

M. STANNARD.
Sewing Machine.

No. 64,184.

Patented April 23, 1867.

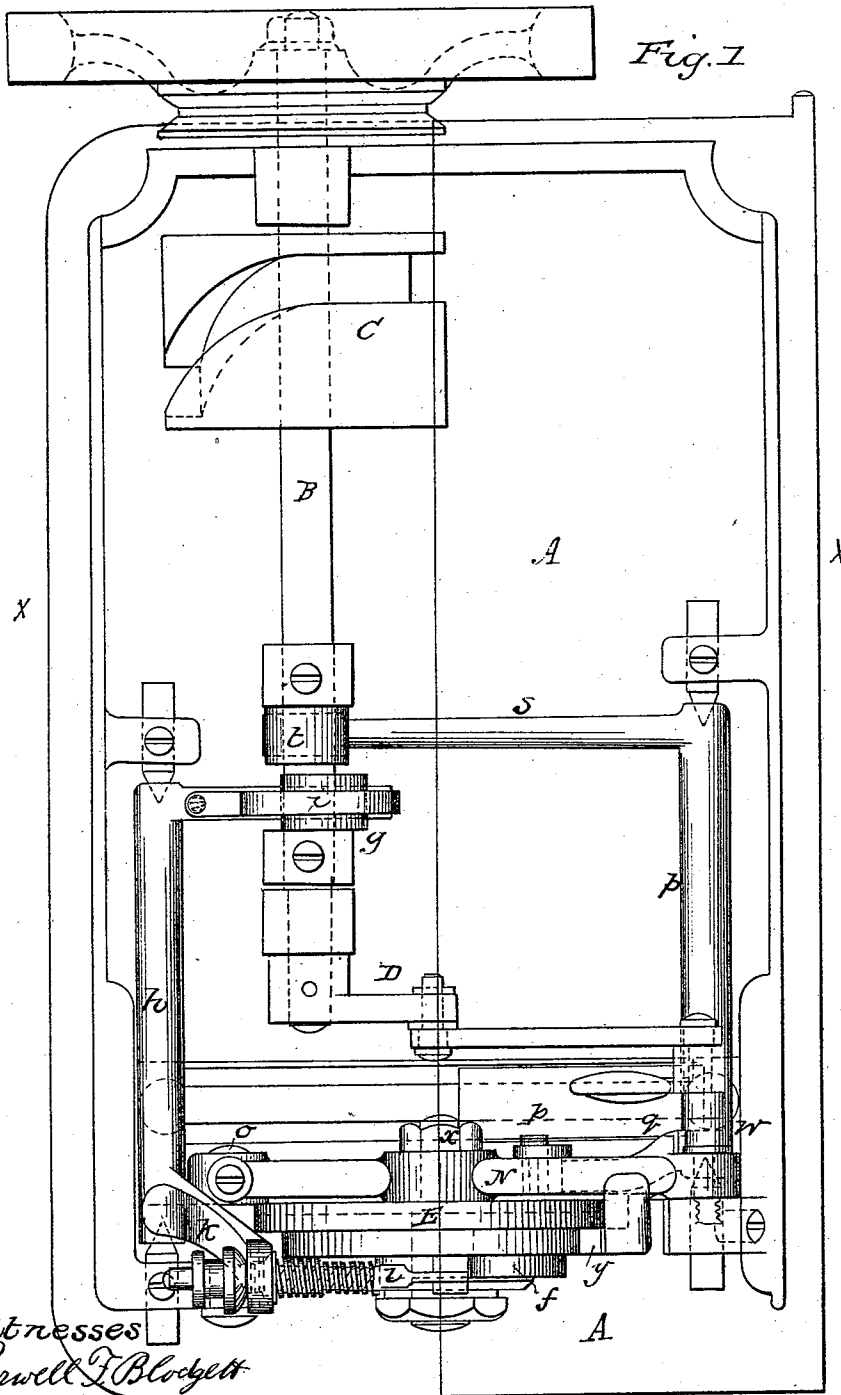


Fig. 1

Witnesses
Rowell F. Blodgett
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Inventor:
Morse Stannard

