

M. F. GERAGHTY.
SEWING MACHINE

No. 103,444.

Patented May 24, 1870.

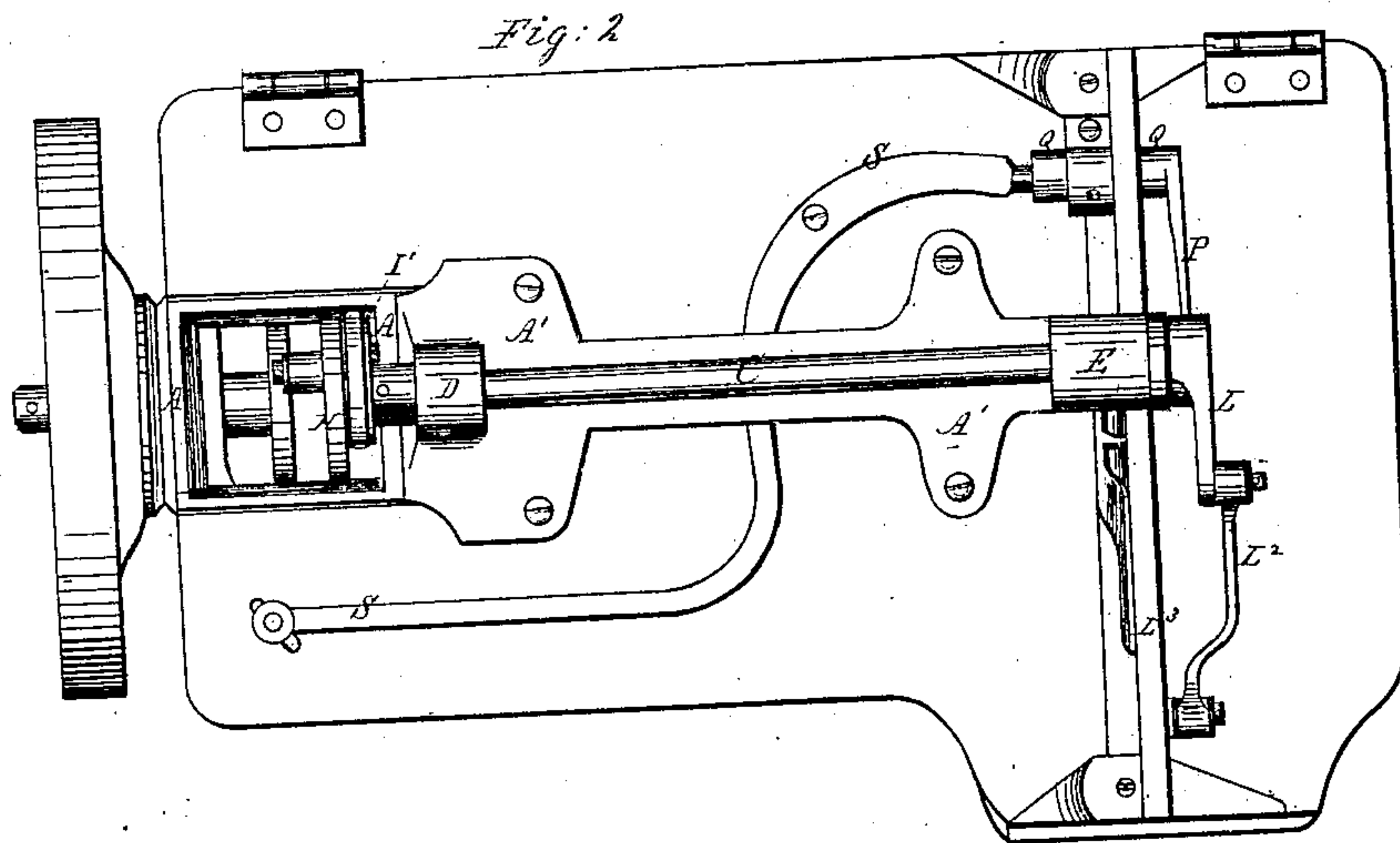
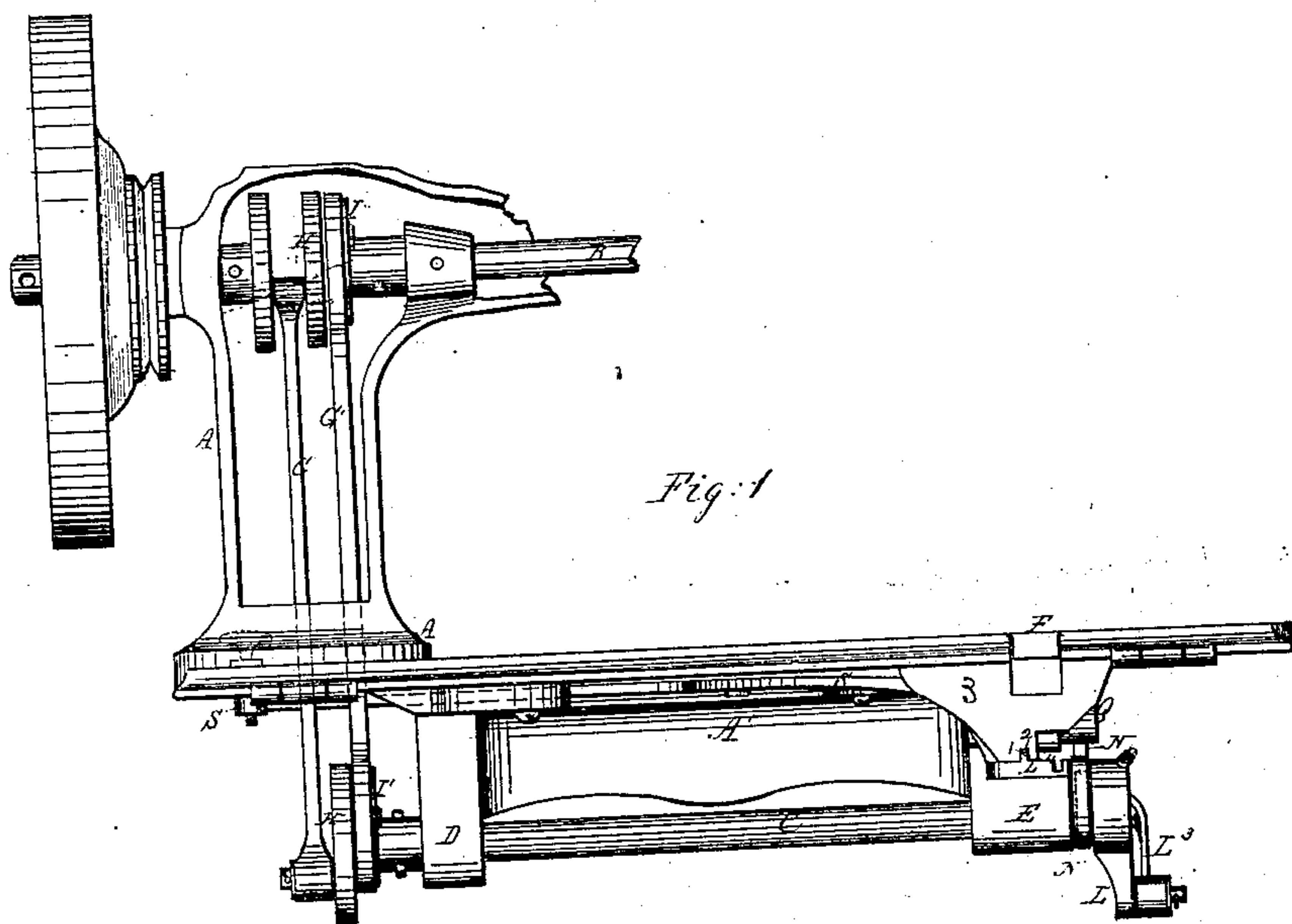


