

No. 608,370.

Patented Aug. 2, 1898.

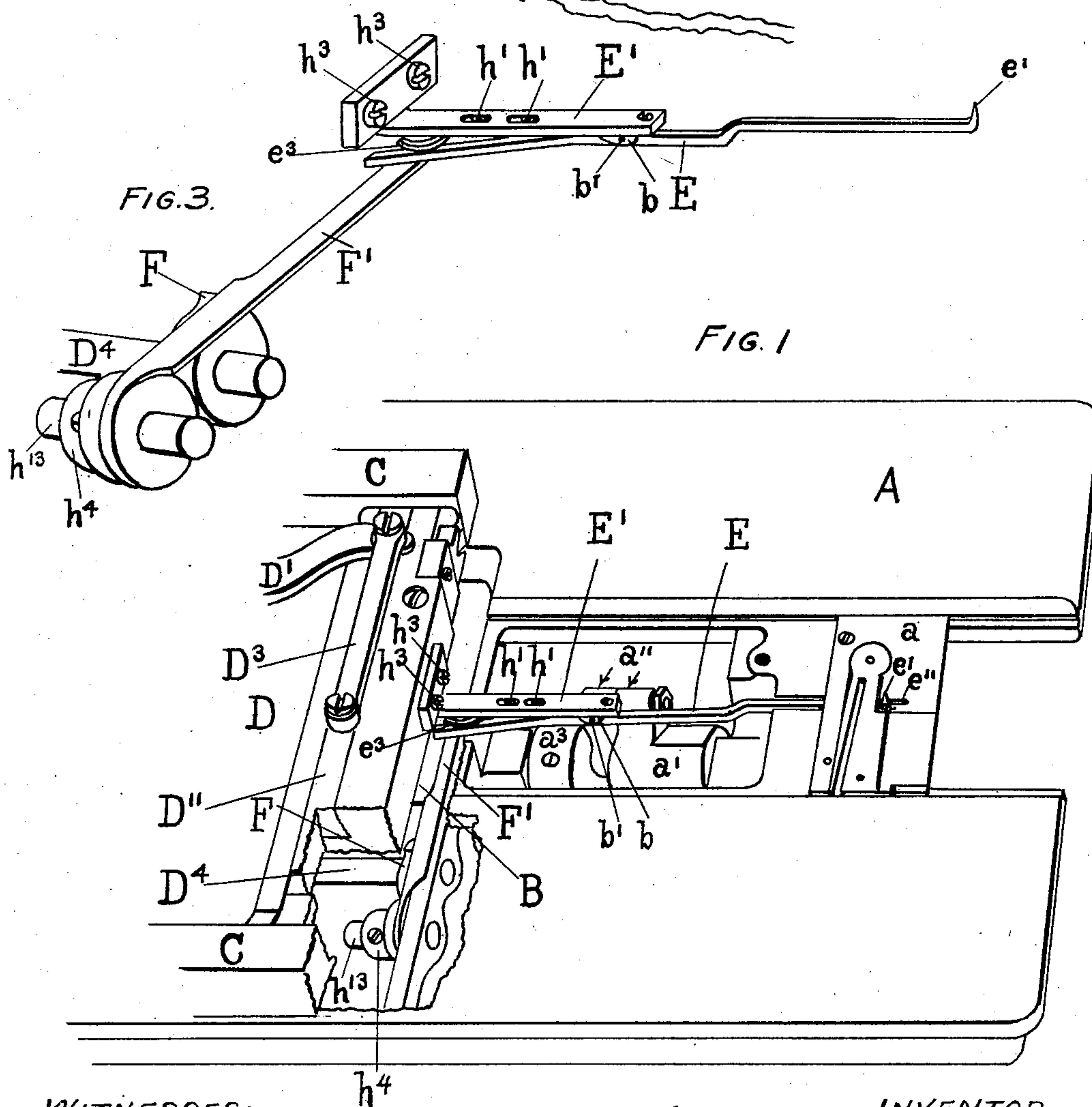
