

(Model.)

J. BIGELOW.

MACHINE FOR SEWING AND TRIMMING FABRICS.

No. 244,532.

Patented July 19, 1881.

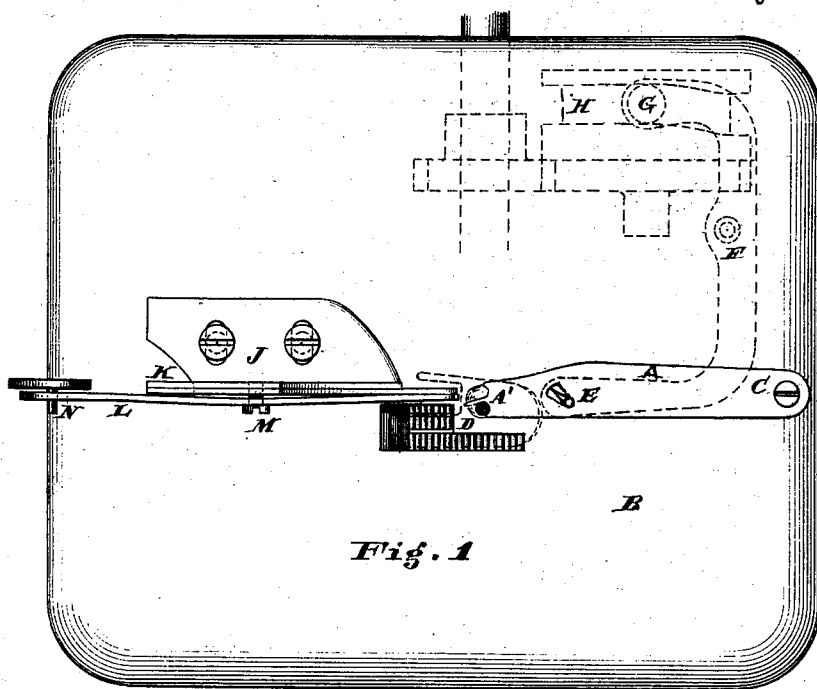


Fig. 1

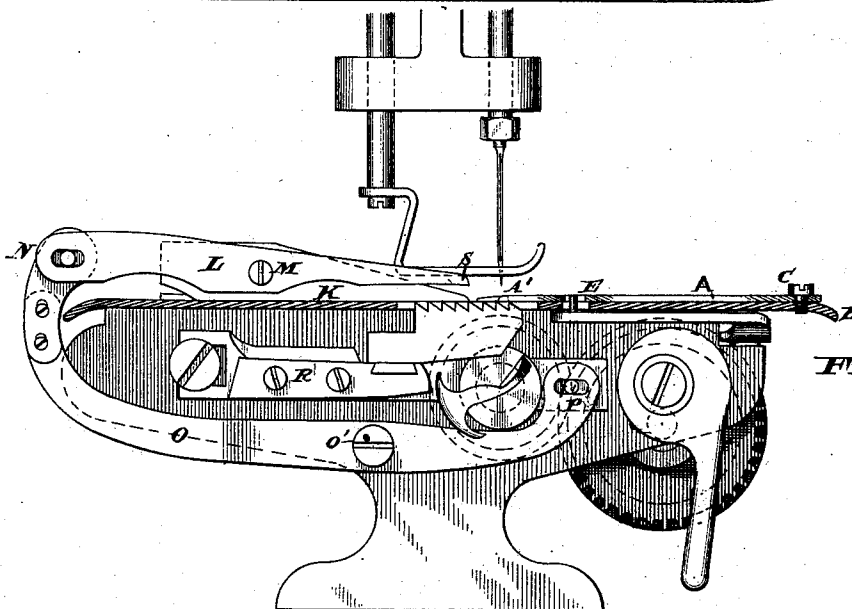


Fig. 2

Attests

George Cornell

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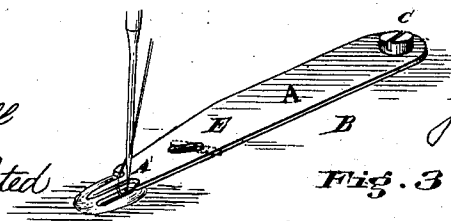


Fig. 3

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MACHINE FOR SEWING AND TRIMMING FABRICS.

