Sheet 1 - 2 Sheets

A. C. Crary.

Operating Sewing-Machines.

No. 75667 Patented Mar. 17, 1868

Fig. 1.

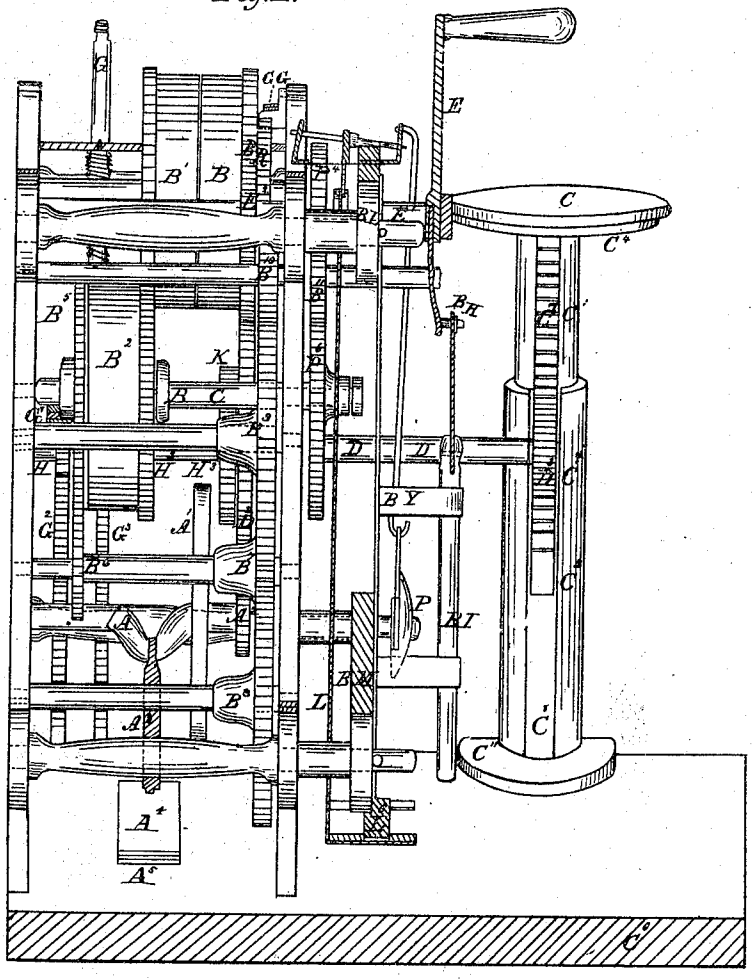
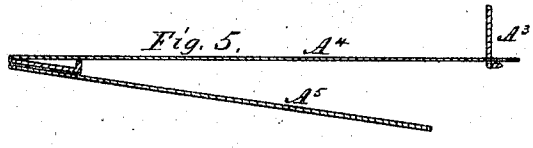


Fig. 5.



Witnesses

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Sheet 2

~~Sheet 1~~ 2 Sheets

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Fig. 3.

