W. L. BARRON.

GAGE FOR BUTTON SEWING MACHINES.

APPLICATION FILED SEPT. 15, 1911.

1,069,053.

Patented July 29, 1913.

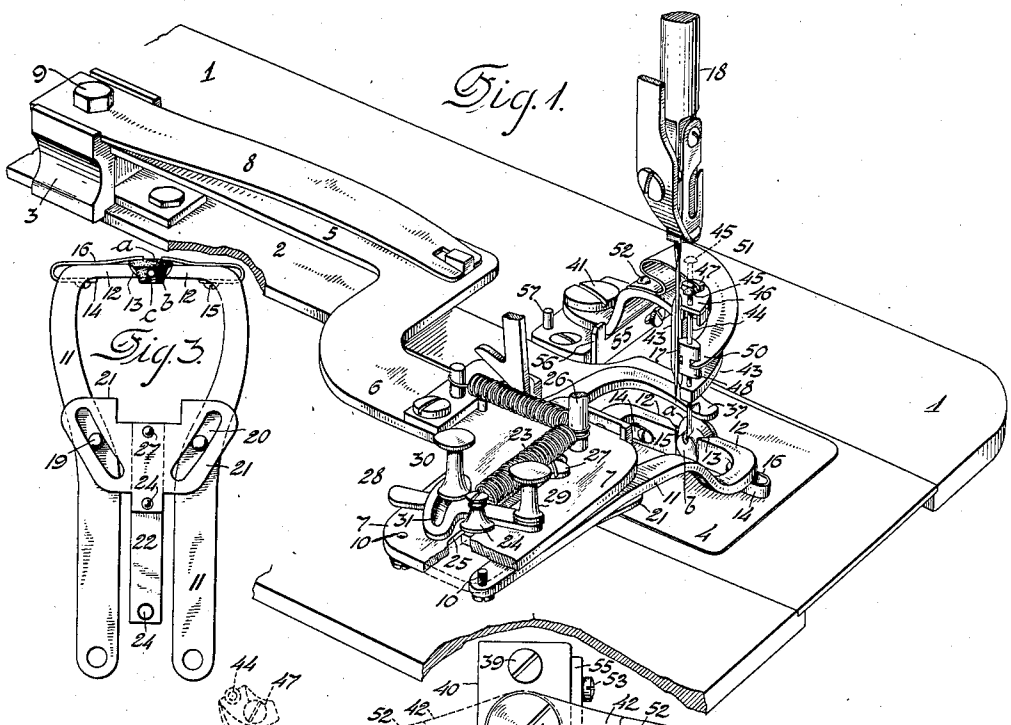

Fig. 1.

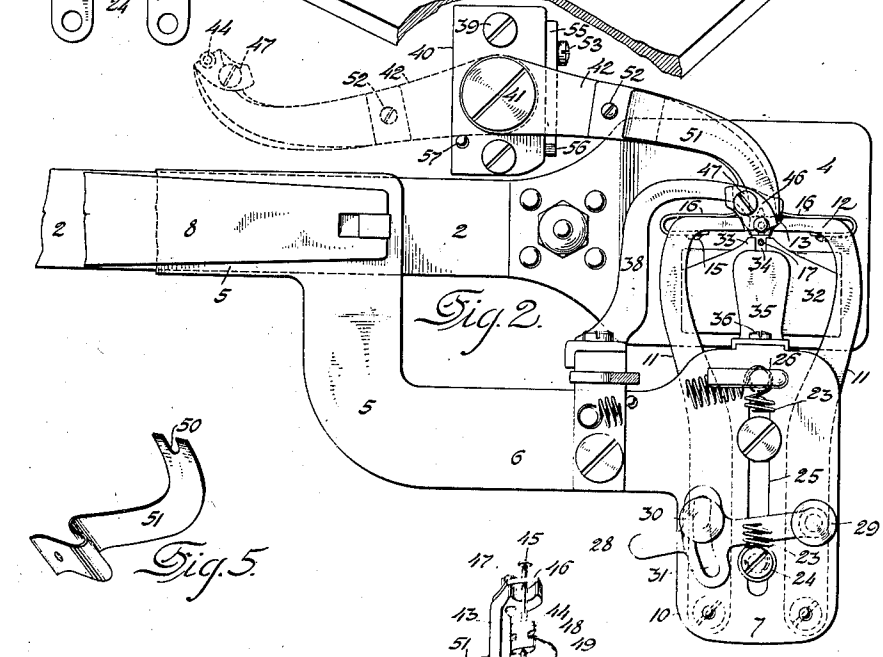

Fig. 2.

