

(No Model.)

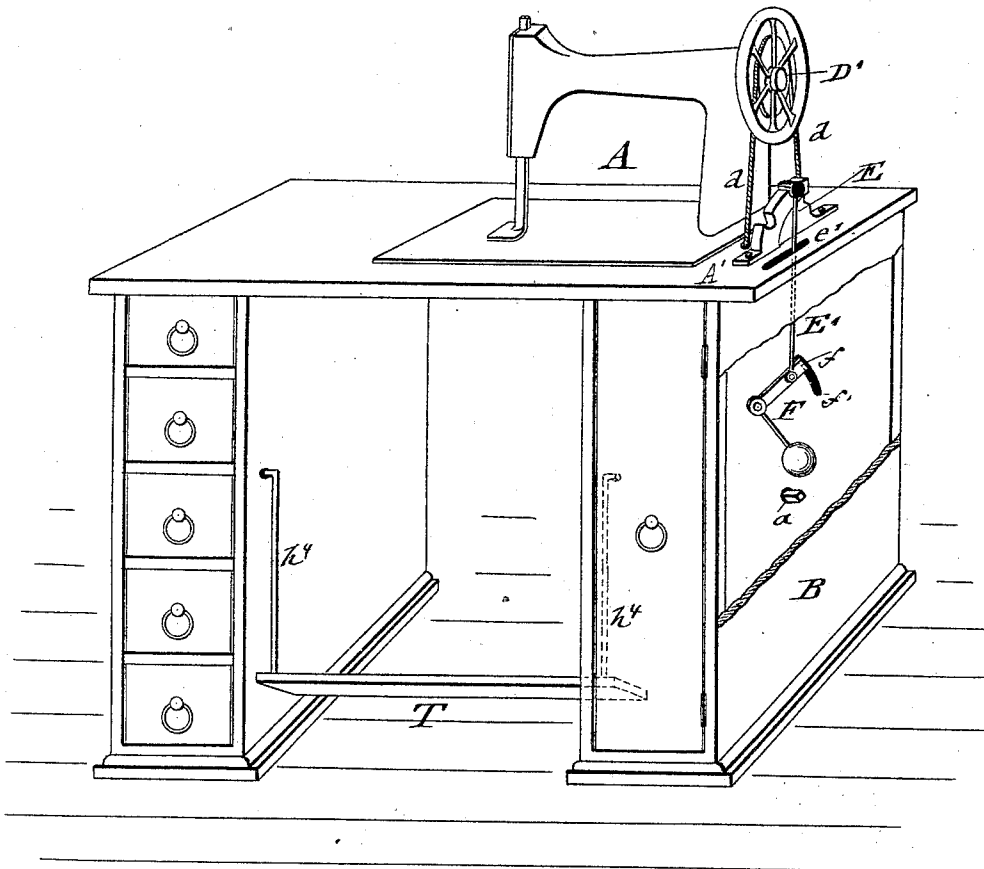
2 Sheets—Sheet 1.

B. REICHELT.
SPRING MOTOR.

No. 449,384.

Patented Mar. 31, 1891.

Fig. 1.



WITNESSES:

J. H. Rosenbaum.
Henry Huber

INVENTOR:

Bruno Reichelt
BY *Loebel & Regener*
ATTORNEYS.