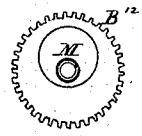
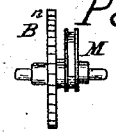
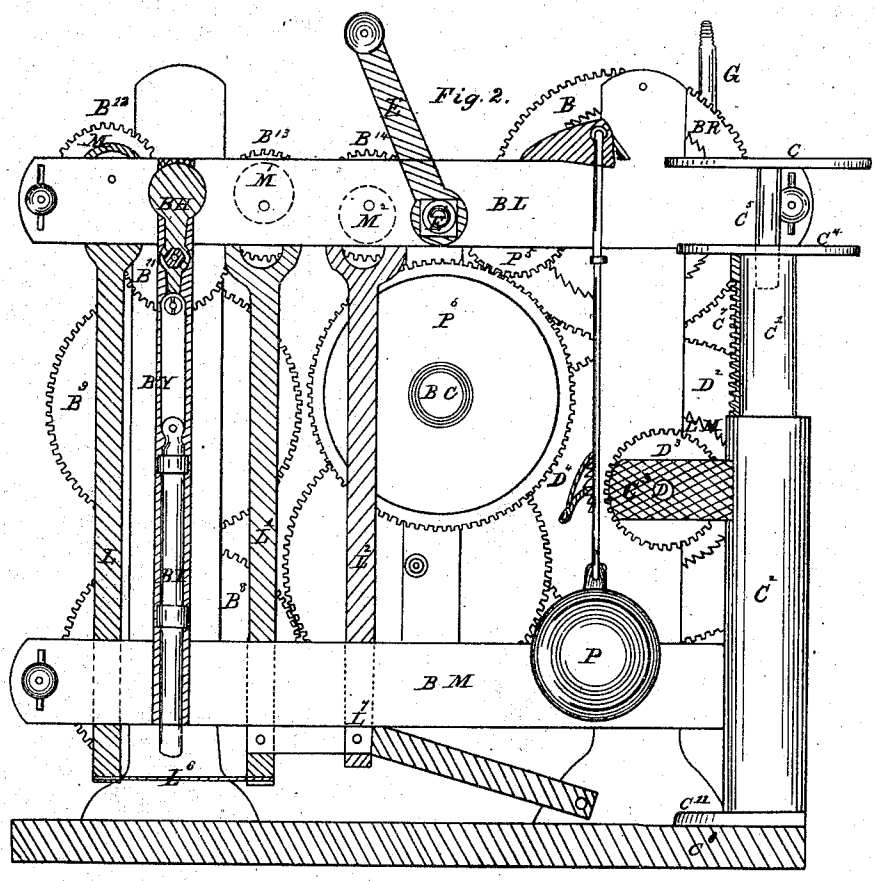


Fig. 4



Patented Mar. 17, 1868

Fig. 2.



Witnesses

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United States Patent Office.

ARCHIBALD C. CRARY, OF UTICA, NEW YORK.

Letters Patent No. 75,667, *dated March* 17, 1868.

IMPROVEMENT IN APPARATUS FOR OPERATING SEWING-MACHINES.

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

TO WHOM IT MAY CONCERN:

Be it known that I, ARCHIBALD C. CRARY, a resident of the city of Utica, county of Oneida, New York, have invented a new and useful Improvement in the Mode of Operating Sewing-Machines, Stocking-Looms, Jewellers' or Light Lathes, and Melodeons.

The nature of my invention consists in the mode of operating, by means of the treadle or its equivalent, springs attached to sewing-machines, stocking-looms, jewellers' or light lathes, and melodeons, for the purpose of operating the same, which spring or springs are coiled or wound up by the application of the motive power by which they are operated, directly to the peripheries of these springs, or to the circumferences of their enclosures; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings making a part of this specification, in which—

Figure 1 represents an end view, showing the treadle, the screw, and the racks, pinions, friction-rollers, cylinder-shaft, and ratchet, connected with and operated by the said screw, the seat of the operator, the drums enclosing the said springs.

Figure 2 represents the front view, including the seat, the counter-gear, pendulum, and the connections with the pendulum; the crank, used as an equivalent to the treadle; the counterpoised needle-bar, and feed.

Figure 3 is the end view of gear B^{13} B^{14}, and of the eccentrics with which they are connected.

Figure 4 is a side view of gear B^{13} B^{14}, (which operate the feed,) and of the said eccentrics.

The Treadle.

