



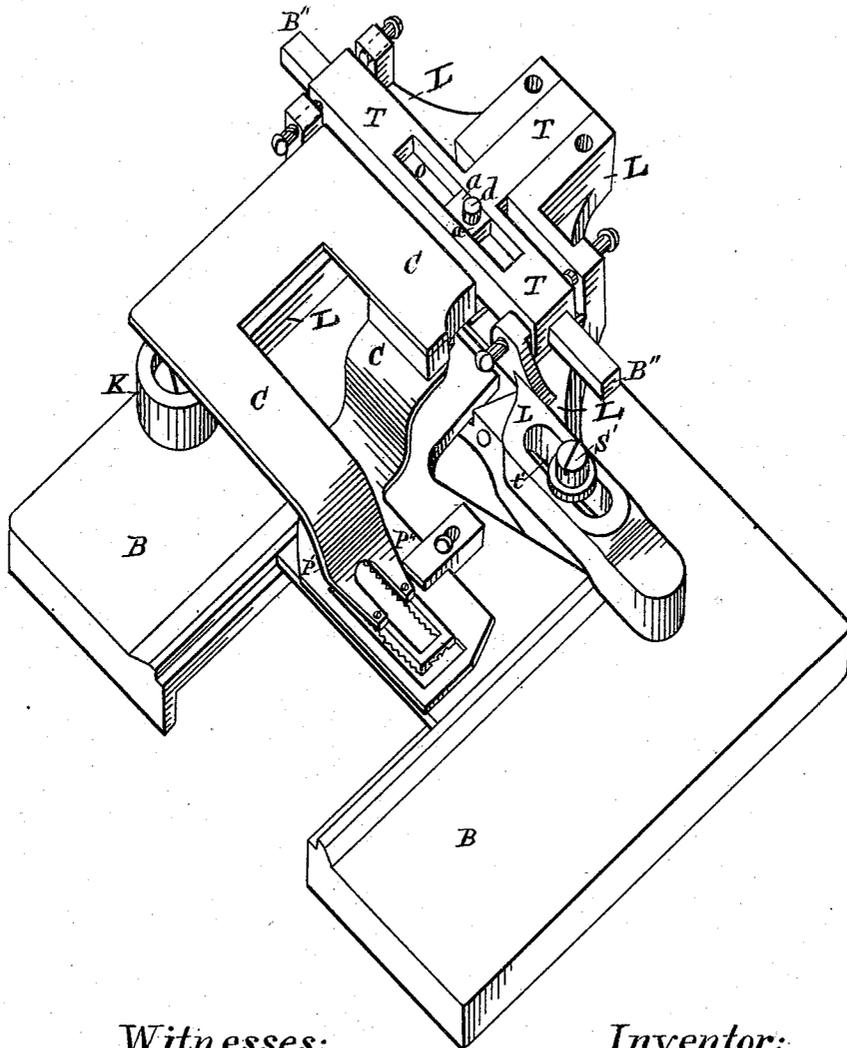
W. H. CARR.

BUTTON HOLE ATTACHMENT FOR SEWING MACHINES.

No. 268,621.

Patented Dec. 5, 1882.

Fig. 2.



Witnesses:

*Charles S. Brintnall*

*Horace L. Nichols*

Inventor:

*William H. Carr*

*by William B. Hagan  
his atty*

(Model.)

5 Sheets—Sheet 3.

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Fig. 3.

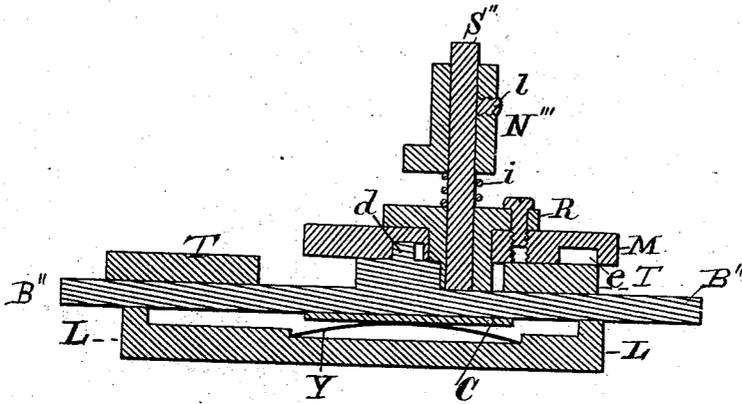


Fig. 4.

