

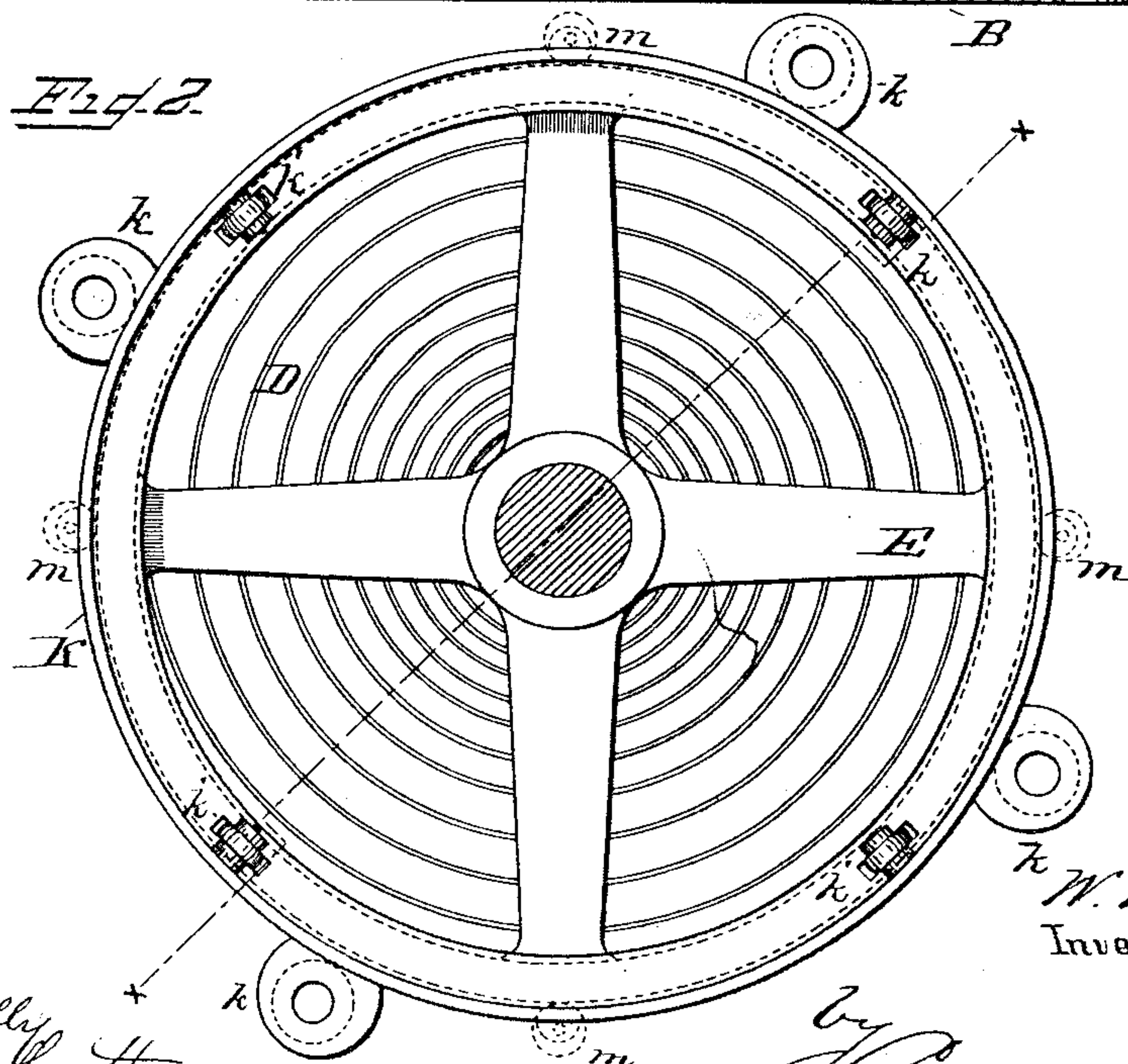
