(No Model.) 3 Sheets—Sheet 1.

J. G. GREENE.

BUTTON HOLE SEWING MACHINE.

No. 360,433. Patented Apr. 5, 1887.

Fig. 1.

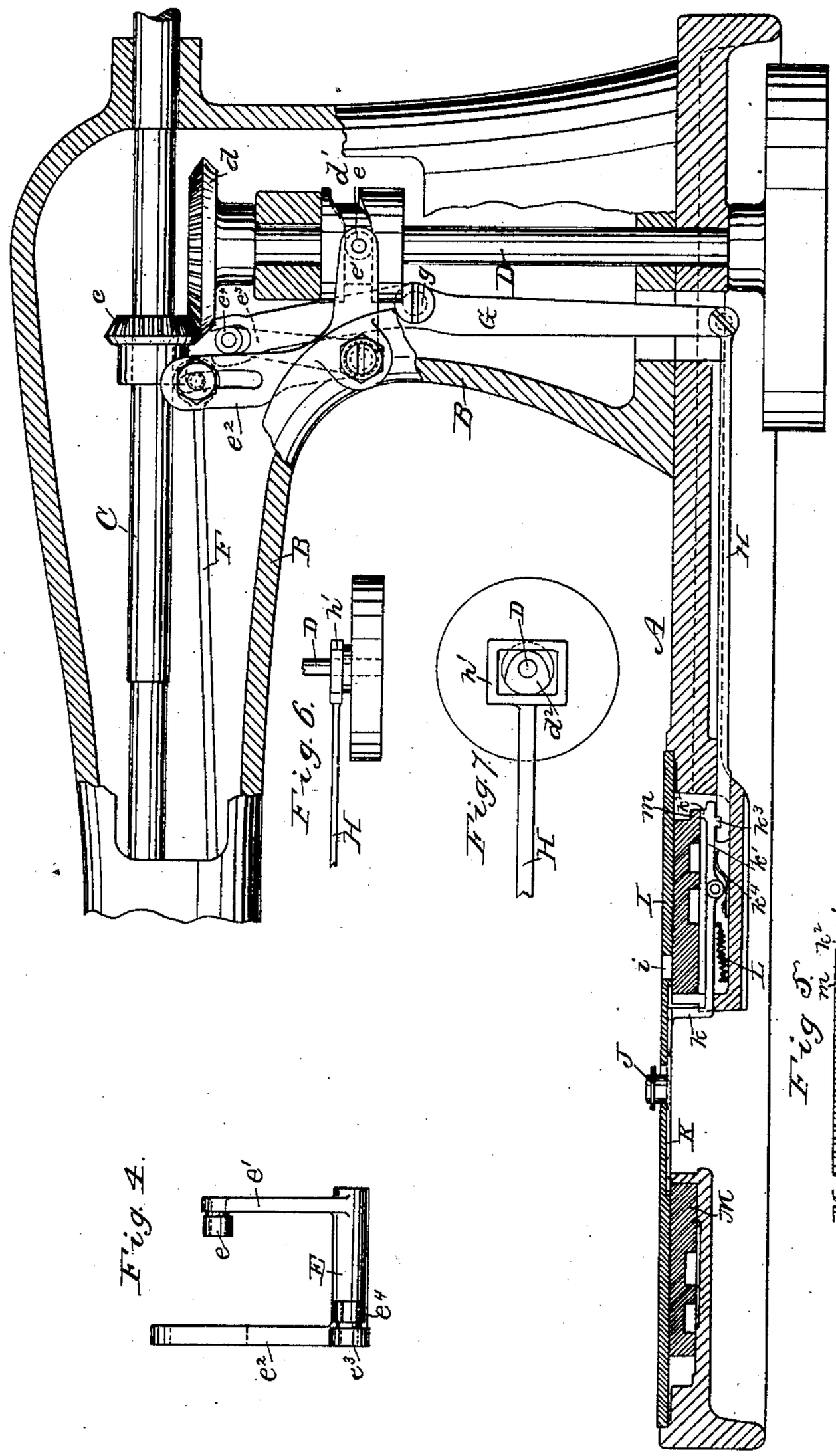
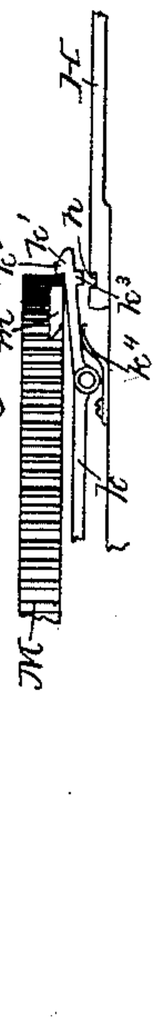


