J. E. A. GIBBS.

Sewing Machine.

No. 17,427. Patented June 2, 1857.

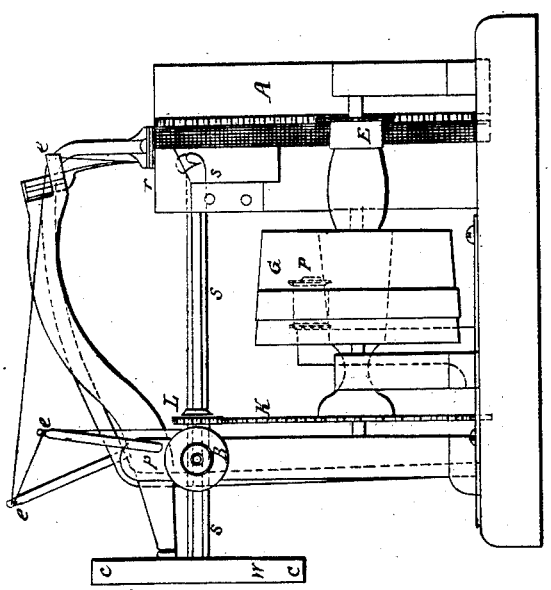

Fig. 11

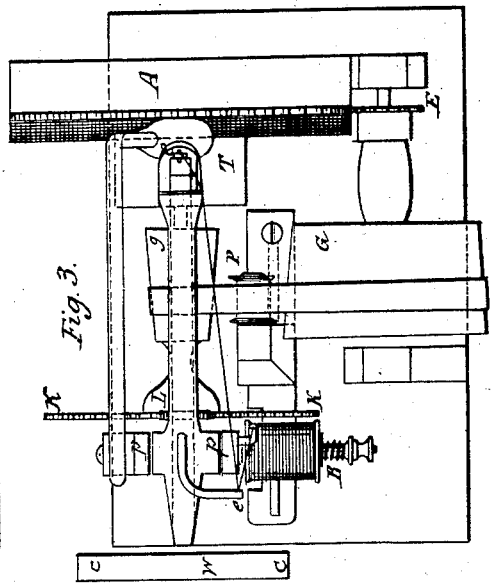

Fig. 3.

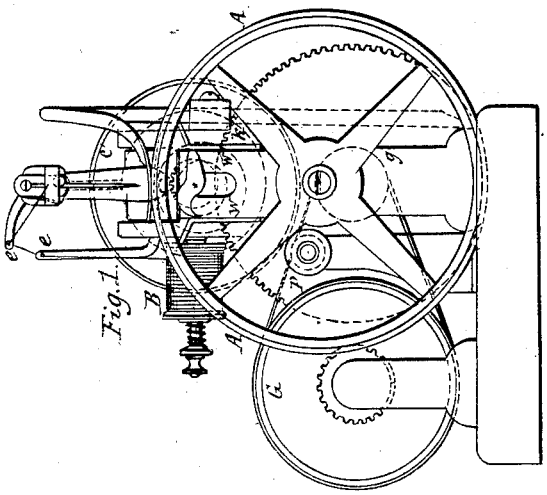

Fig. 1.

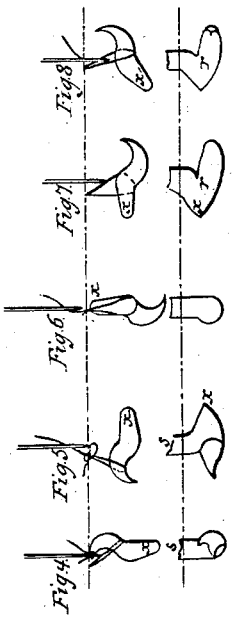

Fig. 8 Fig. 7 Fig. 6 Fig. 5 Fig. 4

Fig. 9.

Fig. 10.

UNITED STATES PATENT OFFICE.

JAS. E. A. GIBBS, OF MILL POINT, VIRGINIA.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **17,427**, dated June 2, 1857.

To all whom it may concern:

Be it known that I, JAMES E. A. GIBBS, of Mill Point, in the county of Pocahontas and State of Virginia, have invented certain new and useful Improvements in Sewing-Machines; and I hereby declare that the following is a full, clear, and exact description, reference being had to the drawings hereunto annexed, and to the letters and figures marked thereon.

Figures 1, 2, 3–10 represent elevations, plan and detail views of a sewing-machine constructed according to my invention.

