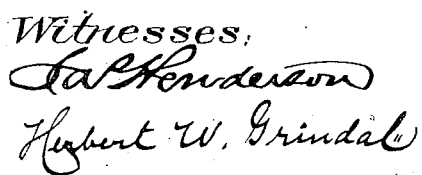


C. L. KIDDER.
SPRING MOTOR.

Patented Oct. 21, 1884.



Inventor:
Chas. L. Kielder

UNITED STATES PATENT OFFICE.

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SPRING-MOTOR.

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To all whom it may concern:

Be it known that I, CHARLES L. KIDDER, a citizen of the United States, residing at New Brunswick, in the county of Middlesex and State of New Jersey, have invented certain new and useful Improvements in Spring-Motors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 is a front view of the entire machine; Fig. 2, an end view of the left-hand end of machine; Fig. 3, a top view of "bearing-frame" removed from the machine and supporting the winding-cylinder, winding-shaft, bevel-wheel, and stop-work mechanism. Fig. 4 is the spring-box B with the head removed, showing the spring attached by its outside end to spring-box B, and by its inner end to shaft *d*, which passes through fusee and spring-box. Fig. 5 is an enlarged view of the mechanism by which I increase or diminish the tension of the spring. Fig. 6 is an enlarged view of center of bevel-wheel D, showing the friction-clutch *c*.

The legs or standards A A, with the table F, constitute the frame of the machine. In the frame is fixed the bearing-frame, Fig. 3, upon which are supported the winding-shafts *m* and *s*. Through the frame below the bearing-frame passes the spring-shaft *d*. On the left-hand end of the frame, as shown in Fig. 2, is hung the pendent lever F, with a foot-rest at its lower end and carrying a pawl and pawl-catch.

The operation of winding the spring or storing the power is as follows: The crank is placed upon the crank-shaft either at *m* or at *p*. If at *m*, it is turned to the right; if at *p*, it is turned to the left, thus winding the cord *t* from the fusee H upon the cylinder E, at the same time coiling up the spring in the spring-box, which is secured to the fusee. The machine is then ready to transmit the power thus stored up to cylinder E, and by means of bevel-wheel D, bevel-pinion *a*, driving-wheel *k*, and belt *u* to the sewing or other machine which it is required to drive. Should the operator at any time wish to renew the power which has been expended

either while the machine is running or at rest, he may do so without applying the crank by placing the foot upon the foot-rest and swinging the pendent lever forward and back. The forward motion engages the pawl *k* with the ratchet-wheel *e'*, driving it forward, and by means of the shaft *s* and two bevel wheels, *v* and *w*, rewinding the cord onto cylinder E.

To provide against overwinding I make fast to the end of cylinder E a worm, *h*, which engages with the worm-wheel *g*, having as many teeth or spaces as the number of turns which I wish to have given to the cylinder, with one tooth of double width. The thread on each end of the worm is cut off square. The worm-wheel *g* allows the worm *h*, and with it the cylinder E, to revolve freely until the squared end of the thread on the worm comes to the tooth of double width, when it is stopped, thus preventing damage by winding too far. To control the speed of the machine I make use of a brake, W, which may be held with any required pressure against the periphery of driving-wheel by thumb-screw O; or the machine may be suddenly stopped by pressure of the hand upon the end of the brake-lever, which projects beyond the table in front of the machine.

Having thus set forth my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a mechanism for driving sewing-machines or other light machinery, a pendent lever adapted to be operated by the foot of the operator, and so arranged as to be capable of rotating a winding-cylinder, whereby the driving cord or belt may be wound upon said cylinder, substantially as set forth.

2. In a mechanism for driving sewing-machines or other light machinery in a spring winding apparatus, a wheel having teeth cut in only a portion of its periphery, the remainder thereof being left blank, so as to allow only the desired number of revolutions of a connected worm, with a worm adapted to revolve such wheel, together forming a stop or safety mechanism, substantially as set forth.

3. In a mechanism for driving sewing-machines or other light machinery, a friction-clutch adapted to hold the winding-cylinder

so that it will be actuated by the forward movement of the shaft, substantially as set forth.

4. In a mechanism for driving sewing-machines or other light machinery, the combination of a pendent lever acting, by means of a pawl and ratchet, to revolve a winding-cylinder, a winding-shaft, a friction-clutch connecting such shaft and cylinder, and a worm wheel and gear adapted to regulate the number of revolutions of said winding-cylinder, substantially as set forth.

5. In a mechanism for driving sewing-machines or other light machinery, a device for regulating the tension of the driving-spring, consisting of a worm-wheel fastened rigidly upon the shaft to which the driving-spring is attached, and adapted to be revolved by a worm attached to the supporting frame, so that the tension of such spring may be increased or diminished, substantially as set forth.

6. In a mechanism for driving sewing-machines or other light machinery, the combination of a driving-spring having its outer end attached to a fusee or drum, which is secured upon a supporting-shaft, so as to revolve thereon, and its inner end fastened to such supporting-shaft, a worm-wheel rigidly attached to such shaft, and a worm adapted to revolve such worm-wheel and shaft, substantially as set forth.

7. In a mechanism for driving sewing-machines or other light machinery, the combination of a winding-shaft adapted to be revolved by means of a crank, a winding-cylinder, a driving belt or cord, a fusee or drum adapted to receive the driving belt or cord, a friction-clutch capable of communicating the forward motion from the winding-shaft to the cylinder, and a pendent lever adapted to revolve the said winding-cylinder, substantially as set forth.

8. In a mechanism for driving sewing-machines or other light machinery, the combination of a winding-shaft adapted to be revolved by means of a crank, and having attached to it a winding-cylinder, a driving belt or cord connected thereto, and also attached to a fusee or drum adapted to receive such cord, a fusee or drum attached to a spring-box containing a coil-spring so arranged as to revolve such drum or fusee when allowed to unwind, a friction-clutch capable of communicating the forward motion of the winding-shaft to the winding-cylinder, a bevel-wheel, pinion, and driving-wheel so arranged as to transmit power from the driving-spring, all arranged substantially as and for the purpose set forth.

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Witnesses:

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