

F. E. SCHMIDT.  
Button-Hole Sewing-Machine.

No. 219,656.

Patented Sept. 16, 1879.

Fig: 1

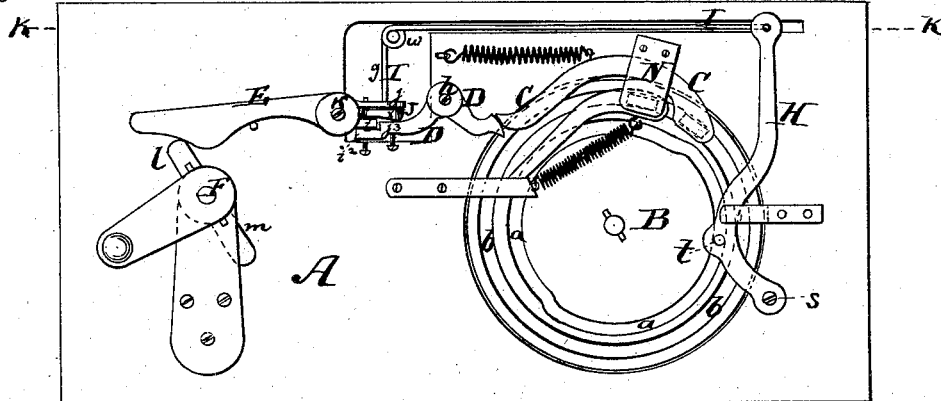


Fig: 2

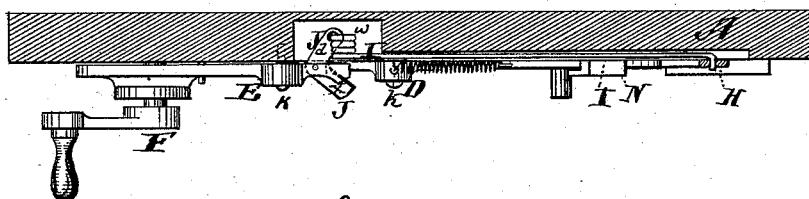


Fig: 3

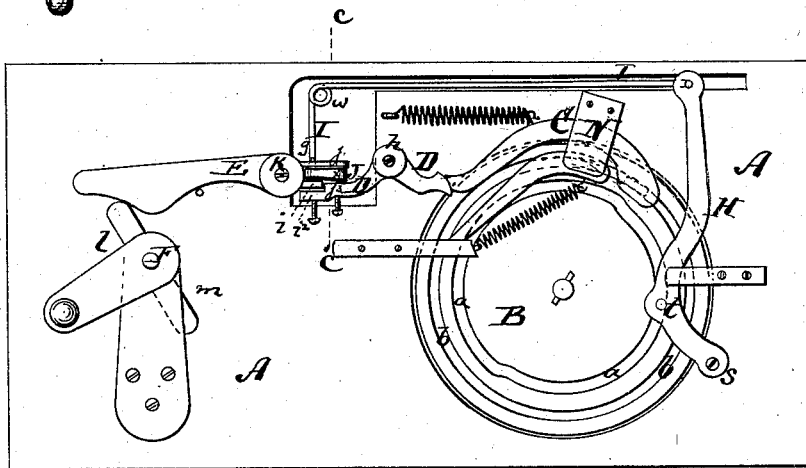
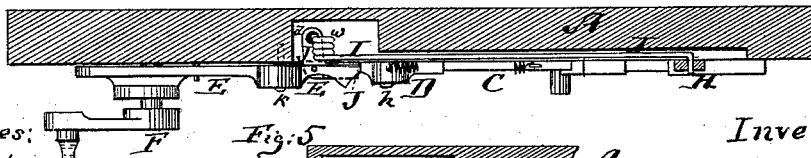


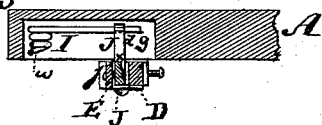
Fig: 4



Witnesses:

J. C. Tunbridge  
H. H. C. Smith.

Fig: 5



Inventor:

F. E. Schmidt  
by his attorney  
A. B. Briesen

# UNITED STATES PATENT OFFICE.

FRIEDRICH E. SCHMIDT, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN BUTTON-HOLE SEWING-MACHINES.