This machine is intended to sew with a single thread, which is properly conducted to the needle from the bobbin B by passing through the several eyes *c*, as shown in Figs. 1, 2, and 3. The needle is connected with the needle-arm by a yielding joint, which allows the needle a vibratory motion in the direction of the feed upon the needle-head as center of oscillation. The needle-arm is pivoted at *p*, and receives its vibratory or reciprocating up and downward motion from a guide-wheel, *w*, into which the shank or tail of the needle-arm plays. This guide-wheel is placed eccentrically upon a circular disk, C, which is supported on its center by a shaft, S, to which it is rigidly connected. Every revolution of the shaft will thus produce vibration of the needle-arm, or, in other words, a needle-stroke. The shaft S is revolving upon two fixed bearings, and runs longitudinally from the rear to the front part of the machine, where it terminates into a hook of a peculiar construction. The shape of the hook will be understood from Figs. 4, 5, 6, 7, and 8 in the annexed drawings, where it is represented in different positions of a single revolution, and also from a detailed description of the series of operations it has to perform. The hook is so arranged in relation to the needle-arm that when the latter shall have reached its lowest point of stroke the hook is just facing the loop which the needle has brought through the cloth. The next motion of the needle will be ascending. The loop is thereby loosened and opens. In the same time the hook will advance and penetrate the loop, as shown in Fig. 4. The loop is now gradually spread by the hook during the next following part of its revolution. The hook is gradually swelling, (in thickness,) and is concavely shaped where the loop is in contact therewith, for the purpose of not drawing more thread than is strictly necessary. After the loop has thus been drawn open, it will slip off the hook and lodge into the angular recess *r*, which the hook is forming with the shaft. This is done during the time the hook is revolving from position Fig. 5 to position Fig. 6. The loop is then twisted—*i. e.*, the thread which has been behind the needle is brought to the front, while the thread in front of the needle is turned toward the rear of the loop. This is effected by the spur or cast-off *x*. This cast-off is so arranged in relation to the hook and angular recess *r* that the loop, is spread for the hook-nose to pass through on taking a fresh loop from the needle. At this moment the hook has two loops engaged, the fresh loop at the nose and the preceding loop, which now bears against the convex part of the hook. (See Fig. 4.) The next motion of the hook will allow this latter loop to slip off entirely from the hook, as shown in Fig. 5, and is drawn tight by drawing open the new loop. This series of operations is repeated at every revolution of the hook.

From the above analytical description of the operation of the hook it is obvious that the stitch will have a different appearance from the ordinary chain-stitch, the loop having been twisted half a revolution, or one hundred and eighty degrees, between each successive stitch. This stitch (shown in Figs. 9 and 10) has the advantage of its being much stronger and compact than the ordinary chain-stitch, also of forming a sort of knot between each stitch, whereby the thread cannot be drawn out the seam by pulling at it one end.

The whole machine is driven, or the motive power required to operate the machine is given, by drawing the cloth to be sewed under the needle. In other words, the whole force required to drive the machine is applied directly to the cloth itself, which transmits its movement to the mechanism operating the machine.

In the annexed drawings, A is a wheel, the outer periphery of which is flush with the sewing-table T, of which it forms part, substantially. A portion of the rim or annular surface of the wheel is roughened, upon which the cloth to be sewed is placed and pressed by means of a permanent spring-pressure pad or roller or their equivalents. This wheel gears

with a pinion, E, the shaft of which carries a conical drum, G. An endless belt or band passing over a regulating-pulley, P, connects the drum G with another conical drum, *g*. The latter is placed at some distance from the former, the axes of both being parallel to each other. The drum *g'* is fixed upon a shaft, which carries a cog-wheel, K, meshing into a pinion, L, which is secured onto the hook-shaft.

The diameters and the relative arrangement of the different wheels, pinions, &c., have to be calculated to suit convenience and the required speed. The length of stitches depends upon the velocity of rotation of the wheel A in relation to that of the hook. The former is therefore so arranged that its speed can be regulated by causing the endless band to run upon a larger or smaller diameter of the drum G. This is effected by the pulley P, capable of being adjusted at any point in a line parallel to the axes of the cones.

Having now fully described my improvement in sewing-machines, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The revolving hook herein described, constructed and arranged in relation to and operating in connection with the needle as set forth.

2. When sewing with a single thread, interlacing or twisting the threads of the loop after passing the cloth to be sewed and before taking a fresh loop, substantially in the manner and for the purpose specified.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

JAMES E. A. GIBBS.

Witnesses:
A. POLLAK,
CHAS. EVERETT.