

J. W. BLODGETT.

BUTTON HOLE ATTACHMENT FOR SEWING MACHINES.

No. 304,256.

Patented Aug. 26, 1884.

Fig. 1.

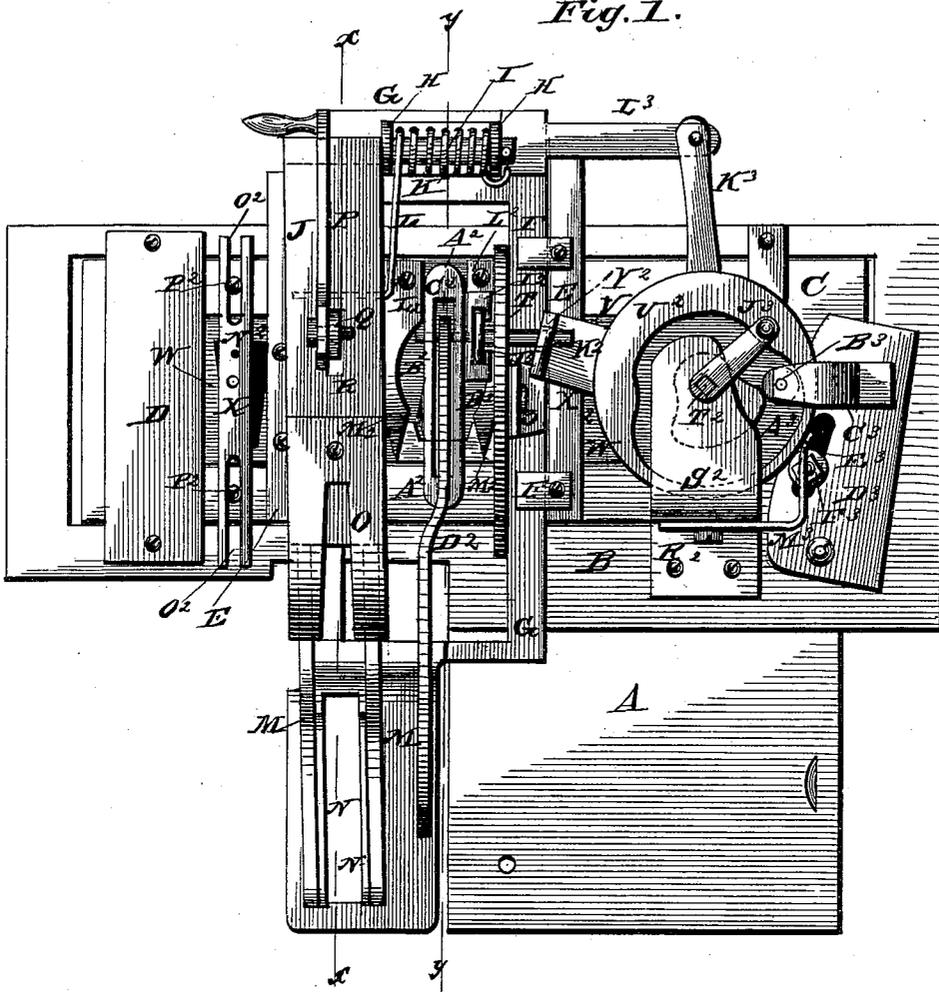
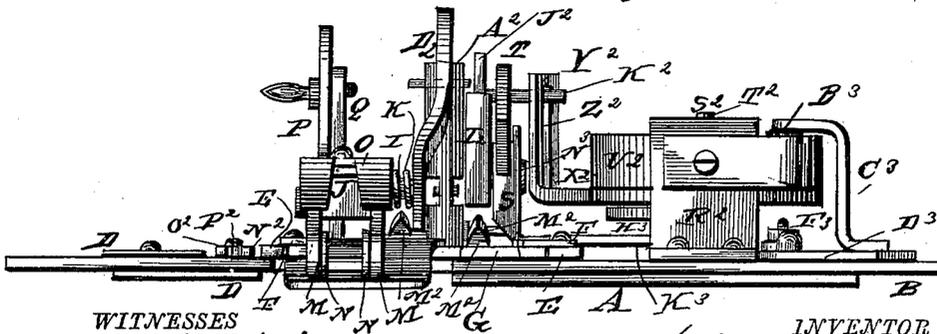


Fig. 2.



