J. E. A. GIBBS.

2 Sheets—Sheet 1.

Sewing Machine.

No. 16,234.

Patented Dec. 16, 1856.

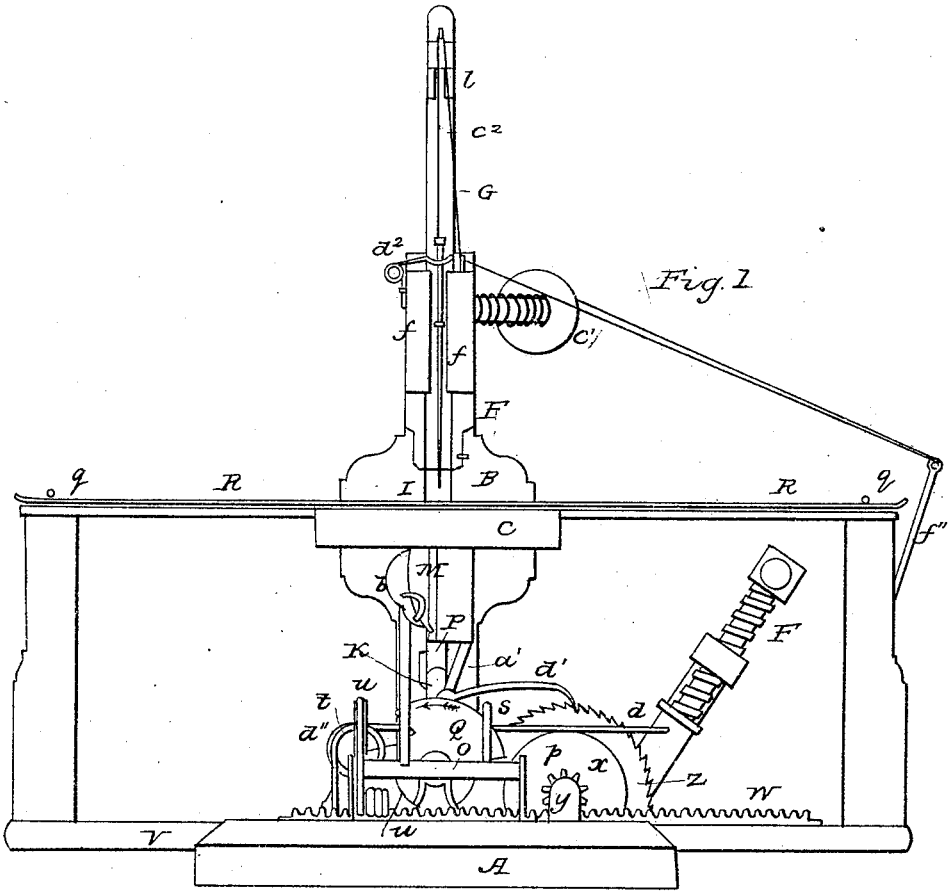

Fig. 1

Fig. 3

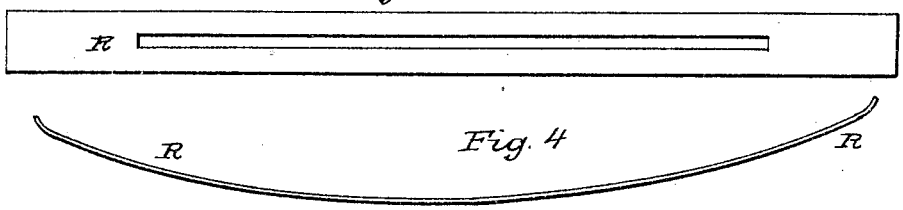

Fig. 4

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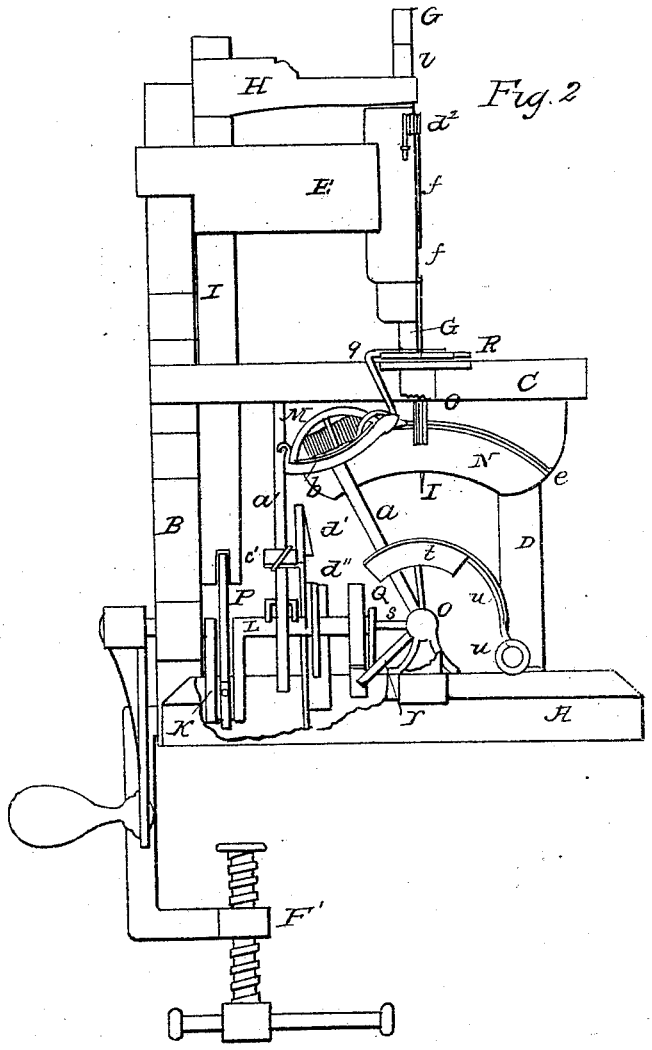

Fig. 2

UNITED STATES PATENT OFFICE.

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

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **16,234**, dated December 16, 1856.

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 thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front elevation; Fig. 2, an end elevation; Fig. 3, a plan view of the spring-clamp; Fig. 4, a front view of the same.

The letters of reference indicate the same parts in the different figures wherever they occur.

The following is a description of the construction and operation of my improvements as applied to a single needle and shuttle machine.

From a bed-piece, A, rises an upright or standard, B, to which is secured the table C. An arm, E, projects forward from the upright B and sustains the guide-piece F for the needle rod or carrier G. A sliding piece, I, works vertically through mortises in E and C, which serve to guide it. From its upper end projects horizontally an arm, H, to which the vertical needle-rod G is attached. It is jointed at its lower end to the pitman P, by which it is connected with the crank K of the main shaft L, from which it derives a vertical reciprocating motion. A rock-shaft, O, is placed in suitable bearings at right angles with the shaft L, their axes being in the same horizontal plane.

From the shaft O projects upward a radial arm, *a*, supporting upon its upper end the shuttle-carrier *b*, in which the shuttle M is placed. The shuttle is open upon both sides, and contains a spool of thread, upon which a small friction-spring bears to give the thread the proper tension. The face of the shuttle works against the face of the vertical shuttle-plate N with a reciprocating motion. This plate is secured to the under side of the table C, and both are supported by the standard D, which is not shown in Fig. 1. A circular groove, *e*, is formed in the face of the plate N, concentric with the axis of the shaft O and corresponding with the path of the shuttle, the