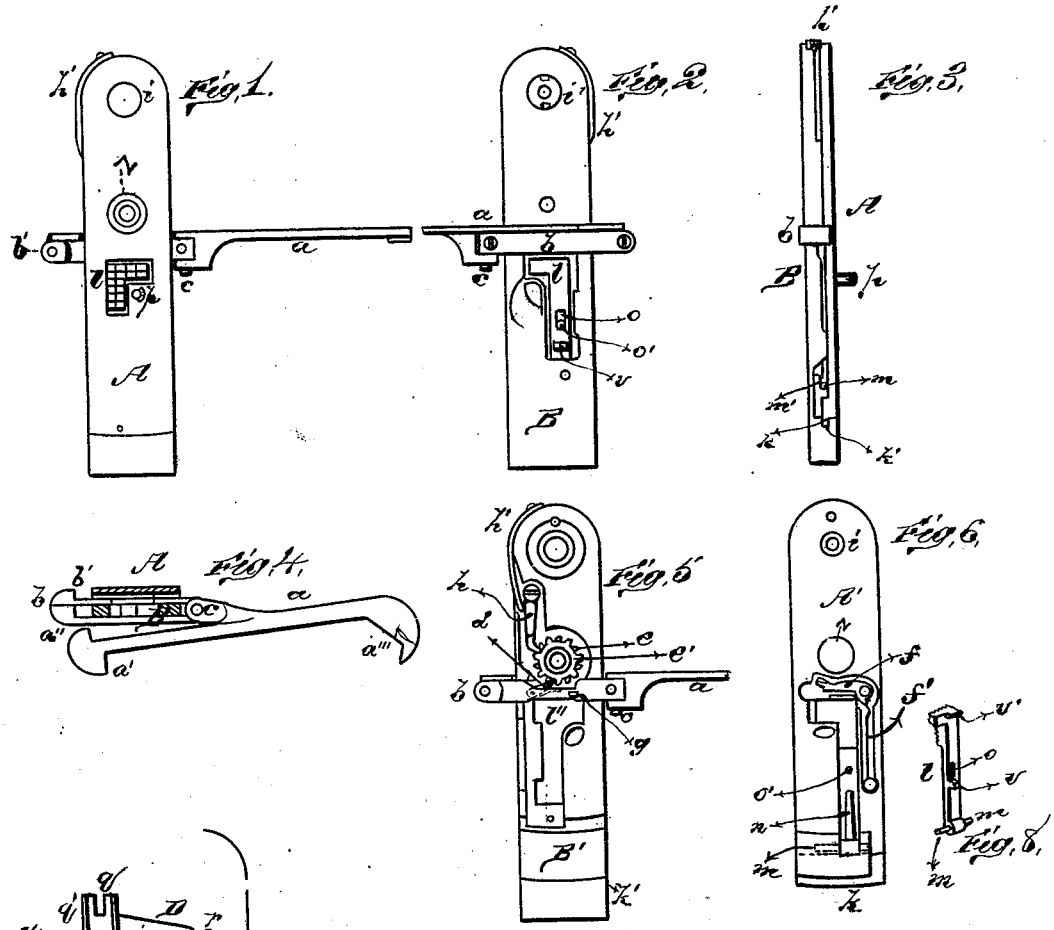
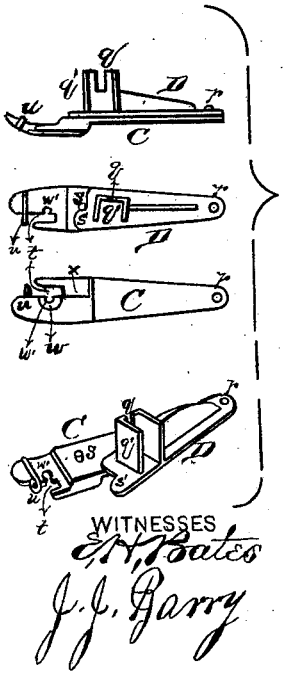
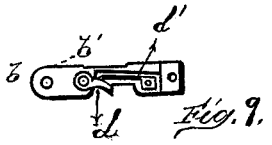
G. F. HILDENBRAND & P. J. ECKES.

