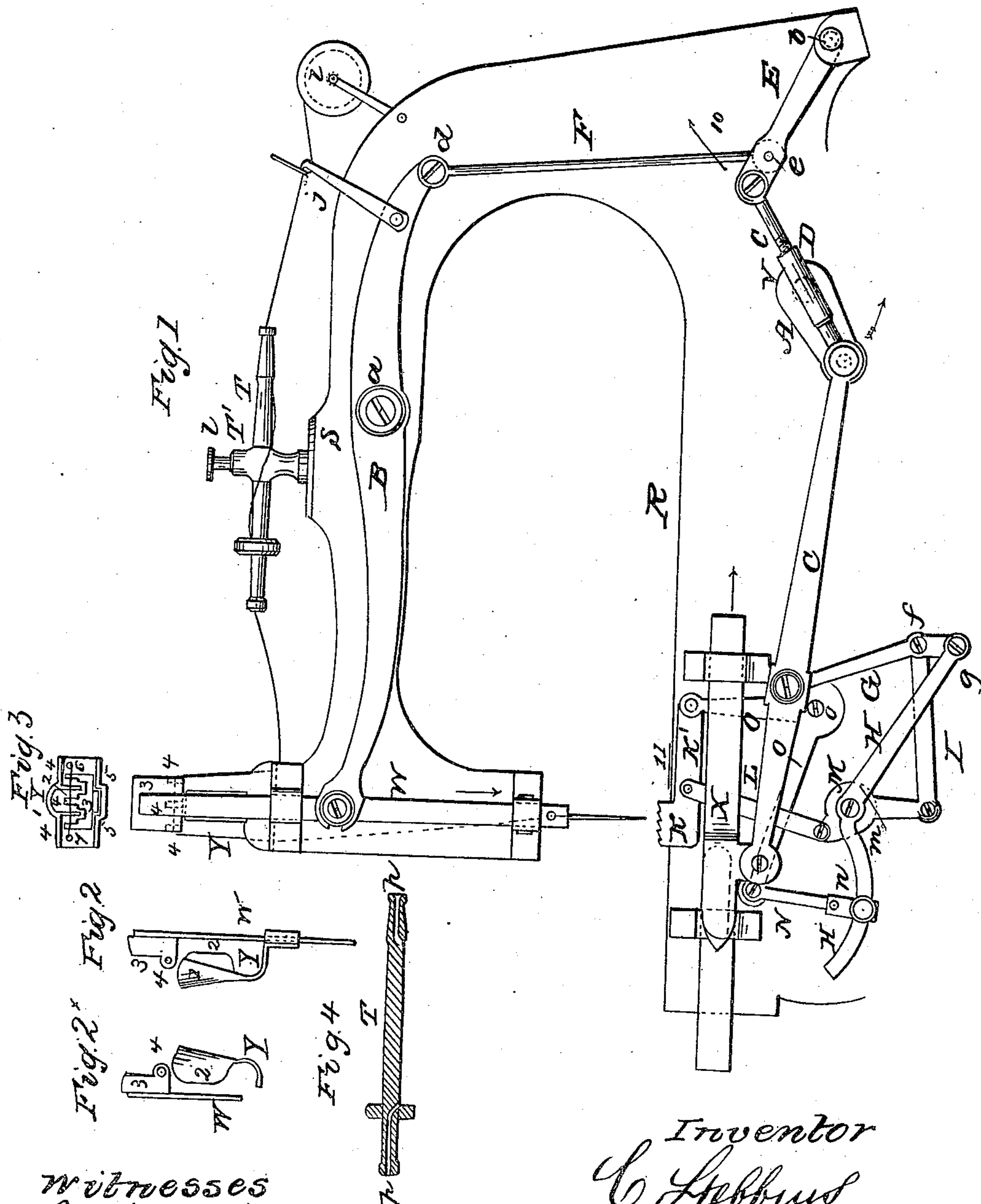


C. STEBBINS.
Sewing Machine.

No. 34,789.

