

(No Model.)

2 Sheets—Sheet 1.

W. WALLICK.

BUTTON HOLE ATTACHMENT FOR SEWING MACHINES.

No. 467,841.

Patented Jan. 26, 1892.

FIG. 2.

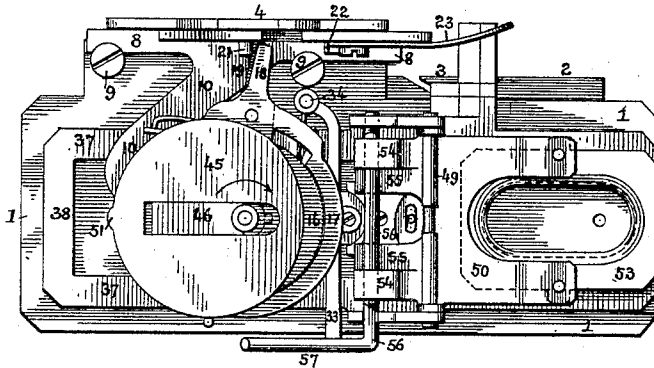


FIG. 1.

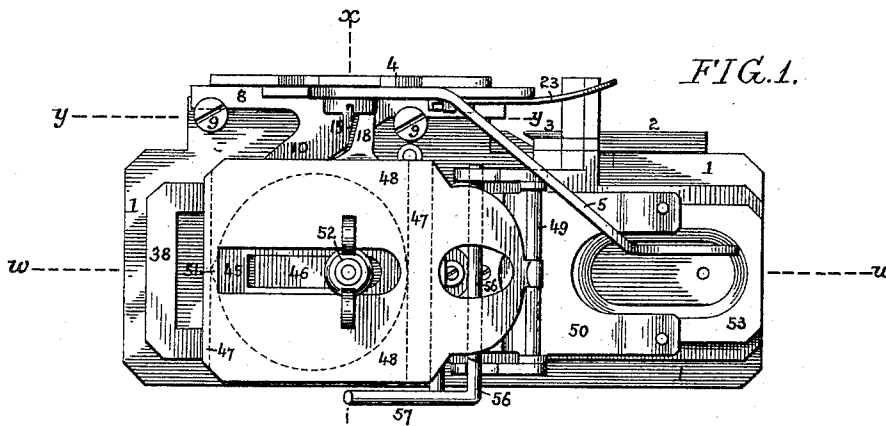


FIG. 8.

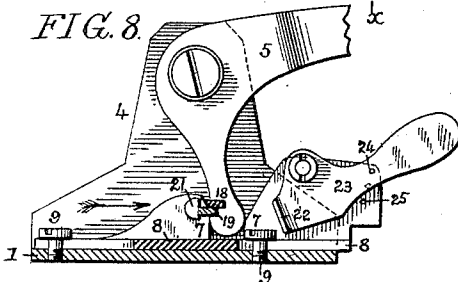


FIG. 7.

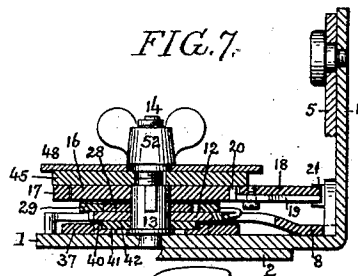
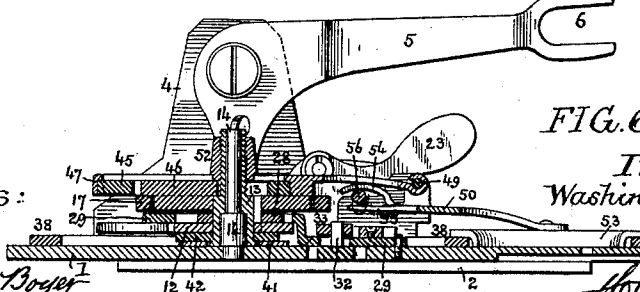


FIG. 6.



Witnesses:

Alex. Barkoff
Murray C. Boyer

Inventor
Washington Wallick
by his Attorneys
Howe & Howe

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FIG. 5.

