2 Sheets—Sheet 1.

(Model.)

J. S. SACKETT.

BUTTON HOLE ATTACHMENT FOR SEWING MACHINES.

No. 266,054. Patented Oct. 17, 1882.

Fig. 1.

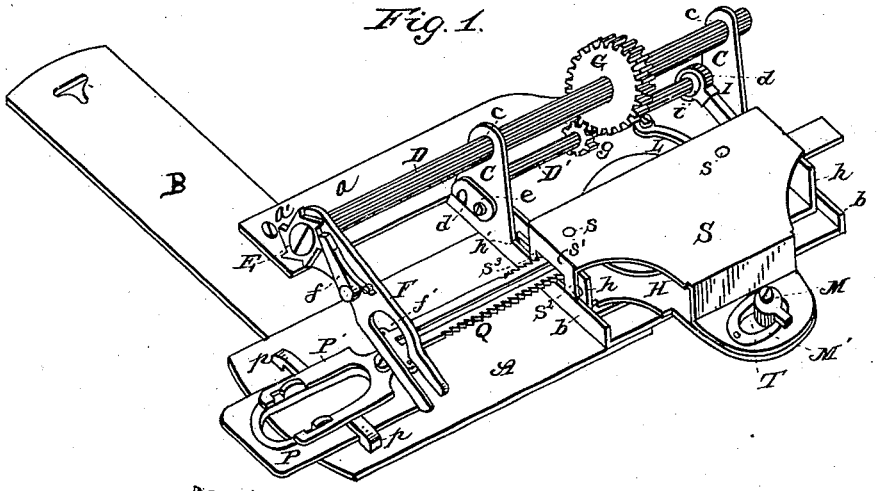
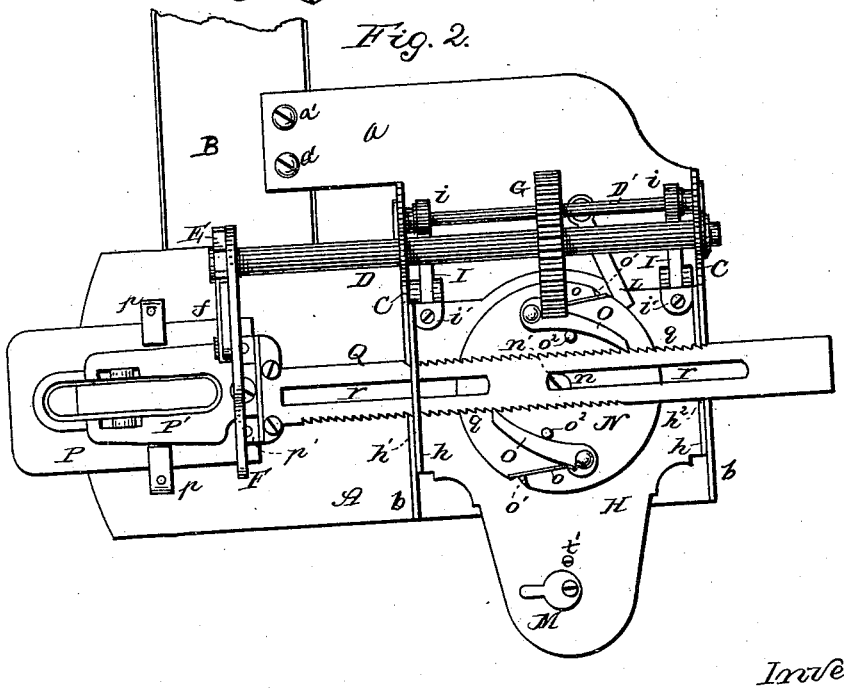


Fig. 2.



Witnesses:

J. W. Garner.
H. S. D. Haines

Inventor:

Joseph S. Sackett
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(Model.) 2 Sheets—Sheet 2.

J. S. SACKETT.

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No. 266,054. Patented Oct. 17, 1882.

