J. L. FOLLETT.

SEWING-MACHINE.

No. 175,602. Patented April 4, 1876.

Fig. 1.

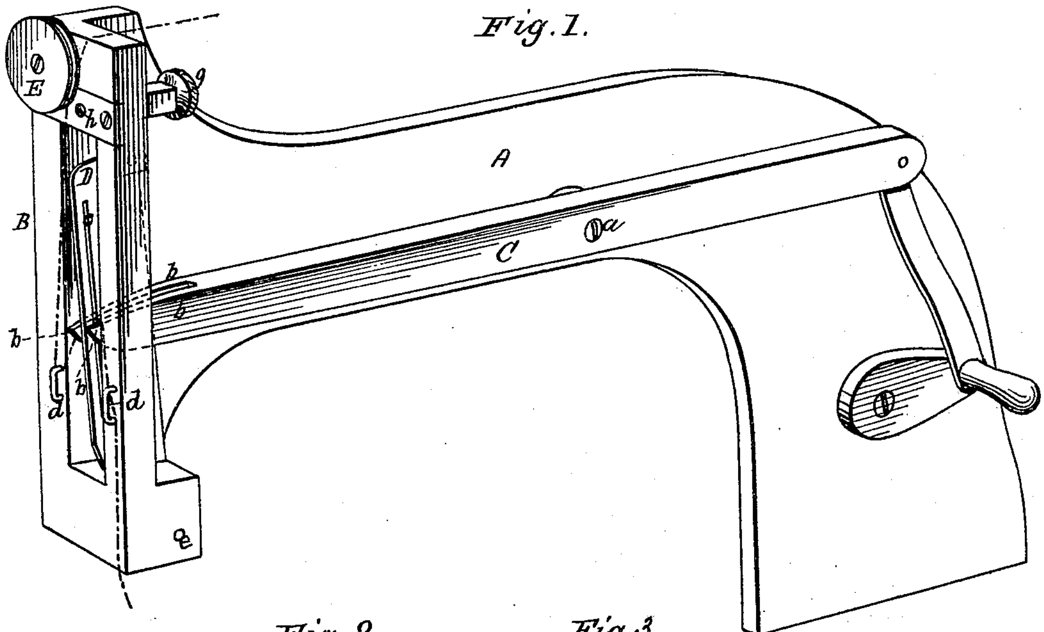


Fig. 2.

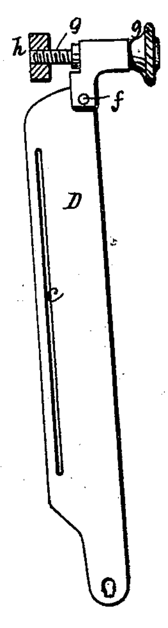
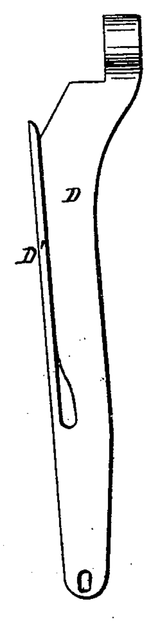


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOSEPH L. FOLLETT, OF NEW YORK, N. Y.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **175,602**, dated April 4, 1876; application filed September 6, 1875.

To all whom it may concern:

Be it known that I, JOSEPH L. FOLLETT, of the city, county, and State of New York, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification:

This invention relates to that portion of a sewing-machine termed the "take-up." The take-up which I have shown in the accompanying drawing in illustration of my invention, comprises a vibrating or rising and falling arm or lever, which is designed in its upward movement to carry with it the needle-thread to a proper distance; and a guide or cast-off, which stands at about right angles to the take-up lever, and is provided with a longitudinal slot, through which the thread passes across the path of movement of the take-up lever. The lever in one direction passes by the thread; in the other direction it lifts the thread to an extent determined by the angle of inclination of the slot, with respect to the lever, for which purpose I prefer to make the slotted guide or cast-off adjustable to any desired angle of inclination with respect to said lever.

One characteristic of this take-up is that the moving member is not continuously connected with the thread, but only intermittently engages it.

Another characteristic is that the thread, while thus intermittently engaging with and operated by the moving member, is held in proper position across the path of movement of the moving member by a guide, which not only maintains it in engagement with the moving member for the proper length of time, but at the expiration of that time compels the disengagement of the two.

A third characteristic is that the guide is adjustable to vary, according to circumstances, the length of time during which the thread and moving member may remain engaged.

I shall now refer to the accompanying drawing in order to explain the manner in which my invention is or may be carried into effect.

Figure 1 is a perspective view of only so much of a sewing-machine as is needed for purposes of this explanation.

