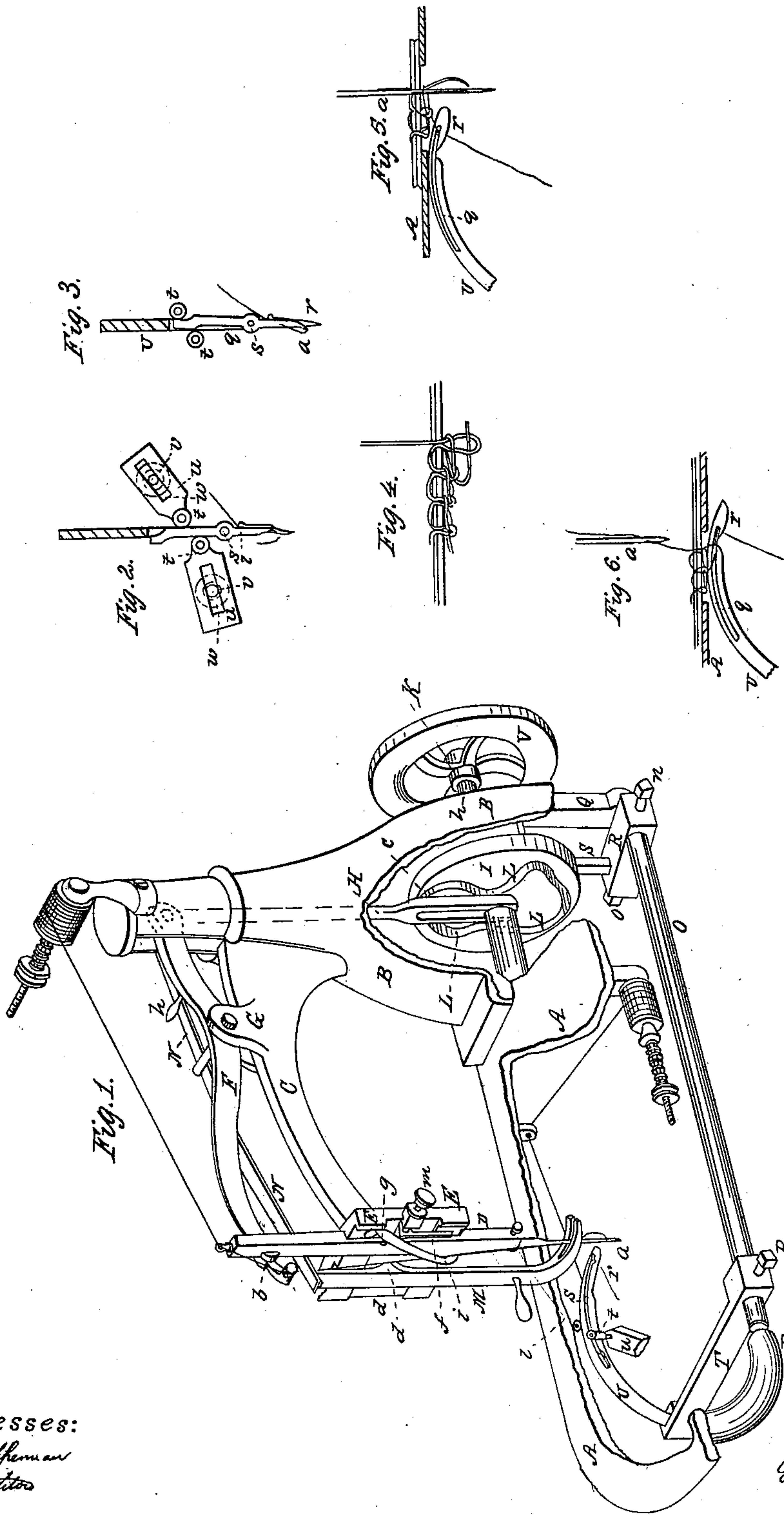


E. BOOTH.
Sewing Machine.

No. 25,087.

Patented Aug. 16, 1859.



Witnesses:
Thos. Helfmann
A.B. Stoughton

Inventor:
Ezekiel Booth

UNITED STATES PATENT OFFICE.

EZEKIEL BOOTH, OF TROY, NEW YORK.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 25,087, dated August 16, 1859.

To all whom it may concern:

Be it known that I, EZEKIEL BOOTH, of Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a perspective view of said sewing-machine. Figs. 2, 3, 4, 5, and 6 represent detached views to be hereinafter described.

The nature of my invention relates to that class of sewing-machines in which two threads are used for forming a loop-stitch by means of a needle and looper; and my invention consists in providing said looper with an auxiliary lever, which, when the needle is descending, will force the looper-thread away from the looper, thus leaving a space between both, through which the needle may descend, thereby insuring the proper working of the looper and needle and preventing them from making drop-stitches.

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

A represents the platform of the machine, on which the cloth to be sewed is placed. It is represented in the drawings as being partially broken out to show the parts below.

B represents the hollow vertical standard, and C the horizontal arm, which carries at its end the needle and feed-bar.

a represents the needle, and D the needle-bar, which fits within a groove of the shield or plate E of the arm C. The needle-bar is actuated by means of a lever, F, which turns on the fulcrum G, and which is connected with the needle-bar by means of a friction-roller, b, which works within a suitable recess near the upper end of said needle-bar. The lever F is operated by means of a rod, H, which is pivoted to the upper end of the lever F, and a cam-wheel, I, the latter being secured to the driving-shaft K of the machine, a pin, c, of the lever H reaching within the cam-groove L of the wheel I, which, being of the proper shape, imparts to the needle-bar the desired motion at the proper intervals, which is essential for the effectual working of the machine.