Specification forming part of Letters Patent No. **219,656**, dated September 16, 1879; application filed June 4, 1879.

*To all whom it may concern:*

Be it known that I, FRIEDRICH ERNST SCHMIDT, of the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Button-Hole Sewing-Machines, of which the following is a specification.

Figure 1 is a bottom view of a portion of a button-hole sewing-machine with my improvement attached. Fig. 2 is a longitudinal section of the same on the line *k k*, Fig. 1. Fig. 3 is a bottom view of the same, showing some of the parts in different positions. Fig. 4 is a longitudinal section thereof on the same plane as Fig. 2. Fig. 5 is a detail cross-section on the line *c c*, Fig. 3.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to improvements on the mechanisms described in Letters Patent No. 183,333, dated October 17, 1876, and in Letters Patent No. 197,528, dated November 27, 1877.

The present invention consists in a new mechanism for regulating the length of stitch, all as hereinafter more fully described.

In the accompanying drawings, the letter A represents the work-plate of the machine; B, the feed-wheel, provided with the groove *a*, of which groove about one half is larger in diameter than the other half, as shown. The wheel B has also the annular groove *b*, termed the "feed-groove," all as described in Letters Patent No. 197,528.

C is the sliding feed-dog, placed under the fixed plate N, the same as in said last-mentioned patent.

D is the intermediate lever, pivoted to the plate A by a pin, *h*, and actuated by the operating-lever E, which, in turn, is oscillated on its pivot *k* by the toes *l* and *m* of the shaft F, or by other suitable mechanism.

H is the lever, pivoted at *s* to the plate A, and carrying a pin, *t*, in the groove *a*, which lever corresponds to the like lever in Patent No. 197,528. This lever H connects by a spring-rod, I, which is partly coiled, as at *w*, or otherwise made properly elastic, with an elbow-lever, J, that is pivoted to the face of the operating-lever E, as shown.

The elbow-lever is pivoted to that face of the lever E which faces the intermediate lever D. The contact part of the lever E is step-shaped, the part *i* which faces and is near the lever D being shorter than the part *j*, between which and the part *i* the elbow-lever J is pivoted. The contact part of the lever D is step-shaped in the reverse order, as shown.

Now, while the pin *t* of the lever H is in the larger half of the groove *a*, as in Fig. 1, the lever H and rod I pull on the upper part of the elbow-lever J, and swing said elbow-lever on its pivot out of line of the lever D, as in Fig. 2. The part *i* of the vibrating lever E will now bear against the part *i*<sup>2</sup> of the lever D, imparting short strokes and making small stitches. As soon, however, as the pin *t* enters the smaller half of the groove *a*, as in Fig. 3, the lever H will be swung to push the rod I and vibrate the elbow-lever J, so as to carry it face to face with the lever D, as indicated in Figs. 4 and 5. The inclined face *x* of the elbow-lever will now serve as contact-point of the lever E on the opposite part *j*<sup>3</sup> of the lever D, thus producing a longer stroke.

By making the face *x* of the elbow-lever slightly inclined, as shown in Fig. 5, it will the more readily enter between the levers D and E, in the position shown in Figs. 3 and 4.

The end *g* of the spring-rod I passes through a hole in the arm *d* of the elbow, the hole being large enough to enable the elbow-lever to vibrate with the lever E without affecting the position of the rod I.

It is well to form a spring in the rod I, so as to make it yielding, as otherwise, if the lever H were moved by the groove *a* at the moment the arm of the elbow-lever which has the inclined face *x* is above the lever D, the parts would be liable to break.

It will be understood that the elbow-lever or vibrating lug J may be applied to the lever D with substantially the same effect as on the lever E.

I claim—

1. The combination of the lever E and lever D with the intermediate pivoted elbow-lever J, and with mechanism for vibrating the said parts on their respective pivots, substantially as herein shown and described.

2. The combination of the lever H and elastic rod I with the pivoted elbow-lever J and with the levers E and D, and with mechanism *F l m*, for oscillating the lever E, substantially as herein shown and described.

3. The lever E, having fixed contact portion *i* and elbow-lever J, in combination with the lever D and with the spring-rod I passing

through the elbow-lever J, and with the lever H, grooved wheel B, and actuating-shaft F, substantially as herein shown and described.

F. E. SCHMIDT.

Witnesses:

F. V. BRIESEN,  
T. B. MOSHER.