ENOS WATERBURY.

Sewing Machine.

No. 125,708. Patented April 16, 1872.

Fig: 1.

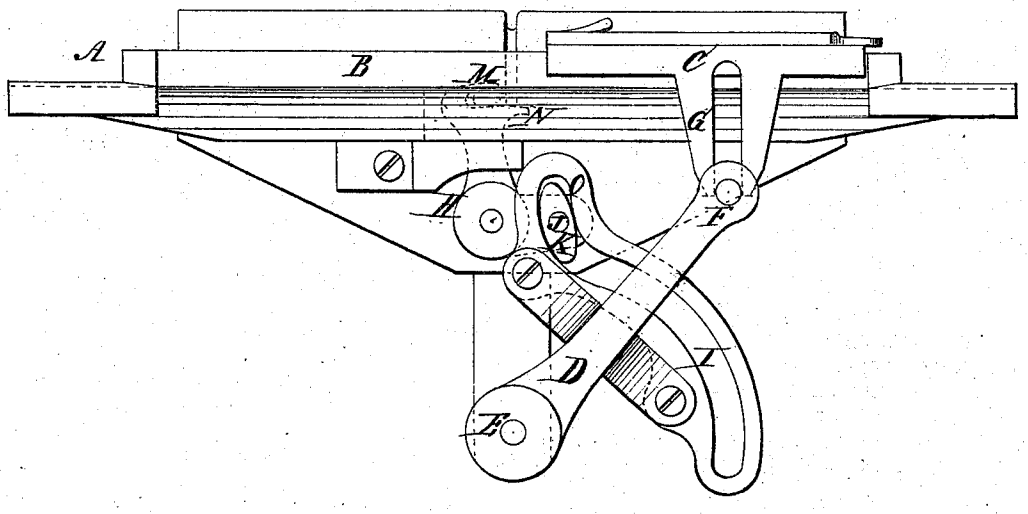


Fig: 2

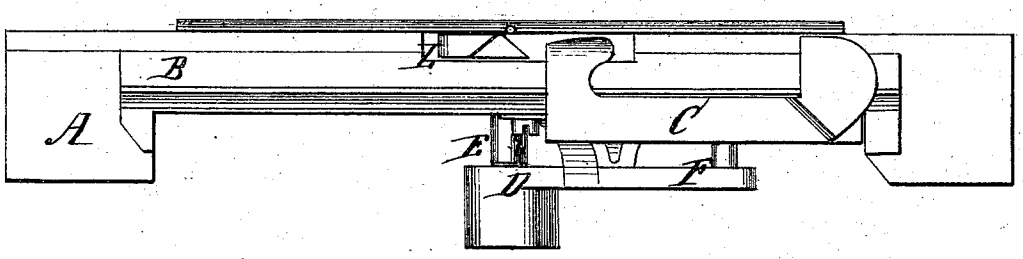
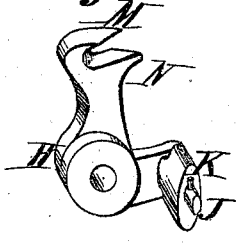


Fig: 3.



Witnesses
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125,708

UNITED STATES PATENT OFFICE.

ENOS WATERBURY, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE GUINNESS SEWING-MACHINE COMPANY, OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 125,708, dated April 16, 1872.

To all whom it may concern:

Be it known that I, ENOS WATERBURY, of Stamford, in the county of Fairfield and State of Connecticut, have invented a new and useful Improvement in Sewing-Machines; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing which forms part of this specification.

This invention, in a shuttle sewing-machine, consists of a looper-hook, provided with a beveled toe, in combination with the needle-groove in the vertical portion of the race-plate, the said hook and toe being so constructed and arranged as to advance in front of the looper-hook and press the needle into its groove in the vertical part of the race-plate, and hold it while the looper-hook seizes the loop and the shuttle enters such loop.