Button-Hole Attachment for Sewing-Machine.

No. 204,572. Patented June 4, 1878.







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IMPROVEMENT IN BUTTON-HOLE ATTACHMENTS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **204,572**, dated June 4, 1878; application filed March 7, 1878.

To all whom it may concern:

Be it known that we, GEORGE FREDERICK HILDENBRAND and PETER JOHN ECKES, of New York, in the county of New York, and State of New York, have jointly invented certain new and useful Improvements in Button-Hole Attachments for Sewing-Machines; and we do hereby declare that the following is a full, clear, and exact description thereof, which 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 of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in attachments to sewing-machines for the working of button-holes.

Its object is to provide a certain and effective means of making the button-hole loop by the use of an attachment which can be readily adapted to many of the shuttle sewing-machines now in common use.

The drawings are made from an attachment adapted to a No. 4 Singer sewing-machine. The necessary modifications for adaptation to machines with a transverse or curved shuttle-race can be easily made.

In the drawings, Figure 1 is a top view of the attachment. Fig. 2 is a view of the under side. Fig. 3 is a view of the edge. Fig. 4 is a transverse section. Fig. 5 is a face view, the top being removed. Fig. 6 shows the under side of the top plate. Fig. 7 shows four views of the presser-foot. Fig. 8 is a detail of the feeder. Fig. 9 is a detail of the slide.

In describing the operation of our attachment we will indicate the parts of which it is composed, referring to the letters of reference on the accompanying drawing.

The throat-plate of the sewing-machine being removed, the attachment is inserted and fastened in its place by the screw of the throat-plate. The arm *a*, Fig. 4, will then extend along and within the race. The forward movement of the shuttle-carrier, striking the projection *a'* of the arm, locks the mechanism by means of the catch *a''* in the position shown in Fig. 1, and holds it so until the return of the shuttle-carrier to the bent end *a'''* of the arm raises that end, and thereby disengages the catch and draws back the double slide *b*. This slide is attached to the arm *a* by the pivot *c*. A dog, *d*, pivoted to the two bars of this slide and held in position by the spring *d'* affixed to the upper bar, pushes forward at each motion a ratchet and star wheel, *e e'*, provided with fourteen lower or ratchet teeth, *e*, and seven upper or star teeth, *e'*. This ratchet and star wheel revolves upon a hollow axle affixed to the bottom or bed plate B' of the attachment. The screw of the throat-plate of the sewing-machine, passing through the hollow of this axle, fastens the attachment in its place. The opening *z* in the upper plate shows the place for this screw. The star-teeth, on each alternate motion of the slide, press down the shoulder-dog *f* attached to the under side of the top plate, Fig. 6, and bring the shoulder into contact with the lug *g* on the upper part of the top bar of the slide, so that when the slide is pushed back the top plate A will be carried to one side at each alternate motion of the shuttle and needle.

On the first motion the needle will pass through the cloth, forming the usual lock-stitch, and, the cloth having been carried aside by the top plate and presser, through the button-hole cut on the alternate motion, locking again, around the edge of the cloth, with the shuttle-thread, thus making a perfect button-hole stitch.

A pawl, *h*, held in position by the spring *h'* affixed to the bed or bottom plate B', holds the ratchet firmly while the star-teeth are pressing upon the dog *f* and holding its shoulder in contact with the lug *g*, which effects the side movement of the top plate A. This top plate is brought back to its first position by means of the shoulder *b'* on the slide.

