(No Model.) 2 Sheets—Sheet 1.

J. F. SNEDIKER.

BUTTON HOLE SEWING MACHINE.

No. 265,167. Patented Sept. 26, 1882.

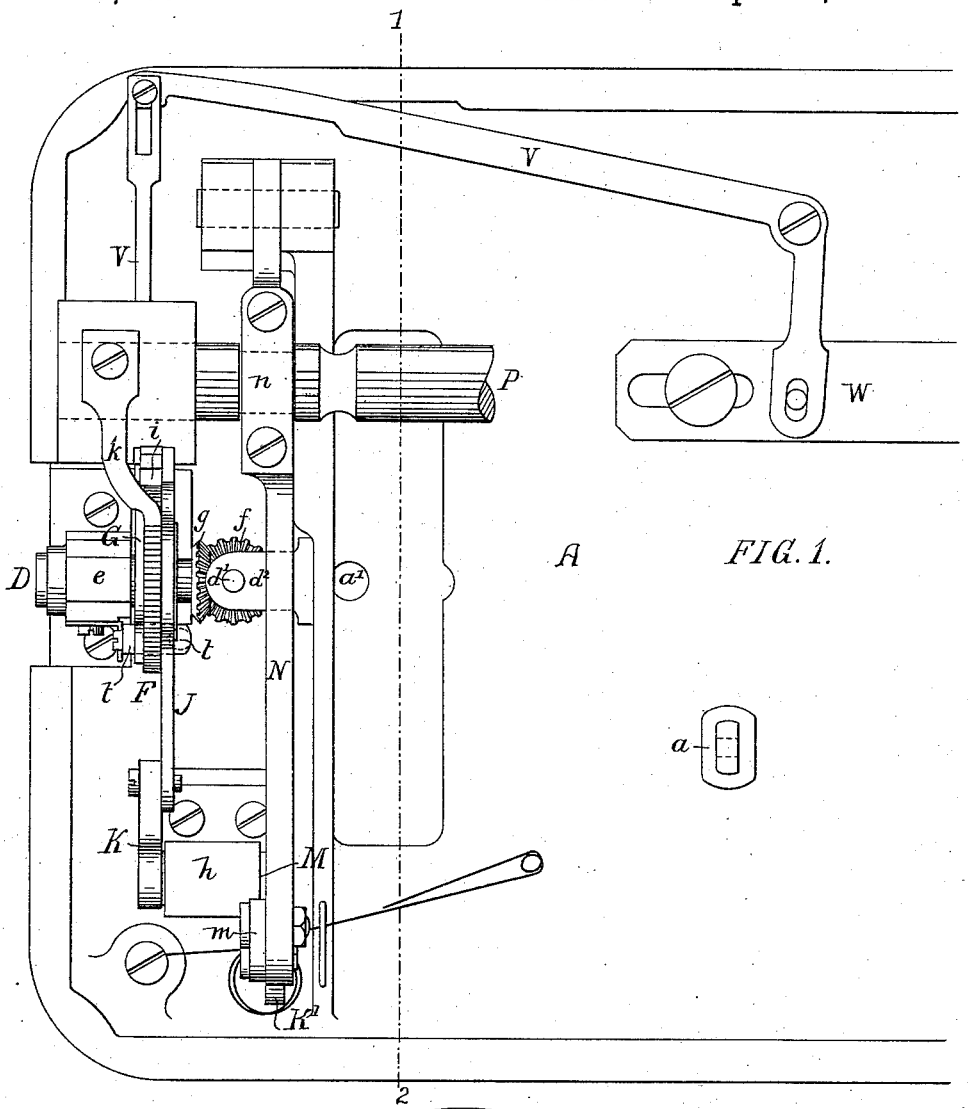
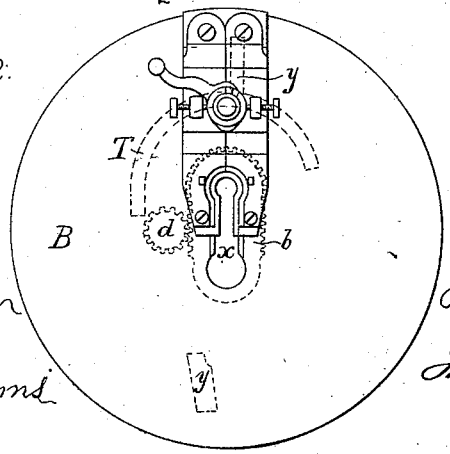


FIG. 1.

FIG. 2.



WITNESSES:

James F. Jobin

David Williams

INVENTOR:

James F. Snediker

by his attorneys

Howson and Sons

(No Model.) 2 Sheets—Sheet 2.

