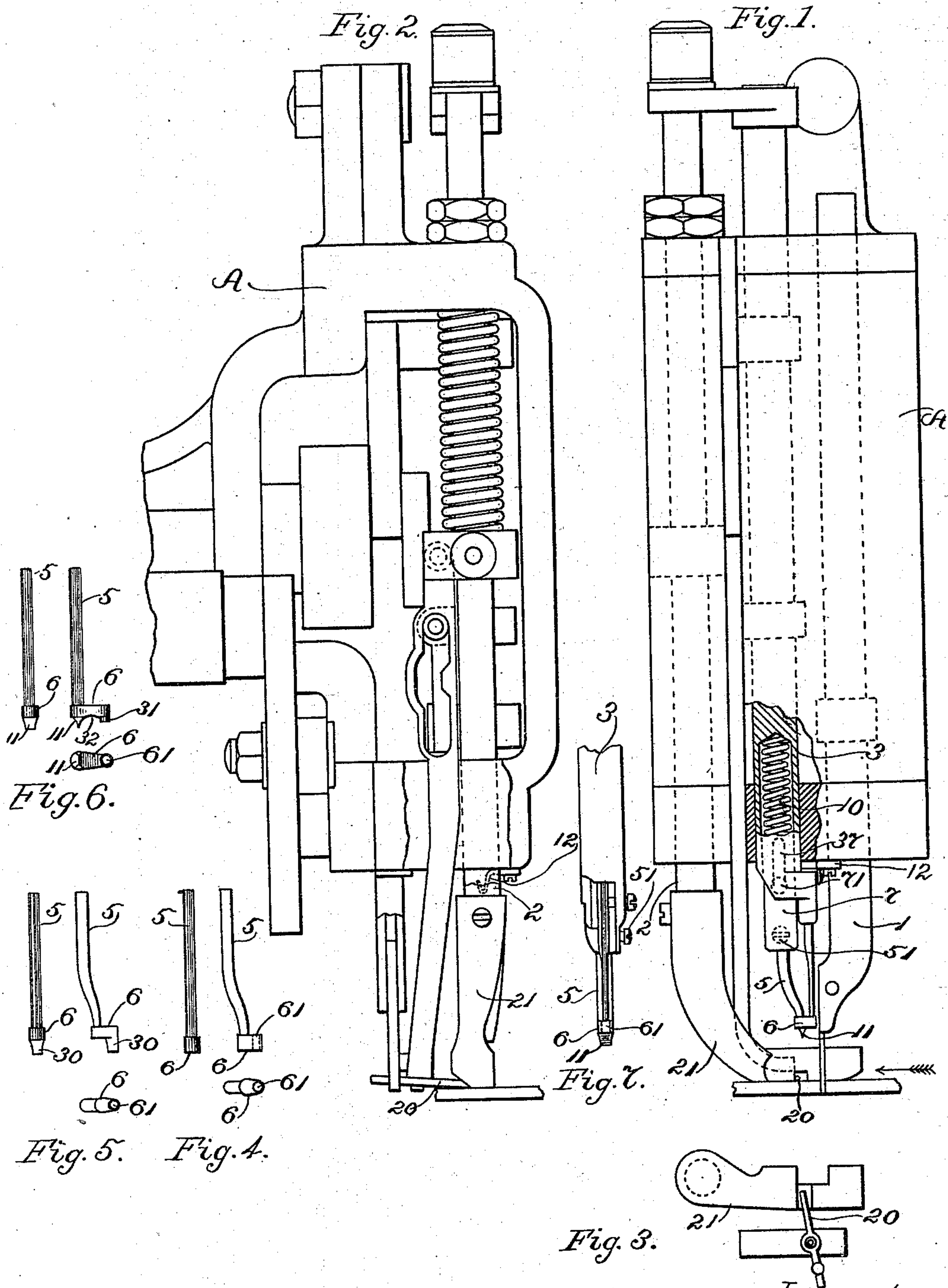


(No Model.)

E. F. MOWER.  
SEWING MACHINE.

No. 562,335.

Patented June 16, 1896.



Witnesses  
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# UNITED STATES PATENT OFFICE.

EDWIN F. MOWER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO FRANK W. WHITCHER, OF SAME PLACE.

## SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 562,335, dated June 16, 1896.

Application filed January 18, 1896. Serial No. 575,993. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN F. MOWER, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My present invention relates to machines on the order of those which are represented in Letters Patent of the United States No. 507,377, granted to me on October 24, 1893, and in my application for Letters Patent filed May 31, 1895, Serial No. 551,104, and has for its object to increase the speed and certainty with which work of the first quality may be produced by such machines.

