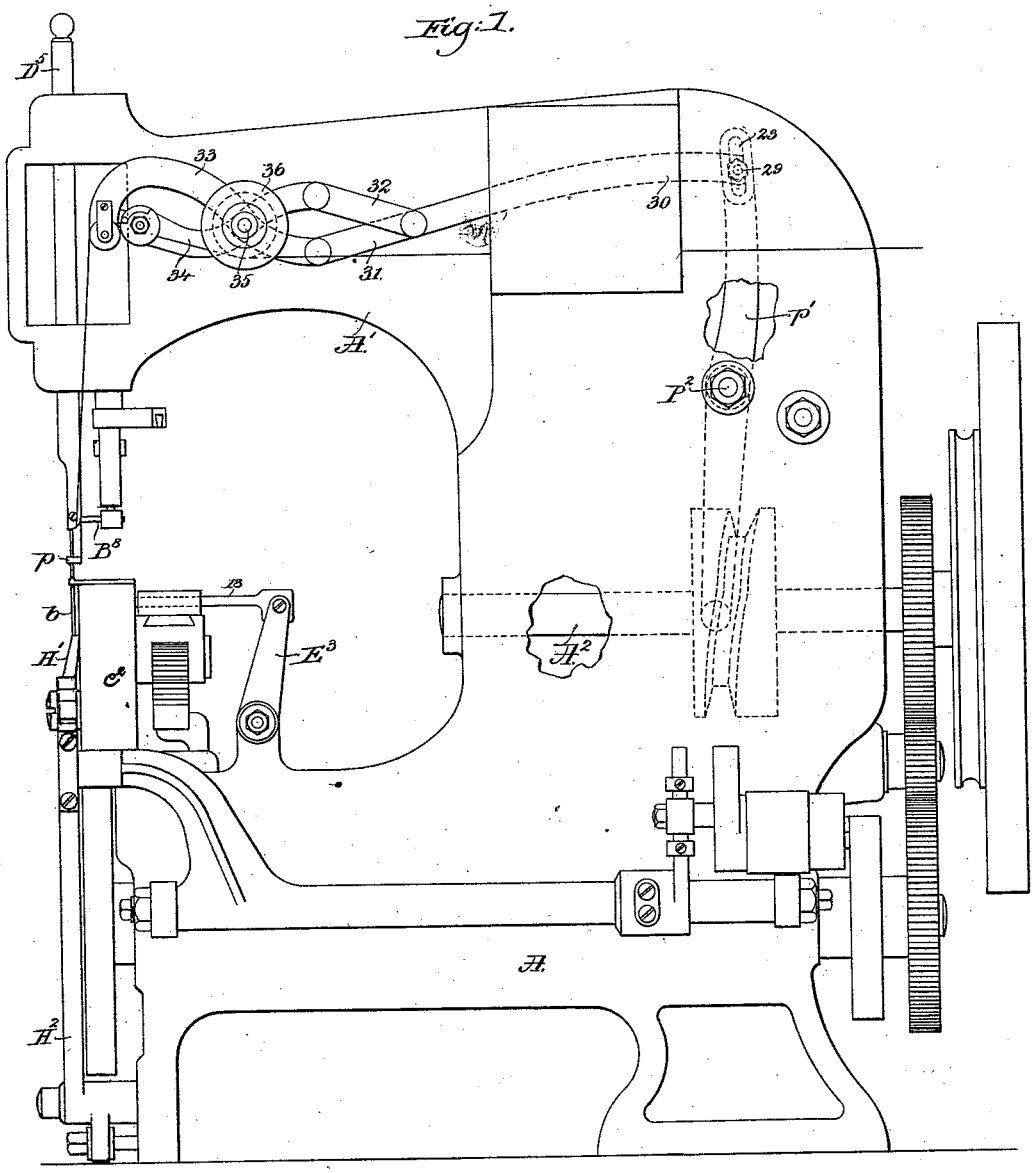
(No Model.) 2 Sheets—Sheet 1.

G. A. STILES.

TAKE-UP DEVICE FOR SEWING MACHINES.

No. 423,457. Patented Mar. 18, 1890.

Fig. 1.



Witnesses.
Frederick L. Emery
Fred. S. Greenleaf

Inventor.
George A. Stiles,
by Crosby & Gregory Attys.

(No Model.) 2 Sheets—Sheet 2.

G. A. STILES.

TAKE-UP DEVICE FOR SEWING MACHINES.

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Fig: 6.

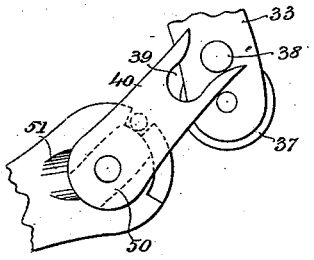


Fig: 4.

