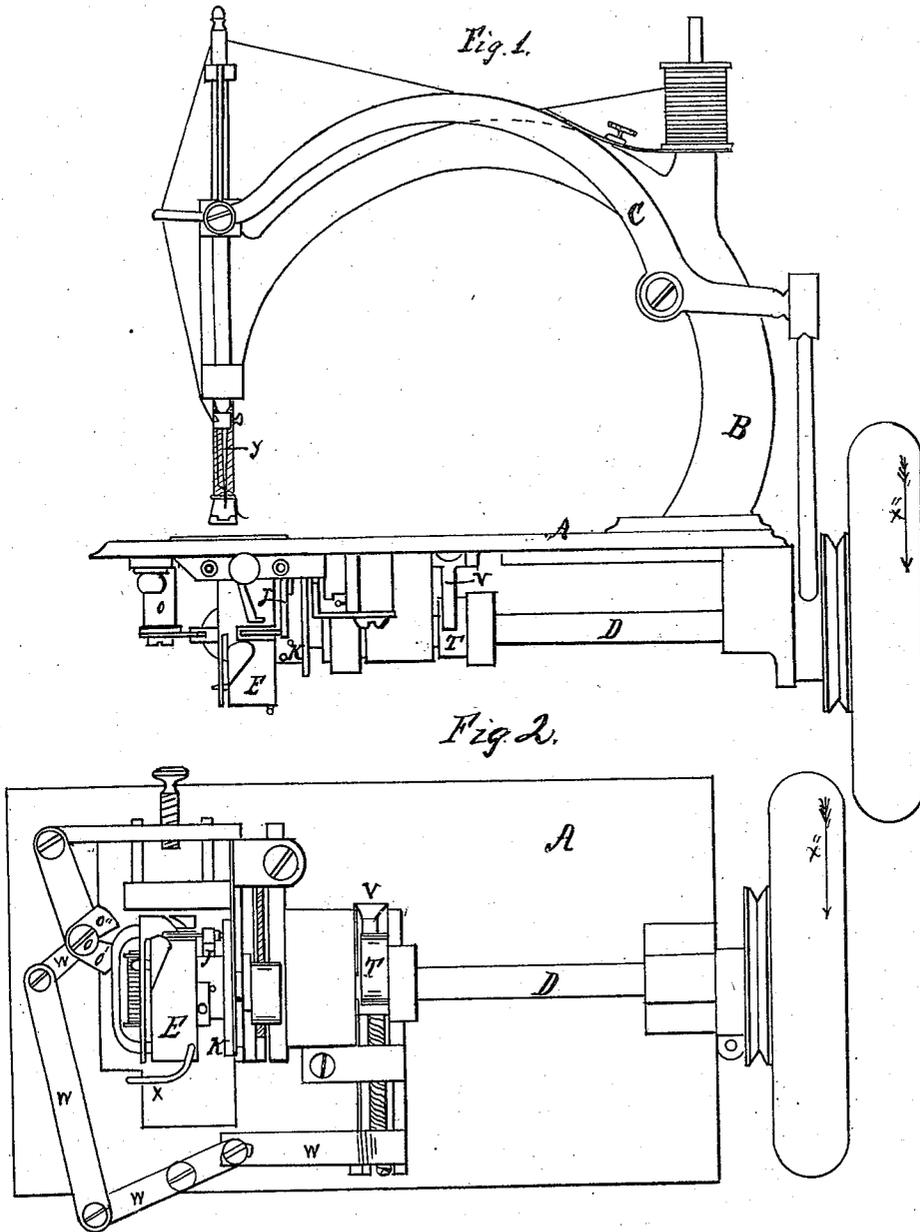


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SEWING MACHINE.

No. 40,446.

Patented Oct. 27, 1863.



