3 Sheets—Sheet 1.

H. A. BLANCHARD.

CROCHET-ATTACHMENT FOR SEWING-MACHINES.

No. 193,216. Patented July 17, 1877.

Fig 1

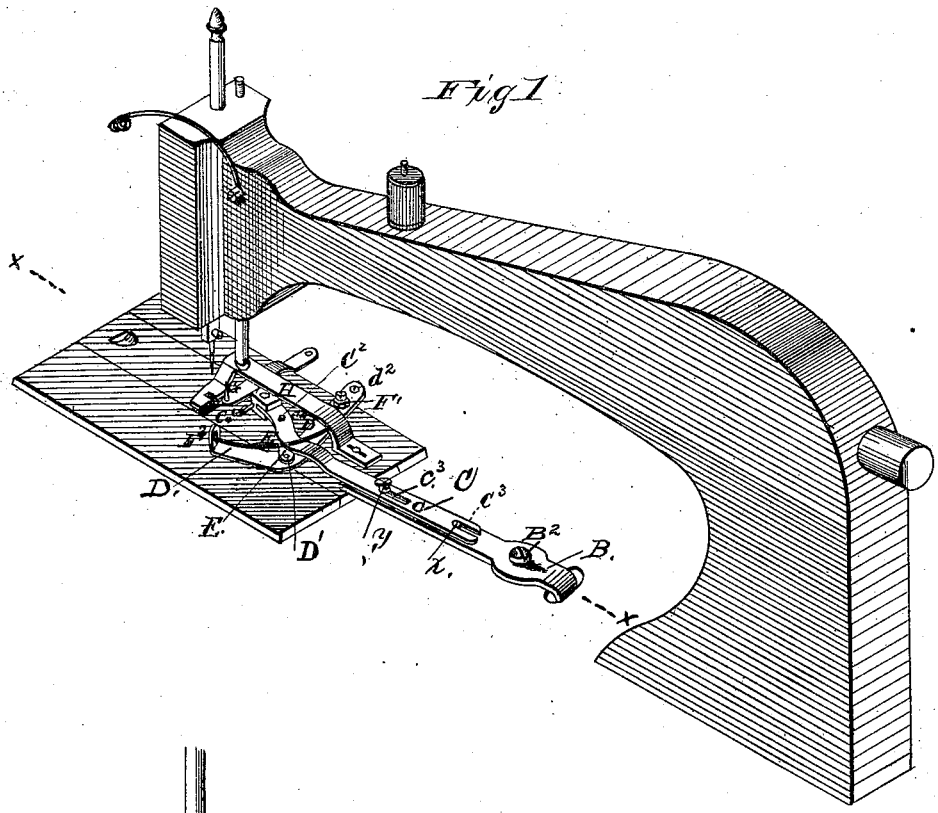


Fig 2

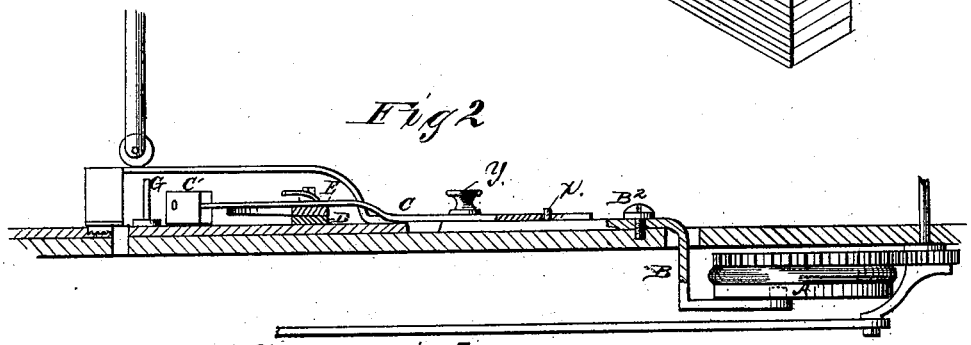
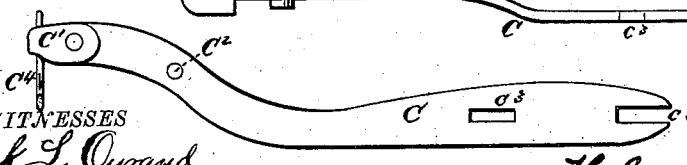


Fig 3.