Fig. 2.

Fig. 6.

Fig. 7.

Fig. 8.



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(No Model.) 3 Sheets—Sheet 2.

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BUTTON HOLE SEWING MACHINE.

No. 360,433. Patented Apr. 5, 1887.

Fig. 2.

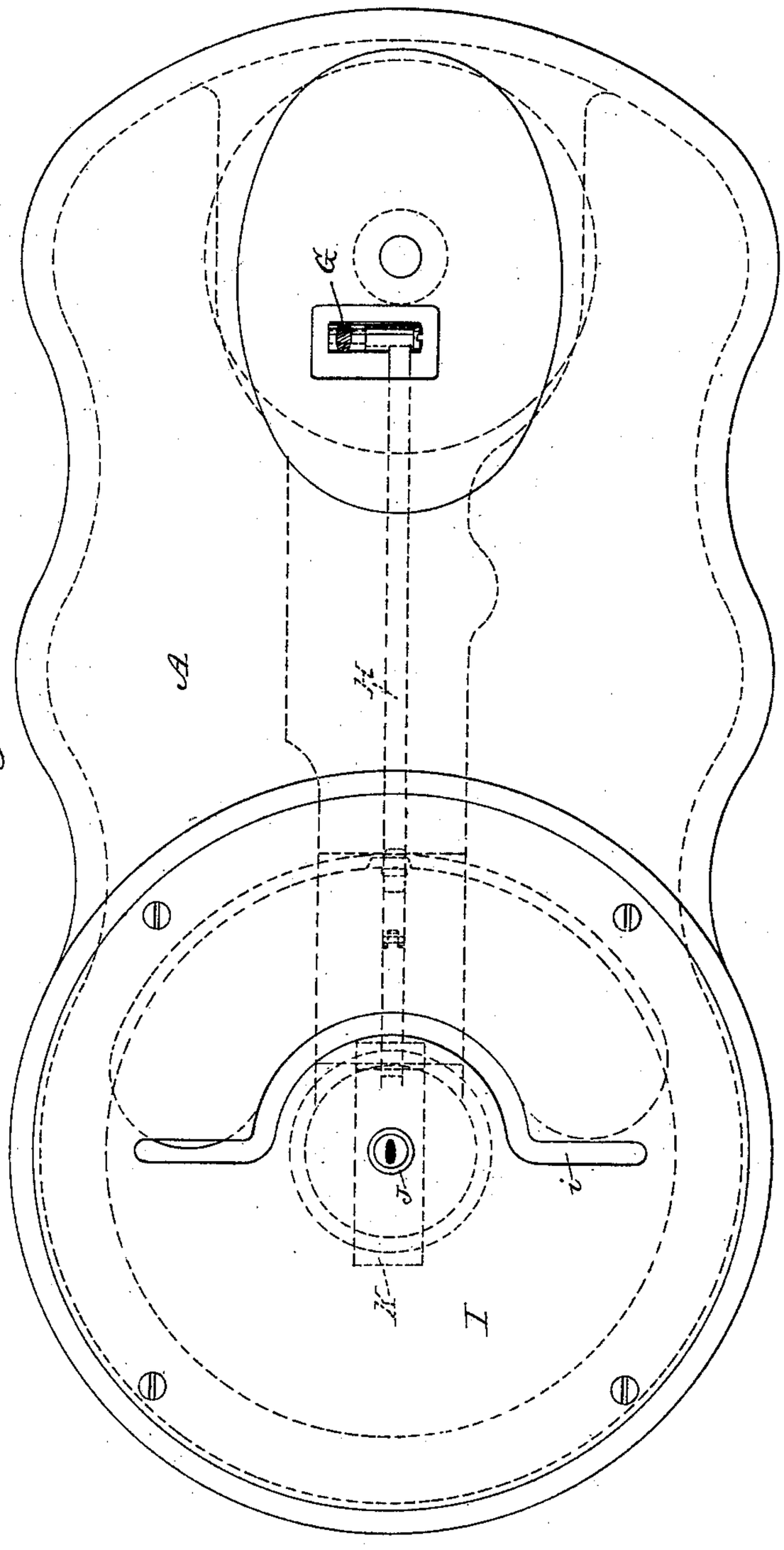
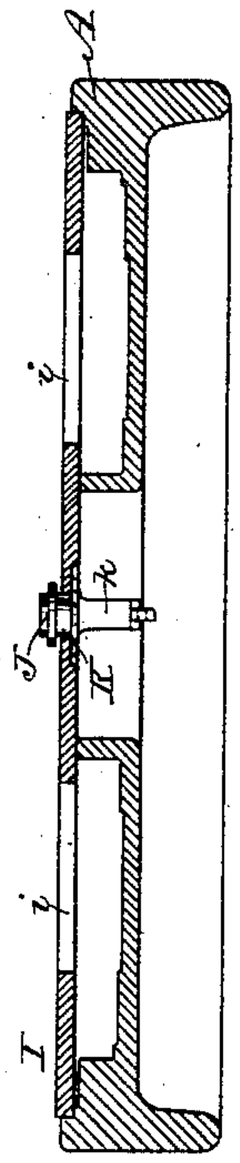


