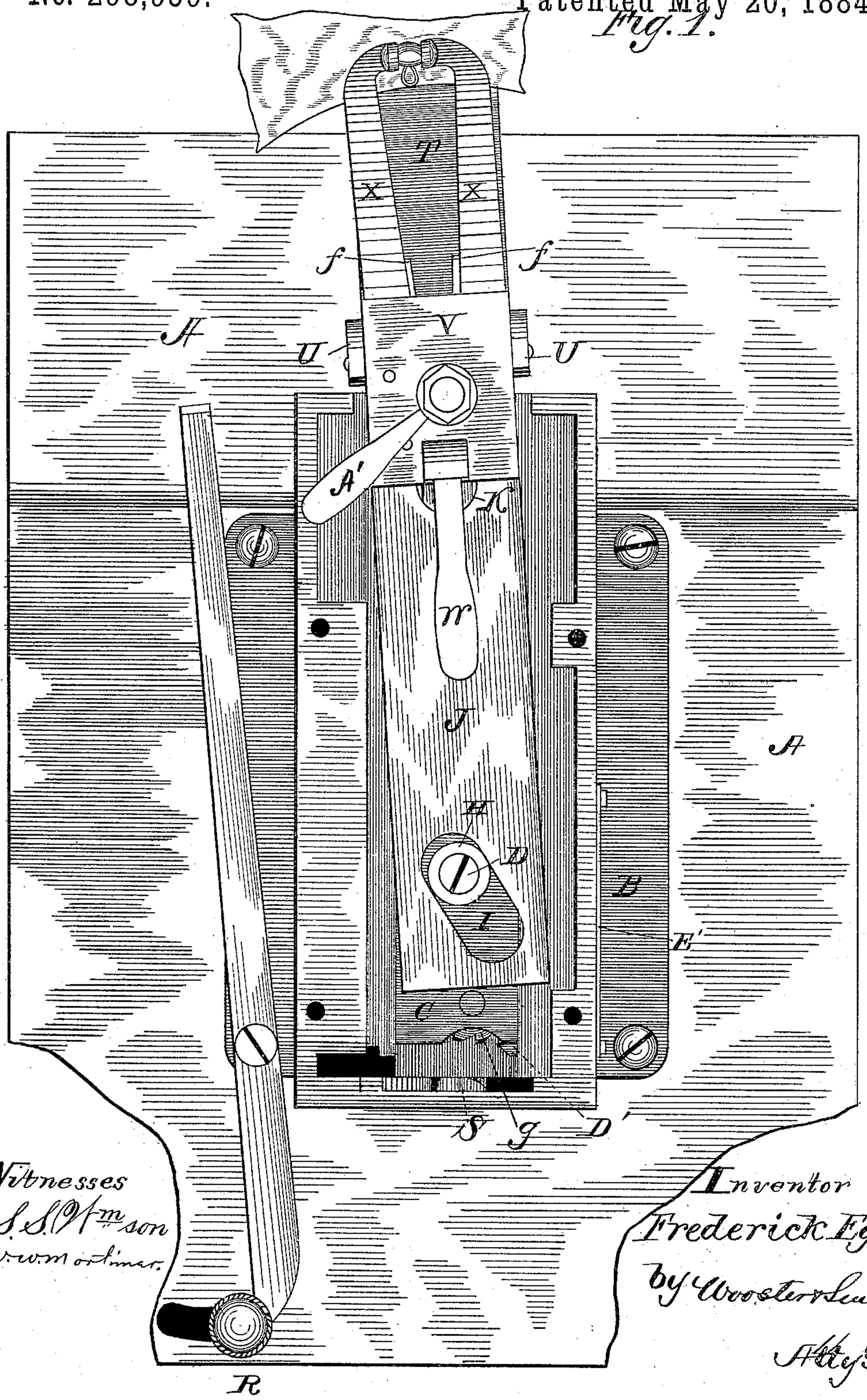
(No Model.) 9 Sheets—Sheet 1.

F. EGGE.

MACHINE FOR SEWING ON BUTTONS.

No. 298,959. Patented May 20, 1884.

Fig. 1.



Witnesses
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(No Model.) 9 Sheets—Sheet 2.

F. EGGE.

MACHINE FOR SEWING ON BUTTONS.

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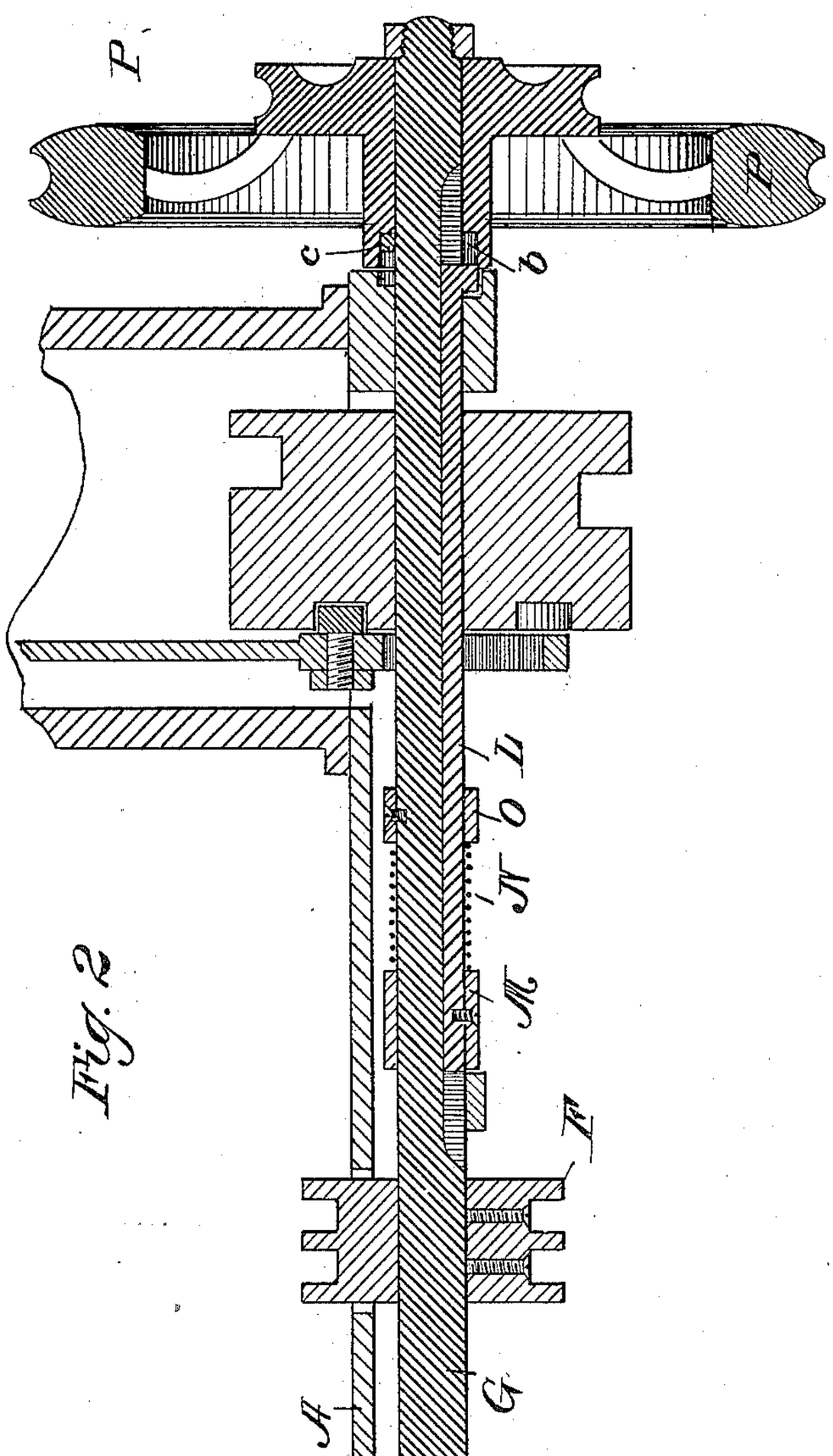

Fig. 2

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(No Model.) 9 Sheets—Sheet 3.

