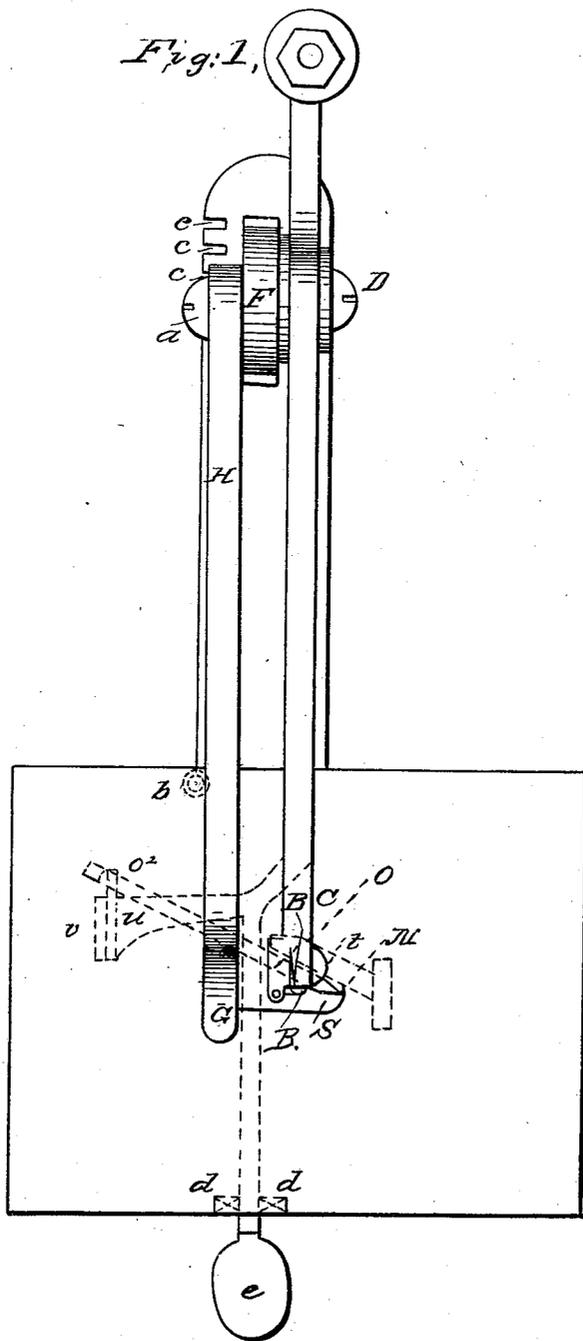


S. F. PRATT.
Sewing Machine.

3 Sheets—Sheet 1.

No. 16,554.