pointed beak of which is curved toward the plate fitting into and traversing in the bottom of the groove *e*. The groove *e* is intersected by a vertical groove, *o*, which extends from the top of the plate to a short distance below the groove *e*, and opens in its whole length into a mortise which is formed in the thickness of the plate through its whole width to admit of the free passage of the needle. The bottom of the groove *e* is made flush with the path of the needle.

It often happens, when the shuttle traverses upon a plane surface, that the twist in the thread causes it to kink and the loop to lie flat upon the plate, the shuttle passing over the loop instead of through it, thus dropping a stitch; but by my improvement the beak of the shuttle will surely engage with the loop, even when the thread lies flat upon the plate.

The needle-rod G carries a straight eye-pointed needle, I, and is guided vertically in a groove in the piece F, to which it is confined by the plates *f*. Near its upper end it is cut away on both sides to form a narrow neck, *l*, having shoulders above and below this neck, moves in a mortise in the arm H to a limited extent for the purpose of allowing two intervals of rest to the needle-rod in each revolution, for purposes to be presently described, while the main shaft is operated with a regular continuous motion in one direction. Upon the piece F is placed a spring, a^2, which is forced down by a pin, c^2, upon the needle-rod when the machine is in a position shown in Fig. 2.

Upon the shaft L is fixed a cam, P, composed of concentric circles, the center of which is the axis of the shaft. About one-third of the periphery of the cam is of greater diameter than the other two-thirds, thus forming a projection the ends of which are tangential to the shaft. From the rock-shaft O project two radial arms, *r* and *s*, of such a length and placed at such an angle with each other that when the projection of the cam shall have forced the arm *r* down sufficiently to bring the shuttle to the end of its backward stroke and shall have held it there a sufficient time, it shall then elevate the arm S, by which movement the shuttle is carried to the end of its forward stroke, as shown in Fig. 1, where it remains until *r* is again engaged by the cam.