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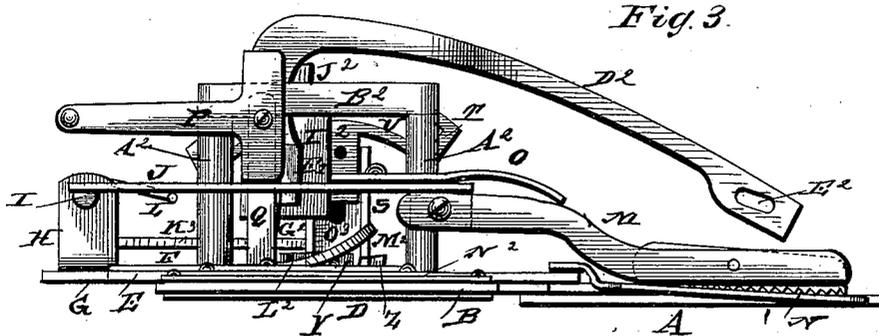


Fig. 3.

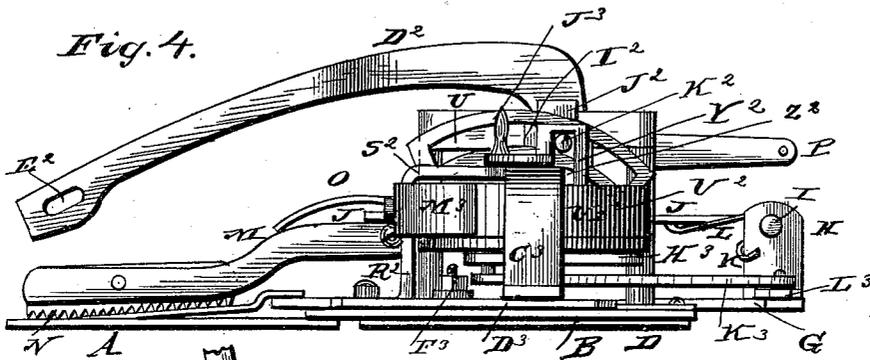


Fig. 4.

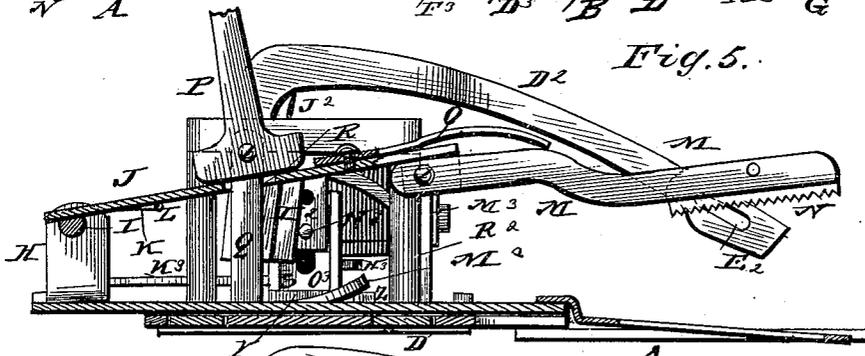


Fig. 5.

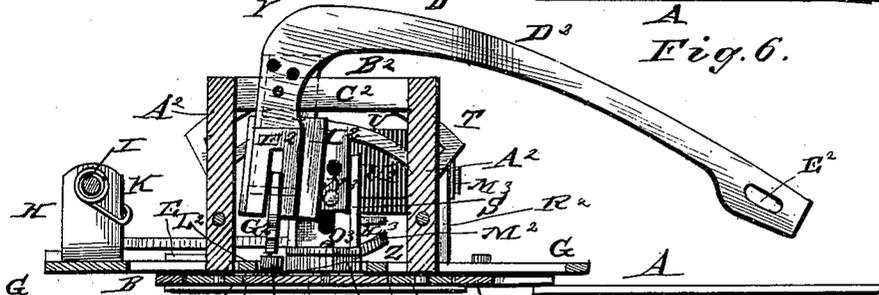


Fig. 6.

