L. BOLLMAN.

2 Sheets—Sheet 1.

Sewing Machine.

No. 33,414.

Patented Oct. 1, 1861.

Fig. 1

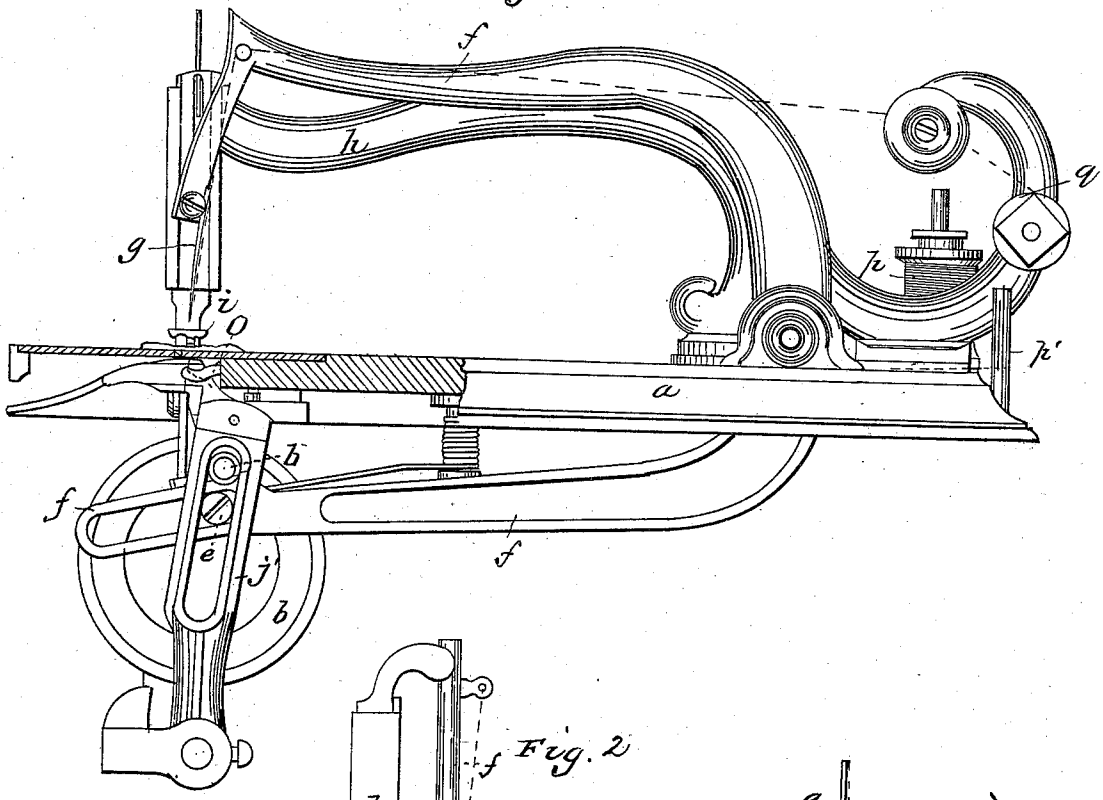
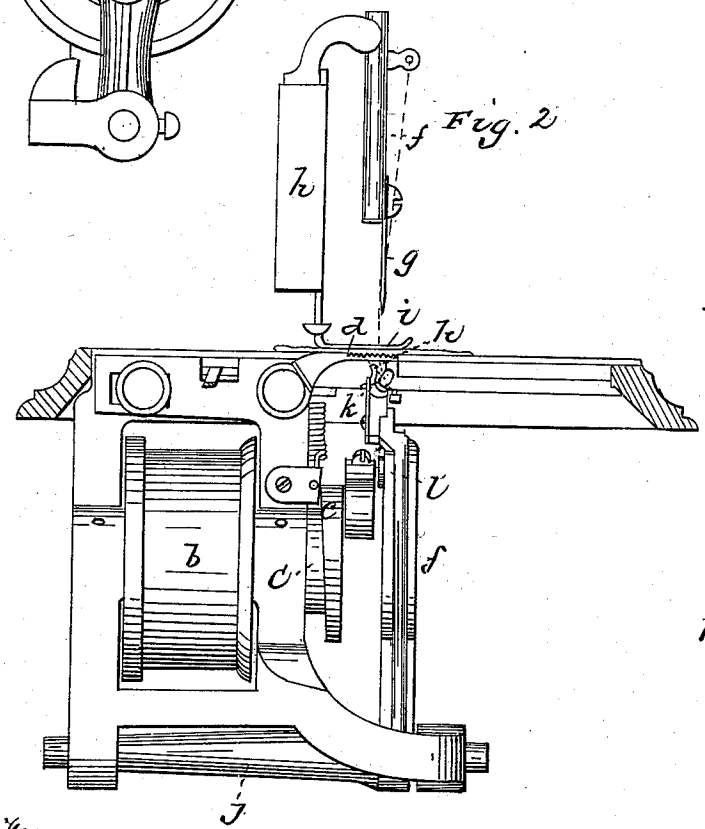
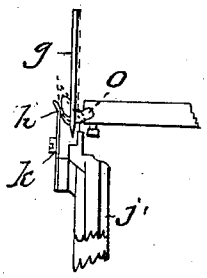


