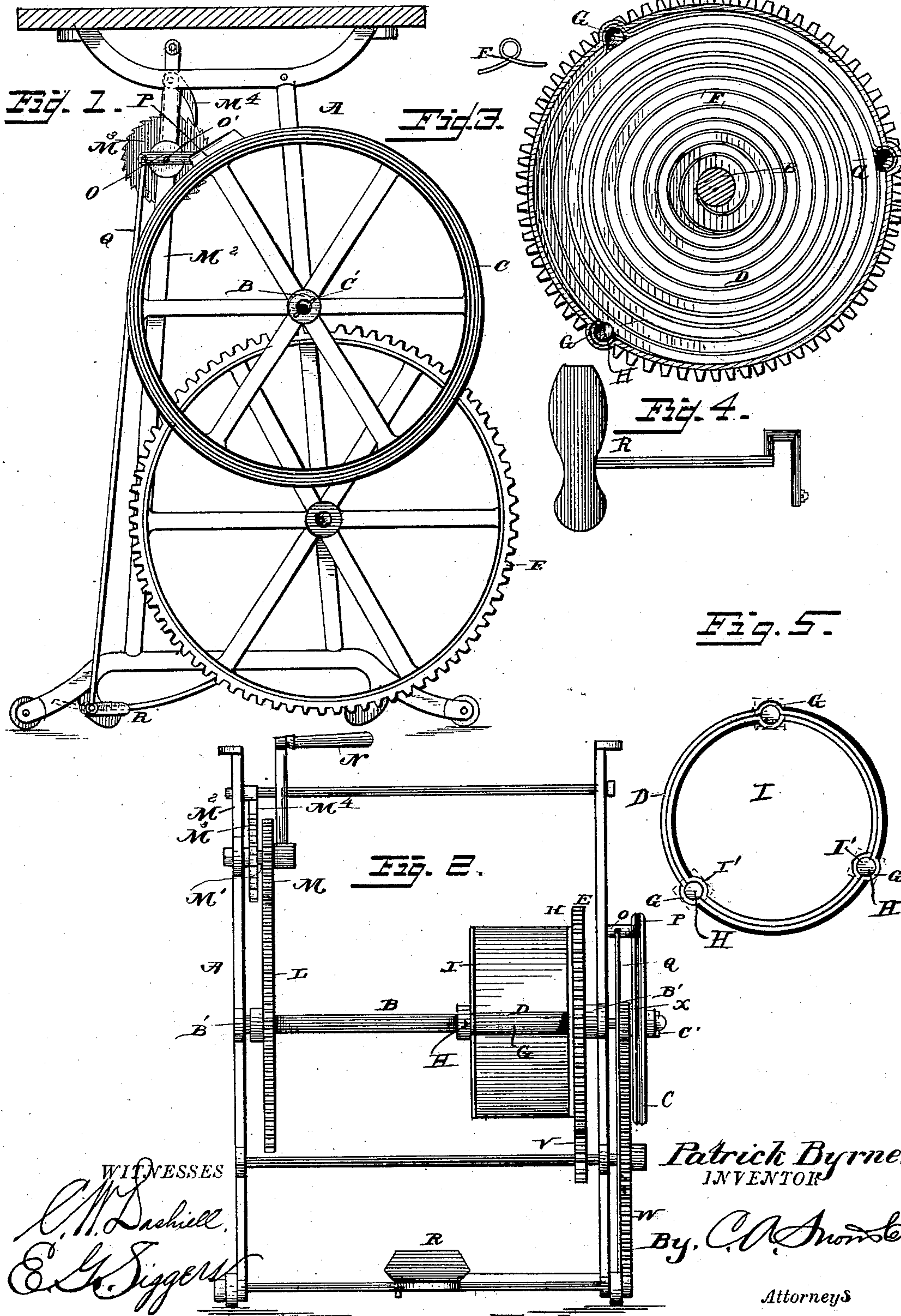


(No Model.)

P. BYRNE.  
SPRING MOTOR.

No. 312,703.

Patented Feb. 24, 1885.





# UNITED STATES PATENT OFFICE.

PATRICK BYRNE, OF NASHVILLE, TENNESSEE.

## SPRING-MOTOR.

SPECIFICATION forming part of Letters Patent No. 312,703, dated February 24, 1885.

Application filed January 12, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, PATRICK BYRNE, a citizen of the United States, residing at Nashville, in the county of Davidson and State of Tennessee, have invented a new and useful Improvement in Spring-Motors, of which the following is a specification, reference being had to the accompanying drawings.

