

**No. 677,318.**

**Patented June 25, 1901.**

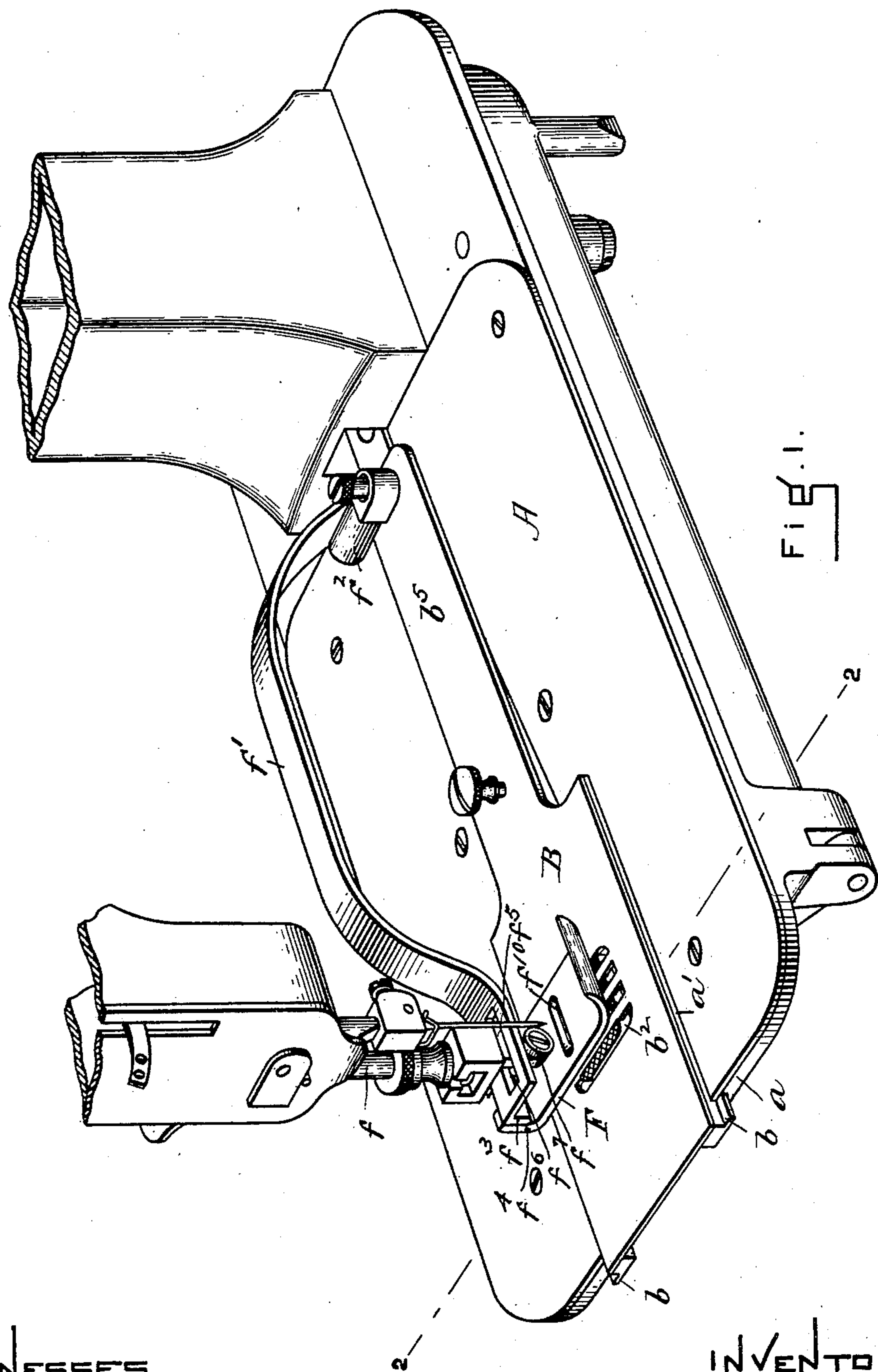
**A. A. MERRITT.**

## FEEDING MECHANISM FOR SEWING MACHINES.

(Application filed Feb. 15, 1897.)

