J. L. FOLLETT.

Take-up Mechanism for Sewing-Machines.

No. 196,210. Patented Oct. 16, 1877.

Fig. 1.

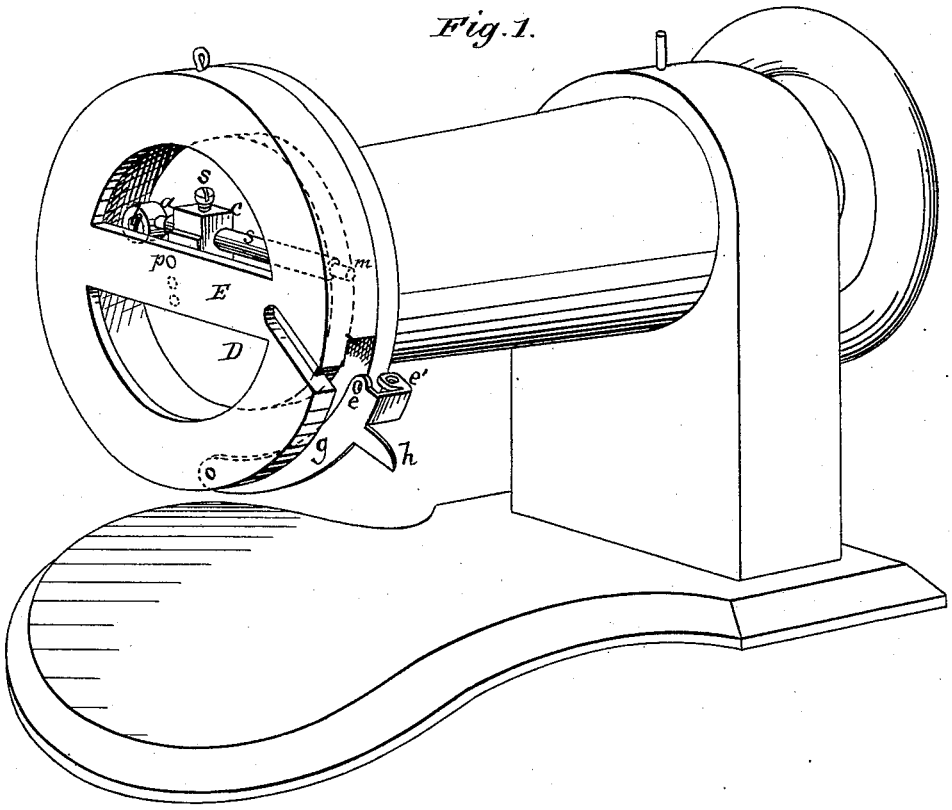
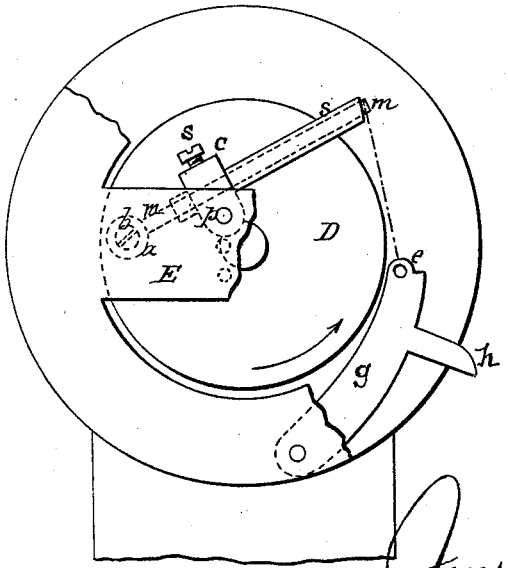


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN TAKE-UP MECHANISMS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **196,210**, dated October 16, 1877; application filed May 18, 1877.

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 Take-Up for Sewing-Machines, of which the following is a specification:

It has been my endeavor to substitute in sewing-machines, as much as practically possible, rotary for reciprocating or oscillatory movement, which, for many reasons not necessary here to enumerate, but particularly in rapid sewing, are more or less objectionable.

I would, however, mention that accuracy of functions is most important in such parts of the sewing-machine which control the thread during the intervals of the formation of stitches, for it is upon it that the uniformity of the stitch itself, the free delivery of the thread to the needle, its non-interference with other moving parts of the machine, its non-liability to tangle and kink, the perfection with which it is drawn up through and laid into the material, mostly depend. Many thread-controlling devices have been devised, which are more or less liable to objections which are due, in a great measure, if not entirely, to the intermittent action of the reciprocating parts upon the thread.

The object of my invention is to dispense, in thread-controlling devices, with such reciprocating parts, and to devise a take-up which shall operate upon the needle-thread by mechanism located above the cloth-plate, and which, during the operation of the sewing-machine, shall continuously revolve in one direction.

In the accompanying drawings I have shown one mode by which I have accomplished the object of my invention.

In said drawings, Figure 1 represents, in perspective view, the device embodying the principle of my said invention.

It will be understood in said drawings all the parts of a sewing-machine not necessary to illustrate the operation of my invention are omitted. The goose-neck and the cloth-plate are indicated only to show the relative position of the take-up device with respect to other parts, the location of which in the frame shown is well-known.

Fig. 2 is an elevation of the device A with the front plate of the head partly removed, showing more particularly the function of the take-up.

The take-up shown in said figure consists of a bar or lever having upon a crank or disk at one of its ends a fixed bearing, and a bearing intermediate between the two ends eccentrically movable with respect to said fixed bearings, so that the free end of said bar shall partake of a combined rotary, translatory, and a periodically accelerated movement, as hereinafter described.