In the accompanying drawing, Figure 1 is an elevation of so much of a sewing-machine as it is necessary to show in order to explain my present improvements. Fig. 2 is a similar view of the opposite side of the same. Fig. 3 is a perspective view of the looper-hook detached.

Similar letters of reference indicate like parts in the three figures.

A designates that part of the frame of a sewing-machine which contains the shuttle-race B, in which the shuttle-driver C slides back and forth. The reciprocations of the shuttle-driver C are produced by a vibrating carriage, D, secured to a suitable rock-shaft, (say, as shown at E,) having its bearings in the frame. The vibrating carriage D operates the shuttle-driver C by means of a pin, F, extending from an arm of the carriage into a slot, G, formed in a projection, H, extending downward from the shuttle-driver, as will be understood by reference to Fig. 1. The pin F of the carriage has a free play in the slot G of the shuttle-driver, as the latter is pushed to and fro by the oscillations of the carriage. The shuttle-carriage D also operates the toe N and looper-hook M, as will be presently described. These parts—the looper hook and toe—are formed upon the upper arm of an angular lever, H, which is pivoted at its angle to the frame A, and vibrated by means of a cam-slot, I, formed in the carriage, acting on a pin, J, which projects from the shorter or lower arm of said angular lever H. The pin J carries on it a loose button, K, of an elongated shape, which is free to turn in the cam-slot as the carriage is vibrated on its pivot. The upper arm, which is also the longer arm of the angular lever H, projects upward into a slot, L, made in the shuttle-race in front of the needle-groove, and the end of said longer arm has, at its extremity, a pointed hook, M, which has a plain face next to the vertical part of the shuttle-race, where the needle-groove is located, and a beveled or angular outer face, the construction being such that its point shall run close to the needle-groove in a position to enter between the needle and its thread when the needle has made its descent. This end of the angular lever H also carries a toe, N, which is located a little below and in advance of the hook, and it, like the hook, moves across the needle groove; and this toe is beveled at its end on the side which is presented toward said groove, so as not to interfere with the loop, and yet perform its office of crowding the needle back into its groove and keeping it there while the looper-hook, which follows immediately after, enters between the needle and its thread and forms the loop for the shuttle to pass through. The toe, owing to its position, acts upon the needle at such a distance below the hook as not to disturb the natural position of the loop.

The cam-slot of the vibrating carriage, which controls the motion of the angular lever H, is so formed as to cause the looper-hook to enter the loop before the shuttle, so that when the shuttle reaches the loop the latter has been opened to receive it, the hook, meanwhile, retiring. The withdrawal of the hook out of the loop is effected by the curve at the end O of the cam-slot, which is so shaped that the movements of the hook and toe on the angular lever take place at the proper times with reference to the motions of the shuttle and the needle.

By my present invention I am enabled to effectually provide against the breaking of needles by reason of the point of the looper-hook striking the same when standing out of their grooves, as they often do, from various causes. It is obvious that the beveled end ot the toe N must press the needle back into its

groove before the looper-hook reaches it, and must hold it there, so that the point of the said hook may pass closely up to the needle, while said hook, in its travel, hugs the vertical face of the plate, carrying the needle-groove, and that it must unerringly force its point between the needle and its thread to form the loop, and hold such loop for the shuttle to pass through. This holding of the loop renders it unnecessary to retain the needle after its descent in order to wait for the shuttle, and consequently the needle can be driven by any ordinary crank-motion without any provision for a "dwell" of the needle after its descent; hence my present invention insures great accuracy in operation, and the dropping of stitches or breaking of needles is entirely prevented, and a perfectly accurate and reliable operation of the shuttle part, so to speak, of a sewing-machine, is insured.

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

In a shuttle sewing-machine, I claim the looper-hook M, provided with a beveled toe, N, when constructed and arranged to operate in connection with the race and needle, substantially as herein shown and described.

ENOS WATERBURY.

Witnesses:
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