Fig. 6.

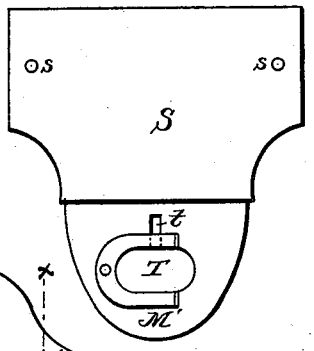


Fig. 3.

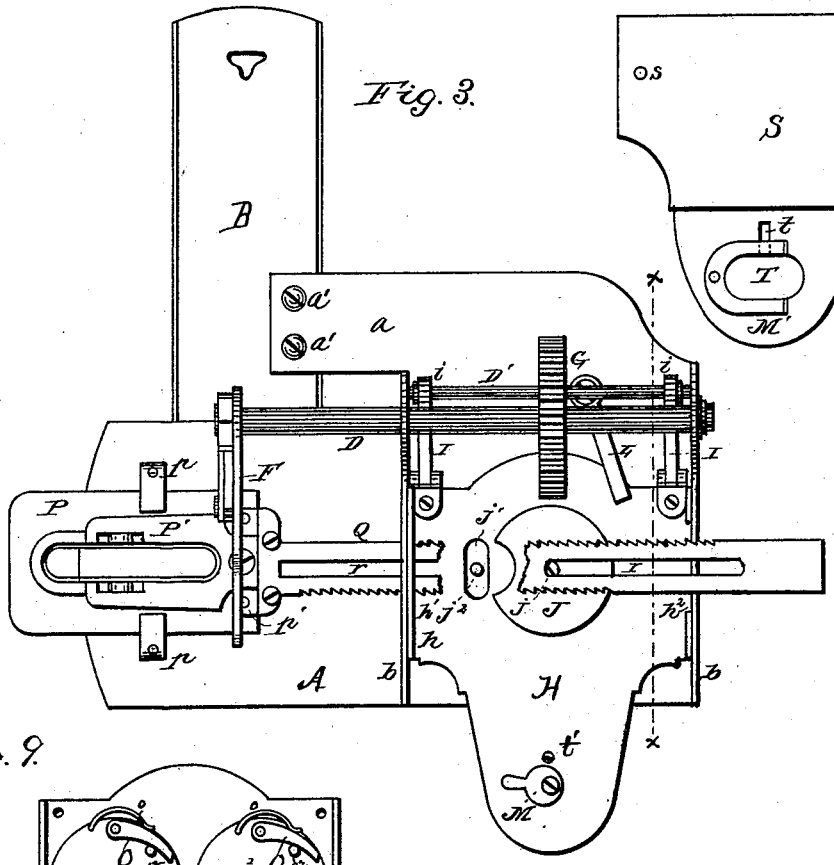


Fig. 9.

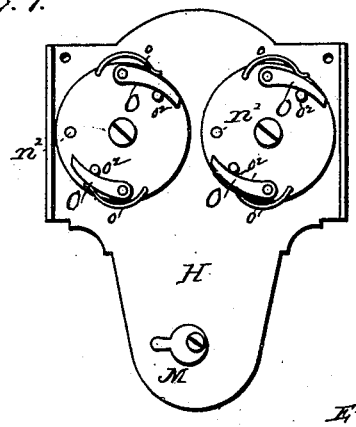


Fig. 7.

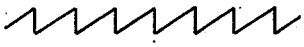
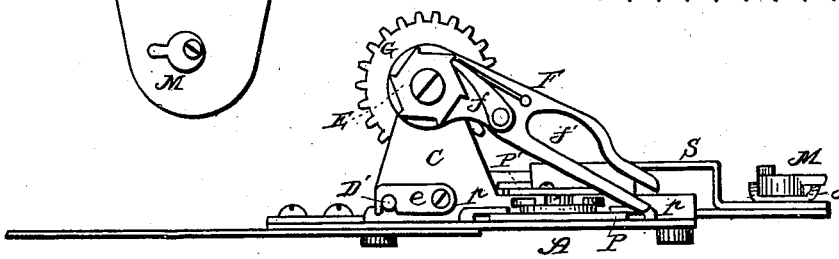


Fig. 8.

