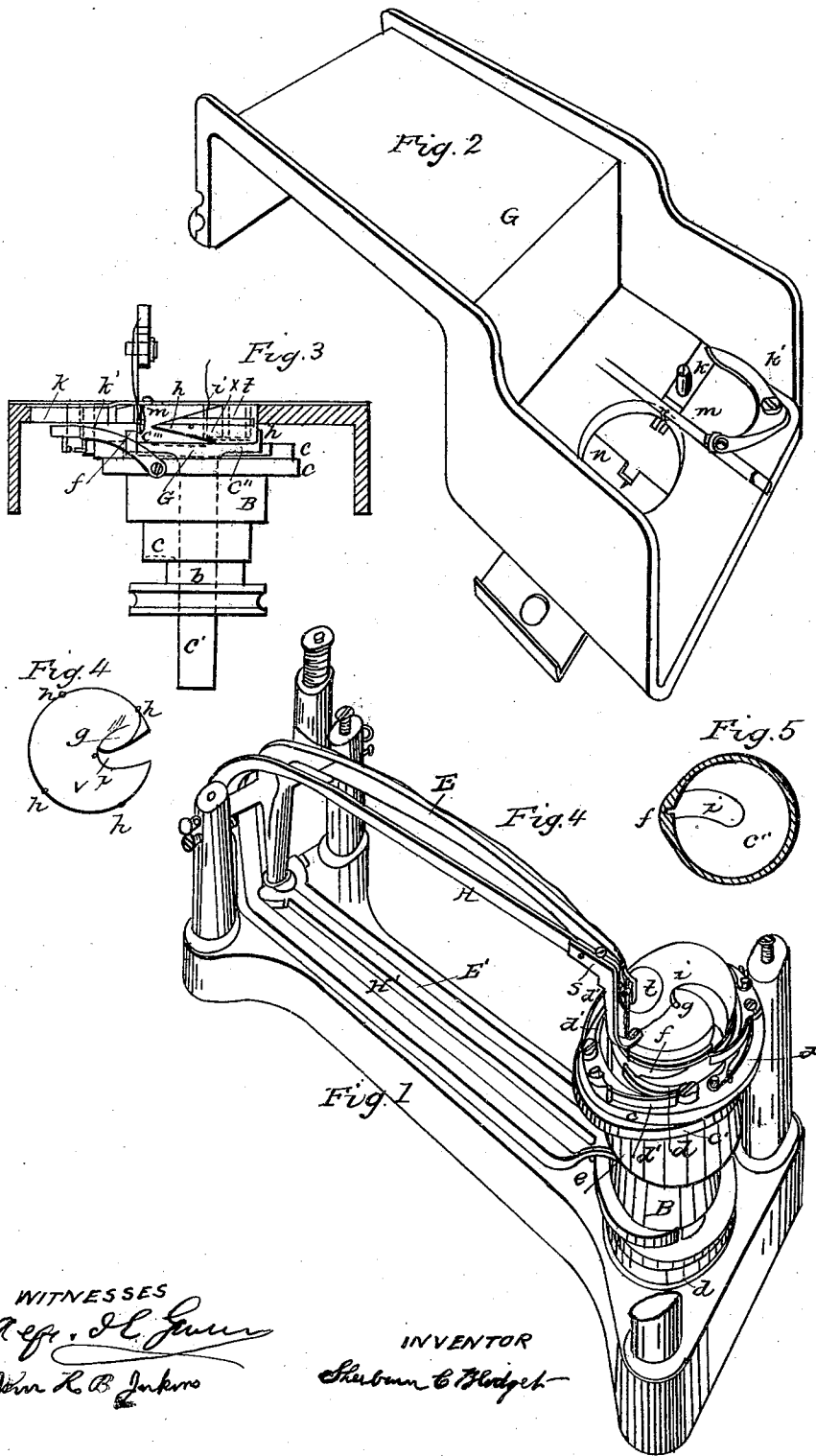


S. C. BLODGETT.

Sewing Machine.