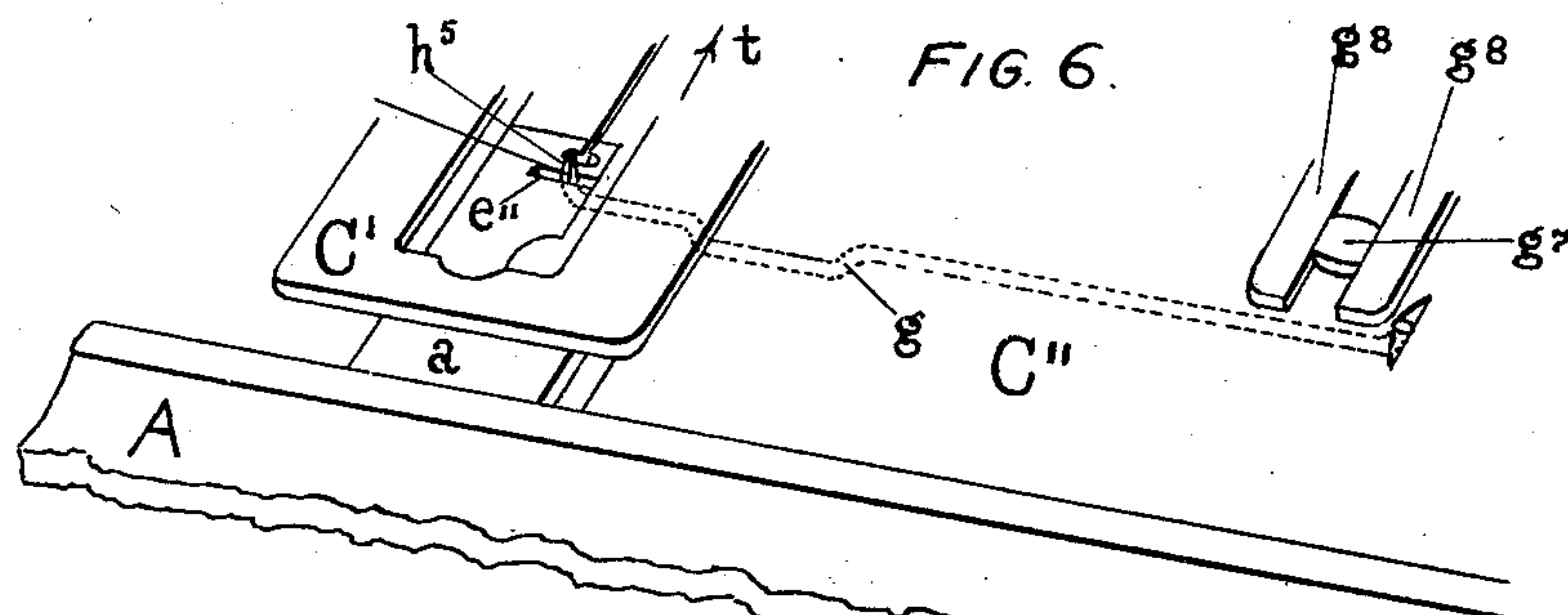
F. W. OSTROM.

