

(No Model.)

2 Sheets—Sheet 1.

I. S. PATTON.
SPRING MOTOR.

No. 460,655.

Patented Oct. 6, 1891.

Fig. 2.

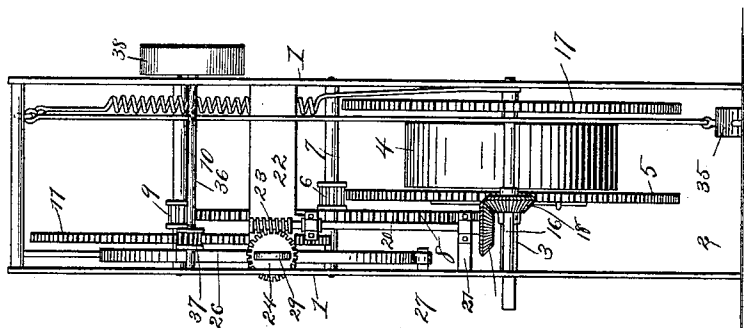
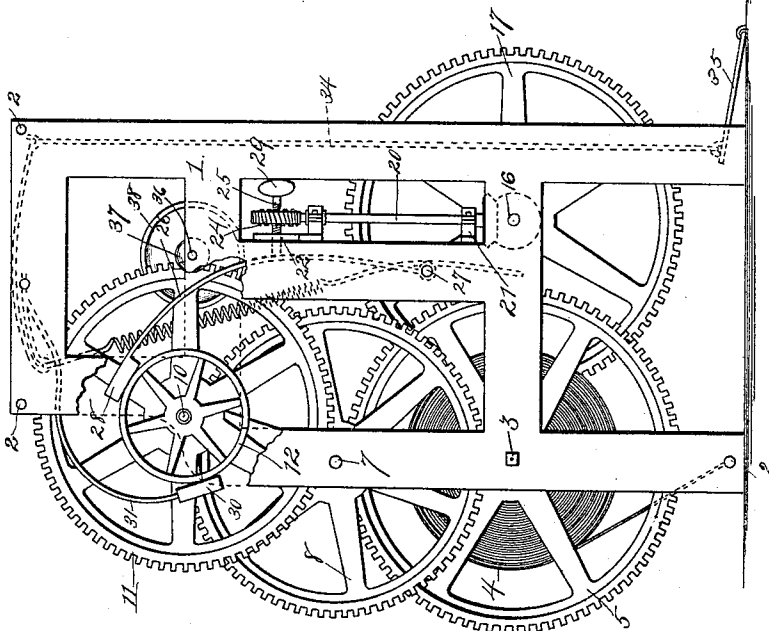


Fig. 1.



Witnesses.

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Ed. Thorpe.

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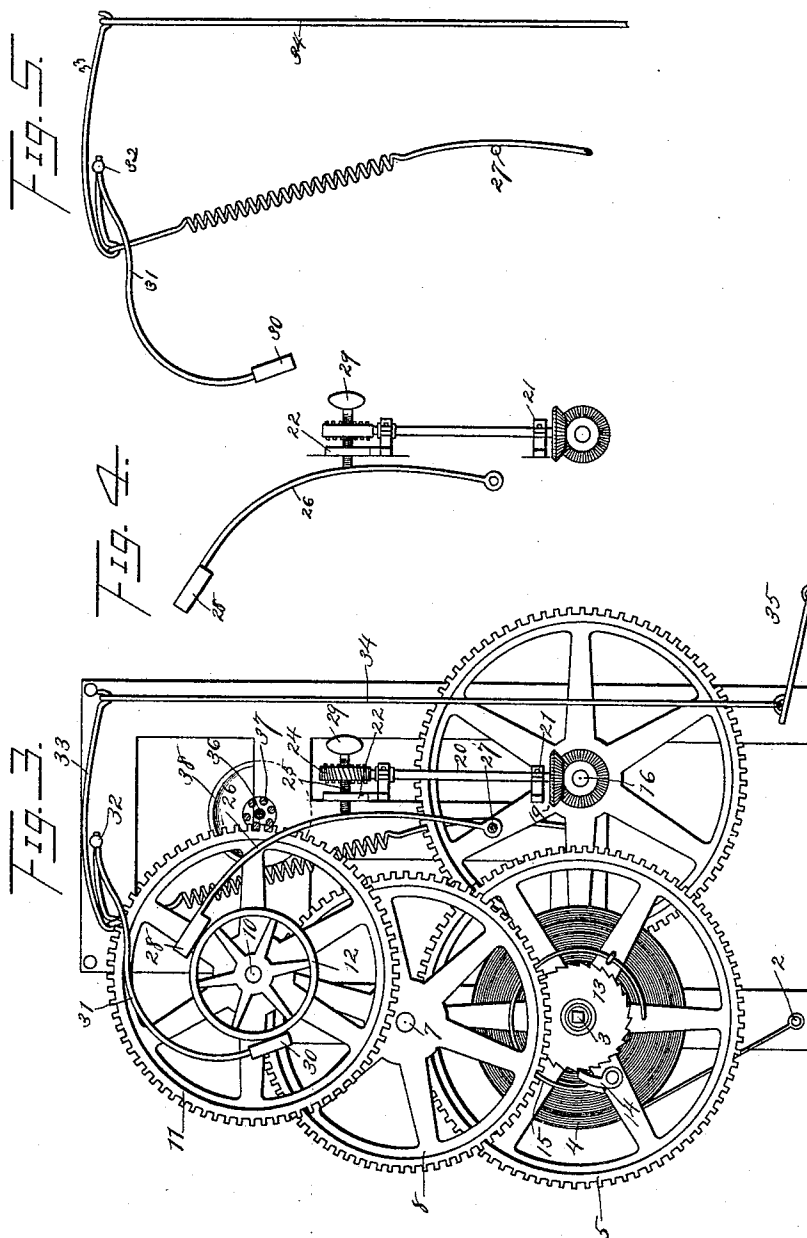
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UNITED STATES PATENT OFFICE.

