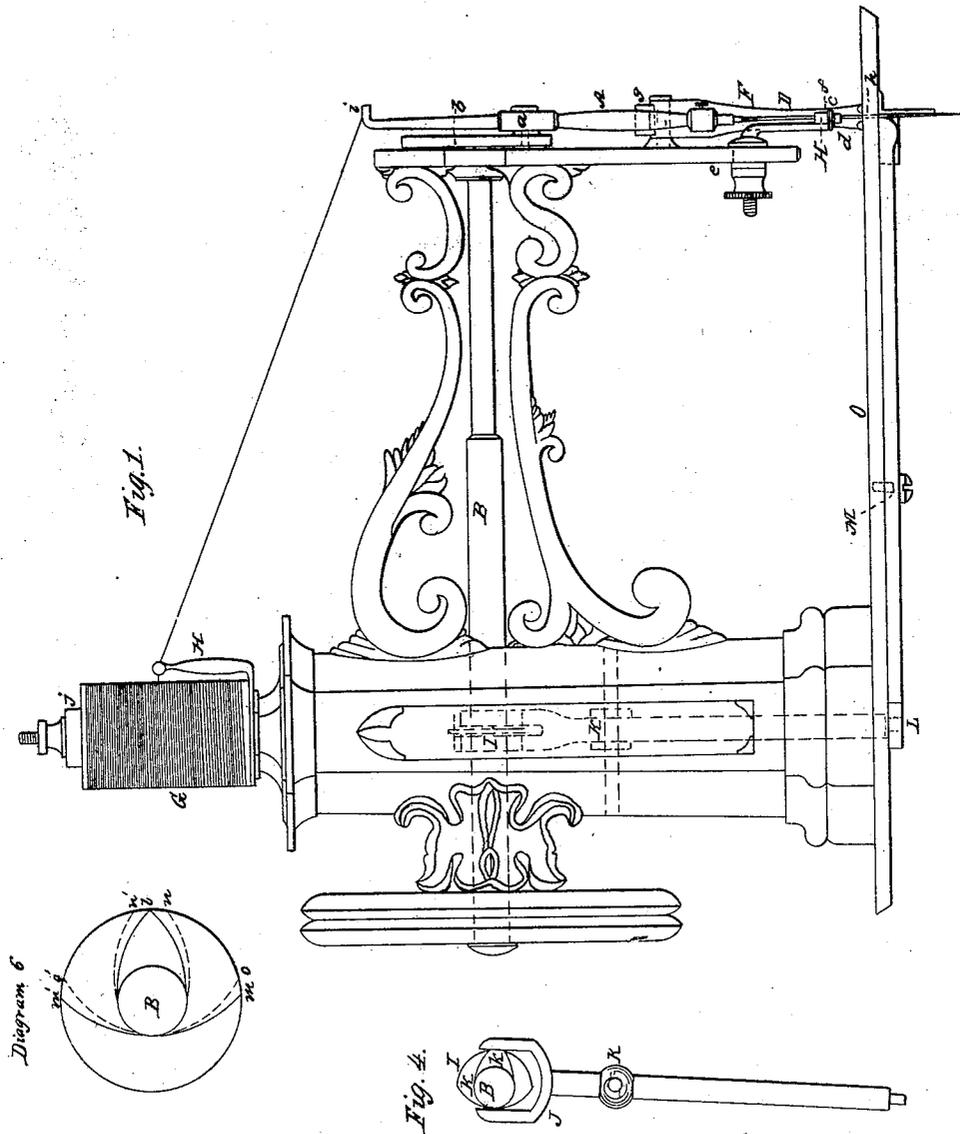


WEST & WILLSON.
Sewing Machine.

2 Sheets—Sheet 1.

No. 20,753.

Patented June 29, 1858.



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Sewing Machine.

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Fig. 2.

