(No Model.)

F. H. CHILTON.

EMBROIDERING ATTACHMENT.

No. 262,002. Patented Aug. 1, 1882.

Fig. 1.

Fig. 2.

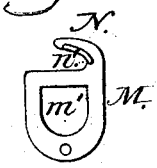


Fig. 3.

Fig. 4.

Fig. 5.

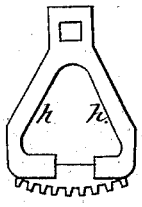


Fig. 6.

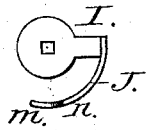


Fig. 7.

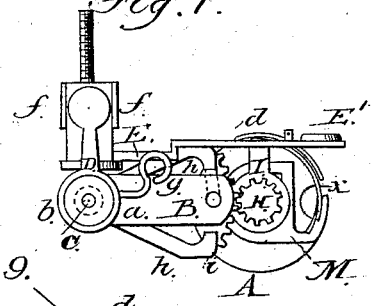


Fig. 8.

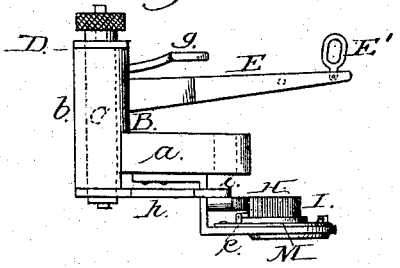


Fig. 9.

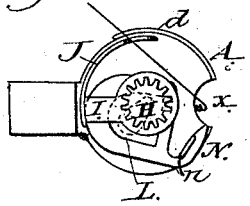


Fig. 10.

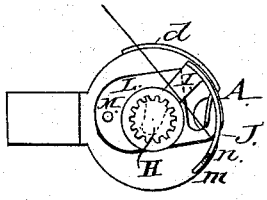


Fig. 11.

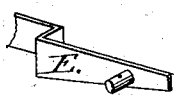


Fig. 12.

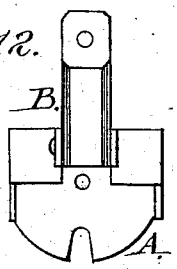


Fig. 13.

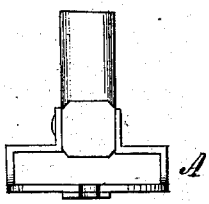
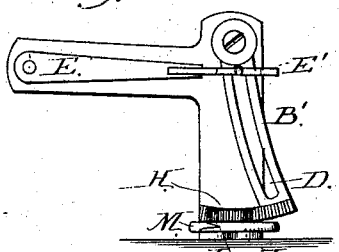


Fig. 14.



Witnesses;
Walter Fowler
Alex. Scott

Inventor;
Franklin H. Chilton,
by Rowland Cox
his Atty

UNITED STATES PATENT OFFICE.

FRANKLIN H. CHILTON, OF NEW YORK, N. Y., ASSIGNOR TO THE EMPRESS EMBROIDERER COMPANY, OF SAME PLACE.

EMBROIDERING ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 262,002, dated August 1, 1882.

Application filed January 30, 1882. (No model.)

To all whom it may concern:

Be it known that I, FRANKLIN H. CHILTON, of New York, in the county of New York and State of New York, have invented a new and useful Improvement in Embroidering Attachments, of which the following is a specification, reference being had to the accompanying drawings.

The invention relates to an improvement in embroidering attachments for sewing-machines; and it consists in the general construction and arrangements of the operative parts and the specific construction of the foot of the attachment, as hereinafter fully described, and particularly pointed out in the claims.

Referring to the accompanying drawings, Figures 1 to 6 are detached views of the various parts of the attachment, which will be understood from the reference made thereto hereinafter. Fig. 7 is a top view of an embroiderer embodying the elements of the invention. Fig. 8 is a side elevation of same. Fig. 9 is a top view of a foot and devices, illustrating the first position of the carrier and detainer. Fig. 10 is a similar view, showing the last position of the carrier and detainer. Fig. 11 is a perspective view of the lever E. Fig. 12 is a top view, and Fig. 13 a front view, of a modified form of presser-foot. Fig. 14 is a front view of a modified form of embroiderer.