F. EGGE.

MACHINE FOR SEWING ON BUTTONS.

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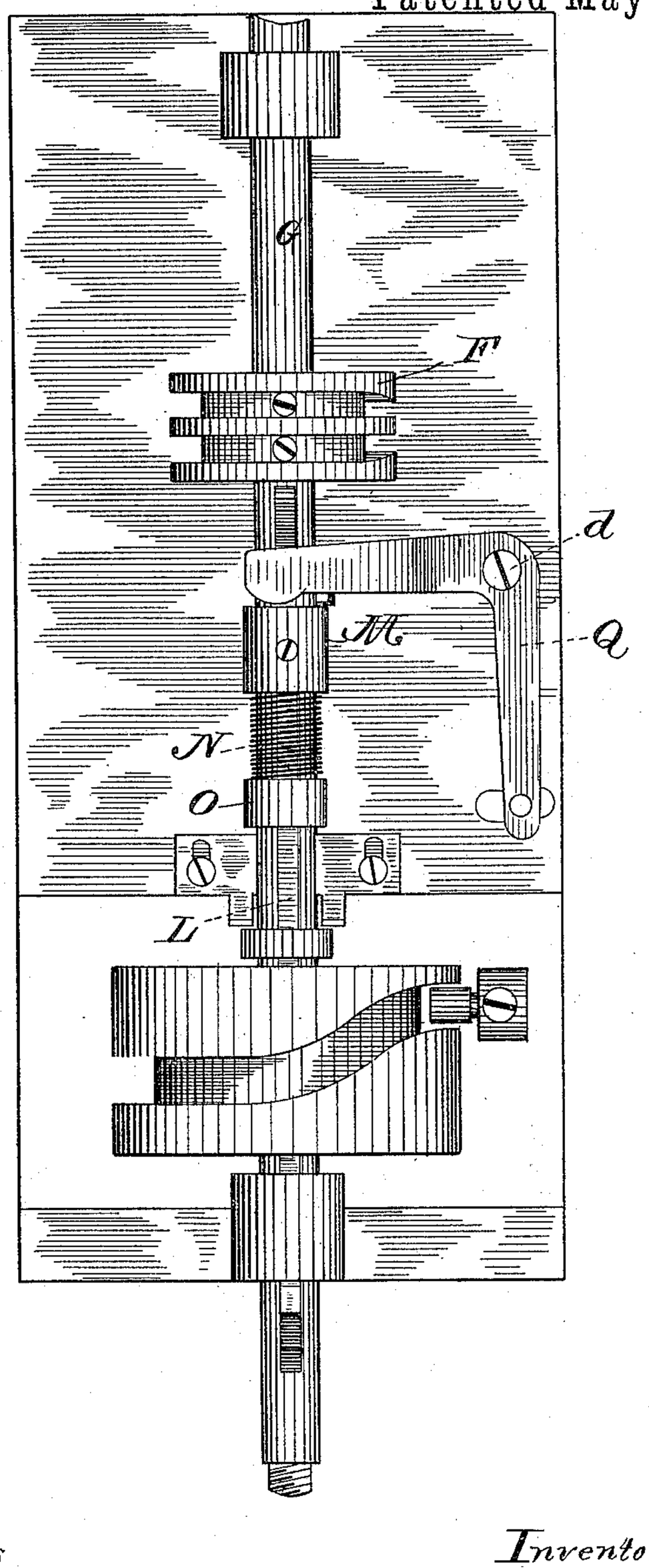
Fig. 3.



Witnesses
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(No Model.) 9 Sheets—Sheet 4.

F. EGGE.

MACHINE FOR SEWING ON BUTTONS.

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Fig. 4.

