

(No Model.)

J. J. & C. A. McCARTHY.
SPRING MOTOR.

No. 515,352.

Patented Feb. 27, 1894.

Fig. 1.

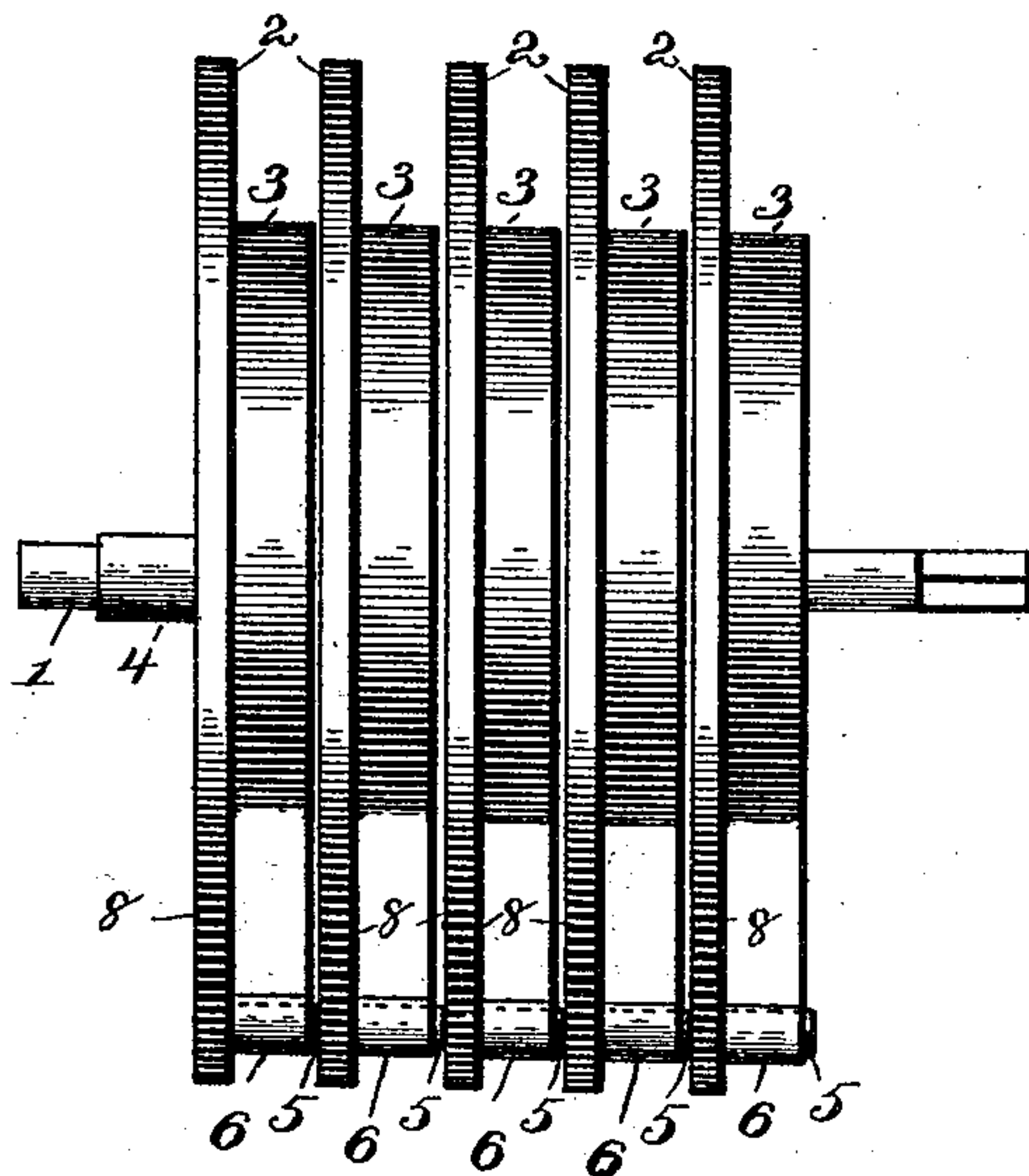


Fig. 2.

