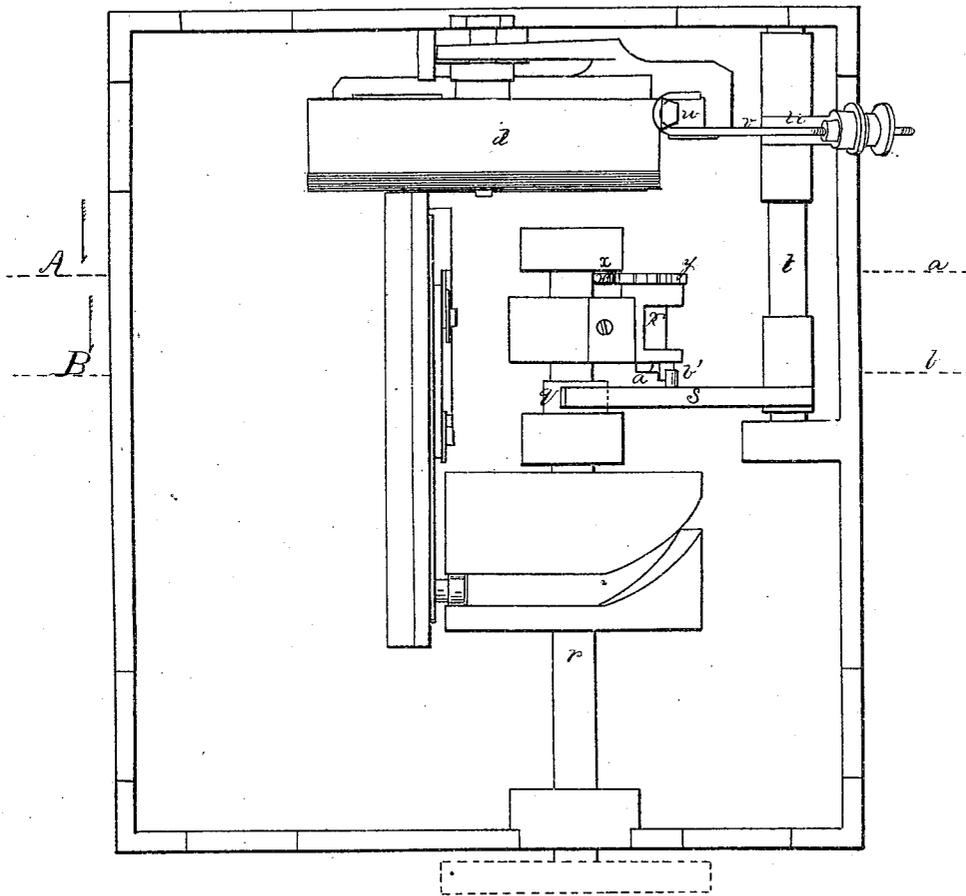


I. M. SINGER.
SEWING MACHINE.

No. 12,969.

Patented May 29, 1855.