Fig. 4

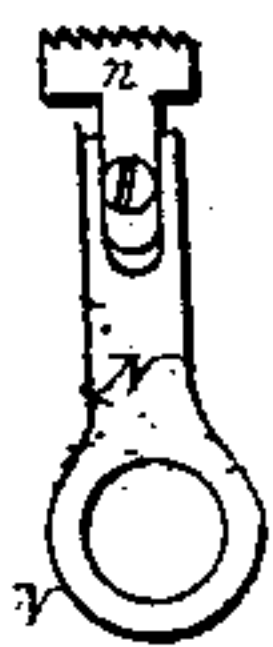


Fig. 3

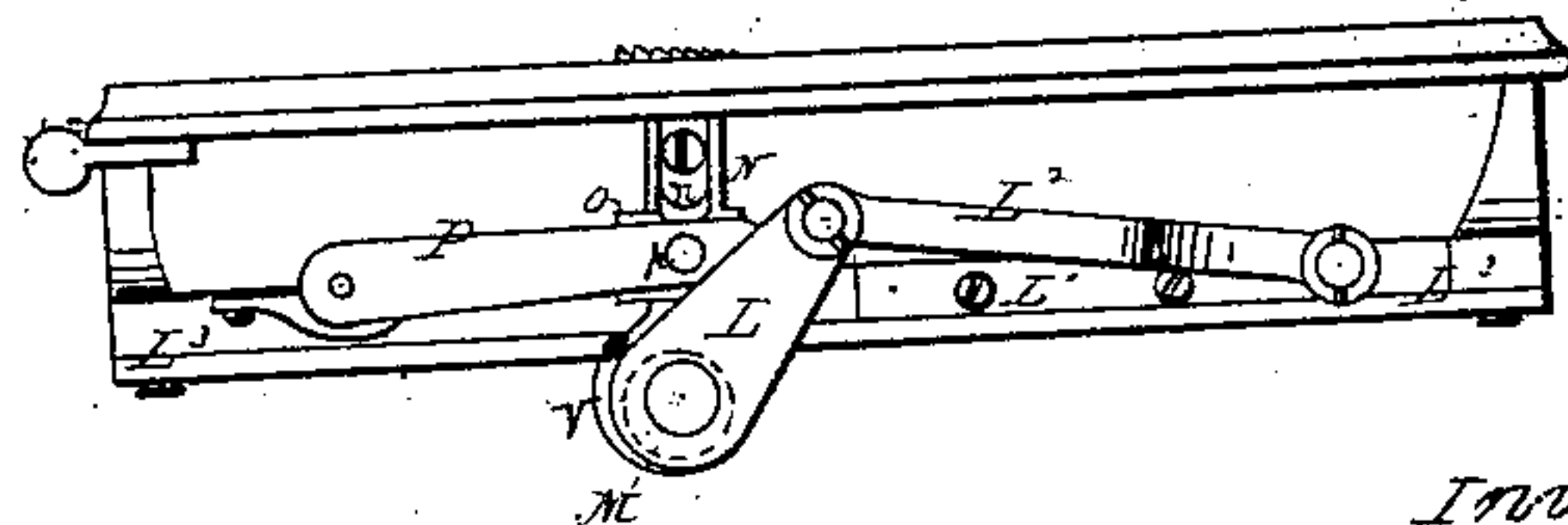


Fig. 5



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Letters Patent No. 103,444, dated May 24, 1870.

IMPROVEMENT IN SEWING-MACHINE.

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, MICHAEL F. GERAGHTY, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain Improvements in Sewing-Machines; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

My improvements relates to a novel mode of connecting and operating the upper and lower parallel shafts, and revolving said shafts in the same direction to the feeding devices, and to other parts, hereinafter named.

The objects of my improvements are the attainment of increased simplicity and cheapness of construction, approximate noiselessness in action, and the avoidance of "back-lash."