No. 15,469.

Patented Aug. 5, 1856.



WITNESSES
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IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **15,469**, dated August 5, 1856; antedated February 5, 1856.

To all whom it may concern:

Be it known that I, SHERBURN C. BLODGETT, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement 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 drawings, making a part of this specification, in which—

Figure 1 is a perspective view of my improved machine with the top plate removed. Fig. 2 is a view of the top plate inverted. Fig. 3 is a vertical transverse section with the top plate in place. Fig. 4 is a view of the lower side of the shuttle. Fig. 5 is a top view of the cup or dish in which the shuttle rotates.

Similar letters refer to like parts.

In the accompanying drawings, B, Figs. 1 and 3, is a loose pulley in one solid piece, extending from the shuttle-cup to the bottom plate for driving all of the machinery, on the surface of which are wrought the following five parts, viz: *a*, the groove for the driving-band; *b*, the crank or eccentric inclosed by connecting-rods; *e*, cam for depressing the pressure-pad; *c* and *c'*, cams for moving the feed-slide. On the top of the loose pulley are four shuttle-drivers, *d d d*, and their springs *d' d' d'* clasp the shuttle.

On top of the shaft C C' is a shallow metallic dish or plate, which I call the "shuttle-cup" *e'' e'''*. A, Fig. 1, is bottom plate, with posts at its four corners.

E is the needle-arm, and E' the connecting-rod which works the needle-arm. H is the arm of the pressure-pad, and H' is the connecting-rod which works the pressure-pad arm. *s* is a joint in the pad-arm. *t* is a shuttle-spool. *i* is a hole for the delivery of the shuttle-thread. *f* is the cam on the shuttle-cup for moving the driving-pawls *d d* away from the shuttle. *g* is the crimping-notch. *h h h h* are holes in the shuttle, into which the driving-pawls fit. *x* is a groove around the shuttle, into which the guide-fingers *m* fit. *k* is a feed-slide. *k'* is a feed-lever. *m* is a guide-finger. *n n* is a sheet-metal cover. *t* is the shuttle-spool. *r* is the surface of the shuttle-cup *e'' e'''*, carved away to make room for the loop of thread to pass under the shuttle.

The relative situation of the needle and

shuttle and pressure-pad is similar to other approved sewing-machines. The needle has seven-eighths inch crank motion. The length of bed-plate is seven inches; height of bed-plate, three inches; length of needle-arm, five and one-quarter inches. The needle-arm has its fulcrum near the top of the back parts and extends its shank down two inches, united to it by a universal joint to the connecting-rod; diameter across the disk of the shuttle, one and one-half inches; thickness of the same, seven-sixteenths inch. The needle is placed at the left of shuttle, as in Figs 1 and 3. The cloth feeds from left to right.

The nature of my invention consists in the application of the following new parts or combinations: The shuttle is nearly in the form of a disk, notched in one edge to the center, forming a heel and point, as at *g*, Fig. 4, and is of such proportion that it more than fills the loop of the needle-thread, and thus the shuttle draws the last stitch tight, and also draws thread from the spool for the next stitch while the needle is up, after which the thread is slack around the shuttle and is held in the crimping-notch *g*, (which is deepest on the under side,) so as to draw it away from the needle-passage, and thus the shuttle cannot enter it a second time. By this mode of tightening the stitch the cloth feeds much easier, and is not drawn into the small slot intended for the outlet of the stitches before they are drawn tight into the cloth. The hole for the delivery of the shuttle-thread is one-sixteenth of an inch (more or less) from the center of the shuttle, and its direction is from the heel of the shuttle, in order to draw the thread from the shuttle when the needle is down. Otherwise this thread might be too tight in the seam. The shaft C C' stands firm in a socket in the bed-plate, solid, on the top of which is the shallow shuttle-cup *e'' e'''*, the top of which is two and three-eighths inches above the bed-plate, and fits around the shuttle as high as the driver-holes. On the edge at the left is a cam, *f*, for raising the drivers out of the holes in the shuttle as they pass the needle, and in the center of said cam is a hole for the passage of the needle. The driving-pawls *d d d d* are arranged around and operate in corresponding holes in the periphery of the shuttle, so as to act upon all parts of the shuttle alike,