(No Model.)

**4 Sheets—Sheet 1.**



WITNESSES

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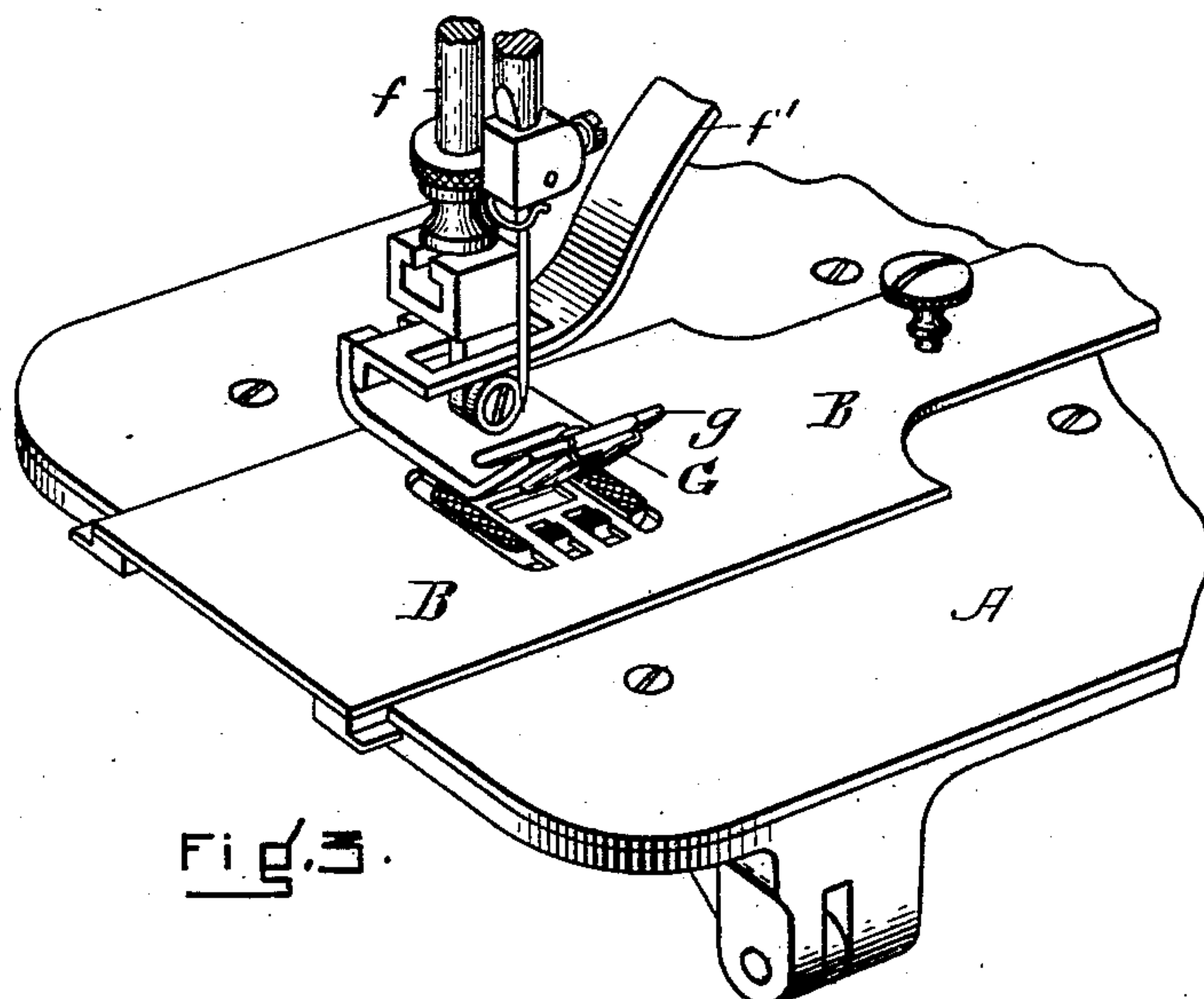