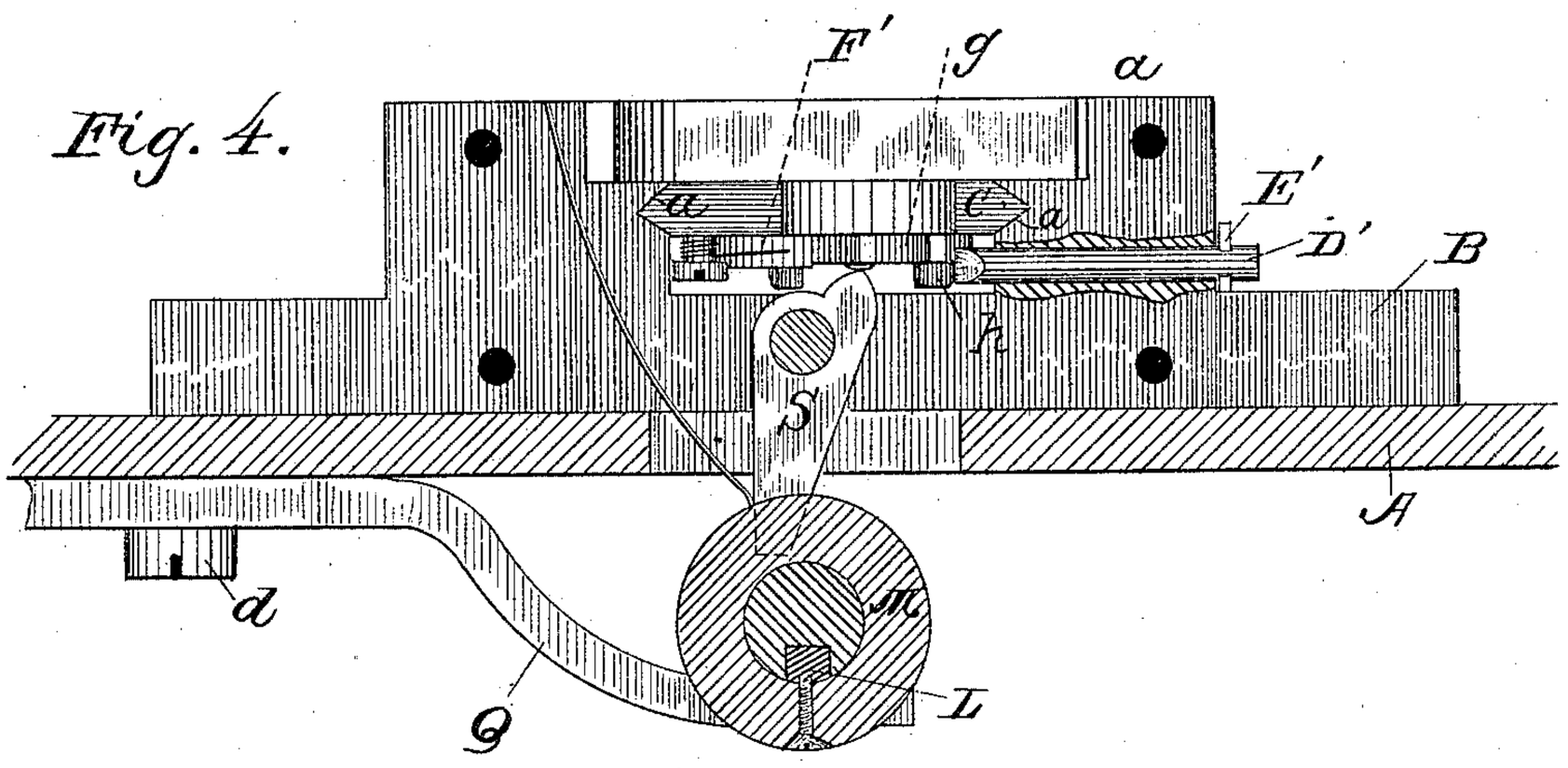
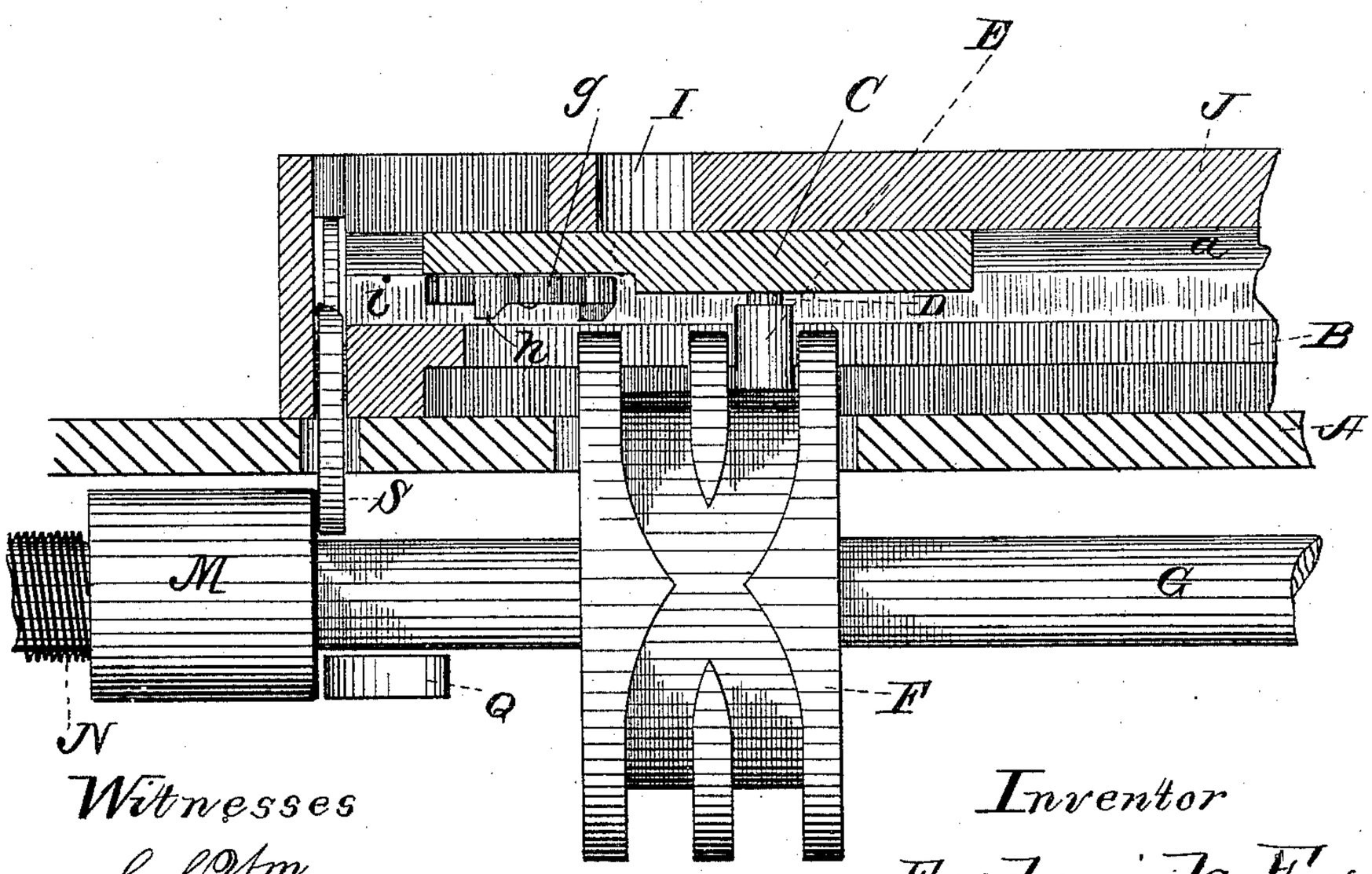


Fig. 5.



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(No Model.) 9 Sheets—Sheet 5.

F. EGGE.

MACHINE FOR SEWING ON BUTTONS.

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Fig. 6.

