(Model.) 3 Sheets—Sheet 1.

H. C. HARTLEY & J. L. RODGERS.

BUTTON HOLE ATTACHMENT FOR SEWING MACHINES.

No. 292,647. Patented Jan. 29, 1884.

Fig. 1.

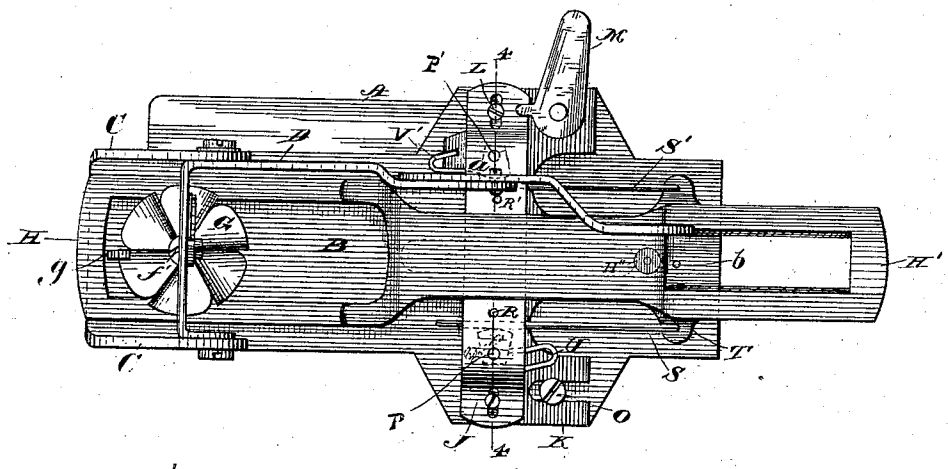

Fig. 2.

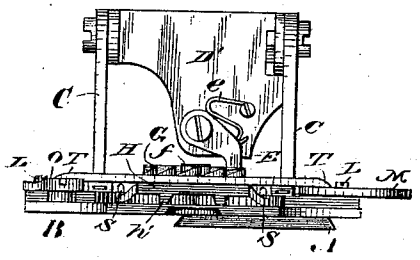

Fig. 3.

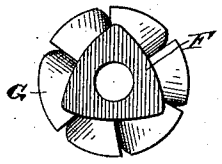

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Fig. 4.

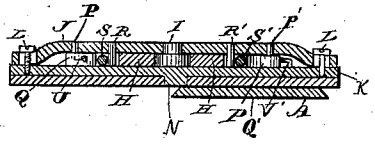
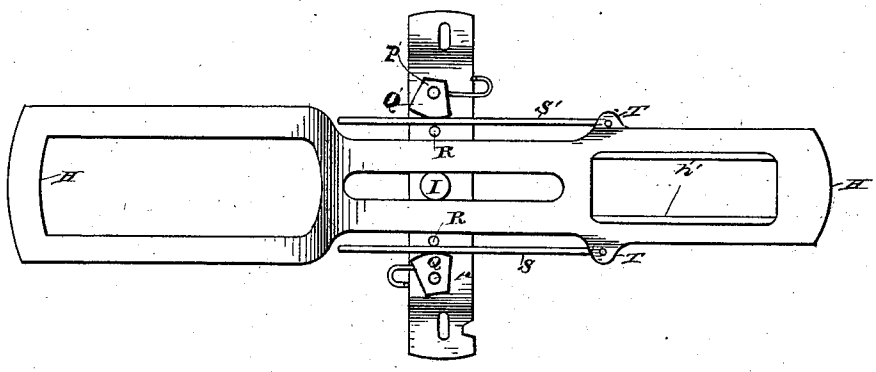


Fig. 5.



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BUTTON HOLE ATTACHMENT FOR SEWING MACHINES.