Fig. 3.

Fig. 5.

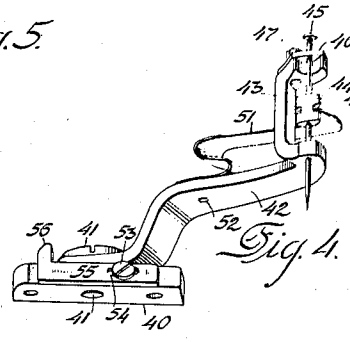

Fig. 4.

WITNESSES:

Geza Jenay.

R. C. Fischer.

INVENTOR

William L. Barron

BY

Henry J. Miller

ATTORNEY

UNITED STATES PATENT OFFICE.

WILLIAM L. BARRON, OF NEW YORK, N. Y., ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

GAGE FOR BUTTON-SEWING MACHINES.

1,069,053. Specification of Letters Patent. Patented July 29, 1913.

Application filed September 15, 1911. Serial No. 649,569.

To all whom it may concern:

Be it known that I, WILLIAM L. BARRON, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Gages for Button-Sewing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an improvement in button-fastening machines, and more particularly to that class of machines comprising stitch-forming mechanism including a reciprocating needle and button-holding means constructed to present for the action of the stitch-forming mechanism that class of buttons having a shank integral with the head with a transverse aperture parallel with the latter, such as are known to the trade as "self-shank" buttons.

The invention has for its object to provide a gage independent of the button-holding means and adapted to be shifted into and out of operative relation therewith to gage the position of the eye of a button sustained by said holding means in operative relation with the needle.

In its preferred form, the improvement comprises a swinging arm or carrier mounted upon a fixed fulcrum and having journaled in its outer end an endwise movable spring-retracted gage-pin disposed substantially parallel with the needle and adapted to be shifted laterally into and out of operative relation with the button-holder and to be depressed to enter the eye of a button within said holder when correctly positioned to receive the fastening stitches, the holder being provided with adjusting means for properly locating the button. An adjustable stop is provided for determining the operative position of the gage-pin carrying arm so as to insure the correct positioning of the gage-pin for different degrees of relative jog between the button-holder and the needle whereby the usual overseam fastening stitches are produced.

In the accompanying drawings, Figure 1 is a perspective view of a portion of a sewing machine bed-plate with the jogging work-clamp and reciprocating needle-bar and needle of a button sewing machine of the well known Singer type, as disclosed in the United States Patent to J. J. Sullivan No. 777,564, dated December 13, 1904, and provided with a button-gage embodying the present improvement. Fig. 2 is a plan view of said parts, upon a larger scale, and with the bed-plate omitted. Fig. 3 is an under side view of a portion of the button-holder. Fig. 4 is a perspective view of the button-gage detached from the machine, and Fig. 5 a similar view of the spring-arm for controlling the gage-pin.

The present improvement is represented in connection with the button-holder forming the subject of my application Serial No. 636,173, filed June 30, 1911.

Sustained upon the sewing machine bed-plate 1 is the laterally jogging slide-bar 2 carrying upon its rearward end the block 3 and having secured to its forward end the work-supporting plate 4 constituting the lower member of the work-holder. Journaled in the block 3 for slight vertical movement is the upper work-clamp arm 5 formed with the backwardly offset forward portion 6 terminating in the button-holder sustaining plate 7, and pressed normally downward by means of the arched pressure-spring 8 secured upon said block by means of the clamp-bolt 9.