Referring to the drawings, D is a disk rigidly mounted upon a revolving shaft in the head of a sewing-machine, and to which may be attached the needle carrier or bar. To a fixed portion, E, of the sewing-machine frame, facing the revolving disk D, is attached, by means of the pin *p*, a crank, *c*, carrying a sleeve, *s*, through which passes a bar, or rod, or lever, *m*, one end of which is secured in a head, *a*, which in its turn is attached, by a pin, *b*, to the disk D, while the other end is free.

The bar *m*, it will be seen, is capable of rotation upon the pin *b*, and is carried by and with the disk in its revolutions.

The crank *c*, together with the sleeve *s*, is also capable of revolution around its center pin *p*, which pin is, however, eccentric with respect to the axis of revolution of the disk. Rotary motion is imparted to said crank and sleeve by means of the rod or bar *m*, which unites the said crank or loose bearing with the fixed bearing upon the disk.

The crank, it will be seen, is thus bound to follow the disk in its revolutions, and, being eccentrically arranged with respect to the disk, it will describe a circle which is eccentric to that described by the pin *b*—that is to say, the crank *c* will, during its revolution, approach and recede from the circle described by the pin or the fixed bearing *b*.

Now, inasmuch as to the crank *c* is secured the sleeve *s*, while to the head *a* is secured the bar *m*, it follows that, in the revolutions of the disk and the crank referred to, the crank, with its sleeve, will, during the revolution of the disk D, approach and recede from the head *a*, and thus cause the bar *m* to slide back and forth, allowing it periodically and during each revolution of the disk, to protrude from

the sleeve at the free end thereof. The movement of the bar within the sleeve is regulated by the position of the crank-pin *p*, the bearing of which is or may be made adjustable.

In the drawings the fixed support E is shown provided with three pin-holes, as one means of adjusting the sleeve-carrying crank, with respect to the fixed bearing *b* of the bar and the center of the disk.

Another and equivalent mode of regulating the action of the sleeve, as a means of stripping the thread from off the bar *m*, consists of the adjustment of the position of the crank *c* on the sleeve—*i. e.*, by shortening or lengthening the acting part of the sleeve, whereby its stripping action is more or less retarded or accelerated. To this effect I simply make the crank movable upon the sleeve, and secure its position thereto by means of a set-screw, *s*. The sleeve is of such length as to just clear the needle-thread, which is held transversely to the path of said sleeve, by means of eyes *e e'* suitably provided.

Another function due to the arrangement described is the accelerated course which is imparted to the free end of the bar or lever during part of its revolution. It will be seen that, as the crank approaches or recedes from the fixed bearing of the bar, the course of the free end of the bar will in the same ratio be accelerated or retarded. This I take advantage of to take up the thread with accelerated speed when necessary.

The operation of this device is as follows: When the sewing mechanism is about to form a stitch with its own or a second thread and the new loop to be drawn up, then the needle-thread above the cloth-plate, which is to be operated upon by the take-up, is held across the path of the take-up bar by means of the eyes *e e'*. At this point the bar projects from the sleeve sufficiently to engage the thread and to carry it along in its upward movement until the thread is entirely drawn up, at which point it is shed from off the bar by the withdrawal of the bar within the sleeve, the latter pushing the thread off the bar. During this upward movement the bar has an accelerated movement and its motion is gradually retarded after the thread is cast off. By this means I am enabled to diminish the size of the head of the machine, and an amount of thread can be taken up which by any other device would require much more room, and endanger the accuracy of the work by the attendant centrifugal force and friction.

To conveniently thread the eyes *e e'* I have arranged them in a swinging lever, *g*, which is brought out of its housing or head of the sewing-machine by pressing upon the horn or projection *h*.

The take-up being located above the cloth-plate, and moving substantially in a plane parallel and near that of the needle, the thread is drawn perpendicularly from the needle, and without passing through and around and over numerous bearings. The eye *e* is, moreover, in the direction of the pull or of the thread of the needle, and therefore offers no resistance to the action of the take-up. This arrangement of a continuously-revolving take-up above the cloth-plate, I deem of great advantage as contrasted with a revolving take-up which is put on the lower shaft under the cloth-plate and on the side of the sewing mechanism. The latter necessitates numerous thread-bearings, which create much friction, and render liability of rupture of the thread by the rapid action of the take-up extremely frequent.

The length of the thread, its elasticity, which differs with sizes and quality of threads, offer additional obstacles to the setting of the stitches correctly and tightly.

My take-up may be used in single or double thread machines, and either in the head or on the right of the machine.

From the above description it will be obvious that my invention is susceptible of many modifications without departure from the principle thereof, and I do not, therefore, confine myself to any details of construction; but

What I do claim, and desire to secure by Letters Patent, is as follows:

1. A take-up device, in combination with mechanism for imparting to said device a combined rotary, translatory, and periodically accelerated movement, as described.

2. A take-up consisting of a bar having upon a disk or crank at one of its ends a fixed bearing, and a bearing intermediate between the two ends eccentrically movable with respect to said fixed bearing.

3. The combination with and arrangement within the head of a sewing-machine of a rotary take-up, substantially as and for the purposes set forth.

In testimony whereof I have hereunto signed my name this 5th day of May, A. D. 1877.

JOSEPH L. FOLLETT.

Witnesses:

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WM. H. MACFADDEN.