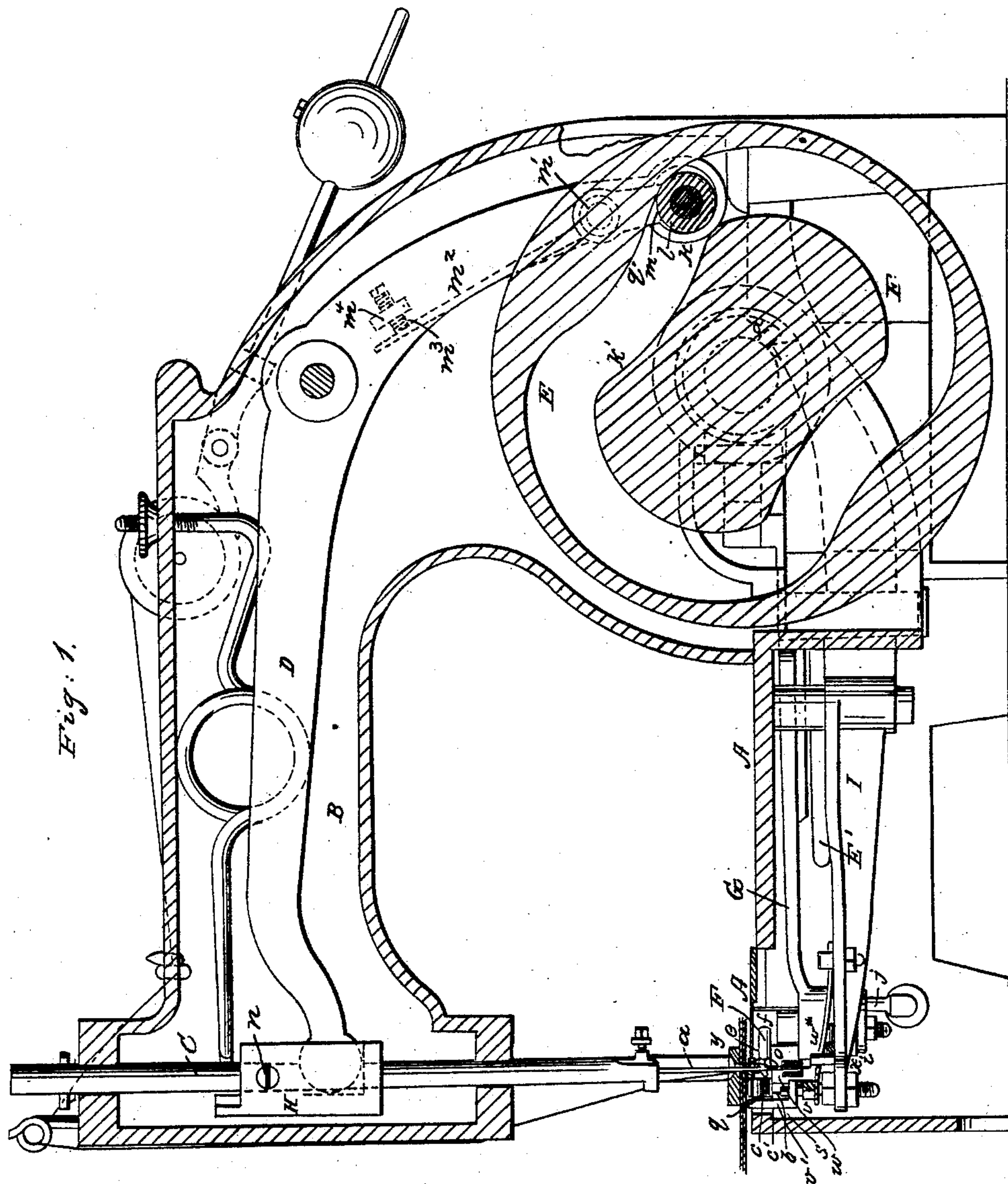


L. JENNINGS.  
Sewing Machine.

2 Sheets—Sheet 1.

No. 16,237.

Patented Dec. 16, 1856.