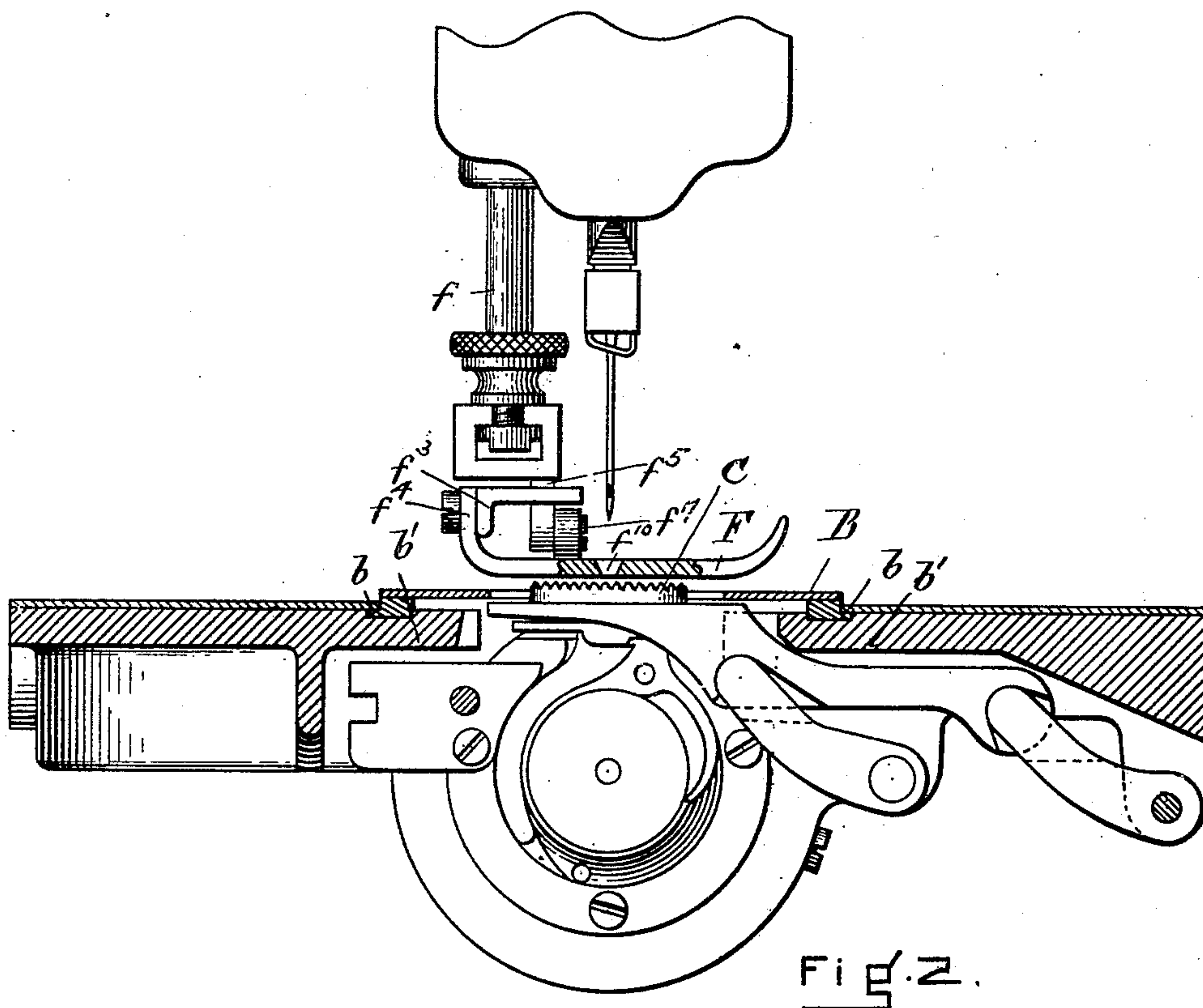
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## FEEDING MECHANISM FOR SEWING MACHINES.