Fig. 3



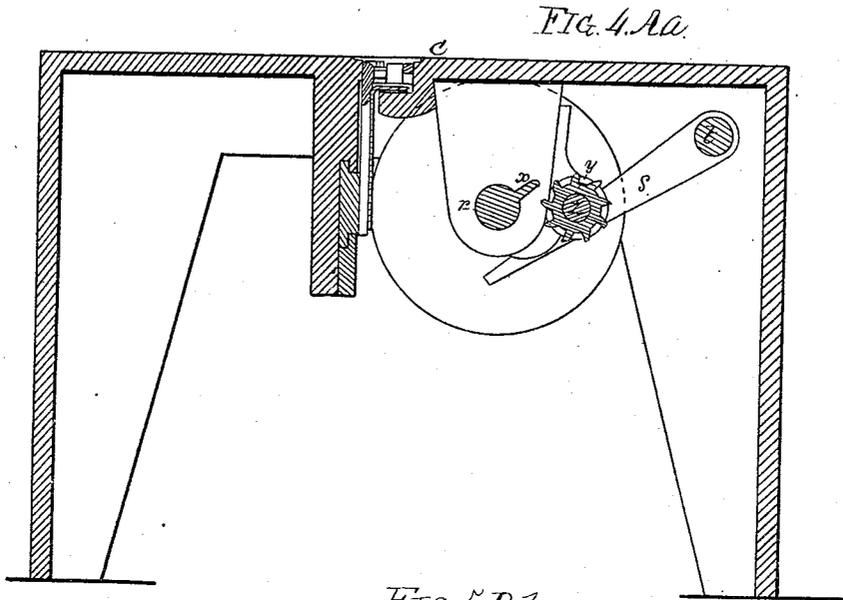
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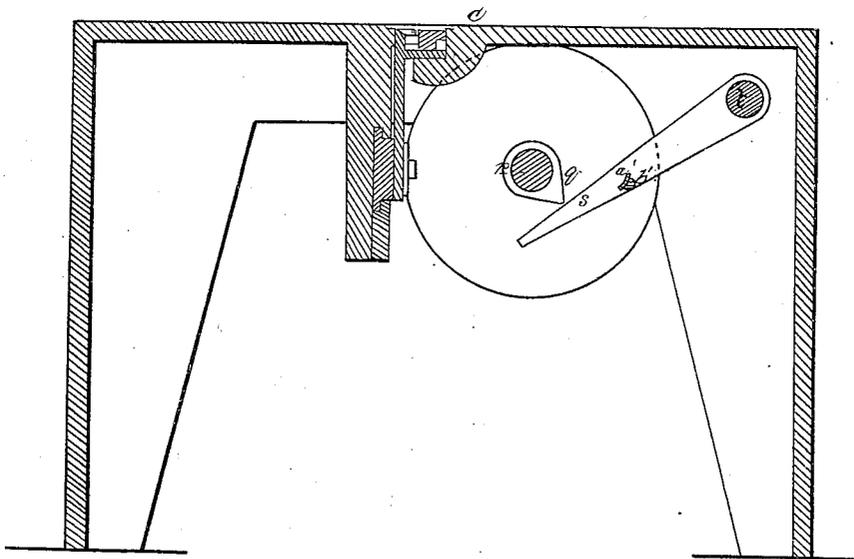
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FIGS. B & C.



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IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 12,869, dated May 29, 1855.

To all whom it may concern:

Be it known that I, ISAAC M. SINGER, of New York city, New York, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front elevation of the machine as improved; Fig. 2, a side elevation; Fig. 3, an inverted view of the under side of the machine, and Figs. 4 and 5 vertical sections taken at the line A *a* and B *b* of Fig. 3.

The same letters indicate like parts in all the figures.

The first part of my invention relates to an improvement in the machine for sewing seams with a single thread by carrying the thread through the cloth or other substance with an eye-pointed needle, and forming therewith a loop through which the thread is carried by the needle at the next perforation, the said loop being then liberated and the thread formed into another loop, around which the first is drawn tight, thus concatenating the self-same thread with itself, stitch after stitch. I have found that a seam sewed in this manner is defective, for the reason that if the thread be cut in any part of the seam it can be drawn apart by pulling on the two substances sewed together, such pull having the effect of drawing the thread in one direction through its own loops.

The object of my invention is to avoid this defect; and it consists in tying the stitches at certain intervals, or whenever required, by causing the needle to pass twice in succession through the same puncture, the feed motion being suspended for that purpose, thereby interlocking the loops twice in succession, which effectually secures the seam.

The second part of my invention relates to the feeding operation. As machines have heretofore been constructed the cloth or other substance is fed forward to space the stitches while under the pressure of a pad, which, for the time being, is not movable, and in consequence the substance to be sewed is liable to be and is often puckered, particularly when thin, (such as linen,) and as the stitches are drawn tight while the substance is thus puckered it is difficult and often impossible to draw out the wrinkles or puckers thus produced. The object of this

part of my invention is to avoid such defect in sewing by machinery; and it consists in having the pad for making pressure on the surface of the substance to be sewed on one end of a long arm jointed at its opposite end to a slide, or its equivalent, which, by the tension of a spring or its equivalent, makes pressure on the pad, so that the pad, while making pressure on the substance to be sewed, will readily move with such substance when operated by the feed motion, instead of remaining stationary to make friction.

The accompanying drawings represent a machine for sewing seams with one thread, such as I have described in an application heretofore made for Letters Patent.