ISAAC S. PATTON, OF KANSAS CITY, MISSOURI, ASSIGNOR OF ONE-HALF TO
FREDERICK VAN SEGGERN, OF SAME PLACE.

SPRING-MOTOR.

SPECIFICATION forming part of Letters Patent No. 460,655, dated October 6, 1891.

Application filed March 20, 1891. Serial No. 385,774. (No model.)

To all whom it may concern:

Be it known that I, ISAAC S. PATTON, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improve-
5 ments in Spring-Motors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to spring-motors; and
10 the objects of my invention are, first, to provide a spring-motor which can be instantly stopped and started as the user may desire; secondly, to provide a spring-motor in which
15 the gradually-decreasing power of the unwinding of the spring shall be regulated and rendered uniform by means of a resisting regulator, the resistance of which shall gradually diminish as the effective force or power
20 of the spring decreases.

To the above purposes my invention consists in certain peculiar and novel features of construction and arrangement, as hereinafter described and claimed.

In order that my invention may be fully
25 understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved spring-motor, a portion of the supporting
30 frame-work being broken away. Fig. 2 is a front view of the same. Fig. 3 is a view similar to Fig. 1, but with the near side of the frame-work entirely removed. Fig. 4 is a detached view of the regulator. Fig. 5 is a detached
35 view of the stopping and starting mechanism.

In the said drawings, 1 designates the frame-work which supports the train or gearing of the motor, the said frame-work being
40 in two parts, each of which is preferably of skeleton or open form and approximately of rectangular shape, and the said portions being connected together by cross-rods 2. In the lower part of the frame-work is mounted
45 the winding-arbor 3, upon which the main spring 4 is wound. This arbor 3 also carries a gear-wheel 5, the teeth of which mesh with a gear-pinion 6 upon an arbor 7, located in the frame-work 1 above the arbor 3 just described. The arbor 7 also carries a gear-wheel
50 8, the teeth of which mesh with those of a

gear-pinion 9 on an upper arbor 10. This arbor 10 also carries a gear-wheel 11 and a brake-wheel 12. The winding-arbor 3 also carries the usual ratchet-wheel 13, the teeth of which
55 are engaged by a pawl 14, carried by the gear-wheel 5, and said pawl is held in engagement with the teeth of the ratchet-wheel 13 by a spring 15, also carried by the gear-wheel 5. This pawl-and-ratchet mechanism serves to
60 prevent the wrongful unwinding of the main spring 4, and insures the expenditure of the power derived from the spring through the described train of gearing.

