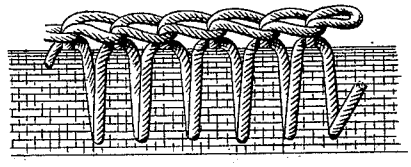
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J. D. MORLEY.

SEWING MACHINE FOR BORDERING THE EDGES OF FABRICS.

No. 432,739. Patented July 22, 1890.

FIG. 1.



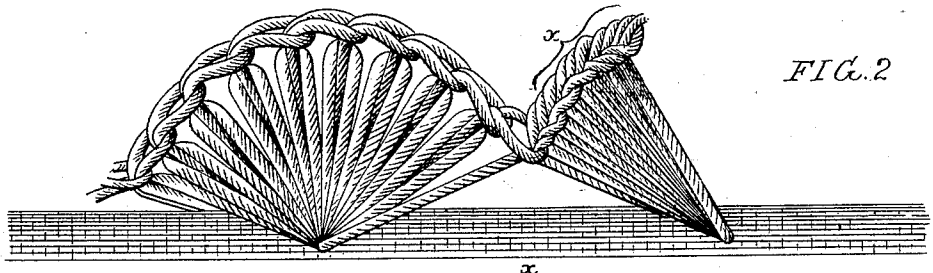


FIG. 2

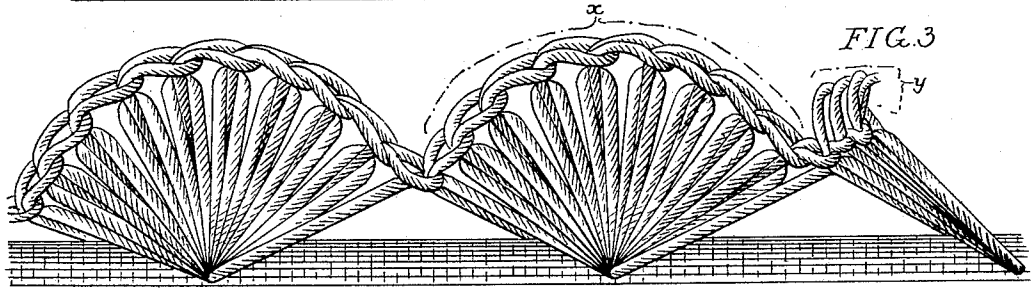


FIG. 3

FIG. 5.

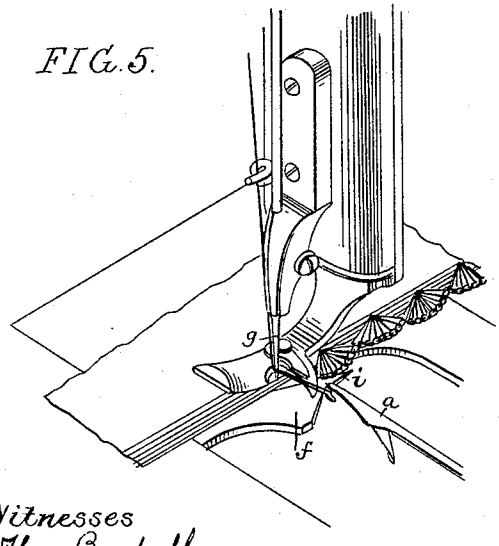
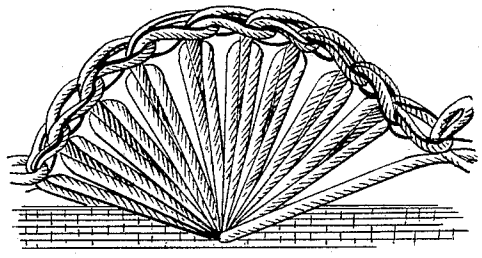


FIG. 6.