Fig 4.



WITNESSES

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Fig. 3.

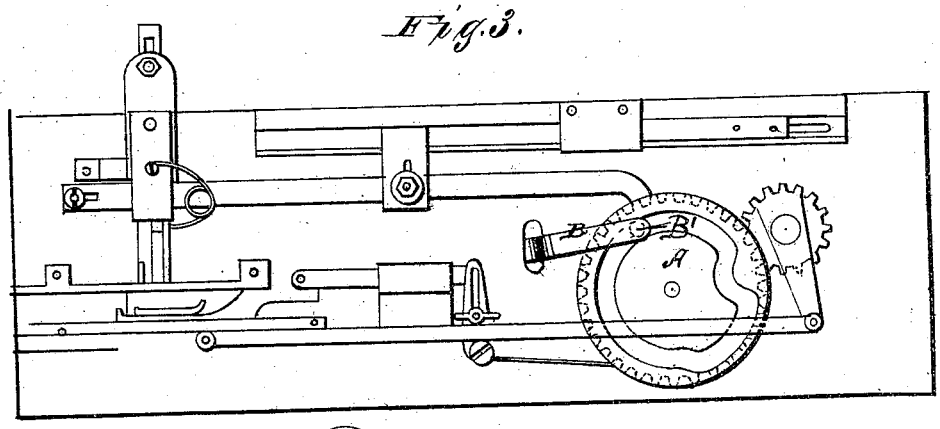


Fig. 6.

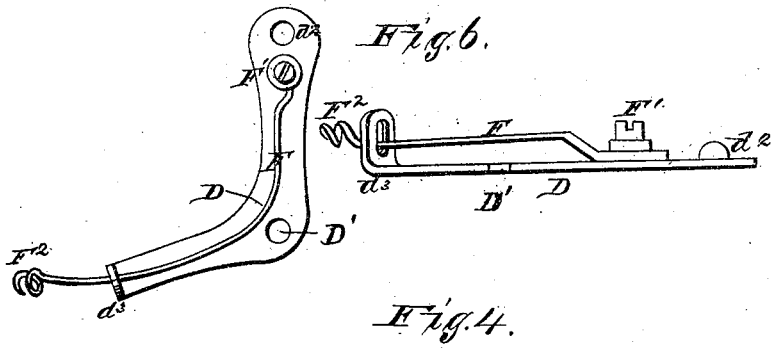


Fig. 4.

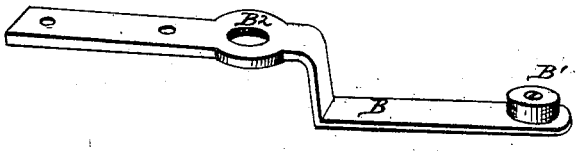
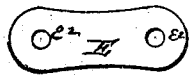


Fig 7



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CROCHET-ATTACHMENT FOR SEWING-MACHINES.

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Fig. 8.

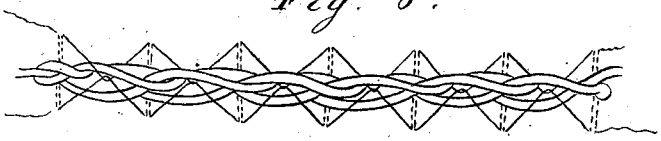


Fig. 9.

