G. W. MANSON.

Sewing-Machine Motors.

No. 141,367. Patented July 29, 1873.

Fig. 1.

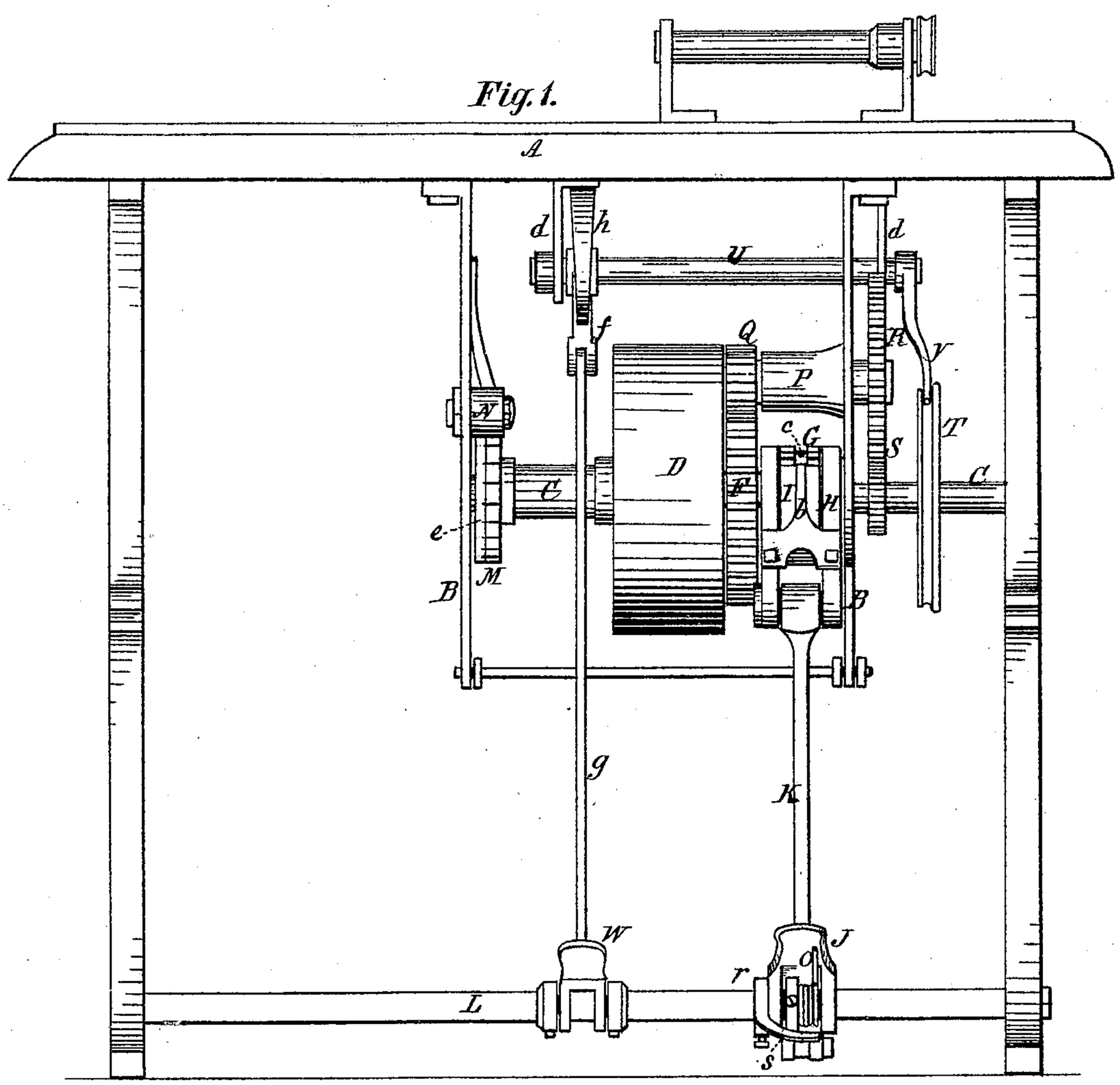


Fig. 6.

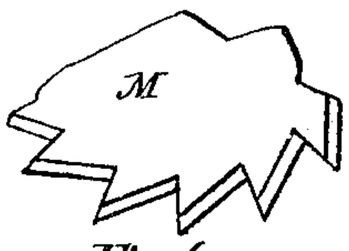


Fig. 5

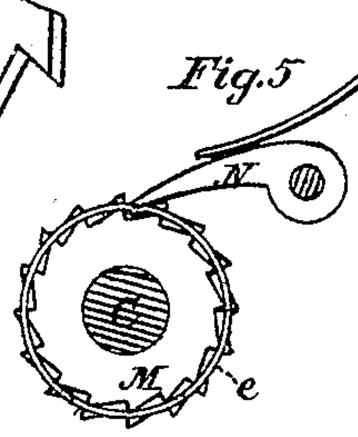


Fig. 2.