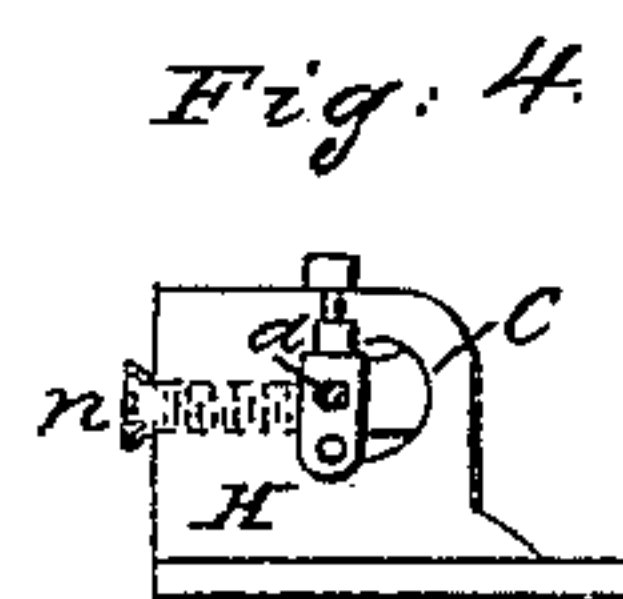
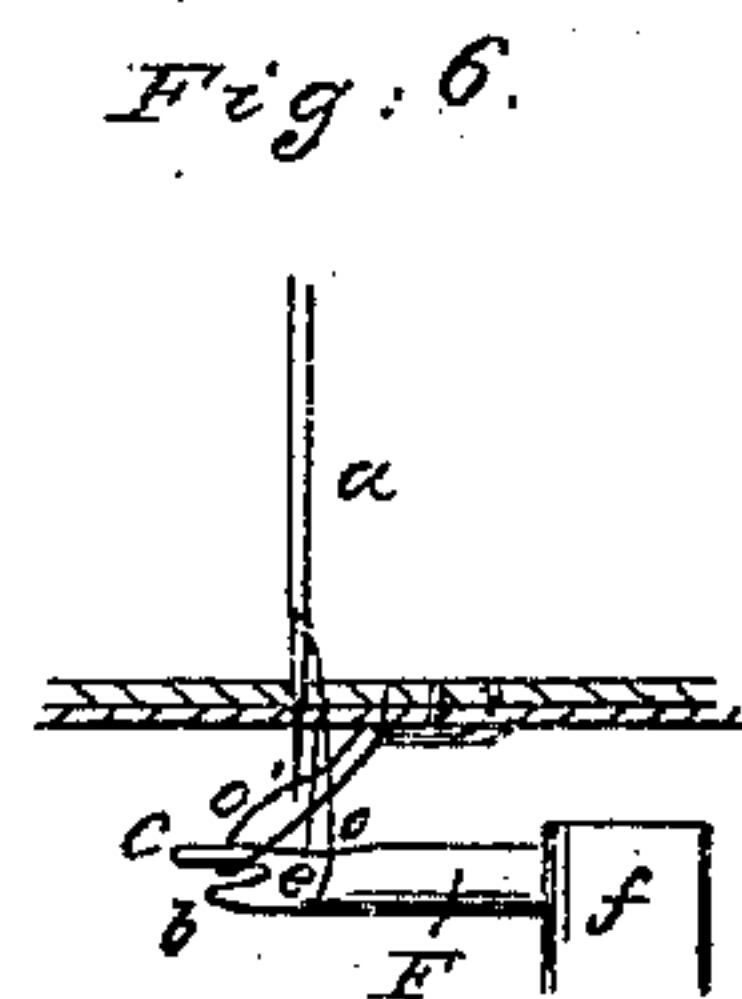