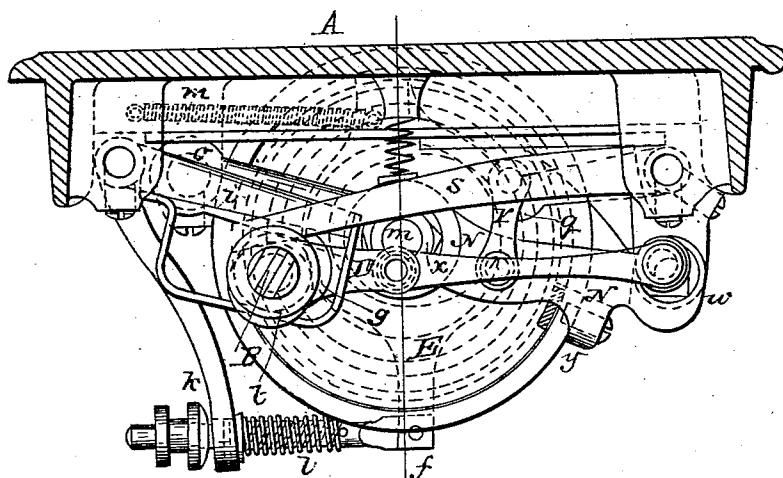
M. STANNARD.
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2 Sheets—Sheet 2.

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Fig. 2



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UNITED STATES PATENT OFFICE.

MONROE STANNARD, OF HARTFORD, CONNECTICUT.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 64,184, dated April 23, 1867.

To all whom it may concern:

Be it known that I, MONROE STANNARD, of the city and county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Sewing-Machines; and to enable others skilled in the art to make and use the same I will proceed to describe by referring to the drawings, in which the same letters indicate like parts in each of the figures.

This invention relates to the feed-wheel of a sewing-machine. It is well known by experts in the use of sewing-machines that, for some kinds of work, what is termed the wheel-feed is the best; while for other kinds of work the best results are produced by the drop-feed, in which the feeding-surface, usually roughened, drops at each stitch below the surface of the plate or table, and is then out of contact with the material which is being sewed. Some of the advantages of the wheel-feed over the common forms of drop-feed are that the periphery of the wheel furnishes a large amount of roughened surface over which the wearing action of feeding is distributed, making it more durable. The rolling action of the roughened surface upon the material to be sewed (which is pressed upon the said surface with the minimum allowable pressure) insures the more perfect engagement of the roughened surface with the material, and its more certain effect thereon. Also, that in sewing straight seams the work is less liable to accidental deviations.

The object of this invention is to produce a single feed device, by a simple and easy adjustment of which either of the two kinds of feeding action—viz., that by contact of a feeding-surface with the work, or that by alternate contact and release of the cloth—can at will be had.

This invention has for a further object an improvement in the arrangement of the brake, which exerts a steady, uniform pressure against the feed-wheel. To these ends this invention consists in attaching the axis of rotation of a feed-wheel to a movable piece, which receives at each stitch made by the machine movements up and down, in combination with mechanism for giving to the feed-wheel intermittent movements upon its axis, whereby the action of the feed-wheel, at each feeding of the cloth, has the following characteristics, viz.: That there are three movements,

as follows: first, the periphery of the wheel is raised above the surface of the plate of the machine, and into contact with the cloth. The wheel is then rotated on its axis, and effects the feeding of the material. Lastly, the wheel is depressed or dropped so that its surface lies below the top of the plate, and out of contact with the cloth.

This invention further consists in so arranging the mechanism for raising and depressing the feed-wheel that its action upon the wheel may be suspended while the intermittent rotary movements of the wheel may be continued, whereby the action of the wheel may be converted into that of the ordinary feed-wheel having a fixed axis, substantially as hereinafter fully explained; and this invention further consists in attaching a friction-brake, which resists the turning of the feed-wheel, as hereinafter set forth.

To enable others skilled in the art to make and use this invention I will proceed to describe a form in which it has been put into actual practice.

In the accompanying drawings, Fig. 1 is an under side view of a shuttle sewing-machine. Fig. 2 is a vertical section at line *xx*, showing only the plate and the parts which lie beneath it.

Similar letters of reference denote the same part in both figures.

A is the bed-plate of the machine. B is the main shaft, the rotation of which gives (by a cam, C, and crank D) proper movements to the needle and shuttle. E is the feed-wheel, having a roughened periphery, the upper part of which, when in contact with the work, protrudes through a hole in the plate A. The wheel E receives intermittent rotary movement in one direction upon its axis by the action of the friction-pawl *f*, which is caused to vibrate by a cam, *g*, on the main shaft B, acting through the rocking shaft *h*, its arms *i* *k*, and the adjustable connecting-bar *l*.

So far as already described the arrangement and operation of the parts immediately above-mentioned do not involve any of the features of this invention, as they may be seen applied to many machines well known and in common use. It is not therefore deemed necessary to give a more minute description of these parts.

