(No Model.)

L. L. MILLER.

SEWING MACHINE.

No. 493,217. Patented Mar. 7, 1893.

Fig. 1.

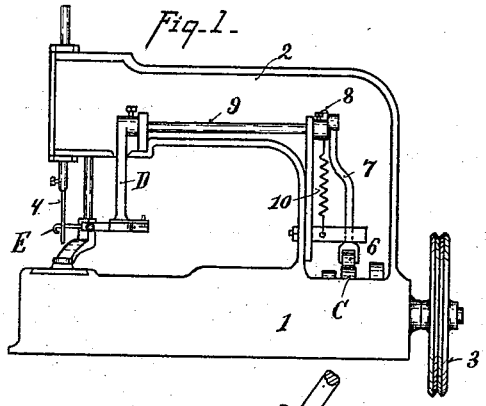


Fig. 2.

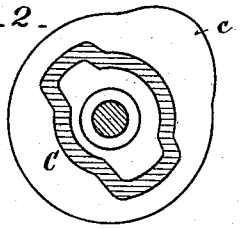


Fig. 3.

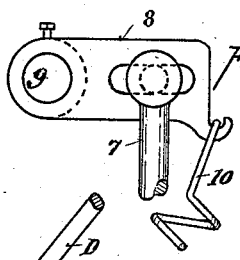


Fig. 4.

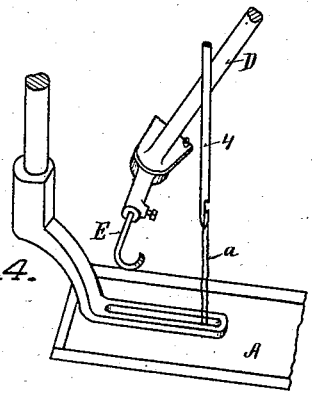


Fig. 6.

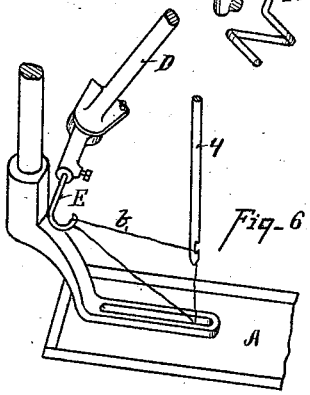


Fig. 5.

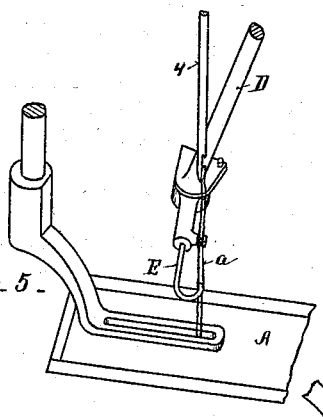


Fig. 7.

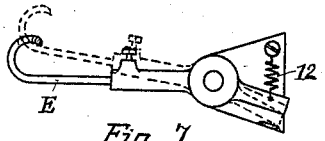
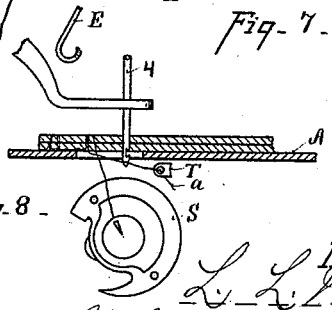


Fig. 8.



Attest.
C. W. Miles.
T. Simmons.

Inventor.
L. L. Miller.
By Mock & Bond, attys.

UNITED STATES PATENT OFFICE.

LOUIS L. MILLER, OF NEWPORT, KENTUCKY, ASSIGNOR TO THE ROSS MOYER MANUFACTURING COMPANY, OF CINCINNATI, OHIO.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 493,217, dated March 7, 1893.

Application filed April 15, 1892. Serial No. 429,308. (No model.)

To all whom it may concern:

Be it known that I, LOUIS L. MILLER, a citizen of the United States, residing at Newport, in the county of Campbell and State of Kentucky, have invented certain new and useful Improvements in Sewing-Machine Attachments, of which the following is a specification.

My invention relates to an attachment adapted to be used with the sewing machine shown in Letters Patent No. 424,330, dated March 25, 1890.

The object of my invention is to provide an attachment to be used in connection with an open eye needle which will pull the slack to form the shuttle loop at the desired time. It also prevents the accidental unthreading of the open eye-needle when it is over the goods.

