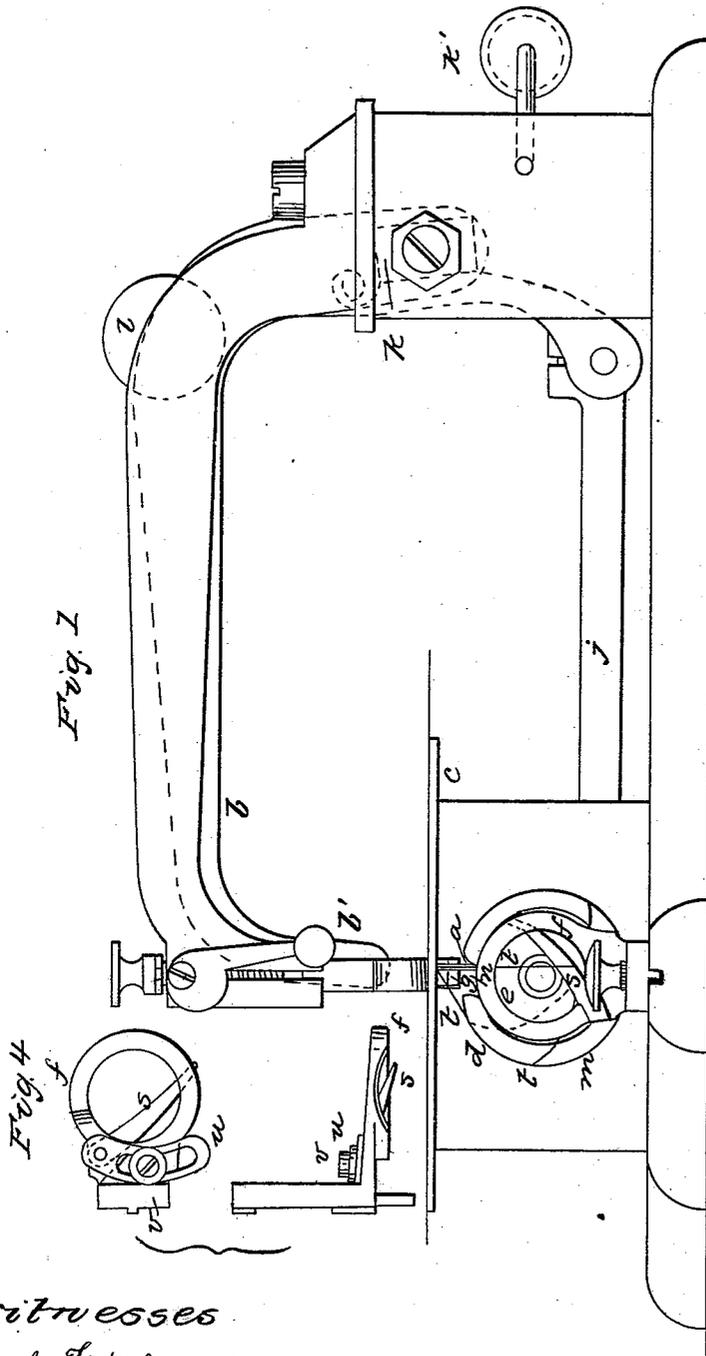


J. N. WILKINS.
Sewing Machine.

No. 36,591.

Patented Sept. 30, 1862.