The treadle and its appurtenants, when applied to winding concentric springs, consist of the shaft A, with a crank in its centre; the balance-wheel A^1 on the shaft A, by the side of the crank; the drive-wheel A^2; the pitman A^3, which connects the treadle A^4 with the crank of shaft A. This crank, being rotated in opposition to the continuous action of the springs B B^1 B^2, the treadle-spring A^5 is required to overcome this resistance, and to raise this crank, when the treadle is relieved of the pressure of the operator's foot. The balance-wheel A^1 is used to force the cranks of shaft A past its centres. The toothed wheel A^2 is firmly connected with shaft A, and meshes in the intermediate, D^2. This intermediate is a loose wheel on shaft D, and meshes in the drum-enclosing spring B. When the treadle acts on spring B, it winds up the series of springs B B^1 B^2 simultaneously. These springs may be enclosed in drums, or used otherwise. When the intermediate, D^2, is not used, the drive-wheel A^2 meshes in the periphery of drum B, and thus winds up the spring enclosed in that drum, and the series of springs connected with it. A series of concentric springs is formed by attaching the several springs to the concave sides of the several drums, or other enclosures of the said springs, and attaching two or more springs to each shaft. The periphery of spring B receives the motive power, and this force passes to its centre, and is, by the shaft which contains springs B and B^1, transmitted to the centre of spring B^1, (which meshes in spring B^2.) From the centre of spring B^1 this force passes to spring B^2, and in like manner through any number of springs, to the pinions and drive-wheels, which connect these springs with the machinery to be operated by this force or motive power. On the end of the shaft which contains spring B is the ratchet B B, which is firmly connected with the enclosure of spring B. The pawl G G is connected with the frame, which contains the machinery, and drops into the periphery of the ratchet B R, and thus prevents the recoil of the springs B B^1 B^2 when the process of winding the springs has ceased. The springs B B^1 B^2, being wound up, spring B^2 commences giving off to the machinery connected with it the motive power received by spring B. On the shaft which contains spring B^2 is a drive-wheel, B^5, which meshes in the pinion B^6. On the shaft with pinion B^5 is a drive-wheel, B^7, which meshes in the intermediate, B^8, which meshes in the intermediate, B^9, and this wheel meshes in the pinion B^{10}. The shaft, which contains the pinion B^{10}, projects from the frame, and contains on the outside of the frame proper, and within the frame-bar B L, a small drive-wheel, B^{11}, and outside of the frame-bar B L this shaft contains the needle-crank B H.

Needle-Crank.

The needle-crank B H is formed by a counterpoised bar, so balanced as to render the momentum of the weight on the blank end of this bar equal to that of the needle-bar B I. The needle-bar B I moves freely

through the arms of the bracket B Y. The bracket B Y is securely fastened to the two flat bars which pass horizontally in front of the frame proper, B L being the upper, and B M the lower of the said bars. The needle-crank B H is connected with the needle-bar B I by a pitman. This pitman is inserted in the upper end of the needle-bar, and is held in that connection by a bolt, which permits the oscillation necessary for the pitman.

Feed.

The three bars L L^1 L^2, shown in the front view, fig. 2, operate the feed. The bars L L^1 operate directly on the feed-bar L^6, giving it a vertical movement. L^2 is connected with the toggle joint, (or a curved spring,) L^7, and by the action of the toggle-joint (or spring) in being straightened, gives to the feed-bar its longitudinal motion. The movement of the bars L L^1 L^2 are produced by the action of the eccentrics M M^1 M^2, which are contained in the upper ends of the bars L L^1 L^2, and are severally connected with the pinions B^{12} B^{13} B^{14}. B^{12} and B^{13} mesh in and receive their motive power from B^{11}.

Pendulum.

The pendulum shown on the front view, fig. 2, receives its motive power from the ratchet and escapement usually connected with a pendulum. This ratchet is on the same shaft with the cogged pinion P^4, which meshes in the intermediate, P^5, which meshes in the drive-wheel P^6 on the shaft B C. This shaft passes through the frame in a line parallel to the shaft of the machine, and is the same shaft which contains spring B^2 and the drive-wheel B^5. Drive-wheel P^3 may be placed on a shaft parallel to the shaft containing the spring B^2, and by means of a pinion meshing in the periphery of spring B^2, or other suitable connection, regulate the velocity of spring B^2, and consequently of the remainder of the machinery. The pendulum or its equivalent may be placed above or on either side of the machine, and connected with the periphery of a spring, or either of the wheels, which will allow the necessary velocity of the needle.

Rotating Seat.

