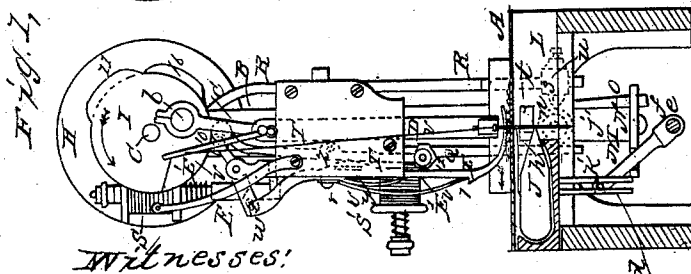
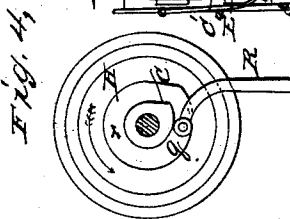
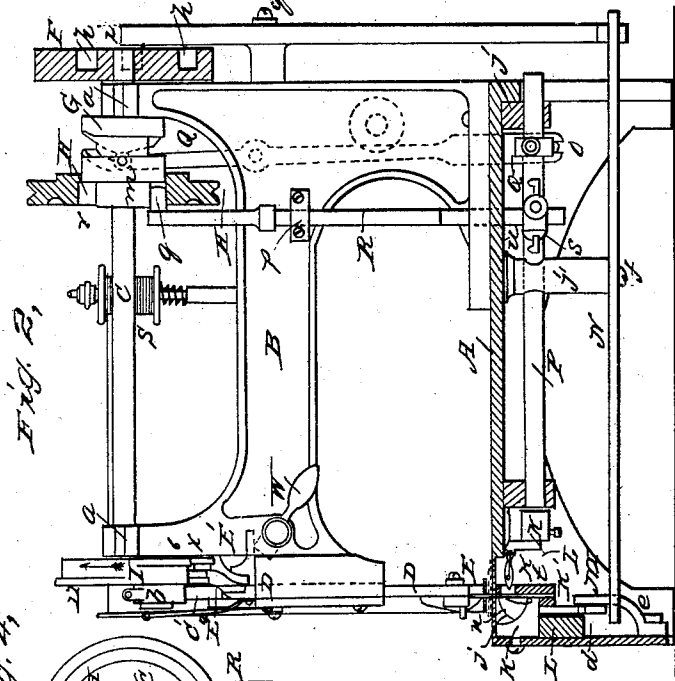
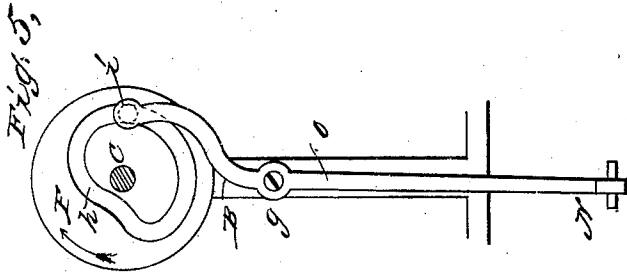


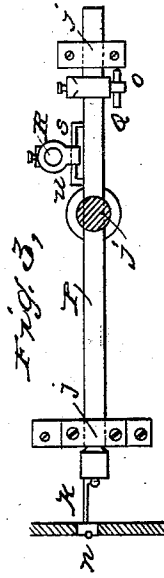
F. NIVELLE.
Sewing Machine.

No. 31,325.

Patented Feb. 5, 1861.



Witnesses:
J. W. Combs.
R. S. Green



Inventor:
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UNITED STATES PATENT OFFICE.

FRANCOIS NIVELLE, OF PARIS, FRANCE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 31,325, dated February 5, 1861.

To all whom it may concern:

Be it known that I, FRANCOIS NIVELLE, of Paris, in the Empire of France, have invented certain Improvements in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed sheet of drawings, making a part of this specification, in which—

Figures 1 and 2 are vertical sections, at right angles to each other, of a machine constructed according to my invention for making the shuttle-stitch and the double-looped stitch. Fig. 3 is an inverted plan of part of the apparatus for operating the under needle for making the double-looped stitch. Fig. 4 is a face view of the cam for operating the under needle. Fig. 5 is a face view of the cam for operating the shuttle.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists in an improved arrangement of the parts, whereby I obtain a machine of simple construction, capable of working either the shuttle-stitch or the double-looped stitch.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is the bed of the machine.

B is the upper frame, having on the top of it the bearings *a a* for the horizontal main shaft C, and having attached to it the guide for the perforating-needle carrier D and the pressing and feeding foot E.

The main shaft C has fast upon it four cams, F G H I, of which F is to operate the shuttle, G H are to operate the under needle, used in making the double-looped stitch, and I is to operate the feeding apparatus. The cam H also constitutes a pulley to receive a driving-band for driving the machine, and the cam I constitutes a wrist-plate to carry a crank-wrist, *b*, for operating the perforating-needle *n*, whose carrier C is connected with the said pin by a connecting-rod, C'.

The shuttle J rests in a bed provided for it in its driver K, which works in a straight horizontal guide or raceway, L, as in many other machines. The driver has projecting downward from it, through a slot in the bottom of the raceway, a slotted leg, K', in whose slot is received a pin, *d*, attached to a rocker, M,

which is arranged to swing in vertical planes on a fixed pin, *e*, attached to the stand of the machine, and which is received within the fork at one end of a horizontal lever, N, which works on a fixed fulcrum, *f*, under the bed A, and whose other end is forked also to receive the lower end of an upright lever, O, which works on a fixed fulcrum, *g*, secured in the upper frame, B, and whose upper end is furnished with a pin, *i*, which enters the groove *h h* of the cam F. This cam, acting through the levers O and N and the rocker M, gives the necessary motion to the shuttle-driver K.