The invention consists chiefly in the application, to such a machine as is shown in either the Letters Patent or the application above referred to, of a thread-guide of novel character by means of which the thread may be held securely relatively to the recessed end of the punch or stitch-former in such manner as to secure with certainty the proper insertion of the thread in the stock in forming a stitch, thereby preventing the machine from skipping a stitch or stitches, as sometimes results in such machines as now constructed when the direction of the line of stitches is suddenly changed, as in going around a corner or sharp bend.

The novel features of the invention will be fully set forth in the following description, with reference to the accompanying drawings, and the characteristic features thereof will be particularly pointed out and distinctly defined in the claims at the close of this specification.

Figure 1 of the accompanying drawings is a front elevation of the head of a machine, showing the stitch-forming mechanism proper, a small portion being in section. Fig. 2 is a side elevation of the same parts of the machine as are shown in Fig. 1. Fig. 3 is an inverted or bottom view of the presser-foot and adjacent parts. Figs. 4, 5, and 6 show modified forms of thread-guides in side, front, and inverted or bottom views. Fig. 7 is a side view of the punch or stitch-former with the

thread-guide in position and shows the groove in the front of the punch or stitch-former in which the thread lies when the machine is in use.

A portion of the frame of the machine is shown at A. This portion of the frame or head of the machine serves to support the awl-bar 1, the presser-bar 2 with the presser-foot 21, and the punch-bar 3, the said parts being constructed, arranged, and operated as heretofore. I do not deem it necessary in the present instance to give a detailed description of the construction, arrangement, or operation of these parts, and I shall therefore, in the following description, confine myself chiefly to the novel features which are comprised in my present invention.

In the machines aforesaid, as heretofore constructed, the thread passes downwardly from the wax-pot, through a guide-eye on a spring-guide, which usually is fastened to the head of the machine, and thence downwardly through a thread-carrier, which latter, as the awl moves downwardly into the stock, operates to move out of the line of the awl the portion of thread which is about to be formed into a stitch, so that the awl will not be liable to cut the thread, and after the awl has passed upwardly the said thread-carrier moves the thread back into position under the notched end of the punch or stitch-former, so that as the latter descends it will carry the thread downwardly into the stock, forming a loop of thread therein and thus making a stitch. As will be obvious, great precision of movement is required in the case of this thread-carrier, in order that the thread may be carried always to exactly the proper place under the punch or stitch-former, so as to insure the thread being carried downwardly into the stock.

When it becomes necessary to form a line of stitches around a sharp curve, it sometimes happens that the thread is not returned to the proper position under the punch or stitch-former and one or more stitches are skipped, rendering the work defective and to a considerable degree valueless. To avoid this difficulty, I have provided a thread-guide which I locate adjacent to the punch or stitch-former, it remaining in the same vertical plane with the latter and restraining the thread at the



lower end of said punch or stitch-former. Preferably, this thread-guide partakes to a limited extent of the movement of the punch or stitch-former. Preferably, also, the said  
 5 thread-guide consists of a shank portion 5 and a foot portion 6, having a vertical hole or eye 61 therethrough through which the stitch-former or punch operates. The shank  
 10 5 of this guide is secured by a set-screw 51 or other equivalent means in a holder 7, which latter in turn is placed in a socket in the lower end of the punch-bar 3. A spring 10  
 15 is placed in the said socket and operates to press the holder and its thread-guide downwardly, the limits of the movement of the holder 7 relatively to the punch-bar 3 being  
 20 determined by a pin or screw 71 on said holder playing in a slot 37 in punch-bar 3. When both the punch and the thread-guide are above the surface of the stock, they will move vertically together, the spring 10 operating to  
 25 hold the eye of the thread-guide at the lower end of the said punch, as shown in Fig. 1. When the punch-bar moves downwardly, the thread-guide is carried downwardly there-  
 30 with until the lower end thereof comes into contact with the surface of the stock, after which, during the continued downward movement of the punch-bar and punch, the thread-  
 35 guide will remain stationary, it resting on the surface of the stock, while the spring 10 will be compressed, the thread-guide holder moving upward relatively in the socket at the lower end of the punch-bar. The hole 61 in  
 40 the foot portion 6 of the thread-guide is large enough to permit the vertical play of the punch therein, and also to permit the thread to be passed downwardly therethrough, the front of the punch against which the thread  
 45 lies being preferably hollowed or grooved slightly lengthwise of the shank of the punch to assist in holding the thread in position.

The grooving of the punch, while desirable, is not essential. The thread passes in  
 45 a nearly horizontal direction over a guide-arm 12, Fig. 2, which is secured to the lower edge of the head or frame at a point very close to the vertical line of the punch. Thence it passes downwardly along the front of the  
 50 punch on the side thereof nearer the awl and through the eye or hole 61 in the foot portion 6 of the thread-guide, through which the punch also passes. The thread thus is held in the notched or recessed end of the punch,  
 55 and it is impossible for the punch to miss taking the thread as the punch passes downwardly into the stock.