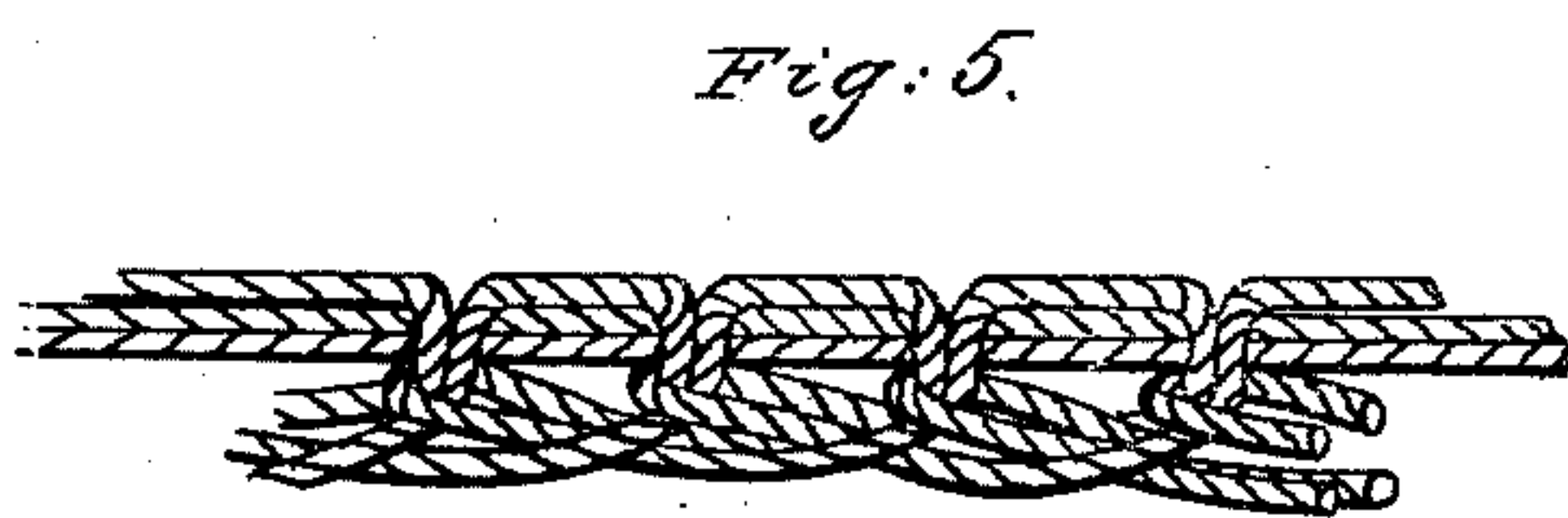