In the lower part of the frame-work 1 at a
65 point opposite that at which the arbor 3 is mounted is an arbor 16, and this arbor carries a gear-wheel 17, the teeth of which mesh with those of a gear-pinion (obscured from view) on the said arbor 3, the said arbor 16 being
70 thus rotated by the arbor 3. The arbor 16 also carries a beveled gear-pinion 18, the teeth of which mesh with those of a similar beveled pinion 19 on the lower end of a vertical shaft 20. The lower end of this shaft 20 is mounted
75 in a bracket 21, projecting inwardly from one of the frames 1, and the upper end of said shaft is mounted in a cross-bar 22, connecting said frames 1. The upper end of the shaft 20 carries a worm 23, which meshes with a
80 worm-wheel 24 on a screw-shaft 25. This shaft 25 works through a screw-threaded opening in the cross-bar 22, and its inner end impinges upon the outer side of a curved flat spring 26. The lower end of this spring 26
85 embraces a lug 27, projecting inwardly from that part of the frame 1 which carries the bracket 21 and which is located just above said bracket.

The upper end of the spring 26 is formed
90 or provided with a brake 28, which presses upon the periphery of the brake-wheel 12, above described. The resilience of the spring 26 tends to lift the brake 28 off the wheel 12, and the arrangement of the described gear-
95 ing is such that when the motor is being wound up the screw-shaft 25 shall be turned in one direction by the revolution of the gear-wheel 17, produced by the winding revolution of the arbor 3 and its obscured gear-pinion,
100 and transmitted by the beveled gears 18 and 19, shaft 20, worm 23, and worm-wheel 24, so

as to advance toward the spring 26 to press strongly upon the brake-wheel 12. On the other hand, as the motor runs the screw-shaft 25 is turned in the reverse direction by reversed movements of the parts just enumerated, and thus retracted from the spring, gradually relaxing the pressure of the brake 28 upon the brake-wheel 12 as the power of the spring 4 decreases by unwinding. It will thus be seen that the resistance upon the train of gearing of the motor gradually decreases as the power of the main spring decreases by unwinding, and that consequently the motor is caused to run evenly and to develop a uniform amount of power so long as it is in action.

In order to nicely adjust the resistance of the brake to the power of the spring 4, I provide the outer end of the screw-shaft 25 with a thumb-piece 29, so that the said screw-shaft can be turned by hand, and its initial pressure upon the spring 26 can be varied as desired.

In order to readily stop and start the motor, I provide a second brake 30, which also presses upon the brake-wheel 12. This brake 30 is carried at the outer end of a spring-arm 31, which is attached to a rocking arbor 32, mounted in the upper part of the frame-work 1. From the said arbor 32 extends an arm 33, to the outer end of which is connected the upper end of a rod 34, the lower end of which carries a treadle, or in lieu thereof a handle, if preferred. The pressure exerted by the brake 30 upon the brake-wheel 12 is sufficient to overcome the power of the spring 4, and consequently when the brake 30 is in contact with the wheel 12 the motor does not run. By pressing upon the treadle 35 or pulling downward upon the rod 34 the brake 30 is lifted off the wheel 12, and the motor is free to run.

The motor is geared to the machinery which it is to run through an arbor 36, one end of which carries a crown-gear 37, which meshes with the gear-wheel 11, and the opposite end of which carries a belt-pulley 38; and the motor is intended to run such machines as sewing-machines, churns, jewelers' lathes, &c.

It will be seen from the above description that the motor is simple, compact, and inexpensive of construction, and that its operation is uniform from first to last, while the amount of power developed is even or uniform as long as the motor continues to run.

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

1. An improved spring-motor comprising a train of gearing and actuating-spring therefor, a brake-wheel carried by said train, a brake carried by a spring and operating upon said brake-wheel, a screw-shaft impinging upon said spring and carrying a worm-wheel, and a worm-shaft actuated by gearing operated by the train-gear and serving to diminish the pressure of the worm-shaft upon the brake-spring in accordance with the diminution of power of the main spring, substantially as set forth.

2. An improved spring-motor comprising a spring-plate carrying a brake at one end, a screw-shaft impinging at one end on said spring-plate, a worm-wheel carried by said screw-shaft, a worm-shaft engaging said worm-wheel and carrying a beveled gear-pinion, an arbor carrying a gear-wheel meshing with the motor-train, and a beveled gear-pinion meshing with the gear-pinion of the worm-shaft, substantially as set forth.

3. An improved spring-motor comprising a train of gearing, a motor-spring therefor, a brake-wheel carried by said train, an arbor carrying an arm, a brake carried by said arm and operating by contact with the brake-wheel to stop the machine, a second arm carried by said arbor, and a rod attached to said arm and serving to rock the arbor for lifting the brake out of contact with the brake-wheel when the motor is to operate, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ISAAC S. PATTON.

Witnesses:

G. G. THORPE,
H. E. PRICE.