A denotes the foot of the attachment, which is firmly secured to the part B, by which the attachment may be connected with the presser-bar of the sewing-machine. The part B, which is composed of the horizontal bar *a* and vertical hollow standard *b*, will by preference be cast in one piece, and in the front end of the bar *a* will be provided a vertical aperture and appropriate set-screw as means for applying the attachment to the machine. The foot A is secured at its rear portion to the lower side of the bar *a*, the front portion being left entirely open at *x*, so that the operator may be able to observe the formation of the stitches, and upon one side of the foot is provided a lip, *d*, arranged in suitable relation for the reception of a thread-eye, *e*, and to constitute a bushing which will assist in preventing the embroidering-thread from getting beneath the thread-carrying devices.

Within the hollow standard *b* is placed the vertical post C, having secured upon its upper end, either by riveting or by a screw or otherwise, the horizontal arm D, the outer extremity of which is rounded and placed between the jaws *f* at the upper end of the short arm of the lever E, which lever is pivoted on the side of the standard *b*, and has supplied on the extremity of its long arm, which extends toward the front of the device, the pivoted loop E′, which, when the attachment is put into practical use, is secured upon and moves with the screw which holds the needle in the needle-bar, whereby movement is communicated to the operative parts of the attachment.

Upon the side of the casting B is secured a bracket, *g*, or similar contrivance, which extends upward above the sweep of the lever E, and is supplied with an eye for the reception of the embroidering-thread.

Upon the lower end of the post C is secured, by riveting or otherwise, the rear end of the forked arms *h*, which extend forward, encircling the vertical portion of the foot A and supporting in their front extremities the segmental rack *i*, the teeth of which mesh with the pinion H, secured upon a screw or pivot in about the center of the foot A. The forked arms *h*, carrying the rack *i*, are immovably secured upon and at right angles to the post C. Thus as the post is caused to have a semi-rotary movement by the operation of the lever E, the rack *i* will oscillate back and forth over the presser-foot from one side thereof to the other and impart a rotary movement to the pinion H and its connecting devices.

Upon the lower surface of the pinion H is rigidly affixed the shank of the oscillating thread-carrier I, the form of which is shown in a detached view in Fig. 9. From the shank of the carrier I extends the part or extension J, which is in the form of an arc of a circle or hook, as indicated in a detached view. The point of the hook-shaped extension J is especially constructed with a view of preventing the embroidering-thread from getting beneath the carrier, and is supplied at its lower edge with the long arm *m* and at its upper edge with the short arm *n*, the operation of which will appear in full hereinafter.

Immediately beneath and arranged to move simultaneously with the carrier I is the cam L, which passes outward from the center to the circumference of the shank of the carrier I, its sides being flat at its outer edge, describing a segment of a circle.

I prefer to construct the pinion H with a squared shank or shank of other angular form and to form corresponding apertures in the thread-carrier I and cam L, whereby in securing the same to the foot A the shank can be passed through the apertures in the carrier and cam, and through an aperture in the foot and riveted on the lower side thereof.

Upon the upper surface of the foot A is placed the movable thread-detainer M, and pivotally secured in place by a pin or pivot situated upon the rear portion of the foot. The central portion of the shank of the thread-detainer M is removed, forming an aperture, m', having flattened sides and front edge, its rear edge being rounded. At the front portion of the thread-detainer M is the hook-shaped extension N, supplied with a vertical lip, n', as indicated in a detached view. When the thread-detainer and thread-carrier I are in position the cam L will be inclosed within the aperture m', and by moving against the sides thereof, when actuated by the thread-carrier, will cause the detainer to oscillate upon its pivot, whereby the carrier and detainer will have a simultaneous movement, with the effect upon the embroidering-thread hereinafter set forth.