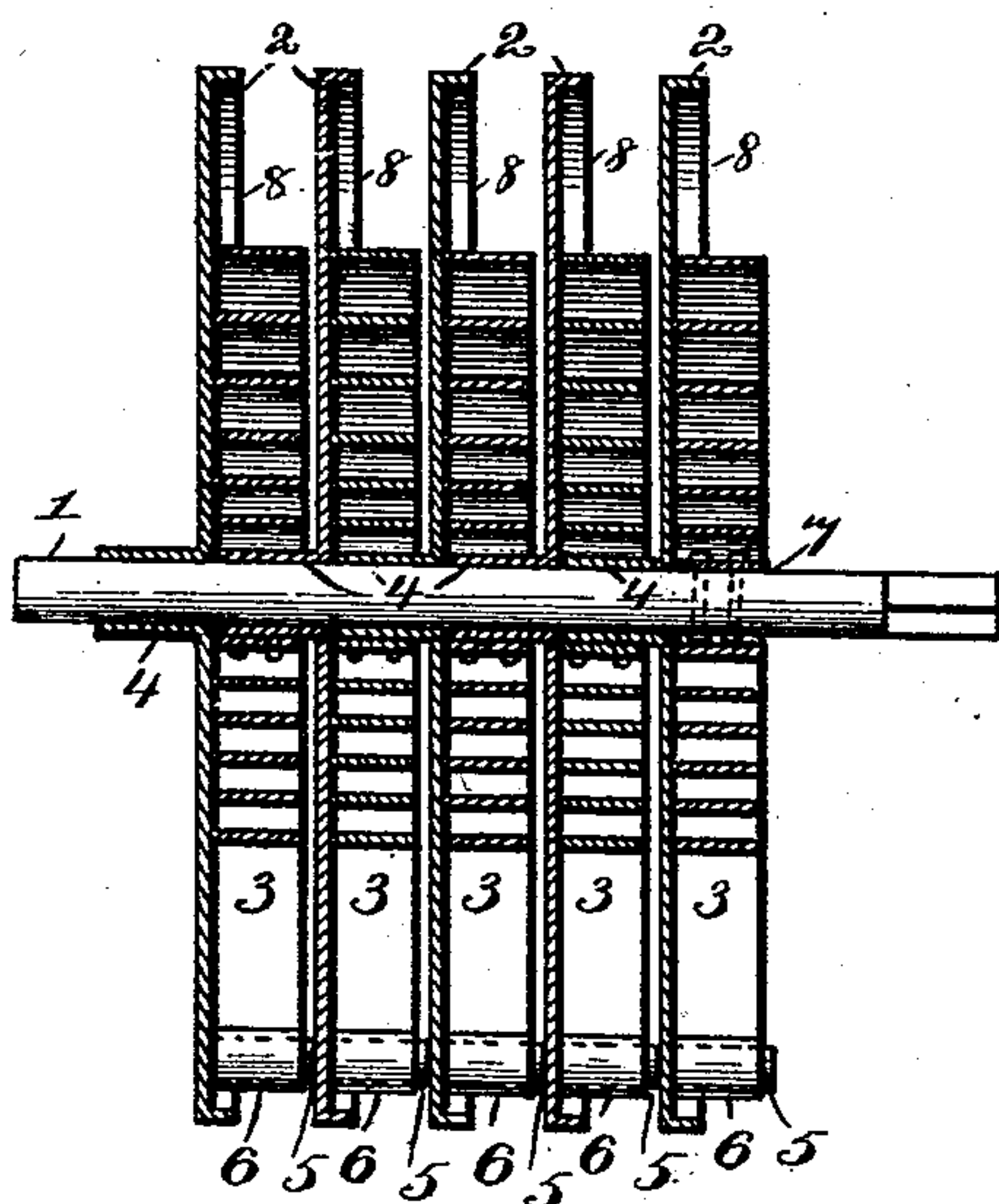