Pivotally mounted beneath the plate 7 by means of the fulcrum-studs 10 are the swinging button-clamp levers 11 each provided at the downwardly offset forward end with the transverse button-clamp jaw 12, the adjacent operative extremities of these parts being divergently beveled to afford button-head seats 13. Each of the jaws 12 is embraced by a U-shaped spring whose rearward limb 14 is secured thereto by means of the fastening screw 15 while the forward limb 16 rests upon the outer face of the member 12 and overlies the button-head seat 13, so as to produce in conjunction therewith one of the separable parts of the button-head cavity which is disposed in angular relation with the face of the work-supporting plate and parallel with the path of reciprocation of the needle 17 carried by the rectilinearly reciprocating needle-bar 18.

The clamp-levers 11 are provided with depending pins 19 entering the divergently arranged cam-slots 20 of a guide-plate 21 secured to the slide-block 22 which is fitted within a suitable guide-channel in the bottom of the sustaining plate 7 and is normally drawn forward to force the button-clamp jaws together by means of the spring

23 having one end attached to the stud-screw 24 passing through the longitudinal slot 25 of the plate 7 and tapped into the slide-block 22, while the other end of such spring is connected with the post 26 secured in the plate 7. The screw 27, also tapped into the slide-block 22 and working in the guide-slot 25, serves, in conjunction with the stud-screw 24, to retain the slide-block 22 in operative relation with the sustaining plate 7.

The position of the cam-plate 21, and hence the spacing apart of the button-clamp jaws 13, is determined by means of the stop-lever 28, fulcrumed upon the screw-pin 29 and adapted to be clamped adjustably in position by means of the thumb-screw 30 entering its segmental slot 31, and against the edge of which stop-lever the stud-screw 24 normally rests under the action of the spring 23. By loosening the thumb-screw 30, the stop-lever 28 may obviously be shifted to determine the spacing apart of the relatively inclined button-engaging jaws 13 to insure the positioning of the button with its eye in register with the needle.

The buttons of the class which the present button-holder is designed to accommodate are usually formed with somewhat tapering shanks, so that the relatively inclined button-engaging jaws present to such button-shanks seats whose spacing apart evidently determines the position of the button relatively to the needle; but even with buttons having cylindrical shanks the holding jaws are so shaped as to engage the button-heads in such manner as to correspondingly position the buttons for the fastening operation.

As represented in Fig. 2, the work-supporting plate 4 is provided at the side of its needle-aperture opposite the button-holding jaws 13 with a rectangular block 32 formed in the adjacent edge with a projection 33 having a needle clearance notch 34, and overlying the block 32 is the presser-foot 35 secured by means of the fastening screw 36 to the button-holder sustaining plate 7. The block 32 and presser-foot 35 are omitted from Fig. 1 in order to expose more fully the button-holding and positioning jaws and the button sustained thereby in operative relation with the stitch-forming mechanism and the button-gage. Normally overlying the button-head cavity is the operative outer end portion 37 of the laterally swinging button-detaining arm 38 mounted upon the clamp-arm extension 6. Secured upon the bed-plate 1 by means of the fastening screws 39 is the fulcrum-plate 40 carrying the screw-stud 41 upon which is fulcrumed the swinging gage-carrying arm or carrier 42 having in its outer end the bearing yoke 43 sustaining the endwise movable gage-pin 44 having the head 45 and journaled in an aperture in the lower member of said yoke and in a similar aperture in a bearing plate 46 secured upon the upper member of the yoke by means of the screw 47. Secured upon the gage-pin intermediate the spaced bearing members of the yoke 43 is a collar 48 formed with a notch 49 to receive the notched outer end portion 50 of the spring-arm 51 secured upon the arm or carrier 42 by means of the screw 52. Secured to the forward edge of the fulcrum-plate 40 by means of a screw 53 entering a longitudinal slot 54 therein is a stop-plate 55 formed at one end with the upwardly-projecting stop-lug 56 adapted to engage the foot of the carrier-arm 42 when thrown forwardly to bring its gage-pin in operative relation with the button-holding jaws. By loosening the screw 53, the stop-lug 56 may be adjusted to arrest the forward movement of the carrier-arm 42 in register with the position of the button-eye when suitably held for passage of the needle in the production of the fastening stitches. The fulcrum-plate 40 carries at the opposite edge from the stop-lug 56 a stop-pin 57 adapted to engage the foot of the carrier-arm to limit its backward movement into inoperative position, as represented in dotted lines in Fig. 2.