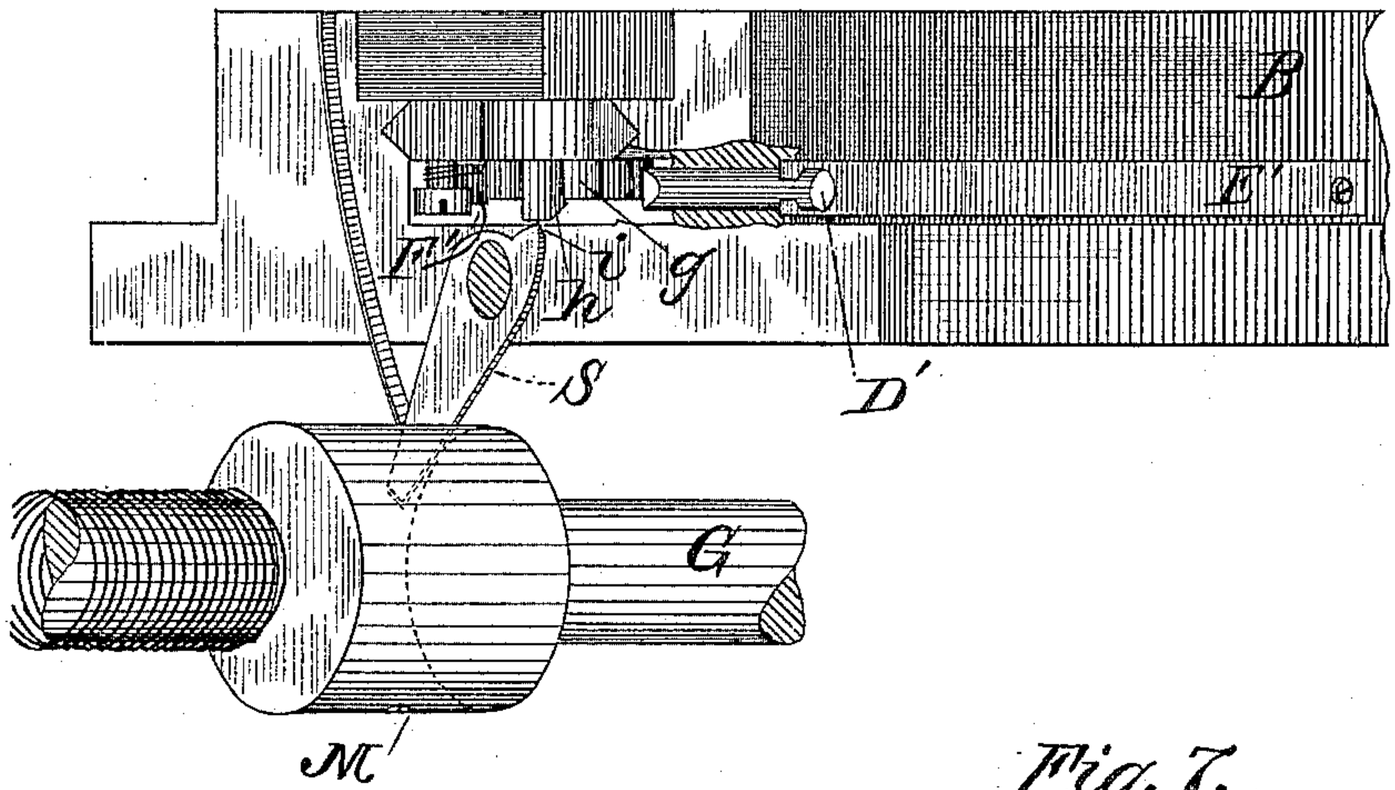
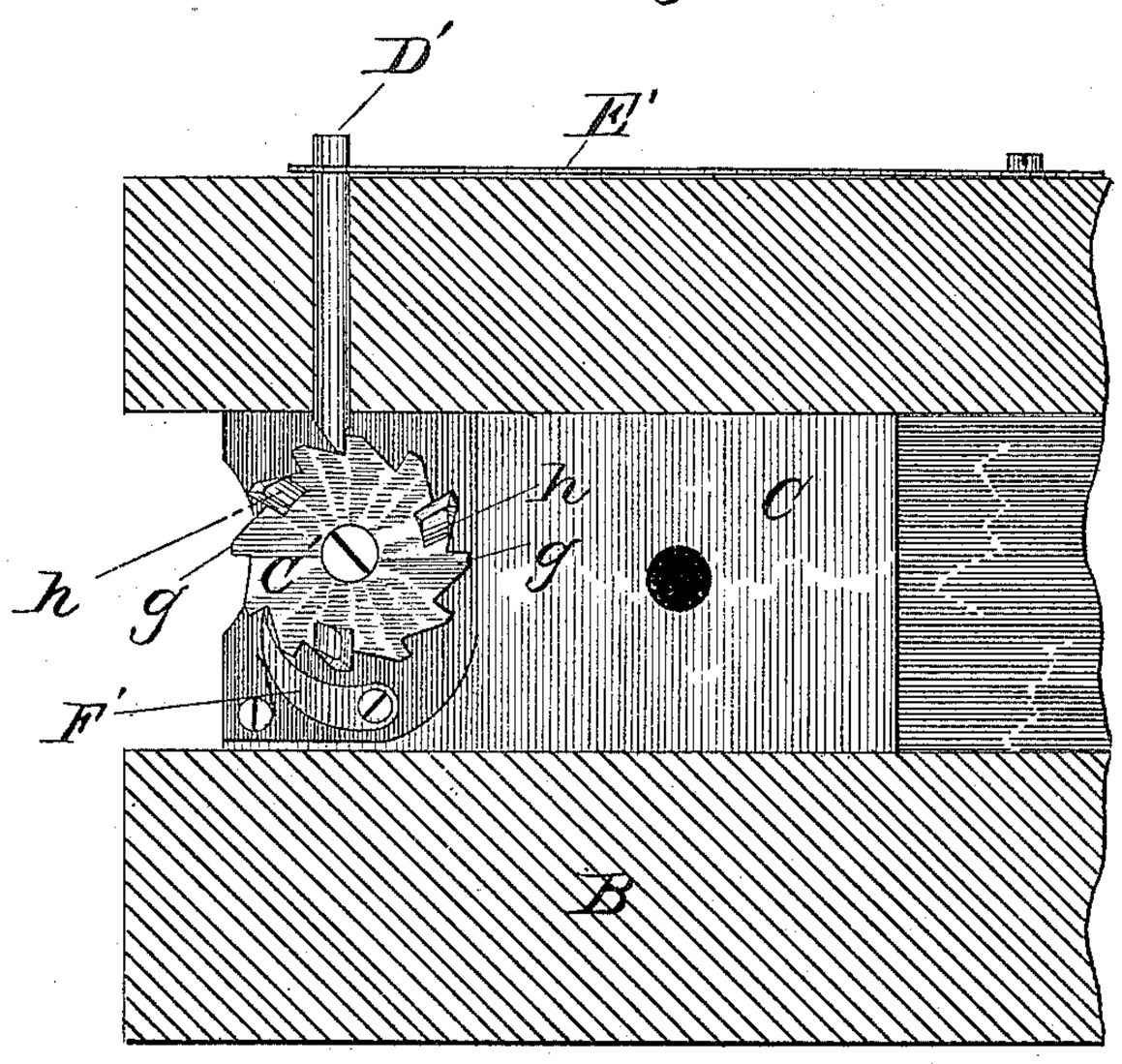


Fig. 7.



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9 Sheets—Sheet 6.

F. EGGE.

MACHINE FOR SEWING ON BUTTONS.

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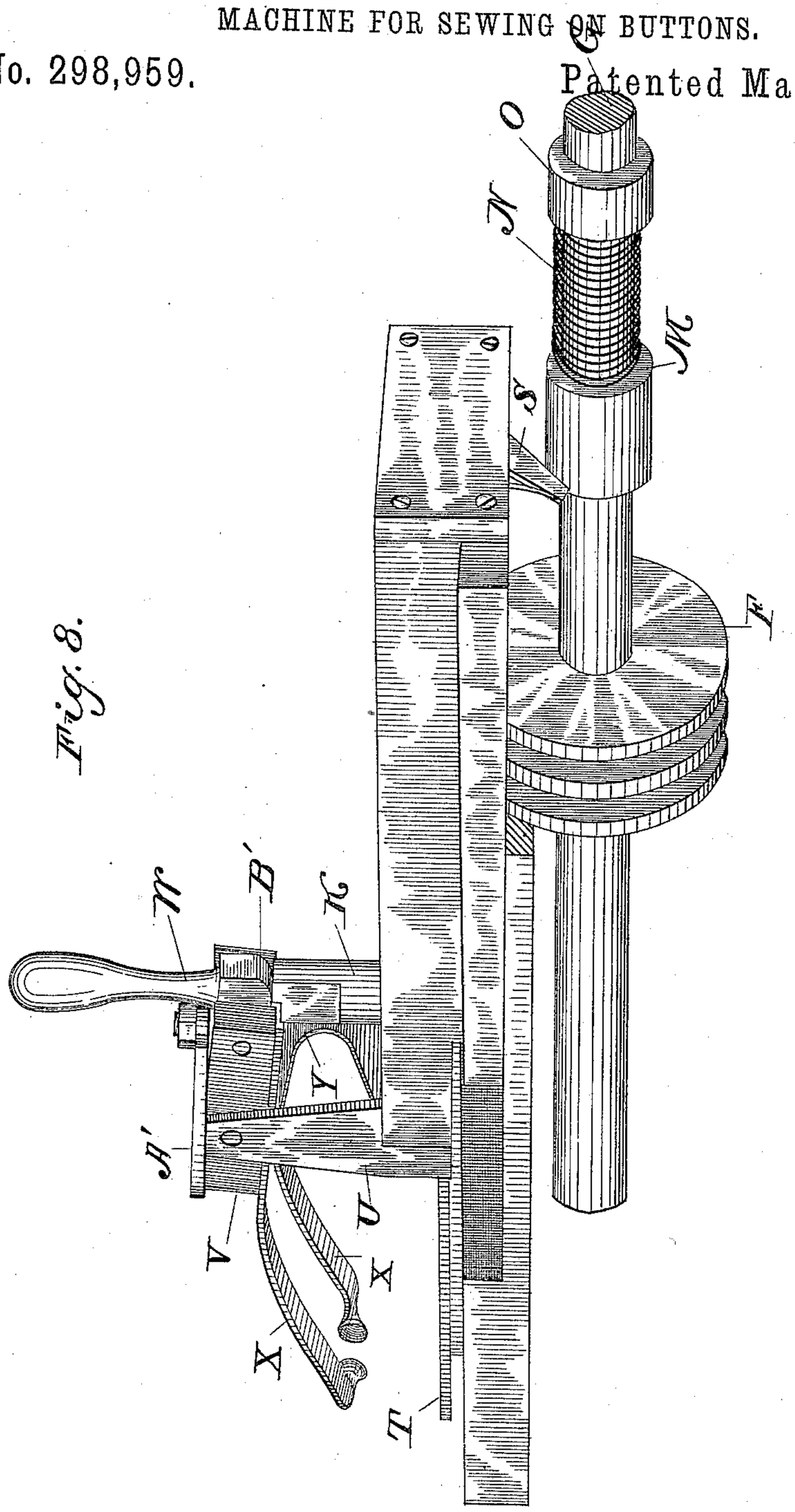
Fig. 8.