In practice the attachment is applied to the presser-bar of the sewing-machine, and the lever E connected with the needle-bar by means of the loop F, as hereinbefore set forth. The sewing-needle is threaded in the usual manner, and the embroidering-thread is brought from a suitable tension and passed through the eye in the bracket g, after which it enters an eye on the lever E, and is then returned to the eye in the bracket g, and afterward carried downward and inserted through the thread-eye e, the end of the thread being then passed under the front portion of the foot, and the work placed in position, the machine is set in motion. The first downward movement of the needle-bar and lever E causes the rack i to sweep across the pinion H, the movement of which pinion at this moment carries the thread-carrier I away from the front of the foot A toward the lever E, the point of the thread-carrier at the end of this (its backward) movement being in proper relation to the eye e to catch the embroidering-thread upon its return movement toward the front of the foot. Simultaneous with the movement of the carrier I the cam L, which is rotated by the pinion H, strikes against the side of the aperture m^2 and imparts to the thread-detainer M a backward movement on its pivot in a direction opposite to that of the thread-carrier. Thus, when the lever E is depressed the thread-carrier and thread-detainer have opposite movements—that is to say, they rotate in opposite directions—whereby their hook-shaped points separate from each other and pass to the sides of the presser-foot. The succeeding upward movement of the needle-bar and lever E operates to produce a contrary motion of the thread carrier and detainer—that is, they are caused to rotate on their pivots toward each other—whereby at the proper time the points of the carrier and detainer pass each other across the opening x, completely closing it. When the needle-bar and lever E is given the said upward movement the thread-carrier I catches the embroidering-thread and carries it past the center of the foot A. At the same time the thread-detainer moves toward and past the point of the carrier I, and in doing so its lip n' moves against that portion of the embroidering-thread which extends from beneath the foot A to and around the shorter point of the hook on the end of the carrier I, whereby a loop is formed, as indicated, which, when the needle-bar descends, (separating the thread carrier and detainer,) is drawn to the proper size and sewed to the goods. Each downward stroke of the lever E separates the thread detainer and carrier, as described, so as to allow the embroidering-stitch to be made, and each upward stroke of the lever E brings them forward again across the front of the foot A, whereby the embroidering-thread is placed in the position above described for the formation of another loop. The movements above set forth are repeated with every stitch of the embroidery, one complete stitch being formed with each full movement of the lever E.

Particular attention is invited to the construction of the thread-carrier and thread-detainer, which have been made with a view of producing a perfect embroiderer with the consumption of the least amount of metal, labor, and expense. The extensions on the ends of both carrier and detainer coact to prevent at any stage of the operation the embroidering-thread from getting improperly caught or from slipping beneath the operative parts of the attachment.

The attachment above described is the preferred embodiment of the invention; but in Figs. 14 to 17, inclusive, are modifications which I include within the scope of my invention. One of these modifications is in the foot A, covered at its sides. These sides cover the oscillating toothed rack and prevent the contact therewith of the fabric being treated.

In Fig. 17 the modification consists in the means employed for giving motion to the rack which operates the pinion H. In this attachment the rack is secured or formed on the lower end of a bar, B′, pivoted at its upper end and having a cam-slot, D, running along its longitudinal center, in which slot a lug extending from the side of the lever E is made to travel and cause the bar B′ to vibrate, whereby the rack is given its movement back and forth against the side of the pinion H. The lever receives its motion from the needle-bar

in the customary way, and the movements of the thread carrier and detainer are the same as those set out concerning the main embodiment of the invention described in the first part of this instrument.

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

1. In an embroidering attachment, the presser-foot, oscillating thread-carrier, and the thread-detainer, the carrier and detainer being connected by mechanism to have a simultaneous movement communicated from a rack and pinion, substantially as set forth.

2. In an embroidering attachment, the open presser-foot, the movable thread-carrier I, having at its end the elongated point *m* and the shorter point, *n*, the thread-detainer having the lip *n'* and extended portion N, the whole adapted to operate substantially in the manner hereinbefore described.

3. The presser-foot, oscillating thread-carrier, and pivoted thread-detainer having a movement simultaneous with that of the carrier and being cut to receive the actuating-cam, substantially as set forth.

4. In an embroidering attachment, the oscillating thread-carrier, thread-detainer, and pinion and rack operated by the vertical post, the horizontal arm, and actuating-lever, the carrier and detainer being connected by mechanism to have a simultaneous movement communicated from the rack and pinion, substantially as set forth.

5. The actuating-lever having jaws to receive the end of the horizontal arm connected with the vertical post, the rack and pinion, thread-carrier, and the thread-detainer, the carrier and detainer being connected by mechanism to have a simultaneous movement communicated from the rack and pinion, substantially as set forth.

6. The actuating-lever having jaws to receive the end of the horizontal arm connected with the vertical post, the rack and pinion, thread-carrier, and thread-detainer, substantially as set forth.

7. The thread-carrier I, consisting of the shank and the hook-shaped extension J, having at its end the elongated point *m* and immediately above it the shorter point, *n*, the carrier being adapted to move in the arc of a circle, the elongated point *m* to sustain the embroidering-thread, and the shorter point, *n*, to carry it against a thread-detainer, substantially as set forth.

In testimony that I claim the foregoing improvement in embroidering attachments for sewing-machines, as above described, I have hereunto set my hand this 23d day of January, 1882.

FRANKLIN H. CHILTON.

Witnesses:
CHAS. C. GILL,
HERMAN GUSTOW.