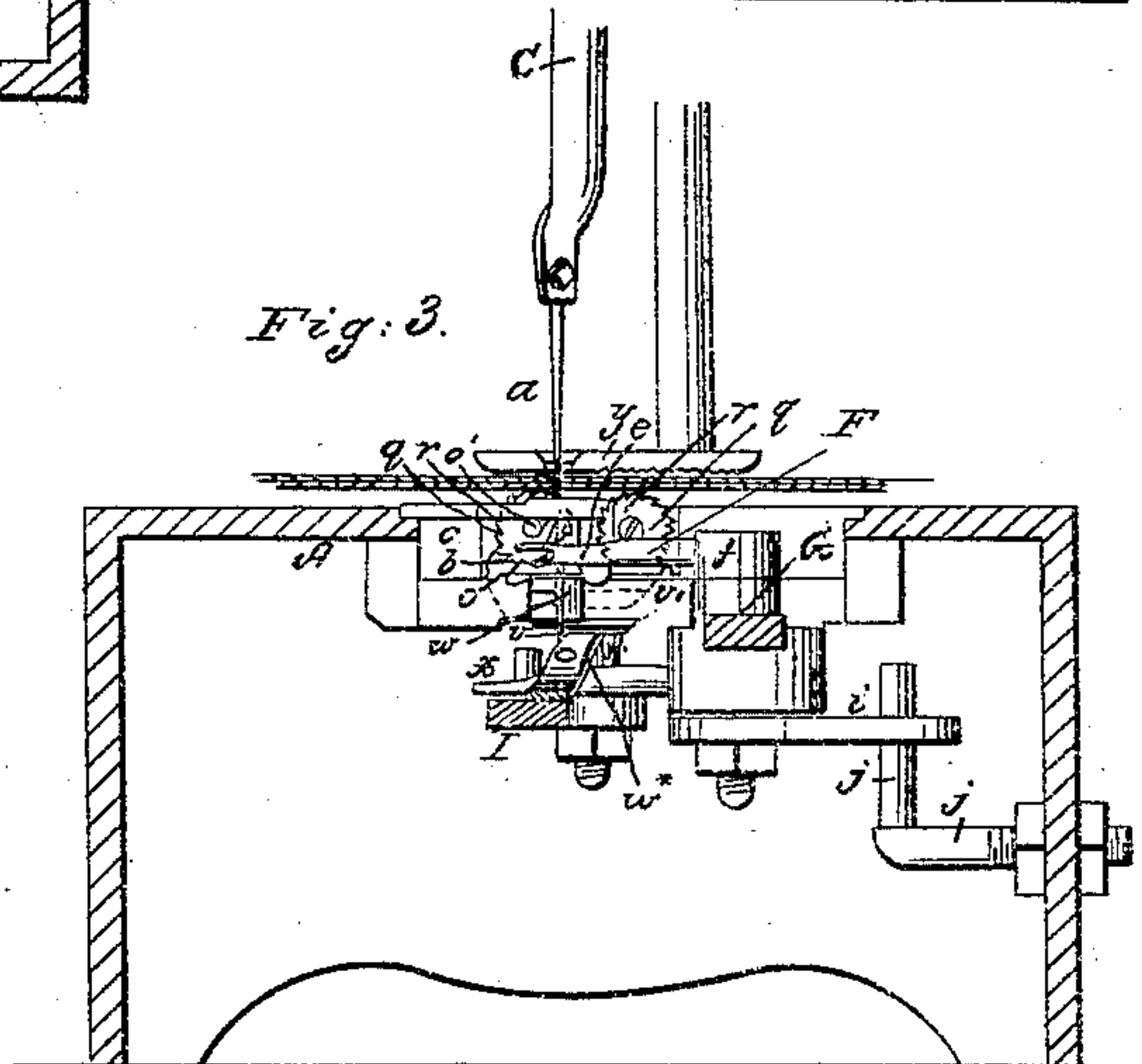
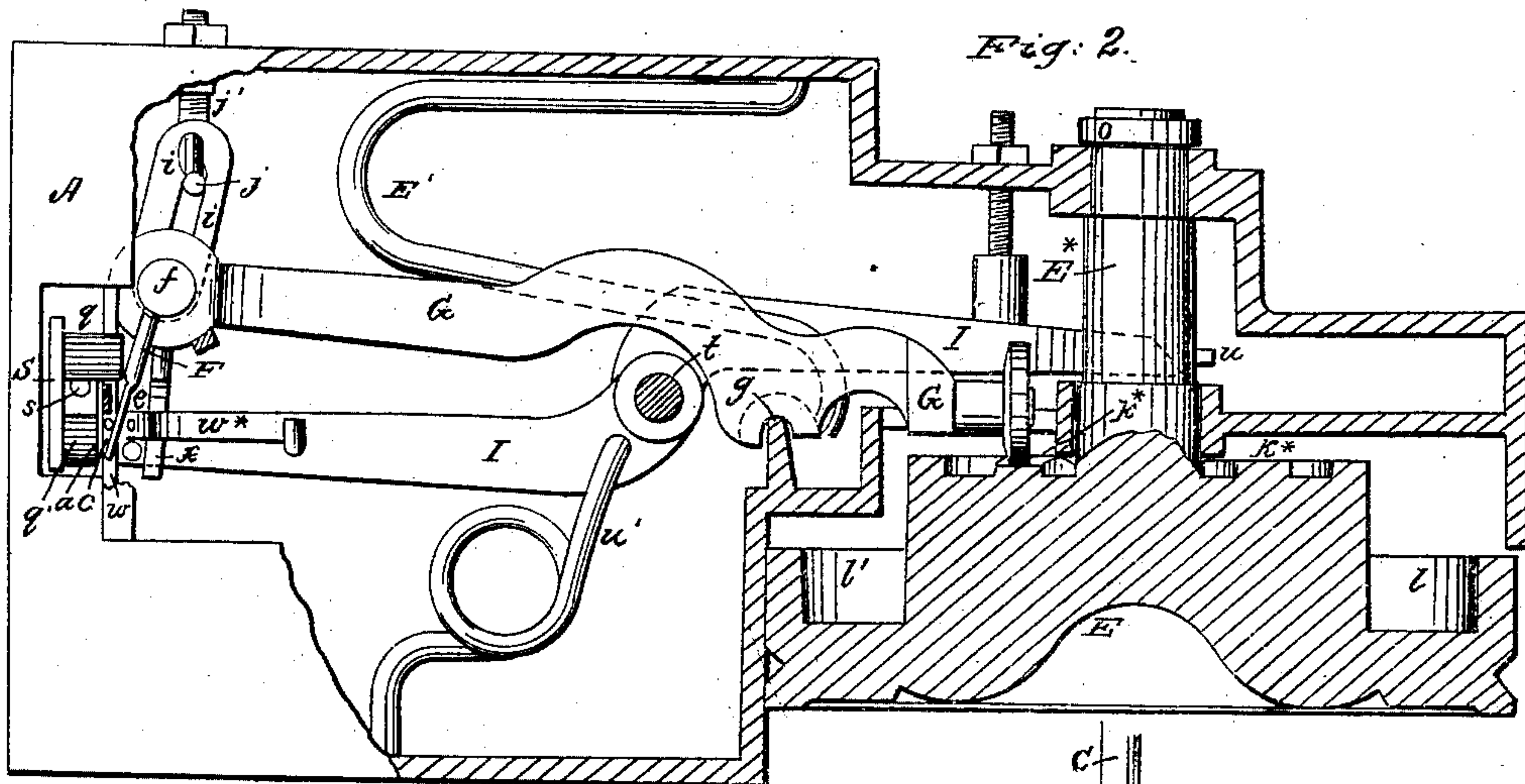