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MACHINE FOR SEWING ON BUTTONS.

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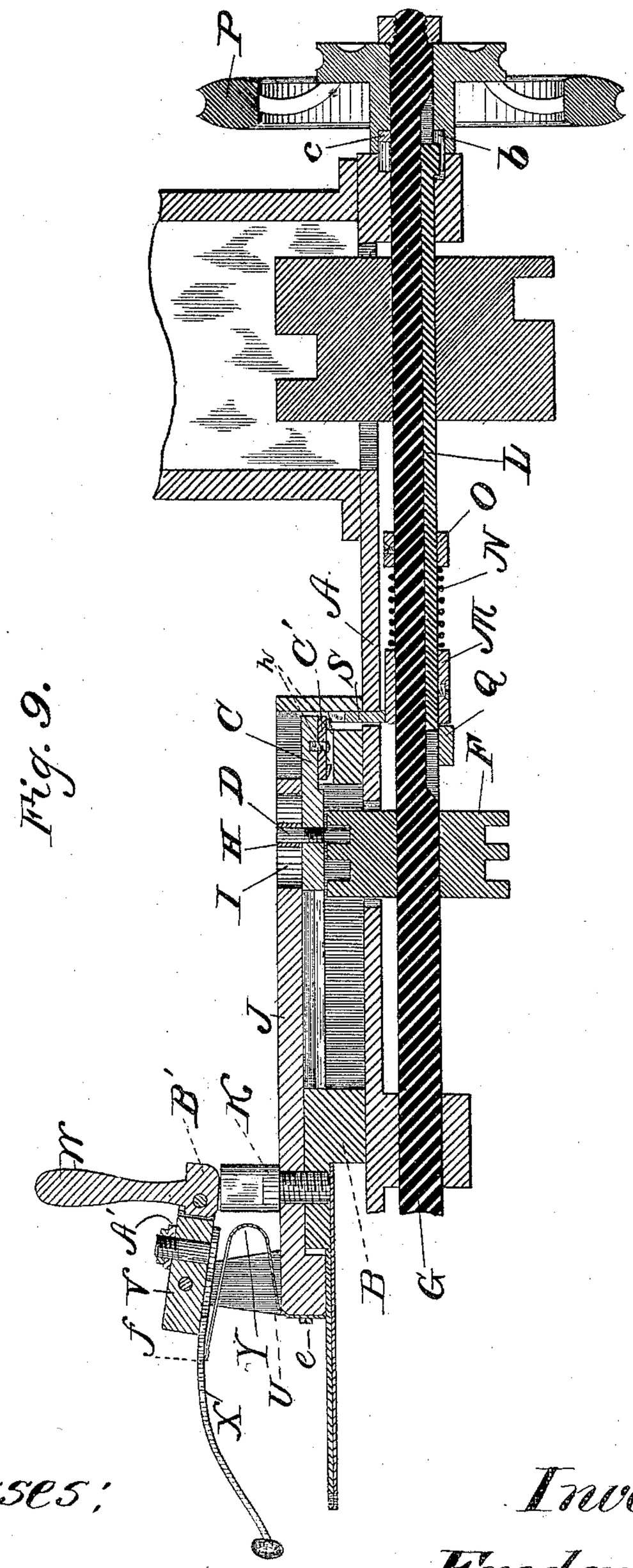

Fig. 9.

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F. EGGE.

MACHINE FOR SEWING ON BUTTONS.

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Fig. 10.