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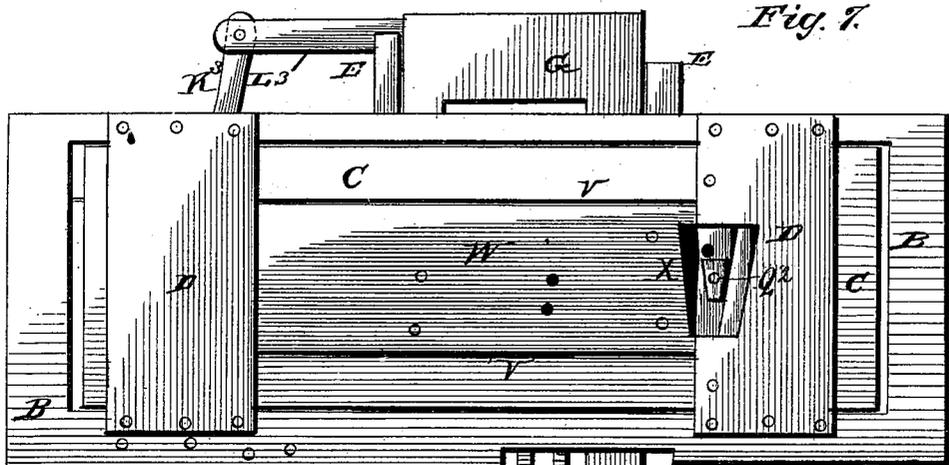


Fig. 7.

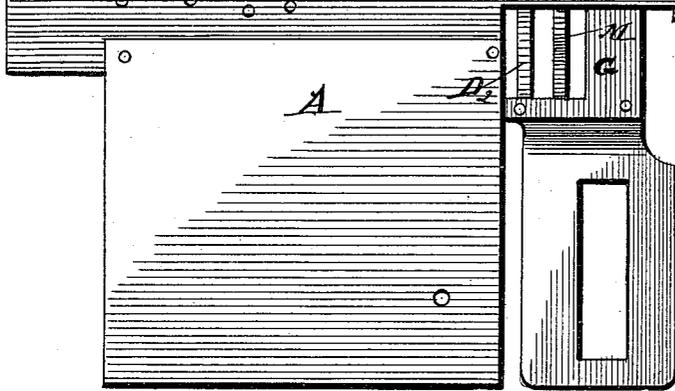


Fig. 8.

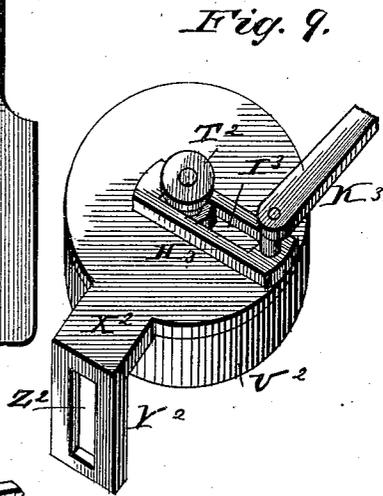
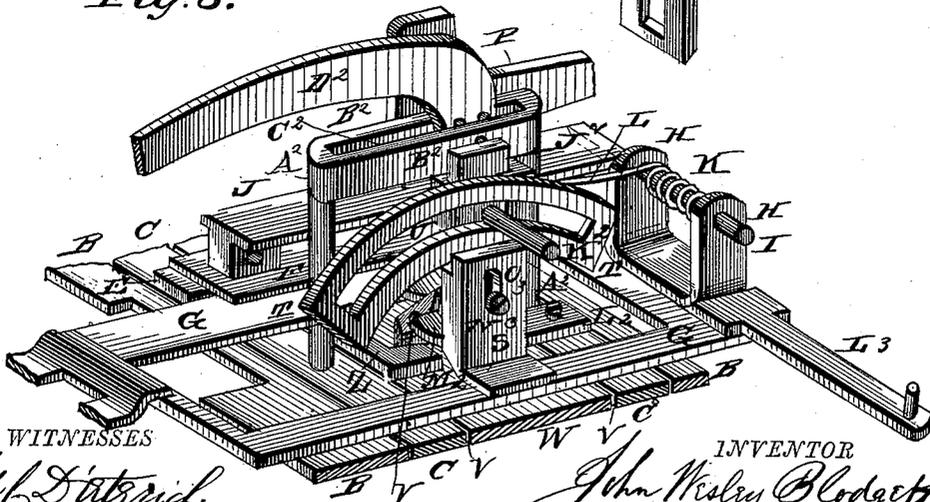


Fig. 9.