Figure 1 is an elevation, a portion of the upper part of the machine, not necessary to be shown, being cut away;

Figure 2 is a plan of the under side of the machine;

Figure 3 is an end view of the front part of the machine, showing devices beneath the bed-plate;

Figure 4 is a detail view of the feeding device; and

Figure 5 is a cross-section through the feed-dog and its movable slide.

The frame of the machine is shown at A, and it is cast in one piece, and with bearings or hangers adapted to receive and sustain the upper revolving shaft B and the lower revolving shaft C, so that these shafts shall always be insured perfect parallelism relatively each to the other, and cannot get out of line, thus avoiding a difficulty of a serious character, often encountered where the goose-neck is made in a separate piece, and requires, therefore, the most accurate adjustment relatively to the bed-plate and the mechanism beneath the table.

The lower shaft revolves in the hangers D and E, and its forward end projects beyond the hanger E, and beyond the shuttle-race F, such part beyond the race being the part which imparts the movements to the feeding-dog and to the shuttle, in a direct manner, and without the usual intermediate connections, as hereinafter set forth.

The upper shaft is shown as the driver, but the lower, if desired, may be the driver, and it gives motion to the lower shaft by means of a double connection, composed of two connecting-rods or links, each reaching from one to the other shaft.

One of these rods, G, is directly connected, at either end, to a crank on each of the shafts, the cranks being marked H, and the other rod, G', is connected by straps to the eccentrics I I' on the shafts. The crank and eccentric on either shaft are set relatively

to each other, so that the one shall be somewhat in advance of the other, thus avoiding any irregularity of motion or other disadvantages arising from the dead points, the eccentrics operating to carry the cranks over the dead points in all cases, and *vice versa*. This mode of connection also insures the revolution of both shafts in the same direction, and thereby avoids the doubling of any irregularity or back-lash which occurs when a rod so connects shafts, that they revolve in opposite directions. And it dispenses with any slot or pin to sustain the rod midway of its ends, and avoids the friction and wear incident thereto.

Instead of driving by two eccentrics for one rod, and two cranks for the other, each rod may have a crank at one end and an eccentric at the other, there being a crank and an eccentric for each shaft, and this I deem the equivalent of the construction shown and above described, and provision may be made for the adjustment of the eccentrics or of the cranks upon the shafts, if desired.

To the extreme forward end of the shaft C, and beyond its forward hanger, and forward of the shuttle-race F, is secured the crank L, which drives the shuttle-carrier, L¹, by means of the connecting-rod L², the carrier running in a race or way, L³.

This piece, in which the carrier reciprocates, has, at each end, a rib, 1, entering a groove, 2, in the hanger 3, on the bed-plate, and fitting it snugly, except that it does not reach to the top of the groove. This provision, whilst firmly holding the piece to place, also allows of elevating the piece to meet any wear caused by the carrier.

In immediate juxtaposition to the hub of this crank, and just back of it, and forming part of it, is an eccentric, M, located in the same vertical plane with the opening in the bed-plate, through which the feed-dog operates when feeding.

This feed-dog, N, at its lower end, is bored or cut to receive the eccentric M, from which its feeding movement is derived, and is otherwise a solid piece, having no cuts nor slots, nor pins passing through it on which it must ride and wear. This piece is sustained snugly between the hanger E and the hub of the crank, and has no opportunity of becoming displaced or deranged. The revolution of the shaft gives it positive motions, both up and down, and forward and back, no springs or other auxiliaries being used with it for the purpose of assisting it in its movements.

The means for controlling the forward and backward throw of the dog, to vary the length of feed, are as follows:

A slide, O, so made as to embrace the dog at its two edges, is applied to it, and it is free to be moved up and down upon it to or from its center of motion,

and then held in position by the arm P, to which it is swiveled, as shown at p.

This arm P is rigidly affixed to a rock-shaft, Q, hung in suitable bearings, and having, at its other end, an arm, which is actuated whenever a change of the length of feed is wanted, by the hand-lever S, the latter being arranged so as to be accessible from the upper side of the table, at a convenient place within reach of the operator.