SEPARATOR FOR BUTTONHOLE SEWING MACHINES.

(Application filed Aug. 12, 1897.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:
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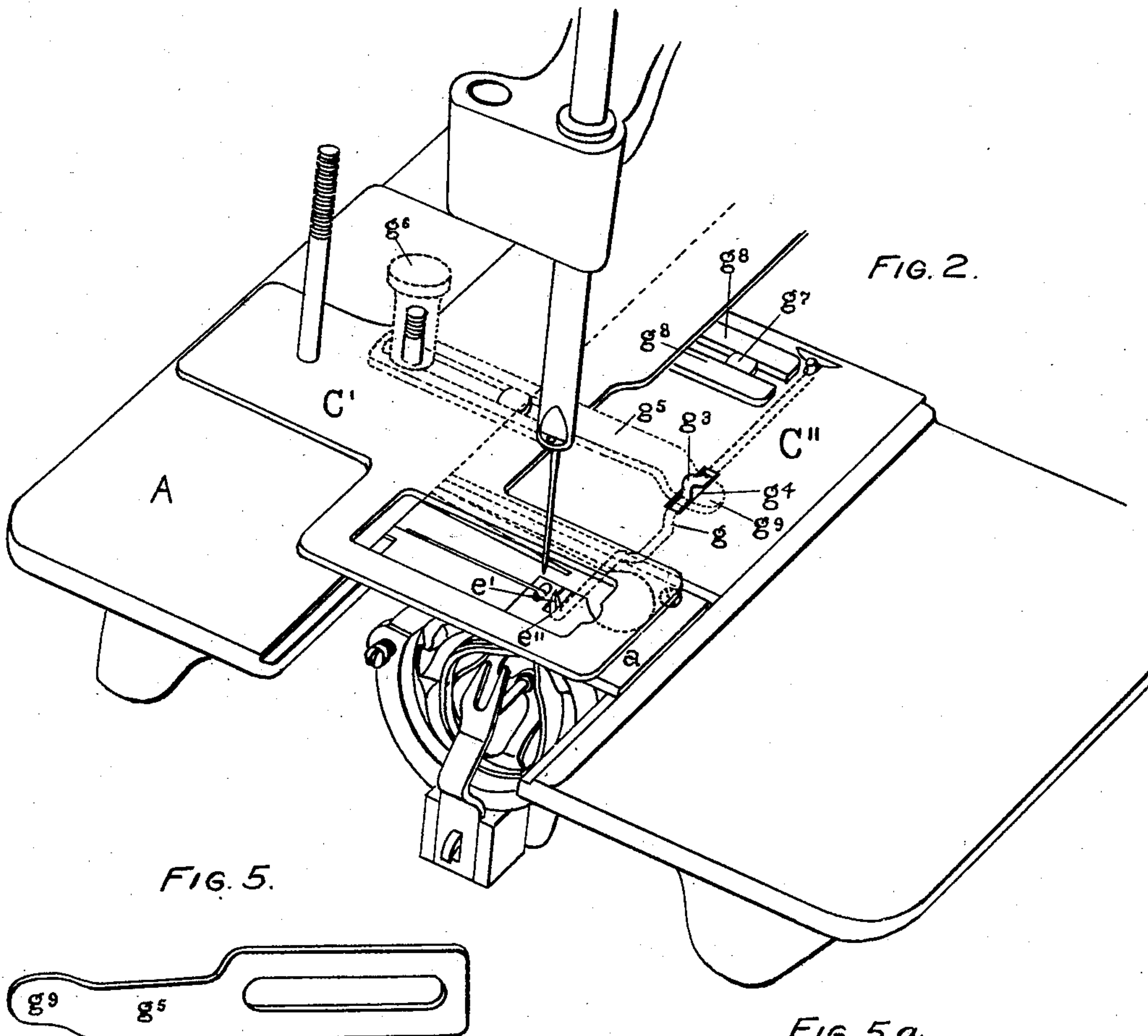


FIG. 5.



FIG. 5a.