in order to prevent wear of the shuttle against the sides of the cup, and they also keep the shuttle perfectly in place while one of the four pawls is successively removed from the shuttle by the cam *f*, in order to pass by the needle and return to its place, and thus the wear of the shuttle is prevented and it is securely retained in its bed or cup. As the arms of the pressure-pad are solid in one piece and held down by a cam, it is necessary to have a joint at *s* to unbutton when it is required to raise the pad high above the cloth. A semi-circular stud partly surrounds the needle-passage in the top-plate as high as the top of the toothed slide, and protects the needle from the effects of the backward motion of the said slide.

The guide-fingers *m* are placed on each side of the needle-passage, and correspond with and fit into the groove around the shuttle. They also serve to present a good loop to the needle, and also to hold back the same thread as the shuttle is passing through the loop. Otherwise the loop might go around with the shuttle. The shuttle fits loose in its cup, and also in the top plate quite up to the sheet-metal cover. The inside of the shuttle-cup *r* is carved away to make room for the thread to pass under the shuttle. The sheet-metal cover must be carved away in a similar manner and the shuttle filed away a little on top at *v*, to let the loop draw up without being pinched between the shuttle and cover.

The feed-slide is supported in the top plate at the left of the needle, and extends on each side of the needle three-eighths of an inch to the right, thus taking hold of the cloth where the stitches are in the seam, and has only a forward and backward motion by means of two cams, *e* and *e'*, one, *e'*, operating on the lever to move it forward, and *e* on the slide-pin to move it back, and thus the feed-plate requires no spring.

The mode of operation is as follows: The needle passes down through the cloth in the usual manner. Near the commencement of its upward motion it presents a loop of thread between the guide-fingers which the shuttle enters. As the needle performs its down and upward motion in the same time that the shuttle performs one revolution, the needle will be up at the same time the shuttle is half through the loop. When the needle is down the second time, the shuttle has finished its course through the loop, except that it retains the thread in the crimping-notch *g*, in order to

draw it away from the needle-passage, so that the shuttle may not take it a second time. The driving-pawls as they successively pass by the needle are removed out of its way by the cam *f*. The first loop is drawn up by the passage of the shuttle through the next succeeding loop. The pressure-pad is forced down upon the cloth during the upward motion of the needle and forward motion of the plate *K*, and is relaxed during the backward motion of the plate, leaving the cloth free to turn on the needle in sewing curves. The feed-slide, with its teeth against the cloth, is moved forward by the cam *e'* and the lever *k'* while the needle is out of the cloth and rising, and is immediately afterward returned by the cam *e* before the needle rises and while the pressure-pad is up.

The cam *f* may be limited to that portion of the circumference of the shuttle-cup opposite the needle, or it may continue its eccentricity to a greater or less extent around the shuttle-cup.

Having thus described my improvement, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The arrangement of the crimping-notch *g* in the shuttle for the purpose of drawing the slack thread from the needle, and thus preventing the loop of thread from being taken up a second time, as above described.

2. The employment of a series of pawls or drivers around the circumference of a discoidal or circular shuttle, whereby the driving-force is applied equally, or nearly so, through a considerable arc of the circumference of such shuttle.

3. The mode of driving the disk-shuttle at its circumference by means of a hollow pulley or sleeve, *B*, revolving around a fixed shaft or axis, *C*.

4. The mode of giving motion to the needle-arm and feed-rollers by direct connection with the same sleeve or revolving shaft to which the drivers are attached, which drive the disk-shuttle, substantially as above described.

5. The arrangement of the cams *e* and *e'* and lever *k'* for operating the slide *k*, in combination with the cam *e* and arm *H*, for operating the pressure-pad, in the manner and for the purpose as hereinbefore described.

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Witnesses:

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