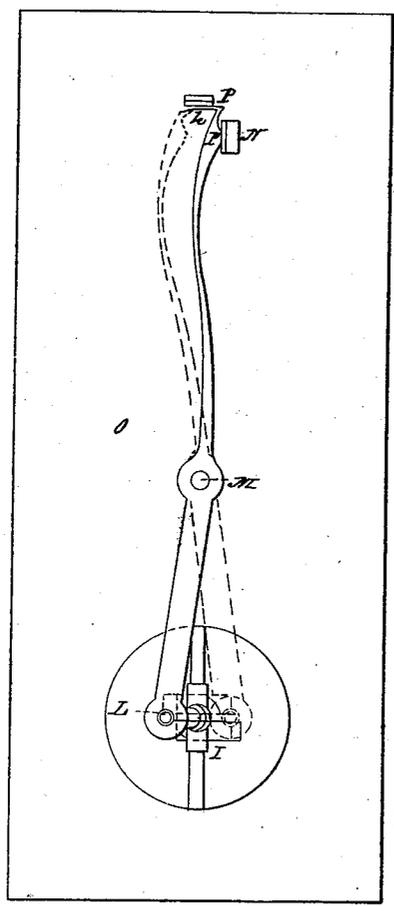


Fig. 3.

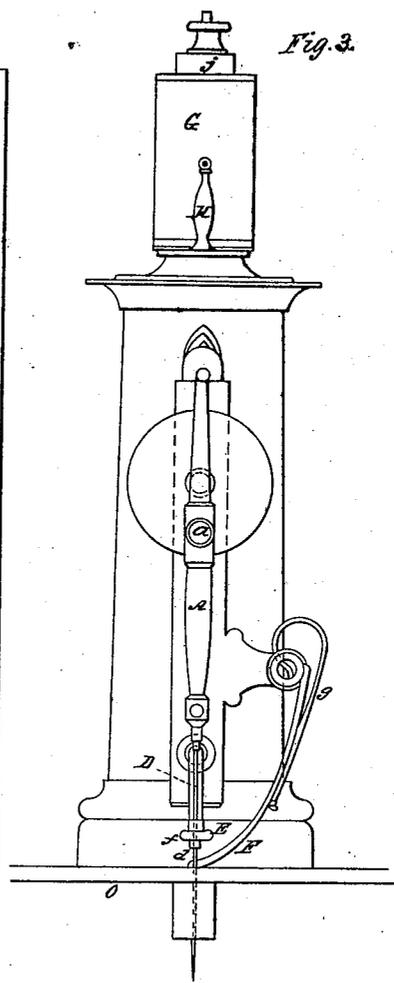
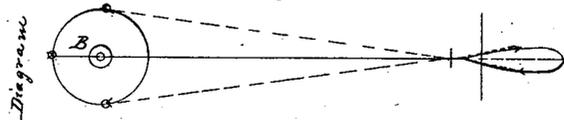


Fig. 5.



UNITED STATES PATENT OFFICE.

H. B. WEST AND H. F. WILLSON, OF ELYRIA, OHIO.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 20,753, dated June 29, 1858.

To all whom it may concern:

Be it known that we, H. B. WEST and H. F. WILLSON, of Elyria, in the county of Lorain and State of Ohio, have invented certain new and useful Improvements in Sewing-Machines; and we do hereby declare that the following is a complete and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, in which—

Figure 1 represents a side elevation. Fig. 2 represents an inverted plan view. Fig. 3 represents an end elevation. Fig. 4 represents a detached view of the eccentric. Fig. 5 represents a diagram showing the motion of needle-bar and needle.

Like letters refer to like parts in the different figures.

The nature of our invention consists in the peculiar manner of operating a spring-looper in combination with an eye-pointed needle.

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

A represents the needle-bar, which is secured to the crank-pin *a* in plate-wheel *b*, which is secured to driving-axle B. (See Figs. 1 and 2.)

D represents the needle, which fits into a socket in the lower end of the needle-bar, and is there secured by a set-screw.

E represents a needle-guide, which is secured in slot *c*, so as to be easily adjusted in a vertical direction, but not laterally, and firmly secured in any position required. Said needle-guide is secured in position by means of a thumb-screw.

d represents an oscillating tube or guide, which is secured on pivots *e* on the inside of the ring *f*, through which the needle passes. This oscillating guide fits closely to the needle, and should extend upward sufficiently high to prevent the possibility of the needle being withdrawn therefrom even when the point of the needle or the lower end of the needle-bar has been raised much higher than the fulcrum by the upstroke of the crank, so that were it not for the tube the guide could not in ordinary fine stitching be set sufficiently low to secure any desirable length of stitch.

F represents a cloth-holder, which is hinged onto the stationary portion of the machine, as seen in Fig. 3, and is pressed onto the fabric

by means of a spring, *g*. Said cloth-holder is so positioned and curved that it will securely clamp fabric of any thickness. Needle D passes through a slot, *h*. The upper end of needle bar A, above the crank-pin *a*, is extended up and curved forward, having a small perforation, *i*, through which the thread passes. (See Fig. 1.)