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(No Model.)

**4 Sheets—Sheet 2.**



WITNESSES

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My love always

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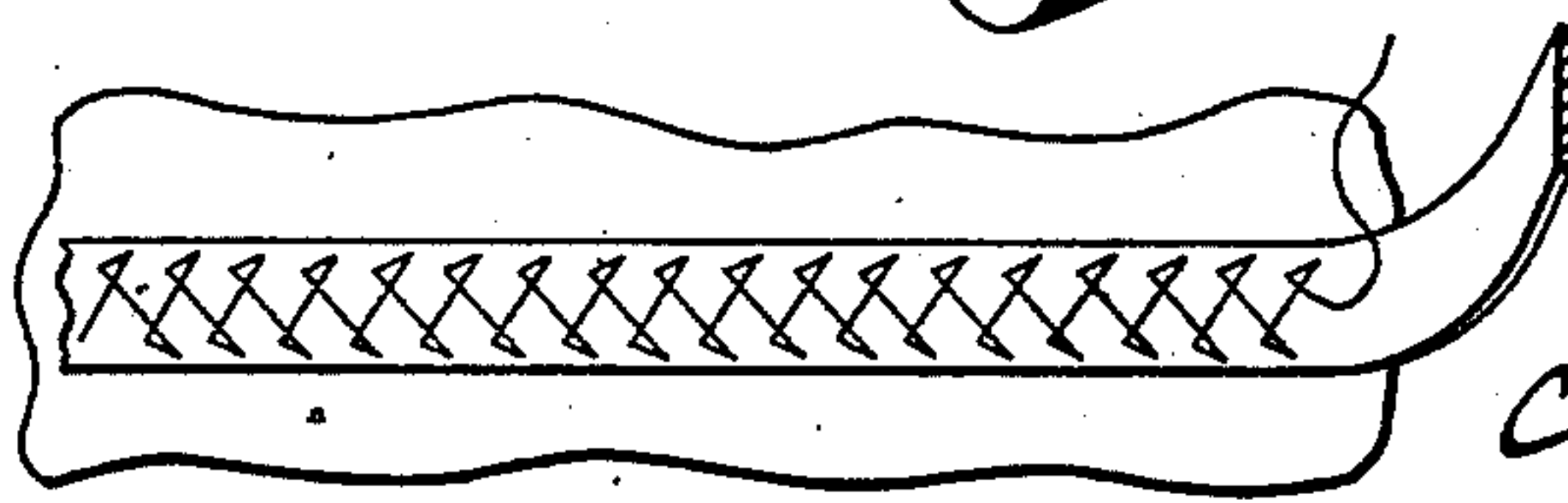


Fig. 4.

