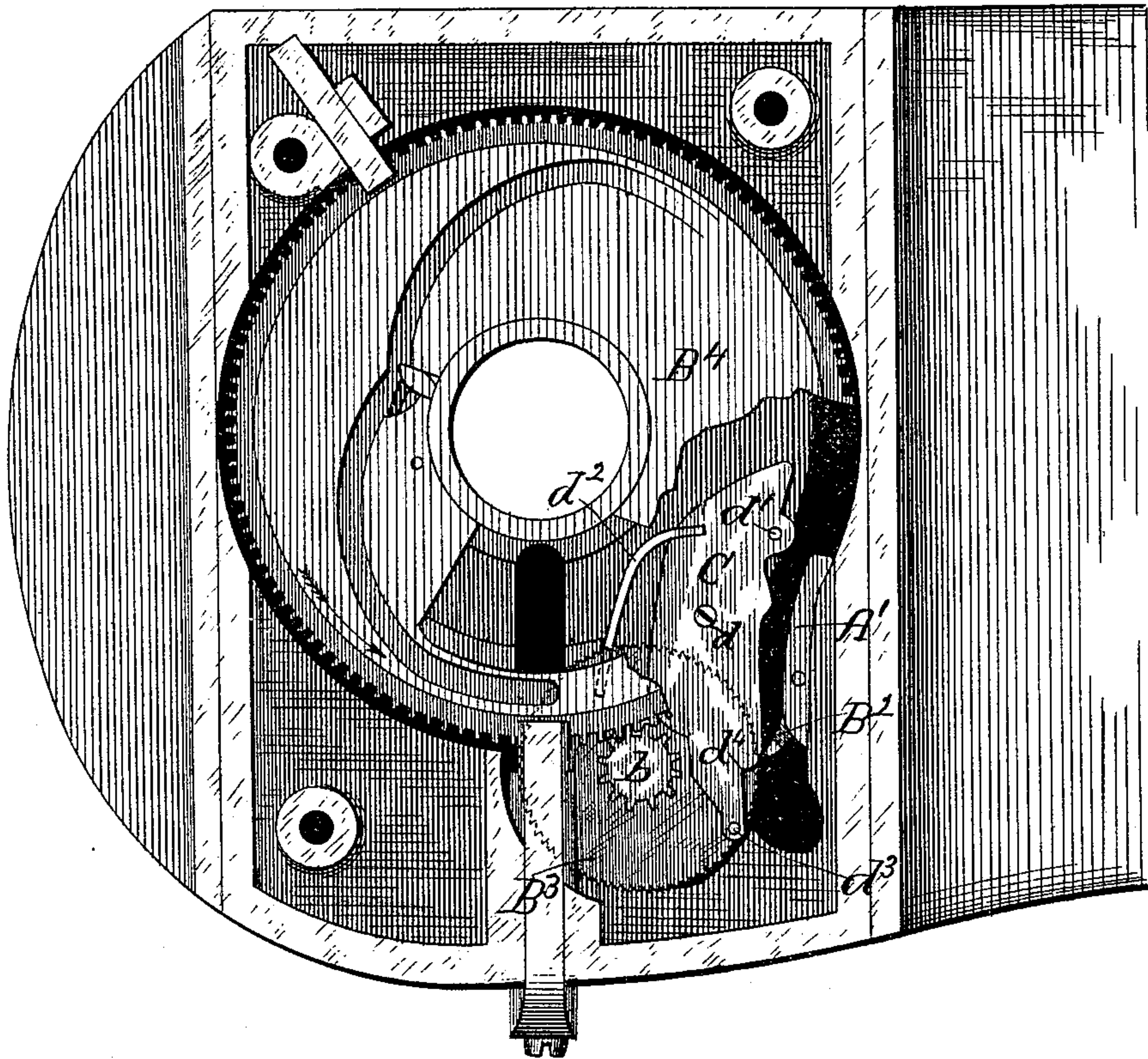
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