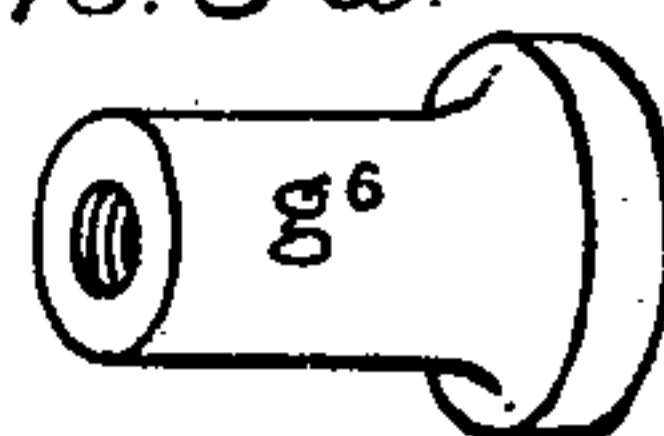
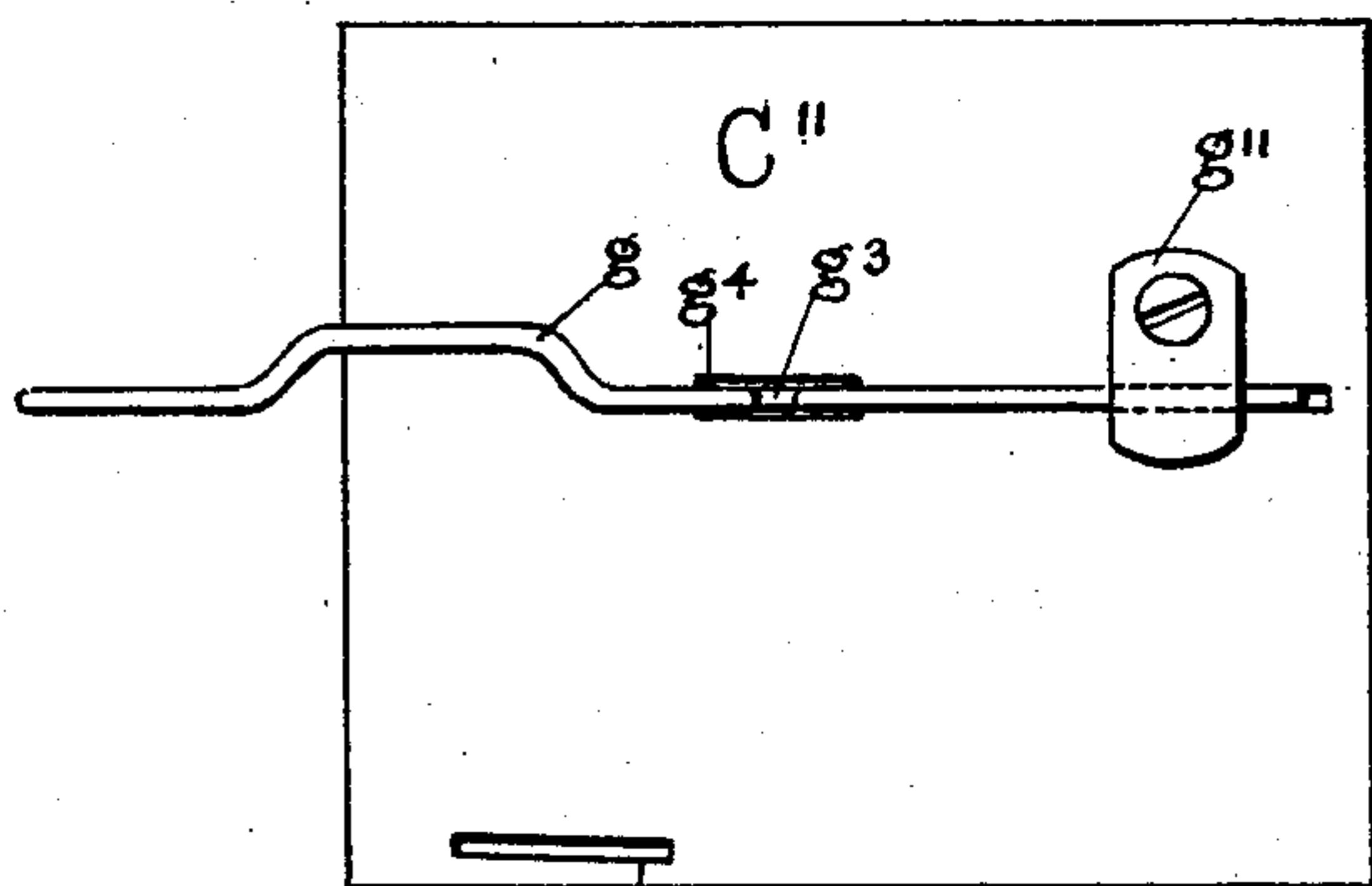


FIG. 4.



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UNITED STATES PATENT OFFICE.

FREELAND W. OSTROM, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE
WHEELER & WILSON MANUFACTURING COMPANY, OF SAME PLACE.

SEPARATOR FOR BUTTONHOLE-SEWING MACHINES.

SPECIFICATION forming part of Letters Patent No. 608,370, dated August 2, 1898.

Application filed August 12, 1897. Serial No. 647,975. (No model.)

To all whom it may concern:

Be it known that I, FREELAND W. OSTROM, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented a new and useful Improvement in Separators for Buttonhole-Sewing Machines, of which the following is a specification.

This invention relates to buttonhole-sewing machines, and to illustrate its application I have embodied in it so much of the well-known Wheeler & Wilson automatic buttonhole-sewing machine (see Patent No. 439,680, dated November 4, 1890) as is necessary to show its operative relationship.

One of the objects of my invention is to provide a buttonhole-sewing machine with a separator which will automatically retain its proper relationship with respect to the buttonhole-slit to be overseamed no matter what may be the cycle of feed movement or the extent or variability of the vibratory movements of the cloth-holding clamp.

Another object of my invention is to provide means for automatically holding the separator in a position below the under surface of the material while the operator is clamping the material in position to be overseamed and while the machine is operated to bar one end and overseam a small portion of the two sides of the buttonhole.

In a buttonhole-sewing machine employing a cloth-holding clamp having a cycle of feed movement automatically controlled the separator must be so constructed that it will effect the desired alinement of separator and buttonhole-slit under all of the varied conditions of position and vibration of the material necessary to the overseaming and barring of the buttonhole, and its every movement at right angles to the length of the buttonhole must be substantially the same as that of the material.