L. JENNINGS.  
Sewing Machine.

2 Sheets—Sheet 2.

No. 16,237.

Patented Dec. 16, 1856.





# UNITED STATES PATENT OFFICE.

LEWIS JENNINGS, OF NEW YORK, N. Y.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **16,237**, dated December 16, 1856.

*To all whom it may concern:*

Be it known that I, LEWIS JENNINGS, of the city, county, and State of New York, have invented certain new and useful 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 accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of the machine at right angles to the line of sewing, showing all of the working parts. Fig. 2 is a horizontal section of the same, showing all the working parts that are below the table A on which the work is performed. Fig. 3 is a vertical section at right angles to Fig. 1, showing a back view of the principal working parts of the machine. Fig. 4 is an inverted plan of the needle-bar and the stock of the bar. Fig. 5 is a side view of the stitching that is produced by the machine. Fig. 6 is a back view of what I call the "thumb and finger," by which the loops are formed.

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

The principal feature of this invention consists in the employment of certain devices, hereinafter termed the "thumb and finger," in combination with a needle, whereby a seam is produced which differs from the seam produced in all other sewing-machines known to me. This seam is produced from a single thread, and partakes of the character of what is known as the "chain stitch" seam, being formed by passing a series of loops through the cloth or other fabric and through each other in such a way as to be interlocked to prevent their being withdrawn; but instead of each being received within and locking its immediate predecessor and receiving within it and being locked by its immediate successor, like the chain-stitch seam, each passes through its immediate successor and receives within it the second one succeeding it, as is illustrated in Fig. 5 of the drawings, where the thread is shown in gray color and the cloth in red. In this way a seam is produced which does not rip to such an extent when a stitch or loop gives way as the chain-stitch seam before alluded to.

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 table or stand upon which the fabric is placed to be sewed, and B is a head-stock bolted thereto, for the purpose of carrying the upright needle-bar C, to which the needle *a* is attached. The needle-bar is operated by means of a lever, D, and a cam, E, in a substantially similar manner to the needle-bar of many other sewing-machines. The needle *a* is of the kind commonly employed, having an eye near its point. It has the same movement as the needles of most other sewing-machines, and it carries the thread through the fabric in a similar manner.