G represents the spool, which is secured, as seen in Fig. 1, by means of thumb-screw and gum-elastic friction-surfaces *j* or the ordinary mode of obtaining a suitable torsion on the thread.

H represents a guide for the purpose of bringing the thread from one common center, as will be readily seen.

I represents a peculiarly-formed compound eccentric, which is formed as seen in Fig. 5, the object of which is to give to the looper-bar a peculiar intermittent oscillating motion which shall be positive in its nature while running at any desired rate of speed. Eccentric I is formed in two parts, *k k'*, and is so arranged that surface K operates on an oscillating fork, J, and throws it forward to the limits of its eccentricity and retains it in that position for a certain portion of the revolution, and when it is relieved the surface of the other portion of the eccentric operates upon the opposite friction-surface of fork J and carries it back to the opposite extremity of its movement, where it is held during a certain portion of the revolution, (see diagram marked 6 in the drawings,) which is laid down as follows: Describe a circle of a radius equal to one-half of the diameter of the concentric portion of the eccentric; also, describe a circle from the same center which should represent the size of the axle. Then place the foot of the dividers on the periphery of the outer circle at *l*, with a radius equal to the distance between the periphery of the outer circle and the opposite periphery of the inner circle, and describe the arc of a circle striking the periphery of the inner circle and cutting the periphery of the outer circle in *m m'*. Then set the foot of the dividers at *m*, and strike the arc of a circle from the periphery of the inner circle, cutting the outer one in *l*. Then set the foot of the dividers at *m'* and strike with the same radius the arc of a circle from the opposite side of the radius of the inner circle, cutting the outer circle also at *l*. Thus

two eccentrics are described, which bear such a relative proportion to each other that they will work harmoniously between two parallel friction-surfaces, which are stationary, or so fixed to each other that they always bear the same relative position to each other, although they are free to oscillate on axle K. (See Fig. 4.) These two eccentrics are placed side by side on the main axle B and rotate with it. The friction-surfaces of the fork J are not in line with each other; but one of them takes onto one eccentric and the opposite one onto the other. (See Fig. 1, dotted lines.) The diagram marked 6 shows the form of both eccentrics and their relative form and size; but this eccentric would not be in the exact proportion used in our machines. In order to obtain the proper proportions, we set off on each side of point *l* a distance equal in the aggregate to the desired length of concentric face of the minor eccentric, (marked *n n'*), and from those points describe arc of circles, as seen in dotted lines in diagram 6, cutting the outer circle at *o o'*. Then from these points strike with the same radius arc of circles, as seen in dotted lines in diagram 6, cutting outer circle in *u u'*. Thus the motion is changed, as will be seen, in proportion as the concentric face of the minor eccentric is increased, and that of the face of the major eccentric is decreased. It is obvious, however, that as the one is increased the other must be decreased in the same ratio. Oscillating fork J, operating on axle K, takes into the end of looper-bar L and imparts to it the same peculiar intermittent motion. Said looper-bar oscillates on pivot M, and is constructed so as to form a curved spring, (see Fig. 2,) on the outer end of which is formed a hook, P, the outer side of which is cut on a circle described from

pivot M. Directly in the rear of said hook there is formed a projection, *p*, which comes in contact with a stationary projection, N, on the under side of the bed-plate O. The point of the hook P passes as close to the needle as possible without striking it, so that when the loop is formed it is taken by the hook and carried forward until the projection *p* strikes projection N and causes the spring to become straightened, and thus elongated, so as to throw the center of the loop in a position where the point of the needle will pass through it, as before described.

The arrangement of the eccentrics acting in combination with the looper-bar and stationary projection, against which said looper-bar strikes, is a combination at once cheap, durable, and effective, being certain in its operations.

We claim—

The spring looper-bar, in combination with the eccentric I, and the oscillating fork J, and stationary projection N, against which the outer end of the looper-bar strikes for the purpose of carrying the looper-bar back and forth, as required, and giving it two intermittent or stop motions, carrying the loop into a position where the needle will pass through it, and allow the spring again to recoil immediately after the needle has passed through said loop, the whole being constructed in the manner and for the purposes described.

Signed and sealed in presence of two witnesses.

H. B. WEST. [L. S.]
H. F. WILLSON. [L. S.]

Witnesses:

C. F. WEST,
THOMAS J. BOYNTON.