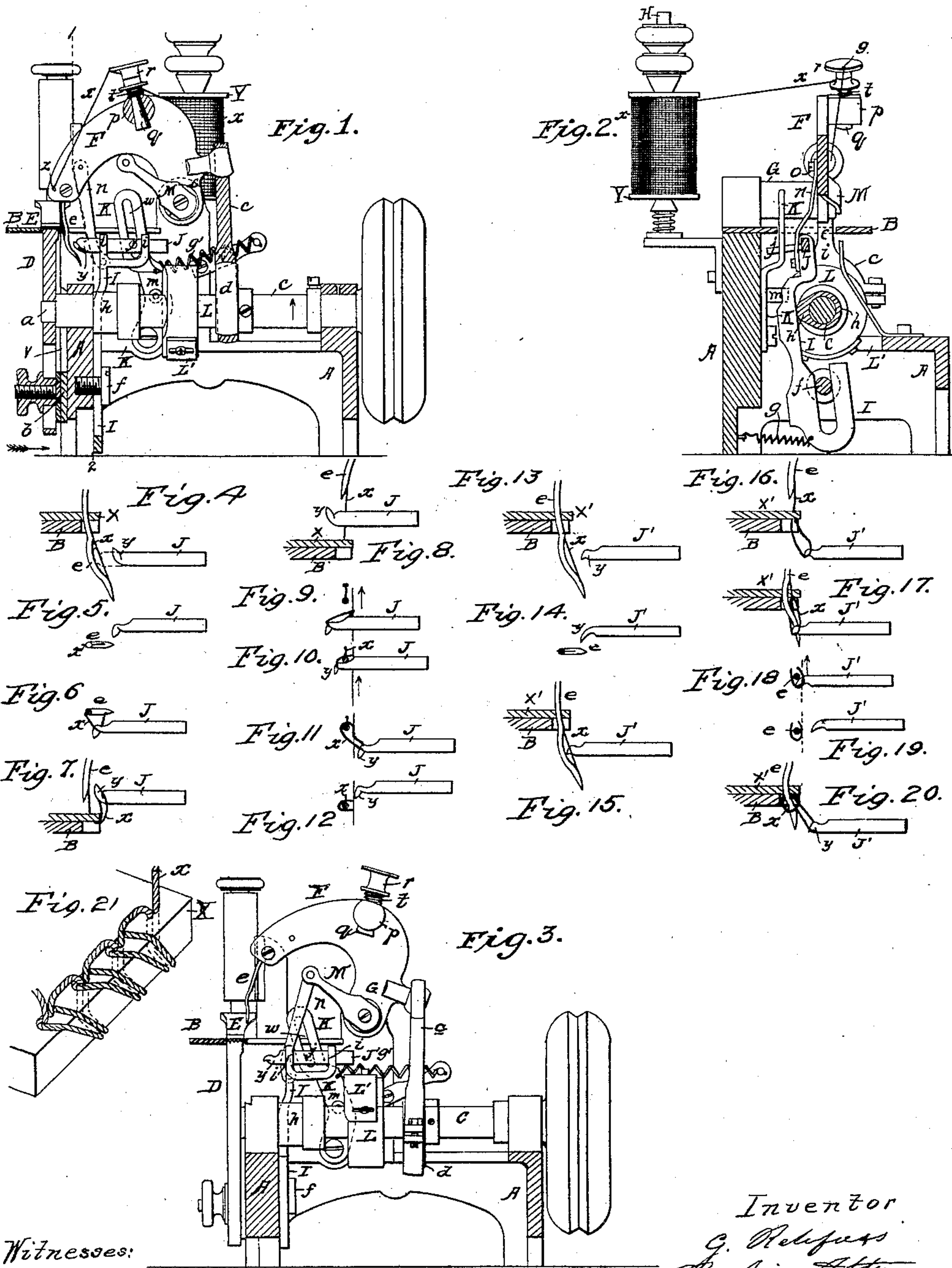


G. REHFUSS.
SEWING MACHINE.

No. 61,102.