From the shaft O projects another arm carrying a segment of a circle, *t*, upon which a spring, *u*, bears for the purpose of creating a

friction, which shall insure steadiness in the action of the shuttle-carrier.

It will be perceived that, when the machine is stopped with the shuttle at the end of its forward stroke, the cam offers no obstruction to moving the shuttle-carrier still farther over for the purpose of removing the shuttle, which is done with great facility.

The cloth to be sewed is held firmly in a slotted clamp, R, the bottom portion of which is rigid, and traverses the table C in a groove sunk sufficiently to bring its upper surface flush with that of the table C. The top portion of the clamp is made of spring-steel, slotted to correspond with the bottom piece, which, when left free, will assume a curved shape, as represented in Fig. 4. This curve should bear such a relation to the strength and stiffness of the spring that the cloth shall be held with equal pressure, or nearly so, throughout the whole length of the clamp, when it is held down at its ends by the hooks *q*. The clamp R is connected by two uprights with a horizontal piece, *v*, which traverses in a groove in the bed-piece A. It carries a rack, *w*, which meshes into a pinion, *x*, upon the shaft *y*. This shaft also carries a ratchet-wheel, *z*, and friction-wheel *p*.

A lever, *a*, hinged to the under side of the table C and bent round the shaft L, receives a vibrating motion by means of an arm projecting from the shaft L.

The lever *a'* carries a slide, *c'*, which can be fixed at any convenient point upon *a'* by a set-screw. To this slide a click, *d*, is pivoted, which takes into the teeth of the ratchet-wheel *z*, thus forming, with the parts before described, a regular feed motion for the cloth, the length of stitch being regulated by the portion of the slide *c'* upon the lever *a'*. A spring, *d''*, bears upon the friction-wheel *p* and steadies the motion of the shaft.

The thread for the supply of the needle is contained upon a bobbin, *c''*, which is provided with a coiled spring and friction-nut to retard or prevent the unwinding of the thread, which proceeds from the bobbin through an eye in a spring-arm, *f''*, projecting from the clamp-frame, from thence through an eye in the piece F, and thence through an eye near the top of the needle-rod; and then it is passed through the eye of a needle, and, being drawn tight, the revolution of the spool is stopped by its friction-nut. By this arrangement of connecting the needle-thread with the feed-motion of the cloth, the loop is invariably formed within the thickness of the cloth—*i. e.*, the needle-thread being fed into the needle sufficient to form the stitch with the loop in the cloth, it has no tendency to draw the shuttle-thread above the cloth, and the bobbin of the needle-thread being fastened stationary, the shuttle-thread cannot draw the needle-thread below the cloth in tightening the stitch. The same object may be attained by giving the needle-thread an independent feed motion on the same principle. The bobbin, for instance, may have a ratchet-wheel attached to it, which is operated by a feed-hand, the latter being moved by a proper mechanism. In this case the feed-motion may also be more easily and coveniently regulated, so as to suit the different thicknesses of cloth.

The whole machine is secured to a table or bench by a screw-clamp, F', which, being pivoted to the bed-piece, can be readily moved out of the way, when not required for, use by turning it up, as shown in Fig. 1.

The machine being started from its position shown in Fig. 1 by turning the crank-handle in the direction of the dart, the shuttle is immediately thrown back, and the needle descends by the means before described. Half a revolution being completed, the arm H begins to rise, but does not lift the needle-bar in the first part of its motion. That is done by the recoil of the spring against the pin. This forms the loop in the vertical groove *o*. The needle-bar stops for an instant of time while the arm H is moving from the lower to the upper shoulder of the neck. At this moment the shuttle darts through the loop. The needle recommences its upward motion and draws the shuttle-thread up to the center of the cloth and forms the stitch. In the meantime the feed motion is put in operation, and the clamp is moved up the length of another stitch.

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

1. Feeding up the thread to the needle by connecting the needle-thread with the cloth feed-motion, or by giving the needle-thread an independent feed motion, so that there shall be sufficient thread and no more at each stitch fed into the needle to form the stitch, thereby causing the needle to draw the shuttle-thread into the cloth and never above it, for the purpose of insuring the meeting of the loops or locks within the body of the cloth.

2. I do not claim straight clamp-feeders for the purpose of feeding the cloth, as they are not new; but I do claim fastening the cloth upon a slotted table moving with a rectilinear motion by means of a slotted curved spring, the slots in both spring and table corresponding with each other and holding the cloth on both sides of the seam.

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

JAMES E. A. GIBBS.

Witnesses:

CHAS. EVERETT,

JOHN S. HOLLINGSHEAD,

G. B. TOWLES.