F is a small arm, of steel, working under the table A, and having formed at its extremity what I term the "thumb and finger" *b c*, by which, in connection with the needle, the loops are formed and interlocked. This thumb and finger resemble almost exactly in their profile form the thumb and forefinger of the human hand when parted and nearly straightened, the thumb being below the finger and slightly curved upward at its point, and the point of the finger being curved slightly downward, and in the connection of the thumb and finger with the arm the resemblance to the profile of the human hand and wrist is continued, the wrist *e* being reduced in size, all of which is shown in Figs. 3 and 6 and part in Fig. 1. The thumb and finger are made as thin as possible laterally, in order that they may pass easily between the needle and the thread that is protruded therewith through the fabric to form the loops passing close to the needle. The arm F is attached rigidly to the upper part of an upright pivot, *f*, which fits to turn freely in a bearing in the end of a horizontally-moving lever, G, which works on a fulcrum, *g*, on one side of the stand, and which is operated by the face, *k*\*, of the cam E, assisted by a spring, E'. To the lower part of the pivot *f* is attached rigidly an arm, *i*, which is slotted to receive a fixed pin, *j*, which is attached to the stand of the machine. The slot in the arm *i*, being for the greater portion of its length described from the fulcrum *g* of the lever G, serves, by working on the said fixed pin *j*, to keep the arm F in a fixed position relatively to the lever, the same as though it were rigidly attached thereto, during the greater portion of the lever's movement; but a sudden bend, *i*², in the slot (see Fig. 2) causes the pivot to turn in the lever at one point in the movement of the lat-



ter, and thus to give the thumb and finger a movement sidewise. In order that this movement may be made sooner or later, the pin  $j$  is attached to a screw,  $j'$ , which is adjustable nearer to or farther from the side of the stand A. The movement of the thumb and finger, while they occupy a fixed position relatively to the lever G, serves to carry them between the needle and thread, to extend the thread and form the loops, and their lateral movement, which takes place after the needle has been withdrawn from the cloth, carries the loops under the needle, to enable it to pass through them in its descending movements.  $w$  is a fixed guide for the needle below the thumb.

Having described the movements of the thumb and finger, I will proceed to describe the formation of the stitch.

At the time when the needle is passing through the fabric, which is represented in Figs. 3 and 6 in red outline, the thumb and finger are receding or moving toward the right hand of Fig. 3, completing their receding movement about the time the needle has completed its descent, and then remaining stationary while the needle rises to commence the formation of the loop, (see  $o$ , Fig. 3, where the thread is shown in blue color,) after which they advance into and through the loop  $o$  as far as their wrist  $e$ , in which condition they are shown in Fig. 3, the needle at the same time continuing to rise. Up to the time or nearly to the time of the needle leaving the cloth the arm F makes no movement, except its direct movement with the lever G, as the arc-formed portion of the slot  $i^2$  in the arm  $i$  continues on the pin; but as soon as the needle leaves the cloth or has risen so high as to be out of the way of the finger and thumb, the arm is caused to move laterally by the bend  $i^2$  in the slotted arm  $i$  passing the pin  $j$ , and thus to throw the finger and thumb under the needle before their advance terminates, and thereby to bring the loop  $o'$ , (see Fig. 6,) which was formed by a preceding operation of the needle and has been since retained on the finger  $c$  and carried through the last loop,  $o$ , that has been formed in the cloth by the last descent and ascent of the needle, into a position for the needle to pass through it in its next descent, the opening of this loop  $o'$  to receive the needle being effected by a slight retreating movement of the arm F before the needle has descended far enough to enter the fabric. When the point of the needle has passed through the fabric and entered into the loop  $o'$ , as shown in Fig. 6, the arm F moves laterally away from the line of the needle's motion to make way for its continued descent, and after this the continued retreating movement of the arm draws the thumb  $b$  out of the last-formed loop  $o$ , which is caught by the finger  $c$ , and immediately afterward the finger  $c$  is drawn out of the loop  $o'$ , which is drawn tight by the continued descent of the needle. During the succeeding ascent of the needle the thumb

and finger operate, as before described, to form a new loop, and in its next descent the needle passes through the loop  $o$ , which was last supposed to be left on the finger  $c$ .