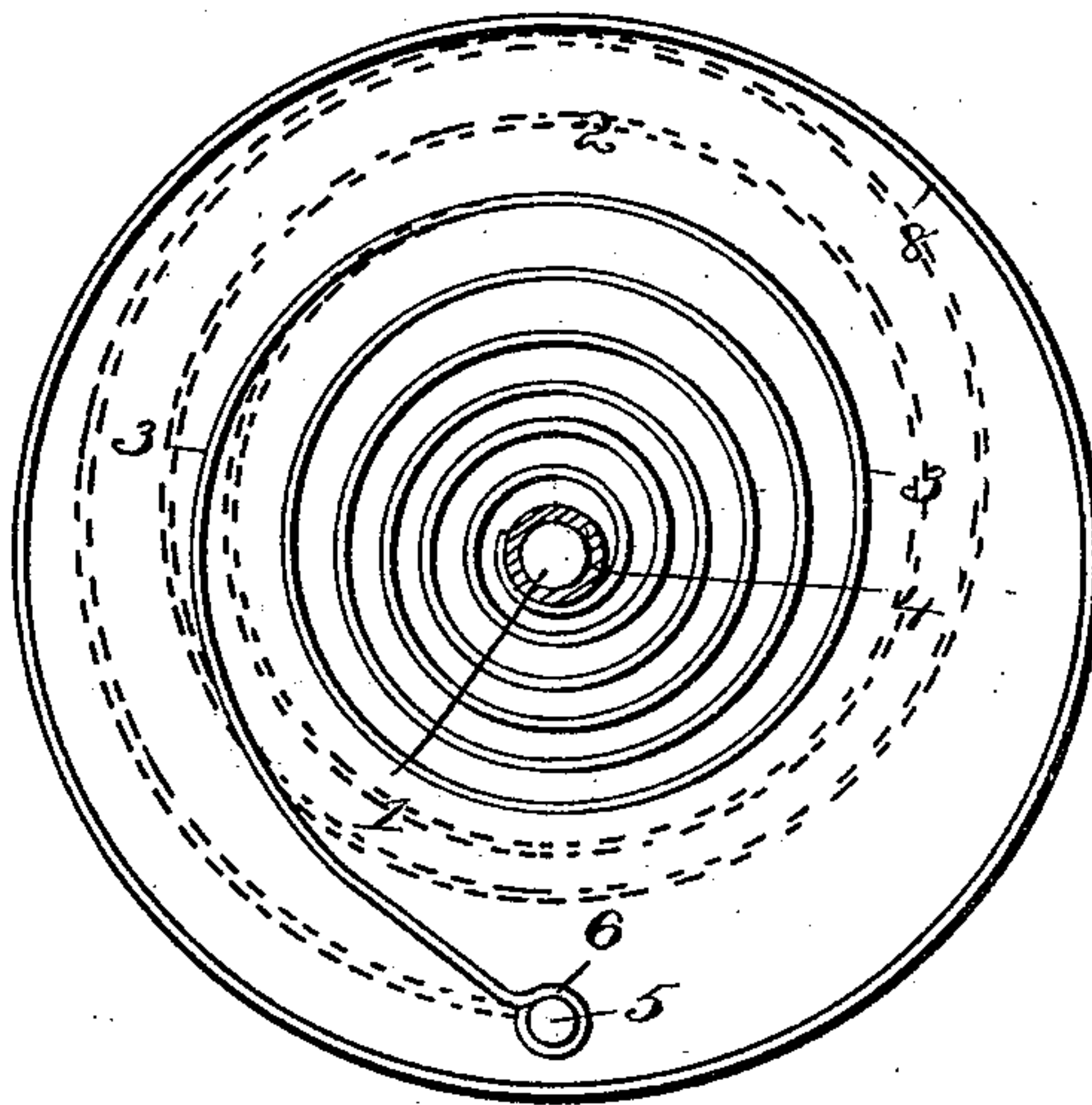