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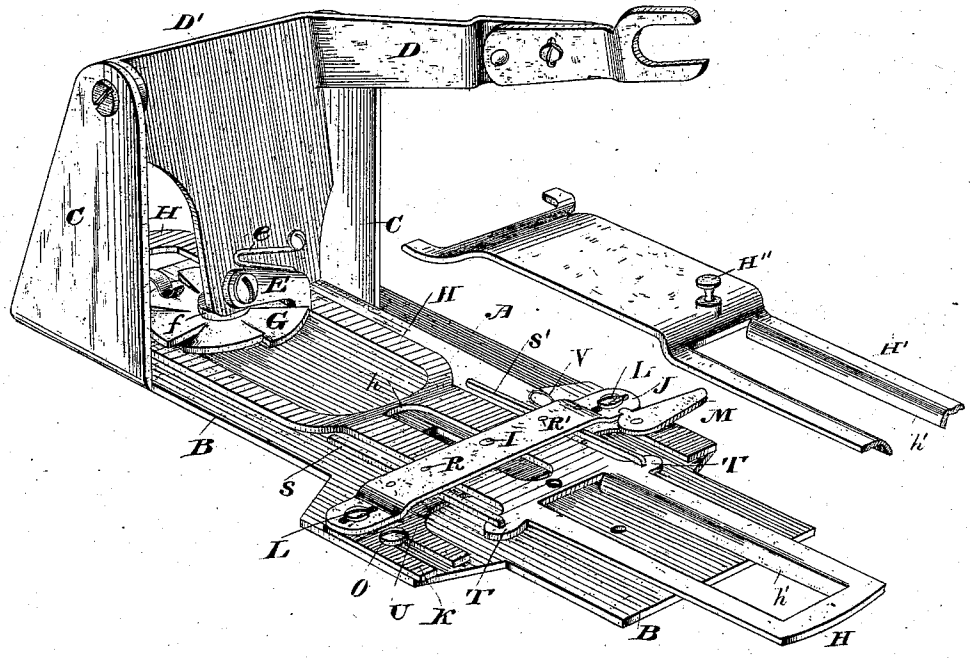
Fig 6.



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UNITED STATES PATENT OFFICE.

HENRY C. HARTLEY AND JAMES L. RODGERS, OF SPRINGFIELD, OHIO.

BUTTON-HOLE ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 292,647, dated January 29, 1884

Application filed March 29, 1883. (Model.)

To all whom it may concern:

Be it known that we, HENRY C. HARTLEY and JAMES L. RODGERS, citizens of the United States, residing at Springfield, in the county of Clarke and State of Ohio, have invented certain new and useful Improvements in Button-Hole Attachments for Sewing-Machines, of which the following is a specification.

Our invention relates to that class of button-hole devices in which horizontal oscillation is imparted to the cloth-clamp by means of a lever actuated by the needle-bar, and in which longitudinal feeding motion is imparted to the cloth-clamp by reason of its own horizontal oscillation.

To these ends our invention consists in the provision of a cam pivoted centrally to the bed-plate of the attachment, and having on its upper side a horizontal circular rack adapted to be intermittently rotated by a projection from the needle-bar lever. The cloth-clamp, having upon one end a slot surrounding the aforesaid cam, derives an intermittent horizontal oscillation therefrom.

Our invention further consists in the provision of either one or two bearing-blocks, preferably of cam shape, pivoted eccentrically to the bed-plate or to a slide thereon, and bearing upon the sides of the cloth-clamp or upon feed-rods pivoted thereto, said block or blocks acting, when the cloth-clamp is oscillated, to feed it longitudinally by bearing upon one or both sides in manner to permit forward but not retrograde motion. Preferably the bearing-blocks and the cloth-clamp are pivoted upon a slide shiftable transversely across the bed-plate, and acting, when moved, to shift the point of bearing of the blocks, as also the pivot-point of the cloth-clamp, and thus reverse the direction of feed of the cloth-clamp. This transverse slide is preferably provided with means of adjustment longitudinally of the bed-plate, for the purpose of shifting the point of pivoting of the cloth-clamp for changing the width of stitch.

In order that our invention may be more fully understoood, we will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 represents in plan our improved button-hole attachment. Fig. 2 is a front view thereof. Fig. 3 is a view of the under side of the cam for oscillating the cloth-clamp. Fig. 4 is a transverse sectional view of the attachment, taken on the line 4 4, Fig. 1. Fig. 5 is an under side view of the cloth-clamp and the transverse slide. Fig. 6 is a perspective view of the attachment.

A is the attaching-plate, of suitable width and form to be slid into the guides for the shuttle-cover.

B is the bed-plate of the attachment, rigidly secured to the slide A.

Upon one end of the bed-plate B are formed lugs C, between the upper ends of which is pivoted an L-lever, D, having upon its outer end the customary means of connection for receiving motion from the needle-bar.

Upon the lower extremity of short arm D′ of the needle-bar lever is hinged a pawl, E, held down by gravity or by means of a spring, *e*, fulcrumed on the arm D′.

A cam, F, here shown with three faces, is centered upon a screw bolt or pin, *f*, fastened to bed-plate B, and has upon its upper face a circular series of teeth, G, inclined upon one face and vertical on the other, in such manner that the pawl E will slip over the teeth when the lever D is being lowered, and will rotate the cam by bearing against the vertical faces of the rack when the lever is being raised. A spring or other catch, *g*, serves to prevent retrograde movement of the rack and cam.

