

(No Model.)

G. H. LEWIS.
SPRING MOTOR.

No. 597,541.

Patented Jan. 18, 1898.

Fig. 1.

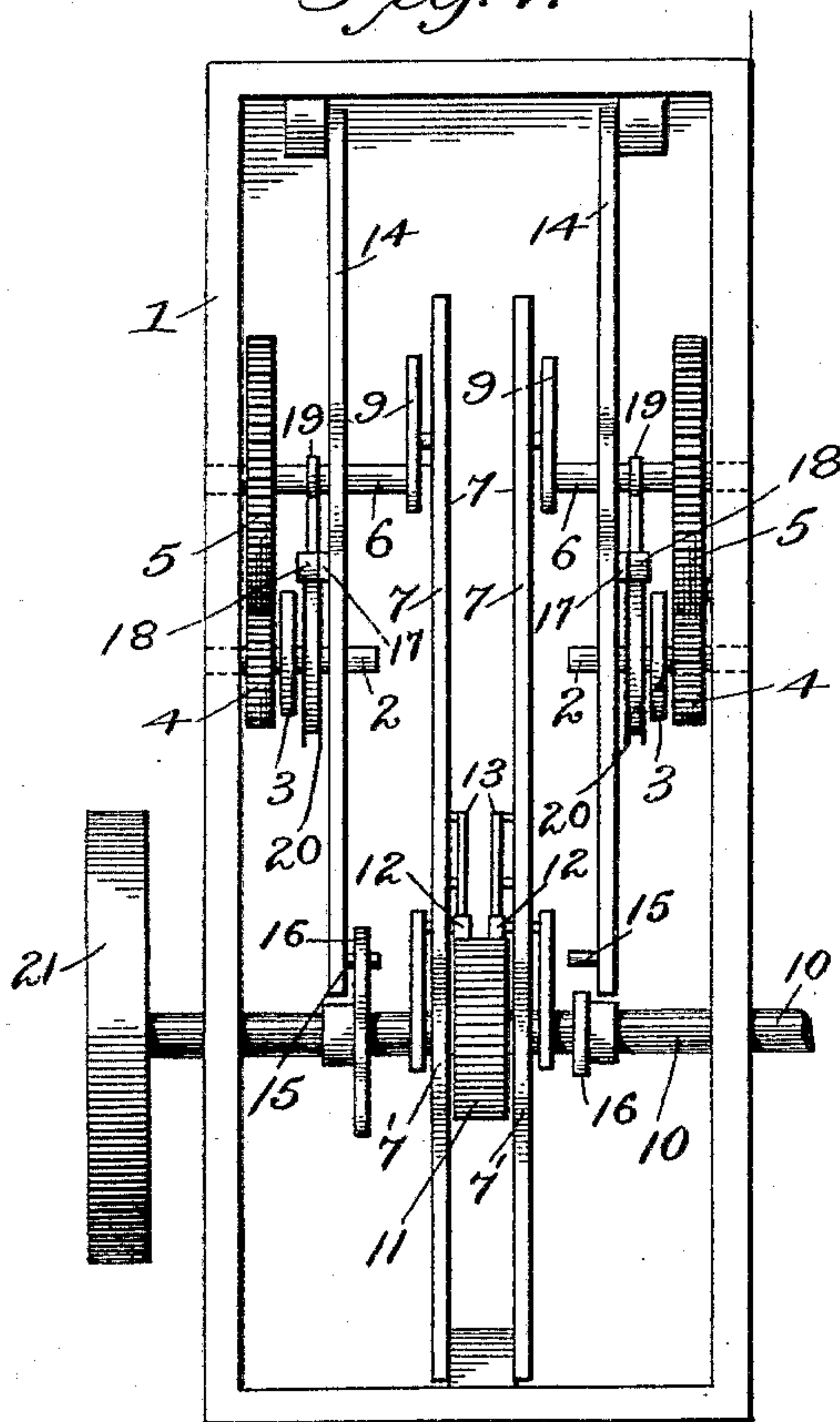
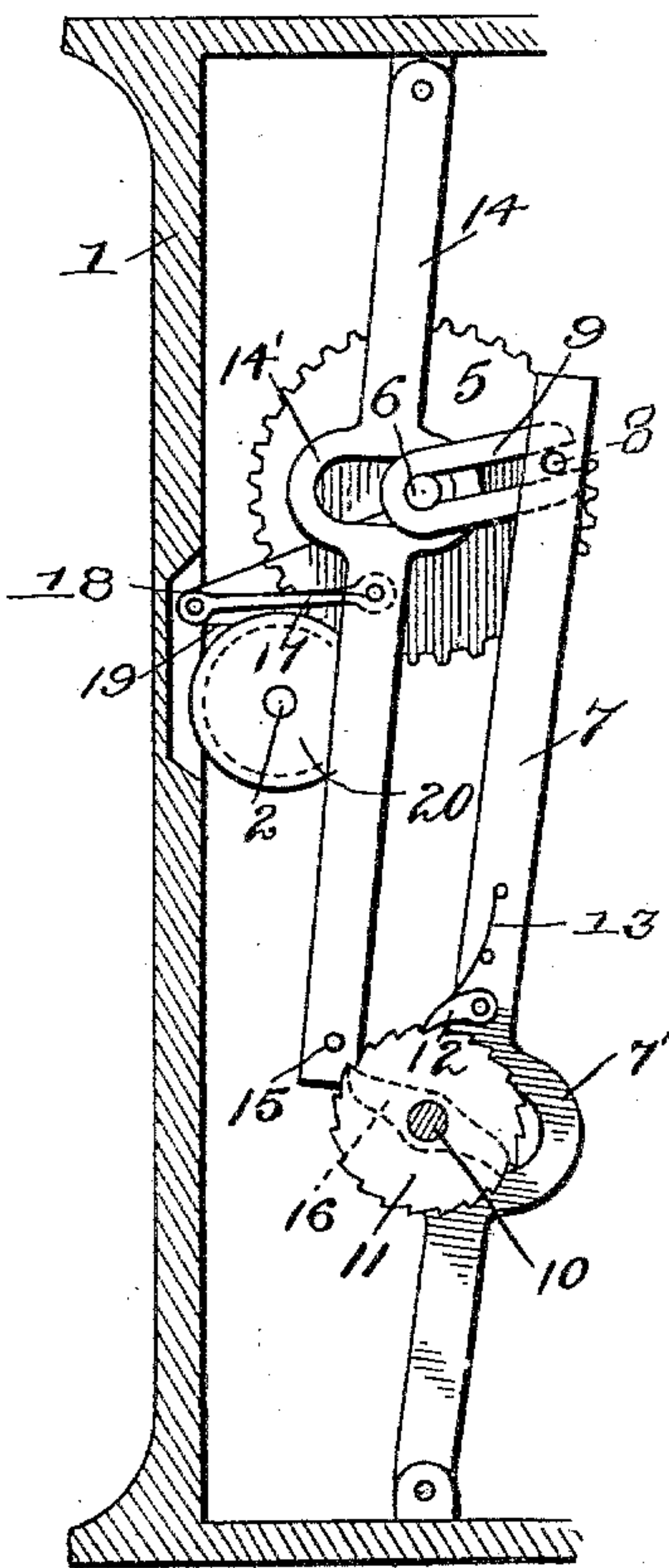