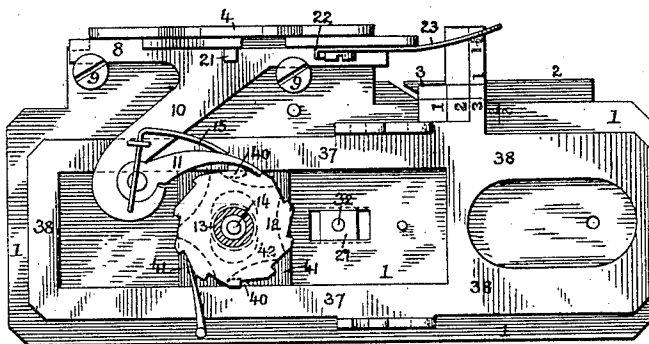


FIG. 4.

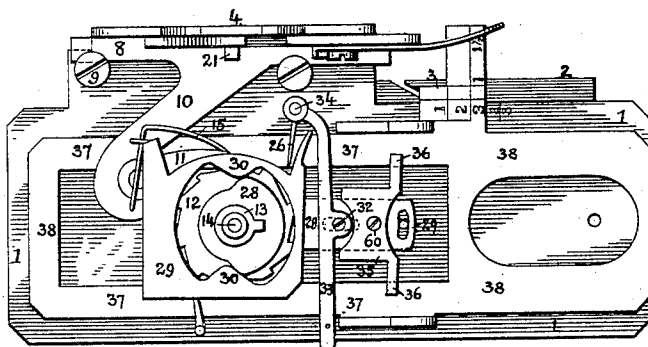
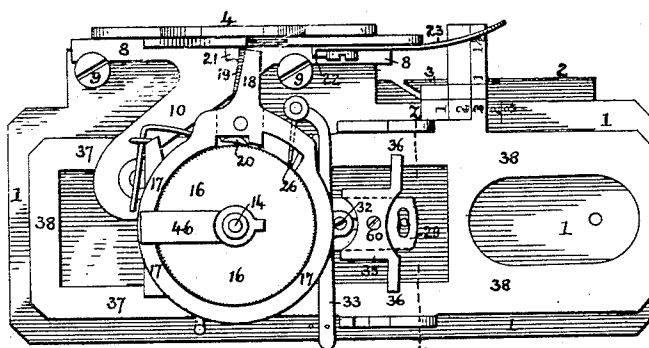
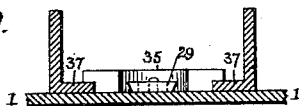


FIG. 3.



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Alex. Barkoff
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FIG. 9.



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UNITED STATES PATENT OFFICE.

WASHINGTON WALLICK, OF PHILADELPHIA, PENNSYLVANIA.

BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 467,841, dated January 26, 1892.

Application filed August 6, 1891. Serial No. 401,878. (No model.)

To all whom it may concern:

Be it known that I, WASHINGTON WALLICK, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Button-Hole Attachments for Sewing-Machines, of which the following is a specification.

My invention consists of certain improvements in the button-hole attachment for sewing-machines forming the subject of my Letters Patent Nos. 406,799 and 406,800, dated July 9, 1889, and of my application for Letters Patent filed April 6, 1891, Serial No. 387,765, the object of my improvements being to provide means for accurately regulating the length of the button-hole and the closeness of the stitches in the row along each side of the button-hole to vary the distance between these rows of stitches without regard to the "bight" or length of stitch, and to provide a simple and efficient form of clamp for the cloth without the use of springs. These objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a plan or top view of my improved button-hole attachment. Fig. 2 is a like view with some of the top parts removed. Figs. 3, 4, and 5 are plan views, each having removed from it some of the parts shown in the figure preceding it. Fig. 6 is a longitudinal section on the line *ww*, Fig. 1. Fig. 7 is a transverse section on the line *xx*, Fig. 1. Fig. 8 is a longitudinal section on the line *yy*, Fig. 1; and Fig. 9 is a transverse section on the line *zz*, Fig. 3.

1 represents the base-plate of the attachment, beneath which is the plate 2, whereby said base-plate is secured in the throat-plate opening of the ordinary work-table of the sewing-machine, said plate 2 having at one side spring-fingers 3, so that when the plate is slipped into the throat-plate opening these spring-fingers by reason of their frictional contact with one side of said throat-plate opening will serve to retain the attachment firmly in position on the work-plate of the machine.