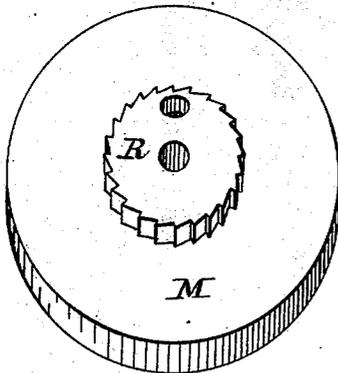
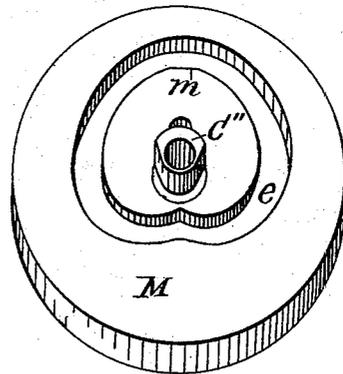


Fig. 5.



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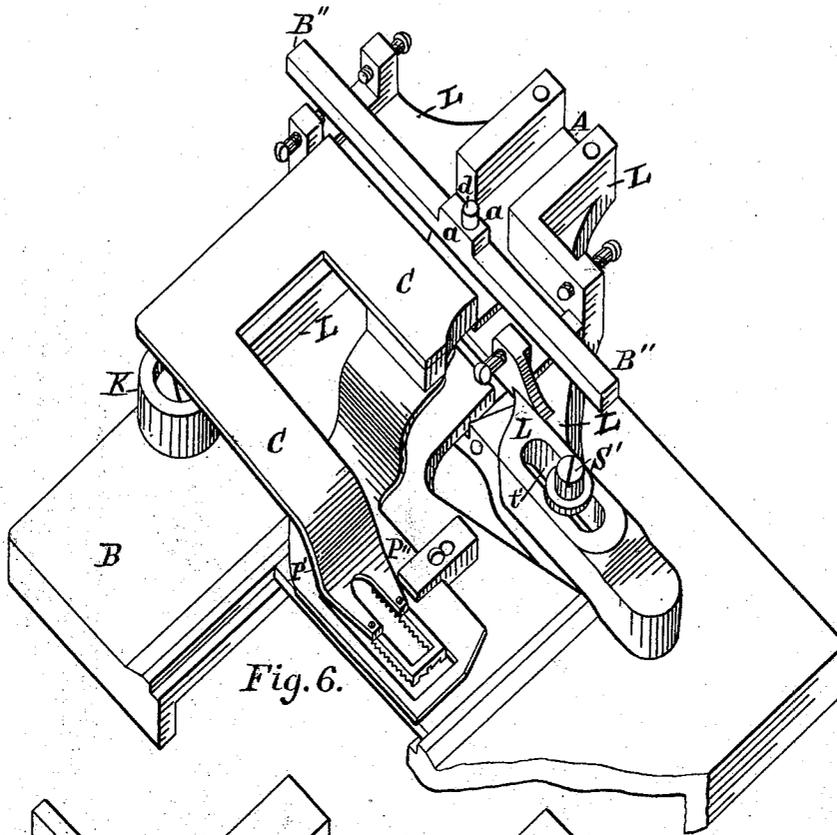


Fig. 6.

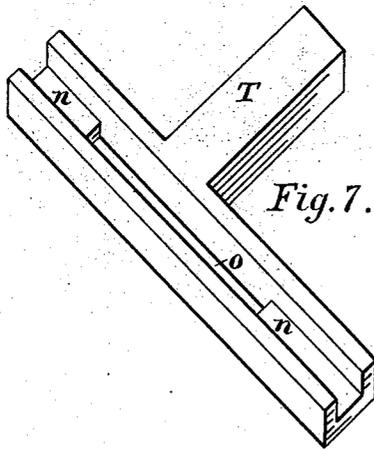


Fig. 7.

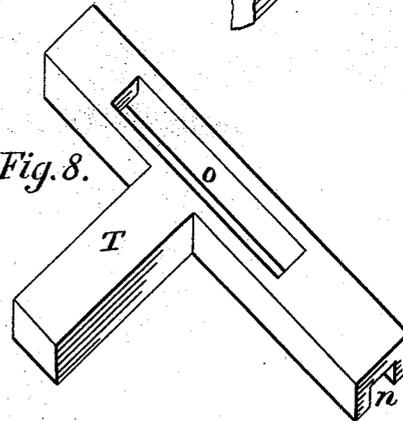


Fig. 8.

Witnesses:

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*his atty*

(Model.)

