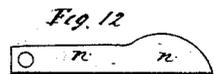
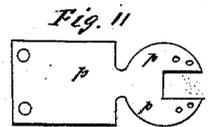
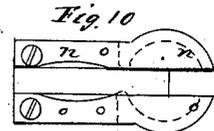
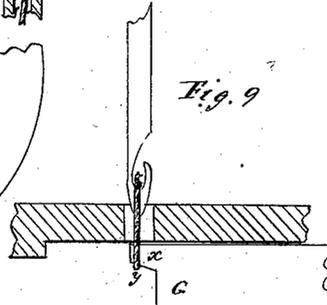
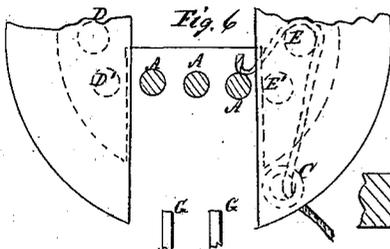
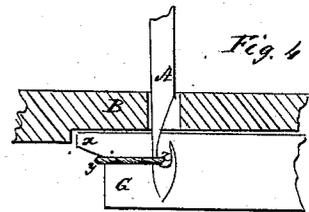
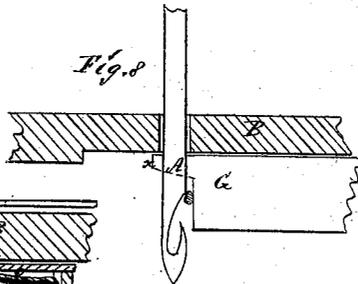
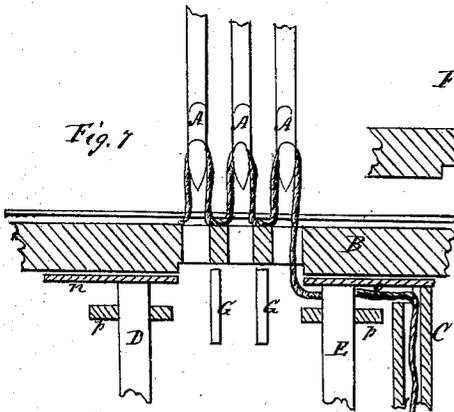
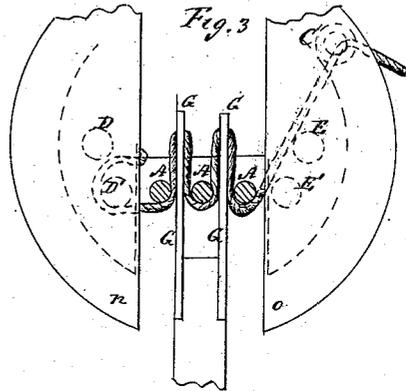
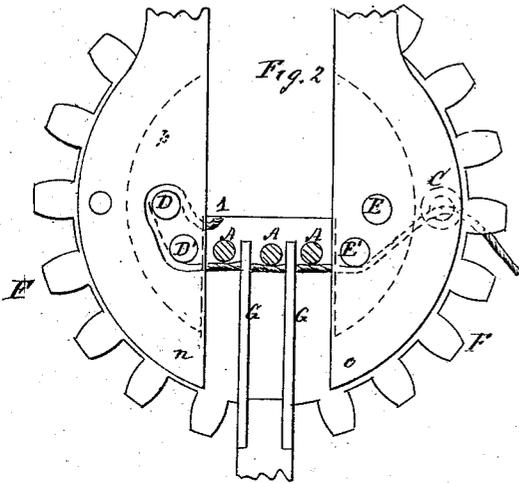
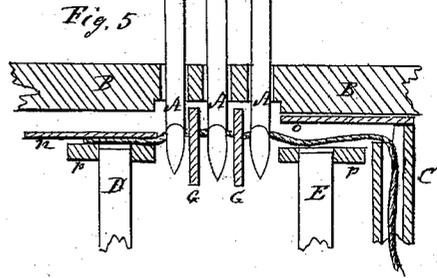
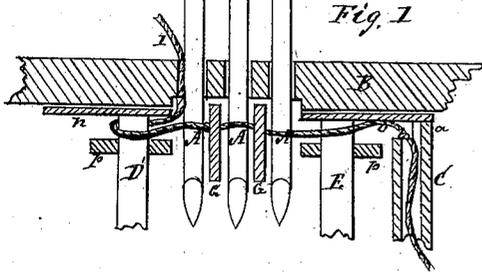


Sewing and Embroidering Machine.