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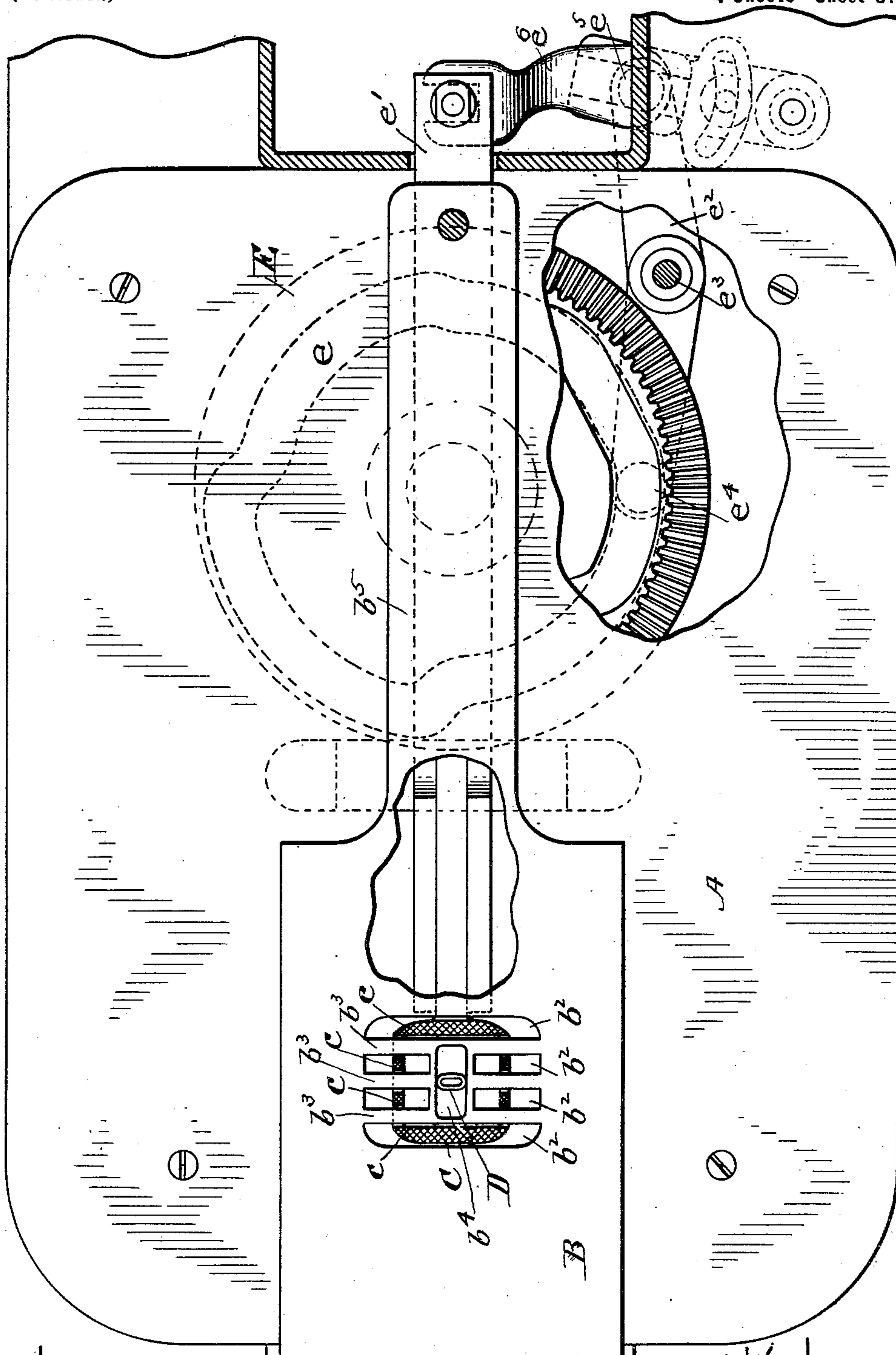
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## FEEDING MECHANISM FOR SEWING MACHINES.