J. F. SNEDIKER.

BUTTON HOLE SEWING MACHINE.

No. 265,167. Patented Sept. 26, 1882.

FIG 3.

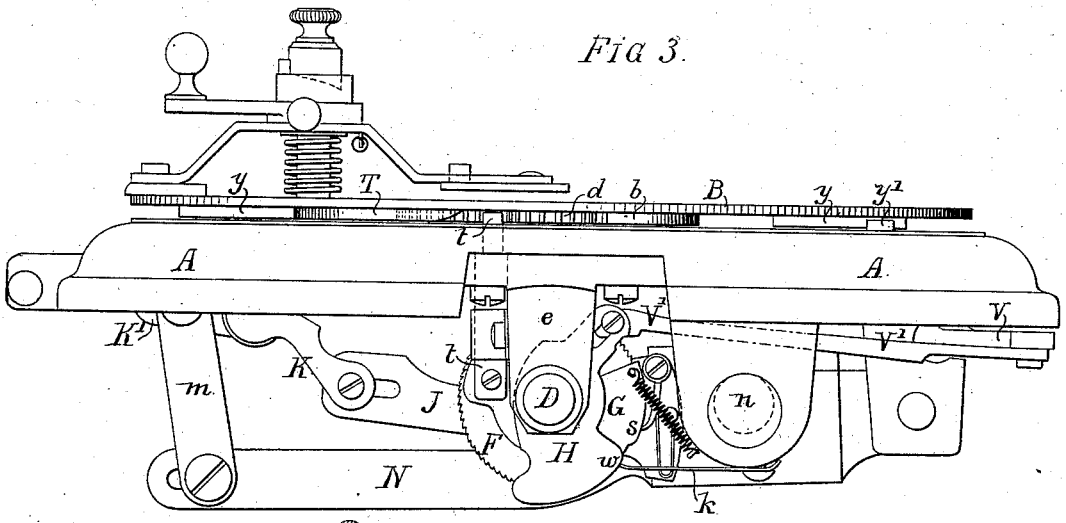
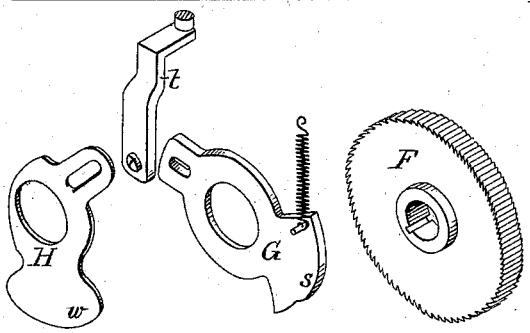


FIG. 5.



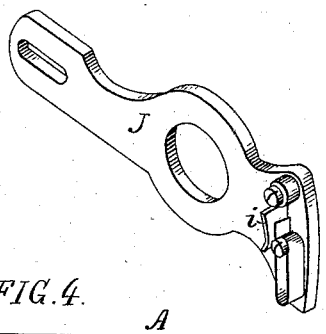
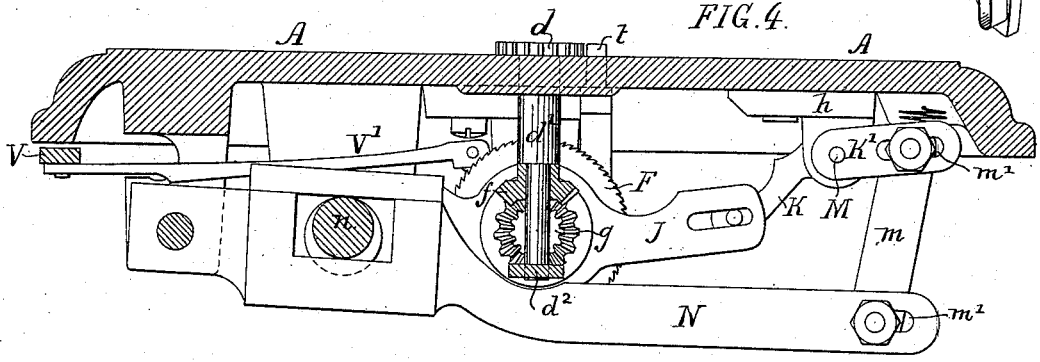


FIG. 4.



WITNESSES:

James F Joyce

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INVENTOR:

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UNITED STATES PATENT OFFICE.

JAMES F. SNEDIKER, OF PHILADELPHIA, PA., ASSIGNOR TO THE NATIONAL SEWING MACHINE COMPANY, (LIMITED,) OF SAME PLACE.