No. 219,225.

Patented Sept. 2, 1879.



Witnesses:
Ed. Pick
Ch. Carpenter

Inventor:

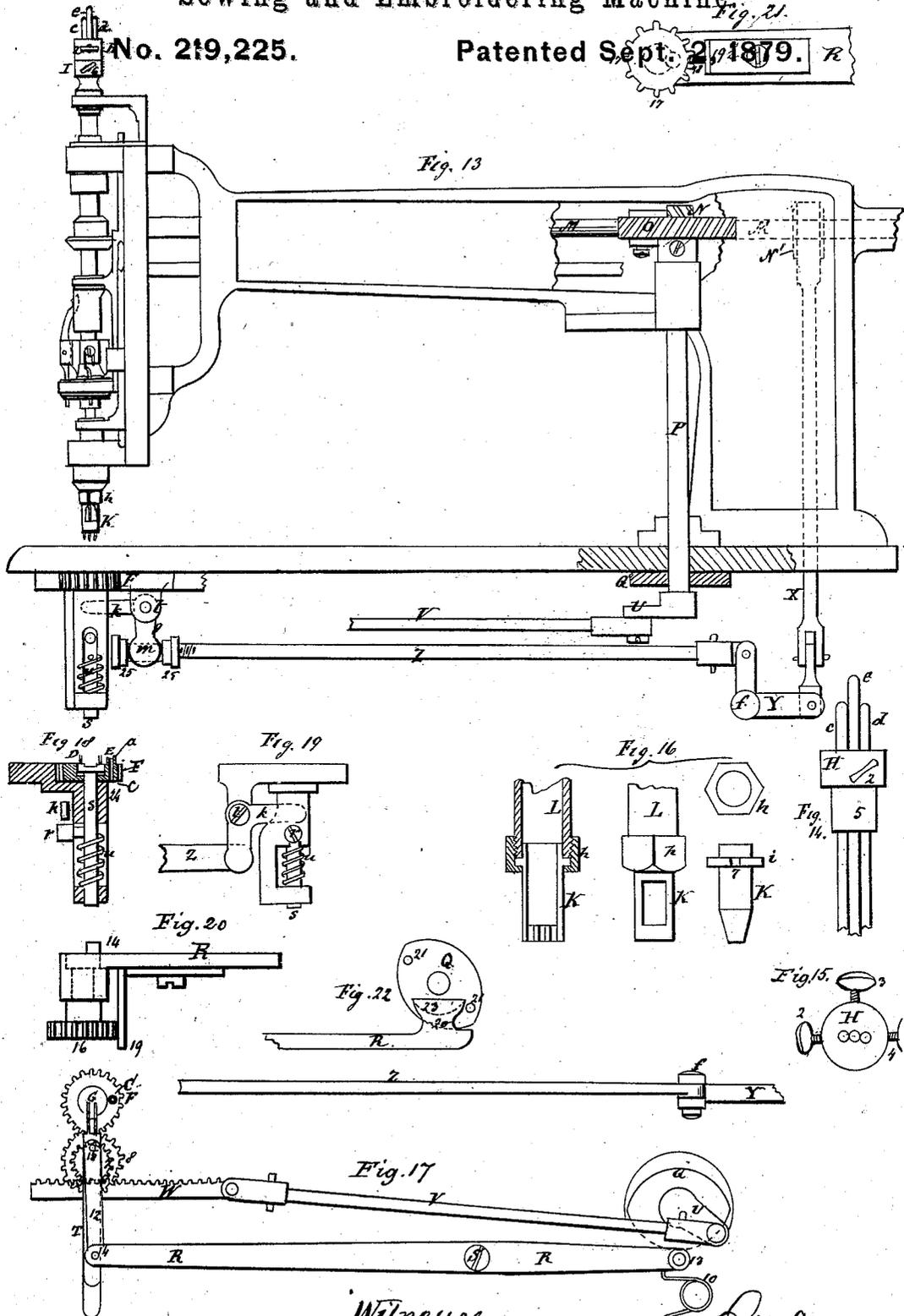
Emile Cornely by
A. Pollok his atty.

E. CORNELY.

Sewing and Embroidering Machine.

No. 219,225.

Patented Sept. 2, 1879.



Witnesses
G. F. Dick
J. E. Carpenter

Inventor: *Emile Cornely*
 by *A. Hollok atty.*

E. CORNELY.

Sewing and Embroidering Machine.

