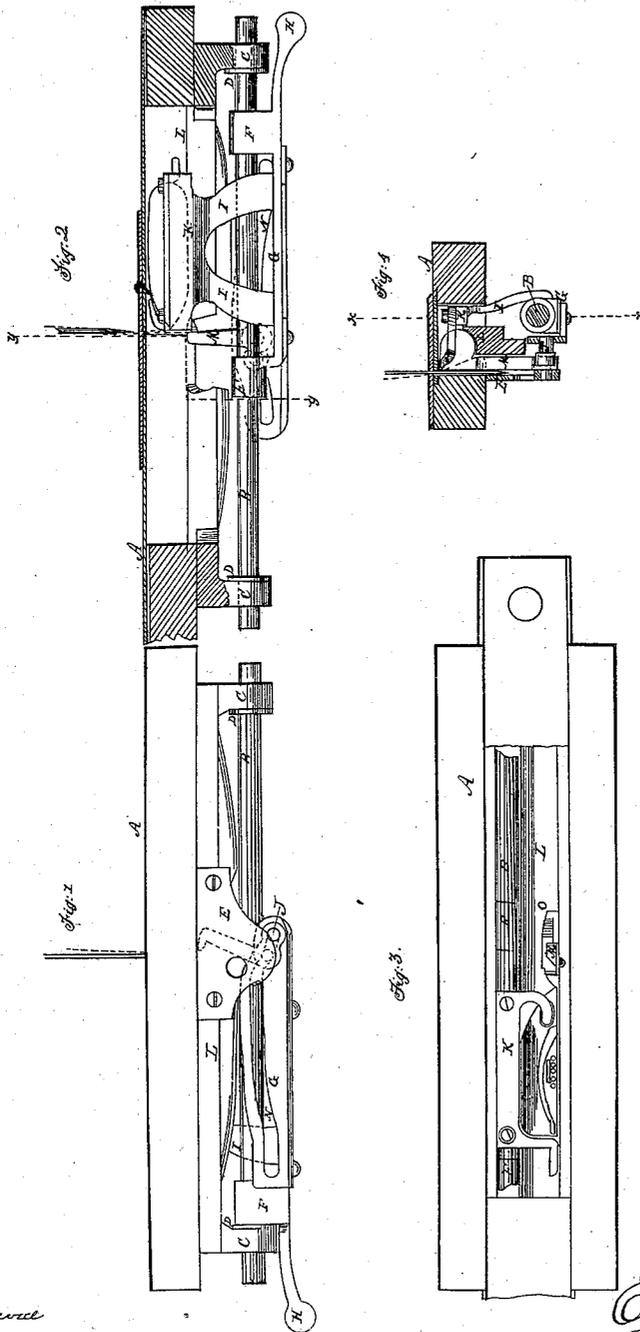


E. WATERBURY.
Sewing Machine.

No. 79,037.

Patented June 16, 1868.



Witnesses
Jas. A. Service
J. W. Huntington

Inventor
E. Waterbury
Chas. Munroe
Attorneys

UNITED STATES PATENT OFFICE.

ENOS WATERBURY, OF STAMFORD, CONNECTICUT.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 79,037, dated June 16, 1868.

To all whom it may concern:

Be it known that I, ENOS WATERBURY, of Stamford, Fairfield county, State of Connecticut, have invented a new and useful Improvement in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation of that part of a sewing-machine which embraces my improvement. Fig. 2 is a vertical section in the plane indicated by the line *x* of Fig. 4. Fig. 3 is a plan or top view. Fig. 4 is a cross-section on the bent line *y* of Fig. 2.

Similar letters of reference indicate like parts.

This invention consists in providing a hook that vibrates beneath the path of the shuttle and near to the needle, so that after the needle descends to its lowest position and recedes a short distance the hook, which is then moved forward for that purpose, immediately enters between the needle and its thread, and not only holds the loop while the thread is ascending, but pushes it aside or spreads it open to allow the nose or point of the shuttle to enter it, allowing the needle to ascend without interruption, and consequently permitting the application of a crank motion to drive the needle.