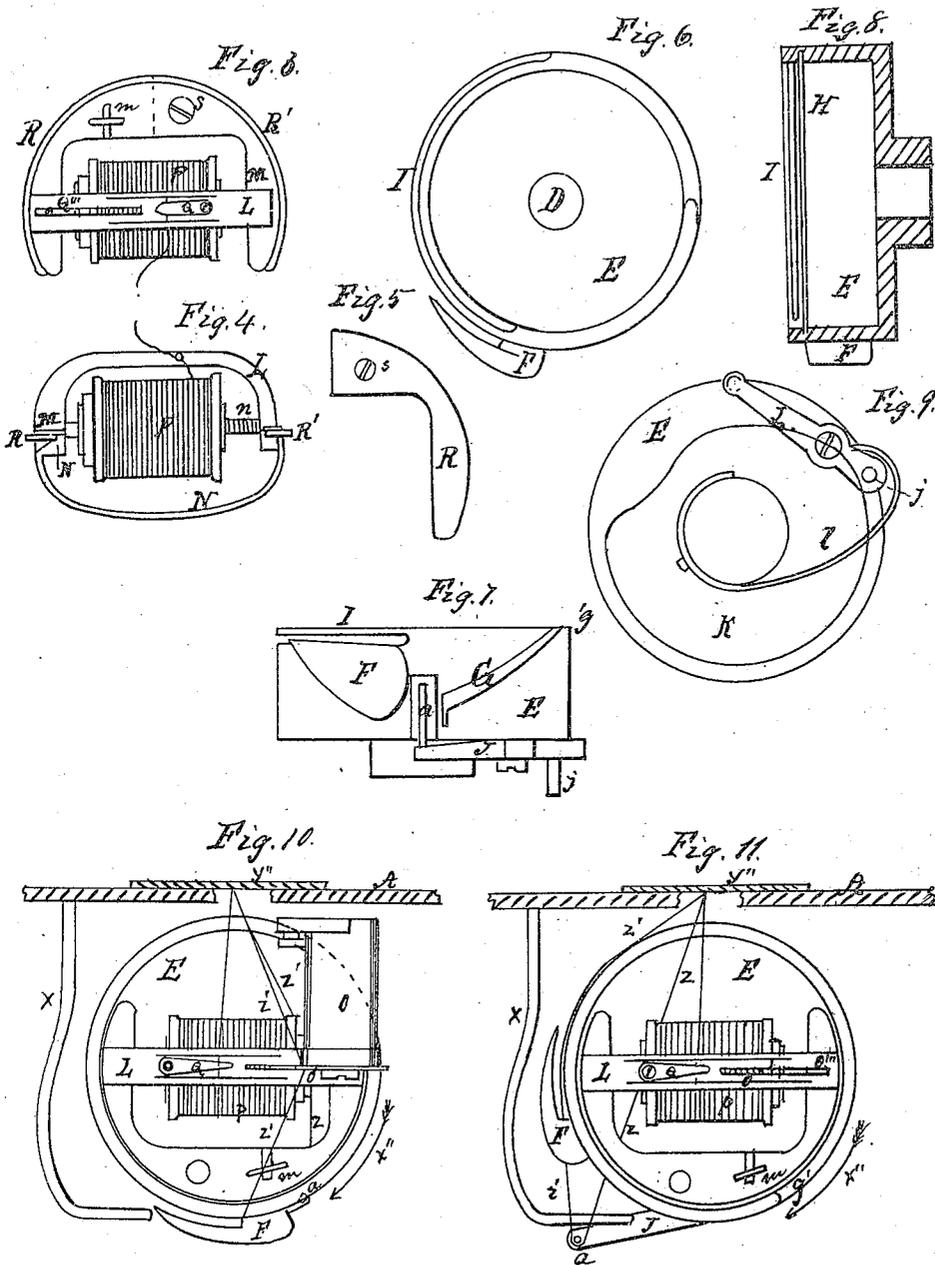
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 Park W. Harlowe,

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# UNITED STATES PATENT OFFICE.

LEBBEUS W. LATHROP AND WILLIAM P. DE SANNO, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO THEMSELVES, WM. H. MYERS, AND JOHN McDOWELL, JR.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent-No. 40,446, dated October 27, 1863.

### *To all whom it may concern:*

Be it known that we, **LEBBEUS W. LATHROP** and **WM. P. DE SANNO**, both of the city and county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Sewing-Machines; and we do hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawings, and the letters of reference marked thereon.

Our invention relates to that class of sewing-machines which use two spools without re-winding in making the lock or shuttle stitch, in which the needle-loop is caught by a hook and carried around the under spool. The loop is then liberated from the hook, and the hook takes the next loop round in the same way, drawing the first loop tight.

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

Referring to the accompanying drawings, Figure 1 is a side view of our machine. Fig. 2 is an inverted plan. Fig. 3 is a plan of the spool-case and frame. Fig. 4 is a side view of spool-case and frame. Fig. 5 is a plan of a detachable part of the spool-case frame. Fig. 6 is a front view of the slotted and grooved cup. Fig. 7 is a side view of the slotted and grooved cup. Fig. 8 is a section through the slotted and grooved cup. Fig. 9 is a view of the back of the slotted and grooved cup with under take-up attached. Figs. 10 and 11 are general views of the above parts in two different positions.

A is the base-plate of the machine. To it is fixed a stationary arm, B, the outer end of which holds the presser-foot and needle-bar, the latter being connected to the needle-arm and operated by the vibrating lever C. This part of the machine is well known, and need not be described more particularly.

Beneath the base-plate runs the horizontal shaft D, giving motion to the different parts of the machine. This shaft has attached to one end a slotted and grooved cup, E. (Shown more particularly in Figs. 6, 7, and 8.) A hook, F, is fixed permanently on the outer edge of the cup, and a slot, G, is cut through the cup, extending clear to the edge or rim at *g'*, Fig. 7.

A groove is also cut round its interior circumference at H. (See Fig. 8.) This cup E has also a guard, I, running partially round its outer edge or rim, to prevent the needle-loop catching against the needle as it (the loop) is being carried round the spool.