SPECIFICATION forming part of Letters Patent No. 244,532, dated July 19, 1881.

Application filed August 19, 1880. (Model.)

To all whom it may concern:

Be it known that I, JOHN BIGELOW, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Zigzag or Irregular Stitch Sewing-Machines with Trimming Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

In the accompanying drawings similar letters of reference indicate like parts.

Figure 1 shows a top view of the cloth-plate of a sewing-machine, with a tongue and mechanism, in dotted lines, for vibrating the same across the needle-throat, a feed, and a trimming device. Fig. 2 is a side elevation in section, showing the sewing mechanism of needle, feed, presser-foot, and looping device, and the relation of the tongue to the same, also the trimming device and its actuating mechanism. Fig. 3 shows the vibrating tongue and its relation to the needle and the sewing-thread.

The object of the present invention is to produce a combination of mechanism adapted, among other things, to make the "cut hose" patented in Reissue Letters Patent No. 9,113, dated March 9, 1880. I produce the zigzag or irregular stitch by means of a tongue projecting over and behind the needle-hole in the work-plate of a sewing-machine, and adapted to be vibrated alternately with each stitch to the right and left of said hole or point of perforation of the needle. I find that by placing the feed at a sufficient distance from the needle hole or throat to allow the tongue to vibrate, and, further, by hollowing or raising the under side of the presser-foot beneath which the tongue works, so as to take off heavy pressure at that point on light stretchy material, like knit fabrics, the tongue, aided by the stitches already made on it, can sufficiently vibrate the material to have the needle stitch or perforate the same in a zigzag or irregular course with-

out in any way impeding the speed of the machine, while the work, notwithstanding the vibrations of the tongue, since the feed is without lateral motion, will be moved in a straight line to the trimming device, which can be stationary and attached to the work-plate of the machine.

For the purpose of illustration, I show my improvement applied to the sewing mechanism of the Willcox & Gibbs sewing-machine.

The tongue A', Figs. 1, 2, 3, is attached at the end of a thin plate, A, which is pivoted at C on the work-plate B of the machine and in advance of the sewing mechanism. The tongue A' projects beyond and behind the line of the needle and over the needle-throat in the work-plate. It is alternately vibrated to the right and left of the line of perforation of the needle and of the side of the needle-throat by means of a rocking lever pivoted at F to the frame of the machine and connected with the tongue-plate A at E and with a cam, H, at G.

The cam H is revolved by gearing at half the speed of the driving-shaft of the machine, and is so arranged as to act when the needle of the sewing-machine is raised out of and clear from the work. By acting at the point G on the lever pivoted at F, motion is conveyed to the pin at its opposite end, which engages the tongue-plate A in a slot, E, and vibrates the same, so that the tongue A' is placed alternately with each stitch on the right and left of the point of perforation of the needle.

Beneath the tongue is the ordinary needle-throat of the machine, around which, on its upper side, the plate is grooved and hollowed out, so that the thread shall not be held by contact of the parts.

The feed-dog works back of and on one, not both, sides of the needle. It has no lateral motion, and its inner side is at a much greater distance than usual in sewing-machines from the needle-throat, to allow for the vibrations of the tongue.

The outer side of the feed-dog teeth can be so shaped that the work, if very much drawn by the tongue to one side, will not be too tightly held by them.

The presser-foot is raised up slightly at its

edge, as by paring away the metal on its under side. When the tongue is arranged so as to work above the work-plate of the machine (of course it can be brought down upon a level with it, if desired) it has its lower surface higher than that part of it on which the feed acts, in order to relieve the tongue and fabric from too much pressure.

The tongue projects sufficiently behind the needle to have one or two stitches formed or in process of formation over it at a time, (according as the machine is single or double thread,) and thus, while the needle, feed, and presser-foot of the machine perform their usual functions, and the tongue alternately with each stitch, and when the feed is taking place, is moved to the right and left of the line of perforation of the needle, the work, especially light elastic material like knit fabric, is at the point of sewing moved with the tongue, and the result is a zigzag stitch or seam.