At one side of the base-plate 1 is an upwardly-projecting standard 4, to which is hung the primary or operating lever 5, one arm of this lever being forked, as at 6, for

engagement with the stud on the needle bar or arm of the machine, so that as said needle-bar rises and falls a vibrating or rocking movement will be imparted to the lever 5. The other arm of said lever plays between shoulders 7 7 on a slide 8, which is guided on and held down upon the base-plate by means of screws 9, said slide having an arm 10, Fig. 5, hooked at the inner end for the reception of the hub of a pawl 11, which engages with the teeth of a ratchet-wheel 12, free to turn on a sleeve 13, which is likewise free to turn upon a stud 14, projecting upward from the bed-plate 1 of the attachment, the pawl 11 being held in engagement with the teeth of the ratchet-wheel 12 by means of a spring 15, as shown in Fig. 5.

Keyed or otherwise secured to the sleeve 13 is a disk 16, Figs. 3, 6, and 7, the periphery of this disk being preferably milled or roughened, and surrounding the disk is a ring 17, from one side of which projects an arm 18, and to this ring is pivoted a clamp-lever 19, the short arm of which is furnished with a tooth 20 for engaging with the milled or roughened periphery of the disk 16. The long arm of this clamp-lever and the arm 18 of the ring 17 project outward and terminate between a lug 21 on the slide 8 and a flange 22 on a cam-lever 23, hung to said slide and adjustable to different positions thereon, so that the distance between the lug 21 and flange 22 of the lever may be increased or diminished as desired, the lever being held in its different positions of adjustment in any suitable manner, preferably by engagement of a pin 24 on the lever with one of a series of openings 25, formed in the upright flange of the slide 8, to which said lever is hung. When the slide 8 moves in the direction of the arrow, Fig. 8, the lug 21 comes in contact with the long arm of the lever 19 and so moves the same as to first cause the tooth 20 of the lever to firmly engage with the periphery of the disk 16, the ring 17 then moving with the lever 19 in a path concentric with the axis of the disk, so as to impart movement of partial rotation to said disk. On the backward movement of the slide the flange 22 of the lever 23 strikes the arm 18 of the ring and swings the latter backward on the disk, the ring carrying with it the lever 19, but backward movement of

the disk being prevented by a catch finger or pawl 26. (Shown in Fig. 3.) The extent of movement imparted to the disk 16 on each reciprocation of the slide 8, therefore, will depend upon the amount of space between the lug 21 and the flange 22 of the lever 23, for the closer together these parts are the greater will be the extent of movement of the ring, and the further said parts are separated the less will be the extent of such movement.

To the sleeve 13, immediately below the disk 16, is keyed a cam 28, which is adapted to an opening in the transverse shifter-lever 29 of the attachment and acts upon inwardly-projecting lugs 30 on said lever, as shown in Fig. 4, the lever being fulcrumed upon a pin 32, carried by a slide-block 27, adapted to a longitudinal slot in the bed-plate, the pin engaging with a lever 33, hung to a stud 34 on the bed-plate and adjustable to different positions, so as to shift the fulcrum-pin 32 and thus vary the relative length of the two arms of the lever 29. To the forward arm of said lever is fitted an under-cut plate 35, with laterally-extending wings 36, notched at their ends, as shown in Figs. 3, 4, and 9, for the reception of the opposite arms 37 of the clamp-lever 38, which is thus fulcrumed upon said wings 36.

The arms 37 of the rear portion of the clamp-lever 38 are acted upon by lugs 40 on a vibrator-slide 41, which rests upon the bed-plate 1, these lugs fitting snugly against the arms 37 of the lever and being acted upon by a vibrator-cam 42, (shown in Figs. 6 and 7, and by dotted lines in Fig. 5,) this cam being star-shaped, and being secured to the under side of the ratchet-wheel 12, so that it has intermittent movements, one of the projections of the cam acting upon one lug 40 when the other lug enters a recess in the cam. Hence short vibrating movements are thereby imparted to the clamp-lever to form the short stitches along the sides of the button-hole, the shifting of the stitches from one side of the button-hole to the other at the ends of said button-hole being effected by the action of the cam 28 upon the transverse shifter-lever 29, which has the effect of laterally shifting the fulcrum-lugs 36 of said clamp-carrying lever, the extent of this movement being dependent upon the position of the fulcrum-pin 32 of the shifter-lever, which can be varied, as described, so that the space between the opposite rows of stitches may be increased or diminished without any change in the size or bight of the stitches themselves.

Change in the size of the stitches is effected by shifting the sliding plate 35 on the lever 29, so as to carry it toward or from the cam 42, the plate being secured in position after adjustment by tightening a set-screw 60 on the sliding plate. (See Figs. 3, 4, and 6.)

