

UNITED STATES PATENT OFFICE.

AUSTIN LEYDEN, OF ATLANTA, GEORGIA.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 26,687, dated January 3, 1860.

To all whom it may concern:

Be it known that I, A. LEYDEN, of Atlanta, in the county of Fulton and State of Georgia, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figures 1 and 2 are vertical sections at right angles to each other, exhibiting such parts of a sewing-machine as are necessary to illustrate my invention. Fig. 3 is a plan of the same with part of the bed-plate broken away. Fig. 4 exhibits a sectional view of the spool-holder and its bed. Fig. 5 is a horizontal section of the spool-holder for the locking-thread. Fig. 6 is a plan of the bed which supports the spool-holder.

Similar letters of reference indicate corresponding parts in the several figures.

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

A is the bed-plate of the machine, upon which the material to be sewed is laid. *n* is the needle, and B is the needle-arm, secured to a rock-shaft, C, which may be operated by an eccentric, D, on a shaft, E, and a rod, D', or in any other well-known manner.

F is the main shaft arranged at right angles to E, and geared therewith by miter-gears *a b*, so as to give it a constant rotary motion.

The pressure-pad and feed-works are not represented, as they may be constructed, applied, and operated in any of the usual modes.

G is an upright plate, secured to the bottom of the bed-plate A in the position occupied by the flat side or face of the raceway in the shuttle-machines.

H is the stationary bed, upon which the spool-holder J, which contains the spool of locking-thread, rests, and consists of a circular plate arranged horizontally below the bed-plate, near but not close to the plate G, where it is supported by a fixed upright stud, *y*, Fig. 4, which is secured in a bracket, H', that is bolted to the bottom of the bed-plate. This bed H has an opening, *c c*, the form of which is best shown in Fig. 6, for the spool-holder I to rest in, the margin of the said opening being rounded off or beveled, that the loops of

the needle-thread may pass freely under the spool-holder.

The spool-holder I consists of an open frame, whose form will be well understood by a comparison of Figs. 1, 3, 4, and 5, its bottom being concave, that its own weight, when the spool K of locking-thread is in it, may be sufficient to cause it to rest within the opening *c c* of the bed H. The spool K is secured to a screwed spindle, *d*, which passes through it, by means of two conical nuts, *e e*, fitting into its ends, and the said spindle is held between two centers, *f g*, in the ends of the holder, the former center being movable to permit the introduction of the spindle. This mode of applying the spools admits of the use of spools of any of the sizes upon which the thread may be bought. The necessary tension is produced on the thread of the spool K by means of an elastic friction-brake lever, *h*, (best shown in Fig. 4,) which is attached to one end of the spool-holder by a fulcrum-pin, *k*, and pressed against one of the conical nuts *e e* by means of a set-screw, *j*, which screws a lug, *i*, formed on the interior of the spool-holder, the said screw being capable of producing more or less friction by being screwed in more or less against the lever *h*. The thread passes from the spool through an opening, *l*, in the top of the spool-holder I. The spool-holder, with the spool in it, is put in its place in the bed H through an opening, *m m*, in the bed-plate A; but this opening is covered when the machine is in operative condition by a plate, J. The position occupied by the spool-holder is such that the axis of the spool I is parallel with the face of the bed-plate, and oblique to the direction of the feed-motion.

L is a looper, by which the spools of the needle-thread are first extended, preparatory to their being passed over the spool-holder I. The form of this looper may be understood by a comparison of Figs. 1, 2, and 3. It consists of a steel plate of nearly triangular form, provided with a hook, *o*, at one corner, and with a shallow parallel groove, *p p*, in its face, and it is arranged to oscillate on a fixed pin, *q*, which attaches it to the plate G. The said looper derives a movement from the position shown in black in Fig. 2 to the position shown in red, and back again, being about a quarter of a revolution, from a cam, M, on the shaft E, the

said cam operating on a lever, N, which works on a fixed fulcrum, r, and which is connected with the looper by a rod, N'.