A is the goose-neck, and B the head, of a sewing-machine of ordinary or suitable construction. C is the moving member of the take-up, and D is the guide and cast-off, hereinbefore referred to. The latter is shown detached in Fig. 2. The moving member C here consists of a vibratory lever, hung on a pivot, *a*, and put in motion by any suitable means, preferably by crank or eccentric on the driving-shaft of the sewing-machine. During the upward movement of its front end it takes up the thread, and its movements are so timed with relation to those of the needle that it acts to take up the thread after the needle leaves the cloth and before it enters it again. The outer extremity of the lever is forked or pronged, the two forks, *b b*, straddling the guide and cast-off D. This guide and cast-off is, in the present instance, a plate provided with a longitudinal thread-slot, *c*, and arranged in an upright, or substantially upright, position in the head B. The forked end *b b*, when the lever is about horizontal, extends forward a little beyond the slot. The length of this portion of the lever, to state it more particularly, is such that the end *b b* will, when below the point where the thread normally stretches across the path of movement of the lever, extend just far enough beyond the slot to insure its engagement with the thread when it rises. The plate D may be stationary. In that case it is placed with the slot *c* at such an inclination that the end *b b*, when rising, and in so doing moving in the arc of a circle having its center at *a*, will pass to the rear of the slot at point where it is desired to cast off the thread. The thread is now entirely disengaged from the moving member, and is free to yield to the action of the sewing mechanism, which draws it taut in usual way, thus bringing it back to its normal position. The prongs *b b* are beveled and rounded off on the under side, so that when they descend they pass by the thread without difficulty. The normal position of the thread is assured by guides, eyes, or hooks *d*, through which, and the intermediate slot *c*, it passes, in the manner shown. The path of the thread is indicated by dotted lines. E represents a tension device, from which the thread passes through *d*, *c*, and *d*, and thence to the needle.

As hereinbefore intimated, I prefer to make

the guide and cast-off adjustable. For this purpose the plate D is hung at its lower end on a pin, *e*, which passes through a hole in the plate, somewhat elongated, in order to give the play to the plate requisite for varying adjustments.

The top of the plate is jointed at *f* to a block containing a set or thumb screw, *g*, which screws into a socket, *h*, on the head B. By turning this screw in one direction or the other the plate will be correspondingly tilted on its pivot *e*, thus varying the angle of inclination of the slot *c* with respect to the lever, and so causing the latter to remain a correspondingly longer or shorter time in engagement with the thread. By this means, without altering the tension on the upper thread in lock-stitch machines, the lower or upper thread may be placed in any position in the stitch, and this while the machine is in motion. In other words, the lower thread may be made to appear on the top of the goods or the upper thread below, simply by varying, in the manner described, the amount drawn up by the take-up. I have described one form of take-up embodying my invention. The same may be varied, however, without departure from the principle of my invention. The take-up may be arranged on any suitable or convenient portion of the sewing-machine head. Its arrangement and details of construction will, of course, vary according to the requirements of the various classes of machines to which it may be applied. In the special organization shown there may be one fork or prong operating between the two plates, or in conjunction with one plate only, if desired. I prefer, however, the arrangement represented in the drawing. The construction of the plate also may be varied. The slot may extend through to the top of the plate, and the two fingers which form the sides of the slot may be brought together, so near as to exercise a slight yielding pressure on the thread. Or, instead of this, I can employ an arrangement such as indicated in Fig. 3, where the plate is split for a portion of its length, and the two edges touch, or nearly touch, one another, the outer strip D′ being elastic, so that the thread, after having been drawn up and cast off, will descend only as it is pulled down by the action of the stitch-forming mechanism, the pressure exerted to hold it being a light and yielding pressure, just sufficient to prevent it from flying around loosely. The construction of this member of the take-up may be otherwise varied, so long as it possesses the essential characteristics hereinbefore recited. A spring or other device may be used to keep the slack taut when cast off, but I prefer to have the thread entirely free for the use of any device below the machine, so that the thread may act unretarded.

A take-up, operating on the plan above described, is particularly desirable in all sewing-machines, as it enables the machines now in use to be run by a regular motion of the shuttle and needle, and, in fact, all its parts, by taking up the slack thread after the needle leaves the goods being sewed, and before the needle enters the same again, doing away with irregular motions, saving friction, power, wear, and noise, and admitting of a greater degree of speed being attained, and a much easier operation of the machine generally.

Having described my invention and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is as follows:

1. A sewing-machine take-up, the moving member of which is arranged and operates to alternately engage and leave the thread, substantially in the manner set forth.

2. In a take-up, the combination, with the moving member, of a guide and cast-off, which maintains the thread and the moving member engaged during the proper length of time, and at the expiration of that time compels their disengagement, substantially as set forth.

3. The vibratory take-up-lever, in combination with the slotted guide and cast-off plate, or its equivalent, substantially as set forth.

4. The combination, with the vibratory take-up lever, of the guide and cast-off plate, adjustable substantially as described, to disengage the thread from said lever earlier or later in the movement of the latter, as described.

5. The pronged or forked take-up lever, in combination with the slotted guide and cast-off plate, or its specified equivalent, substantially as described.

6. The combination of the take-up lever, the guide and cast-off, and guide eyes or hooks, through which and the intermediate guide and cast-off the thread passes, and is extended across the path of the take-up lever, substantially as set forth.

In testimony whereof I have hereunto signed my name this 26th day of August, A. D. 1875.

JOSEPH L. FOLLETT.

Witnesses:
CHAS. V. WARE,
JAMES A. PURDY.