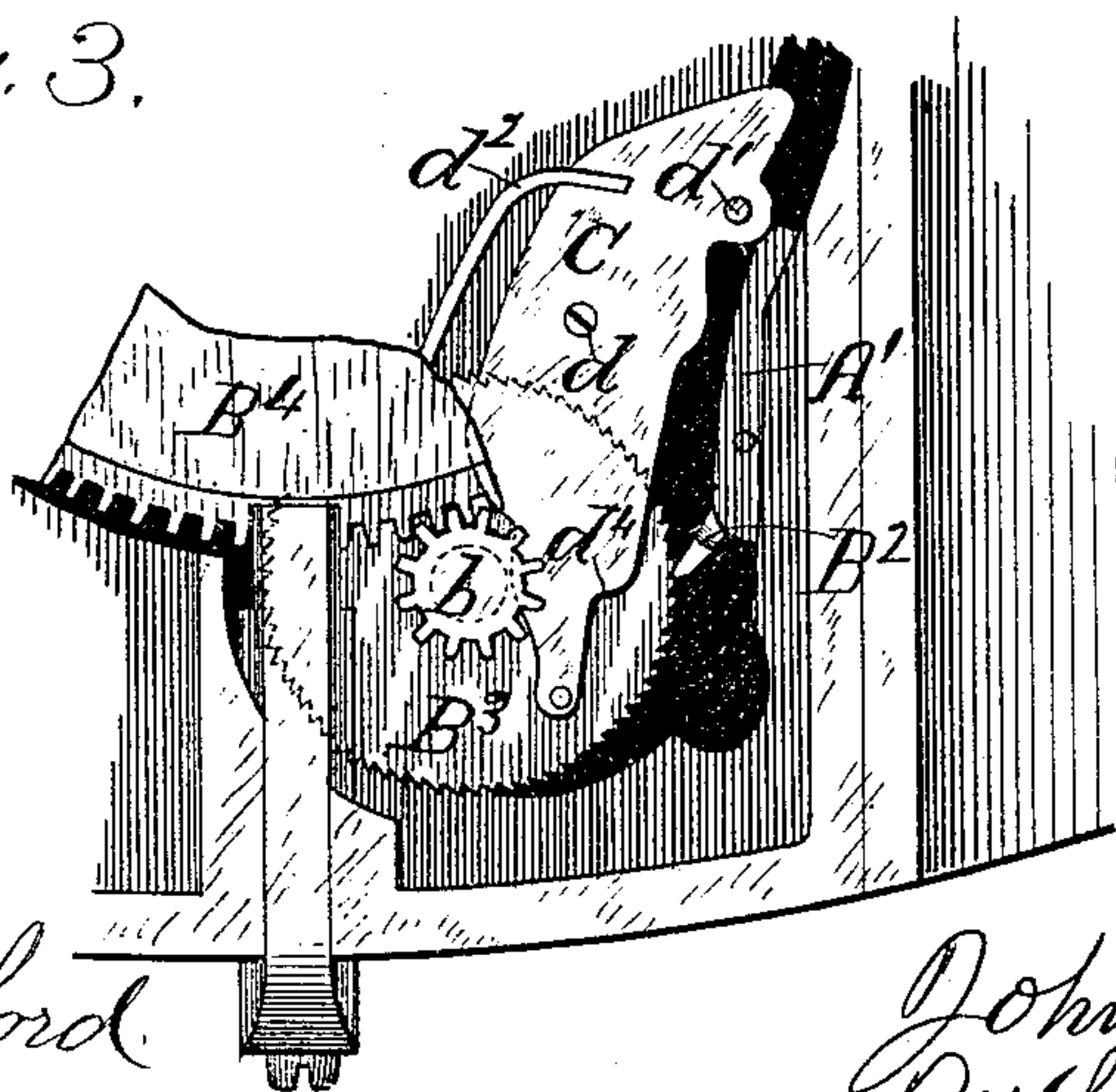
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*Fig. 2.*