P is a shaft, which is arranged parallel with the main shaft and at right angles to the shuttle-raceway, in fixed bearings *j j* below the bed, in which bearings the said shaft is free to oscillate about its axis and to move longitudinally back and forth. This shaft, which is situated above the lever N, passes through the hanging post *j'*, to which the fulcrum *f* of the said lever is attached. One end of the said shaft is constructed to constitute a holder for the under needle, *k*, which operates, in combination with the perforating-needle, to work the double-looped stitch, and which is of very well-known construction, except that its shank is made of crank form, as shown in Fig. 2. The shaft P derives the necessary longitudinal movement to carry the under needle into the loops of the perforating-needle thread and withdraw it therefrom from the cam G, through a lever, Q, which works on a fixed fulcrum, *l*, secured in the back of the upper frame, B, the said lever being furnished at its upper end with a stud, *m*, which enters the groove in the cam G, and at its lower end with a fork, which receives an arm, *o*, which is secured to the shaft P. The said shaft P receives from the cam H the oscillating movement about its axis, by which it carries the under needle, *k*, laterally across the path of the perforating-needle to enable the latter to enter the loops of the under thread, the said cam acting through a rod, R, which works up and down through a fixed guide, *p*, secured to the upper frame, B, the said rod having attached near its upper end a pin, *q*, which enters the groove *r* of the said cam, and having at its lower end a forked arm, *u*, which takes hold of an arm, *s*, on the rock-shaft. The movement thus given to the under needle does not differ essentially from that given to the under needle in other sewing-

machines, though the manner of imparting the movement is different. The under needle works through an opening, *t*, provided for the purpose in that side of the raceway *L* next to which the needle works.

To enable the machine to work the shuttle-stitch or the double-loop stitch it is only necessary to insert either the shuttle or the under needle and to remove the other from the machine. The operating mechanism for one device does not interfere with the other device.

S is the spool for supplying thread to the upper or perforating needle, and *S'* the spool for supplying thread to the under needle, both attached to the upper frame, *B*, and each provided with a friction apparatus to produce the necessary tension on the thread.

The presser and feeder *E* is made with a foot substantially like those used in other sewing-machines, and the face of said foot is serrated or toothed, as shown in Fig. 1, to make it bite the cloth to feed it in the direction of the arrow shown in that figure. The guide in the top frame, *B*, to which the stem *E*² of the said presser is fitted, only confines the said stem in a direction lateral to the feed movement, but permits it to vibrate freely back and forth in the requisite direction for the feed. The said stem is arranged to vibrate as a lever on a fixed fulcrum, *y*, arranged, as shown in Fig. 1, within the guide, and is so slotted where the fulcrum-pin passes through it that it can be raised up bodily. Its upper end is attached by a slot-and-pin connection, *w*, to one end of a short lever, *E'*, which works in a fixed fulcrum, *v*, secured to the upper frame, *B*. The other end of the said lever *E'* carries an anti-friction roller, *x*, which is within range of a projection, *6*, on the cam *I*, and which, every time the perforating-needle *n* is passing downward through the cloth, is acted upon by the said projection to raise the presser and feeder from the cloth for the purpose of facilitating the turning of the latter. The presser and feeder is held down upon the cloth, when not thus raised by the cam, by means of a spring, *U'*, which is attached to the upper frame, *B*, and which presses on a shoulder, *7*, on the presser-stem. Another spring, *V*, attached to the frame *B*, presses the lower part of the stem of the presser and the

foot in the opposite direction to the feed movement, as far as is permitted, by a stop, *8*, formed by the rigid upper part of the spring close to the attachment of the latter to the frame *B*. Between the stem *E*² of the presser and feeder and the needle-carrier *D* there is arranged in a cavity within the upper frame, *B*, a lever, *T*, working on a fixed fulcrum, *z*. To the upper end of this lever is attached an anti-friction roller, *10*, which is in range of a projection, *11*, on the cam *I*, and to the lower end of the said lever there is firmly secured a polygonal eccentric, *U*, which may be adjusted upon a pivot, *12*, to present either of its sides toward the stem of the presser and feeder. While the perforating-needle *n* is out of the cloth the projection *11* of the cam *I*, revolving in the direction of the arrow shown in Fig. 1, comes into operation on the anti-friction roller *10*, and so moves the upper end of the lever *T* in a direction to press the eccentric *U* against the stem of the presser and feeder, and cause the latter to be moved in the required direction to feed the cloth. As soon as the projection *11* has passed the roller *10* the spring *V* presses back the presser and feeder and the lever *T*, and, as the stop *8* is fixed, the length of the feed movement depends upon the degree of prominence or distance from the center of the pivot *12* of that side of the eccentric *U* which is toward the stem.

W is a lever, to be operated by hand, for raising and holding up the presser and feeder during the adjustment of the work in the machine.

I do not claim providing a sewing-machine with the means of making the shuttle-stitch and the double-looped stitch; but

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

The arrangement of the shuttle-operating levers *O N* and rocker *M*, and of the oscillating and reciprocating under-needle shaft *P* and its operating-lever *Q*, rod *R*, and connection *u s*, in combination with cams on a driving-shaft, *C*, arranged above the upper frame of the machine, substantially as herein described.

F. NIVELLE.

Witnesses:

A. GUION, Jr.,
GEO. HULLM.