Patented Jan. 8, 1867.



Witnesses:
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Letters Patent No. 61,102, dated January 8, 1867.

IMPROVEMENT IN SEWING MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, G. REHFUSS, of Philadelphia, Pennsylvania, have invented an Improvement in Sewing Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

My invention consists of certain mechanism, fully described hereafter, for making stitches over and across the edges of a fabric, (or an edge binding;) also in devices, described hereafter, whereby the said mechanism can be readily so arranged as to make the ordinary looped stitch; also of a device for imparting tension to the needle-thread, and regulating that tension.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation. On reference to the accompanying drawing, which forms a part of this specification—

Figure 1 is a sectional elevation of my improved sewing machine, arranged so as to form stitches over the edges of fabrics.

Figure 2, a sectional elevation on the line 1 2, fig. 1, looking in the direction of the arrow.

Figure 3, an elevation, partly in section, of the machine, arranged for sewing in the ordinary manner.

Figures 4 to 12 inclusive, diagrams illustrating the manner in which the stitch is formed over the edges of a fabric.

Figures 13 to 20 inclusive, diagrams illustrating the formation of the ordinary stitch; and

Figure 21, an enlarged view representing the stitch made when the machine is arranged as shown in figs. 1 and 2.

Similar letters refer to similar parts throughout the several views.

A is the frame of the machine, near the front edge of which is secured a work-plate, B, and in bearings on the frame turns a driving-shaft, C. On the end of the shaft C is a pin, *a*, which is eccentric to the axis of the shaft, and projects into an opening in a feed-lever, D, the upper serrated edge of the latter extending into a slot in the work-plate. Through a slot in the lower end of the lever D projects a pin, which is secured to an adjustable plate, *b*, sliding in a vertical recess, *v*, in the frame A.

As this feeding device is described and claimed in a separate application for a patent, further explanation of it here will be unnecessary.

Against the upper face of the work-plate B bears the usual presser-foot E, and to a bracket, G, projecting from a standard on the frame, is hung a needle-arm, F, which is operated through the medium of a connecting-arm, *c*, by an eccentric, *d*, on the driving-shaft. To the outer end of the arm F is secured a needle, *e*, which is bent near the lower end, as shown in the drawing, and on a rod, H, secured to the frame, turns a spool, Y, containing the needle-thread *x*. In the outer end of the arm F is an opening, *z*, for a purpose described hereafter. Through a slot in the lower end of a plate or lever, I, and into the frame A, passes a pin, *f*, on which the lever has both a vibratory and a vertical motion, and to the lower end of the lever and to the frame is secured a spring, *g*, which tends to maintain one end of the lever in contact with a cam, *h*, on the driving-shaft, (fig. 2.) In two projections, *i i*, at the upper end of the lever I, is a detachable loop-carrier, J, at one end of which is a hook, *y*, and from one side of the carrier projects a pin, *j*, which extends into a slot, *w*, in a lever, K, hung to the frame; a spring, *g'*, secured to this lever, maintaining a friction-roller, *m*, on the lever, in contact with the edge of a cam, L, on the driving-shaft. To the periphery of the cam L is secured an adjustable curved cam-plate, L', for a purpose described hereafter. To the lever or carrier-holder I is jointed an arm, *n*, the upper edge of which may be secured by a pin, *o*, to either the needle-arm F, or to a stationary arm, M, secured to the outer end of the bracket G. At one side of the needle-arm F is a projection, *p*, on which is a tapering opening, adapted for the reception of a tapering pin, *q*, and to the upper end of the latter is secured a button, *r*, in which is an opening, *s*; a spring, *t*, which is coiled round the pin, and bears against both the projection *p* and the button, tending to raise the latter, and maintain the pin *q* wedged firmly in the opening. The thread *z* is passed from the spool to the button *r*, is lapped one or more times round the shank of the latter, is passed through the opening *s*, through the opening *z* in the arm F, and through the eye of the needle *e*. The fabric