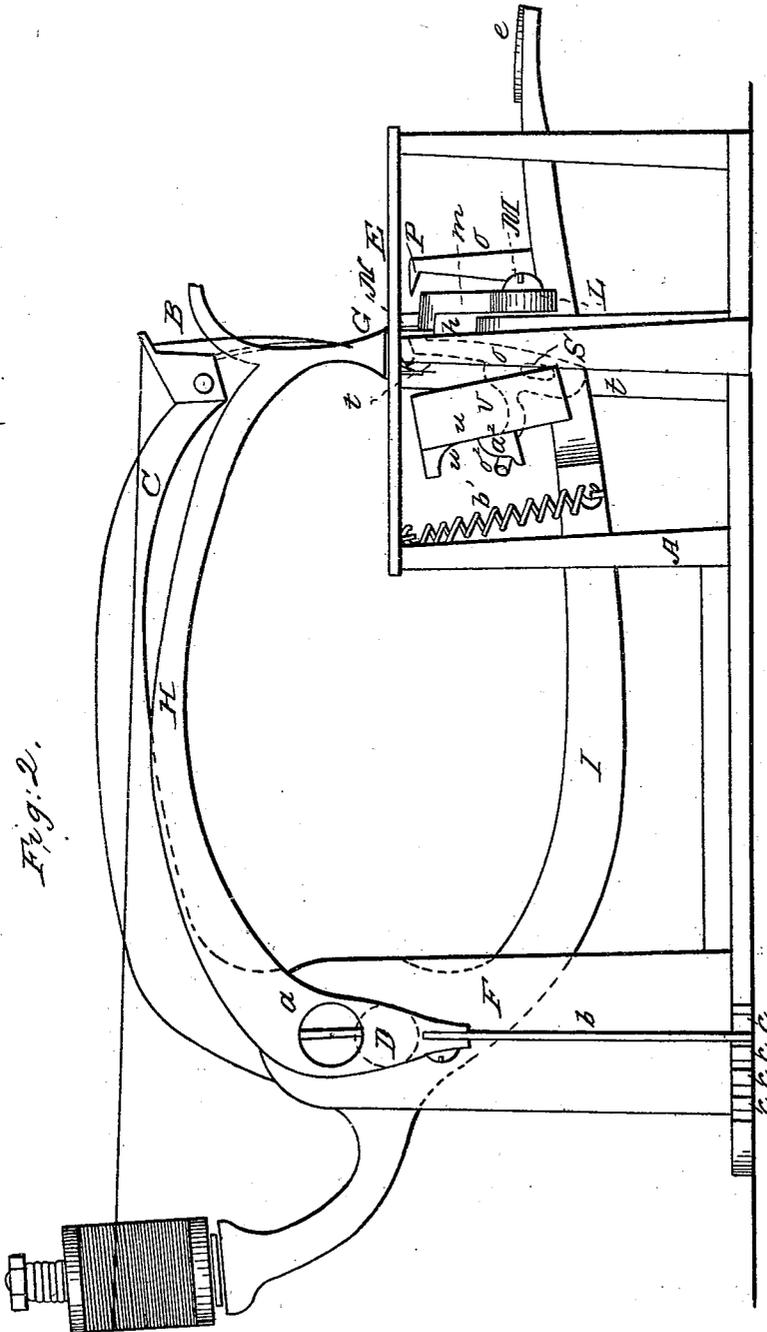
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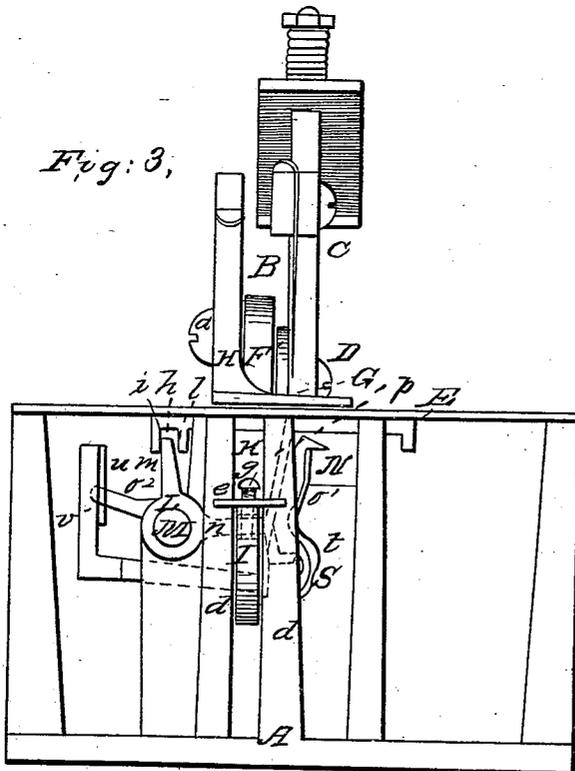
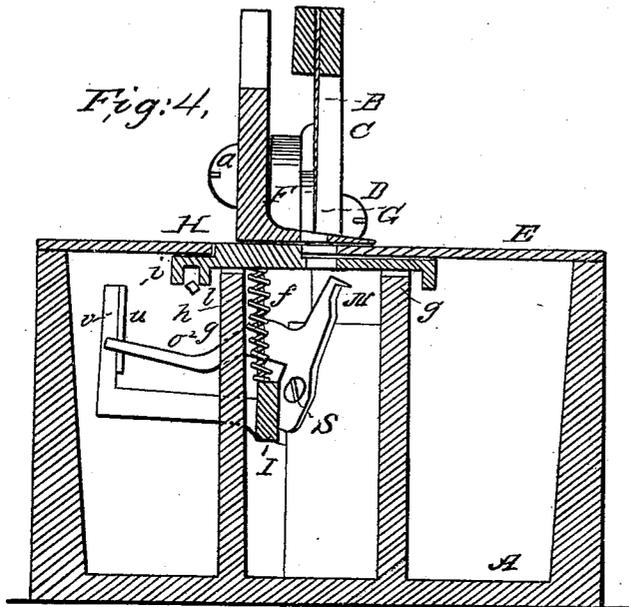