Fig. 2





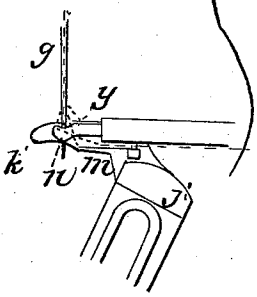


Fig. 11

Witnesses:

C. H. Knox

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S. Bollman. Sheet 2, 2 Sheets.

Sewing Mach.

No. 2,410. Patented Oct. 1, 1861.

33,414.

Fig. 3

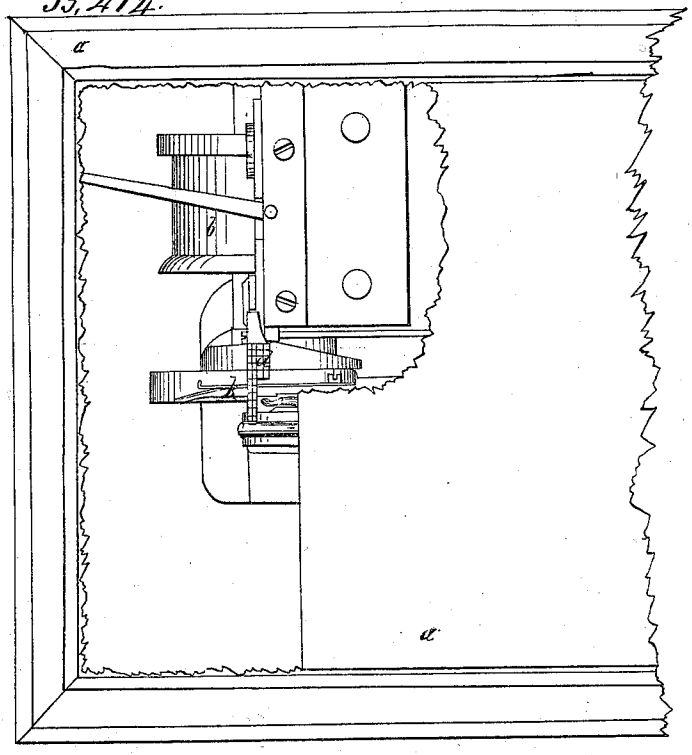


Fig. 4.

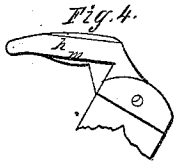


Fig. 5.

Fig. 6.