X to be sewed is placed on the work-plate B, so that it can be penetrated near the edge by the needle. The parts of the machine are brought to the position shown in figs. 1, 2, 4, and 5, a rotary motion in the direction of its arrow is imparted to the driving-shaft, when the operation will be as follows:

The carrier J first slides forward to the position shown in dotted lines, fig. 4, then moves laterally, so that its hook, *y*, shall catch the thread *x*, and carry it in the form of a loop to the position shown in fig. 6. The needle will now rise, while the carrier moves back slightly, and then also rises so as to draw the loop of the thread across the edge of the fabric, the needle continuing its upward motion while the carrier moves forward to the position shown in figs. 8 and 9. The feed-lever then moves the fabric in the direction of the arrow, fig. 9, and the carrier J moves towards the needle until the loop of the thread is carried beneath the point of the same, as shown in fig. 10, when the needle will descend and pass through the loop into the fabric. The carrier then moves back and downwards in a diagonal direction to its first position, so as to release itself from the loop, after which it moves forward and catches another loop of thread, and carries it up over the edge of the fabric, and holds it beneath the needle, so that the latter can pass through the same as before; the stitch or binding over the edge of the fabric thus formed being similar to that shown in fig. 21. When, instead of forming an edge binding, it is desired to sew two folds or strips of fabric together, the carrier J is removed and another, J', (fig. 3,) having a hook of different form, is adjusted in its place in the holder I. The pin *o* is then removed from the needle-arm F, and the upper end of the arm *n* is secured by this pin to the end of the arm M, after which the curved cam-plate L' is adjusted so that its edge shall project beyond the edge of the cam L, and bear on the friction-roller *m*, as shown in fig. 3. The fabric X' to be sewed is then so adjusted that the needle shall penetrate the same at the point desired, and the parts described are brought to the position shown in figs. 13 and 14, when their operation will be as follows: The carrier J' will first move forward to the position shown in fig. 15, and then laterally, so that its hook shall catch the thread *x*, and carry the same in the form of a loop to one side of the needle; the latter will then rise to the position shown in fig. 16. The fabric will then be moved in the direction of its arrow, fig. 18, so that the loop is carried to such a position that the needle, when it descends through the fabric, shall also pass through the loop, as shown in figs. 17 and 18. The carrier now resumes its first position, moving in a diagonal direction, so as to disengage itself from the loop, and then moves forward and catches the needle-thread before the needle again ascends, after which the needle rises, the old loop being drawn round the loop now held by the carrier, which is stretched beneath the needle, and penetrated by the latter on its next descent in the same manner as the loop first caught by the carrier. When it is desired to wind the thread round the shank of the button *r*, (in order to increase the tension,) the button is pressed downwards towards the projection *p*, so that the tapering pin *q* shall be moved from close contact with the tapering sides of the opening in the projection; the button *r* is then turned to the extent desired, and the pressure is removed, when the spring will elevate the button to its first position, the pin *q* being thus brought to its place, in which it is firmly held so long as the button is not again depressed. When an arm somewhat longer than the arm F is used, an ordinary curved needle may be substituted for the bent needle *a*. I have found, however, that by employing a needle bent near the lower end, as shown, a much shorter needle may be used, and the machine is thus rendered more compact, and may be efficiently worked at a higher speed. It will be apparent that other devices than those shown and described may be used for imparting such a motion to the hook *y* as to cause it to carry the loop from beneath the fabric, across the edge, and over the top of the same.

Without confining myself to the precise devices herein described, I claim as my invention, and desire to secure by Letters Patent—

1. A hook, *y*, in combination with a reciprocating eye-pointed needle, bent near its lower end, and with the within-described operating devices, or their equivalents, the whole being constructed and arranged for joint operation substantially as set forth.

2. The lever I, constructed for the retention, removal, and replacement of the loop-carrying bars J or J', substantially as described.

3. The said lever I and its loop-carrying bar J or J', in combination with the within-described devices, or their equivalents, whereby the said bar can be readily adjusted to act in conjunction with the needle for forming the edge binding, or for making the ordinary loop stitch.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEO. REHFUSS.

Witnesses:

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W. J. R. DELANY.