Fig. 4.



Witnesses:

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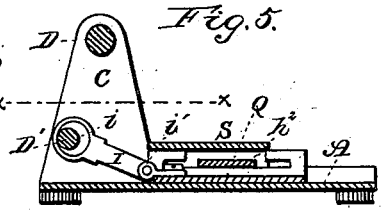
W. S. D. Haines

Fig. 5.



Inventor:

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UNITED STATES PATENT OFFICE.

JOSEPH S. SACKETT, OF PLATTSBURG, NEW YORK, ASSIGNOR OF ONE-HALF TO WILLIAM E. CHATTERTON, OF SAME PLACE.

BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 266,054, dated October 17, 1882.

Application filed May 1, 1882. (Model.)

To all whom it may concern:

Be it known that I, JOSEPH S. SACKETT, a citizen of the United States, residing at Plattsburg, in the county of Clinton and State of New York, have invented certain new and useful Improvements in Button-Hole Attachments to Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to button-hole attachments for sewing-machines, the object being to provide a device of this character which will be of simple and economical construction, adapted to be readily attached to a sewing-machine, and capable of producing either an alternate straight and diagonal stitch or a zigzag stitch, as desired.

The invention consists in the improved construction and combinations of parts hereinafter fully described, and pointed out in the claims.

In the drawings, Figure 1 is a perspective view of the attachment complete and secured to the slide of the shuttle-race of a machine. Fig. 2 is a plan view of the same with the guide-plate removed. Fig. 3 is a similar view with the oscillating disk removed. Fig. 4 is an end elevation, illustrating the devices for operating the shaft of the attachment. Figs. 5 and 6 represent parts in detail. Figs. 7 and 8 represent different forms of stitches produced by my attachment. Fig. 9 is a modification.

A represents the bed-plate of the attachment provided with a rear arm, *a*, adapted to be secured by screws *a'* to the slide B of the shuttle-race of a machine. The attachment may, however, be secured to the machine by means of a screw or screws passing up through the bed-plate of the machine into the bed-plate of the attachment, or by any other suitable means.

The bed-plate A is provided at its outer end with two parallel vertical guides, *b b*, the rear ends of the latter projecting above the forward portions to form standards or brackets C C, provided with upper bearings, *c c*, to receive the main shaft D, and with lower slots or bearings, *d d*, to receive a lower auxiliary shaft, D', the latter being held in position by hooks *e e*, pivoted on the outer sides of the standards C C and adapted to engage the respective ends of said shaft D'.

Upon the inner end of the main shaft D is rigidly mounted a toothed wheel, E, and adjacent thereto upon said shaft is loosely fulcrumed an operating-lever, F, provided on one side with a spring-pawl, *f*, adapted to engage the teeth of the wheel E, as will be further explained. The forward portion of the lever F is provided with a cam-slot, *f'*, by means of which said lever is secured to a lateral screw of the needle-bar of the machine.

G represents a spur-wheel mounted rigidly on the shaft D, centrally between the standards C C. This wheel G is adapted to mesh with a spur-pinion, *g*, rigidly mounted on the shaft D', and thus operate the latter.

H represents a reciprocating plate, adapted to slide between the guides *b b* of the bed-plate A, and provided with vertical sides *h h*, which latter are formed with horizontal elongated slots *h' h²*, the lower edges of which are flush with the upper edges of the guides *b*. The rear end of this plate H is pivotally connected to eccentrics *i i*, mounted on either end of the shaft D', by links I I, surrounding said eccentrics and pivotally secured in brackets *i' i'* of said plate by suitable pins. The plate H is provided with a central circular disk or raised portion, J, provided with a central opening, *j*, to receive the pivot of the oscillating disk. An elongated slot or opening, *j'*, is formed in the plate H and disk J, at one side of the opening *j*, to permit the passage of a stud, *j²*, of the bed-plate A.