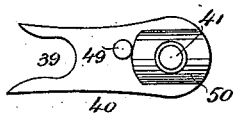


Fig: 5

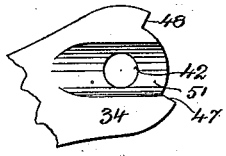


Fig: 2.

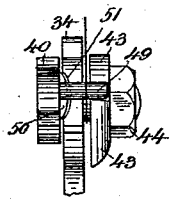


Fig: 3.

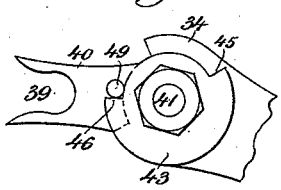


Fig: 7.

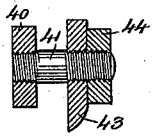


Fig: 8.

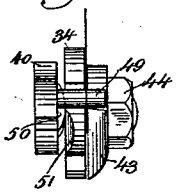


Fig: 9.

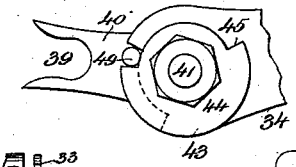


Fig: 10.

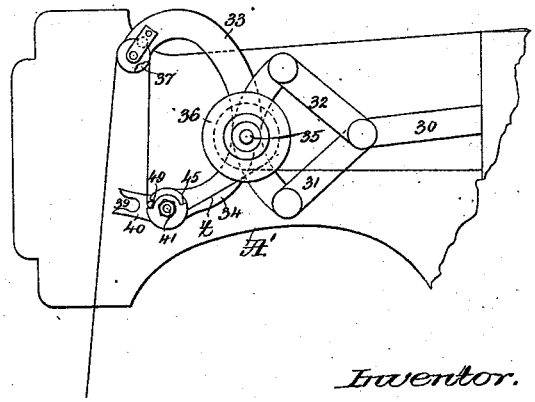
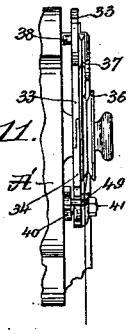


Fig: 11.



Witnesses.
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Fred. L. Emerson

Inventor.
George A. Stiles,
by Serrell & Gregory
Attys.

UNITED STATES PATENT OFFICE.

GEORGE A. STILES, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE NATIONAL SEWING MACHINE COMPANY, OF NEW HAVEN, CONNECTICUT.

TAKE-UP DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 423,457, dated March 18, 1890.

Original application filed September 10, 1888, Serial No. 285,031. Divided and this application filed June 6, 1889. Serial No. 313,291. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. STILES, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Thread-Controlling Mechanism for Sewing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to improve the thread controlling and tension mechanism, more especially in that class of machines employing a hooked needle to pull a loop of thread through the material and present it to a shuttle to be entered thereby.

In my improved machine the moving take-up has a thread clamping and gripping mechanism which is carried by and forms part of it, the said gripping mechanism being operated positively to grip the thread as soon as the shuttle passes through the loop of needle-thread, so that as the take-up continues to rise the thread is drawn upon positively between the gripping device and the work.

I am aware that prior to my invention a take-up composed of oppositely-moving members has been employed in both dry and in wax thread sewing-machines, and that with such a take-up in wax-thread machines a clamp has been employed to clamp the thread before drawing up the stitch; but in such wax-thread machine the clamp has been moved or actuated solely by the strain of the thread upon it between the take-up and the ball or spool supplying the thread. By mounting the thread-clamp upon a member of the take-up, so as to move in unison with it, it is possible to pull upon the thread when setting the stitch closer to the material.

My invention consists in the combination, with a take-up for the needle-thread, of a clamping device for the said needle-thread and means for moving the said clamping device toward and from the said take-up, substantially as will be described.

Other features of my invention will be described, and pointed out in the claims at the end of this specification.

Figure 1 is a right-hand side elevation of a sewing-machine embodying this invention, the presser-foot being shown as lifted, the slack-thread-controlling device and clamp being in position to give up the needle-thread. Figs. 2 to 9, inclusive, show details of the take-up and thread-clamping mechanism in different positions. Fig. 10 shows the take-up and clamp in a position different from that in Fig. 1; and Fig. 11 is a left-hand end view of the parts shown in Fig. 10, the frame-work being broken out.

The frame-work A and overhanging arm A′ are and may be of usual shape. The frame-work has bearings for the main shaft A^2, which shaft may be as the shaft designated by like letter in my application, Serial No. 285,031, filed September 10, 1888, it in practice having a series of cams such as shown and described in my said application, to which reference may be had.