Fig. 1 represents an end view of the seat of the operator, and of the machinery connected with it. Projecting from the lower side of the seat C is a pivot or dowel C^5, descending into the top of the plunger C^1. This plunger is contained in a vertical cylinder, C^2, and is permitted to move freely in the cylinder C^2, when pressed down by the weight of the operator. At the top of the plunger C^1 is a flange, C^4, securely fastened to the plunger. On the flange C^1 the seat is supported. The pivot C^5 retains the seat in its position, and permits it to rotate freely. Cylinder C^2 is securely fastened to the platform C^6, (on which the machinery is placed,) by means of flange C^{11}, or it may be similarly connected with the descending leaf of a cabinet. In one side of the plunger C^1 is a rack, C^7. This rack is securely dove-tailed in the side of plunger C^1, (or the rack C^7 may be cast as a part of plunger C^1.) In the side of cylinder C^2 is a nick, C^8, of sufficient width for rack C^7 to move freely through when the plunger C^1 is raised or descends. Near the top of cylinder C^2, and close to the side of the nick C^8, is an ear, C^9, in which is inserted the shaft D. Shaft D passes from its connection with the vertical cylinder C^{11} to the frame which contains the machinery. The loose wheel D^3 and the ratchet L M are on the shaft D. This ratchet L M is firmly connected with the shaft D, and is close to the side of the wheel D^2. When the shaft D is turned around by the operation of the pinions D^3, which meshes in the rack C^7, the ratchet L M (by means of the pawl D^4) causes the wheel D^2 to rotate, and thus winds up the series of springs B B^1 B^2, as above described. The pawl D^4 is connected with the sides of wheel D^2, and drops in the periphery of ratchet L M.

The Screw.

The end view 1 also shows the screw, and the machinery connected with it. The screw may be used as equivalent to the treadle. The screw G is enclosed at its top in the nut G^1. This nut at its ends is firmly connected with the racks G^2 G^3. These racks mesh in the flanged pinion H, which is on and firmly fastened to the hollow shaft H^2. This hollow shaft is firmly connected at its end, near the loose wheel D^2, with the ratchet H^3. The ratchet H^3 receives in its periphery the pawl K, which is securely fastened by a pivot to the wheel D^2. When the screw G is turned forward this nut rises. The racks G^2 G^3 cause the pinion H to rotate, which turns the hollow shaft H^2, and the ratchet H^3, by means of the pawl K, causes the intermediate, D^2, to revolve, and consequently wind up the spring B B^1 B^2.

The Crank.

The end view 1 also shows the crank E, its shaft E^1, and its drive-wheel E^2. The crank operates directly on the periphery of spring B. The crank E is securely fastened to the end of shaft E^1, and is situated on the outside of the frame which contains the machinery. On the shaft E^1, and securely fastened to this shaft, is the drive-wheel E^2, which meshes in the row of cogs on the drum which encloses the spring B, and thus winds up the series of springs B B^1 B^2.

The Lever.

Instead of the screw, as shown, (in end view 1,) a lever and lever-spring, as shown in end view 1, similar to the treadle and spring 4, may be connected with the lower ends of racks G^2 G^3, and through the connection of these racks with the hollow shaft H^2, ratchet H^3, and pawl H, operating on the intermediate, D^2, wind up the springs B B^1 B^2, as above stated.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. The combination and arrangement of a series of springs and their connection, for the purpose of propelling or operating sewing-machines, substantially as described.

2. The application of motive power or force to the periphery or peripheries of concentric or coiled springs,

or alternately to the peripheries of a series of springs, substantially as herein described, for the purpose of propelling or operating sewing-machines, substantially as described.

3. The mode or manner, substantially as herein described, of coiling or winding up concentric or coiled springs for the uses and purposes herein stated, by means of the treadle or its equivalent, viz, the operator's rotating seat, the screw, the crank, and the lever.

4. The mode, substantially as herein described, of constructing the operator's rotating seat, and of its attachment, for the uses and purposes aforesaid.

ARCHIBALD C. CRARY.

Witnesses:

M. M. JONES,

B. DEMING.