*Fig. 3.*



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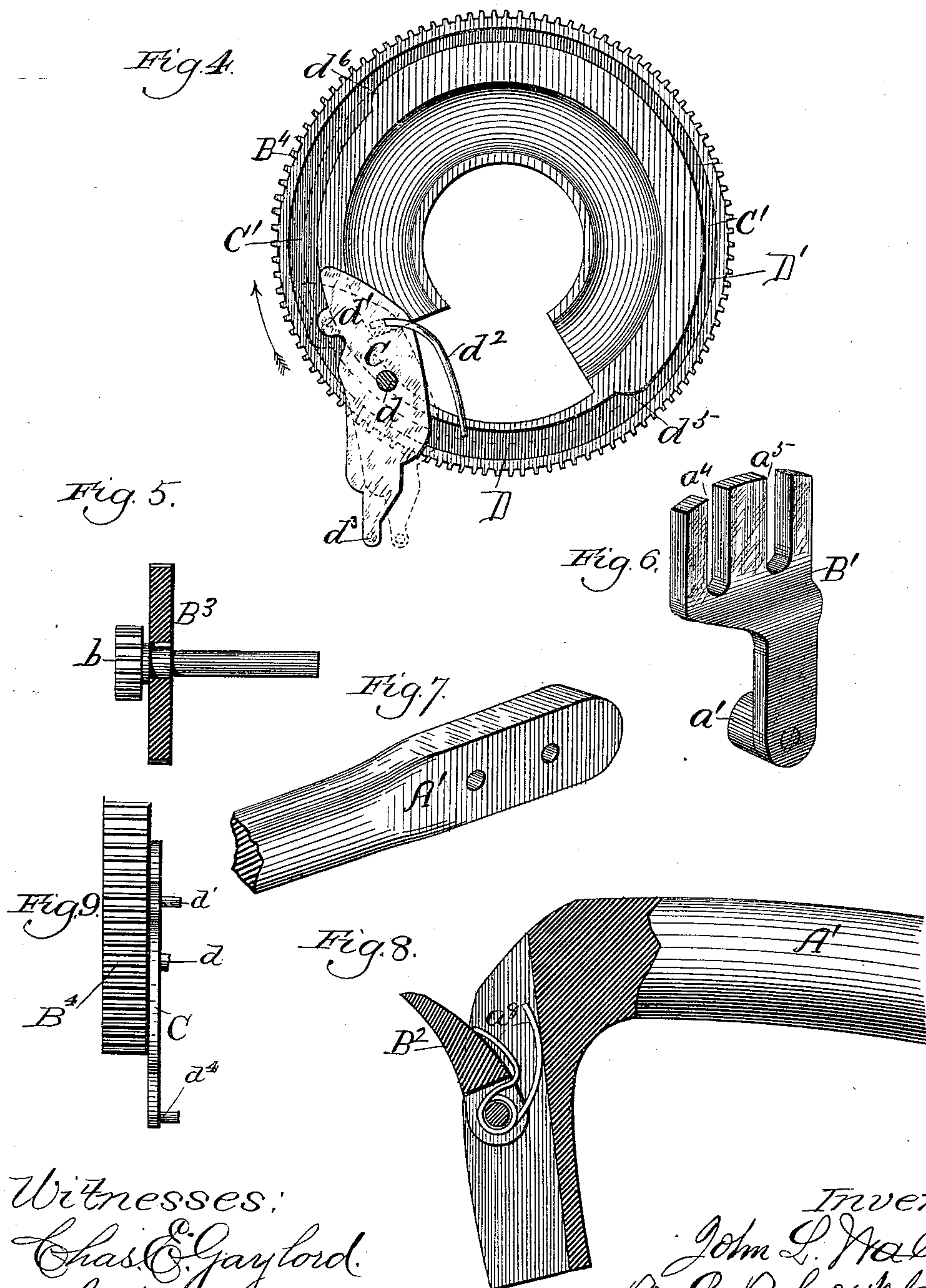
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# UNITED STATES PATENT OFFICE.

JOHN L. WALSH, OF CHICAGO, ILLINOIS.

## BUTTON-HOLE SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 332,122, dated December 8, 1885.

Application filed March 18, 1885. Serial No. 159,271. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN L. WALSH, of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in a Button-Hole Sewing-Machine, of which the following is a full, clear, and exact description, that will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to that class of sewing-machines that are especially used in working button-holes; and it consists of certain novel features in the construction, combination, and arrangement of parts, as will be hereinafter set forth.

Figure 1 is a view of the under side of a machine embodying a part of my improved features; Fig. 2, a top view with the upper plate removed; Fig. 3, a broken-away part of Fig. 2, showing the rocking plate in another position. Fig. 4 shows the under side of the feed-wheel having a part of my improved features attached thereto, and Figs. 5, 6, 7, 8, and 9 detached details of construction.

Referring to the drawings, A represents the ordinary cam, provided with the groove  $a$ , which operates the spreader-arm S.