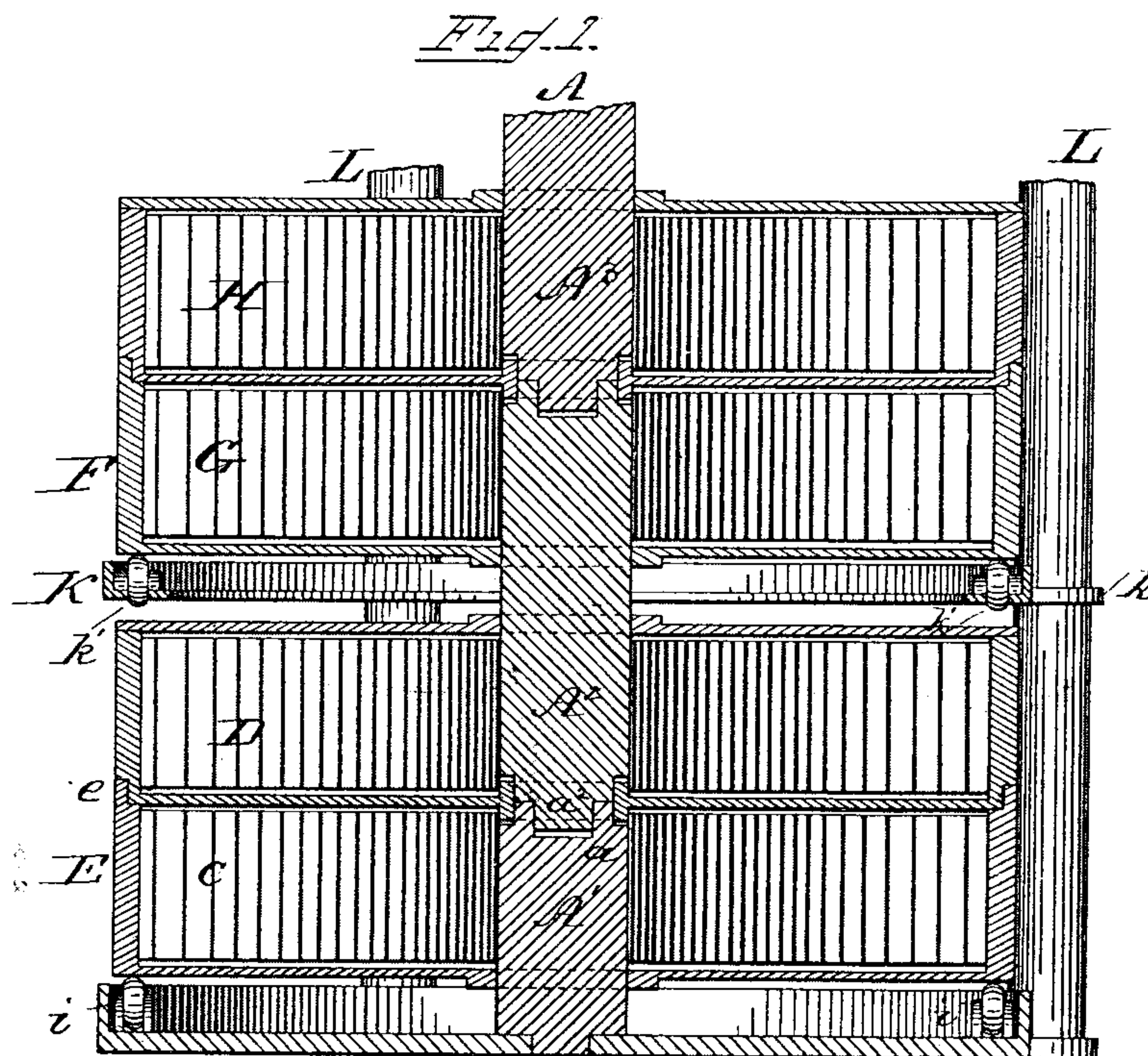
(No Model.)