Patented March 25, 1862.



witnesses
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UNITED STATES PATENT OFFICE.

CARLOS STEBBINS, OF PIKE, NEW YORK.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 34,789, dated March 25, 1862.

To all whom it may concern:

Be it known that I, CARLOS STEBBINS, of Pike, in the county of Wyoming 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 same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of a sewing-machine with my improvements, taken in the plane parallel with the shuttle and feed motions. Figs. 2 and 2* are opposite side views of the take-up device. Fig. 3 is a top view of the same. Fig. 4 is a central longitudinal section of the tension device.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists, first, in obtaining the movement of the needle of a sewing-machine from a crank or its equivalent through the agency of a pitman and toggle-joint *e*, by which means I am enabled to obtain such a movement of the needle as is most desirable to provide for the passage of the shuttle or its equivalent through or into the loops of the needle-thread.

It consists, secondly, in the employment, for transmitting motion from a crank or its equivalent to a reciprocating feeding-dog, of a novel system and arrangement of levers by which a movement of a most positive and otherwise desirable character is obtained for the dog without any noise or jarring of any of the parts of the feed-motion.

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

R is the bed-plate of the machine, and S the stationary arm.

V is the main shaft, carrying a crank, A, from which the working parts—viz., the needle, the shuttle, and the feeding device—derive motion, the said shaft being furnished with a fly-wheel or a counter-balance opposite to the crank.

W is the needle-bar, and B the needle-operating lever, arranged to work on a fulcrum, *a*, supported by the arm S, as in many other sewing-machines. One end of this lever is connected with the needle-bar, and the other end by a pin, *d*, with the link F of the toggle-

levers E F, the link E of which is arranged to vibrate on a fixed pin, *b*. The link E is also connected with the crank A by means of the pitman D, through which a vibrating movement is given to the toggle-joint *e* to make the latter produce the movements of the lever B and the needle-bar. The pitman is made in two pieces, having a screw-connection at *c* to vary its length, and its length is such that after having produced the complete downward movement of the needle by a movement of the toggle-joint *e* in the direction of the arrow 10, Fig. 1, to the straight position, it carries the toggle-joint *e* a little way beyond that position to raise the needle a short distance to form the loop in the needle-thread for the passage of the shuttle between the said thread and the needle. In coming back again to the straight position the toggle of course depresses the needle again preparatory to the withdrawing movement, which is effected by the greater movement of the toggle beyond that position in the opposite direction to the arrow 10, but during such depression time is gained for the passage of the shuttle. The screw-joint *c* in the connecting-rod, by enabling its length to be varied, enables it to move the toggle-joint *e* in the direction of the arrow 10 a greater or less distance beyond its straight position, and so it gives the needle a greater or less rise to form the loop previous to its withdrawing movement.

The advantages of the above-described method of operating the needle are great ease of operation under either slow or rapid motion, simplicity of construction, and durability.

X is the shuttle-driver or shuttle-carrier, connected directly with the crank A by means of the pitman C, by which the necessary motion is transmitted to the shuttle from the said crank, such motion being so timed by the arrangement of the crank and the needle-operating mechanism in relation to the shuttle driver or carrier as to produce the proper relative movements of the needle and shuttle.

K is the reciprocating feeding-dog, formed upon or rigidly secured to a vibrating bar, K', near one end thereof. This bar K' is pivoted at the end farthest from the dog to one arm of an elbow-lever, O, working upon a fixed fulcrum-pin, *o*, and is connected near the dog by a link, L, with one end of a lever, M, working on a fixed fulcrum, *m*. The other arm of the

lever O is connected by a double link, N n, with one arm of a lever, H, which works on the same fulcrum, m, as the lever M, and whose other arm is connected by a pin, g, with one end of a lever, G, the other end of which is connected with the shuttle-driving pitman C. The pin g constitutes the fulcrum of the lever G, which is also connected at a short distance from the said pin g, by a pin, f, and link I, with the other arm of the lever M. The lever G transmits motion from the pitman C to the levers O, M, and H, the movement of the lever O being derived through the lever H and link N n, and the movement of M being derived through the link I. The lever M, acting through the link L, produces the upward and downward movement of the feed bar and dog to make the latter bite and relieve the cloth, and the lever O produces the forward movement of the feed bar and dog, by which the feed-movement of the cloth is effected, and carries it back preparatory to the repetition of the said movement.