The rod H is retained in its vertical position during the operation by its forked ends straddling the driving-shaft K.

M represents the feed-bar of the machine, which is of the usual construction. It is fitted within a cam-plate, d, in which it can slide vertically, and which itself is fitted within the plate E, and which can slide therein horizontally. The cam-plate f is connected with the cam-plate d, and when the needle descends the cam g of the needle-bar strikes the plate f and moves the same and the feed-bar over the cloth to be sewed, the feed-bar being then not pressed tightly against said cloth, as the projecting pin h of the lever F does not then bear upon the pressing-spring N; but when the needle rises and has arrived above the cloth, the pin h presses upon the spring N, presses down the feed-bar upon the cloth, and the cam i now comes in contact with the cam d, pushes the feed-bar back, and thus effects the feed of the cloth, said feed being made adjustable by means of the thumb-screw m. I have described merely the operation of these parts, as their construction does not embrace any novelty, and they therefore do not require a minute description.

O represents a shaft, which has its bearings in the brackets P and Q of the frame, and which extend below the platform.

R represents a nut, which is secured to the shaft O by means of the screw n, and to which nut a pitman, S, is secured by means of the set-screw o. The upper end of said pitman is provided with a friction-roller, which runs in a cam-groove of the wheel I, (not represented in the drawings,) the cam-groove being of such a shape as to give the shaft O the desired reciprocating rotary motion when the machine is in operation.

T represents a crank-arm, which is secured to the other end of the shaft O by means of the set-screw p. To the end of the crank is secured a circular or curved-shaped arm, U, the outer end of which constitutes the looper r of the machine. The motion of this looper is a circular one, turning on the shaft O as its fulcrum. q represents a lever which is fitted within the arm U, and which can turn on the pin s as its fulcrum. The front end of said lever is pierced, and the looper-thread (represented in blue in the drawings) is passed through its eye. The shape of the lever is represented in a top view in Figs. 2 and 3.

This lever, which constitutes the principal part of my invention, has for its object the more perfect working of the machine by preventing the needle from making drop-stitches. It runs between two rollers, *t*, which are secured to the brackets *u*, the latter being secured to the lower side of the platform, where their positions can be adjusted with the greatest nicety by the set-screws *v* passing through the slots *w*. The position of the guide-rollers *t* is such that they will both be constantly in contact with the sides of the lever *q* when the bar *U* is vibrated, and consequently when the curved rear end of said lever comes in contact with said guide-rollers the lever will be thrown in the position represented in Fig. 3. There is thus no lost motion, as there would and must be when a spring is used in connection with any quick movement.

The operation of the machine is as follows: The cloth being properly adjusted on the table, the needle-thread (represented in red) and the looper-thread (represented in blue) are passed through their respective eyes, motion being given to the driving-shaft *K* by turning the pulley *V*. The needle *a* descends through the cloth to the positions represented in Figs. 1 and 5, in which the lever *q* is in the position represented in Fig. 2, in which its front part is entirely flush with the looper *r*, or shielded by it, and does not project beyond its surface. As the needle rises the thread slackens, forming a loop, through which the looper *r*, which now commences its motion, may pass. As the needle rises farther the looper will come to the position represented in Fig. 6, where the loop of the needle-thread rests in the neck of said looper, while the end of the looper-thread is secured by the preceding stitch. As soon as the eye of the lever *q*, during the forward motion of the looper, has passed beyond the needle, the lever *q* is thrown in the position represented in Fig. 3 by its curved rear end coming in contact with the guide-rollers *t*, and its front end is pushed out from the looper *r*, thereby leaving a space between the looper and its thread, through which the needle may pass in descending, as represented in Fig. 3, thereby insuring a perfect stitch, said space being enlarged by the feed of the cloth, which is moved in the opposite

direction from the looper. The needle now descends for the next stitch, passing unflinchingly between the looper and its thread, and as the looper returns the lever *q* is brought back to the position represented in Fig. 2, where its eye is flush with the looper, and can therefore clear the needle. The use of the auxiliary lever *q*, besides insuring the proper working of the machine, also serves to take up part of the slack of the thread after the stitch has been made, and thus does not require the entire slack of the thread to be taken off by the needle movement, as used heretofore, and this is effected by reason of the front end or eye of the lever *q* being pushed out to such an extent as that the length of the looper-thread between said eye and the preceding stitch will be in a diagonal instead of a parallel direction, and will, while thus stretched, take in part of the slack and tie the preceding stitch, which latter is represented on an enlarged scale in Fig. 4. The lever *q* is always shielded within the loop when said looper passes through the needle-loop, and being worked by a positive motion, it is always reliable, there being no spring which must contract and expand at every operation of forming a stitch.

I am aware that a vibrating lever has been used in connection with a looper, but of a different construction, different operation, and for a different purpose from that of mine. I do not therefore claim a vibrating lever and looper independent of its construction, operation, and purpose; but

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

1. The combination of an eye-pointed vibrating lever and a looper, operating together substantially in the manner and for the purpose set forth.

2. The vibrating of the eye-pointed lever by a positive motion given to it by the rollers *t t* entirely, and as contradistinguished from the use of a spring of any kind, by which means I insure its reliable action under its rapid motions, as set forth.

EZEKIEL BOOTH.

Witnesses:

THOS. H. UPPERMAN,
A. B. STOUGHTON.