No. 219,225.

Patented Sept. 2, 1879.

Fig. 23.

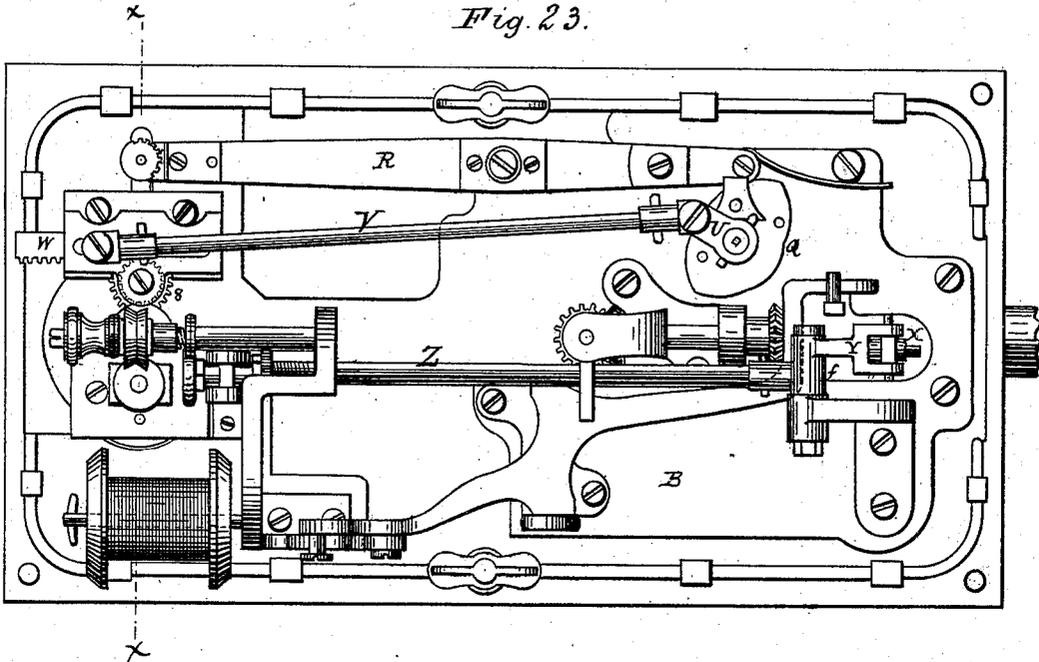


Fig. 24

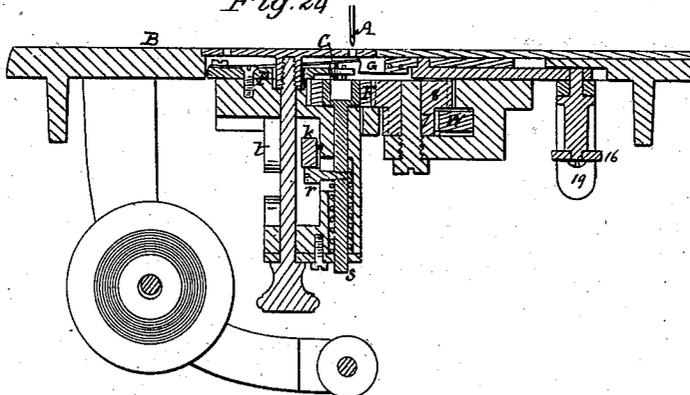
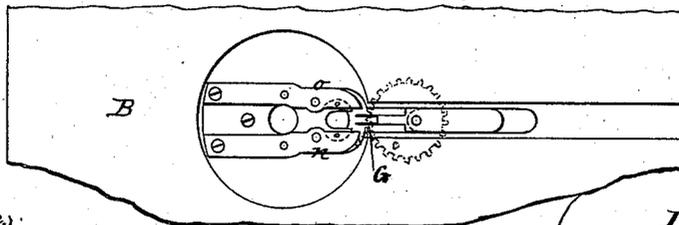


Fig. 25



Witnesses:

E. A. Sick
J. H. Carpenter.

Inventor

Emile Cornely by
A. Pollock
 his atty

UNITED STATES PATENT OFFICE.

EMILE CORNELY, OF PARIS, FRANCE.

IMPROVEMENT IN SEWING AND EMBROIDERING MACHINES.

Specification forming part of Letters Patent No. **219,225**, dated September 2, 1879; application filed October 14, 1878; patented in England, June 27, 1877; patented in France, June 15, 1877.