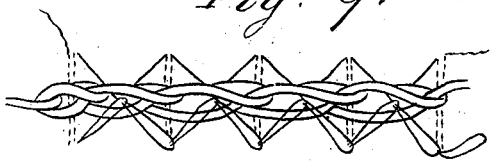
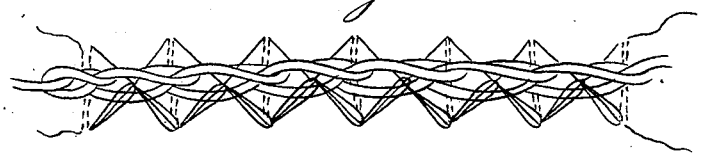


Fig. 10.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN CROCHET ATTACHMENTS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **193,216**, dated July 17, 1877; application filed June 28, 1876.

To all whom it may concern:

Be it known that I, HELEN A. BLANCHARD, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Crochet Attachments for Sewing-Machines; and I 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 pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a perspective view, showing the operative parts which are involved in present invention in readiness for use. Fig. 2 is a vertical central section of Fig. 1 on line X X, and also showing, besides, a section of the bed-plate and a side view of the cam-wheel and some of its connections. Fig. 3 is a bottom plan view of Fig. 2. Fig. 4 shows, in perspective, the angle-lever, which communicates motion from the cam-wheel shown in previous figures. Fig. 5 shows, in plan and side elevation, the needle-carrier. Fig. 6 shows the crochet-thread carrier in plan and side elevations. Fig. 7 is a plan of the swinging link to connect crochet-thread carrier with needle-carrier; Fig. 8, plain lock overstitch with crochet-loop; Fig. 9, Grover & Baker overstitch with crochet-loop; Fig. 10, Willcox & Gibbs overstitch with crochet-loop.

My invention is an improvement in overseaming sewing-machines, being a further improvement on the invention shown in my patent No. 161,471; and, among other things, it is designed and adapted for uniting together the edges of knitted fabrics and hosiery for crocheting upon such edges, for inserting patches, and for making a fabric composed only of the crocheted stitches interwoven or interlocked with the overseaming-stitches.

In the accompanying drawings, A is the cam, giving motion to the crochet attachment, making one revolution to every two of the driving-shaft of the sewing-machine. B is the angle-lever, fastened and pivoted at B^2 on the upper side of the bed-plate of the machine, thence passing through the plate and engaging at B^1 by means of a roll with the cam A. C is the carrier, which carries the needle at C^1, and it is connected at c^3 c^3 with the lever B, receiving its motion from the same. D is the crochet-thread carrier. It is pivoted to the plate of the sewing-machine at d^2, and is connected at D^1 with and receives its motion from the needle-carrier C by means of the swinging link E and pivot-pin C^2. F is the spring-wire, having a scroll-twist at its end F^2 for the easy introduction of and holding of the crochet-thread, and is attached at its opposite end F^1 to the carrier D, from which it receives its motion. This is made of spring-wire, because at times it passes over the presser-foot H of the machine, which might be lifted when F^2 is over it, and the parts strained by unyielding contact. G is an upright pin, arranged to be set stationary and act as a cast-off.

I will now proceed to describe the operation of the parts.

The cam A is attached to the larger gear-cam of my patented overseaming-machine, (No. 161,471,) which revolves once to two revolutions of the smaller gear attached to the driving-shaft of the machine.

This cam A actuates the lever B, pivoted at B^2, giving it a horizontal vibrating movement, which the lever B imparts to the needle-carrier C, as it is attached to B at the two points C^3 by a steady-pin, x, and also by an adjusting-screw, y. In the end of C, at c^1, I secure an ordinary hosiery latch-needle, at a slightly-acute angle with C and paralliel with the bed-plate of the machine, and at right angles with the vertical sewing-needle of the sewing-machine. The point or hook of the latch-needle I have angled slightly away from the sewing-needle, in order to assist it in handling the loop.