L represents a spring arm or guard secured to the bed-plate below the shaft D', and bearing upon the plate H to prevent any upward movement of the latter.

M represents an eccentrically-pivoted finger-piece or catch, secured near the forward end of the plate H, for a purpose hereinafter explained.

N represents a rotating disk, provided with

a central opening, n, registering with the opening j of the plate H to receive a screw-pivot, n'. A perforation, n^2, of the disk N receives the upper end of the stud j^2 of the bed-plate, by means of which an oscillating movement is given said disk when in operation.

On either side of the center of the disk N is pivoted a pawl, O, provided with springs o, which latter bear against studs or upturned portions o' of the disk. The pawls O are limited in their movement by studs o^2 o^2 projecting from the disk, and said pawls are oppositely arranged, so that their respective free and pivoted ends will be diagonally opposite each other.

The needle-plate P, bearing the cloth-clamp P', is supported in guides p of the bed-plate and provided with an outwardly-projecting lip, p', to which is secured by screws or otherwise the inner end of a slotted rack-bar, Q, the latter being provided on opposite sides with oppositely-inclined teeth q. Said bar Q is adapted to pass through the slots h' h^2 of the plate H, the slot h' being closed at its top to guide said bar. The bar Q passes between the pawls O O, and is provided with slots r r to receive downwardly-projecting studs s s of a removable guide-plate, S. The latter is provided with depending ends s' s', slotted to form lugs s^2 s^3, between which the bar Q passes. The guide-plate S is adapted to fit over the vertical sides h h of the reciprocating plate H, so that said sides will be between the ends s' s' and the studs s s of the guide-plate, while the said studs s s will enter the slots r r of the rack-bar to guide the latter, and the lugs s^2 s^3 of the guide-plate will depend on either side of said rack-bar. The forward end of the guide-plate S is bent downward and then forward, and is provided with a circular slot or opening, T, which takes over the finger-piece M of the plate H, and with a short horizontal slot, t, adapted to receive a short guiding-stud, t', of said plate H.

M' represents a spring, preferably of horseshoe shape, secured to the forward end of the guide-plate S, so as to surround a portion of the slot T and finger-piece M, so that the latter will bear upon said cam, and when turned thereon will operate to move the guide-plate S either forward or backward, to throw the rack-bar Q in contact with one or the other of the pawls O O, as will be further explained.

The operation of the attachment constructed as above described is as follows: The lever F, slotted as shown, being attached to the screw of the needle-bar, each upward stroke of the latter will cause the pawl of said lever to engage one of the teeth of the wheel E. This wheel is provided with six teeth, so that at each upward stroke of the needle-bar it will revolve the main shaft D one-sixth of a revolution, thus moving the spur-wheel G, which is provided with twenty-four teeth, the distance of four teeth. The wheel G meshes with the spur-pinion g, (which is provided with eight teeth,) and imparts a half-revolution to the shaft D' and a reciprocating movement to the plate H, which carries the oscillating disk N, the latter being pivoted upon the pivot n' and stud j^2. The oscillation of the disk N causes one of the pawls O to engage the teeth of the rack until the bar Q is moved the length of the button-hole being worked, when the other pawl is thrown into operation by shifting the plate S by means of the finger-piece M. The rack-bar is brought in contact with the pawls by means of the eccentric finger-piece M, which, when forced upon the inner side of the spring M', will move the guide-plate S rearward, and the lugs s^2 s^3, coming in contact with the rack-bar Q, will move the latter slightly rearward to allow the engagement of the rear pawl, O, with the adjacent teeth of said bar. The oscillation of the disk N will impart an intermittent motion to the rack-bar at a right angle and an acute angle to the needle-bar at each upward stroke of the latter, thereby producing a stitch of the form shown in Fig. 7 of the drawings—that is, a perpendicular and a diagonal stitch. When the rack-bar has traveled the length of the button-hole a reverse motion is obtained by turning the finger-piece M to the outer side of the spring M', which will bring the opposite teeth of the rack-bar in contact with the other pawl.