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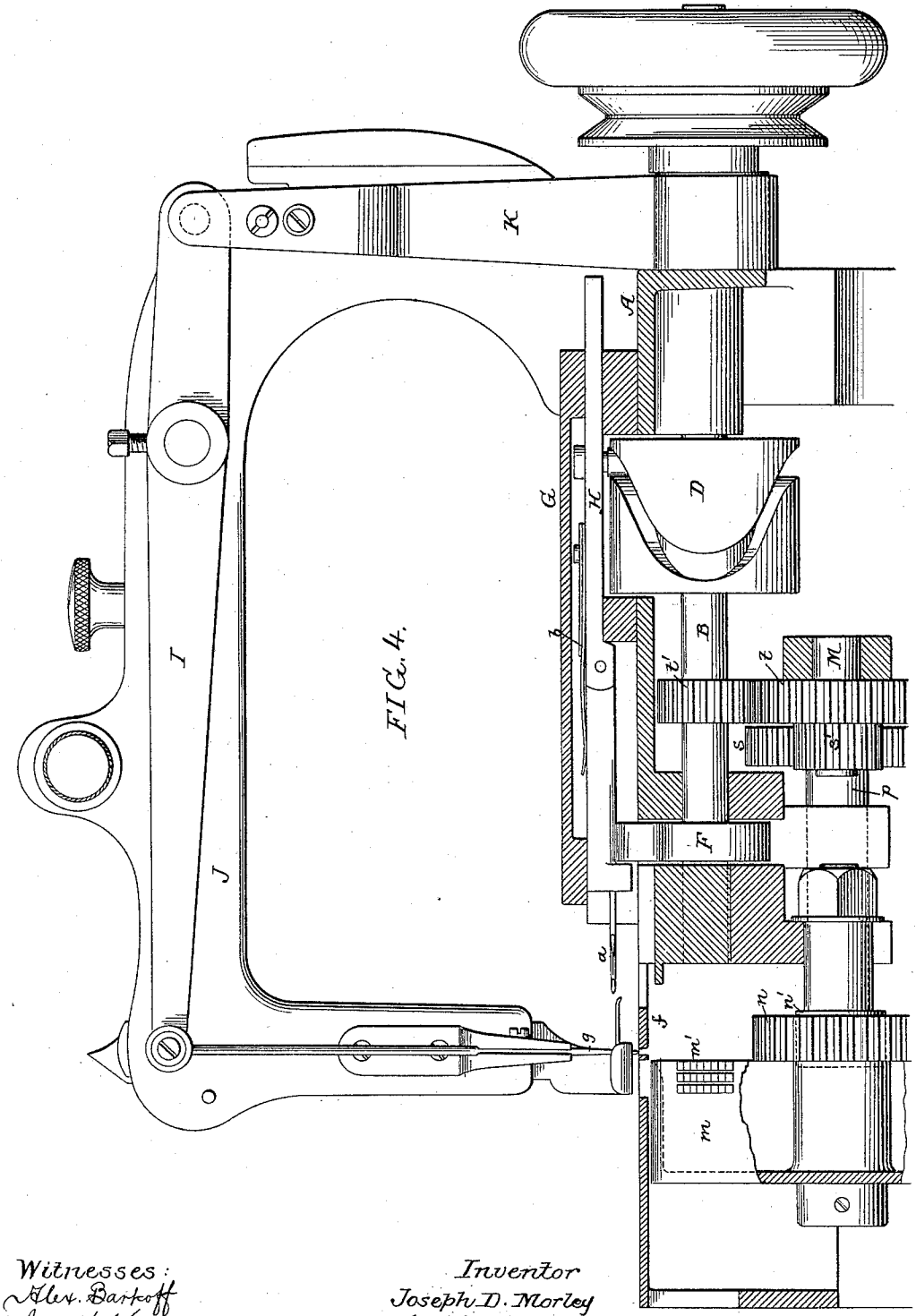


FIG. 4.

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(No Model.) 3 Sheets—Sheet 3.

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FIG. 7.

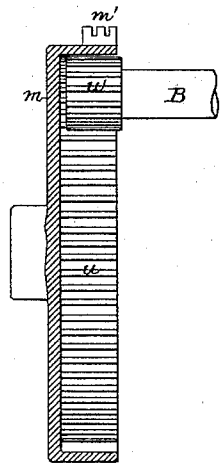
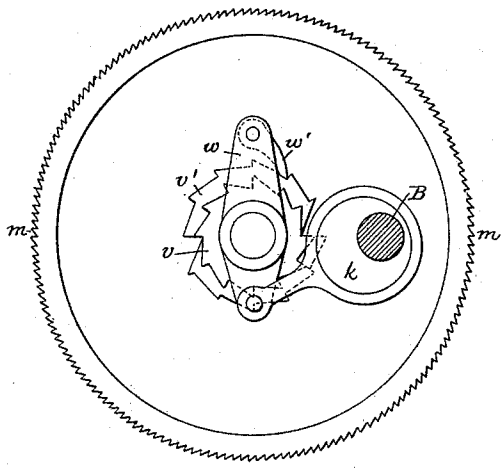


FIG. 8.



