

W. G. BECKWITH.
Sewing-Machines.

No. 146,505.

Patented Jan. 20, 1874.

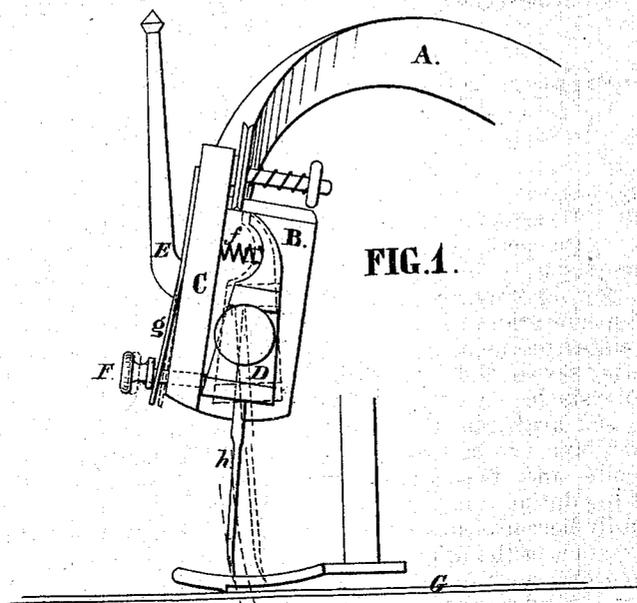


FIG. 1.

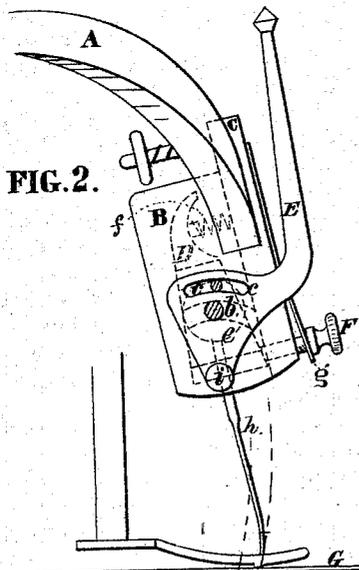


FIG. 2.

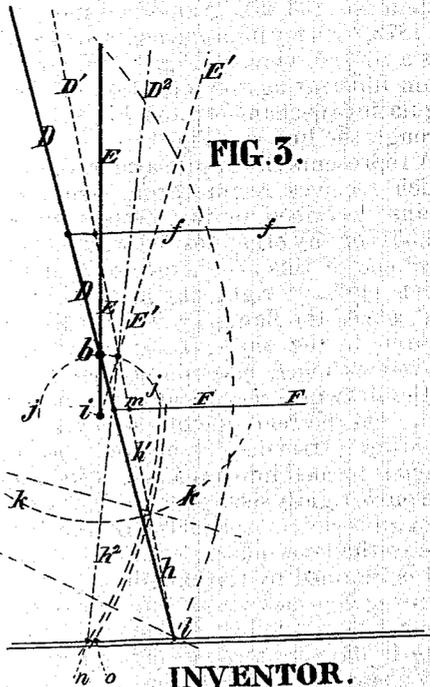


FIG. 3.

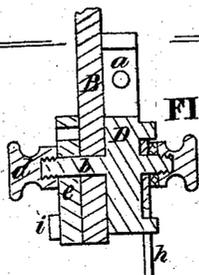


FIG. 4.

WITNESSES.

E. Johnson
C. Durcquin

INVENTOR.

W. G. Beckwith
per C. Durcquin
att'y

UNITED STATES PATENT OFFICE.

WILLIAM G. BECKWITH, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **146,505**, dated January 20, 1874; application filed December 31, 1873.

To all whom it may concern:

Be it known that I, WILLIAM GOULD BECKWITH, of Newark, in the county of Essex and State of New Jersey, have invented certain Improvements in Sewing-Machines, of which the following is a specification:

My invention relates to the mechanism for feeding the material sewed through sewing-machines; and consists in a novel construction, combination, and arrangement of parts, which have for their object to improve the operation of the machine, and afford an easy and accurate means of regulating the length of the stitch, as will be fully hereafter described.

Figure 1 is a side view of the upper extremity of the needle-arm of a sewing-machine similar to the one shown and described in Letters Patent No. 133,351, granted to me November 26, 1872, with my improvements attached. Fig. 2 is a reverse view of Fig. 1. Fig. 3 is a diagram illustrating the operation of the stitch-regulating mechanism; and Fig. 4 is a section through the line *y y*, Fig. 1.