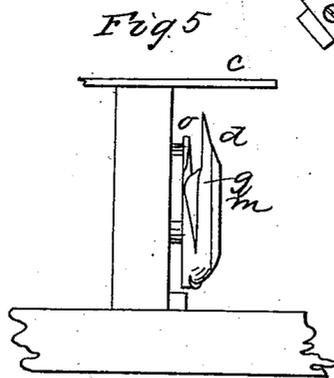
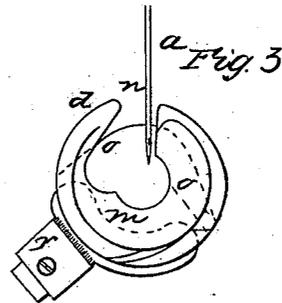
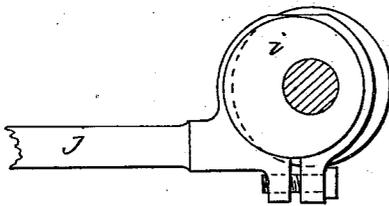
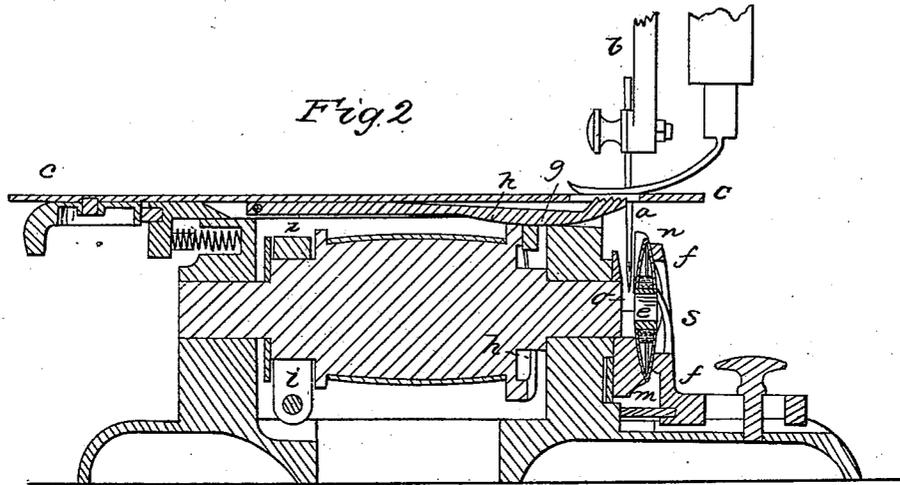
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UNITED STATES PATENT OFFICE.

JOHN N. WILKINS, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 36,591, dated September 30, 1862.

To all whom it may concern:

Be it known that I, JOHN N. WILKINS, of the city of Chicago, county of Cook, and State of Illinois, 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 thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of the machine; Fig. 2, a vertical section taken in the plane of the axis of the rotating hook; Fig. 3, a face view of the rotating hook and needle, with the spool and sustaining-ring and loop-controller removed, and with the loop-check as at present generally used; Fig. 4, separate views of a loop-controller made adjustable, and Fig. 5 a side view of the rotating hook.

The same letters indicate like parts in all the figures.

My said invention relates to an improvement in that class of sewing-machines in which a rotating hook is employed in combination with an eye-pointed needle and a spool, and in which the said hook enters between the needle and its thread to form the needle-thread loop and carry it around the spool which carries the other thread, thereby to interlock the two threads to form the stitch. In this class of machines various devices have been employed, called "checks," to hold back the loop, so that as the hook, in its rotation, again approaches the needle, to enter between it and its thread to form and carry around the next succeeding loop, it shall not again enter the loop which it has already carried around the spool. All of these devices operate simply to check or hold back the loop as the hook is moving toward the needle. The most efficient of the devices heretofore used for this purpose is a brush formed of bristles secured in the socket of an adjustable segment, the said brush being placed so near to the periphery of the rotating hook that the loop, after being carried around the spool, shall be caught and held back until the hook again enters between the needle and its thread, and then permit it to escape as the thread is pulled by the forming of the next succeeding loop.

The object of my invention is to avoid certain difficulties experienced in the use of loop-checks.

In the accompanying drawings, *a* represents

the needle on a vibrating needle-arm, *b*; *c*, the table on which the fabric to be sewed is placed; *d*, the rotating hook; *e*, the spool; *f*, the ring for holding the spool in the cavity made for it in the face of the disk of the rotating hook; *g*, the feeding-bar; *h*, the cam on the shaft of the rotating hook for operating the feeding-bar; *i*, the eccentric on the shaft of the rotating hook, which eccentric, by the eccentric-rod *j*, imparts the required rocking motion to the rock-shaft *k*, which carries the needle-arm. The needle-thread from a spool, *k'*, passes around a tension-wheel, *l*, to the eye of the needle. All these parts are represented as usually made in this class of machines.