It will be seen that a feed-dog, controlled and operated as described, has but little wear upon it, and when set for a given extent of feed, will continue to measure, with great uniformity, the same length of stitch without variation; also, that the noise and rattle incident to a slotted dog, playing upon a small pin, which is constantly wearing away by its frictional contact with the slot, are entirely avoided; also, that the swiveling character of the slide, in connection with its length, affords a close contact of the sides of the slide with the dog, under all adjustments, and more than sufficient to meet the little wear that may occur in practice, so that rattling from this or from any cause is next to impossible.

Instead of the eccentric on the sleeve of the crank L, to impart the positive movements to the feed-dog, the shaft may have the eccentric made upon or applied directly to it.

For the purpose of readily lowering or raising the roughened upper surface of the feeding-dog, to adapt it for more efficient action upon various kinds of fabrics, I have furnished my feeding-dog with a movable piece, n, which is adjustable, vertically, by means of a set-screw, as shown. This piece is sunken in an appropriate rebate in the feeding-dog, and it may or may not be used, as desired. The dog N itself may have the roughened or acting feeding-surface upon its upper end, and the piece n would, in such case, be dispensed with.

The frame A of the machine, and which supports all the working parts, except the shuttle-carrier, is made from a single piece of casting.

I am aware that, in some simple kinds of sewing-machines, intended to be driven by hand, the frame has sometimes been made in a single piece, but none, I believe, have ever been so made in which a shuttle has been employed.

In my construction, the "goose-neck" (so called) is integral and continuous with the part A', to which are also cast the bearings D E for the lower shaft, these bearings being, as heretofore stated, so located as not only to insure perfect parallelism of the upper and lower shafts at all times, and thus secure trueness of position and action, but the forward one being so located as to throw both the crank for the shuttle and the feeding-dog in front of the race.

This construction absolutely prevents any displacement of the upper or lower parts relatively to each other, and permanently preserves, in their relative

working positions, the needle, the feed, the "motion" which connects the shafts, and the shuttle connections, without possibility of derangement, unless by breakage.

By this means I save much labor, time, and skill usually required in putting the machine together, in the first instance, and in adjusting these various parts for joint operative action, and when once put together, they cannot become displaced with regard to each other, and must work true and in harmony.

The lower part of this frame also forms a support for the work-supporting plate, and which latter is secured to it by screws, as shown, or otherwise, and has affixed to it the shuttle-race, which is, therefore, removable with it from the machine.

The shuttle-driver, as will be seen, is so shaped that there is no tendency, by its own gravity or its traversing movements, to lean or droop at its upper end toward the face of the shuttle. Such tendency in machines, as usually constructed, is a serious detriment, as it causes the shuttle, after the machine has been run a short time, and there has been a little wear on the driver, and the ways in which it runs, and, consequently, some lost motion, to hug more and more tightly against the face of the race, thus rapidly wearing out the face of the shuttle, and greatly increasing friction, and causing the machine to run heavily. This is positively prevented in my machine, by so making the driver that its cradle or upper part shall have its center of gravity fall inside and in the rear of a vertical line passing through its center of vibration, the cradle, when loosed at all, always falling in a direction away from the face of the race.

I claim—

The rotating shafts operating the needle and the portions of sewing mechanism under the table, when connected by links, cranks, and eccentrics, substantially as described.

Also, the solid feed-dog, having no pivotal center passing through the same, and operated by an eccentric only, combined with a pivoted guiding piece for varying its throw, substantially as described.

Also, the revolving shaft, having a shuttle-driving crank at its forward end, and forward of the shuttle-race, and a feeding-dog, arranged between such crank and a stationary bearing or piece, and standing and working in a vertical plane, and having positive motions, only derived from an eccentric on the shaft.

Also, the swiveling slide O, affixed to and adapted to turn upon an adjustable lever, and clasp the feeding-dog, substantially as shown and described.

Also, the combination of the feed-dog N, slide O, and adjustable lever P, with the hand-lever S, and its thumb-screw, substantially as shown and described.

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Witnesses:

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