The first part of my improvement consists in enlarging this cam so as to provide a second or outside cam-groove, B. This irregular cam-groove or channel imparts the required oscillating movement to the feed-lever A' and the feed-works. The lower end of the connecting-arm B' is provided with the friction-roller  $a'$ . (Shown in Fig. 6, and indicated by a dotted circle in Fig. 1.) The upper end of this arm is adjustably secured in relation to the outer end of the feed-lever A' by means of the clamping-screws  $a^2$   $a^3$ , passing through the elongated slots  $a^4$   $a^5$  in said arm. Shortening this arm B' has the effect of increasing the length of the stitch by sending the feed farther ahead at each revolution. The mechanism ordinarily employed only feeds every other time that the needle leaves the cloth, while by my improvement I feed every time. This is effected by means of the elongated cam provided with the second groove, B, and having the widened cam-surfaces  $a^6$   $a^7$  diametrically

opposite each other, so as to feed each time that these widened surfaces pass underneath the roller  $a'$ . The opposite or inner end of the feed-lever A' is provided with the feed-pawl B<sup>2</sup>, which is adapted to engage with the ratchet drive-wheel B<sup>3</sup>, and is held into engagement with the same by means of the spring  $a^8$ . The pinion  $b$  is mounted on the same shaft with the ratchet-wheel B<sup>3</sup>, and engages with the feed-wheel B<sup>4</sup>.

The second part of my improvement consists of the plate C, attached to the bed of the machine by means of its pivot  $d$ , upon which it has a rocking movement. This plate is located at one edge of and below the feed-wheel, as shown in Figs. 3 and 4. A part of the feed-wheel is broken away in Figs. 2 and 3, showing the relative position of the plate C, and Fig. 4 is a view of the under side of the feed-wheel and plate.

Figs. 2 and 4 illustrate the position of the plate C when the side of the button-hole is being worked. Fig. 3 shows the opposite position of the plate, and when in this position the eye of the button-hole is being operated upon.

A third feature of my improvement is to provide a feed-wheel having a continuous groove, C', of an irregular width, in the under side of the same, as shown in Fig. 4, the wider part, D, of the groove being for working the side of the button-hole, and the narrow part, D', for the eye. When the roller  $d'$ , inserted near the inner end of and projecting upwardly from the plate C, is riding in the groove C', it is retained in close frictional contact with the inner wall of said groove by means of the spring  $d^2$ , the opposite end of the plate C being provided with a post,  $d^3$ , adapted to come in contact with the bed of the machine and stiffen the plate C in this position. Now, in this position, working on the side of the button-hole, the point of the feed-pawl B<sup>2</sup> bears against the edge of the plate C for the greater part of its stroke, and does not engage with and move the ratchet-wheel B<sup>3</sup> until nearing the end of the stroke, as shown in Fig. 2, the plate being cut away and back a little to form the offset  $d^4$ , so as to allow the pawl to engage the ratchet-wheel



from this point to the close of its stroke. When the feed-wheel rotates far enough from the position shown in Fig. 4 to bring the shoulder  $d^5$  in contact with the roller  $d'$ , the latter is drawn in the direction of the edge of the feed-wheel and into the narrow part of the continuous groove  $C'$ , thus throwing the plate  $C$  into its opposite position, as shown in Fig. 3. The pawl on the end of the feed-lever now engages with the ratchet-wheel the full length of its stroke or movement, and feeds the ratchet-wheel around much farther at each stroke, thus giving the greater movement required when working around the eye of the button-hole. The inner wall of this groove is also provided with the companion shoulder  $d^6$ , diametrically opposite the shoulder  $d^5$ .

I am aware that button-hole sewing-machines have been provided with a link operated by a drive-wheel, a pawl-carrier operated by the link and having pawls pivoted thereto, a ratchet-wheel, and a shipper-lever having shields which limit the action of the pawls, and such a device I do not claim. My device differs from that construction, in that I dispense with the pawl-carrier and the shipper-lever and pivot the pawl directly to the lever  $A'$ .

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

1. In a sewing-machine, the combination of a cam having inner and outer grooves, the spreader-arm connected with the inner groove, the feed-lever having the arm  $B'$  adjustable thereon and connected with the outer groove of the cam, the feed-wheel, and intermediate connecting devices, substantially as described.

2. In a sewing-machine, the combination of the feed-lever having the pawl pivoted thereto, the drive-wheel, the cam-plate pivoted to the machine-bed, and having the roller  $d'$ , and the feed-wheel having in its under side the irregular groove  $C'$  for the roller  $d'$ , substantially as described.

3. In a sewing-machine, the combination, with the cam  $A$ , having groove  $B$ , the adjustable connecting-arm  $B'$ , the feed-lever  $A'$ , having the pawl  $B^2$ , the ratchet drive-wheel, the feed-wheel having the irregular groove and geared with the drive-wheel, and the rocking plate  $C$ , having the roller  $d'$ , substantially as described.

JOHN L. WALSH.

Witnesses:

L. M. FREEMAN,  
J. B. DONALSON.