Now, with the understanding that the feeding device has a lateral reciprocating motion imparted to it, and also the presser-foot, if need be, but the devices for which are not necessary to be shown in the present application, as they are already shown and described in my above-mentioned Patent No. 161,471, I will proceed to describe the operation of the devices constituting my present improvement. Starting with the sewing-needle down its full

throw, and in that part of the zigzag movement that would place it outside the material to be sewed—the cam A acting on the pivoted lever B, through the cam-roll B^1, and thence on the needle-carrier C—the latch-needle is brought to its extreme throw toward the operator. At the same time the part C, in its vibrating movement, carries with it the stud c^2, and thus actuates swinging bar E, pivot-pin D^1, and crochet-thread carrier D, which swings on the point d^2 back and forth from left to right, as the operator faces a Singer medium sewing-machine, the scroll end F^2 of the thread-carrier wire F is brought to its extreme throw to the right. This leaves the presser-foot clear from F^2, so that it can be raised. The work is then placed beneath the presser-foot, the crochet-thread, which passes through F^2, is caught in the hook of the latch-needle C^4, and its end secured by being also drawn under the presser-foot H.

Revolving the fly-wheel, the latch-needle, with its thread, is drawn back, which movement, through the connection of C with D, brings the looper-scroll F^2 to the left. The sewing-needle then rises, and, passing down a second time, takes a stitch inside the edge of the work. As it rises from this stitch, and its point is free from the work, the cam A acts to draw the latch-needle C^1 to its extreme distance away from the operator, which movement brings the looper F^2 to its extreme left throw. This brings the crochet-thread stretching between F^2 and the hook of the latch-needle, so that the sewing-needle will pass over it. When the sewing-needle is well down, this time outside the edge of the material being sewed, the latch-needle comes forward, the loop which it holds slips back, turning the latch and passing over its latch-point. The looper F^2 moves from left to right, placing its thread in the hook of the latch-needle, which, having received it, draws back until its first loop again closes its latch and drops off its point, the looper F^2 favoring this by moving to the left. I sometimes place an upright wire standard, G, so as to assist and make sure of the loop being dropped.

A crochet-stitch is thus formed. The sewing-needle rises again, crosses the crochet-thread, since the latch-needle and looper F^2 are not at their full throw back and to the left, passes down inside the edge of the work, and secures the crochet-stitch to the edge of the material sewed. As the sewing-needle rises and passes down again outside the edge, it crosses the crochet-thread, as before described.

In straight sewing, as in the overseaming described, the parts of the crochet attachment take the same movements and in the same way. Every stitch of the sewing-needle crosses and recrosses, thus securing the crochet-thread.

The attachment is equally applicable to all single and double thread sewing-machines. Although, as now shown, the cam A is fixed stationary to the gear, it can be made adjustable, so that its relations with the time of crossing and recrossing of the sewing-needle thread may be changed from that described. If desired, it can arranged so the sewing-thread will alternately pass over and under the crochet-thread.

The presser-foot H should be slotted, for straight sewing, from where the sewing-needle passes through it, thence to the rear, in order to allow clearance for the newly-woven crochet-loop; in overseaming, from the point of penetration of the needle, to and through its right or inner edge, and for the same reason.

Instead of the latch-needle, a barb-needle or other needle adapted for making a crochet stitch or loop may be employed, without altering the character or spirit of my invention.

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

1. In combination with the stitch-forming mechanism of a sewing-machine, a horizontally-acting loop weaving or knitting device, a cam located beneath the table for operating the same, and connecting mechanism, substantially as shown and described.

2. In an overseaming sewing-machine, the combination, with the stitch-forming mechanism thereof, of the horizontally-operating loop weaving or knitting device, operated as shown, and arranged in relation to the said mechanism, as described, whereby a series of crochet-stitches are placed along the edge of the fabric being united, and sewed thereto by means of the diamond overseaming-stitch, as and for the purposes set forth.

3. The combination of crochet-thread carrier D, which swings on point d^2 back and forth, with needle-carrier C and lever B, and its operative mechanism, substantially as and for the purposes set forth.

4. The needle-carrier C c^1 c^2 c^3, having latch-needle c^4, and combined with lever B B^2 and cam-wheel A, substantially as and for the purposes described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

HELEN A. BLANCHARD.

Witnesses:
LOUISE P. BLANCHARD,
GEORGE B. BIGELOW.