To all whom it may concern:

Be it known that I, EMILE CORNELY, a resident of Paris, in the Republic of France, have invented new and useful Improvements in Sewing and Embroidering Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object of my present invention is the production of several parallel sewing or embroidering seams by means of several needle-hooks and one single thread only.

The invention consists in the method and means of producing the parallel or embroidering seams with a single thread, and in the construction and combination of parts, as hereinafter more fully set forth.

A number of simultaneously moving needle-hooks are employed. After these hooks have passed through the fabric a thread-carrier which vibrates or oscillates back and forth in a horizontal plane lays the thread in the hooks. A number of reciprocating blades with hooks at the ends are pushed between the needles, and produce the necessary slack thread and insure the taking of the thread in the needle-hooks. Four studs, operating in connection with two spring-blades secured to a plate attached to the casting of the machine under the bed-plate, and with the thread-carrier, hold the end of the thread, and serve to insure the proper laying of the thread in the hooks. After the thread has been placed in the needle-hooks they are drawn upward through the fabric, and lay the loops upon the top, and return for the formation of other loops, which are drawn upward through the first-formed loops on the next upward movement of the needle-hooks.

The following description will enable those skilled in the art to make and use my invention, reference being had to the accompanying drawings.

Figures 1, 2, 3, 4, 5, 6, 7, 8, and 9 represent views, in vertical and horizontal sectional elevations, and on a large scale, of the devices for producing the stitch; Figs. 10, 11, and 12, detached views, on a smaller scale, of the plate secured to the casting of the machine and the

spring-blades attached thereto; Fig. 13, the machine in elevation, partly in section, on a smaller scale than the parts represented in the above-named figures; Figs. 14 and 15, enlarged views of the means for securing the needle-bars in position; Figs. 16, enlarged views of the nipple and means for securing the same to the nipple-tube; Fig. 17, a detached bottom view of mechanism for operating the thread-carrier and reciprocating blades, on the same scale as in Fig. 13; Figs. 18 and 19, detached views, respectively in section and in elevation, on the same scale, of part of the mechanism for operating the studs; Figs. 20 and 21, enlarged views of the means for regulating the forward limit of motion of the reciprocating blades; Fig. 22, a detached view, on the scale of Fig. 13, of means for keeping the lever operating the reciprocating blades against its cam, the rod operating the studs being shown in position beside it; Fig. 23, a bottom view of the machine with all the parts in position; Fig. 24, a section on line *xx*, Fig. 23; and Fig. 25, a top view of the stitch-forming devices used in connection with the needle-hooks in position in the cloth-plate of the machine.

My invention may be applied to machines of different kinds; but I prefer to apply it to what is known as the "Bonnaz embroidering-machine," for which Letters Patent were granted to me on the 10th day of November, 1868, inasmuch as suitable mechanism for operating the needle-hooks and universal feed are used therein, the said feed being capable of employment on one-third of a circle for doing edge-work. I shall therefore confine my description to those parts which are different from or are not found in said machine.

A represents the needle-hooks, which are secured to one or to several needle-bars of a sewing or embroidering machine in such a manner that they rise and descend simultaneously. B represents the cloth-plate of the machine, through which suitable holes are made for the passage of the hooks, and which holes are connected with one another by means of slots for the passage of the thread. C represents a thread-carrier, which has an alternate oscillating motion around the needle-hooks, and which lays its thread against said

hooks, so that they can take hold of it in their upward motion and draw the loops above the cloth. D D' and E E' are four studs, which have an upward and downward motion, and whose operation will be described hereinafter. G represent small blades, which have a horizontal reciprocating motion, and which are pushed between the needles to produce the necessary slack thread, and to secure the taking of said thread by means of the hooks A, as will be more fully described. *p* is a plate, which is secured to the castings of the machine under the bed-plate B, and whose shape is shown in Fig. 11. *n* and *o* are two spring-blades, which are secured to the plate *p*. The studs D' E' are pressed against the free ends of said spring-blades by the constant action of a spiral spring, and the studs D E project into holes of said springs when in their highest position. Both the studs D E and D' E' are secured to one and the same vertical shaft.

The thread-carrier C is secured to the face of a small pinion, F, which receives its oscillating motion from a rack.

The needle-hooks A are secured to the needle-bars *c d e*, of hardened steel, which bars are themselves secured in the sleeve H, Figs. 13, 14, and 15, by means of set-screws 2, 3, and 4. This sleeve or needle-bar holder is provided with a tubular projection, 5, Fig. 14, of smaller diameter, which is secured within the part I by the set-screw 6, Fig. 13.