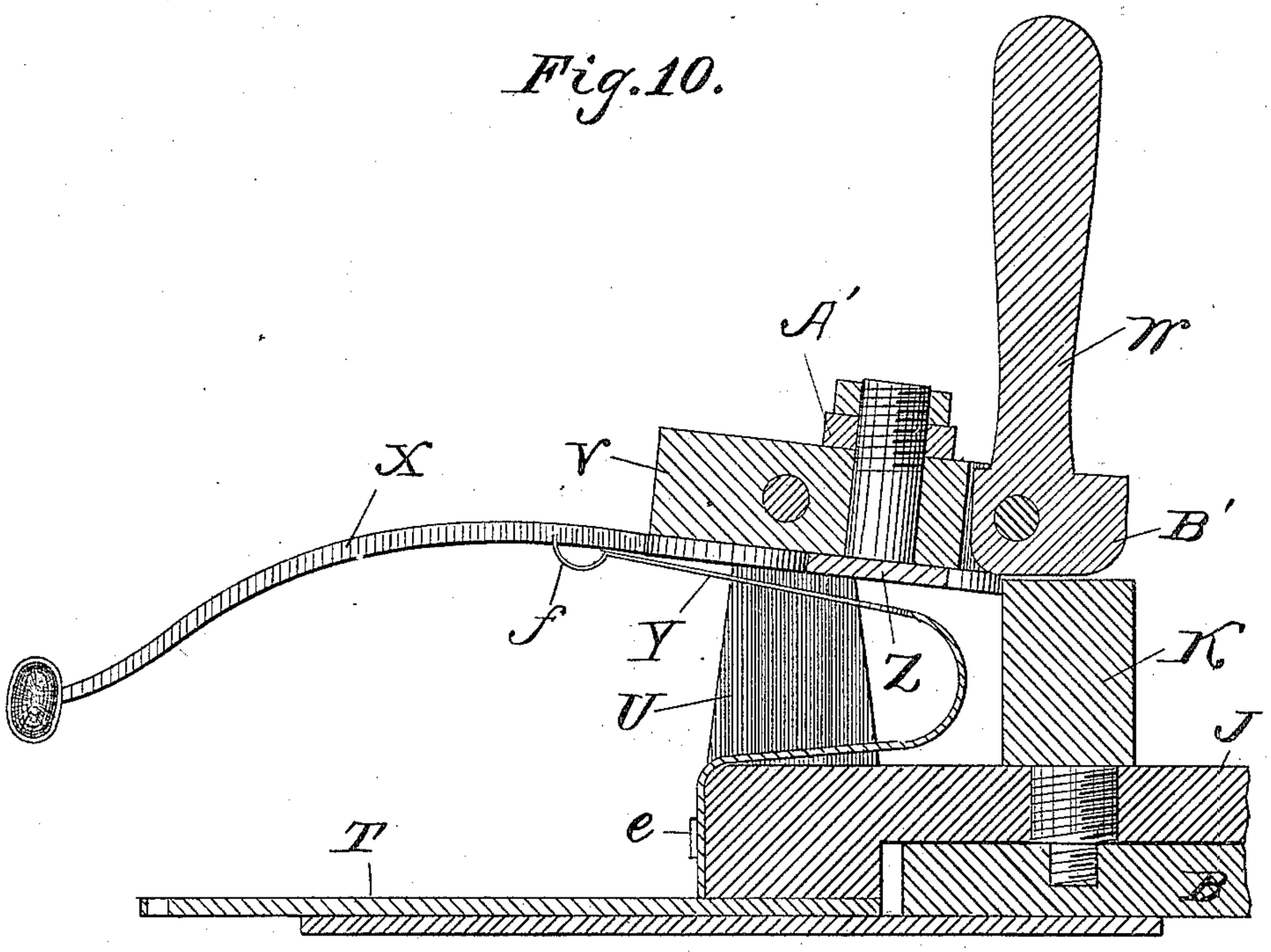
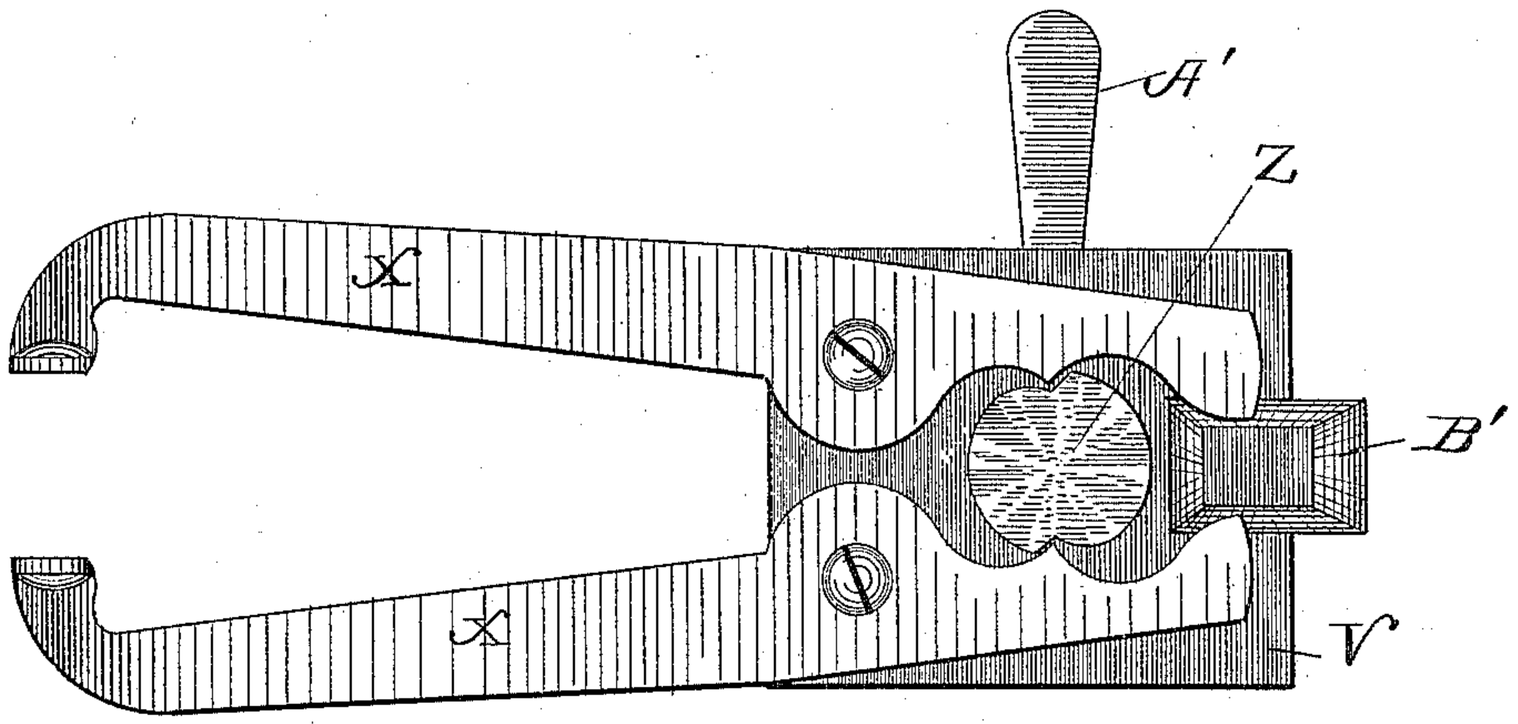


Fig. 11.



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(No Model.) 9 Sheets—Sheet 9.

F. EGGE.

MACHINE FOR SEWING ON BUTTONS.

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Fig. 12.

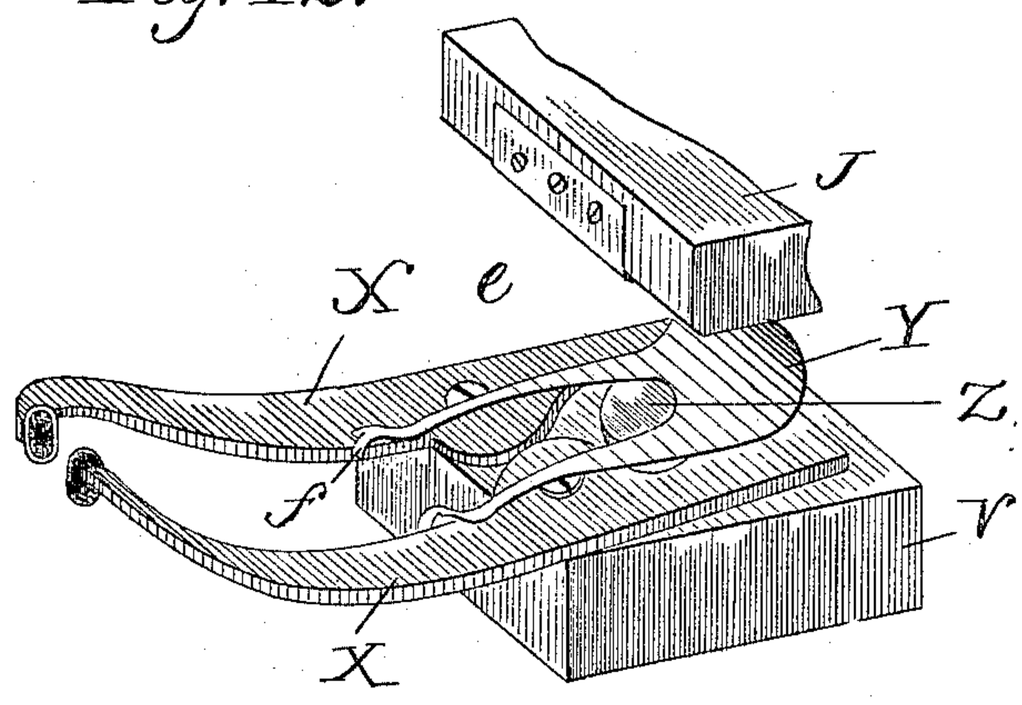
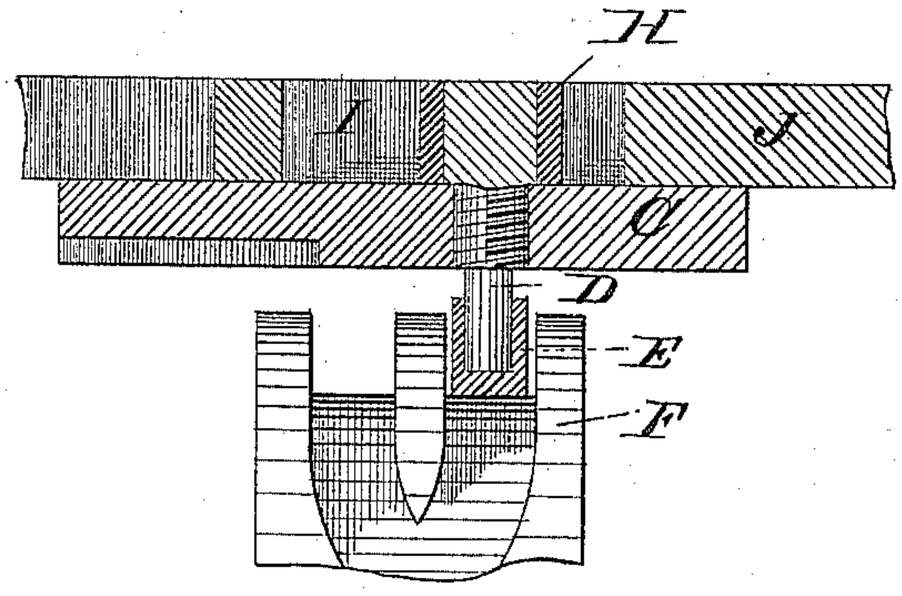