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**4 Sheets—Sheet 3.**



WITNESSES

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4 Sheets—Sheet 4

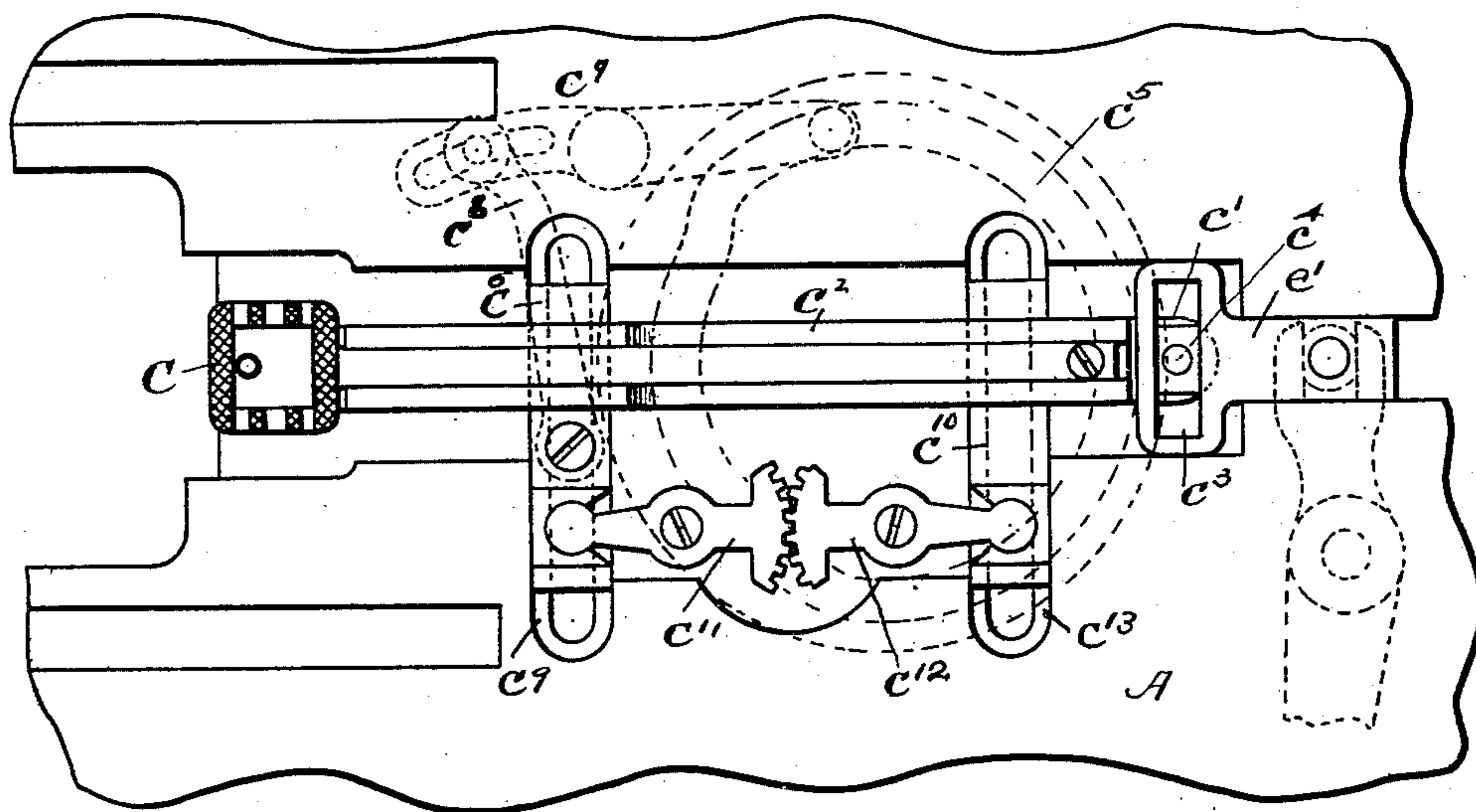


Fig. 6.

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# UNITED STATES PATENT OFFICE.

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## FEEDING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 677,318, dated June 25, 1901.

Application filed February 15, 1897. Serial No. 623,508. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR A. MERRITT, a citizen of the United States, residing at Cohoes, in the county of Albany and State of New York, have invented a new and useful Improvement in Feeding Mechanism for Sewing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to the class of sewing-machines known as "universal-feed" sewing-machines, and is an improvement upon the machine described in Letters Patent No. 519,676, dated May 8, 1894, granted J. T. Jones.

In the drawings, Figure 1 is a view in perspective of a sufficient portion of the machine to represent my invention. Fig. 2 is a view in cross vertical section upon the dotted lines 2 2 of Fig. 1. Fig. 3 is a view in perspective, illustrating the application to the presser-foot of a guide for directing or guiding a narrow piece of fabric like braid onto the surface of the material to which it is to be attached and to the stitching devices. Fig. 4 is a view in plan, representing a piece of braid as thus attached to other material. Fig. 5 is an enlarged view, principally in plan, to illustrate the work-plate and its construction, the feed-dog, and the mechanism for moving the same lengthwise the bed of the machine. Fig. 6 is a view principally in plan of devices for moving the feed-dog forward and back in a straight line.