It is necessary to an appreciation of my said improvements to understand clearly the operation of the rotating hook *d* of this class of machines. It is formed from a circular disk, *m*, on the end of a shaft. The front face of this disk is recessed to receive the spool *e*. A portion of the periphery is cut away, as at *n*, and forward of the point of the hook, and the back is cut away, as at *o*, for some distance back and forward of the point of the hook, to permit the needle to move down and up as the hook approaches and passes by it. The point of the hook passes so near to the needle as to insure its entrance between the needle and its thread. The needle begins to rise a little before the point of the hook reaches it, that the thread may bend outward from the needle, the better to insure the entrance of the point of the hook, and the needle then continues to rise as the hook continues to advance in its rotation, and when the needle is up out of the cloth the needle-thread is in the form of a loop extending from the cloth down in front of, under the hook, and up back of the hook to the cloth. The object, then, is to expand this loop and pass it over the spool *e*, which carries the other thread, the end of which other thread is also in the cloth, and thereby to interlock the two threads to form the stitch. As the hook continues its rotation the back portion, *p*, comes against what may be termed the "bottom" of the loop and enlarges it, drawing the thread from the previously-formed loop, and to get this loop around the spool *e* that part of the thread which lies in front of the hook passes between the recessed face of the disk *m* and the spool *e*, and that part of the loop which extends back of the hook is drawn onto

the periphery of the disk, which for some distance back of the hook is formed with an oblique groove, *g*, which at the rear end extends by a bevel to the front face of the disk. This, as the hook rotates, shifts that part of the loop which was behind to the front and casts or turns it over to the front of the spool *e*, the hook still remaining in the loop, which by this operation is simply turned over the spool *e* in the cavity of the disk *m*. This operation is not completed until the hook has performed a little more than half a revolution from the time it entered the loop. Now, the hook being still in the loop which has been carried around the spool *e*, as the point of the hook again approaches the needle to enter the next loop it is evident that it must first get out of the previously-formed loop; otherwise it would be in two loops at the same time and the thread would be broken. If the previously-formed loop be left loose, the point of the hook is just as likely to re-enter it as to get out of it. To prevent this, as before stated, various devices have been used to check or hold back the loop. The most effective of these various devices heretofore used is a check-brush (represented at *r*, Fig. 3) placed against the periphery of the hook, so as to hold back the loop as the hook rises and until it enters the next loop. By thus keeping the thread distended from the cloth down on both sides of the hook the point of the hook, in approaching the needle to enter the new loop, must go out of and thereby liberate the previously-formed loop. The feeding motion for the spacing of the stitches takes place while the needle is out of the cloth, and hence before the hook approaches the needle to enter a loop. Now, if long stitches are to be made, the feed motion carries the thread so far over that the point of the hook will pass outside of the previously-formed loop before entering the new loop, thus leaving the previously-formed loop on the hook, as well as the new one. To prevent this it has been the practice to use a guard, which is a rounded bar attached to the under side of the table, (not represented,) and which holds back the needle-thread when the feed motion advances the cloth, so that the hook, in approaching the needle to enter a new loop, must pass out of the previously-formed loop.

By my improvement I am enabled to dispense with the brush or other device for checking the loop, and to avoid all the disadvantages consequent upon the use of such a device, including the guard for holding back the loop to insure its liberation before the next is formed. Instead of such check or hold-back, I employ what I denominate a "thread-controller." It is a mere finger, *s*, projecting from the inner periphery of the ring *f*, which holds the spool *e* in the cavity of the disk *m*. This finger is curved on its inner face, and is placed in front of the front face of the spool *e*, and its upper end extends to or slightly beyond the edge or periphery of the spool and just within the periphery of the recess in the