A represents the needle-arm of the machine, which receives reciprocating motion by the means described in the Letters Patent No. 133,351, or any other desired way. On the forward end of this arm is formed a plate, B, on which plate, at right angles to its outer surface, is cast the flange C. The needle is rigidly secured to the block D, as described in the above-mentioned patent and shown in Fig. 4 of the drawings accompanying this specification. On the rear side of the plate B, and at its lower extremity, is pivoted the lever E, which is formed into a plate, *e*, at its lower end. The pin *b*, rigidly secured to the block D, passes through a slot in the plate B, and through a hole in the lever-plate *e*, in which it oscillates, and is retained by the thumb-screw *d*; and as the lever E is moved back and forth the block D receives a similar motion, the slot in the plate B allowing the play of the pin *b*. In the upper part of the lever-plate *e* is cut a slot, *c*, through which a screw passes, the purpose of which is to create friction on the lever E to retain it in any desired position. From the upper part of the block D projects a pin, *a*, which serves to keep the spring *f*, which presses against the rib or flange C on the plate B, in position. F is a screw passing through the

lower extremity of the flange C, and against which the spring *f* has a tendency to keep the bar D. *g* is a spring for creating friction on the screw F to prevent its turning accidentally. The cloth is held on the plate G by a presser-foot, which is niched or barbed, as shown.

The needle *h*, as in my former patents, is tangent to the arc described by the needle-arm, or by the point of the needle, and thus, in passing through the cloth, it carries it forward the length of the difference between the radius of the point of the needle and that of the point on the needle at which it (the needle) stops or ceases to be tangent to the arc described by the needle-arm, and, as the needle necessarily performs the same path in ascending as in descending, it would return the cloth from where it withdrew it; but this is obviated by slightly niching or roughening the presser-foot to prevent the return of the cloth, and the needle, in ascending, would cause the cloth to pucker in front of it if it (the needle) were rigidly fixed to the needle-arm; but as it is pivoted to the lever E through the block D, so as to be capable of receiving an oscillating motion in its ascent, the thread tightens, and, exerting a pull on the needle, slightly turns it, (the needle,) the spring readily yielding to the pull of the thread, and thus the needle is withdrawn from the cloth without puckering it or having any tendency to push it backward. As the needle commences to descend the thread slackens, and the spring forces the bar D out and moves the point of the needle some distance over the surface of the cloth preparatory to its descending for another stitch.

In my former patent, No. 133,351, the block D was pivoted directly to the plate B, and the stitch was regulated by the screw, which acted on the lower end of the block to throw the needle in or out over the cloth, and thus shorten or lengthen the stitch. This manner of regulating the stitch was imperfect, as the needle entered at a different point in the cloth-plate each time the stitch was altered, and thus its relation to the looper was changed, making the stitch irregular and uncertain. This invention obviates this difficulty, as, instead of changing the point of the needle, I shift the pivot on which it turns by means of the lever E, in which lever the pivot-pin *b* has its bear-

ings, as before described, and thus either shorten or lengthen the chord of the arc described by the needle-point, and changing the angle of the needle. This will be readily understood by referring to the diagram, Fig. 3, in which the heavy line D represents the needle and needle-block pivoted to the lever E at *b*, which lever is pivoted at *i* to the plate B. The dotted arc *j* represents the slot in the plate B, in which slot the pin pivoting the block D to the plate-lever plays back and forth as the lever is operated. The line F F represents the screw, against which the needle-block is kept by the spring represented by the line *f f*. The arc *k* shows the lowest point to which the needle descends in the cloth.

On desiring to shorten the stitch, the lever is drawn out, as shown by the dotted line E' E'. This will bring the needle, which turns on the screw F as a fulcrum, to the position of the broken and dotted lines D² *h*²; and, to bring the point of the needle to the point *l*, the screw must be retracted to the point *m*, when the needle will assume the position of the dotted

line D¹ *h*¹, and the stitch be shortened by the difference between the two points *n o*.

It will be observed that with this means of adjustment the stitch is shortened in the rear of the needle, while in my other patents, where the needle was thrown in by the screw, just the reverse was the case, the stitch being shortened from in front; and that, in this instance, the needle enters at the same point on each alteration.

I claim—

1. The stitch-regulating mechanism consisting of the lever E *e*, pivoted needle-block D, pin *b*, screw F, and spring *f*, constructed and operating substantially in the manner and for the purpose described.

2. The combination, with a stitch forming and holding mechanism, of a stitch-regulating mechanism, constructed and operating substantially as described and specified.

WILLIAM G. BECKWITH,

Witnesses:

E. H. JOHNSON,
C. C. DURGIN.