The top plate is pivoted upon the attachment by the screw-pivot *i*, the nut of the screw being countersunk on the bottom *i'*, and is provided with a curved tongue, *k*, fitting in the groove *k'* of the lower plate. The top plate also carries the feeder *l*, working upon its axle *m* in the open socket *m'*. This feeder receives its motion from the feeder of the sewing-machine, the ordinary drop-feed fitting between the lugs *v v'* and giving the usual back-and-forth motion. The slot *o* and pin *o'* control the extent of this motion, and the spring *n*, affixed to the under side of the shifting top plate A, serves

to depress the feeder when that of the machine drops. The feeder, being attached to the top plate A, moves sidewise with that plate on its alternate motion.

On the face of the top plate, and adjoining the needle-hole, a half-tubular lug, *p*, is affixed, which serves to keep open the button-hole and permit the needle to pass through the cut when the outside loop is to be formed. This lug also secures the oblique motion of the presser-foot, Fig. 7.

The presser-foot to be used with this attachment is composed of an upper or stationary plate, D, and a lower or shifting plate, C, and is affixed to the bar of the sewing-machine with the usual screw through the slot *q* in the socket *g'* in the upper or stationary portion D. As the foot must move with the top plate A of the attachment, we pivot the lower or shifting plate C to the stationary part D at *r*, and provide a check-pin, *s*, to control the return by contact with the projection *s'* on the stationary part D. The square slot *t* fitting over the lug *p* on the top plate, a side motion simultaneous with that of the plate is secured. An eye, *u*, is provided for edging-cord when a strong or extra fine button-hole is required. On the under side of the presser-foot the mouth of the needle-hole is countersunk, *w*. The foot is also rabbeted, *x*, on the bottom. This facilitates the turning of the ends of the button-hole without stopping the machine or making a break in the work, the entire work of the button-hole being effected as neatly as it can possibly be done by the most expert hand.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In a button-hole attachment for sewing-machines, the arm *a*, provided with the catch *a'* and projection *a''*, and bent end *a'''*, adapted to be operated by the shuttle-carrier of a sewing-machine, substantially as shown and specified, and for the purposes set forth.

2. The slide *b*, provided with the dog *d* and spring *d'*, in combination with the pivoted arm *a* and star and ratchet wheel *e e'*, substantially as described and shown, and for the purposes indicated.

3. The ratchet and star wheel *e e'*, with its pawl and spring *h h'*, in combination with the slide provided with the lug *g* and the dog *f* of the shifting top plate A, substantially as shown and specified.

4. The button-hole feeder provided with the axle *m*, the lugs *r r'*, and slot *o*, in combination with the top plate A, having the open socket *m'* and pin *o'*, and the bottom plate B, having the opening *l'*, substantially as specified and shown, and for the purposes set forth.

5. The top plate A, provided with the shouldered dog *f* and spring *f'*, in combination with the pivoted arm *a*, the slide *b*, provided with the lug *g* and shoulder *b'*, and the star and ratchet wheel *e e'*, for the purpose of giving the side motion to the top plate, substantially as described.

6. The shifting top plate A, provided with the curved tongue *k* and screw-pivot *i*, in combination with the bottom plate B, having a curved groove, *k'*, substantially as shown and specified.

7. The combination of the top plate A, provided with the half-tubular lug *p*, with the lower plate C of the presser-foot, provided with the slot *t*, needle-hole *w'*, and stop-pin *s*, substantially as described and shown.

8. The presser-foot composed of the two plates C and D, pivoted together at *r*, as described, the upper plate D being provided with a socket, *q*, and projection *s*, and the lower having the needle-hole *w'* and slot *t*, substantially as shown and specified.

9. A pivoted shifting presser-foot provided with the eye *u*, a needle-hole countersunk at the mouth *w*, and rabbeted on the bottom *x*, for the purpose of securing equal pressure on all parts of the cloth, and facilitating the turning of the button-hole, substantially as shown and described.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

G. FR. HILDENBRAND.
PETER J. ECKES.

Witnesses:
JAMES B. FULLERTON,
J. WOLBACH.