

UNITED STATES PATENT OFFICE.

THOMAS HAGERTY, OF NEW YORK, N. Y., ASSIGNOR OF ONE-THIRD OF HIS RIGHT TO JOHN B. VALDETTARO, AND ONE-THIRD TO A. L. WOOD, OF SAME PLACE.

IMPROVEMENT IN BUTTON-HOLE ATTACHMENTS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. 184,239, dated November 14, 1876; application filed December 17, 1875.

To all whom it may concern:

Be it known that I, THOMAS HAGERTY, of the city of New York, State of New York, have invented certain Improvements in Button-Hole Attachments for Sewing-Machines; and I declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, in which—

Figures 1 and 2 are views of the attachment, showing the different relative positions of the looper and retainer. Fig. 3 is an elevation of the two needles. Fig. 4 is a modification of Figs. 1 and 2, adapted to the Singer machine. Fig. 5 is a side elevation, showing the connection of the attachment to the sewing-machine.

Similar letters of reference indicate the same parts.

This invention relates to that class of button-hole machines in which two vertically-reciprocating needles are employed; and the object of the invention is to produce an interlocked or looped button-hole stitch without the aid of a gimp or top cord between or under the stitches; and also to deliver the threads from both needles under one and the same tension.

To this end the invention consists in the devices employed for interlocking and retaining the thread of one needle with the thread of the other needle while under tension, as hereinafter described.

In the drawing, A is the frame, made of sheet metal, and bent at an angle to fit the leg of the presser-foot, to which it is attached by a screw, *a*, passing through a hole in the side. The front side of frame A is bent upward at its lower end, to conform to the bend in the presser-foot, and rests on the top of the same, and to this part I attach the looper and retainer.

It is obvious, however, that the frame A may be dispensed with, and the parts attached directly to the presser-foot.

The looper B is secured at its center by a rivet, *d*, upon which it moves, and the retainer C is also secured in a similar manner

by the rivet *e*. The looper and retainer are connected by a link, D, which is secured to their ends by pins *f* and *g*.

An oscillating arm, E, is attached to the upper end of the frame A by a screw, *h*, upon which it freely swings. Opposite to screw *h* a groove is cut in arm E, into which the needle-screw *i* enters as it ascends, and the lower end of said arm is tapered and rounded off to fit into an oblong hole provided in the right-hand end of looper B.

Between the frame A and arm E a flat spiral spring, E, is placed, and is held in position by the screw *h*. One end of the spring presses against the frame, and the other is bent so as to rest on the top of the arm E, pressing it downward.

In the Singer machine the attachment has the lever C formed at its outer end on a concentric curve, which forces the thread before it, as represented in Fig. 4, and does not pull it over, as shown in Fig. 1 and 2, in the curved hook.

The operation is as follows: The needles are threaded, and the first stitch has been taken, the shuttle having passed through both loops. During the descent and ascent of the needles through the cloth the looper and retainer remain inactive; but as the point of the right-hand needle *m* emerges from the cloth, the needle-screw *i* has by this time entered the groove in the arm E, carrying it upward to the limit of the stroke. By this same movement the lower part of the arm E has carried forward the looper with the thread from under the right-hand needle *m*, describing a quarter-circle around the side and front of the left-hand needle *l*. The retainer C has at the same time moved in an opposite direction, and stands in front of the loop formed, ready to advance, and hold it until the left-hand needle *l* enters it. The spring F has at this stage been let free, and it presses the arm E downward, its lower end carrying with it the looper and retainer to their original position, where they remain ready to repeat the operation. The first stitch has now been taken, and it

will be seen that, whether the right-hand needle *m* goes through the cloth or through the cut button-hole, the stitch will be the same.

The advantages secured by the construction of my device arises from the fact that it can be readily attached to any sewing-machine arranged for two needles without altering the machine.

Another advantage is the forming and retaining the loops while under tension, which enables me to do closer work with less chafing of the thread.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the frame A, oscillating arm E, looper B, link D, retainer C, and spring F, substantially as described and shown.

2. The combination of the arm E, looper B, link D, and retainer C, with a support attached to the presser-bar, by which the thread of one needle is drawn from under its point around the side and front of the other needle and there retained while under tension, substantially as described and shown.

THOMAS HAGERTY.

Witnesses:

ADOLPH L. SANGER,

SAMUEL ROTHSCHILD, Jr.