Fig. 3.



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(No Model.) 3 Sheets—Sheet 3.

J. G. GREENE.

BUTTON HOLE SEWING MACHINE.

No. 360,433. Patented Apr. 5, 1887.

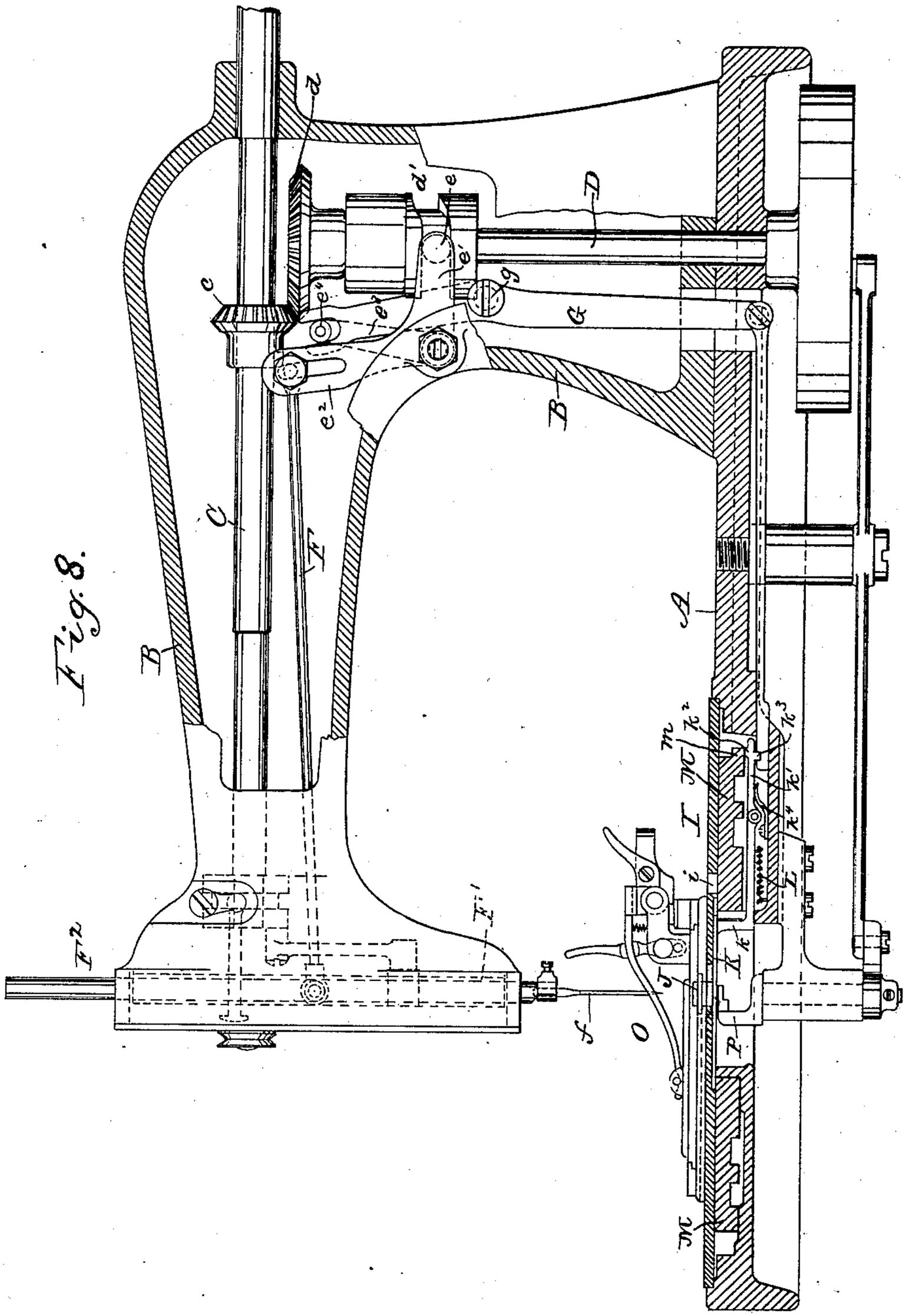

Fig. 8.

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UNITED STATES PATENT OFFICE.

JAMES G. GREENE, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY OF NEW JERSEY.

BUTTON-HOLE SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 360,433, dated April 5, 1887.

Application filed March 20, 1886. Serial No. 195,900. (No model.)

To all whom it may concern:

Be it known that I, JAMES G. GREENE, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Button-Hole Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to provide a simple and effective mechanism for automatically barring button-holes after they have been otherwise completely finished by the stitch-forming mechanism of a button-hole sewing-machine. To this end I mount the guiding-button for the work-clamp on a slide which is at the proper moment automatically thrown into action, so as to reciprocate the said work-clamp across the line of feed and in opposition to the lateral reciprocating movement of the needle-bar of the machine, and thus form a bar across the end of the otherwise finished button-hole to fully complete the same.