Fig. 13.



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UNITED STATES PATENT OFFICE.

FREDERICK EGGE, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE SMITH & EGGE MANUFACTURING COMPANY, OF SAME PLACE.

MACHINE FOR SEWING ON BUTTONS.

SPECIFICATION forming part of Letters Patent No. 298,959, dated May 20, 1884.

Application filed June 22, 1883. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK EGGE, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Machines for Sewing on Buttons; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain novel and useful improvements in machines for sewing buttons onto leather, cloth, or other fabric, but more especially for sewing on shoe-buttons, and has for its object to provide a means whereby a button may be grasped and held in a suitable position and then sewed on, while at the same time the action of the machine is uniform and positive; and with these ends in view my invention consists in the details of construction and combination of elements hereinafter fully and in detail explained, and then specifically designated by the claims.

In order that those skilled in the art to which my invention appertains may more fully understand its construction and operation, I will proceed to describe the same in detail, referring by letter to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a plan view of my improvement, showing a button held between the jaws of the clamp down on a piece of fabric. Fig. 2 is a central vertical longitudinal section through the shaft, bed-plate, and driving-wheel of my device, showing the several cams and also the mechanism by means of which power is communicated to the machine; Fig. 3, a bottom view of the machine; Fig. 4, a detail cross-sectional view showing the relative positions of what will be hereinafter referred to as the trip-wheel and spring-dog; Fig. 5, a detail longitudinal sectional view illustrating in side elevation the relative positions of the trip-wheel, spring-dog, and switch-cam. Fig. 6 is a detail perspective view showing the operation of the trip-wheel on the spring-dog and the latter thereby thrown out of engagement with the collar on the shaft; Fig. 7, a detail bottom view with the frame in section and showing the means whereby the trip-wheel is rotated during the operation of the machine; Fig. 8, a perspective view with the bed-plate and shaft broken away, showing the spring-dog out of engagement with the collar on the shaft, and also the mechanism for grasping the buttons and holding them down in the position for sewing; Fig. 9, a central vertical longitudinal section of my improvement; Fig. 10, an enlarged central vertical longitudinal section of the clamp proper; and Fig. 11 a bottom view of the clamp with the spring removed, showing the cams which operate the jaws of the clamp. Figs. 12 and 13 are detail views showing other parts of the machine.

Similar letters denote like parts in the several figures of the drawings.

A is the bed-plate of the machine, and B the frame, within which the operating parts are arranged. Within this frame is a sliding plate, C, which travels in V-shaped bearings *a*.

D is a pin projecting above and below this plate, the lower extremity having thereon a shoe, E, which travels in a switch-cam, F, on the shaft G of the machine, and the upper projection being provided with an ordinary anti-friction collar, H, which moves to and fro within a diagonal slot, I, in the oscillator J, all of which will be readily understood by reference to Figs. 1, 5, 9, and, 13, and which will be hereinafter explained. This oscillator J is pivoted to the frame D by means of a post, K. This plate C reciprocates as the shoe E travels in the switch-cam, and motion is thereby imparted to the oscillator by the action of the pin D within the diagonal slot I. This method of producing oscillation is not new, and I therefore will not enter into any further explanation concerning the same.

I have illustrated in my drawings at Figs. 2 and 3 mechanism for imparting motion to the shaft of the machine from the driving-wheel precisely like the mechanism shown and fully described in my application, Serial No. 65,665, at present pending in the United States Patent Office, for improvement in machine for stitching button-holes, and it is not thought necessary to describe the same in detail, as it forms no part of my present invention. The feather L is arranged to slide freely within the shaft of the machine, and is secured to the sliding collar M. The spring N, confined between the

sliding collar M and the stationary collar O, imparts a spring movement to the feather. When the latter is thrown within the recess *b* in the hub of the driving-wheel P, the lug *c* strikes the end of said feather during the revolution of said wheel, and thereby imparts motion to the shaft.

Q is a bell-crank lever pivoted underneath the bed-plate, as seen at *d* in Fig. 3, and operated by hand by a knob or button, R, Fig. 1, connected to the lever through the bed-plate. The inner end of this lever extends underneath the shaft, close to the sliding collar, so that it will be readily understood that when the said knob is moved in the proper direction the lever will force the collar along the shaft, and thereby throw the feather within the recess in the hub of the wheel, as above set forth. The collar is held in this position by means of a pivoted spring-dog, S. (See Figs. 4, 5, and 6.) When the feather is not in said recess, the spring-dog rests upon the sliding collar, as shown at Figs. 6 and 8. When the collar is forced along the shaft beyond the spring-dog, the latter drops by reason of its spring nature, and assumes the position seen at Figs. 4 and 5, which is the position necessary during the operation of the machine.

Secured to the oscillator J at its forward end are the work-plate T and the mechanism for clamping the button in the required position. The construction and operation of the latter are as follows:

Two standards, U, are secured to the oscillator J.

V is a block pivoted between said standards and operated by a pivoted cam-lever, W. When this lever is depressed, its cam-surface crowds against the post K, and thereby lowers the forward end of the block.

X are the clamp-arms, which are each pivoted underneath the block, as seen at Fig. 11, their forward ends being adapted to grasp the body of the button.

Y is a spring secured to the end of the oscillator, as seen at *e*, and forked at the outer extremity, each fork being provided with lugs *f*, which are forced within and against the inner edges of the jaws X, thereby causing the normal position of said jaws to be distended, as shown at Fig. 11. The bottom of the cam-lever W is beveled inward, so that when the clamp-arms are distended at their forward extremities their rear ends will be forced against this portion of said lever. When the lever is depressed, the beveled portion will act to spread the rear ends of the clamp-arms apart.

The normal position of the block V is illustrated at Fig. 10, and the spring Y is depressed by said block on the depression of the cam-lever W. After the lever has been raised the resiliency of the spring will tend to keep said block in its normal position, so that it will be readily understood that the spring Y has a double function—namely, to return both the block V and the clamp-arms X to their normal positions.

Z is a cam which acts on the jaws X, so as to bring the forward ends thereof together in order to grasp a button. This cam is actuated by the lever A′. As the latter is turned into the position shown at Fig. 1, the cam Z forces the inner ends of the jaws farther apart, thereby bringing the forward extremities thereof nearer together, for the purpose above set forth. When the cam-lever W is depressed, the cam B′, operated thereby, will enter between the rear ends of the jaws, thereby acting as an auxiliary to the cam Z in maintaining a firm grip on a button grasped by the forward extremities of the jaws.