In the drawings, A is the bed of the machine. Opening from its front edge *a* is a wide recess *a'*, in which is arranged the work-plate B, the work-plate having on each side a flange *b*, which extends under the edge of the bed upon each side of the recess. (See Figs, 1 and 2.) The flanges and sections upon the upper surfaces of the plate adjacent thereto also bear upon the surfaces of the ribs *b'*, and they may be slightly set into said surfaces, (see Fig. 2,) if desired. The work-plate has the openings *b<sup>2</sup>* extending across the same at or near its center, in which the sections *c* of the

feed-dog C are adapted to be moved vertically and also lengthwise the recesses. This provides the work-plate with a support for the material having a number of grids or cross-bars *b<sup>3</sup>* practically over the feed-dog and close to the throat D of the machine and which affords means whereby the material being sewed is supported closely to the stitch-forming devices and is kept from sagging while it is being fed. This is of especial consequence in the stitching of very light or thin delicate elastic fabrics. The work-plate also has the long slot or hole *b<sup>4</sup>* extending lengthwise it midway the openings *b<sup>2</sup>* and in line with the throat D to permit the movement of the plate in relation to the throat and without moving over the same.

It will be seen that the work-plate has a large area upon each side of the dog of sufficient extent to receive and hold the fabric or material being stitched. It will also be seen that the surface of the work-plate is slightly above the surface of the bed A and that the work-plate acts to receive and hold the material instead of the bed, as heretofore.

The work-plate has a movement lengthwise the bed imparted to it by the cam-groove *e* in the cam-wheel E, and the same cam also moves the feed-dog lengthwise the bed. The cam-groove is represented as connected with the plate or slide *e'*, to which a rearward extension or tongue *b<sup>5</sup>* of the work-plate is attached at its front end by means of a lever *e<sup>2</sup>*, pivoted at *e<sup>3</sup>*, having a cam-pin *e<sup>4</sup>* at one end to enter the groove *e* and connected at *e<sup>5</sup>* at its opposite end to an adjustable lever *e<sup>6</sup>*, which in turn is connected with the end of the slide *e'*. These operating devices are like similar ones described in the said Patent No. 519,676, as are also the devices for moving the feed-dog C transversely the bed and for raising and lowering the same.

It will be understood that the feed-dog C is moved lengthwise the bed to vary the distance apart or length of stitches which are being placed laterally in a fabric or out of line with its general line of progression and that it is moved transversely the work-plate to feed the material forward or forward and back and that



these movements of the feed-dog take place while the work-plate is stationary and while it is being moved and that by providing the work-plate with the movement specified the material is better fed and held than by a structure which does not sufficiently support the material and which moves in all directions with the feed-dog.

The presser-foot F is mounted at the lower end of the presser-foot rod  $f$  to be moved upward and pressed downward thereby and to be held downward by the usual presser-rod, depressing-spring, or other equivalent spring. The presser-foot is also adapted to be moved backward and forward with the work-support B and in respect to the end of the presser-rod. The presser-foot is preferably made large enough to cover or very nearly cover the openings  $b^2$  in the work-support B. It has the long throat-opening  $f^{10}$ , and it is connected with the plate B to be movable therewith by the long arm  $f'$ , which extends backward and is pivoted at  $f^2$  to the tongue or rearward extension  $b^5$  of the plate B. At its forward end it has a downwardly-extending ear  $f^3$  at one side, to which an upwardly-extending section  $f^4$  of the presser-foot is detachably secured, preferably by screws, and it is connected to the end of the presser-rod by an arm  $f^5$ , attached to the end of the presser-rod and extending through a long slot  $f^6$  in the plate, which arm bears an antifriction-roller  $f^7$ , arranged between the under surface of the end of said arm  $f'$  and the upper surface of the presser-foot and upon which said arm and presser-foot move as they are caused to be carried backward and forward by the work-plate B. This provides a structure by which the presser-foot while operated in the usual way by the presser rod or bar also has the traveling movements in relation to it specified. The purpose of thus providing the foot with these movements with the work-plate is to prevent the material from being accidentally rumpled or moved out of place by contact with the under surface of the presser-foot, the presser-foot having all the horizontal movements of the work-plate.