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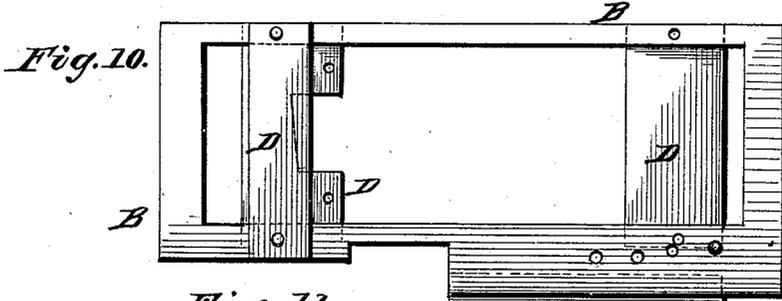


Fig. 10.

Fig. 11.

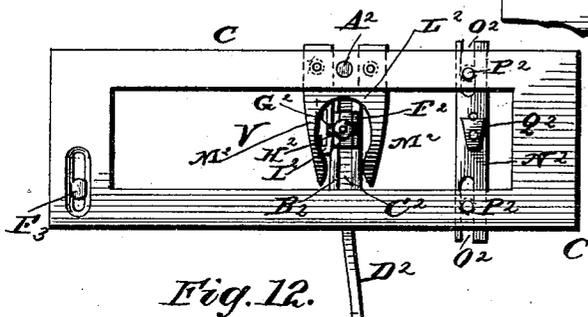


Fig. 12.

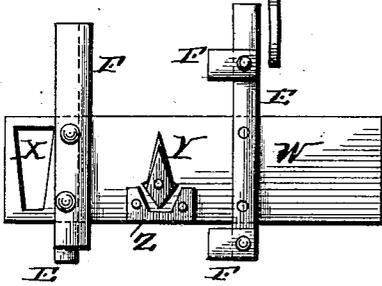


Fig. 13.

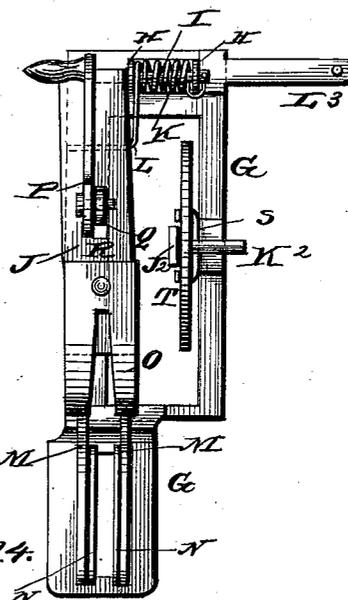


Fig. 14.

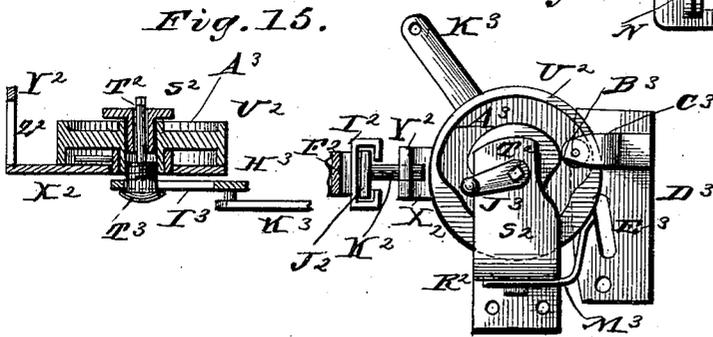


Fig. 15.

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UNITED STATES PATENT OFFICE.

JOHN WESLEY BLODGETT, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF
AND FRANKLIN M. BLAIR, OF SAME PLACE.

BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 304,256, dated August 26, 1884.

Application filed March 6, 1884. (Model.)

To all whom it may concern:

Be it known that I, J. W. BLODGETT, of Chicago, in the State of Illinois, have invented certain new and useful Improvements in Button-Hole Attachments for Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention relates to button-hole attachments for sewing-machines; and it has for its object to produce a device which shall possess superior advantages in point of simplicity, durability, and general efficiency, and in which special provisions shall be made, first, for regulating the movement or throw of the laterally-movable device which carries the goods under the needle, so as to regulate the length of the overseaming stitches; secondly, to provide a guide which shall enable the button-holes to be worked for their full length without difficulty or interference from other parts of the machinery; thirdly, to provide improved mechanism for regulating the length of the button-holes evenly and effectually; fourthly, to provide an improved feed mechanism which shall be simple and not liable to break down or get out of order.

