



# UNITED STATES PATENT OFFICE.

GEORGE FETTER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND EDWARD JONES, OF SAME PLACE.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 19,059, dated January 5, 1858.

*To all whom it may concern:*

Be it known that I, GEORGE FETTER, of the city of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to improvements in sewing-machines for forming either the double chain-stitch or the ordinary single chain-stitch; and my improvements consist in so attaching a looper to a spindle that the former may be readily adjusted to the latter, the spindle being allowed to turn, so as to accommodate itself to the lateral movement of the looper, as fully described hereinafter.

The looper is so combined with a small finger that it may be readily adapted to the formation of either double or single chain-stitch, and this without disturbing the working or other parts of the machine.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the drawings which form a part of this specification, Figure 1 is a side elevation of a sewing-machine with the edge of the base removed, in order the more clearly to show my improvements. Fig. 2 is an inverted plan of Fig. 1; Fig. 3, a view of the looper (full size) as arranged for forming the double chain-stitch; Fig. 4, a sectional view, illustrating the manner of hinging the looper to the vibrating arm; Fig. 5, a view of the looper as adapted for forming the ordinary chain-stitch from a single thread.

Similar letters refer to similar parts throughout the several views.

A is the base of the machine, upon which is secured the box B, the arm C projecting from and forming a part of the box.

D is the driving-shaft, to which is secured the cam-wheel E. On the front face of the latter is a double-scroll-cam recess for operating the needle-lever F, and in the back face another scroll-cam recess for imparting a vibrating motion to the horizontal shaft P.

H is the needle-bar, operated by the lever F

and sliding in a box, I, secured to the end of the arm C.

K is the pressure-bar, to which the required feed movement is imparted from the reciprocating motion of the needle-bar.

U is the spool of needle-thread, and V that of the under or looping thread.

As the above-mentioned parts are not comprised in my present improvements, a further description to them in this specification will be unnecessary.

To the spindle P is secured the arm M, the top of which projects, so as to form a bearing for the top of the spindle N, the bottom of the latter turning in an orifice in the spindle P. In the spindle N are two slots for receiving the legs of the looper R, these legs being secured to the spindle by means of the set-screws *m m*. One end of a rod, S, is loosely connected to the looper at the points *x*, Figs. 3 and 5, the opposite screwed end of the rod passing through the projection *n* on the piece T, and being secured to the same by two nuts—one situated on each side of the projection—so that the length of the rod, and consequently the position of the point of the looper as regards that of the needle, may be regulated at pleasure. The piece T is connected to the under side of the base by means of the stud *t*, which passes through an oblong slot in the piece and screws into the base, so that the piece T, with the rod S, may be allowed a limited reciprocating as well as a vibrating movement on the stud *t* as the center of vibration. A pin projects from the end of the piece T, and on this pin is a roller, fitting freely in a groove cut in the periphery of the cam-wheel E. This groove is of such a curved or zigzag form that when the cam-wheel turns a reciprocating motion is imparted to the piece T, and consequently, through the rod S, a vibrating motion to the looper, the groove being so curved that the looper shall vibrate once for every stitch produced by the machine.

It will now be seen that three distinct movements are imparted to the looper: first, the curved reciprocating motion of its point from and toward and past the needle, obtained from the vibration of the spindle P as actuated by the double-scroll-cam recess on the back of the wheel E, in connection with the arm Q; second, the lateral vibrating motion, caused by the ac-

tion of the curved groove in the periphery of the wheel E on the sliding piece T and adjustable rod S; third, another lateral motion of the looper, caused by the peculiar position of the stud *t* as regards that of the looper, the point of the latter being turned laterally as it is caused to approach the same by the vibration of the shaft P, for, as the sliding piece T is stationary as regards reciprocating motion when the above lateral motion is required, it is evident that as the looper advances toward the needle the rod S and sliding piece T must turn on the stud *t*, consequently turning the looper laterally to the amount required.

It will be observed that a finger, *p*, is jointed to the side of the looper in such a manner that it may be readily caused to assume either of the positions shown in Figs. 3 and 5.

Operation: When the moving parts of the machine are in the position shown in the drawings—that is, with the needle depressed to its lowest position and the looper moved to its utmost extent from the needle—the sliding piece T has, by the action of the curved groove in the periphery of the wheel E, been moved back and the point of the looper turned back laterally from the needle, in which position it remains as the point, by the vibration of the shaft P, approaches the needle and until the point reaches the limit of its forward movement. As the point of the looper is in the act of approaching the needle the rod S and sliding piece T must necessarily turn on the pin *t*, and this turning of the rod must necessarily draw back the point of the looper laterally, the amount of this movement being so regulated by adjusting the rod S to the sliding piece T that the point of the looper is momentarily in contact with the back of the needle, thereby insuring its passage through the loop of the needle-thread. Just as the needle has been raised to its highest position, and when the looper has arrived at the required distance past the needle, the groove in the periphery of the wheel E pushes forward the sliding piece,

and consequently turns the point of the looper laterally toward the line of the needle-thread, so that as the needle descends its point must pass between the looping-thread and the looper. When this has been accomplished, the piece T is again moved back and the point of the looper turned away from the needle, thereby preventing the looping-thread from being worn or cut—a defect common to other sewing-machines—through the friction of the looper against the needle. The looper being now moved back to its original position, and the needle being depressed, a repetition of the above-described movements takes place.

The formation of the double chain-stitch by the combined action of the needle and looper is precisely the same as in other well-known machines, so that a minute description of the same will be unnecessary.

By turning up the finger *p* to the position shown in Fig. 5, and by disconnecting the looping-thread from the looper, the latter becomes adapted for forming the single chain-stitch, for as the point of the looper thus arranged seizes the loop of the needle-thread the latter is held in such a position that the descending needle passes through the loop.

I claim and desire to secure by Letters Patent—

1. The combination of the looper R with the spindle N, when the former is rendered adjustable to the latter substantially in the manner herein described, and when the spindle is allowed to turn so as to accommodate itself to the lateral movement of the looper.

2. The combination of the finger *p* with the looper R, in the manner and for the purpose specified.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

GEORGE FETTER.

Witnesses:

HENRY HOWSON,  
WILLIAM DUTTON.