To use my invention in connection with the well-known Wheeler & Wilson buttonhole-sewing machine, wherein the overseam-stitches are formed by vibrating the material instead of vibrating the needle and wherein there is employed a cloth-holding clamp automatically controlled for the cycle of feed

movement necessary to the overseaming of the buttonhole, the separator must partake of the vibratory movement of the material for the making of the edge and depth stitches, for the overseam-stitches, and also of the movements transverse to the lengthwise feed movements necessary for the overseaming of first one side and then the opposite side of the buttonhole.

If my invention is used in connection with a buttonhole-sewing machine wherein the overseam-stitches are formed by vibrating the needle and wherein there is employed a cloth-holding clamp having a cycle of feed movement automatically controlled for the overseaming and barring of the buttonhole, the movements of the separator transverse to the buttonhole-slit will be the same as the movements of the material to change the overseaming from the first to the second side of the buttonhole. A separator which must maintain substantially a given alinement with respect to a buttonhole-slit which is fed out of a right line for the automatic overseaming of the two sides of a buttonhole must be one which synchronously coacts with the movements of the material transverse to its lengthwise feed movement; and to this end I have provided a separator, which is a part of the cloth-actuating mechanism, located, timed, and controlled so that it effects the desired functions claimed.

The particular features comprising my invention will be hereinafter described, and specified in the claims.

Figure 1 is a perspective view of my invention, showing in outline so much of the throat-plate illustrated and described in my United States Patent No. 367,315, dated July 26, 1887, as is necessary to illustrate its application and operation. Fig. 2 is a like view of my invention, showing in outline so much of the well-known Wheeler & Wilson buttonhole-sewing machine as is necessary to illustrate their operative combination. Fig. 3 is a perspective view in detail of my invention. Fig. 4 is an under side view of the back slide-plate, showing the adjustably-attached separator. Figs. 5 and 5^a show the adjustable separator-depressor and its holding-nut, the same parts

being shown in the dotted lines in Fig. 2. Fig. 6 is a perspective view showing a modified form of construction.

Referring to the drawings, the cloth-plate A, the throat-plate *a*, the hook-shaft crank *a'*, the link *a''*, the shaft-flange *a*³, the main shaft B, the under member of the cloth-holding clamp C', the back slide-plate C'', and the slide-frame ways C C are parts common to the Wheeler & Wilson commercial buttonhole-sewing machine, with the exception that the throat-plate *a* is provided with a slot *e''* to permit the action of the separator, and the back slide-plate C'' is changed sufficiently to illustrate one form of application of my invention to the well-known Wheeler & Wheeler buttonhole-sewing machine. Each of these modifications will be hereinafter more fully described.

Referring to Fig. 1, the slide-frame D, the lever D', the slide D'', the link D³, and the pattern cam-shaft D⁴ are parts common to the buttonhole-sewing machine to which I have applied my invention.

Referring more particularly to Fig. 3, E is a rock-lever adjustably secured to the bracket E' through the rock-lever hanger *b* and screws *h'* *h''*. The rock-lever hanger *b* is constructed of thin sheet metal and located close up under the bracket E', and the portion containing the fulcrum-pin *b'* is shown in Figs. 1 and 3. The bracket E' is secured to the front end of the slide-frame D by the screws *h*³ *h*³. (See Fig. 1.) The forward end of the rock-lever E is formed with an upwardly-extending separator-blade *e'*, which when in operative relationship with the buttonhole-slit passes up through the slot *e''* in the throat-plate *a*, as shown in Figs. 1, 2, and 6, the opposite end of the rock-lever E being controlled to hold the separator-blade *e'* in its elevated or operative position with relation to the buttonhole-slit by the spring *e*³. (Shown partially in full lines in Figs. 1 and 3.) The reverse movement of the rock-lever E, and consequently the separator-blade *e'*, is controlled by the cam F, mounted upon the pattern cam-shaft D⁴, acting upon a lever F', suitably fulcrumed to the frame of the machine by the fulcrum-pin *h*¹³ and collar *h*⁴, its opposite end acting upon the rock-lever E to depress the separator-blade *e'* whenever the lever F' is in operative relationship with the cam F.