The needles pass through a number of holes in the lower part of the nipple K, which is secured to the nipple-tube L by means of a collar, *i*, and the screw-nut *h*. (See Figs. 13 and 16.) A pin on the end of the nipple-tube enters the notch 7 in the collar *i*, so that the nipple will always be screwed on in proper position.

M, Fig. 13, represents the main driving-shaft, from which all the movements of the various devices are derived.

The manner of operating the part I to reciprocate the needle-bars, and the use of the nipple K, and also the other devices in immediate connection therewith, are well known in the Bonnaz machine, before referred to, and need not be here more particularly specified.

On the shaft M is secured a helical pinion, N, which drives a helical toothed wheel, O, of double its diameter, secured to the vertical shaft P. A crank, U, on the lower part of this shaft operates the pitman V.

At the opposite end of the pitman V, Figs. 17, 23, and 24, is secured by a loose joint the rack W. This rack gears with a pinion, 7, which is attached to the upper side of the gear-wheel 8, which engages with the pinion F, on the upper part of which the thread-carrier is secured, as before stated. By means of this mechanism, at each revolution of the shaft M the thread-carrier is oscillated to the right or left alternately.

The cam Q, Figs. 13, 17, 22, and 23, is secured to the shaft P, and revolves with it.

The lever R, turning on the pin S, which is attached to the under side of the bed-plate of the machine, carries at one end a roller, 13, which is kept in contact with the face of the cam Q by the spring 10. To insure the perfect contact, especially at high speeds, a cam-shaped piece, 20, Fig. 22, is sometimes secured to the short arm of the lever R, so that by the bearing of the pins 21 at the proper moment against its inner face, 23, the end of the lever follows always the circumference of the cam Q. The cam Q is shaped as shown, so that the lever R is reciprocated twice at each revolution of the shaft P, or once during each revolution of the main shaft M.

At the end of the long arm of the lever R is pivoted a link, 12, by means of a pin, 14. This link is pivoted at 15 to a slide, T, to which the blades G, above mentioned, are attached. By the rotation of the cam Q, therefore, the blades G are reciprocated. The limit to the forward movement of these blades is regulated by the adjustment of the pin 14 in the lever R. Referring to Figs. 20 and 21, it will be seen that this pin 14 is eccentrically secured to a shaft, which turns in a bearing at the end of aforesaid lever. On the lower end of this shaft is secured a stud, 16, provided with small notches 17, into which a tooth, 18, of the spring 19 drops to retain it in position. By turning the stud 16, therefore, the position relative to each other of the slide T and lever R is varied, and consequently the limit of the forward movement of the blades G is regulated.

The shaft M communicates motion by means of the cam N', cam-rod X, and connecting-link to one arm of a bent lever, Y, turning on a pivot, *f*, which is secured to the frame of the machine below the bed-plate. To the other arm of this bent lever the rod Z is pivoted. The rod Z communicates motion to one arm, *g*, of a bent lever pivoted at *t* to a projection on the bed-plate. The other arm, *k*, of this bent lever (see Figs. 18 and 19) projects above the pin *r*, secured to the rod *s*, which latter is pressed upward by a spring, *u*. The rod *s* moves in a hole in a projection, 24, Fig. 18, on the under side of the bed-plate of the machine, and passes through an aperture in the center of the pinion F, which vibrates the thread-carrier C. To a head on the upper part of the rod *s* the studs D E D' E' are secured.

By the movement down, therefore, of the lever-arm *k* the studs are depressed, and at its upward movement they are returned to their first position by the action of the spring *u*.

To adjust the movement of these studs so that they may be timed with great accuracy, the point *m* at which the motion of the rod Z is communicated to the lever-arm *g* may be shifted by means of two check-nuts, 25, Fig. 13, so that the lever-arm *k* will bear sooner or later, as desired, on the pin *r*.

From the foregoing description the construction and means for communicating motion to the several parts will be readily understood,

as also the means for effecting the various adjustments. I will therefore describe the operation of forming the stitches, omitting reference to mechanism employed to impart to the several stitch-forming devices the unnecessary movements from the main shaft of the machine.