5 Sheets—Sheet 5.

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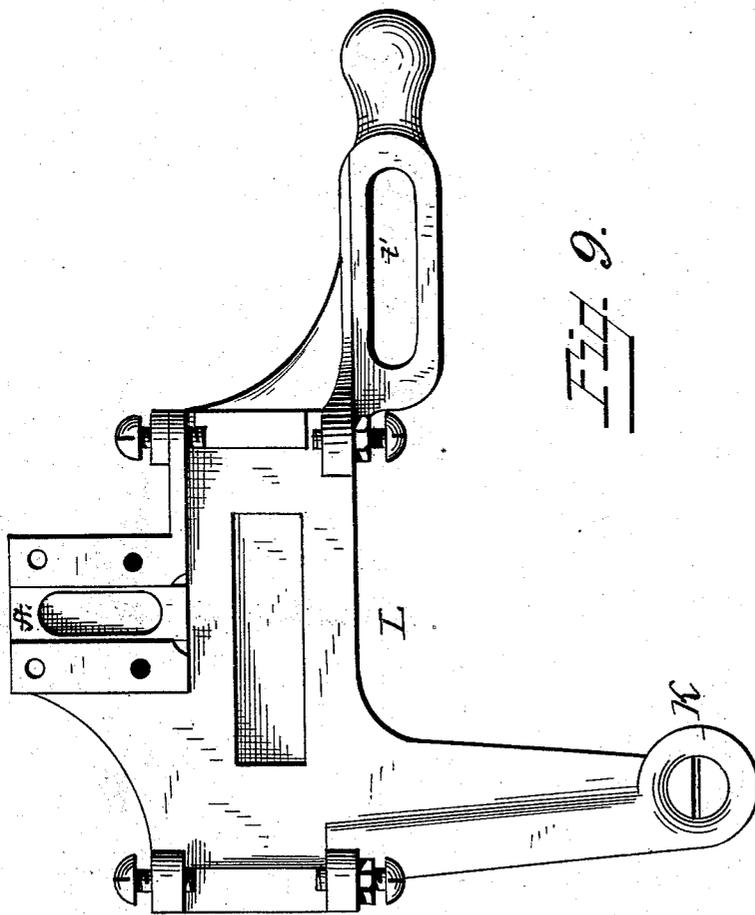


Fig. 9.

WITNESSES

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# UNITED STATES PATENT OFFICE.

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OF TROY, NEW YORK.

## BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 268,621, dated December 5, 1882.

Application filed December 24, 1881. (Model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. CARR, of the village of Lansingburg, county of Rensselaer, and State of New York, have invented a new and useful Improvement in Button-Hole Attachments for Sewing-Machines, of which the following is a specification.

My invention relates to that class of devices which are attached to sewing-machines to sew button-holes, and that move the fabric around and beneath the vertical traverse of the needle, so as to produce a line of stitching having the form of a flattened ellipse.

My invention consists, as will hereinafter be more fully described, in the manner of constructing and arranging upon a vertical shaft, and so as to move on or with the latter, a ratchet-wheel, a disk-wheel having a heart-shaped cam-groove on its under side, and a cam, in combination with a pin upwardly projected from the cloth-carrying mechanism, and which pin engages with and is moved by the cam-groove, and a longitudinal slot formed in a T-shaped bar, and the sub-combination of these factors, as to be hereinafter designated in the claims.

Accompanying this specification, and forming a part of it, are five plates of drawings, containing nine figures, in all of which illustrations the same designation of parts by letter-reference is used.

Figure 1 is a perspective view of the combined parts composing my invention. Fig. 2, in perspective, illustrates the same parts shown in Fig. 1, with the exception that the combined ratchet-wheel, cam-grooved disk-wheel, cam, and vertical shaft, as well as the arm by which they are attached, are removed. Fig. 3 shows a vertical section taken on the line  $x$  of Fig. 1. Fig. 4 shows a top view, in perspective, of the ratchet-wheel and cam-grooved disk-wheel separated from their connection with the vertical shaft. Fig. 5 illustrates a perspective of the under side of the cam-grooved disk-wheel and cam, with the vertical shaft removed. Fig. 6 illustrates in perspective the parts shown in Fig. 1, with the vertical shaft, ratchet-wheel, cam-grooved disk-wheel, cam, and T-form bar removed. Fig. 7 shows in perspective the T-form bar as re-

moved from the machine and turned over to illustrate the groove formed on its under side, and also the longitudinal slot formed in it. Fig. 8 illustrates in perspective the T-form bar as removed from the machine, and showing the longitudinal slot formed in the bar. Fig. 9 is a plan view of the angular-shaped lever.

The several parts of the mechanism are designated by letter-reference, and their connected operation described as follows:

The letter B indicates the table-plate of the machine, and L an angular lever, pivoted to the table-plate at K, and constructed to vibrate horizontally by means of a connection made through the slot  $t'$  with the shaft of the machine, as designated at  $S'$ .

The letter C designates a cloth-carrier of the usual form, and having the downwardly-projected arm  $P''$  and the presser-foot  $P'$ .

The letter  $B''$  designates a sliding bar, secured on the cloth-carrier C; and  $d$  an upwardly-projected pin connected with the sliding bar  $B''$ , and having the flat sides  $a$   $a$ .