The axis of the feed-wheel E is a pin, *m*,

fastened to about the center of a lever, N, the fulcrum of which is a pin, O, secured to a lug, *m'*, projecting downward from the plate A. The lever N lies in an inclined position, and crosswise under the plate. Parallel to the main shaft P is a rock-shaft, *p*, which has at the end nearest the feed-wheel an arm, *q*, attached by a connecting-bar, *r*, to the lever N, at a point near the center of said lever. At the farther end of the rock-shaft *p* is an arm, *s*, the end of which lies over the main shaft B, and rests on a cam, *t*, fastened to said shaft. A spiral spring, V, is located between the plate A of the machine and the top of the lever N, and presses down said lever, and through its connections forces the arm *s* upon the cam *t*. The free end of the lever N is perforated to form an elongated vertical opening, through which the clamping-screw W passes, which screws into a lug projecting downward from the plate A. It is so located that the free end of the lever N may be so far raised that when clamped to the lug by the screw W the end of the arms *s* will be held so high that the cam *t* cannot touch it; but when the screw W is unscrewed the lever N may vibrate up and down to the extent of the movement given by the cam *t*. The pin *m*, on which the feed-wheel turns, is formed with a collar, which rests against one side of the lever N, and it passes through a vertically-elongated hole in the lever N, to which it is fastened by a nut, *x*. At the side of the feed-wheel E, and attached to the lever N, is a friction-brake, *y*, which presses against the side of a smooth projecting rim on the feed-wheel.

The operation of the feeding apparatus, as above described, is as follows: At each revolution of the main shaft B the feed-wheel E receives from the cam *g*, by its connection therewith, an intermittent rotary movement, and by the action of the cam *t* (when the clamp-screw W is loosened) the feed-wheel is elevated and depressed at each revolution of the shaft B. The adjustments are such that during the whole or greater part of the time that the movement of rotation of the feed-wheel occurs, the feed-wheel is so far elevated that its periphery protrudes above the top of the plate A in contact with the material upon which it is required to act. While during the whole or greater part of the time that the feed-wheel ceases to rotate it is so far depressed that its periphery lies below the top of the plate, and does not touch the material which is being sewed, whereby the said material is left pressed between the smooth surface of the presser-foot and the plate, which allows the material so placed and held to be more easily turned than when in contact with the feeding-surface. When it is desired to dispense with the drop-feed, operating as just described, it is only necessary to so far raise the end of the lever N that the cam *t* shall turn free of the arm *s*, and then to clamp the lever by the screw W. The axis of the wheel is then fixed, and acts only by its intermittent rotary

movements in the usual way of the common wheel-feed. The height at which the axis of the wheel E may be fixed (above the limits to which it is raised by the cam *t*) may be readily determined by clamping the lever at the proper point. This facility of adjustment is important, for when operating on thick elastic material it is desirable to have the feeding-surface more elevated above the top of the plate than is desirable for thin and firm fabric. If, on account of wear of the cam *t*, or for other reasons, it is desirable to alter the height to which the feed-wheel shall be raised by the cam *t*, the axis-pin *m* may be raised or lowered in the elongated hole in the lever N, through which it passes. The brake *y*, being attached to the lever N, rises and falls with the feed-wheel, and, being located at its side, is rendered readily accessible and easily adjusted. Heretofore the brake has been placed at the top or bottom of the feed-wheel, and attached to the fixed parts of the machine, and any vertical adjustment of the wheel has been attended with difficulties which are effectually removed by this improvement.

It will be readily understood from the above that this invention furnishes a feed device for sewing-machines, which, when used as a drop-feed, combines the advantages of the common drop-feed, such as that used in the Wheeler & Wilson sewing-machine, with the advantage of the wheel-feed. The advantage of thus being able to apply the wheel-feed in its ordinary mode of action, when this kind of feed is desirable, is believed to be obvious.

I do not wish to limit my claim to the details of the mechanism by which the feed-wheel receives its movements. Nor do I wish to claim, broadly, securing the axis of the feed-wheel to a vertically-movable piece when this is not combined with mechanism for giving positive and controllable vertical movements to the wheel at each feeding of the material.

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

1. Operating the feed-wheel of a sewing-machine by means substantially such as described, so that, while it shall always when in action have the ordinary intermittent rotary motion, it may, in addition, have or not have, at the option of the operator, a positive rising and falling motion for each progressive action of the wheel for the purpose set forth.

2. The employment in a sewing-machine of the adjustable vibrating lever N, or its mechanical equivalent, with the rock-shaft P, arms *q* *s*, connecting-bar *l*, cam *t*, or their mechanical equivalents, for holding the feed-wheel, and for giving to it an alternate rising and falling movement, substantially as described.

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