

J. P. EMSWILER.

Sewing Machine.

No. 25,002,

Patented Aug. 9, 1859.

Fig. 2,

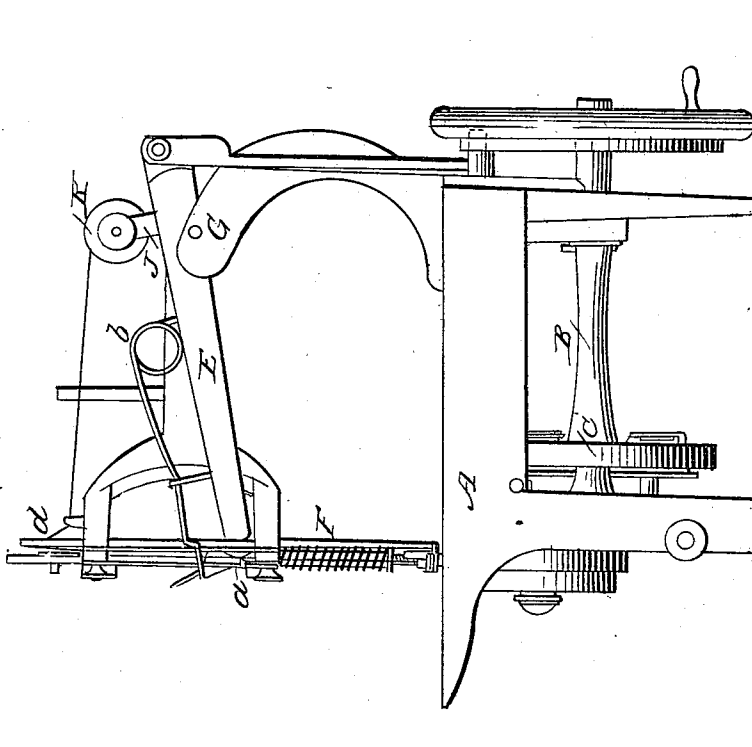
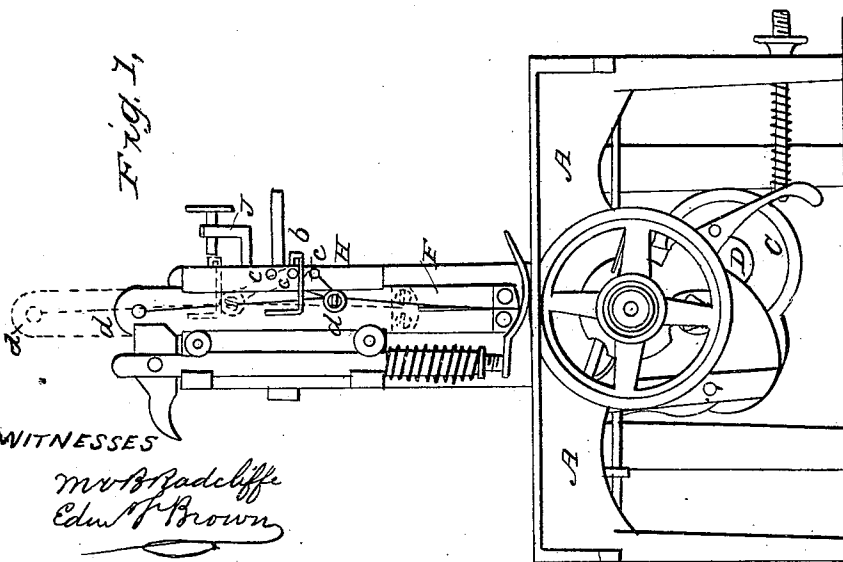


Fig. 1,



WITNESSES

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INVENTOR:

*J. P. Emswiler*

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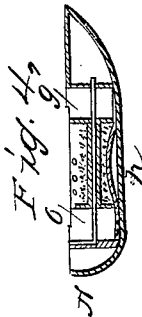
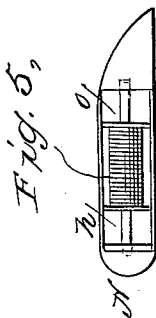
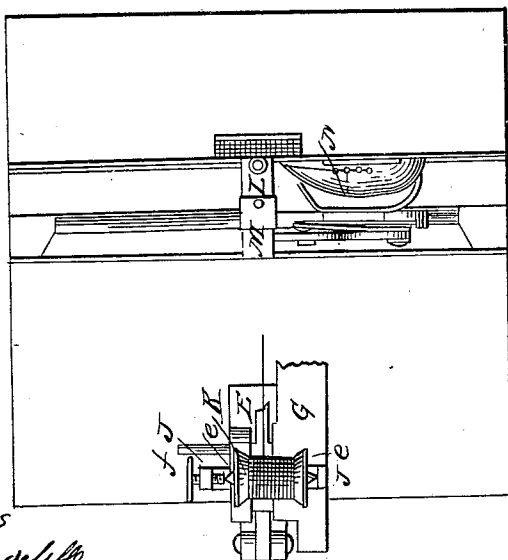


Fig. 3,



WITNESSES

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# UNITED STATES PATENT OFFICE.

J. P. EMSWILER, OF KNIGHTSTOWN, INDIANA.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 25,002, dated August 9, 1859.

*To all whom it may concern:*

Be it known that I, J. P. EMSWILER, of Knightstown, Henry county, and State of Indiana, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a front elevation of a sewing-machine embracing my improvements. Fig. 2 represents a side view of the same. Fig. 3 represents a plan of the table. Fig. 4 represents a longitudinal section of the shuttle and bobbin. Fig. 5 represents a front view of the shuttle, showing the interior of the same.