S. F. PRATT.
Sewing Machine.

3 Sheets—Sheet 3.

No. 16,554.

Patented Feb. 3, 1857.



UNITED STATES PATENT OFFICE.

SAMUEL F. PRATT, OF ROXBURY, MASSACHUSETTS.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 16,554, dated February 3, 1857.

To all whom it may concern:

Be it known that I, SAMUEL F. PRATT, of Roxbury, in the county of Norfolk and State of Massachusetts, have invented a new and useful or Improved Sewing-Machine; and I do hereby declare that the following specification and the accompanying drawings fully set forth and represent the nature and operation of the said machine.

Of the drawings, Figure 1 represents a top view of my machine; Fig. 2, a side elevation of it; Fig. 3, a front view of it, and Fig. 4 a vertical transverse section taken through the needle and feed bar.

In the drawings, A denotes the frame of the machine; B, the needle, attached to a rocking arm, C, extending over the table E of the machine, said arm rocking or turning on a pin, D, projecting from a suitable standard, F, as seen in Fig. 2.

G is a pressure pad or bar for holding the material down upon the table while being sewed. Said pad is attached to a long arm, H, jointed to the standard F, as seen at *a*. A vertical adjusting-spring, *b*, is applied to the arm just below the joint-pin, *a*, said spring extending down into one of a series of slots, *c c*, all as seen in Fig. 2. As the materials to be sewed vary in thickness, the spring *b* may be changed from one slot *c* to another, so as to produce the required pressure upon the cloth. This method I consider better than making the arm H fast to the standard, but with spring sufficient to raise the pad to pass the cloth under it, as the pressure, when several thicknesses of cloth are to be sewed, is too great, while by the adjusting-spring it may be regulated at pleasure.

Just below the joint-pin D of the rocking arm C another arm, I, somewhat similar to the arm C, extends, the two arms forming together a fork rocking on the pin D. The lower arm extends under the table to the front part of the machine, and between two vertical guides, *d d*, as seen in Fig. 3, and it has attached to its front end a thumb or finger plate, *e*, for operating the machine by the thumb or finger of the operator applied thereto. By extending the arm through the guides *d d* sure vertical motions of the two arms C and I (and the needle) are produced, thereby preventing horizontal vibrations of the nee-

dle, which tend to cause the sewing to be uneven.

K is the feed-bar, made in section, as seen in Fig. 4, and placed just beneath the pressure-pad G. The movements of the feed-bar (and the consequent feed of the cloth) are produced as follows: The bar first moves down vertically, (away from contact with the cloth,) next horizontally and back, (under the cloth,) next vertically upward, (against the under surface of the cloth,) and next horizontally forward, (carrying the cloth with it the length of the stitch.) The bar, when against the cloth, or when the needle is at its highest position, as seen in the drawings, is held against the cloth by a spiral spring, *f*, or its equivalent, placed on top of the lower rocker-bar I. Now, when we press down upon the thumb-piece *e*, it will be seen that just as the needle reaches to or about to the cloth the spring *f* leaves the feed-bar, when said bar will fall by its own weight upon two ways, *g g*. (Seen in Fig. 4.) This is its first motion.

From one end of the bar two pins or projections, *i l*, extend down and receive between them a projection, *h*, from one arm, *m*, of a bent lever, L, whose fulcrum is at M. The other arm, *n*, of this bent lever extends in the direction as seen in Fig. 3.