P, Figs. 1 and 3, is what I term a "swivel-hook," consisting of a short but broad hook, fitted to turn horizontally upon an upright spindle, s, which is caused to revolve horizontally round the spool-holder I and its bed H by being secured to a revolving carrier, P', which is fitted to the fixed uprightstud which supports the spool-holder bed, and which derives motion from the shaft E through a pair of miter-gears, t u. The object of this hook is to take the loop of the needle-thread from the looper L and pass it over the spool-holder I; and for this purpose it is so applied as to pass through the groove p p of the looper while the latter is in the position represented in black in Fig. 2. The hollow stem s' of the swivel-hook, which receives within it the spindle s, is furnished below the hook with a milled collar, s², which at a certain stage of the revolution of the hook around the spool-holder, hereinafter described, comes in contact with the leather or india-rubber covered face of a stiff curved spring, Q, that is bolted to the bracket H', and so causes the swivel-hook to turn on the spindle s for the purpose of releasing the loop of the needle-thread. A spiral spring, v, Fig. 1, is applied below said collar s² for the purpose of throwing the hook back into position for taking the loops from the looper, and a stop is provided on the spindle to prevent the spring moving the said hook beyond the proper position.

R, Figs. 1 and 2, is what I term the "loop-controller," whose duty is to take the loop from the swivel-hook and keep it extended until the looper L commences the extension of the succeeding loop. This loop-controller consists of a long arm with a hook at its extremity, arranged to swing horizontally upon a fixed pivot, w, secured under the bed-plate A, and deriving the necessary movement from the combined action of a cam, S, on the driving-shaft F, and a spring, T, secured to the bed-plate A. The cam S acts upon the loop-controller through the agency of a lever, U, which works on a fixed fulcrum, x, carried by a fixed arm, H², secured to the bracket H', and a rod, U', which connects the said lever with the thread-controller.

Having described the construction and arrangement and the individual operations of the several parts of the machine which constitute my invention, I will proceed to describe their combined operation in sewing.

As the needle enters the material to be sewed with its thread the looper L is in the position shown in black in Fig. 2, and during the com-

pletion of the descent of the needle it (the looper) moves quickly from that position to the position shown in red. After the needle has risen a little way and commenced to throw out a loop the looper returns and advances into and extends the loop, resuming the position shown in black by the time the needle is withdrawn from the material. As soon as the looper has arrived in this position, in which it remains stationary till the needle again enters the cloth, the swivel-hook, which revolves continuously in the direction of the arrow 7, (shown in Fig. 3,) passes through the groove p p, catches the loop and takes it off the looper, and carries it in an open condition over the spool-holder I, which, resting loosely in the opening c c of its bed, allows the lower part of the loop to pass between it and the margin of said opening. The loop-controller R remains stationary in the position shown in Fig. 3 until the swivel-hook has arrived at about the position shown in that figure, and then commences to move in the direction of the arrow 8, and, moving much faster than the swivel-hook, overtakes the latter and passes it just as it has been turned on its spindle s to such a position as to allow the loop to slip off it by the collar s² rolling against the leather or india-rubber on the face of the spring Q. In this way the thread-controller is made to take the loop out of the way of the swivel-hook and keep it stretched, so as to prevent its kinking, until the needle has passed through the material again and the looper L has entered and commenced the extension of a new loop, and until the swivel-hook comes into operation on the new loop, and by the extension of that loop draws up the old one to the back of the material with the locking-thread in it. In this way one stitch is produced by every revolution of the shafts E and F, the stitch being the ordinary lock-stitch, the same as produced by the needle and shuttle.

I do not claim the use, in a sewing-machine, of a stationary thread-case or spool-case to contain the locking-thread; nor do I claim using the locking-thread in making the lock-stitch directly from an ordinary spool without rewinding; but

What I claim as my invention, and desire to secure by Letters Patent, is—

The spool-holder constructed and applied, in combination with the bed H, substantially as herein described.

AUSTIN LEYDEN.

Witnesses:

THOS. L. THOMAS,
W. HERRING,
ELIAS HOLCOMBE.