Since the feed is at one side of the tongue, I find that the material feeds best with the tongue slightly inclined toward the feed. Indeed a zigzag stitch can be produced without the tongue projecting behind the needle, in which case it is furnished with teeth to engage with the work sufficiently to move it to the right and left at the point of sewing.

In order to produce the cut hose patented as aforesaid at one operation of the machine, in combination with the vibrating tongue described, I add a trimming device, of which the following is the description:

The knife-plate J, Fig. 1, which supports the lower knife-blade, K, and on which the upper knife-blade is pivoted at M, is attached to the work-plate B of the machine by screws, and is so arranged as to be adjustable nearer to or away from the line of sewing, as may be desired. The cutting-point S of the shears is behind the end of the tongue A'.

A lever, O, is pivoted to the frame of the machine at O', Fig. 2. One end of the lever engages at P with a pin in the feed-block R, while the other end of said lever O has a pin which engages in a slot in the upper knife-blade at N. Now, since the feed-block R receives its motion from an eccentric on the end of the driving-shaft of the machine, it has an upward and downward, backward and forward, motion at the point P. It conveys, however, by means of the pin only its upward and downward movement to the knife-actuating lever O, because of a slot at its end P being in the direction of the said backward and forward motion.

In operation, when the needle has made its stitch and rises from the work, the feed-block R, bearing the feed-dog, rises for the feed to come into action. This raises the pin, and so the point P at the end of the knife-actuating lever O. Since the lever O is pivoted at O', a corresponding depression of its other end, N, is occasioned. This depression is conveyed by the pin N, which engages in a slot in the upper knife-blade, to said blade, which is pivoted

at M, and causes its cutting end at S to rise, and the shears thus to open. The feed having taken place and moved the material to be trimmed forward into the jaws of the shears, as the needle again penetrates the work the feed-block R drops previous to again moving into position for work. This depresses the point P of the lever O and raises the point N, which, in rising, raises the back of the upper knife-blade and depresses its end S. The cutting-edge of the upper knife-blade is thus brought against the cutting-edge of the lower blade and a shear-cut made in the material. The shears are thus open when the work is being fed forward, and, closing, cut when the feed is not in action.

Instead of being connected with the feed-block R, as described, the actuating knife-lever O can engage with and receive its motion directly from the feed-eccentric, which moves the feed-block.

It will thus readily be seen that by the vibrating tongue I get a zigzag or irregular stitch, and by the trimming device the surplus edge can be trimmed close to the sewing, as is described in said Reissue Letters Patent No. 9,113.

The foregoing specification and accompanying drawings show the vibrating tongue and a trimming device as applied to a Willcox & Gibbs sewing-machine; but by slight modifications of the mechanism, essentially the same, however, in principle, they can equally well be applied to any of the sewing-machines now in use, such as the Singer, Wheeler & Wilson, Grover & Baker, and others.

I am aware that revolving cutters, plunging knives, and other forms of cutting devices have been used; but for the purpose of illustration I have shown a shear trimming device, although, with proper mechanical changes, others might be used.

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

1. In combination with the stitch-forming mechanism of a sewing-machine, a feed, a needle, and a presser-foot, all without lateral motion, and a tongue vibrating across the path of the needle, substantially as described.

2. A piece pivoted in advance of the stitch-forming mechanism of a sewing-machine under the presser-foot, and provided with a tongue and mechanism for swinging said piece to carry its tongue across the line of perforation of the needle, substantially as shown and described.

3. The combination of a cam, H, swinging lever F, and swinging tongue-piece A, substantially as shown and described.

4. In combination with the stitch-forming mechanism of a sewing-machine, a shear trimming device having its parts actuated by the feeding mechanism, substantially as described.

5. The combination, with the work-plate of a sewing-machine, of a feed, a needle, and a

presser-foot, all without lateral motion, a stationary trimming device, and a tongue vibrating across the line of perforation of the needle, substantially as described.

- 5 6. A trimming device, in combination with a vibrating tongue and mechanism, substantially as described, for making a zigzag stitch, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN BIGELOW.

Witnesses:

L. DEANE,

G. W. BALLOCH.