W. H. POWELL.

SPRING MOTOR.

No. 332,000.

Patented Dec. 8, 1885.



Witnesses:

A. A. Connolly
Samuel. Scott

W. H. Powell
Inventor:

by Connolly Bros
attys

UNITED STATES PATENT OFFICE.

WILLIAM H. POWELL, OF PHILADELPHIA, PENNSYLVANIA.

SPRING-MOTOR.

SPECIFICATION forming part of Letters Patent No. 332,000, dated December 8, 1885.

Application filed May 13, 1885. Serial No. 165,346. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. POWELL, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, 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, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a vertical central section of the motor on line *x x* of Fig. 2. Fig. 2 is a plan view.

My invention has relation to that class of spring-motors which employ a series of coiled springs arranged in boxes and so connected that in unwinding the power exerted is that or the equivalent of one spring only, while the period of time covered by the running down of the series is the aggregate of the times of unwinding of the springs separately taken.

Heretofore a difficulty has been experienced in obtaining the full effect of the springs, in view of the fact that generally the entire weight of the series of springs and of their boxes has been imposed upon and sustained by the central shaft, producing a very considerable amount of friction, which interfered with the development of the full power of the springs, so that much of the force of the latter remained latent or not exerted for any useful purpose. To overcome this difficulty, I provide a construction whereby the weight of the springs and their boxes is transferred from the shaft and sustained by the frame of the motor or by supports external to said shaft.

My invention accordingly consists of a spring-motor having a series of two or more springs and boxes containing the same, with a central sectional shaft, said springs and boxes being sustained on the frame of the machine or on a support external to the shaft, substantially as set forth.

My invention further consists in the combination, with the springs, boxes, and central sectional shaft of a spring-motor, of a support for said springs and boxes external to said shaft, and anti-friction rollers interposed between said boxes and support, substantially as hereinafter fully set forth.

Referring to the accompanying drawings, A

designates the central shaft, which is made in sections A' A², &c. The lower section, A', is made fast in the base B, and in effect forms a post, inasmuch as it does not rotate. The upper end of this section A' has a socket, *a'*, which receives the stepped or tenoned lower end, *a*², of the superjacent section A², the socket and tenon being round, so as to permit the section A² to freely revolve on its vertical axis.

C and D represent two reversely-wound springs, one being wound right and the other left, arranged in a box or casing, E. Said box or casing is made in two sections or divided horizontally at *e*, to permit the introduction of the springs, the sections being then rigidly secured together. The outer ends of the springs C and D are fastened to the box E, their inner ends being fastened, respectively, to the shaft-sections A' A². The shaft-section A² extends above the box E and half-way through a superjacent box F, which has two springs, G and H, similar in construction and arrangement to the springs C and D, the spring G having its inner end attached to the upper half of shaft-section A², the inner end of spring H being attached to the lower half of shaft-section A², which is stepped in the upper end of section A², and the outer ends of said springs G and H being secured to the walls of box F.

The just-described construction and arrangement of sectional shaft, springs, and boxes are already well known; hence I do not claim the same as my invention; but heretofore the springs and boxes have been so arranged that their weight was sustained by the central shaft. To avoid this, I support the lower box on anti-friction rollers *i i*, secured in brackets on the base, and I provide a similar support for the upper box, F, consisting of a ring, K, sustained on the posts L L or exterior frame-work of the motor. Said ring has lugs *k k*, by means of which it is connected with the posts, and it has anti-friction rollers *k' k'*, upon which the box F rests and rides.

By means of the foregoing-described construction the central shaft is relieved of the weight of the springs and their boxes, and the latter are provided with anti-friction supports, thereby reducing resistance to the spring-power to a minimum and allowing the full force of the springs, or as much thereof as it is possible to obtain, to be usefully exerted.

The foregoing description presupposes that the axis of the central shaft is vertical. If, however, the motor be arranged with the shaft horizontal, the described results sought to be accomplished may be achieved by providing 5 peripheral anti-friction supports, as shown in dotted lines *m m* in Fig. 2, which represent anti-friction rollers. These rollers will have the effect, also, of preventing lateral play of 10 the boxes should the shaft-sections wear loose on their centers.

What I claim as my invention is as follows:

1. A spring-motor comprising a central sectional shaft, right and left wound springs, with 15 boxes and a support for said springs, and boxes external to said shaft, substantially as shown and described.

2. The combination, in a spring-motor, of a central sectional shaft, right and left wound springs having their inner ends respectively 20 connected to different sections of said shaft, boxes or casings for said springs, and anti-friction rollers having bearings on supports external to said shaft, substantially as shown and described.

In testimony that I claim the foregoing I 25 have hereunto set my hand this 11th day of May, 1885.

WILLIAM H. POWELL.

Witnesses:

LISLE STOKES,
M. D. CONNOLLY.

Corrections in Letters Patent No. 332,000.

It is hereby certified that in Letters Patent No. 332,000, granted December 8, 1885, upon the application of William H. Powell, of Philadelphia, Pennsylvania, for an improvement in "Spring Motors," errors appear in the printed specification requiring correction as follows: The comma after the word "springs" in lines 14 and 15, page 2, should be stricken out; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 22d day of December, A. D. 1885.

[SEAL.]

H. L. MULDROW,
Acting Secretary of the Interior.

Countersigned:

R. B. VANCE,
Acting Commissioner of Patents.