The operation of the several parts hereinbefore described is as follows: The body of the button is placed between the jaws of the clamp by any proper feeding mechanism, or by hand, in such manner that the eye of the button will extend inward and the loop forming the eye lie in a horizontal plane. The lever A′ is then turned to one side, which causes said jaws to grasp the button, and the cam-lever W is depressed, thereby bringing the eye of the button down firmly onto the leather, cloth, or other fabric, as seen at Fig. 1. The machine is then thrown into operation in the manner hereinbefore explained. No presser-foot is necessary, as the loop forming the eye of the button acts in that capacity. The number of stitches by which the button is sewed on is determined by means of the mechanism illustrated at Figs. 4, 5, 6, and 7, the construction of which is as follows:

C′ is a wheel pivotally secured to the under side of the sliding plate C. On the periphery of this wheel are ratchet-teeth *g*, and projecting downward from the face of the wheel and at regular intervals are beveled lugs *h*.

D′ is a pawl which extends through the side of the frame B, and is connected at the outer extremity with a flat spring, E′, the inner end being in engagement with the said ratchet-teeth.

F′ is an ordinary spring-click pivoted to the sliding plate. As the sliding plate moves backward in the direction of the driving-wheel, the ratchet-teeth *g* will strike against the pawl D′, which will cause the wheel C′ to revolve. At the opposite or forward movement of the sliding plate the inclined surface of the teeth will force the pawl upward until the latter shoots down by reason of its spring-connection beyond the teeth, assuming the position shown at Fig. 7. The check serves merely to prevent the wheel from turning in an opposite direction during the forward movement of the wheel. It will thus be readily understood that the said wheel has two movements—one a rotary, and the other in conjunction with the movement of the sliding plate C. The extent of the backward slide of the plate C is such that the ratchet-teeth *g* and beveled lugs *h* will be brought successively beyond the vertical plane of the spring-dog S, and the horizontal plane of the teeth is above that of the spring-dog. The lugs *h* project downward be-

low the horizontal plane of said dog, as seen at Figs. 4 and 5. The upper part of the dog is beveled, as seen at *i*, Figs. 5 and 6, and it will be readily understood that when the lugs *h* are brought beyond the vertical plane of the spring-dog S said lugs will operate upon the dog by depressing the upper part thereof, thereby throwing the lower portion upward out of engagement with the collar and causing the operation of the machine to cease, as hereinbefore set forth. The number of teeth intervening between any two successive lugs determines the number of stitches taken by the needle, since during the rotation of the wheel C′ the oscillator is operated and the machine is in full operation, until one of the lugs *h* is brought by the action of the ratchet-teeth *g* against the pawl D′ in such a position that it will trip the dog S as the sliding plate moves backward. It will accordingly be readily understood that at each complete reciprocation of the plate C one tooth only of the ratchet-wheel will have been operated upon by the pawl D′; also, at each said reciprocation the oscillator J will have likewise reciprocated and the needle meantime will descend twice, so that it follows that at the operation of each ratchet-tooth on the pawl the needle will have made two stitches over the loop of the button-eye. A greater number of stitches can be made by increasing the number of teeth between the beveled lugs. Of course it will be clearly seen that the number of lugs may be increased or decreased, as may be desired; but it is obvious that this will not affect the number of stitches taken as long as the number of ratchet-teeth between the successive lugs remains the same, because the greater the number of such teeth the greater is the number of steps that will have to be taken before the said lugs operate on the spring-dog.

I prefer to operate my improvement in connection with certain mechanism for feeding and manipulating the buttons described in an application of even date herewith, and the operation of the two improvements combined is as follows: The buttons are fed and brought into the required position, as described in said application. The lever A′ is operated and the jaws brought toward each other, thereby grasping the button, as hereinbefore described. By depressing the cam-lever W, the button is brought down in position for sewing, and the loop of the eye firmly held against the leather, cloth, or other fabric, all as before set forth. The machine proper is now thrown into operation and the desired number of stitches passed over the said loop, when the machine will be thrown out of operation. In the meantime a second button will have been brought into the same position as the former one, and the manipulation and operation of the machine are the same.

I have shown and described in a previous and now pending application, filed July 1, 1882, Serial Number 65,665, for improvement in button-hole machines, mechanism for limiting the number of oscillations and automatically stopping the machine, and also means for throwing the machine in and out of connection with the driving-wheel; but have not made therein any claims, broadly, to the same, the claims for such construction and arrangement being reserved for this application.

By the use of my improvement a positive stop mechanism is had, which renders the number of stitches uniform and gives the operator time to shift the work underneath the needle.

I do not wish to confine myself to the exact manner shown and described of rotating the wheel, as this may be accomplished in any ordinary way, the gist of my invention in this respect resting in the broad idea of the revolution itself, whereby the lugs are caused to operate as set forth.

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

1. In a machine for sewing on buttons, a clamp secured to the oscillating mechanism, and having independently-pivoted arms held at their forward extremities, in a distended position, by means of a spring, in combination with means for operating the arms, whereby the buttons may be grasped and brought down to the proper position for sewing, substantially as set forth.

2. In a machine for sewing on buttons, the clamping-jaws pivotally attached to a block, which is pivoted within standards projecting upward from the oscillator, in combination with a spring for keeping the jaws distended and the block elevated at its forward portion, and means, substantially as described, for closing the jaws and elevating the rear end of said block, as set forth.

3. The block V, mounted in standards U, secured to the oscillator, and having spring-jaws X, pivoted to the under side, in combination with the post K, and suitable cams and levers for operating said jaws, substantially as shown and described.

4. The sliding plate C, having secured thereto mechanism for determining the number of oscillations, in combination with the switch-cam, the oscillator, and means for holding the shaft in connection with the driving-wheel.

5. The spring-dog S, beveled at its upper portion, and adapted to hold the shaft in connection with the driving-wheel, as described, in combination with mechanism for tripping said dog, whereby the action of the machine is stopped, substantially as shown and described.

6. The wheel C′, having peripheral teeth *g*, and teeth *h*, projecting downward from its face, in combination with means for rotating and reciprocating the same, whereby the teeth *h* may act intermittently on the mechanism which holds the shaft in connection with the driving-wheel, substantially as described.

7. The wheel C′, secured to the sliding plate C, and having teeth *g h*, projecting from its

periphery and face, respectively, in combination with means for rotating the said wheel, and the pivoted spring-dog S, substantially as described.

8. The wheel C′, secured to the sliding plate C, and having teeth *g h*, as described, in combination with the pawl D′, connected with spring E′, click F′, and pivoted spring-dog S, substantially as set forth and described.

9. The spring-dog S, pivoted to the frame of the machine, in combination with the pivoted lever Q and sliding collar M, as set forth.

10. The block V, having jaws X, pivoted thereto, and pivoted lever A′, operating the cam Z, in combination with the lever W, carrying cam B′, and post K, substantially as described.

11. The oscillator pivoted within the frame B, in combination with the sliding plate C, provided with pin D, and carrying the wheel C′, having peripherical and face teeth, as described, means for rotating said wheel intermittently, and the pivoted spring-dog S, substantially as set forth.

12. The combination, with the spring-dog S, pivoted to the frame B, and lever Q, pivoted to the bed-plate, of the collar M, and feather L, secured thereto, spring N, collar O, and driving-wheel P, having recess *b* and lug *c* therein, substantially as shown and described.

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

FREDERICK EGGE.

Witnesses:

S. S. WILLIAMSON,

W. W. MORTIMER.