On the rocking arm I, and just in front of the bent lever L, is a hooked projection, *o*.

Now, the feeding-bar K having fallen, as just described, if we continue our downward pressure on the rocker-arm I the hook *p* of the arm *o* will strike upon the arm *n* of the bent lever L and cause the projection *k* of its other arm to strike the pin *l* of the feed-bar and move it through its horizontal back motion under the cloth. As the rocker-arm next rises, the spring *f*, reaching the bar K, pushes it up against the cloth, when the needle will be raised entirely out of the cloth. As the rocking arm continues to rise, it will strike on the lower end of an adjusting-screw, *q*, (extending through the arm *n* of the bent lever N,) and will tip said lever in such manner as to cause the projection *k* to strike against the end *i* of the feeding-bar, which will move said bar and the cloth in a forward direction the length of the stitch, said length being varied by the adjusting-screw *q*. The cloth will now be ready for the next stitch. A spiral spring,

b', or its equivalent is so applied to the rocker-arm I that after every movement of the needle and rocking bars in a downward direction said spring shall draw the bars and needle back in such manner that whenever the machine is at rest the needle shall be raised entirely out of the cloth, in order that the cloth may be at any time withdrawn without having first to shove up or raise the needle-bar.

I will now proceed to describe the method of forming the stitches.

N represents the hook for holding the loop. This hook is attached to an arm, *o'*, turning on a pin, *s*, screwed into a beveled or inclined standard, *t*, in such manner as to allow the hook to move on its pin *s* in a vertical plane up to and into the vertical plane of the needle and seam, and back from said plane, said movements being diagonally to said plane, and being produced by its arm *o'* being acted upon by a curved plate, *u*, on a projection, *v*, extending from the lower rocker-arm, I, and as follows: When the needle and the rocking arms are at their highest position, the thread will be cast in a loop over the hook N, said hook being at its most forward position, and so as to hold its loop just in the path of the needle. Now, as we press the arm I down, the needle and thread pass down into the loop, said loop and hook remaining stationary until the point of the needle enters the loop. As the needle now passes down and carries its thread through the loop, the point *w* of the plate *u* strikes the arm *o'* of the hook and moves it down, which movement causes the hook to draw back until the needle and thread, passing into the loop, have descended to their lowest position, when the hook will have been wholly drawn back. Now, as the needle begins to rise, its thread slackens, and the part *a'* at the plate *u* will act on the arm *o'* and cause the hook N to advance and pass through the slack in the thread. Just as the needle has risen out of the cloth the feed motion of the bar and the cloth commences. Now, if during this forward movement of the cloth the movement of the needle forward should continue, the thread would

be liable to be pulled too hard and break, to prevent which the plate *a'* is so formed as to stop moving the hook as soon as the feed of the cloth forward begins, and to leave it stationary during the completion of the upward movement of the needle and while the cloth is moving forward, and it remains stationary with its loop until the point of the needle has next descended to its loop, as before described.

This constitutes the principal construction and the mode of operation of my machine, a suitable crank-shaft and balance-wheel being applied thereto to operate the arms, or the thumb-plate *e* being alone used for such purpose, as may be desired. As will be seen, the parts of my machine are very few and the construction and operation very simple, rendering the machine cheap and not liable to get out of order, while the work produced is as perfect as that produced by any machine now in use for producing the chain or tambour stitch.

I do not claim the particular motions of the feed-bar K in vertical and horizontal directions; but

What I do claim is—

1. The combination, with the arm I, of the spring *f*, the projections *s* *l*, the bent lever L, and its projection *k* or their equivalents, the same being to produce the motions of the feed-bar in the manner as above described.

2. Moving the loop-hook or looper N diagonally up to and away from the needle, substantially in the manner as above specified.

3. Effecting the movements of the loop-hook N at the proper time, substantially in the manner as above described—that is to say, by means of the plate *u*, attached to the arm I, operating upon the arm *o'* of the looper.

In testimony whereof I have hereto set my signature this 25th day of December, A. D. 1856.

S. F. PRATT.

Witnesses:

FRANCIS GOULD,
FREDCK. HILL.