The longitudinal movement of the clamp-lever, so as to provide for the formation of stitches from end to end of the button-hole, is effected by a cam 45, which has a central

slot for the reception of an arm or lug 46 on the disk 16, said cam acting upon projections 47 on the under side of a longitudinal shifter-slide 48, which is connected at its front end to a transverse bar 49 of the clamp, this bar also carrying the upper clamp-plate lever 50. As the cams 42, 45, and 28 are rotated, therefore, short quick lateral vibrations will be imparted to the clamp-lever 38 to form the stitches. A slow longitudinal movement first in one direction and then in the other will be imparted to said lever, so as to form stitches successively from end to end of the button-hole, and transverse shifting movements will be imparted to the lever at each end of its longitudinal traverse, so as to carry the line of stitches from one side of the button-hole to the other and form stitches at each end of said button-hole.

To provide for rounding the ends of the button-hole—that is to say, to prevent the stitches from being carried straight across from one side of the button-hole to the other—the cam 45 has a lug 51, which so acts upon the projections 47 of the slide 48 that when the clamp-carrying lever is approaching each limit of its longitudinal movement and is being shifted laterally the longitudinal movement is quickened, so that the result of the two movements is to form a rounded or curved line of stitches extending from one side of the button-hole to the other. The slot in the cam 45 for the reception of the arm or lug 46 on the disk 16 is longer than said lug, so that the cam can be adjusted to vary its effective throw to suit different lengths of button-holes, this movement being effected by simply moving the clamp-lever longitudinally to the desired extent after first slackening the thumb-nut 52, whereby the cam 45 is confined, this thumb-nut being adapted to the threaded upper end of the sleeve 13, as shown in Fig. 6.

The upper clamp-plate lever 50 is, as before stated, hung to the transverse rod 49, and the front end of this lever is forked and carries the upper clamp-plate 53, the rear arm of the lever having upper and lower wings 54 and 55, as shown in Figs. 2 and 6, so as to embrace the cranked portion of a shaft 56, which has an operating-arm 57 at one side of the machine, so that by turning said shaft the upper clamp may be either raised or depressed, each of said movements being positive and all springs in connection with the upper clamp-plate lever being dispensed with.

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

1. The combination of the clamp-lever 38, a shifter-lever 29, on which said clamp-lever is fulcrumed so as to be free to slide, a cam 28 for operating said shifter-lever, a movable fulcrum 32 for said lever, a vibrator-cam 42 for the clamp-lever, and means for operating said cams, substantially as specified.

2. The combination of the clamp-lever 38, a slide-plate 41, adapted to a slot in said le-

ver and having lugs 40, acting upon the opposite arms of the lever, a vibrator-cam 42, acting upon said lugs, and means for moving said cams, substantially as specified.

5 3. The combination of the clamp-lever 38, the transverse shifter-lever 29, a vibrator-cam 42, acting on the clamp-lever, a shifter-cam 28 for the shifter-lever, means for operating said cams, fulcrum-lugs 36 for the clamp-lever, carried by the shifter-lever, a movable fulcrum-pin 32 for said shifter-lever, and a lever 33, carrying said pin, substantially as specified.

15 4. The combination of the clamp-lever 38 and transverse shifter-lever 29, vibrator and shifter cams 42 and 28, means for operating the same, a movable fulcrum 32 for the shifter-lever, and a slide 35, carrying the fulcrums of the clamp-lever and adjustable on the shifter-lever from and toward the vibrator-cam, substantially as specified.

20 5. The combination of the clamp-lever 38, a longitudinal shifter-slide 48, connected thereto, a cam 45 for acting upon said slide, 25 said cam having a lug or projection 51, where-

by the movement of the slide is accelerated as it approaches each end of its traverse, and means for operating said cam, substantially as specified.

6. The combination of the clamp-lever 38, 30 the longitudinal traverse-slide 48, connected thereto, the slotted cam 45 for acting on said slide, and an operating-arm 46, adapted to said slot, but less in length than the same, whereby the cam can be adjusted so as to vary 35 its throw, substantially as specified.

7. The combination of the upper clamp-plate lever 50, having upper and lower projecting wings 54 and 55 in the rear of its fulcrum, and a crank-shaft 56, embraced by said 40 wings, whereby positive lift or depression of the upper clamp-plate may be effected, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of 45 two subscribing witnesses.

WASHINGTON WALLICK.

Witnesses:

EUGENE ELTERICH,
HARRY SMITH.