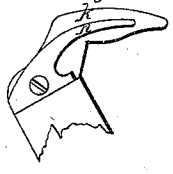


Fig. 12

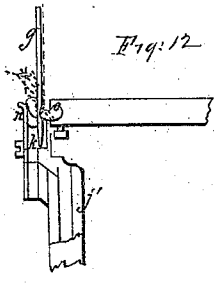
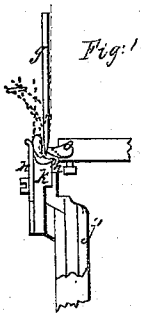
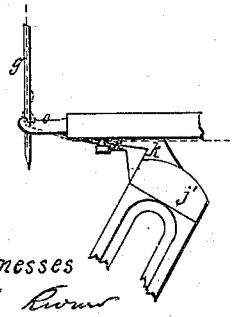


Fig. 13





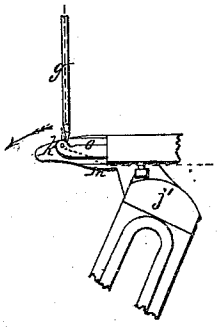


Fig. 7.

Fig. 8.

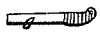


Fig. 9.

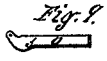
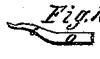


Fig. 10.



Witnesses

J. H. Rowe

Albert F. Lawrence

Inventor.

Louis Bollman.

UNITED STATES PATENT OFFICE.

LOUIS BOLLMAN, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO GROVER & BAKER SEWING MACHINE COMPANY, OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **33,414**, dated October 1, 1861.

To all whom it may concern:

Be it known that I, LOUIS BOLLMAN, of the city of Boston, in the State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare that the following, taken in connection with the drawings, is a full, clear, and exact description thereof.

In the drawings, Figure 1 is a side elevation of the machine, with portion of the bed-plate or platform broken away. Fig. 2 is a front elevation, with the bed-plate in section. Fig. 3 is a plan of a part of the machine, with the bed-plate removed. Fig. 4 is an elevation from one side of the hook; Fig. 5, a plan of the same, and Fig. 6 an elevation of the other side thereof, Fig. 7 being a section through the hook. Fig. 8 is an elevation of one side of the lower thread-post; Fig. 9, an elevation of the other side of the same, and Fig. 10 a plan thereof; and Figs. 11, 12, and 13 are front and side elevations of the hook, needle, and lower thread-post in the relative position that they assume in the operation of the machine.

In the drawings, the upper thread is represented by blue and the lower by red lines. The machine makes what is commonly known as the "Grover & Baker" or "double-looped" stitch, and the stitches are made by an eye-pointed needle, a vibrating hook, and a thread post or supporter for the lower thread, acting conjointly in the manner hereinafter set forth.

The machine is mounted upon a bed-plate, *a a a*, making part of a table or platform on which the material to be sewed is supported. The machine has a driving-shaft with a belt-pulley, *b*, mounted thereon. This shaft carries a cam, *c*, which actuates a four-motion feed, the roughened surface of which is shown at *d*, and the same shaft is provided with a crank-pin, *e*, which traverses in a slot in the needle-arm *f*. This latter is pivoted near the rear end of the bed-plate, and carries the needle *g*, which as the crank-pin rotates vibrates up and down.