Fig. 2.



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GEORGE H. LEWIS, OF MINNEAPOLIS, MINNESOTA.

SPRING-MOTOR.

SPECIFICATION forming part of Letters Patent No. 597,541, dated January 18, 1898.

Application filed September 18, 1896. Serial No. 606,290. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. LEWIS, a citizen of the United States, and a resident of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Spring-Motors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to spring-motors.

My object is to provide an extremely simple and cheap spring-motor which will be of such novel and improved construction that it will be automatic in its action and will require but a small amount of power to keep it in continued operation, so that it will be peculiarly adaptable to bicycles and other vehicles, but can be used to great advantage in many other connections.

Having this object in view, my invention consists of a spring-motor of novel and improved construction, as will appear more fully hereinafter.

In the accompanying drawings, Figure 1 is a front elevation of my improved spring-motor, and Fig. 2 a side elevation showing the frame in section.

The numeral 1 designates the frame that carries the operative parts of the device, and this frame can be made in different shapes to suit the structure or machine to which it is to be applied.

The numerals 2 designate two shafts, on each of which is located a spiral spring 3, which has one of its ends connected to the frame and its other end secured to the shaft.

The numerals 4 designate pinions which are secured on the shaft 2. There are two other shafts 6 6, which are located above shafts 2 and are journaled in the sides of the frame. Each shaft carries a gear 5, which meshes with its respective pinion. The inner ends of these shafts terminate in arms having slotted jaws 9, which extend at right angles to the length of the shaft.