Fig. 3.



Witnesses

John L. Shaw
E. D. Ryle

Inventors

Joseph J. McCarthy

By their Attorneys, *Charles A. McCarthy*

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

JOSEPH J. MCCARTHY AND CHARLES A. MCCARTHY, OF DODSONVILLE,
ASSIGNORS OF ONE-HALF TO HARRY D. WADDELL AND JOHN M.
CLARK, OF HILLSBOROUGH, OHIO.

SPRING-MOTOR.

SPECIFICATION forming part of Letters Patent No. 515,352, dated February 27, 1894.

Application filed February 23, 1893. Serial No. 463,386. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH J. MCCARTHY and CHARLES A. MCCARTHY, citizens of the United States, residing at Dodsonville, in the county of Highland and State of Ohio, have invented a new and useful Spring-Motor, of which the following is a specification.

Our invention relates to improvements in spring motors, the objects in view being to provide a device of the class named of simple construction and operation, having an increased capacity for the storage of power in a limited space.

A further object of our invention is to provide a device of the class named which will exert its power over a greater length of time than a single spring of equal storage capacity, and which will offer less resistance in winding than such single spring.

A further object of our invention is to provide a device of the class named in which the friction, and consequent loss of effective power, due to the twisting or side motion caused by alternately reversed springs, is avoided, thus resulting in an increase of power.

A further object of our invention is to provide a device of the class named in which the friction due to contact of the springs, partly expanded, with the supports or other portions of the frame, is prevented.

A further object of our invention is to provide a device of the class named in which the members thereof are so connected and combined as to enable the number of coacting members to be varied at will to suit the work to be accomplished.

Further objects and advantages of our invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claim.

In the drawings: Figure 1 is a side view of a motor embodying our invention. Fig. 2 is a central longitudinal sectional view of the same. Fig. 3 is a face view of one of the members of the motor.

Similar numerals of reference denote corresponding parts in the several views.

1 designates a central shaft or arbor upon which are mounted the rotatable disks 2. These disks are arranged in juxtaposition and are held at intervals suitable to accommodate the interposed springs 3 by sleeves 4, each of which is fixed to a disk and fits the shaft or arbor. Each disk is provided, upon the opposite side to that which carries said sleeve, with a lateral stud 5, which fits in an eye 6 at the free terminal of the spring which is located between such disk and the adjacent disk. The said stud terminates close to the surface of such adjacent disk, whereby displacement of the free end of the spring is prevented. The inner end of each spring is firmly attached to the sleeve which inclosed in the space in which such spring is located, and as the sleeve 4 and the stud 5 are arranged upon opposite sides of each disk, it will be seen that the outer end of each spring is attached to the stud of one disk and its inner end is attached to the sleeve of the adjacent disk. The inner end of the terminal spring (at one end of the series) is attached to the shaft or arbor, as shown at 7. The disks are further provided, upon the same side as the stud 5, with a peripheral flange or guard 7, which, surrounding or inclosing the spring, prevents the same from expanding beyond the limits of the space between adjacent disks. In other words, the springs are prevented from expanding beyond the peripheries of the disks.

All of the springs are arranged in the same relative positions, whereby they are all tightened by one operation of winding, whether such operation is applied to the shaft or to a terminal disk, and therefore it will be seen that each disk is affected solely by the rotatable power of the spring whose outer terminal is attached thereto, and side or twisting movement or influence is avoided. The power of one disk is communicated to the next through the interposed sleeve and spring, and therefore in winding the motor the power is distributed evenly and a less exertion is necessary upon the part of the operator to store an equal amount of power than would be necessary in the winding of a single spring hav-

ing the same storage capacity. Furthermore, this stored power is distributed evenly and slowly, each member of the motor adding its share to the general effect, and thus avoiding
5 a rapid and violent dissipation of the power.

Any suitable means for communicating the power thus derived to the mechanism to be operated may be employed, the construction of such means depending upon the use to
10 which the power is to be applied and being connected by any well known or approved gearing or construction to the terminal disk of the series.

Having thus described our invention, what
15 we claim, and desire to secure by Letters Patent of the United States, is—

In a spring motor, the combination with a common shaft or arbor, a plurality of spaced disks rotatably mounted upon said shaft or
20 arbor and provided, respectively, with spacing sleeves which extend in the same direction from the planes of the disks, and springs interposed between the disks and secured at

their inner ends to the said sleeves with the exception of the terminal spring which is se- 25 cured at its inner end to the shaft or arbor, of peripheral flanges or guards 2 carried by the disks and extending in the opposite direction from the sleeves to limit the extension of the springs, and pins 5 projecting perpen- 30 dicularly from the disks upon the same sides thereof as the peripheral flanges or guards and terminating close to the surfaces of the adjacent disks, the springs being provided at their outer ends with eyes which are fitted 35 upon said pins and are held from accidental displacement by the contiguity of the adjacent disks, substantially as specified.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures 40 in the presence of two witnesses.

JOSEPH J. McCARTHY.

CHARLES A. McCARTHY.

Witnesses:

CHAS. HUGHES,

W. L. MORROW.