The machine has a standard, *h*, and a presser-foot, *i*, as usual, and upon a rock-shaft, *j*, is mounted a hook-stock, *j'*, which carries a hook, *k*. This hook-stock has a slot in it, into which projects a pin, *l*, attached to the needle-arm *f*. As the needle-arm vibrates up and down this pin causes the hook to vibrate to and fro. This hook is to be shaped and located, substantially as shown in the drawings, so as to produce the effect desired, and its offices are, first, to advance point first and seize a loop of needle-thread; second, to spread that loop; third, to draw that loop, when seized, over an angle or bend of lower thread held by a post or thread-supporter; and, fourth, to release the loop it has seized, these offices being performed at proper times, and in order to effect them the hook has a thin lancet-shaped point to seize looped thread, has a flange, such as *m*, to spread the loop, so that it may pass over the thread-post, and a spring, *n*, which nips loops of thread against the side of the hook, so that the hook, in retreating, may pull a loop over the thread-post, and consequently over an angle or bend of lower thread. The hook vibrates on one side of the needle, and on the other side thereof there is located a thread-post, whose office is to support lower thread in such manner that there shall be an angle or bend therein over which loops of needle-thread may be cast. This post *o* is attached to the bed-plate, and in the present instance has an eye in its end. A notch or guide-groove would answer the same purpose. By referring to the various drawings it will be seen that this eye lies in close proximity to the hook, and above the flange thereon, and that the post then bends away from the hook, or has a recess formed in it, the needle rising and falling between this bend or recess and the side of the hook, and by reference also to the drawings it will be seen that the lower thread passes from a spool, *p*, around a standard, *p'*, under the bed-plate, through the eye in the post, and thence upward again through the bed-plate and to the under side of the material being sewed, the eye in the post so supporting the thread that it makes a bend or angle. (See specially Figs. 1, 11, and 13. The upper thread is furnished from a spool at *q*, and passes thence through a tension apparatus, through a leading-eye, and then through the eye of the needle.

The cloth is to be located under the presser-foot, and the pulley *b* is to be rotated in the direction of the arrow. When rotated the needle will descend, pass through the cloth and down between the hook and the post, and will rise a little, opening its loop. As this loop opens the hook advances, point first, en-

ters this loop, seizes and spreads it, Fig. 13 showing this position of the parts. As the needle rises the hook continues to advance and spread this loop wider, (see Figs. 1 and 2,) spreading it so widely sidewise by the action of the flange (see Fig. 2) that on the retreat of the hook one side of the loop will be carried along that side of the post farthest from the hook and needle. As the hook advances it grasps one part of the loop between its side and the spring which makes part of the hook, the thread having slipped into the space between the two. The hook now (after advancing to the position Figs. 1 and 2) commences to retreat and the needle to descend, and as the hook retreats with the loop in its grasp it carries it over the thread-post, and consequently over the angle of lower thread. (See Fig. 11, where the loop has thus been cast over the lower thread, and where the needle has subsequently descended between that loop and a part of the lower thread.) A further retreat of the hook causes the loop it held to slip off of it or be released, and the loop shortly after slips over the end of the thread-post. All parts now arrive at the position shown in Fig. 12, where the needle is shown as about to rise and open a new loop, and the hook is commencing to advance to spread that new loop. A succession of such motions, in conjunction with the feed which takes place when the needle is out of the cloth, and advances the goods in a direction from the thread-post toward the hook, will make a stitch like that made by the Grover & Baker machines now in common use, and it should be noted, in examining carefully into the operation of the machine, that the needle descends between that part of the lower thread leading from the post to the cloth and the loop that is then passed over the thread-post, (see Fig. 11,) and that the needle does not descend below the cloth until the loop is cast over the thread-post. The post is curved in or recessed on the side farthest from the needle, as at *s*, (see Figs. 9 and 10,) in order to insure this position of the loop, so that the needle must pass, as above specified. The seizing and spreading of each loop draws up the slack loop that has just been released by the hook and slipped off of the end of the thread-post, thus tightening each stitch in succession.

Other contrivances may be substituted for the spring which makes part of the hook, so long as such contrivances perform the office of drawing a loop of upper thread over a bend or angle of lower thread on the retreat of the hook.

Having thus described a machine embodying my invention, I claim therein as new and of my own invention—

The combination, substantially as described, of a vibrating hook, a lower thread-post, and an eye-pointed needle, operating in conjunction, substantially as hereinbefore specified.

LOUIS BOLLMAN.

In presence of—
JAMES H. BROWN,
ABERT F. CONANT.