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UNITED STATES PATENT OFFICE.

JOSEPH D. MORLEY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO JOSEPH M. MERROW, OF MERROW, CONNECTICUT.

SEWING-MACHINE FOR BORDERING THE EDGES OF FABRICS.

SPECIFICATION forming part of Letters Patent No. 432,739, dated July 22, 1890.

Application filed April 20, 1888. Serial No. 271,305. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH D. MORLEY, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Machines for Bordering the Edges of Fabrics, of which the following is a specification.

The object of my invention is to produce by machinery ornamental designs or borders upon fabrics in place of the usual plain crochet or overseam border now produced, and this object I attain in the manner hereinafter set forth, reference being had to accompanying drawings, in which—

Figure 1 is a view of a piece of fabric having the ordinary crochet-stitch on the edge. Figs. 2 and 3 are enlarged diagrams illustrating the method of making the ornamental crochet-stitch. Fig. 4 is a view, partly in section and partly in elevation, of a machine constructed in accordance with my invention for making said ornamental stitch. Fig. 5 is a perspective view of the stitch-forming parts of said machine. Fig. 6 is a view showing a modified form of stitch, and Figs. 7 and 8 are views illustrating modified forms of feed mechanism which may be used.

A is the bed-plate of the machine, to suitable bearings on the under side of which is adapted the driving-shaft B, which carries two cams D and F.

In a box G on the bed-plate A is guided a bar H, made in two parts or sections hinged together, the front part carrying a latch-needle *a*, performing the office of a looper and being acted upon by a spring *b*, which tends to depress it and keep it always in contact with the surface of the cam F.

The cam D has a groove, which receives an anti-friction roller *d*, carried by a stud on the bar H, so that as the shaft B rotates said bar is reciprocated twice for each rotation of the shaft, and the cam F is so shaped that on one reciprocation the front end of the bar H is so supported that the needle *a* moves forward above a dividing-plate *f* and on the next reciprocation is allowed to drop, so as move forward beneath said plate.

The machine has an eyed needle *g*, serving as the thread-carrier, the stem of which is connected at the upper end to one arm of a lever I, hung to the fixed frame J of the machine, the other arm of said lever being connected to the upper end of the strap K of an eccentric on the shaft B.

The knitting-needle *a* moves forward above the plate *f*, catches the thread from the needle *g*, and pulls a loop of the same out over said plate, said needle *a* then dropping to a point below the plate, again advancing and drawing the loop of thread from the needle *g* below said plate *f*. The fabric is confined between the presser-foot and the plate *f*, so that loops are drawn alternately above and below the fabric, the plate *f* having a projecting tongue *i*, as shown in Fig. 5, and the loops formed below the plate slipping from this tongue as the fabric is fed forward. In its forward movement above the plate *f* the needle *a* does not slip its stitch back of the latch; but in the forward movement below said plate *f* the stitch and fresh loop carried by the needle are slipped back of the latch, and on the retraction of the needle are cast off, so as to form a chain along the outer edge of the series of loops.

In machines of this class heretofore employed the feeding of the fabric is effected by a toothed feed-wheel which is operated by worm and spur gearing from the shaft B, so as to impart a definite feed to the fabric for each reciprocation of the needle *g*, the result being the formation of a stitch similar to that shown in Fig. 1 of the accompanying drawings.

In carrying out my invention I produce a shell or fan-like arrangement of the stitches, and thus impart an ornamental finish to the edge of the fabric, and this I accomplish by stopping the feed of the fabric until a bunch of stitches *x* is produced, as shown, for instance, in Fig. 2, and then imparting an extended feed to the fabric, so as to spread this bunch of stitches and bring the fabric into position for the formation of a succeeding bunch of stitches *y*, as shown in Fig. 3.