In Fig. 9 is represented a modification of my improvement adapted to produce the zigzag stitch shown in Fig. 8. In this modification two oscillating disks are shown arranged side by side on the reciprocating plate and pivoted thereto in the same manner as the disk N, above described, but on opposite sides, so that they will oscillate in opposite directions, the two pawls located on one side of the rack-bar being alternately brought in contact with the adjacent teeth of said bar, thus imparting an intermittent movement to said bar at an acute angle to the needle-bar at each upward stroke of the latter and producing a zigzag stitch, as shown in Fig. 8. In this modified form of attachment the guide-plate and the other parts of the device are to be used and operated in the same manner as when only a single oscillating disk is employed.

Many slight alterations in the details of form and construction may be resorted to in the manufacture of my improved attachment without departing from the spirit of my invention, and hence I would have it understood that I do not limit myself to the precise construction shown and described, but reserve to myself the right to make such changes as may properly fall within the scope of my invention.

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

1. In a button-hole attachment for sewing-machines, the combination, with a bed-plate adapted to be secured to the machine and provided with vertical standards and guideways, of a main shaft supported in bearings of said

standards, a ratchet-wheel arranged on the inner end of said shaft, a slotted lever provided with a spring-pawl and loosely mounted on said shaft adjacent to said ratchet-wheel and adapted to be connected to the needle-bar of the machine, an auxiliary shaft located below said main shaft and connected to the latter by suitable gearing and eccentrically to a reciprocating plate carrying an oscillating disk or disks, and a rack-bar connected to the needle-plate and adapted to be operated by said disk or disks, substantially as described.

2. The combination, with a main shaft carrying a toothed wheel and adapted to be operated from the needle-bar of the machine, of an auxiliary shaft located below the main shaft and carrying a pinion which meshes with said toothed wheel, a slotted reciprocating plate connected to said auxiliary shaft by suitable eccentrics, and a rotating disk centrally pivoted on said plate and perforated to receive a stud of the bed-plate projecting through the slot of the reciprocating plate, and provided with spring-pawls which engage a rack-bar connected with the needle-plate, substantially as described.

3. The combination, with the operating-shafts and reciprocating plate, the latter being provided with vertical guides, of an oscillating disk provided with spring-pawls, a rack-bar connected with the needle-plate of the device and adapted to be operated by said pawls, and a guide-plate adapted to fit over said disk and provided with downwardly-projecting lugs to embrace the rack-bar, and guiding-studs adapted to the slots in said bar, and a spring-cam and an eccentric finger-piece, whereby said guide-plate may be slid backward or forward to throw the rack-bar in contact with one or the other of the pawls on the oscillating disk, substantially as described.

4. The combination, with the reciprocating plate, its operating mechanism, and the oscillating disk or disks, of a guide-plate fitting over the sides of said reciprocating plate and provided with downwardly-projecting lugs to embrace the rack-bar, and a spring-cam and eccentrically-pivoted finger-piece or lever for moving said guide-plate, substantially as set forth.

5. The combination, with the needle-plate and cloth-clamp, of a rack-bar supported in suitable guides and adapted to be operated by an oscillating disk or disks provided with spring-pawls and mechanism for operating said disk or disks from the needle-bar of the machine, substantially as set forth.

6. The combination, with the bed-plate and reciprocating plate and the operating mechanism of the device, of a guard-arm secured to said bed-plate and adapted to bear upon said reciprocating plate, as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH S. SACKETT.

Witnesses:
W. H. MELLOR,
IRVING J. MORRIS.