The pattern cam-shaft D⁴, which carries the cam F, has one revolution for each cycle of feed movement of the cloth-holding clamp, and the formation of the cam F is such that its cam portion is in operative relationship with the lever F' once for each cycle of feed movement of the cloth-holding clamp. Thus it will be understood that the normal or operative position of the separator-blade *e'* is the position controlled by the spring *e*³, (the position shown in Figs. 1, 2, and 3,) and that the depressed position of the separator-blade *e'* is the position controlled by the cam F.

Adjustably securing the rock-lever E to the bracket E' is not an essential feature of my invention; but it avoids the necessity of an accurate constructive alinement of the separator-blade *e'* with the buttonhole-slit.

The operation of the separator-blade *e'* relatively to the overseaming of a buttonhole is as follows: Supposing the overseaming of the buttonhole to be commenced with the barring of the first end of the buttonhole, the separator *e'* would be under the domination of the cam F, and consequently in its depressed position. The material to be operated upon, containing the usual buttonhole-slit, is placed in the clamp with the slit in the same vertical plane with the separator *e'*, and the machine is set in motion. First, the barring-stitches comprising the one end of the buttonhole will be made, when the material will be advanced to receive the side overseam-stitches, and as soon after as the material has been advanced sufficiently to bring the separator-blade into vertical alinement with the buttonhole-slit the cam F will permit the spring *e*³ to elevate the separator-blade *e'* up through the slot *e''* in the throat-plate *a* and up through the buttonhole-slit. This relation of separator-blade and buttonhole-slit will continue until the completion of the overseaming of the first side of the buttonhole and the barring of the opposite end and until the overseaming of the second side of the buttonhole is nearly completed, or until the material has been fed with respect to its lengthwise movement to the position occupied when the separator-blade entered the buttonhole-slit. At such time the cam F will, through motion imparted to the lever F' and rock-lever E, cause the depression of the separator-blade below the under surface of the material, where it will be held until the material for the succeeding buttonhole is by the feed movement advanced sufficiently to again bring the separator-blade into vertical alinement with the buttonhole-slit.

From the foregoing explanation of the relative action of the separator-blade it will be understood that the separator must remain stationary with respect to the lengthwise feed of the material, but that it must partake of the vibratory movements of the material and of the movements necessary to present the material for the overseaming of first one side and then the opposite side of the buttonhole and that the cam portion of the cam F is of sufficient length to effect the depression of the separator-blade during all the time that the blade is not required to be in the buttonhole-slit.

When this invention is used in connection with a buttonhole-sewing machine employing an automatic cutting device substantially such as is illustrated by my Patent No. 439,680, dated November 4, 1890, arranged and timed to cut the buttonhole-slit in advance of the overseaming of the buttonhole, the construction and operation of the parts comprising the separator mechanism remains

the same. In such instance the operator would not be obliged to register the buttonhole-slit in a vertical plane with the separator-blade, for the reason that the buttonhole-slit would be automatically cut in the material in position to receive the separator-blade as soon as the feed of the material had positioned the buttonhole-slit within the field of operation of the separator-blade.

In Figs. 2, 4, 5, and 5^a I have shown a modified application of my invention which in detail differs from the application first recited, but retains the elements of construction essential to its practical operation. To illustrate this modified form of construction and application, I have shown so much of the well-known Wheeler & Wilson commercial buttonhole-sewing machine as is necessary for an operative combination.

Mounted operatively in the cloth-plate A (see Fig. 2) is the usual back slide-plate C' and the throat-plate *a*, both common to the Wheeler & Wilson buttonhole-sewing machine employing an automatic buttonhole-cutting device. The throat-plate *a* is provided with a slot *e''* for the reception of the separator-blade *e'*, as is illustrated in Fig. 1. To the under side of the back slide-plate C', by a suitable clamp-plate, as *g''*, (see Fig. 4,) is adjustably secured the spring-lever *g*, formed with a separator-blade *e'* at its forward end, (see Fig. 2,) the same as is shown by *e'*, Fig. 1, and formed in the spring-lever *g* is an upwardly-projecting portion *g³*, which passes up through the slot *g⁴*, made in the back slide-plate C', where it is operated upon to effect the depression of the separator-blade *e'* by a controller-plate *g⁵*, secured by the thumb-nut *g⁶* (shown in dotted lines in Fig. 2 and in full lines in Fig. 5^a) to the under member C' of the cloth-holding clamp. To give to the spring-lever *g* movements corresponding to the movements of the material at right angles to its lengthwise feed movement, I have suitably connected the back slide-plate C' with the under member C' of the cloth-holding clamp. To effect this connection, I provide the back slide-plate with a stud *g⁷*, and to coact with this stud I suitably secure to the under side of the member C' of the cloth-holding clamp the two guide-bars *g⁸* *g⁸*, which transmit to the back slide-plate (carrying the spring-lever *g*) movements corresponding to the movements given the material at right angles to its lengthwise feed movements. The controller-plate *g⁵* at its front end is bent or offset, as shown at *g⁹*, (see Fig. 5,) so that when it is suitably adjusted with relation to the offset portion *g³* of the spring-lever *g* it will in its lengthwise movement corresponding to the lengthwise feed movement of the material effect the depression of the separator-blade *e'* during such time as the separator-blade is not required to be in the buttonhole-slit. At all other times the separator-blade, through the flexible construction of the