The various features of my invention are fully set forth in the description of the accompanying drawings making a part of this specification, in which—

Figure 1 is a side elevation of a sewing machine with my attachment in position for use. Fig. 2 is a detail view of the cam. Fig. 3 is a detail view of the detachable rock shaft. Fig. 4 is a detail view showing the position of the parts when the needle is raised. Fig. 5 is a similar view showing the hook in the act of engaging with the thread. Fig. 6 is a similar view showing the position of the parts when the threaded needle is entering the goods. Fig. 7 is a bottom plan view of the thread pulling hook. Fig. 8 is an elevation of shuttle showing the position of the parts for threading the needle.

The machine herein shown and designed is constructed in accordance with my said former patent No. 424,330. 1 represents the base of such machine. 2 the overhanging arm. 3 the driving wheel. 4 the needle. S the shuttle. A the table.

I have not shown the details of the driving mechanism as they may be made in any appropriate manner, but I prefer the construction shown in my said former patent.

The following parts are the features of my improvement.

c represents the cam for driving the rock shaft for operating the arm to pull the slack and form the loop. It is preferably mounted on the cam C, which operates one of the needle feeding motions of my said former patent.

6 represents a friction roller which is supported in the forks of the pitman 7.

8 represents a crank arm supported upon the rock shaft 9 which is suitably journaled to one side of the overhanging arm 2.

10 represents a spring for holding the roller 6 down upon the periphery *c* of the cam C. The rock shaft 9 is provided with the crank arm D at its forward end which carries the thread pulling hook E.

12 represents a tension spring which allows the hook to yield while the needle is passing through the goods. Said hook vibrates to and from the needle in appropriate time movements to perform the following operations: The needle passes down, as shown in Fig. 8, and engages with the thread *a*, which is suitably supported on the spool and is preferably provided with the threader T which assists in putting the thread into the eye as shown in my said former patent. The needle is raised into the position shown in Fig. 4, when the hook E advances and engages with the thread as shown in Fig. 5, and then moves backward drawing out sufficient thread for the shuttle loop. When the parts are in position shown in Fig. 6 there is sufficient thread drawn off the spool to form a sufficient sized loop before the needle descends through the goods. The cam *c* operates the hook E at each alternate movement of the needle, one movement of the needle being without engagement with the thread, as shown in my said former patent, and the next movement the parts make the stitch. It is necessary to have the hook E engage with one side or thread of the loop *b* between the needle and the end that is fastened in the goods; if the hook should be made to engage with the thread on the opposite side of the needle it would hold the thread too taut and would break it as the needle passes through the goods. The point of the hook is sloped downwardly, as indicated in Figs. 1, 4 and 6, so as to allow the thread to slip off as the loop is taken up by the shuttle.

The crank arm 8, Fig. 3, is shown as slotted to receive the pin of the pitman 7, so that the pitman may be adjustably hinged to said

crank arm, whereby the stroke of hook E may be lengthened or shortened to the distance required.

Having described my invention, what I claim is—

1. In a sewing machine, the combination with the open eye needle 4, and the shuttle S arranged to operate below the table and goods, of the rock shaft 9 arranged above the table and provided with the crank arm D, the vibratory thread pulling hook E carried by said arm and having its forward end sloping, and a cam mechanism connected with said rock shaft for operating said arm and hook in time movements with the open eye needle, whereby said hook is caused to move forward to engage with only one side or thread of the loop when the needle is elevated and backward to draw the thread from the spool through the goods and eye of the needle to form the slack for the succeeding shuttle loop, as specified.

2. In a sewing machine, the combination with the open eye needle 4, and the shuttle S, of the rock shaft 9 provided with the crank arm D, the vibratory thread pulling hook E mounted upon the forward side of said arm and provided with the retractile spring 12 for cushioning the pull of said hook, and a cam mechanism connected with the rock shaft substantially as described, for operating said arm and hook in time movements with the open eye needle, whereby the said hook is caused to move forward to engage only one side or thread of the loop when the needle is elevated and backward to draw the thread from the spool through the goods and eye of the needle to form the slack for the succeeding shuttle loop below the goods, substantially as specified.

In testimony whereof I have hereunto set my hand.

L. L. MILLER.

Witnesses:
T. SIMMONS,
C. W. MILES.