My invention further and finally consists of the improved construction and arrangements of details, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a plan view of my improved button-hole-worker attachment for sewing-machines. Fig. 2 is a front view of the same. Fig. 3 is a side view taken from the outer side. Fig. 4 is a side view taken from the opposite side. Fig. 5 is a vertical sectional view taken on the line *xx* in Fig. 1. Fig. 6 is a similar view taken on the line *yy* in Fig. 1. Fig. 7 is a bottom view. Fig. 8 is a detail view in perspective of the mechanism which serves to move the plate carrying the goods transversely in relation to the needle, for the purpose of forming the overseaming stitches. Fig. 9 is a perspective detail view of the under side of the friction-clutch,

by which the lengthwise feeding mechanism is operated, illustrating the device for regulating the throw of said feed mechanism. Fig. 10 is a top view of the bed-plate B and part of the plate A. Fig. 11 is a bottom view of the movable plate C and the parts directly attached thereto. Fig. 12 is a top view of the movable plate W, showing the switch. Fig. 13 is a top view of the sliding frame G and its immediate attachments. Fig. 14 is a top view in detail of the clutch and its immediate attachments. Fig. 15 is a vertical section through the clutch and its slotted arm H.

A in the drawings designates the bed-plate of the machine to which my invention is applied. This machine may be a Wheeler & Wilson, or it may be of any other suitable make or construction.

B designates the bed-plate of my improved button-hole attachment, which is provided with a slot or opening extending nearly through its entire length, and in which is fitted a movable barring-plate, C, which is retained in its bearings by means of cross-pieces D, secured to the upper and lower sides of the bed-plate of the device. The movable plate C carries, as will be presently described, the mechanism for moving the goods in proper directions with relation to the needle-bar of the machine.

E E are cleats secured upon the plate W, and provided with inwardly-projecting flanges F F, serving to retain in position a clamp-plate, G, the rear end of which is provided with lugs H, carrying a post, I, the outer end of which is provided with a forwardly-extending plate, J, which is forced in an upward direction by the action of a spring, K, wound upon the post I, and having an arm, L, extending forwardly under the said plate. The latter is provided near its front end with the pivoted arms M M, forming the presser-feet, and which carry the pivoted gripping-jaws N N, said arms being forced downward by the action of a flat spring, O, suitably attached to the plate J. The latter may be forced in a downward direction, so as to cause the presser-feet to take a hold on the goods by the action of a cam, P, pivoted to a post, Q, secured to the plate G, and extending upwardly through

a slot, R, in the plate J, thus enabling the said cam to work against the tension of the spring K. The inner side of the clamp-plate G is provided with an upright, S, having at its upper end a plate, T, in which is formed a segmental slot, U, serving as a guide, the functions of which will be hereinafter described.

The plate C is provided with a slot, V, to accommodate another sliding carrying-plate, W, which is retained in position mainly by the cross-pieces D and cleats E, and which is thus brought to the level of the bed-plate of the button-hole attachment. This plate is provided near its outer end with a slot, X, having converging sides, and it carries on its upper side a pivoted switch-cam, Y, the movement or throw of which is limited by a recessed plate, Z, secured to the plate W in front of the said cam, the end of which will abut against the sides of the said recessed plate when the swinging motion of the cam takes place during operation. The front and rear sides of the barring-plate C are provided with uprights A² A², the upper ends of which are connected by cross-pieces B² B², forming a slot, C², in which is pivoted a bell-crank lever, D², the front end or arm of which has a transverse slot, E², to receive a pin projecting laterally from the needle-bar of the machine, which is not shown in the drawings, but from which motion is imparted to the working parts of the button-hole attachment. The lower end or arm of the lever D² is provided with a casing, F², in which is pivoted a transversely-oscillating arm, G², carrying at its lower end a friction-roller, H². To the side of the casing F² is secured a frame, I², having dovetailed bearings for a vertically-sliding plate, J², which is provided with a laterally-extending pin, K², extending through the slot U in the plate T, attached, as herein and before described, to the movable frame G. The plate C is provided in front of the rear uprights with a plate, L², having arms M², that extend forwardly and upwardly in a horseshoe shape, and which are made of steel or other elastic material. These arms will not interfere with the free operation of the latter or of the carrying-plate W, to which the said cam is pivoted. The function of the arms M² is to serve as side bearings for the oscillating arm G² during the action of its roller H² on the switch-cam. It may be stated that the front inner ends of the arms M² are beveled in an outward direction, in order to facilitate the operation.