My invention has relation to spring-motors designed to run jewelers' lathes, sewing-machines, dental machines, fly-fans, and other kinds of light machinery; and it consists in the novel construction and combination of parts, as will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings, Figure 1 is an end elevation of a spring-motor embodying my improvements. Fig. 2 is a front view. Fig. 3 is a transverse sectional view of the iron shell or casing which incloses the power-spring. Fig. 4 is a detail view of the rock-shaft and treadle; and Fig. 5 is a longitudinal sectional view through the iron shell, the spring being removed.

Referring by letter to the accompanying drawings, A designates the frame of the sewing-machine table, or other table to which the spring-motor is applied, the table-top being convenient for holding tools or other needed articles, or the work where the motor is applied to sewing-machines.

B designates the main shaft of the motor, and is journaled in bearings or bosses B' in the ends of the supporting-frame A. One end of the main shaft B projects beyond its bearing, and is provided outside of the frame A with the driving or belt wheel C, which is held in place by a pin or key, C', outside of the hub of the driving-wheel. A cast-iron shell or hollow cylinder, D, is cast with and forms part of the gear-wheel E, and this shell D incases the coiled springs F, the inner ends of said springs F being secured to the main shaft B by bolts, the outer ends of said coil-springs F being secured to the inner face of the cylindrical wall of the shell or hollow cylinder D. The hollow cylinder D has one integral head, H', and the other head, I, is removable, and is secured in place after the coil-springs and the body and integral head H' of the cylindrical shell are in place on the driving-shaft. The springs F are secured to the

shell by bolts passing through loops at their inner ends, recesses G being provided in the casing for the loops. These bolts H also pass through the cover or removable head I, to secure it in place after the springs F are in place. The removable head or cover I is notched at I' over the recesses to keep it from turning when the strain of the springs comes upon the bolts H. The cylindrical shell D and gear-wheel E turn freely on the main shaft B. On the left end of the main shaft B a large gear-wheel, L, is firmly secured, and this gear-wheel L engages a pinion-wheel, M, on a shaft, M', projecting laterally inward from the upright M<sup>2</sup> near its upper end. The shaft M' is provided with a ratchet-wheel, M<sup>3</sup>, and above this ratchet-wheel M<sup>3</sup> is a pivoted detent, M<sup>4</sup>, which engages said ratchet-wheel M<sup>3</sup> and prevents the backward movement of said pinion M.

N designates a crank on the shaft M', by which the motor is wound up.

O designates a brake-lever, which is pivoted on a shaft, o', and is provided with a brake-shoe, P, which engages the belt-wheel, and is connected by a rod, Q, with the treadle R, and is designed to control the speed of the machine, either to stop it entirely or to regulate the speed of the motor, as may be desired. The toe end of the brake-shoe is made sufficiently heavy that when the foot of the operator is taken off of the treadle the brake-shoe will stop the motor automatically. The brake-shoe is lined on its under side with leather, which rubs on the wheel, creating sufficient friction to stop the machine.

To operate the machine it should be wound up by turning the crank-handle, which puts in motion the small gear and ratchet-wheel. The detent drops into the ratchet-wheel as the latter is turned. The small gear or pinion M communicates motion to the large gear, with which the pinion engages, and through it to the main shaft, on which the springs are secured. The winding should be continued until the springs are wound tightly on the main shaft, the pressure on the brake preventing the gearing from moving in the meantime.

To start the machine, place the foot on the treadle and press on the heel of the treadle. This action will lift the brake, and the casing



inclosing the springs will commence to rotate on the main shaft, the large gear-wheel E communicating motion to the smaller one, V, on the lower shaft, rotating the latter, and also, 5 by means of the intervening gears, W X, keeping the belt-wheel C in motion until the brake is operated to stop or decrease the speed of said wheel.

Having thus fully described my invention, 10 what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination, with the frame A, of the driving-shaft provided with the shell D, having the integral gear-wheel E, the coil- 15 springs secured to the driving-shaft and to the shell D, the drive-wheel on the main shaft outside of the frame, the gear-wheel L, pinion-wheel M on shaft M', and winding-crank, substantially as specified.

2. The combination, with the main frame 20 A, the driving-shaft, with its driving-wheel and spring-actuated gearing, substantially as described, of the pivoted brake-shoe engaging the driving-wheel, the brake-rod, and the weighted treadle, substantially as specified. 25

3. The combination, with the main frame A, of the driving-shaft, with the winding mechanism, driving-wheel, the cylinder with the integral gear-wheel, and springs connecting the cylinder and driving-shaft, and the treadle, 30 brake-lever, and brake-shoe, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

PATRICK BYRNE.

Witnesses:

FREDERICK W. CHASE,

P. O'CONNOR.