The eye-pointed needle *a* on the lower end of the slide *b* carries the thread through the substance to be sewed, which is placed on a table, *c*, the looping apparatus being situated below for the purpose of effecting the concatenation of the stitches. Below the table is placed the usual feeding-wheel, *d*, the periphery of which is made rough, as represented, and projects a little above the surface of the table through an aperture made therein for that purpose, so that the substance to be sewed may be pressed onto this roughened periphery by the pressure of a pad, *e*, on the lower end of an arm, *f*, the upper end of which arm turns on a fulcrum-pin, *g*, secured to a slide, *h*, which is adapted to slide on the standard *i* of the needle-slide. A helical spring, *j*, is interposed between the lower end of this slide *h* and the standard *i*, to force down the slide and cause the pad to make pressure on the substance to be sewed placed on the table. The lower end of the slide *h* is provided with a plate, *k*, having a slot cut in which the arm *f* of the pad works, and by which it is guided in its lateral movements.

From the foregoing it will be seen that while the pad is forced down to make pressure on the substance to be sewed it is free to move with such substance when advanced by the feed motion of the feed-wheel, because the arm of the pad is connected at its upper end by a joint or fulcrum pin with the slide that forces it down toward the table, and as the friction of the pad-arm on its fulcrum-pin is much less than the friction between the pad and the substance to be sewed as a necessary consequence the pad moves with the feed motion, and thus avoids all tendency to produce a pucker or wrinkle.

So soon as the feed motion has taken place and the needle begins to enter the substance to be sewed the pad is lifted up, that it may be forced back to its original position by the tension of a delicate spring, *l*, which acts on the pad-arm. The lifting of the slide with the pad-arm connected is effected by a cam, *m*, on the needle-cam wheel *n* on the end of the shaft *o*, which cam acts on an arm, *p*, attached to the pad-slide in the usual manner. The feed motion is given by a cam or tappet, *q*, on the shaft *r* below the table, which at each revolution acts on and forces down an arm, *s*, on a rock-shaft, *t*, the said rock-shaft being provided with another arm, *u*, connected by an adjustable link, *v*, with the lever *w*, which imparts the required feed motion to the feed-wheel *d*. By means of this or any equivalent arrangement a regular feed motion, corresponding to the length of one stitch, is imparted to the cloth or other substance once for every rotation of the shaft and once for each operation of the needle *a*. Near its end the shaft *r* carries one cog, *x*, which at each rotation of the shaft acts on the cogs of a pinion, *y*, on a short parallel arbor, *z*, and turns the said pinion the distance of one cog. On the opposite end this arbor carries a cog or spur, *a'*, which once in every complete revolution acts on a corresponding spur or shoulder, *b'*, on the arm *s* of the rock-shaft *t* and holds it out while the shaft *r* makes one revolution, so that during that revolution the feed motion shall be suspended, and, as a necessary consequence, the needle passes a second time through the same hole in the cloth or other substance, and thus concatenates two loops, one over the other, and effectually ties the thread, so that it cannot run when the thread is cut and the two substances are drawn apart. The pin-

ion is represented as having nine cogs, so that this tie will take place at the end of every eight stitches; but the number of cogs can be increased or decreased at pleasure, and thus increase or decrease the number of ties in the seam. At the end of the seam, or whenever it may be desired to make a tie in the seam, it is only necessary for the operator to pull back the arm *u* of the rock-shaft during the passage of the tappet *q*, which operates the rock-shaft *t*, thus suspending the feed motion during one operation, in consequence of which the needle performs two successive operations in the same puncture, thereby effectually tying the seam.

What I claim as my invention, and desire to secure by Letters Patent, in sewing seams in cloth and other substances by machinery, is—

1. Suspending the feed motion for the purpose of causing the needle to perform two successive operations in one and the same puncture to tie the seam, substantially as specified.

2. Connecting the pressure-pad with its slide or the equivalent thereof by means of a long jointed arm, substantially as described, in combination with the feed-wheel or its equivalent, as described, so that the said pressure-pad shall move with the cloth or other substance when fed forward for spacing the stitches, instead of making friction, which would tend to pucker or wrinkle such cloth or other substance, as described, and by which, also, the cloth is relieved from pressure after the needle has entered, so that it can be turned freely on the needle as an axis, as set forth.

ISAAC M. SINGER.

Witnesses:

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