In Fig. 6 I have illustrated a mechanism for moving the feed-dog transversely the work-plate which is adapted to provide it with a parallel or straight movement instead of a movement upon a slight arc, or such as the mechanism described in said Patent No. 519,676, and this result is reached by moving the feed-dog and its bar throughout its length to the same extent. This result is reached by providing the rear end  $c'$  of the feed-dog arm  $c^2$  with the slide  $e'$ , which permits it to be moved across the same to the same extent that the dog is moved instead of being pivoted thereto. This connection is represented as obtained by providing the slide  $e'$  with a long slot  $c^3$  crosswise it, in which a pin  $c^4$  at the end of the feed-dog arm projects. The feed-dog-actuating-cam groove  $c^5$  is connected

with a slide  $c^6$ , carrying the feed-dog bar  $c^2$ , by means of a lever  $c^7$  and link  $c^8$ , as described in said patent. The slide, however, is carried in a straight slideway  $c^9$ , and it is connected with another slide  $c^{10}$ , which carries the rear end of the feed-dog arm, by means of the two sectors  $c^{11}$   $c^{12}$ , the sector  $c^{11}$  being operated by the slide  $c^6$  and communicating through the sector  $c^{12}$  movement to the slide-block  $c^{10}$ , which also moves in the straight slideway  $c^{13}$ . By this means the slide-blocks which carry the feed-dog arm and in which the feed-dog is moved backward and forward are moved together, and thus transfer in a straight line the feed-dog and its arm. This modification is desirable in sewing absolutely straight seams or lines of stitches.

In Fig. 3 the presser-foot is represented as having at its toe portion  $g$  the inclined guide G, open at its top and at its bottom, adapted to receive and hold a narrow fabric like a braid and permit its movement through the same and at the same time prevent lateral movement thereof in relation to the presser-foot or stitching devices, excepting as it is moved in unison with the presser-foot and with the work-support. This directs the course of the braid or other narrow fabric to the surface of the material, to which it is attached by stitching of the character specified. (See Fig. 4.)

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a sewing-machine, the combination with the stitch-forming devices thereof, of a feed-dog divided into a series of sections  $c$ , mechanism for imparting movements to said feed-dog both crosswise and lengthwise the bed-plate of the machine, a work-plate provided with the slot  $b^4$  and with a series of slots  $b^2$  in which last-named slots the sections of said feed-dog work and in which they closely fit, said slots alternating with bars  $b^3$  which serve to support the material between the said slots, a broad presser-foot connected with said work-plate and adapted to extend over the several sections of said feed-dog, mechanism for reciprocating said presser-foot and work-plate transversely to the line of the general work-advancing movements of the said feed-dog, and a relatively stationary needle-throat D arranged in the said slot  $b^4$ .

2. In a sewing-machine, the combination with the stitch-forming devices thereof, of the reciprocating work-plate B provided with the extension  $b^5$ , the arm  $f'$  hinged at its rear end, at  $f^2$ , to said extension and provided with the slot  $f^6$  at its forward part, the presser-foot F secured to the forward end of said arm and provided with the slot  $f$ , and the presser rod or bar provided with the arm  $f^5$  extending through said slot  $f^6$  and carrying, beneath the said arm  $f'$ , the antifriction-roller  $f^7$ .

3. In a sewing-machine, the combination with the stitch-forming devices thereof, of a



feed-dog and mechanism for imparting movements thereto both lengthwise and crosswise the bed of the machine, an arm, as  $c^2$ , by which said feed-dog is carried, a plurality of  
5 slides, as  $c^6$ ,  $c^{10}$ , which serve as supports for said arm, and connections between said slides whereby they are caused to reciprocate to-

gether simultaneously in their slideways to cause straight-line feeding movements to be imparted to said feed-dog.

ARTHUR A. MERRITT.

In presence of—

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