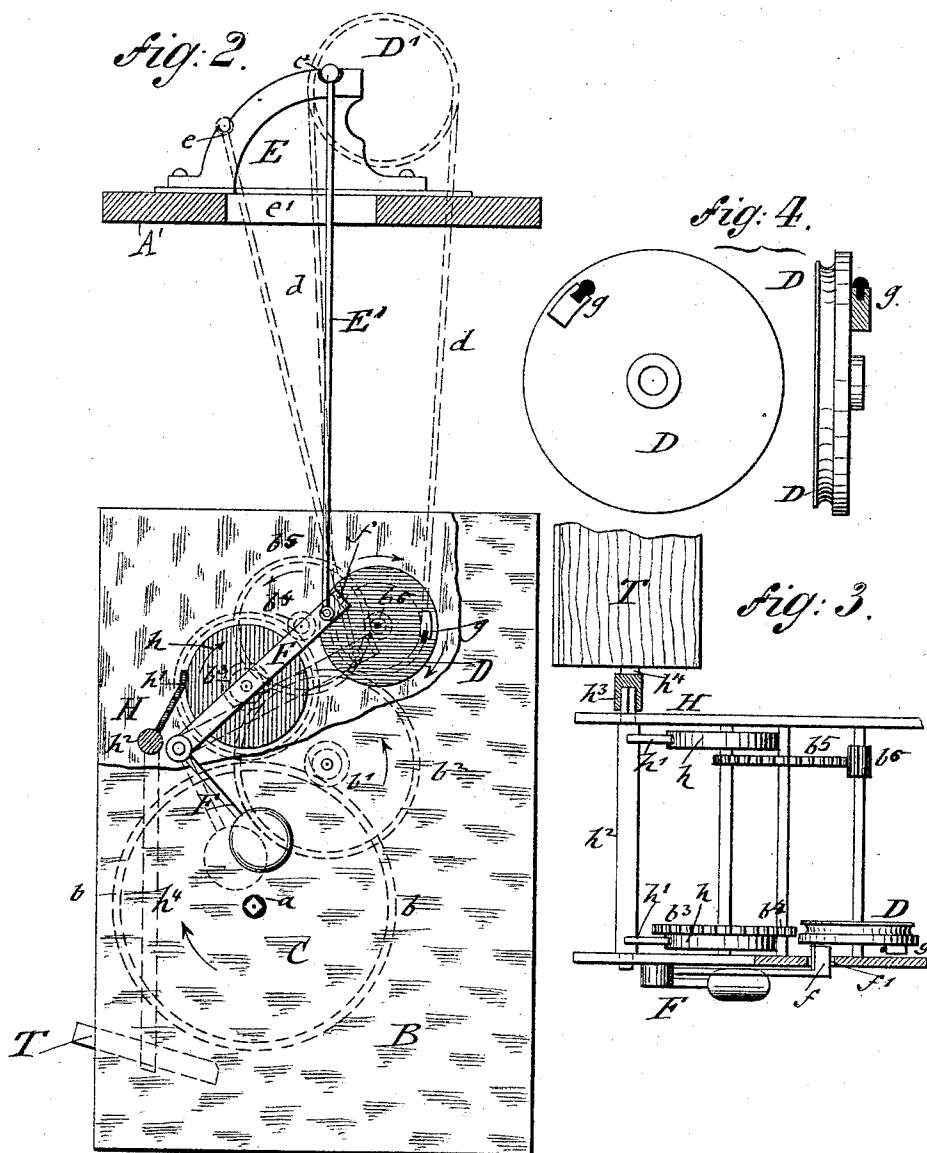
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2 Sheets—Sheet 2.

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WITNESSES:

A. Schuhl.
Henry Huber

INVENTOR

Bruno Reichelt
BY
L. P. R. R.
ATTORNEYS.

UNITED STATES PATENT OFFICE.

BRUNO REICHELT, OF SOUTH BEND, INDIANA.

SPRING-MOTOR.

SPECIFICATION forming part of Letters Patent No. 449,384, dated March 31, 1891.

Application filed December 29, 1890. Serial No. 376,054. (No model.)

To all whom it may concern:

Be it known that I, BRUNO REICHELT, of South Bend, in the county of St. Joseph and State of Indiana, a citizen of the United States, have invented certain new and useful Improvements in Spring-Motors for Sewing-Machines, of which the following is a specification.

This invention relates to an improved spring-motor for sewing-machines or other light machinery, by which said machinery can be operated without the use of the foot by simply winding up the driving-spring of the motor, which can also be stopped or started with great facility and its speed regulated as required; and the invention consists of a spring-motor for sewing-machines, which imparts motive power to a sewing or other light machine by a suitable belt-and-pulley transmission, and which is provided with a stopping and starting device operated from the table of the sewing-machine, and with brake devices operated by a treadle for regulating the speed of the motor, as will be fully described hereinafter, and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a perspective view of a sewing-machine with my improved spring-motor attached thereto. Fig. 2 is a sectional side view of the spring-motor, drawn on a larger scale and with parts broken away, so as to show its starting and stopping device and its speed-regulating brake. Fig. 3 is a section of plan of the starting and stopping device and the speed-regulating brake of the spring-motor, and Fig. 4 shows details of the elastic buffer of the starting and stopping device shown arranged in the motion-transmitting pulley.

Similar letters of reference indicate corresponding parts.

A in the drawings represents a sewing-machine or other light machine in which the treadle-motion operated by the foot is to be replaced by a suitable spring-motor. The spring-motor is arranged in a casing B at the right-hand side of the sewing-machine, and comprises a spring-barrel C, having a driving-spring of suitable strength in the same, which spring-barrel is provided with the usual winding-up arbor *a* and check parts. The spring-barrel C transmits its power by a gear-wheel

b to an intermediate train of gear-wheels *b'*, *b*², *b*³, *b*⁴, *b*⁵, and *b*⁶, (shown in dotted lines in Fig. 2) to a driving-pulley D, from which the motion is transmitted by a belt *d* to a pulley D' on the main shaft of the sewing or other machine, as shown in Figs. 1 and 2.

The mechanism so far described—namely, the spring-barrel and its transmitting gear-wheels and pulleys—are well known, and form no part of my invention.