In the use of the machine, the jogging mechanism for the button-holder is adjusted to produce the required throw for production of the desired length of fastening stitch, after which the carrier-arm 42 is moved into its operative position as represented in full lines in Fig. 2 to bring its gage-pin 44 a corresponding distance in front of the needle. The stop-plate 55 is then adjusted to bring its stop-lug 56 into operative engagement with the foot of the carrier-lever 42 to insure the arrest of the latter in the same position in its subsequent movements into operative position from retracted position. A button is then inserted in the button-cavity with its head *a* intermediate the clamp-spring arms 16 and the outer portions of the jaws 12 and with its slightly tapered shank *b* in engagement with the inner extremities of the clamp-jaws. If, upon depression of the gage-pin 44 from the dotted line position to the full line position represented in Fig. 1, the point of the pin enters the eye *c* of the button accurately, the gage is then retracted into the inoperative position represented in dotted lines in Fig. 2, but if the button-eye is not so positioned, the relation of the button-jaws 12 is adjusted by shifting the stop-lever 28 so that the button-eye is presented precisely in register with the gage-pin, after which the gage is retracted and the machine is in adjustment for attaching successively a series of buttons of the same size and shape. In changing to another size or pattern of button, it is merely necessary to shift the button-gage into operative position and to adjust the clamp-jaws suitably for bringing

the button-eye in register therewith, the lateral jogging movement of the clamp causing the needle to descend alternately beyond the end of the button-shank and then through the button-eye.

While the button-jaws are not held in position by positive means, but merely by the action of the spring 23 which maintains the stud-screw 24 yieldingly in contact with the stop-lever 28, in practice the spring-arms 16 have sufficient elasticity to enable them to yield for different sizes and shapes of button-head before the jaws 12 could be forced apart by the insertion of a button into the button-cavity, so that the jaws 12 in practice retain their positions of adjustment as determined by the stop-lever 28.

While the present improvement is designed more particularly for use in connection with integral-shank buttons with transverse eyes, it is evidently adapted, with such modification as would be obvious to those skilled in such matters, for use in connection with the attachment of flat buttons having eyes passing through their body portions.

Having thus set forth the nature of the invention, what I claim herein is:—

1. The combination with stitch-forming mechanism including a reciprocating needle, and a button-holder adapted to receive lateral jogging movements relatively to said needle and provided with jaws formed with divergently arranged button-engaging faces each substantially parallel with the needle and adapted for positioning and holding a shank-button to receive fastening stitches, of a button-gage movable in the direction of said jogging movements within a range wholly at one side of the needle into and out of register with the shank of a button held by said jaws, and means for adjusting the button-holding jaws toward and from each other to position the button-shank relatively to the needle.

2. The combination with stitch-forming mechanism including a reciprocating needle, and a button-holder provided with button-engaging jaws for positioning and holding a button, of a button-gage comprising a rigidly sustained carrier adapted to move and confined to movement within a plane transverse to the needle and a gage-pin sustained by and against lateral movement relative to said carrier and movable endwise in a direction transverse to that of said carrier.

3. The combination with stitch-forming mechanism including a reciprocating needle, and a button-holder provided with button-engaging jaws for positioning and holding a button, of a carrier movable relatively to the button-engaging jaws, and an endwise movable gage-pin journaled therein substantially parallel with the needle and adapted to be shifted into and out of operative relation with the button-engaging jaws.

4. The combination with stitch-forming mechanism including a reciprocating needle, and a button-holder provided with button-engaging jaws for positioning and holding a button, of a carrier movable relatively to the button-engaging jaws, and an endwise movable spring-retracted gage-pin journaled therein substantially parallel with the needle and adapted to be shifted into and out of operative relation with the button-engaging jaws.

5. The combination with stitch-forming mechanism including a reciprocating needle, and a button-holder provided with button-engaging jaws for positioning and holding a button, of a carrier movable relatively to the button-engaging jaws, an adjustable stop for determining the operative position of said carrier, and an endwise movable gage-pin journaled in said carrier substantially parallel with the needle and adapted to be shifted into and out of operative relation with the button-engaging jaws.

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

WILLIAM L. BARRON.

Witnesses:
HENRY J. MILLER,
HENRY A. KORNEMANN, Jr.