At 7 7 are shown two levers, each of which is provided with a pin 8 at its upper end and which are received in the jaws 9, the lower ends of said levers being hinged to the frame. It will be observed that these levers are each

provided with an open link portion 7' for the reception of a shaft 10, which is journaled in the frame and carries on its end a fly-wheel 21.

The numeral 11 designates a broad ratchet-wheel which is secured to shaft 10.

At 12 12 are shown two ratchets which are pivoted to the respective levers 7 and are pressed against the ratchet-wheel by respective springs 13 13. There are two additional levers 14 14, which are hinged to the frame at one end, and each is provided with an open link 14' for the reception of the shafts 6. On the free end of each of these levers is located a pin 15.

At 16 16 are shown two double tappets which have their longitudinal axes located at right angles and are secured to the shaft 10, being adapted to come in engagement with the pins 15.

The numerals 17 17 designate arms which are connected to the levers 14. On the free ends of these arms there are located rollers or pulleys 18.

The numerals 20 20 designate pulleys which are secured to shafts 2 2, and 19 19 represent metallic ribbons which have one end connected to the shafts 6 and the other end secured to the pulley and adapted to wind thereon.

It will be observed that owing to the disposition of the tappets one of them is always in engagement with the pin of one of the levers 14, so that one of the springs is normally wound, while the other lever is free and the other spring is unwound. The springs keep the ribbons 19 bearing against the rollers 18.

The operation is as follows: The free lever is pressed toward the left, (see Fig. 2,) and when this is done its arm 17 by engagement with the metallic ribbon turns the pulley and winds up the spring. When this is done, shaft 2 is turned and the engagement of the pinion 4 and gear 5 causes the shaft 6 to turn, whereupon the jaw 9 will be moved and by its engagement with pin 8 will push the lever 7 so that the pawl thereof will ride idly on the ratchet-wheel. When the pressure is released on the lever 14, the spring will assert itself and cause an opposite action, so that the pawl will engage with the ratchet-wheel and turn the same, simultaneously causing the other tappet to disengage itself from the other

repeating-lever 14, (which has been pressed toward the left,) so that the spring that actuates the latter lever will begin to unwind, whereupon said lever 14 will be urged toward the right and the other lever 7 will be made to actuate the ratchet-wheel. The other tappet will then engage with the other repeating-lever and lock it so that the operation can be repeated. Thus it will be seen that while one spring is winding the other is unwinding, and the motor needs but little power to keep it in continuous operation.

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

1. In a spring-motor, the combination with pivoted levers, of shafts, springs having one end connected to the shafts and the other fixed, pulleys on said shafts, ribbons connected to the pulleys and having their other ends fixed, an operative connection between the levers and the ribbons, a drive-shaft, and operative connections between said shaft and the levers.

2. In a spring-motor, the combination with pivoted levers, of shafts, spiral springs having one end connected to the shafts and the other end fixed, pulleys secured on the shafts, ribbons having one end connected to the pulley and the other end fixed, arms connected to the levers and provided with rollers on their ends which bear against the ribbons, a drive-shaft, and operative connections between the levers and said shaft.

3. In a spring-motor, the combination with pivoted levers, of spring-rotated shafts, operative connections between the respective levers and the respective shafts, additional piv-

oted levers, said additional levers also being operatively connected to the respective shafts, a main shaft, a ratchet-wheel carried thereby, and pawls connected to the last-named levers and adapted for engagement with the ratchet-wheel.

4. In a spring-motor, the combination with pivoted levers, of spring-rotated shafts, operative connections between said shafts and the levers, pinions on the shafts, additional shafts having arms provided with slotted jaws, gears on said shafts meshing with the pinion, additional pivoted levers provided with pins which are received in the slotted jaws, a main shaft, a ratchet-wheel on said shaft, and pawls connected to the last-named levers and adapted for engagement with the ratchet-wheel.

5. In a spring-motor, the combination with pivoted levers, of spring-rotated shafts, operative connections between the respective levers and the respective shafts, additional pivoted levers also operatively connected to the respective shafts, a main shaft, a ratchet-wheel carried thereby, pawls connected to the last-named levers and adapted for connection with the ratchet-wheel, and tappets having their axes located at right angles and connected to the main shaft, being adapted for engagement with the first-named levers.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

GEORGE H. LEWIS.

Witnesses:

GEORGE A. WEYMIER,
GEORGE KEATS.