BUTTON-HOLE SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 265,167, dated September 26, 1882.

Application filed July 15, 1882. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. SNEDIKER, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Button-Hole Sewing-Machines, of which the following is a specification.

My invention relates to certain improvements in that class of button-hole sewing-machines in which the cloth, leather, or other material is clamped to a plate to which a traversing motion in respect to the needle is imparted, my improvements consisting of certain combinations of mechanism for effecting this traversing of the plate, for varying the length of stitch, and for permitting the movement of the plate independently of the feeding mechanism when such movement becomes necessary.

In the accompanying drawings, Figure 1, Sheet 1, is an inverted plan view of part of a sewing-machine with my improved button-hole-sewing mechanism; Fig. 2, a plan view, on a reduced scale, of the cloth-clamping plate; Fig. 3, Sheet 2, an end view of the device; Fig. 4, a transverse section on the line 1 2, Fig. 1, and Fig. 5 a perspective view of the parts composing the feeding device.

A represents part of the bed-plate of a sewing-machine, that shown in the present instance being the well-known "American Button-Hole Machine," *a* being the lug on the under side of the bed to which the looper-arm is hung, and *a'* the opening in the bed-plate through which the looper works. It should be understood, however, that my invention is not necessarily limited to a machine of this character, the invention being capable of adaptation, with slight modifications, to shuttle machines.

B is the cloth-plate on the bed of the machine, this plate having a central elongated opening, *x*, for the passage of the needle and looper, and being furnished with clamping-arms and operating mechanism therefor, which form no part of my present invention, but constitute the subject-matter of a separate application which I have made, and hence will require no further description.

On the under side of the plate B is a rack, *b*, which surrounds and conforms in shape to the opening *x*, this rack having on its opposite straight sides and on one of its rounded ends teeth adapted to gear into the teeth of a pinion, *d*, on the upper end of a shaft, *d'*, adapted to bearings in the bed-plate A, and in a bracket, d^2, beneath the same.

The shaft *d'* has a bevel-wheel, *f*, which gears into a bevel-pinion, *g*, secured to a shaft, D, to which is also secured a ratchet-wheel, F, the shaft D being adapted to turn in a bracket, *e*, on the under side of the bed-plate.

Hung to the hub of the ratchet-wheel F, so as to be free to vibrate thereon, are two levers, G and H, arranged closely together on one side of said ratchet-wheel, and on the opposite side of the same is a lever, J, also hung to the hub of the wheel, the short arm of this lever carrying a spring-pawl, *i*, which engages with the teeth of the ratchet-wheel and projects laterally beyond the same for some distance, so as to come within the control of the levers G and H, for a purpose set forth hereinafter. A retaining-spring, *k*, secured to one of the bearings of the machine, engages with the teeth of the ratchet-wheel to prevent back movement of the same.

The long arm of the lever J is slotted for the reception of a pin on an arm, K, secured to a rock-shaft, M, which has its bearing in a bracket, *h*, on the bed-plate, a second arm, K', on this rock-shaft being connected by means of a link, *m*, to an arm, N, which is hung to a stud at the back of the machine, and is slotted for adaptation to the usual feed-operating crank-pin, *n*, on the main shaft P of the machine. This crank-pin, in the ordinary "American" machine, is so timed in respect to the needle and looper-cams that I am compelled to use the rock-shaft M in order that the movement of the arm N may be properly transmitted to the feed-operating lever J; but in new machines the rock-shaft M may be dispensed with, as the fixed crank-pin *n* may be replaced by a crank-pin or eccentric adjustable on the shaft, so that it may be shifted thereon to suit the character of the feed desired. In this case the crank-

pin or eccentric may act directly upon the lever J; but I prefer in all cases to interpose the arm N, as it permits a varying stroke of the lever J by adapting the pins of the connecting-link *m* to slots *m'*, in which they can be adjusted. These slots are shown in the drawings in the arm N and in the arm K' of the rock-shaft M; but when the latter is dispensed with the upper pin of the link may be adapted to the slot in the long arm of the lever J. As the lever J is vibrated an intermittent movement is imparted to the ratchet-wheel F, and thence to the cloth-plate B. It is not advisable, however, to have a uniform feed of the cloth-plate during all parts of its movement, otherwise there would be an objectionable crowding of stitches at the end of the button-hole, owing to the limited amount of cloth presented to the needle while the pinion *d* is acting upon the segmental portion of the rack *b*, the needle in such case occupying a position at or near the center around which the plate turns, so that there is very little traverse of the cloth at this point. I therefore provide for increasing the length of the stitch during this movement of the cloth-plate by means of the lever G, the long arm of which, as will be observed on reference to Figs. 3 and 5, has a cam, *s*, which acts upon the pawl *i* and serves to keep the same out of engagement with the teeth of the ratchet-wheel for a greater or less portion of the stroke of the lever J, depending upon the position of the lever G in respect to the pawl. This position is governed automatically by means of a segmental cam, T, on the under side of the cloth-plate, this cam, as the plate is traversed, acting upon the upper end of a pin, *t*, which projects through the bed-plate A, the lower end of the pin being connected to the short arm of the lever G. (See Figs. 3 and 5.)