The stitch-forming mechanism, including the rocker-post H^2, needle-bar H′, sliding therein, the hooked needle *b*, thread-guide B^8, awl-bar D^5, the race C^2, the loop-holder bar 18, and the lever E^3, is and may be supposed to be all as in my said application Serial No. 285,031.

The main shaft A^2 has fast on it, among other devices, a cam-hub P, (shown in dotted lines, Fig. 1,) provided at its periphery with a groove, in which is entered a roller or other stud carried at the lower end of a lever P′, pivoted at P^2 and slotted at its upper end, as at 23, the said slot receiving in it in an adjustable manner a bolt, as 29, which is also extended through a connecting-rod, as 30, which in turn is jointed by like links 31 32, respectively, to the arms 33 and 34 of the take-up, the said arms being pivoted on a stud 35, made fast in the frame-work of the machine, the said stud also constituting the support for the tension device 36, which is and may be a wheel of usual construction. The arm 33 of the take-up has at its end a roll 37, (see Figs. 6 and 10,) and near its end, at its rear side, a pin 38, the said pin, when the two arms 33 and 34 are made to approach each other respectively from opposite directions, by moving the connecting-rod 30 backward or to the right in Fig. 1, entering a notch, as 39, in a short forked arm 40, fast to

a stud 41, which is extended loosely through a hole 42 in the arm 34, the said stud 41, after passing through arm 34, having screwed upon it a thread-clamp, shown as plate 43, which is held in place by the check-nut 44. The thread-clamp 43 is shown as provided with two shoulders 45 46, and the arm 34 has two shoulders 47 48. The forked arm 40 has a pin 49, and about the base of the stud 41 the said arm has a cam projection 50, whereas the inner side of the arm 34 next the forked arm has a recess, as 51, (see Fig. 5,) into which may enter the said cam projection at a certain position of the parts—as, for instance, as in the position Fig. 1—at which time it is desired that the thread *t* be free, in order that the shuttle used in the machine while passing through the loop of thread just previously drawn down by the needle *b* may act upon the thread to draw from the usual wax-cup or thread-supply a small amount of thread, which it is necessary to supply to enable the shuttle to get through the loop, and at the same time aid in correctly setting the stitch, the roll 37 of the take-up being at such time in its lowest position. The arm 40 and plate 43 are such a distance apart on the stud 41 that it has a slight longitudinal movement in the hole 42 of the arm 34, as shown in Figs. 2 and 8. By reason of this movement the friction produced on the thread by the arm 34 and plate 43 is so slight when the arm 40 is in the position shown in Figs. 1 and 2 that the thread may be drawn forward without difficulty. The roll 37 remains in its lowest position and the thread unclamped until the shuttle passes through the loop, and then the connecting-rod 30 is moved forward, as to the left in Fig. 1, which acts to separate the arms 33 and 34 or to move the roller 37 away from the clamp 43, the pin 38 at such time acting to turn the forked arm 40 in such direction as to remove the cam 50 from and so as to stand across the space 51, such movement of the arm 40 resulting in a movement of it, the stud, and the plate 43 bodily to the left, (see Fig. 8,) thereby causing the thread-clamp 43 to be moved toward the face of the arm 34, so as to firmly clamp the thread between said clamp and arm and positively prevent any thread from being taken from the thread-tension or wax cup, (not shown,) while the arm 33, having the roll 37, acts on the needle-thread to take up the shuttle-loop and finish the stitch.

It will be noticed herein that the thread-clamp 43 is located between the tension and the take-up roll, and as a result thereof the amount of thread which is subject to hard strain when setting the stitch is less in quantity than were the thread-clamp stationary on the machine and did not move with the arms of the take-up. The shorter the bight of thread acted upon by the take-up the less the spring or stretching of the thread. The shoulders 45 46 and 47 48, co-operating with the pin 48, are to limit the extent of vibration of the arm 40.

The presser-foot is marked *p*.

I claim—

1. In a wax-thread sewing-machine, a take-up composed of two arms, as 33 34, having a common pivot, a roll, as 37, carried by the arm 33, a thread-clamp, as 43, carried loosely by the said arm 34 and movable toward and from the same, means, substantially as described, to move the said arms simultaneously in opposite directions, and a pin 38 and a forked arm, the said arms 34 and 40 having, respectively, a recess and a cam projection to effect the clamping of the needle-thread when the take-up roll acts to set the stitch and the unclamping of the said thread while the shuttle is being passed through the loop of thread formed by the needle, substantially as described.

2. The combination, with a take-up for the needle-thread, comprising two arms having a common pivot and movable toward and from each other, and a clamping device for the needle-thread carried by one of said arms, the take-up actuating the clamping device intermittingly, of means for moving said clamping device and take-up toward and from each other simultaneously to effect such intermittent action, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEO. A. STILES.

Witnesses:

BERNICE J. NOYES,

FREDERICK L. EMERY.