The object of my improvements in sewing-machines is to adapt the machine for sewing materials varying greatly in thickness without changing the position or the movement of the feeding mechanism, as heretofore; and my invention for effecting this object consists in the application of a plate arranged upon a guide so that it can be slid forward under the needle and the pressure-pad, and thus raise the bed in relation to the feeding mechanism at this point and adapt the machine to sew materials varying in thickness; and it also consists in the application of a longitudinal spring in the bottom of the shuttle-box, arranged to bear on the surface of the thread on the bobbin when nearly full and on the heads of the bobbin when the thread is partially drawn off, by which means the tension required to draw the thread from different parts of the bobbin is equalized and a more uniform and regular interlocking of the upper with the lower thread is produced.

In the accompanying drawings is represented a sewing-machine embracing my improvements, which consists of a table or stand, A, on which the material to be sewed rests, and which also supports the moving and stationary parts of the machine. A main driving-shaft, B, with its bearings in ears under the table, has attached to it two open-grooved cams, C and D. The one, C, gives motion to the needle, and the other, D, to the shuttle, and these two cams are so constructed that during one revolution they communicate three vibrations to the needle and shuttle. The connection between the cams and the needle-bar and shuttle-driver are made in the manner

well known in sewing-machines, and therefore do not require particular description. The arm E, driving the needle-bar F, is pivoted to a bracket, G, extending upward from the rear of the table, and passes through the needle-bar. An eye, *a*, is made in the outer end to form a guide for the needle-thread, and attached to the arm is a tension-spring, *b*, for the needle-thread, which passes around in front of the needle-bar. In the guide H of the needle-bar holes *c* are made, through which the needle-thread passes. The needle-thread in passing from the spool is carried through an eye, *d*, in the top of the needle-bar, thence through the eye *a* on the needle-bar and through one of the holes in the needle-bar guide, depending upon the amount of thread taken up by the material in forming each stitch, thence around the spring *b*, and again through the eye *a* to the eye of the needle. As the needle ascends the spring *b* and eye *a*, around and through which the thread passes, are carried above the holes *c* in the needle-bar guide, and the amount of thread drawn off from the spool is equal to the distance from the hole *c* to the eye *a* and the spring *b*. This amount may be either increased or diminished, as required for the stitches in materials varying in thickness, by changing the thread from one hole to another in the needle-guide. The slack of the thread between the needle and fabric sewed is taken up and the stitch drawn tight by means of the spring *b*, as in other sewing-machines. A forked bracket, I, is attached to the needle-arm E, and carries the spool K, supplying the thread to the needle. A metallic rod or wire, *e*, pointed at both ends, is passed through the hole in the spool, and one point of the rod rests in a conical socket in one arm of the bracket and the other in a socket in the end of a tightening-screw, *f*, passing through the other arm. By means of this screw the degree of tension required to draw off the thread from the spool is regulated.

The feeding mechanism consists of a feeding-wheel, R, with a roughened surface arranged in front of the needle and projecting above the bed, and operated in the usual manner. A bar, L, extends across the shuttle-race under the needle and the pressure-pad, and through the bar a hole is made to allow the needle to pass through. This bar carries a sliding plate, M, which can be moved forward under the nee-

dle and the pressure-pad, bringing the hole in its end, which is smaller than that through the bar, opposite the hole in the bar. Thus the bed is raised opposite the feeding-wheel, and the machine adapted to sew materials varying in thickness without changing the position of the feeding mechanism. The bar L, instead of being stationary, may be arranged so that it can be raised or lowered, if thought best.

The shuttle N and bobbin O are of the usual forms in sewing-machines, with the exception that the bobbin is only about half the length of the cavity in the shuttle, and is free to slide from end to end in this cavity on a race-rod, *g*, which passes through its center, so as to bring either end of the bobbin opposite the central hole in the side of the shuttle, through which the thread passes, by which means the line of draft of the thread in passing through the central hole in the side of the shuttle is perpendicular to the axis of the bobbin, and consequently the tension required to draw off the thread from all parts of the length of the bobbin at equal distances from its center is uniform, which is not the case when the bobbin does not vibrate for its entire length on either side of the hole in the shuttle through which the thread passes. In the bottom of the shuttle, and extending the entire length of the cavity, is a thin arched spring, *h*, confined at the ends to the shuttle. This arrangement of the spring tends better than any other to compensate for the varying length of leverage with which the thread acts on the bobbin while being drawn off. When the bobbin is full and the leverage of the thread is greatest, the spring is flattened along its line of contact with the thread, and acts with its greatest force to pre-

vent the bobbin from turning. As the thread is reduced on the bobbin its leverage is gradually reduced, and the spring, expanding, becomes more arched and acts upon a less extent of surface of the thread and comes in contact with the heads of the bobbin, and as the pressure of the spring on the thread diminishes its pressure on the bobbin-heads increases, which tends to equalize and proportion the diminishing pressure of the spring to the diminishing reduction of the length of leverage through which the thread acts on the bobbin. It will also be seen from the arrangement of this spring that there is no liability of its catching the thread and preventing the bobbin from turning or from vibrating freely on its race-rod.

Having thus described my improvements in sewing-machines, what I claim therein as new, and desire to secure by Letters Patent of the United States, is—

1. The combination of the slide M, or its equivalent, arranged substantially as described, with the feeding mechanism, for the purpose of adjusting the bed to the feeding mechanism for materials of various thicknesses without changing the position of the feeding mechanism.

2. In combination with the bobbin, arranged, as described, to vibrate in the shuttle-race, the longitudinal arched pressure-spring, arranged substantially as described, for the purpose set forth.

In testimony whereof I have subscribed my name.

J. P. EMSWILER.

Witnesses:

EDM. F. BROWN,

M. V. B. RADCLIFFE.