To regulate the movement of the transversely-sliding plate W within the sliding plate C, I provide the latter with a cross-bar, N², adjustable by means of set-screws P², working in slots O² in the ends of the said cross-bar. The latter is provided on its under side with a pivoted bevel-sided lug, Q², which, by striking against the sides of the slot X, will limit the movement of the carrying-plate W to any desired extent, the regulation being effected by

simply moving the cross-bar N² in a forward or rearward direction, as may be required.

Secured to the front side of the base-plate B, near the inner end of the latter, is an angular post or upright, R², to the rearwardly-projecting upper arm, S², of which is journaled the central stem or axis, T², of a suitably-constructed friction-clutch, U², movable in only one direction, and the lower end of the axis of which is provided with a laterally-extending arm, X², having at its outer end an upwardly-projecting bracket, Y², provided with a slot, Z², to receive the pin K², which extends, as heretofore described, from the vertically-sliding plate J², attached to the lower arm of the lever D², through the segmental guide-slot U in the plate T. The upper side of the casing of the friction-clutch U² is provided with a cam-groove, A³, in which works a roller, B³, journaled to an arm, C³, extending upwardly from a plate, D³, pivoted to the front side of the base-plate B, and having a slot, E³, working over a pin, F³, secured to and extending upwardly from the plate C.

The function of the barring mechanism is to modify the action of the devices which carry the goods, so that the long stitches known in the art as the barring-stitches shall be made.

The length of the button-holes is regulated by the extent of the movement of the sliding plate G. To operate this plate, and to regulate the extent of its movement, I have provided the following mechanism: To the under side of the axis of the friction-clutch is attached an arm or lever, H³, having a slot, I³, by which it is attached adjustably to the under side of the casing of said clutch, the adjustment being effected by turning a thumb-screw or crank, J³, fitted upon the upper end of the arbor extending vertically through the casing of the clutch. It will be seen by reference to Fig. 15 that the arbor or central stem, T², has a screw threaded on its lower part, and also a clamping-head, T³, which latter is adapted to clamp and hold the slotted arm H³ firmly. By turning the said stem backward, this arm H³ will be loosened, when it can be adjusted to give any desired throw to the frame G, and again tightened. To the outer end of the arm H³ is pivoted a pitman or connecting-rod, K³, the outer or rear end of which is pivotally connected with an arm, L³, extending laterally from the rear end of the plate G, to which the reciprocating motion is thus imparted.

To prevent any back movement of the friction-clutch, which might seriously interfere with the successful operation of the device, I employ a flat angular spring, M³, attached to the front side of the post or upright R², with sufficient force to prevent the latter from moving in a reverse direction by any ordinary cause.

In order to regulate the distance between the stitches I avail myself of the following very simple mechanism, which operates in conjunction with the parts of the invention heretofore

described: The segmentally-slotted plate T, which has been described as being secured to an upright, S, attached to the plate G, is made vertically adjustable by means of a set-screw, N³, working in an arm extending downwardly from the said plate T, and in a slot, O³, in the standard to which the said plate is attached. It follows that the throw of the pin operating the friction-clutch and extending laterally from a plate vertically movable upon the side of the bell-crank lever will regulate the operation of the clutch and lengthen or shorten its throw, according to whether the said pin be lowered or raised. Another important function of the plate T is to cause the distance between the stitches to be equal throughout the entire length of the button-hole. This is effected by automatically changing the relative positions of said pin with respect to the fulcrum of the bell-crank D².

It is well known that when a reciprocating plate is operated by a pitman the speed decreases as the dead-centers of the crank working such pitman are approached. In this case the plate G, being operated by pitman K³, would be thus affected; but this is compensated for by the segmentally-slotted plate T, which, when the plate G approaches the ends of its travel, gradually and evenly lowers the pin K³, increasing its distance from the fulcrum of the bell-crank lever D², and consequently lengthening its stroke and correspondingly increasing the throw or movement of the friction-clutch.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation of this invention and its advantages will be readily understood by those skilled in the art to which it appertains.