The cloth-clamp is formed of two jaws, H H′, prolonged rearwardly to surround the cam F, and is pivoted by its elongated slot *h* on circular stud I, projecting from a slide, J, in such manner that as the cam F is rotated the clamp H will be oscillated horizontally, carrying with it the cloth placed therein. The upper jaw, H′, is secured to the lower jaw, H, by means of a thumb-screw, H″, or other suitable means. Flanges or tongues *h′* project downward from the upper jaw, H′, and press the cloth through an opening in the lower jaw, thus tightly clamping and stretching it under the needle, and at the same time holding it on or as near the bed-plate as possible, so that it will not be dragged out of the clamp by the needle.

b is the needle-hole in the bed.

The slide J, upon a projection of which the cloth-clamp is pivoted, may be placed either above or below said clamp, but is preferably

made to pass transversely over the same and be supported upon a second slide, K, upon which it is transversely adjustable by means of slot and pin L and lever or cam M.

For the purpose of changing the length of stitch and the distance between the stitches, we provide means common to both adjustments whereby they may be accomplished simultaneously. The slide K (with which the pivotal stud is mechanically connected through the medium of the slide J) is connected to the bed-plate by a tongue, N, working in a suitable longitudinal groove in said bed-plate, thereby affording the necessary longitudinal adjustment.

O is a set-screw secured to the bed-plate, and working in a slot in the slide K, for the purpose of holding it in any position to which it may be set. It will be seen that the nearer the center of oscillation is brought to the point where said oscillation is produced the greater will be the stroke of the cloth-clamp beyond the pivotal point, thus simultaneously lengthening the stitches and increasing the distance between them, the latter function being produced by the increased length of the arc described at the bearing-points of the cams.

For utilizing the transverse oscillation of the cloth-clamp to produce a longitudinal feeding movement thereof, the following preferred form of mechanism is adopted: Projecting downward from slide J are four pins, to two of which, P P′, are pivoted cam-faced bearing-blocks Q Q′. The other two pins or projections, R R′, project down at such distances from the faces of the bearing-blocks as to admit between the said faces and the pins R R′ rods S S′. These rods are preferably of spring-steel, and are hinged loosely at one end to lugs T on the cloth-clamp. Spring-setters U U′, fulcrumed at one end on the slide K and attached at the other to the bearing-blocks Q Q′, serve, when the slide K is moved transverse by means of lever M, to shift the bearing-points of the blocks P P′, and thus reverse the direction of feed of the cloth-clamp. One extreme position of the bearing-blocks is shown more clearly in Fig. 5. It will be apparent that as the cloth-clamp is oscillated the rods S will be alternately clamped between the blocks P and pins R, and allowed to slide between the same on the return movement of the cloth-clamp.

Instead of the arrangement above described, we may, if preferred, reverse the positions of cam-blocks and levers by fulcruming the former upon the slide K and the latter upon the slide J; or either the slide K or spring-rods S may in some forms of the invention be omitted, and the cam-blocks be arranged to bear directly upon the sides of the cloth-clamp.

If it be desired that the cloth-clamp shall feed only at every alternate stroke, instead of with oscillation in each direction, as here shown, one of the bearing-blocks may be omitted.

Any novel subject-matter which we have described but not claimed in this application we have reserved to be claimed in future applications.

Having thus described our invention, the following is what we claim as new therein and desire to secure by Letters Patent:

1. In a button-hole attachment for sewing-machines, the combination of a rotary cam pivoted to the bed-plate, and provided with a circular rack adapted to receive motion from the needle-bar, as described, with a cloth-clamp surrounding and bearing at all times on diametrically-opposite points of the cam, whereby said cam imparts an oscillating motion to the clamp and is adapted to hold said clamp firmly in the extreme positions to which it is carried, substantially as set forth.

2. In a button-hole attachment for sewing-machines, the combination of the cloth-clamp having means of oscillation, as described, and the eccentrically-pivoted cams having two bearing-points, of which one or the other may be brought into engagement with the cloth-clamp, according to the desired direction of feed.

3. The combination of the oscillating cloth-clamp, having rods S S′ hinged thereto, and the transverse slide, having pins R R′ and pivoted blocks Q Q′, between which the rods S S′ are alternately clamped and released, substantially as described.

4. In a button-hole attachment for sewing-machines, means for adjusting the center of oscillation of the cloth-clamp, and thereby controlling the length of stitch, in combination with intermediate means whereby the same adjustment regulates the distance between the stitches, as set forth.

5. The combination of the transversely-adjustable slide carrying the pivot on which the cloth-clamp oscillates, and the longitudinally-adjustable slide mechanically connected thereto, for shifting the center of oscillation of said cloth-clamp relatively to the point where said oscillation is produced, as and for the purpose set forth.

HENRY C. HARTLEY.
JAMES L. RODGERS.

Witnesses:
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MARY W. RODGERS.