When the needle-hooks are in their lowest positions, as shown in Figs. 1 and 2, the thread-carrier C commences its movement from the left to the right to lay the thread against the hooks A. The spring-blades *n o* are in their highest position, being held there by the pressure of the studs D' E'. The thread being secured at 1 to the preceding stitch, the thread-carrier C lays it first around the stud D, then around the stud D', then against the needle-hooks A, Figs. 1 and 2, then against the studs E' and E. The blades G, advancing all this time against the needles, push the thread between them, while the needles commence their upward motion, as shown in the positions Figs. 5 and 3. While the blades G advance between the hooks the studs D D' and E E' descend, and the spring *n* retains the loose loop by pressing it against plate *p*, so that the needles A cannot make any drop-stitches, and as the blades G advance farther the loose loop held by the spring *n*, Fig. 3, will be employed for supplying the necessary length of thread to the hooks A.

During this operation the spring-blade *o* is kept open by the thread-carrier C, whose tube is provided with a projection, *a*, while the thread issues from the inner and lower side, *b*.

When the blades G have arrived at their extreme positions, Fig. 3, they immediately commence their backward motion; but each blade retains its loop by means of a small hook, *x*, Figs. 4, 8, and 9, and the backward motion of the blades G is timed in such a manner that the loops *y z*, which are between the hook A and the blades G, are kept tight until the hook A arrives in the line of the cloth-plate, when each loop is released and carried above the cloth-plate, as shown at Fig. 7.

The thread-carrier C having laid its thread behind the studs E' E, Fig. 3, said studs now rise to their highest position, so that when the thread-carrier C returns for the next following operation it lays its thread around the studs E E', Fig. 6.

The hooks A having drawn their loops above the cloth, Fig. 7, the feed takes place. The hooks descend, lay the loops upon the cloth, and descend through them for the next following operation. Thus a new stitch is formed, which is composed on the upper side of several parallel chain-stitches, which are united one to the other by the thread on the under side, and thus constitute a firm and secure embroidery, which will serve not only for ornamental purposes, but also for binding and edge-work to all sorts of goods.

The pins or studs D' E' are principally necessary to guide the thread when it is laid in front of the hooks A, so that the latter do not descend in front of the thread and thus cause drop-stitches.

It is evident that the number of needle-hooks employed can be increased or reduced to produce wider or narrower seams.

Having thus fully described the nature of my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The method of producing several parallel or embroidering seams with a single thread at one and the same time, the same consisting in simultaneously passing through the fabric to be sewed or embroidered a series of loops, formed in the thread, then forming a second series of loops and passing them through the fabric and through the loops first named, and so continuing with successive series of loops, the several series being separated from each other by suitable distances, substantially as described.

2. The combination, with a number of simultaneously reciprocating needle-hooks, of a thread-carrier, arranged substantially as described, for placing a thread in said hooks at each downward motion of them, and connecting and operating mechanism, substantially as set forth.

3. The combination, in a sewing or embroidering machine, with a number of needle-hooks and means for simultaneously reciprocating them, of the thread-carrier, studs, reciprocating blades, and operating mechanism, substantially as described.

4. The combination, with a number of needle-hooks, the thread-carrier, the studs, the reciprocating blades, and operating mechanism, of the spring-blades, substantially as described.

5. The combination, in a sewing or embroidering machine, of the following elements: first, the main shaft of the machine; second, a number of needle-bars and needle-hooks secured thereto; third, means for securing and simultaneously reciprocating the needle-bars at each revolution of said shaft; fourth, a vibratory thread-carrier; fifth, means for vibrating said carrier back and forth at every two revolutions of aforesaid shaft; sixth, a number of reciprocating blades; seventh, means for imparting to said blades a reciprocation at each revolution of the main shaft, and for adjusting the forward limit of motion of said blades; eighth, a plate secured to the machine-frame below the bed-plate; ninth, spring-blades secured to said plate; tenth, four studs; eleventh, means for retaining by spring-pressure said studs in contact with aforesaid spring-blades; twelfth, means for withdrawing said studs from contact with the spring-blades at each revolution of the aforesaid main shaft, and for regulating the time of said withdrawal, substantially as described.

6. The combination, with the needle-hooks

and means for reciprocating the same, of the thread-carrier, studs, and operating mechanism, substantially as described.

7. The combination, with a reciprocating slide and a number of hooked blades attached to one end thereof, of the operating-lever, eccentric pin carried thereby, and the connecting-

link turning on said pin and pivoted to said slide, substantially as described.

E. CORNELLY.

Witnesses:

ROBT. M. HOOPER,
J. A. MCKEAN.