The letter A designates the table or surface of a sewing-machine on which the cloth rests, and through which the needle passes in its reciprocations.

L is the shuttle-race, having an elongated opening, O, in it at the place where the needle descends, in which opening the hook M', hereinafter described, vibrates. The ends of the shuttle-race have lugs CC, which are perforated to receive a horizontal rod, B, that is permanently fastened to the lugs.

K is the shuttle-driver, having arms or horns at its ends that embrace the point and heel of the shuttle, respectively, in the usual way. The shuttle-driver is permanently connected to the carriage G by means of the standard I, which rises from the latter on the side most distant from the needle, and is fastened to the bottom of the shuttle-driver, going through the same opening that is made in the table for the reception of the race-plate. The carriage G is

suspended upon the rod B by means of two bosses, FF, which are perforated to allow them to embrace the rod. One end of the carriage G has a prolongation or arm, H, the end of which can be connected by a pitman to a crank on the lower shaft of the machine in order to produce the necessary reciprocations of the said carriage, and thereby to move the shuttle to and fro. The carriage G has on its outer side a long slot, N, which is curved at each end, as seen in Figs. 1 and 2. This slot receives a pin, J, that projects from the short arm of a right-angled lever, M, which is pivoted at its angle to the vertical piece E, the longer arm of the lever extending upward toward the opening O, where it terminates in a wide hook, M', whose pointed end is directed toward the pointed end of the shuttle. One side of the hook is straight and the other is curved or angular, as seen in Fig. 3, its straight side being next to the needle. The vertical groove in which the needle moves when it descends to give its thread to the shuttle is intersected by the elongated slot O, in which the hook M' moves, and the hook is so placed and adjusted that it moves across and close to the needle-groove in order to be in a position to enter between the needle and its thread after the needle has reached its lowest position and has ascended a short distance. The slot N in the reciprocating carriage G forms a cam by reason of the curve in its ends, the shape and position of each curve being such as to throw the hook M' backward away from the needle-groove by bearing the short arm of lever M downward; but when the parts of the groove N between the curves are passing the pin J on the short arm of the lever the short arm is raised or depressed, according to the shape of the groove, and the hook is thrown forward across the needle-groove, the motion being so timed as to take place when the needle descends in order that the hook may catch its thread immediately and permit the needle to be drawn up at once. At this time the shuttle is advancing toward the needle in order to take the needle-thread. The needle-thread, being seized, as aforesaid, by the hook, is not only spread out and held straight and kept from kinking, as it is apt to do when not distended, but it is held by the hook in readiness for the advancing shuttle, which can pass into and through it without

liability of missing or passing at one side. The needle meanwhile is free to ascend, its thread being held down by the hook until the shuttle has fairly entered the loop of the needle-thread, that part of the slot N between the curves being long enough to keep the hook in its forward position until the shuttle has nearly passed through such loop. The hook M' is then drawn or moved backward out of the loop by the curve at the proper end (observing Fig. 2) of cam-groove N, thereby releasing the loop and allowing it to be tightened up to complete a stitch.

By means of this construction I am able to dispense with the variable movements usually given to reciprocating needles in sewing-machines in which the needle, after going downward to its lowest position, is raised a little distance in order to make a loop in its thread for the entrance of the shuttle, and is next brought downward again, or else is held stationary a moment, before it is finally raised out of the cloth. Such compound movements require special contrivances and devices to effect them, and therefore a steady crank motion cannot be

used or applied in sewing-machines of the present construction; but by means of my invention I am able to drive the needle by an ordinary crank on a steadily-revolving shaft, and consequently to give a reciprocating movement of the simplest character to the needle without interrupting its motion either in its ascent or descent, thereby simplifying the means of imparting motion to the needle and increasing its speed.

Any suitable means may be provided for supporting the carriage G instead of the rod B, whose office is to guide and support the carriage like an ordinary "way" in machinery.

I claim as new and desire to secure by Letters Patent—

The combination of the pivoted right-angular arm M, pin J, slotted carriage G, and shuttle-driver K, substantially as described, for the purpose specified.

ENOS WATERBURY.

Witnesses:

ISAAC WARDWELL,
JOHN J. WARREN.