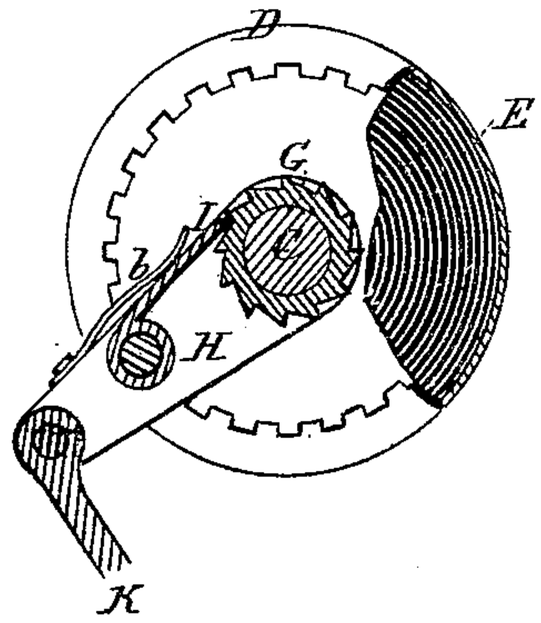


Fig. 4.

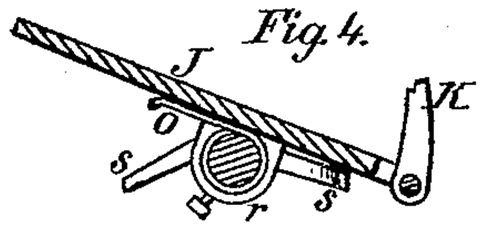
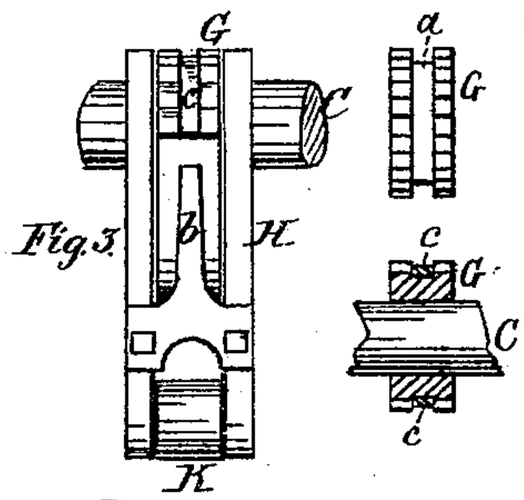


Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE W. MANSON, OF AUBURN, MAINE.

IMPROVEMENT IN SEWING-MACHINE MOTORS.

Specification forming part of Letters Patent No. **141,367**, dated July 29, 1873; application filed January 20, 1873.

To all whom it may concern:

Be it known that I, GEORGE W. MANSON, of Auburn, in the county of Androscoggin and State of Maine, have invented certain new and useful Improvements in Sewing-Machine Motors, of which the following is a specification:

This invention relates to a spring power particularly applicable for driving sewing-machines and keeping the driving-power wound up; and the improvement which forms the subject-matter of this patent consists in the construction and arrangement of the device for winding up the driving-spring by the foot of the operator, said device being an oscillating or swinging frame mounted upon the winding-shaft and carrying a spring-pawl to operate a ratchet-wheel on the driving-shaft, the parts being so constructed and arranged that the pawl with its swinging frame, when not turning the ratchet-wheel, will remain at a point to be engaged therewith at once for action and while the machine is running, the moment the foot is pressed upon the treadle, which is connected to the swinging frame; also, in the arrangement of the stops, in connection with the treadle, for limiting the downward movement of both ends of the treadle, whether the latter be at rest or in winding up the spring; and in the peculiar construction of the teeth of the ratchet-wheels to receive and hold encircling rubber bands upon which the points of the pawls act and rest, and thereby prevent the clicking noise of the spring-pawls when the ratchets are turned—the object of my said improvements being to to obtain an effective and durable foot winding device, entirely noiseless, and to prevent any possible displacement of the spring-pawl from the winding-ratchet, while the latter may be operated at any time during the working of the machine, so as to keep it always wound up.

In the accompanying drawings, Figure 1 represents a front elevation of a sewing-machine motor, embracing my invention; Fig. 2, a section, showing the winding-ratchet, with its spring-pawl and swinging carrying-frame; Fig. 3, a top view of the same; Fig. 4, a section, showing the treadle and its stops; Fig. 5, the retaining ratchet and pawl; and Fig. 6, the ratchet enlarged.