In the above manner the needle is always caused to miss the last loop that has been carried through the cloth, by reason of the said loop being retained on the wrist  $e$ , and pass through the one preceding it, thus, with a proper feeding movement of the fabric in the direction of the arrow shown in Fig. 6, producing the stitching or seam represented in Fig. 5. In the formation of this seam by the above-described operation the first loop is caused to pass through the second loop and round the third, the second to pass through the third and round the fourth, the third to pass through the fourth and round the fifth, and so on, every one passing through its immediate successor and receiving within it the second one that succeeds it.

In order to give the needle a very accurate movement, I fit the end of the lever D, which is operated upon by the cam E, with two friction-rollers,  $k$  and  $l$ , the former of which is intended to run on a hub,  $k'$ , of the cam and works on a pivot permanently secured to the lever, and the latter is intended to run on the outer side of the groove  $l'$ , works on a pivot attached to the end of a short arm,  $m$ , which is attached to a pin or pivot,  $m'$ , fitted to the lever. To the same pin or pivot  $m'$  there is attached another arm,  $m^2$ , of spring-steel, which rests against a set-screw,  $m^3$ , which is held in a lug,  $m^4$ , on one side of the lever, and the elasticity of the arm serves to keep the roller  $l$  always close to the outside of the groove and the roller  $k$  to the inner side, notwithstanding any wearing away of the cam or the roller, and thus prevents any shaking or uncertain movement of the lever D.

The adjustment of the needle in proper relation to the thumb and finger is effected by fitting the needle-bar C to turn in a stock, H, with which the lever D connects, and by arranging the needle  $a$  eccentrically to the needle-bar C, as is shown in Fig. 4. By turning the needle-bar very slightly in its stock H the needle may be thrown backward or forward to make it work in close contact with or sufficiently near to the thumb and finger without being sprung by or bearing too hardly against them. The bar is secured in the stock in any desired position by means of a set-screw,  $n$ .

The feeding movement of the cloth is effected by two parallel rollers,  $q$   $q$ , grooved like ratchet-wheels, arranged to work in an opening in the table A on two pivots,  $r$   $r$ , which are secured in a small stand,  $s$ , attached to the end of a horizontally-moving lever, I, which is arranged below the table on a fulcrum,  $t$ , and operated by two studs,  $u$   $u$ , on the driving-shaft E\* of the machine, assisted by a spring,  $u'$ , in such a manner as to give the rollers a movement back and forth parallel with the table. These rollers only differ



materially in their action from the feed-rollers of some other sewing-machines in being locked and unlocked in moving forth and back by means of dogs *v' v'*, having a positive movement, instead of by a common spring pawl or pawls, as generally used, and thereby insuring a more certain operation. The two dogs *v' v'* are at the points of the two prongs of a strong forked piece, *v*, of metal, which is attached to a spring, *w\**, secured on the top of the feed-lever *I*. This forked piece is provided with a hole, which works on the stem of the stand *s* as on a guide. The tendency of the spring *w\** is to hold down the dogs out of gear with the rollers; but during the advance of the thumb and finger to form the loop a wedge, *x*, attached to the lever *G*, is caused by the movement of the said lever to pass between the lever *I* and the spring *w\** and lift it up, and thus to throw the dogs into gear with the rollers and lock them, and before the lever *G* moves back again and unlocks them the feeding movement of the lever *I*, which is sudden, takes place. The fabric is held in con-

tact with the rollers by a foot-piece, *y*, such as is commonly employed for a similar use, acted upon by a spring, *z*.

I do not claim as my invention the belaying double-looped stitch described in the patent of W. H. Johnson, dated March 7, 1854; but

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

1. The formation of the seam from a single thread by passing each loop, after it has passed through the cloth or material to be sewed, through its immediate successor and round the second one which succeeds it by means of a needle and a thumb and finger, operating substantially as herein described.

2. The combination of the arm *F*, to which the thumb and finger *b c* are attached, the pivot *f*, the slotted arm *i*, the fixed pin *j*, and the lever *G*, or its equivalent, substantially as and for the purpose herein set forth.

L. JENNINGS.

Witnesses:

WM. TUSCHE,

JAMES F. BUCKLE, Jr.