To the back of this cup E is fixed the under take-up, J. (See Figs. 7 and 9.) It revolves with the cup, and carries at one end the pin *a*, which at a portion of the revolution of the said cup is sunk into a recess in the cup. At the other end of this lever, or "under take-up," as we call it, is another pin, *j*, sliding on a fixed cam, K. A spring, *l*, fixed on the cup and pressing against the lever J, serves to keep the pin *j* in contact with the edge of the cam K. The shape of the cam is indicated by the red lines in Fig. 9. This cam is attached firmly to the base-plate in a fixed position, and does not revolve with the cup. As the cup revolves the pin *j* is carried along the circumference of the cam K, causing the pin *a* at its opposite end to take a position, as shown in Fig. 11, at a certain portion of its revolution.

The spool-case and frame are shown in Figs. 3, 4, and 5. The spool-case is composed of a slotted bar, L, and flange M, by which it is bolted to the frame N, and is easily detached from the frame by means of a thumb-screw, *m*, whenever a new spool is to be inserted. The spool is placed on a bar, *n*, which bar is made in two parts, one part having a socket, into which the other part slides. A spiral spring in the socket serves to press the two ends of the bar outward, and enables the bar to accommodate itself to the centers prepared in the case to receive it. The bar L has a slot cut through it at *O'''*, in which the spool-case holder *o o' o''* vibrates. This bar also has attached to it a small spring, Q, used to give a proper tension to the lower thread. The spool-case frame N has a flange, R R', round it, which fits into the circular groove H, Fig. 8. Now, in order to insert this flange in the groove H, it is necessary to make it in two pieces. One is shown detached in Fig. 5. This piece R is fixed to the frame N by the small screw S.

The spool-case holder *o o' o''* is shown in Fig. 10, and also an end view of it in Fig. 2. It may be described as a vibrating fork work-

ing in the slotted groove  $o'''$  of the spool-case. It is operated by the cam T on shaft D. This cam strikes the tappet V, (see Fig. 2,) and by means of the communicating levers  $w w w w$  it gives the fork  $o o' o''$  a reciprocating rotary motion, whereby each of the points  $o' o''$  of the fork enters and recedes from the slot  $o'''$  alternately and holds the spool-case from turning, and at the same time allows the loop of thread Z' Z to pass by it and between it and the bar L. The bar  $x$  is a piece of wire firmly fixed in the base-plate A, and is curved, as shown in Fig. 11 and 2.

The operation of the machine is best seen by reference to Figs. 10 and 11, and is as follows: The spool-case and frame being placed in the slotted grooved cup, and that in its proper position on the shaft D, the cup is rotated in the direction of arrow  $x''$ . The needle of the machine in passing through the cloth forms on its return a loop on the under side of the cloth, known as the "needle-loop." This loop is caught by the hook F, Fig. 10, as it rotates, and is carried round the under loop,  $p$ , one side of the loop Z entering the slot G and passing behind the spool, the other side, Z', passing in front of the spool-case over the bar L. Fig. 10 shows the loop just as it enters the notch in the spool-case holder  $o o' o''$ . The spool-case at this instant vibrates on its center, the part  $o''$  entering the slot  $o'''$  and the part  $o'$  leaving it and liberating the loop, to pass on, and at the same time preventing the spool-case from turning round. As the cup E reaches the position shown in Fig. 11 the under take-up, J, comes into operation. The cam K now causes the pin  $a$  to diverge from the cup, carrying with it the loop Z Z', slightly extending it, and liberating it at the same time from the hook F, so that the hook F may be clear of the loop Z Z' and free to enter the next needle-loop and repeat the same operation over again. The loop Z Z' now comes in contact with the bar  $x$ , which, by its curved shape, throws the

loop off the pin  $a$ , leaving it free to be drawn tight to the cloth. By thus catching the loop on hook F and carrying it to the inside of the cup through a slot, G, behind the hook, it is carried round the spool-case and frame without coming in contact with the flange R R', and thus avoiding abrasion of the thread. It also prevents the twisting of the loop which occurs in an ordinary hooked and grooved ring.

We do not claim the passing of a needle-loop round an ordinary spool of commerce, nor the tightening of the first needle-loop by the formation of the second below the cloth, nor the passing of a needle-loop round a spool of commerce by means of a revolving hook or hooked and grooved ring, nor the passing of said loop round a spool when such spool changes its relative position, nor the passing of such loop round a spool when such loop comes in contact with the flange of the spool-case, such devices being used before; but

We claim—

1. The slotted circular grooved cup E, with hook F permanently attached to the outside surface, constructed and operating substantially as described.

2. The under take-up, J, which revolves with the cup for extending the loop and liberating it from hook F, constructed and operating substantially as described.

3. The reciprocating holder  $o o' o''$ , arranged and operating substantially as described.

4. The combination of the slotted circular grooved cup E and its hook F with the spool-case and frame L N, the under take-up, J, and the reciprocating spool-case holder  $o o' o''$ , the whole constructed and operating substantially as described.

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