To the under side of the table A are attached brackets or hangers B, forming a frame for the reception of the driving mechanism. The main shaft C, upon which the spring power is mounted, is journaled in said frame, and carries a drum, D, containing the coiled spring E, the expansible force of which furnishes the motive power. The drum D is fitted loosely upon the shaft C, and has attached to it the outer end of the spring E, the inner end of which is secured to the shaft. To the side of the drum D is secured a spur-wheel, F, which serves to transmit the power to the mechanism connected with the needle-carrier. A ratchet-wheel, G, is secured upon the winding-shaft C, and is provided with a double series of teeth, so as to form a central groove, *a*, to receive a rubber band, *c*, between the arms of a frame, H, swinging or oscillating upon the shaft C. To the upper side of said frame, H, is secured between the arms a pawl, I, combined with a flat spring, *b*, which bears upon the same for retaining it in contact with the ratchet-teeth. The point of the pawl I, however, does not rest upon the teeth, but upon the rubber band *c*, between the double row of teeth, and thus prevents noise in winding up the spring. A vertical rod, K, is pivoted between the arms of the frame H, at its lower end, and is connected with a treadle, J, mounted on the cross-rod L, at the bottom of the table-frame. When the winding mechanism is not in action the heel of the treadle is elevated by means of a small coiled spring, O, Fig. 4, which is located between the ears forming the bearings of the treadle, and is attached to the lower surface of the latter, so as to press upward from the front. The spring O elevates the heel of the treadle J when the foot-pressure is removed from the same, which pulls down the swinging frame H and its pawl I into positions for instant action to wind the spring when the foot is applied to the treadle. This arrangement not only keeps the treadle in position, but also the winding-pawl frame for instant action. To arrest the downward movement of either end of the treadle, and for supporting the same against the pressure of

the spring when not winding, I locate on the cross-rod L a collar or hub, *r*, having two curved arms, *s*, covered with India rubber, and forming stops or supporting surfaces for the treadle, so that the latter and the pawl-frame H have a limited movement thereby. By operating the treadle J the spring-pawl I is caused to engage with the teeth of the ratchet G for turning the same, and as the ratchet is secured to the main shaft C it will also be rotated and thus wind up the spring. The movement of the needle is, however, not arrested during the winding up or renewing of the spring, and thus the operator is enabled to keep up the sewing without being obliged to take the hands from the work. To hold the main shaft from turning back I apply to the outer end of the same a ratchet-wheel, M, the teeth of which are notched or formed in two series—one above the other, as shown in Figs. 5 and 6, so as to receive and hold a rubber or other band, *e*, upon which the point of the spring-pawl N, applied to the table-frame B, rests as the ratchet is turned, and thus prevent noise of the parts. The revolution of the spring-drum D on the main shaft C will, through the medium of the spur-wheel F applied to the same, actuate the intermediate shaft P journaled in the frame and carrying a pinion, Q, and large spur-wheel R, meshing, respectively, into the wheel F and pinion S on the shaft C of the belt-wheel T.

For controlling the movement of the machine I employ a brake mechanism, consisting of a horizontal rock-shaft, U, mounted in arms *d d* attached to the table, and carrying at its outer end a brake-arm, V, which is provided with a frictional shoe to enable it to bite upon the belt-wheel T. The rock-shaft U is provided at one end with an arm, *f*, to which is hinged the upper end of a connecting-rod, *g*, whose lower end is hinged to the toe of a treadle, W, mounted on the cross-rod L. A spring, *h*, is caused to bear upon the arm *f* of the brake-shaft, or the same may bear directly upon the brake-arm, as found most expedient. The foot of the operator is placed on the treadle W, and by moving the toe or heel up or down the brake may be caused to press upon the belt-wheel with more or less force for retarding or accelerating the movement of the mechanism, thus putting the machine under the complete control of the operator.

Having described my invention I claim—

1. In a sewing-machine motor, the frame H, suspended from and turning freely upon the winding-shaft C, and carrying the pawl I, in combination with the winding-ratchet G, treadle J, and connecting-rod K, arranged to operate as described.

2. The spring O, in combination with the treadle J, and the swinging frame H arranged to maintain the treadle and winding-pawl frame in position to wind the driving-spring without loss of motion, as described.

3. The stops *s s* and spring O, in combination with the treadle J and the swinging frame H, when said stops are arranged to support the treadle and frame H in positions for use against the action of the spring O, as described.

4. The ratchet-wheels G M, having teeth constructed to receive and hold rubber bands, as described, whereby the clicking noise of the spring-pawls is avoided in winding up the power.

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