In the accompanying drawings, Figure 1 is a sectional elevation of a button-hole sewing-machine embodying my invention. Fig. 2 is a plan view of the bed-plate of the machine, and Fig. 3 is a cross-section thereof. Figs. 4 and 5 are detail views, which will be hereinafter referred to; and Figs. 6 and 7 are detail views illustrating a modification of the operating mechanism of the button-carrying slide. Fig. 8 is also a sectional elevation of a machine embodying my invention.

A denotes the bed-plate, and B the arm, of an ordinary "Singer" button-hole sewing-machine.

C is the driving-shaft, having a bevel-gear, *c*, meshing with a larger bevel-gear, *d*, on the vertical shaft D, so that the latter shaft makes one revolution while the driving-shaft turns twice, as is common in this class of machines. The shaft D is provided with a cam, *d'*, engaged by a pin or roller, *e*, carried by an arm, *e'*, of a rock-shaft, E, (see Fig. 4,) said shaft having a second arm, e^2, connected by a rod, F, to an ordinary frame, F', by which the needle-bar F^2 is moved laterally after each descent to make the overseaming-stitches, in a well-known manner. The shaft E has, in addition to the arms *e'* and e^2, a third arm, e^3, carrying a pin or roller, e^4, which is engaged by the forked upper end of a lever, G, pivoted at *g* to the arm B and connected at its lower end to the rod H, the forward end of which is provided with a notch, *h*.