The new features of my invention are the devices by which the motor is started and stopped and the speed of the same regulated, which is accomplished by a brake that is operated by a treadle suspended on pendent arms pivoted to the supporting-frame of the sewing or other machine.

The starting and stopping device is composed of an arc-shaped plate E, that is attached to the table of the sewing-machine above the spring-motor, said plate E being provided with notches or recesses *e e* for the upper end of a lever-rod E', which passes through a slot *e'* of the table A', and which is pivoted at its lower end to the upper arm of an elbow-lever F, that is fulcrumed to the supporting-frame of the spring-motor. The lower arm of the elbow-lever F is weighted, so that the lever-rod E' is firmly retained in the upper or lower notch or recess *e* of the arc-shaped plate E. The outer end of the upper arm of the elbow-lever F is provided with a laterally-bent lug *f*, that passes through an arc-shaped slot *f'* of the supporting-plate of the spring-motor into the path of an elastic buffer *g*, that is attached to the transmitting-pulley D of the spring-motor.

When it is desired to stop the machine, the lever-rod E' is placed into the upper notch of the plate E, as shown in full lines in Fig. 2, in which position the lug *f* is placed into the path of the buffer *g* on the driving-pulley, so that the latter, and thereby the spring-motor, is stopped as soon as the buffer *g* comes in contact with the lug *f*.

For starting the machine the lever-rod E' is placed by the operator into the lower notch of the plate E, as shown in dotted lines in Fig. 2.

The lever-rod E', in connection with the weighted elbow-lever F, permits the ready stopping or starting of the spring-motor by

simply placing the lever-rod E' into the upper or lower notch of the arc-shaped plate E, which is readily accomplished by the operator. The upper end of the lever-rod E' is provided with a knob or handle for readily taking hold of the same in its adjustment on the plate E, whereby the adjustment of the same is facilitated.

The speed-regulating brake H is composed of two leather-covered disks *h*, which are applied to the shaft of the transmitting gear-wheel *b*³, operated by the spring-motor, and of two brake-arms *h'*, which are applied to a shaft *h*², that turns in bearings of the supporting frame or housing of the spring-motor, as shown in Figs. 2 and 3. One end of the shaft *h*² is made of square cross-section shape and projected at the inner side of the inclosing casing, where it is connected with a socket *h*³, having a square recess at the upper end of a pendent rod *h*⁴, to the lower end of which is applied a treadle T, the opposite end of which is attached to a second pendent rod *h*⁴, that is pivoted to the supporting-frame of the sewing-machine, as shown in Fig. 1.

Whenever the operator desires to apply the brake and reduce thereby the speed of the machine, the treadle is moved by the feet toward the operator, by which motion the brake-arms are applied to the brake-disks *h' h'*, so that the motion of the motor is retarded or entirely stopped, according to the degree of friction exerted on the brake-disks. When the brake action is desired to be discontinued, the treadle is released, so that it swings away from the operator into its normal position, by which motion the brake-arms are removed from the brake-disks, so that the frictional contact with the latter is interrupted. In the normal position of the treadle the same serves as a rest for the feet of the operator, it being only moved backward toward the same when the brake is to be applied and the speed of the motor and of the machine driven thereby is to be diminished, which feature is especially useful for inexperienced operators, as it gives them a fuller and better control over the machine.

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

1. The combination, with a spring-motor and its transmitting train of gear-wheels, of a starting and stopping device composed of an arc-shaped plate having notches or recesses located on the table of the machine to be driven, a lever-rod adapted to engage one of said notches, a fulcrumed and weighted elbow-lever connected to the lower end of the lever-rod and provided at its upper end with a lateral lug, and an elastic buffer located on the transmitting-pulley of the motor, said lug being adapted to be placed by the lever-rod in or out of the path of the buffer, so as to produce the stopping or starting of the motor, substantially as set forth.

2. The combination, with a spring-motor and its transmitting train of gear-wheels, of brake-disks applied to the shaft of one of said gear-wheels, brake-arms adapted to be placed in or out of contact with said disks, and a treadle supported on the pendent rods pivoted to the supporting-frame and connected with the shaft of the brake-arms, so as to apply or remove the same from the disks by the forward or backward action of the treadle, substantially as set forth.

3. The combination, with a spring-motor and its transmitting gear-wheels, of brake-disks applied to the shafts of one of the transmitting gear-wheels, brake-arms applied to an oscillating shaft supported in the frame or housing of the spring-motor, pendent rods pivoted to the frame of the machine to be driven, one of said rods being attached to the oscillating shaft of the brake-arms, and a treadle attached to the lower ends of the pendent rods, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

BRUNO REICHELT.

Witnesses:

JOHN ROTH,
C. H. MYERS.