It will thus be seen that as the plate commences to swing to form the rounded end of the button-hole the lever G is operated so as to retract the cam *s* and permit the engagement of the pawl *i* with the ratchet-wheel F during all or the greater portion of the stroke of the lever J, the stitch being consequently longer than when the extent of engagement of the pawl and ratchet is limited.

It is also desirable to throw the pawl *i* entirely out of gear with the ratchet-wheel F at times, in order that the feed mechanism will not interfere with the adjustments of the plate B prior to the commencement of the sewing operation. This I effect by means of the lever H, the short arm of which has a cam, *w*, adapted to act upon the pawl *i*, so as to lift and hold the same clear of the teeth of the ratchet-wheel, the lever H being actuated by a slide, W, on the under side of the bed-plate A, through the medium of a bell-crank lever, V, and connecting-rod V'.

The slide W is the slide which shifts the position of the looper-cam in order to withdraw the looper from above the table, as described in the Letters Patent granted to my assignees on the 18th day of July, 1882, No. 261,399.

The cloth-plate has on the under side strips *y*, adapted to come into contact with a lug, *y'*, on the bed-plate, to insure the movement of the plate B in a straight line while the pinion *d* is acting upon the straight sides of the rack *b*, as usual in devices of the class to which my invention relates.

Various modifications of the mechanism above described may be made within the scope of my invention. For instance, instead of the cam-lever G and pin *t*, a bell-crank lever may be used, one arm of this lever being actuated by the cam-plate T and the other arm being adapted to control the pawl *i* in the manner shown, or being furnished with a plate overlapping a portion of the teeth of the ratchet-wheel, the pawl sliding over this plate during a portion of the movement of said pawl.

The movement of the slide W may also be caused to throw the pawl *i* out of gear by mechanism other than that shown. For instance, the connecting-rod V' may be slotted at the end for direct adaptation to a pin on the pawl *i*, the slot being intended to permit movement of the pawl with the lever J without bringing said pawl under the influence of the connecting-rod.

I claim as my invention—

1. The combination of the cloth-plate B and its rack *b* with the pinion *d*, shaft *d'*, bevel-gears *f* and *g*, ratchet-wheel F, and lever J with pawl *i*, as set forth.

2. The combination of the pinion *d*, ratchet-wheel F, and intermediate gearing with the pivoted lever J, having a pawl, *i*, and the crank-pin or eccentric *n*, adapted to actuate said lever, as set forth.

3. The combination of the pinion *d*, ratchet-wheel F, and intermediate gearing with the pawl-carrying lever J, the crank-pin or eccentric *n*, the pivoted arm N, and devices, substantially as described, for connecting said arm N and lever J, as set forth.

4. The combination of the pinion *d*, ratchet-wheel F, and intermediate gearing with the pawl-carrying lever J, the crank-pin or eccentric *n*, the arm N, the rock-shaft M, with arms K K', and the link *m*, as set forth.

5. The combination of the feed-operating ratchet-wheel F, the cloth-plate B, located wholly above the bed of the machine, and having on the under side a cam-plate, T, the lever J, having a pawl, *i*, adapted to the ratchet-wheel, and a lever under control of the cam-plate T, and adapted to govern the extent of engagement of the pawl and ratchet, as set forth.

6. The combination of the cloth-plate, having a cam T, with the ratchet-wheel F, the lever J and its pawl *i*, the cam-lever G, and the pin *t*, whereby the cam-plate T is caused to actuate the lever G, as set forth.

7. The combination of the feed-operating ratchet-wheel F, the lever J and its pawl *i*, the

looper-cam, operating-slide W, and mechanism, substantially as described, whereby the slide is caused to actuate the pawl in order to free the ratchet-wheel from the control of the same, as set forth.

8. The combination of the feed-operating ratchet-wheel F, the lever J and its pawl *i*, the cam-lever H, the slide W, and mechanism, substantially as described, whereby said slide W and the lever H are connected, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES F. SNEDIKER.

Witnesses:
HARRY DRURY,
HARRY SMITH.