I denotes the work-plate, having the usual guiding-slot, *i*, and J is the button by which the cloth-clamp O is guided in the usual way. The button J, instead of being fixed to the work-plate, as heretofore, is mounted on a small slide, K, movable lengthwise of the machine in a recess beneath the work-plate, said slide being provided with an arm, *k*, extending beneath the feeding-wheel M. To the arm *k* is pivoted a dog, *k'*, having two small lugs or projections, k^2 k^3. A spring, L, (see Fig. 1,) is provided to hold the arm *k* and the plate K in the forward position (shown in Fig. 1) when the said plate is to be at rest, and a spring, k^4, presses the dog *k'* upward, as shown in Fig. 5, when the said dog is to be disconnected from the rod H. The feeding-wheel M is provided with a lug, *m*, which, when the last side of the button-hole has been stitched, comes in contact with the lug k^2 on the dog *k'*, thus pressing said dog downward, and causing the lug k^3 to engage the notch *h* of the reciprocating rod H, when in the movement of the said rod the said notch next registers with the said lug k^3, and thereby causing the movements of the said rod to be imparted to the button J through the dog *k'*, arm *k*, and sliding plate K.

As the movements of the lower end of the lever G are in opposition or contrary to the movements of the arm e^2, by which the needle-bar is moved laterally, it is obvious that the movements of the button J, carried by the sliding plate K, will be contrary to the lateral movements of the needle. From this it results that the work-clamp guided by the button J will be reciprocated laterally, so as to move the work across the line of feed of the button-hole a sufficient distance to cause long barring-stitches to be made across the end of the otherwise completed button-hole, and thereby fully finish the same.

The stitch-forming mechanism, comprising the needle *f* and the looper P and their operating mechanisms, is or may be of any well known form, that herein shown being tr[illegible]

same as is shown by United States Patent No. 272,126.

Instead of reciprocating the rod H by the lever G, the said rod may be provided with a yoke, h', surrounding a cam, d^2, on the lower end of the shaft D, as shown in Figs. 6 and 7, and as it is obvious that other means than those herein shown may be employed for reciprocating the button J, I do not wish to be understood as limiting my invention to the particular mechanism herein shown and described for this purpose.

I do not wish to be understood as claiming, broadly, an automatic mechanism for reciprocating the cloth-clamp of a button-hole sewing-machine across the line of the feeding movement of said clamp for the purpose of barring button-holes which have been otherwise completed, as I am aware that such an invention is shown by the application of Charles S. Jordan, No. 170,486, filed July 2, 1885; but in Jordan's machine the work-plate which supports the cloth-clamp and which carries the button for guiding the latter is made movable and is reciprocated to give the clamp the proper barring movements, while in my machine the work-plate is stationary, but the guiding-button is movable independently of said plate.

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

1. In a button-hole sewing-machine, the combination, with the stitch-forming mechanism, the cloth-clamp, and the stationary work-plate, of a guiding-button movable independently of said work-plate, and automatic mechanism for reciprocating said button for barring a button-hole when it has been otherwise completed, substantially as set forth.

2. In a button-hole sewing-machine, the combination, with the stitch-forming mechanism, the cloth-clamp, and the feed-wheel and the stationary work-plate, of the movable guiding-button, operating mechanism for reciprocating said button when desired, and a device thrown into action by the said feed-wheel for operatively connecting the said button with the said mechanism when a button-hole is to be barred, as set forth.

3. In a button-hole sewing-machine, the combination, with the stitch-forming mechanism, the cloth-clamp, the work-plate, and feeding-wheel, the latter having a lug or projection, of a movable guiding-button, a slide carrying said button and having an arm extending beneath said wheel, a dog pivoted to said arm, a spring for lifting said dog, and a reciprocating rod, with which the said dog is engaged by the said lug or projection when a button-hole is to be barred, substantially as set forth.

4. In a button-hole sewing-machine, the combination, with the stitch-forming mechanism, the cloth-clamp, and the work-plate, of the guiding-button J, the slide K, provided with the arm k, the dog k', pivoted to said arm and provided with lugs k^2 k^3, the spring k^4, the rod H, having notch h, and the vibrating lever G, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES G. GREENE.

Witnesses:
PHILIP DIEHL,
L. L. BURRITT.