Fig. 4 shows a simple form of the thread-guide. The thread-guide in some cases is provided with the downwardly-projecting portion 11, Figs. 1, 6, and 7, which latter comes  
 60 in contact with the stock when the punch-bar descends. This portion 11 is placed directly over the line of stitches in such a position as to rest on the stock directly between two stitches. The end of the said projection 11 is pointed or chisel-shaped, as clearly shown in

Figs. 1 and 6, and in the descent of the punch-bar the chisel-shaped end will be forced downwardly between the stitches, and thus will  
 70 serve as a pricking-up device. It will be clear also that if the thread-guide is formed with a chisel-pointed end it may be wide enough to project across the line of stitches,  
 75 as in the drawings, or at one side thereof, and then will operate also as a marker. By the employment of a downward projection 11, the foot portion 6 of the thread-guide is not permitted to come into contact with the surface  
 80 of the stock, but is held up therefrom, so that a clear space under said foot portion is left for the operation of the slackener device, which is shown at 20. The said slackener device operates to produce a slack in the thread  
 85 from which a stitch is being formed, so that when in forming a stitch the loop of thread is forced downwardly by the punch into the stock, the punch will not operate to draw the thread out of the preceding loop, the slack  
 90 which is formed by the slackener device being sufficient to supply thread to the loop which is being formed by the punch. When, therefore, it is desirable to use a slackener device, or any similar device which operates  
 95 close to the surface of the leather and directly behind the punch, the foot portion of the thread-guide may be held up off the surface of the leather to accommodate such device by means of the downwardly-projecting portion  
 100 11, and such downwardly-projecting portion may, as previously described, be used in addition as a pricking-up device, or as a marking device, or both. It will be clear that when said portion 11 is used as a pricking-up device, and it therefore is necessary to force it  
 105 into the space between two preceding stitches, the distance to which it is desired to force it into the stock between the stitches will be according to the extent to which the thread-guide holder is permitted to recede in its  
 110 socket at the lower end of the punch-bar, since, as soon as the limit is reached, the continued downward movement of the punch-bar will serve positively to force the end of the projection 11 into the space between the  
 115 stitches. When no provision requires to be made for the operation of a slackener device or other similar device, the form of the thread-guide which I employ is that shown in Fig. 4, in which there is no downward projection below the foot portion 6 of the guide. In the  
 120 use of this thread-guide (shown in Fig. 4) the foot portion of the thread-guide moves downwardly until it makes contact with the surface of the stock; but otherwise the operation is the same as that previously described for the form of thread-guide shown in Fig. 1.

In Fig. 5 I have shown another modification of a thread-guide which is provided with a downward projection 30, through which is  
 130 formed the hole or eye 61 for the passage of the punch. This projection 30 serves as a support for the thread-guide on the surface of the stock, and by locating the projection



adjacent to the punch the greater part of the space rearwardly of the punch is free, which sometimes is desirable in order to permit of the free operation of other devices, such as the  
5 slackener device already referred to, which are employed in connection with stitch-forming mechanism of the character employed in these machines.

10 In Fig. 6 I have shown a modification in which a thread-guide provided with a projection 11, formed to serve for pricking up, or pricking up and marking, as in the case of that shown in Figs. 1 and 7, is provided also with a short projection 31 on the order of that  
15 designated 30 in Fig. 5. The said projection 31, it having the hole or eye 61 therethrough for the passage of the punch, limits the descent of the thread-guide, and thus constitutes a stop to hold foot 6 elevated sufficiently  
20 above the work to allow of the working of the slackener device, or the like device, beneath the same in the recess at 32, Fig. 6.

I claim as my invention—

25 1. The combination with a stitch-forming punch for forming a line of stitches by forcing successive loops of thread into the stock, and the punch-bar, of a thread-guide restraining the thread at the lower end of the punch, and means to cause said thread-guide to move  
30 in unison with said punch through part of

the vertical movement of the latter, substantially as described.

2. The combination with a stitch-forming punch for forming a line of stitches by forcing successive loops of thread into the stock, 35 and the punch-bar, of a thread-guide restraining the thread at the lower end of the punch, said thread-guide having a stop to engage with the work and hold it raised therefrom, and means to connect said thread-guide with said  
40 punch-bar with capacity for movement to a limited extent relatively thereto, substantially as described.

3. The combination with a stitch-forming punch for forming a line of stitches by forcing successive loops of thread into the stock, 45 and the punch-bar, of a thread-guide restraining the thread at the lower end of the punch, said thread-guide having a wedge-shaped projection to engage with the work, and means  
50 to connect said thread-guide with said punch-bar with capacity for movement to a limited extent relatively thereto, substantially as described.

In testimony whereof I affix my signature 55 in presence of two witnesses.

EDWIN F. MOWER.

Witnesses:

CHAS. F. RANDALL,  
WM. A. MACLEOD.