A bed-plate is provided in which two plates are mounted, movable one within the other. The inner plate has mechanism operating in conjunction with the needle-bar of the machine for forming the stitch. The length of the stitch is regulated by the adjustable cross-bar attached to the outer plate. The length of the button-holes is regulated by the friction-clutch mechanism herein described, and the distance between the stitches, which it is necessary to regulate according to the length of the button-holes, is likewise controllable by means of the attachment of the swivel-pin, which is vertically adjustable on the bell-crank lever, which imparts motion from the sewing mechanism to the button-hole attachment connected therewith.

I do not, under this application, claim the friction-clutch herein described and shown, for the reason that this clutch was secured to me by Letters Patent No. 299,453, dated on the 27th day of May, 1884.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. The combination, in a button-hole attachment for sewing-machines, of the barring-plate, the carrying-plate, the clamp-plate, le-

ver D², the casing F² on this lever, the oscillating arm G², its roller H², the pivoted cam Y on plate W, and the arms M², secured to plate C, all constructed and adapted to operate substantially in the manner and for the purposes described.

2. The combination of the bed-plate B, the adjustable cross-bar having a pivoted wedge-shaped lug, Q², and a carrying-plate having a slot with oblique sides, and mechanism for reciprocating said plate, the barring-plate, and the cloth-clamp and its carrying-plate, substantially as described.

3. In a button-hole attachment for sewing-machines, the combination of a bed-plate, a sliding slotted barring-plate, the cloth-clamp, a cross-bar adjustable upon the latter and having a lug on its under side, a movable carrying-plate provided with a slot, as described, a clamp-plate, and mechanism for actuating the barring and clamp plates, substantially as specified.

4. The combination of the movable barring-plate, the cloth-clamp, a carrying-plate moving within the said barring-plate and provided with a pivoted switch-cam, a bell-crank lever pivoted to the barring-plate, an arm, G², pivoted to the short arm of said lever and having a friction-roller adapted to operate the said cam, guides M² for said arm G², and the mechanism for operating said devices, substantially as described.

5. The combination of the inner sliding carrying-plate having the pivoted diamond-shaped cam with the outer sliding barring-plate having the elastic horseshoe-shaped upwardly-curved and beveled arms, the cloth-clamp, and the operating-lever having a pivoted arm provided with a friction-roller, substantially as set forth.

6. The combination of a bed-plate, an upright secured to the same, a cam-grooved friction-clutch journaled to the said upright, a barring-plate movable within the said bed-plate, the cloth-clamp, and a plate pivoted to the bed-plate connected by a pin and slot with the sliding barring-plate, and having a friction-roller moving in the cam-groove of the clutch, from which motion is thus imparted to the sliding plate, as set forth.

7. The combination of the bed-plate, the barring-plate sliding longitudinally in the same, and having uprights carrying a bell-crank lever provided with a laterally-swinging arm provided with a roller at its lower end, a horseshoe-shaped guide attached to the barring-plate, an interior carrying-plate having a switch-cam and stops for the latter, a clamp-plate mounted upon the said carrying-plate, and having suitable cloth-holding mechanism, and a regulating device attached to the clamp-plate, and adapted to regulate the length of the throw from the operating-lever to a friction-clutch, by which motion is imparted from the said operating-lever to the several parts of the device, as set forth.

8. The combination of the barring, carrying, and clamp plates, the operating-lever pivoted to standards attached to the barring-plate, a pivoted arm connected to the lower arm of said operating-lever, and adapted to operate the inner sliding carrying-plate, a dovetailed casing secured to the lower arm of the operating-lever, a slide movable in said casing and having a laterally-projecting pin, the clamp-plate having a segmentally-slotted plate to receive the said pin, a friction-clutch having a slotted arm receiving and operated by the end of the said pin, and connecting means, as arm L³ and link K², substantially as set forth.

9. The combination, with the barring, carrying, and clamp plates, of a friction-clutch mounted upon the stationary bed-plate and arranged to impart motion imparted to said

clutch from an operating-lever mounted upon the barring-plate to both the barring and clamp plates, substantially as set forth.

10. The combination of the bed plate, the carrying and barring plates, the sliding clamp-plate having a laterally-projecting bracket, the friction-clutch having an adjustable arm connected pivotally with the said bracket, and operating mechanism, substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOHN WESLEY BLODGETT.

Witnesses:

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CHARLES PLUMB.