In the machine shown in Fig. 4 the feed-wheel *m* has a feed-surface *m'*, extending throughout a limited portion only of its circumference, and said feed-wheel has a spur-wheel *n*, which engages with a pinion *n'* on a shaft *p*, the latter having a spur-wheel *s*

gearing into a pinion s', carried by a spur-wheel t, which engages with a pinion t' on the shaft B, and is free to turn on a stud M, projecting from a bracket M′ on the frame. In Fig. 7 I have shown a similar form of gearing for operating the feed-wheel, the latter in this case having an internal rack u, with which engages a pinion u' on the driving-shaft B. In both cases the gearing should be such that the time which elapses between the successive feeding operations of the surface m' will be sufficient to permit the formation of the proper number of stitches to constitute the bunch.

A continuously-toothed feed-wheel operating intermittently, as will be evident, may be substituted for the continuously-moving wheel having a feed-surface of limited size, and in Fig. 8 I have shown one plan of operating such a wheel. The wheel has a ratchet v, and alongside of the same a secondary loose ratchet v', with alternate deep and shallow teeth, the shallow teeth being in sets, with as many teeth in each set as there are to be stitches between successive feeds of the fabric.

Hung to the spindle of the wheel is an arm w, operated by an eccentric k on the driving-shaft and having a pawl w', which engages with the teeth of the wheel v'. The pawl is, however, held out of engagement with the teeth of the wheel v by the wheel v', except when it drops into one of the deep teeth of said wheel v', in which case there is a movement of the feed-wheel to the extent of one tooth of said wheel v, as will be readily understood.

I am aware that a reciprocating feed mechanism has been employed in connection with a needle and looper to intermittingly advance the fabric after a series of loops have been formed, thereby spreading the cluster of loops in the form of scallops; but in such cases special mechanism is required for reciprocating the feed-dog as well as for moving it laterally into and out of operative relation with the fabric at predetermined intervals. By my improvements I am enabled to dispense with much of the complicated mechanism heretofore employed. The feed dog or surface traverses through an orbit, which is intersected at a single point by the fabric lying upon the plate; hence during a complete movement the feed-surface is caused to engage the fabric but once, and the time of such engagement can be readily determined and adjusted by increasing or diminishing the length of the path traversed, the speed remaining constant, or by increasing or diminishing the speed, the path being of uniform length, or by changing both the length of the path and the speed.

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

1. The combination, in a crocheting-machine, of the eyed needle and the latch-needle reciprocating in planes at an angle to each other and coacting to form successive loops, and a connecting chain of stitches along the outer ends of said loops with an intermittently-acting rotating feed-surface, whereby the fabric is fed forward only after the formation of a series of loops by the needles.

2. The combination, in a crocheting-machine, of the eyed needle and the latch-needle reciprocating in planes at an angle to each other, the feed-wheel having a feed-surface occupying a limited portion of the circumference of said wheel, and mechanism for imparting a forward rotating movement to the feed-wheel.

3. In a crocheting-machine such as described, containing a thread-carrier, a looper, and a dividing-plate, and in combination therewith a rotary feed mechanism provided with a limited feeding-surface, with mechanism for rotating said feeding surface to bring the latter in co-operative relation with the fabric after a number of movements of the thread-carrier and looper, substantially as described, whereby the fabric is held in position and a number of loops are formed while the feed-surface is traversing its orbit and before it is again brought into contact with the fabric.

4. In a machine such as described, and in combination with a reciprocating needle, a looper reciprocating at an angle to the needle, and a feed mechanism for the fabric, a looper-carrier in two sections, the one guided to reciprocate longitudinally with actuating mechanism therefor and the other flexibly connected to the first-named section carrying the looper and provided with mechanism for vibrating it upon its flexible connection with the other section, and a yielding connection, such as a spring, mounted upon and reciprocating with the looper-carrier and interposed between the two sections thereof to hold the vibrating looper-carrier section in engagement with the devices by which it is vibrated, substantially as described.

5. In combination with a reciprocating needle and a looper adapted to be reciprocated at an angle to said needle, a looper-carrier in two sections flexibly connected together, the one section guided to reciprocate toward and from the needle, being provided with actuating devices for effecting the longitudinal motions of the looper, and the other section carrying the looper and flexibly attached to the first-named section, being provided with actuating devices for effecting the lateral motion of the looper, and a yielding device, such as a spring, mounted upon the looper-carrier and interposed between the sections thereof to hold the looper-carrying section in engagement with its actuating devices, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH D. MORLEY.

Witnesses:
JAS. H. DAVIS,
FRED. G. BRENNER.