spring-lever *g*, is held in its elevated or normal position.

Referring to Figs. 1 and 3, the prime member for controlling the depression of the separator-blade *e'* is the rotating cam F, mounted upon the pattern cam-shaft D⁴, and the spring *e³* is employed to hold the separator-blade in its normal position when it is not under the domination of the cam F.

Referring to Fig. 2, the prime member for controlling the depression of the separator-blade is the traveling controller-plate *g⁵*, carried by the under member C' of the cloth-holding clamp, and the resiliency of the spring-lever *g* holds the separator in its normal position while the latter is not under the domination of the controller-plate.

Fig. 6 illustrates a modified form of construction wherein the depression of the separator-blade *e'* is controlled by the material. In the figure above referred to the separator-blade is shown as formed with an incline *h⁵*, which when acted upon by the feed movement of the material in the direction indicated by the arrow *t* will, when the buttonhole-slit has been fed backward sufficiently to bring the material comprising the front end of the buttonhole-slit in operative relationship with the inclined portion of the separator-blade, depress the blade and permit the material to be advanced under the needle to receive the barring-stitches. When for any purpose the material is changed or repositioned in the clamp, the action of the material at the same time depresses the separator. While this manner of controlling the separator-blade is practical, I prefer to employ positively-controlled mechanical mechanisms, substantially as previously described.

The herein illustrated and described means for constructing and operatively connecting my invention with buttonhole-sewing machines demonstrate that the details of construction and application are not essential so long as the construction and operation embrace the application to a buttonhole-sewing machine of a separator which is offset from the needle parallel with the line of feed movement and vertically movable relatively to the cloth-clamp, said separator partaking of the relative movement between the cloth-clamp and the stitch-forming mechanism in so far as such movement is required to change such relative position in stitching the two sides of the buttonhole.

What I claim is—

1. In a buttonhole-sewing machine, stitch-forming mechanism; a cloth-clamp; mechanism for changing the relative position of the cloth-clamp and the stitch-forming mechanism; and a throat-plate; combined with a separator offset from the needle, parallel with the line of feed movement, and vertically movable relatively to the cloth-clamp; said separator partaking of the relative movement between the cloth-clamp and the stitch-

forming mechanism in so far as such movement is required to change such relative position in stitching the two sides of the buttonhole, substantially as described.

5 2. In a buttonhole-sewing machine, stitch-forming mechanism; a cloth-clamp; mechanism for changing the relative position of the cloth-clamp and stitch-forming mechanism, a separator to separate the cut edges of the
10 material to be overseamed, said separator being in operative connection with the mechanism and partaking of its relative movements in changing the relative position of the cloth-clamp and stitch-forming mechanism,
15 ism, combined with devices to temporarily depress said separator, substantially as and for the purposes set forth.

3. In a buttonhole-sewing machine, stitch-forming mechanism; a cloth-clamp; mechanism for changing the relative position of the

cloth-clamp and the stitch-forming mechanism; a separator in operative relationship with said mechanism and partaking of its movements in changing the relative position of the cloth-clamp and stitch-forming mechanism to stitch both sides of the buttonhole; combined with a separator-depressor in operative relationship with and controlled by the mechanism for giving lengthwise feed movement to the material to be overseamed,
25 substantially as described. 30

In testimony whereof I have hereunto signed my name to this specification, in the presence of two subscribing witnesses, this 22d day of July, A. D. 1897.

FREELAND W. OSTROM.

Witnesses:

ALFRED W. HURD,
FRANK M. WOOTTON.