The several levers and their connections are so arranged that while the upward movement of the dog takes place the horizontal movement is almost entirely suspended, and that during the forward horizontal movement to feed the cloth the upward movement is almost entirely suspended; but the downward and backward movements take place together, and the two combine to produce an oblique downward movement. The dog may therefore be considered as having only three movements—viz., the upward movement to bite the cloth, and the horizontal forward movement to feed the cloth, and the obliquely-downward movement, which both liberates the cloth and prepares it for the repetition of the biting and feed movements. The length of the stitch is adjusted and varied by shifting the connection of the link N n nearer to or farther from the fulcrum m of the lever M. The advantages of this mode of obtaining the feed motion are perfect certainty in measurement of stitch at all rates of speed, noiselessness, and ease of operation and regulation.

The take-up device for taking up and controlling the slack of the needle-thread is composed principally of three eyes, 4 4 4, on the back of a broad head, 3, with which the needle-bar is furnished at its upper end, and two tongues, 1 2, which I call respectively the "lifter" and "depressor" on the front of a stand, Y, which is erected on the top of the arm S, behind the needle-bar. The head has two vertical grooves, 5 5, which I call "keepers," in its back, for the reception of the tongues 1 and 2; but the said grooves are considerably wider than the tongues, and the stand Y has two eyes, 6 7, Fig. 3, in its lower part. The top of the lifter 1 is slightly rounded, and its

lower part beveled, as shown in Fig. 2; but both the top and bottom of the depressor are rounded, as shown in Fig. 2*. The needle-thread passes from the spool i through a guide, j, on the needle-operating lever B, thence through and around the tension-bar T, thence through the eye 6, three eyes, 4 4 4, and eye 7, and thence down to the needle. After the shuttle has passed through the loop of the needle-thread, and while the needle is still ascending, the thread between the eyelets is caught under the depressor 2, and thus depressed between the said eyelets as the ascent of the needle is completed, thereby causing the slack of the loop to be partly drawn up through the cloth. As the upward movement of the needle is completed the keepers pass the depressor, and the thread, being no longer confined by the keepers, slips from under the depressor. As the needle descends again the thread between the two eyes 4 4, which embrace the lifter 1, is caught on the tops of the lifter 1 and depressor 2, and the drawing up of the slack of the needle-thread is thus completed, the thread being dropped from the lifter just as the needle-eye is at the surface of the cloth. The advantage of this take-up device is that it requires no adjustment or oiling, operates easily, is not liable to derangement, and adds no moving parts to the machine.

The tension-bar T fitted to a stand, T', and secured therein by a set-screw, l, is made of tubular construction for some distance from each end, the tubes opening through the side of the bar at their inner ends, as shown at p p in Fig. 4. The thread passes through both tubes p p, and the tension is varied by turning the bar in the standard to wind more or less thread upon its exterior, in a similar manner to that practiced with other tension-bars of a similar class. The tubes p p at the ends of the bar enable a more uniform tension to be produced.

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

1. Obtaining the movement of the needle of a sewing-machine from a crank or its equivalent through the agency of a pitman and toggle-joint, e, applied and arranged in combination with the said crank or equivalent to operate substantially as herein specified.

2. Transmitting motion from the crank A or its equivalent to the vibrating feed-bar K' by means of a system of levers, C G H M O, and connections and slide X, arranged, applied, and operating substantially as herein set forth.

CARLOS STEBBINS.

Witnesses:

W. W. BUSH,
B. F. WOLCOTT.