The letter T indicates a T-form bar, having on its under side the groove  $n$ , and through its longitudinal center the slot O; and A indicates a sink formed in the angular lever L, which serves as a guide for the short arm of the bar T while this and the cloth-carrier are connectedly moving out or in and the fabric is being passed beneath the traverse of the needle to stitch the opposite sides of the button-hole.

The letter R designates a ratchet-wheel, and M a cam-grooved disk-wheel which is attached to the ratchet-wheel and has constructed upon its under side the heart-shaped cam-groove  $e$ , and  $C''$  a cam. The ratchet-wheel, cam-grooved disk-wheel, and cam are connected so as to move together upon the shaft  $S''$ .

The letter  $N'''$  indicates the arm in which the vertical shaft  $S''$  is secured by means of the set-screw  $l$ , and  $B'$  a spring-pawl that at  $t''$  is pivoted to the standard  $D''$ , the latter being attached to the table. This pawl is forced to engage with the ratchet-wheel by means of the spring  $S'''$ , which spirally surrounds the standard  $D''$ , with its lower end attached thereto and its upper end passed underneath

the pawl-dog, so as to hook on the side of the latter, as shown in part by a dotted line at Fig. 1.

The letter N' shows the aperture in the table-plate for the passage of the needle to form the stitches, and *i* a spiral spring that is placed around the shaft S'', between the under side of the arm N''' and the top of the ratchet-wheel, to keep the parts on the shaft in place when in motion.

It will be observed from the foregoing description that all the parts of the device, with the exception of the pawl B', are carried by and moved with the angular lever L.

As the angular lever L is actuated by the mechanism of the sewing-machine it forces the ratchet-wheel to engage with the spring-pawl, by which said ratchet-wheel is caused to turn one or more teeth in revolution at every reciprocation of the angular lever. The ratchet-wheel, cam-grooved disk-wheel, and cam, being connected, move together, and the cloth-carrier is also moved by and with them through its connection made with the cam-groove *e* on the under side of the disk-wheel, with the cam-pin *d* on the sliding bar B'', being guided in a direct line of motion by means of the said sliding bar B'' on the carrier and the sliding groove *n* in the bar T, as indicated in Fig. 3 of the drawings. After having been thus moved and guided to stitch one side of the button-hole, before having started in return to stitch the other side, the cam C'', which is on the under side of the disk-wheel M, and which is arranged to move with the latter on the shaft S'', engages with the slot O in the bar T and moves it, and as well the carrier and fabric, outwardly and oppositely from the end of the side already sewed, so as to stitch the end of the button-hole in passing over, and while the pin *d* is passing the end of the heart-shaped groove. When this has been done the pin *d* and the cam-groove *e* again engage to move the carrier and fabric in return to stitch the other side, after which the cam C'' again engages with the opposite side of the slot O to move the fabric-carrying mechanism back and in return across to sew the remaining unsewed end of the button-hole.

While I have illustrated and described the ratchet-wheel, cam-grooved disk-wheel, and cam as turning together upon the same shaft, S'', these parts may, if desired, be constructed to turn with the latter by keying them to the

shaft, instead of keying the shaft to the arm; and while I have designated the spring *i* on the shaft S'' as a means to keep the parts in place when in operation, if desired a loose collar may be used upon the shaft between the bottom of the arm and the top of the ratchet-wheel, instead of the spring.

To make button-holes of differing sizes, cam-grooved disk-wheels having longer or shorter heart-shaped grooves and a corresponding measure of depth to the cam C'' are used, and as these parts are all operated on one shaft the latter is easily taken out with the connected parts and others put in their places.

I am well aware that the angular lever shown and described is not my invention, considered by itself, and the same is true of a T-form bar, both being old and well-known devices. I am also aware of the fact that an angular lever, spring-pawl, and ratchet-wheel are shown as combined to move the cloth-carrying mechanism of a button-hole attachment to a sewing-machine in an application for a patent made by me and filed in the United States Patent Office, October 28, 1880.

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

1. In a button-hole attachment to a sewing-machine, the combination of the vertical shaft S'', the cam C'', constructed to move on or with said shaft, and the slot O, constructed in the guide-bar T, as and for the purposes described and set forth.

2. In a button-hole attachment to a sewing-machine, the combination of the ratchet-wheel R, cam-grooved disk-wheel M, cam C'', vertical shaft S'', the pin *d*, upon the cloth-carrying mechanism, and the slot O in the bar T, as and for the purposes described and set forth.

3. In a button-hole attachment to a sewing-machine, the combination of the ratchet-wheel R, cam-grooved disk-wheel M, cam C'', vertical shaft S'', the pin *d*, and sliding bar B'' upon the cloth-carrier, and the groove *n* and longitudinal slot O on the bar T, arranged to operate as herein shown and described.

Signed at Troy, New York, this 15th day of December, 1881.

W. H. CARR.

Witnesses:

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CLARENCE B. CUTLER.