face of the disk *m*. The under edge of this loop-controller is curved, as represented. As the loop of the needle-thread is carried around from the back to the front and cast over by the hook that portion which was on the inside in the beginning, and which is cast off or turned over the outer face of the spool *e*, passes over the outer face of the finger *s*, and is drawn down over its outer face by the continued rotation of the hook until it extends down from the cloth to the lower part of the fingers, about at right angles with the surface of the table, and thence around the edge of the periphery of the disk *m* to the cloth, as represented by the red line *t*, forming an angle a little less than a right angle. At this time the hook is within about one-sixteenth of its revolution from the needle, and as the hook progresses toward the needle, the loop being held by the loop-controller in front, and drawn, as it were, from the face of the disk, causes that part of the loop which extended back of the hook to slip over the edge of the periphery of the disk *m* to the front, and hence to escape from the hook, as represented by the dotted red line, which indicates its position just before the point of the hook enters the next loop. By reason of this it becomes impossible for the hook to remain within the old loop when it enters the new loop. If, instead of this, the loop be held back by any means whatever at or near the periphery of the disk, as it is by the check-brush *r*, (represented in Fig. 3,) the pull on the loop has no tendency to cause it to escape from the back to the front of the hook, and hence the result secured by my said invention cannot be obtained. To secure this result the loop must be so controlled that the pull on the thread shall cause that portion of it which extends back of the hook to slip over the edge or periphery to the front. The moment this escape takes place the hook is entirely out of the old loop, which remains under the control of the finger *s* until after the hook has entered the next loop, which it can do without danger of any conflict with the loop thus liberated; and as the new loop is drawn out by the continued rotation of the hook the old loop is drawn up toward and through the cloth, the inclination of the under edge of the controller being such as to permit its free escape upward.

The advantages of my said improvements are, first, a better control of the loop, so as to insure the hook getting out of one loop before it enters a new one; second, greater simplicity and cost of construction, the single finger *s* being substituted for the brush or other check and its appendages and its means of adjustment; third, dispensing with the necessity of adjustment as the brush wears out, and when a change is made from very coarse to very fine or from very fine to very coarse thread, and avoiding the necessity of renewing the parts, as my improved controller will last as long as any other part of the machine; fourth, dispensing with a loop-guard under

the table, the objection to the use of which was its tendency to resist the feed motion.

Besides the advantages above enumerated, there are others important to name. With the thread-checks as heretofore used the ring *f*, which holds the spool *e* in its recess in the face of the disk *m*, requires to be accurately adjusted, so as to leave just sufficient room for the passage of the thread of the loop both sides of the spool *e*, requiring the ring to be readjusted whenever the size of the thread is materially changed; but my improved method of controlling the loop admits of considerable play of the spool between the ring *f* and the disk, so that such adjustment becomes unimportant. Another advantage is that the space for the passage of the spool-thread between the two disks constituting the spool may be made considerably wider than the thickness of the thread without danger of the loop getting into it. As the thread-controller extends over the edge of the spool, when the loop is cast off or turned over the spool by the hook it must pass over the controller, and this effectually prevents it from getting to the edge of the spool.

I have contemplated making the loop-controller adjustable in the ring *f* by attaching its lower end to one end of a sector, *v*, and securing the sector to the ring *f* by a screw, *v*, passing through an elongated slot in the sector, as represented separately in Fig. 4. If desired, it may be made adjustable in any other suitable manner; but if placed at the proper angle, as represented in the figures first above described, it will need no adjustment.

The distinguishing character of my said in-

vention is that by the use of the controller the loop is discharged, or rather drawn off, from the hook before its point enters the next loop, while by all other methods before known the loop is simply distended or drawn back from the cloth and extending on each side of the hook, so that in passing toward the needle to enter the next loop it shall pass out of the previously-formed loop. The former methods so held the loop as to permit the hook to pass out of it, while by my method the old loop is cast off before the hook enters the new loop, and it is this difference in the mode of operation which I desire to secure by Letters Patent.

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

1. In combination with the rotating hook, eye-pointed needle, and spool, the thread-controller having the mode of operation substantially such as herein described, to receive the loop and hold it from the face of the spool, so that that portion of the loop which extends back of the hook shall be drawn over the edge to the front thereof before the point of the hook reaches the needle to enter the next loop, the said controller being so inclined as to permit the loop freely to escape from it as it is drawn up in forming the next loop, as set forth.

2. Extending the said loop-controller to or near the edge of the spool, substantially as described, to prevent the loop from getting into the spool, as set forth.

JOHN N. WILKINS.

Witnesses:

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C. T. BOGNE.