P. CATUCCI.

SPRING BOX FOR SPRING MOTORS.

APPLICATION FILED APR. 10, 1911.

1,029,852.

Patented June 18, 1912.

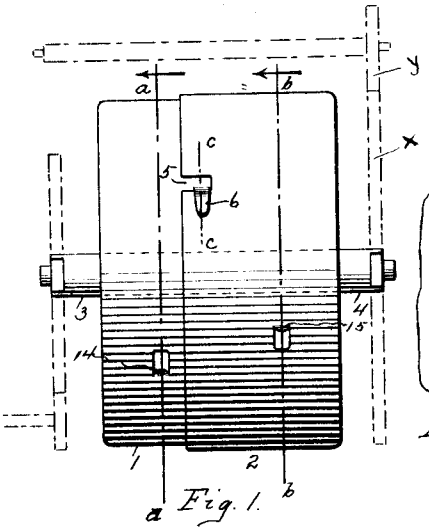

Fig. 1.

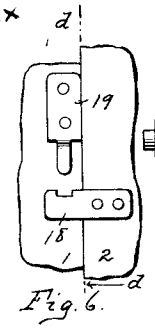

Fig. 6.

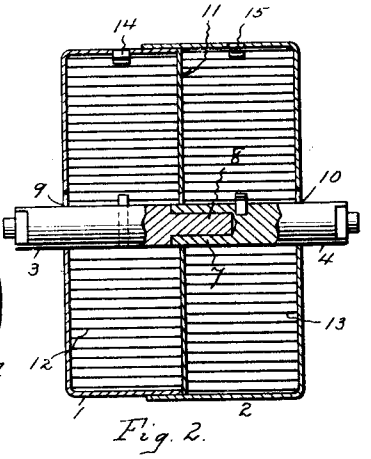

Fig. 2.

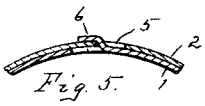

Fig. 5.

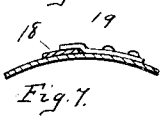

Fig. 7.

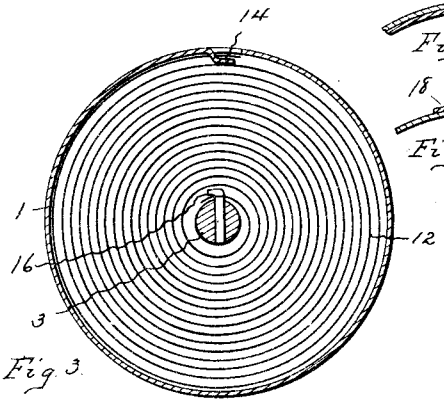

Fig. 3.

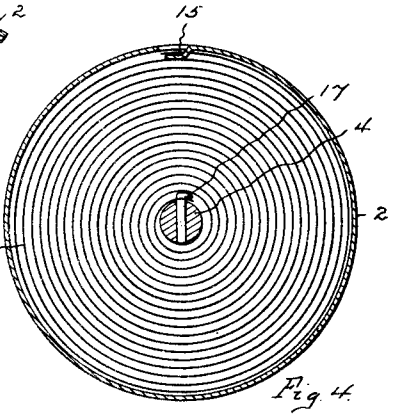

Fig. 4.

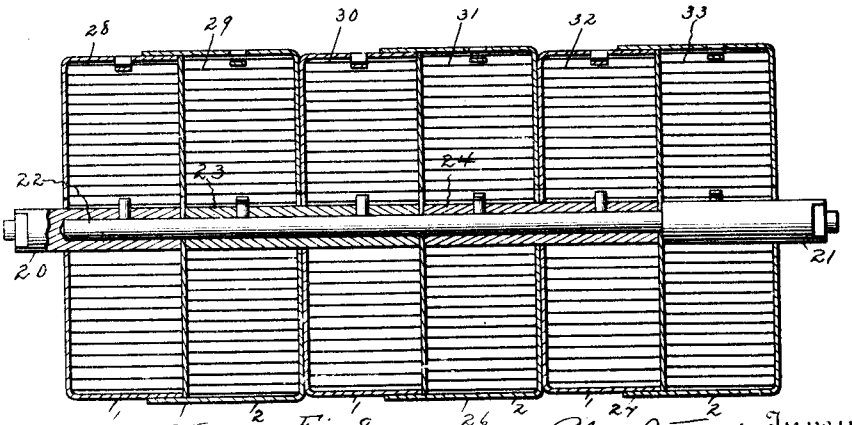

Fig. 8.

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UNITED STATES PATENT OFFICE.

PLINY CATUCCI, OF NEWARK, NEW JERSEY, ASSIGNOR TO A. F. MEISELBACH & BROTHER, A CORPORATION OF NEW JERSEY.

SPRING-BOX FOR SPRING-MOTORS.

1,029,852. Specification of Letters Patent. Patented June 18, 1912.

Original application filed November 17, 1910, Serial No. 592,818. Divided and this application filed April 10, 1911. Serial No. 619,934.

To all whom it may concern:

Be it known that I, PLINY CATUCCI, a citizen of the United States, residing in the city of Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Spring-Boxes for Spring-Motors, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it pertains to make, construct, and use the same.

In the manufacture of spring motors for various purposes, as, for example, phonographs, clocks, and other devices where a spiral spring is utilized as the motive power, it is quite often the custom to mount the spring in a spring box or barrel; and when it is desired to produce an unusually long running motor, to connect two such boxes or barrels together, with the spirals of the springs in opposite directions, mounting them upon a sectional shaft in such manner that one shaft section is used to wind up the springs, while the other section carries the gear through which the tension or power of the springs is communicated to the mechanism to be operated thereby. In this case the outer ends of the springs are connected to the inner faces of their respective barrels, and their inner ends are connected respectively to the shaft sections, the arrangement being such that the springs are connected up in series or tandem, with the spring barrels rigidly secured together by overlapping cross pieces.

The main object of my improvement is to so construct the spring barrels or boxes that they may be readily connected for operation, and as readily disconnected for inspection or repair, without the necessity of removing screws, rivets, or any other fastening device.

Another object is to provide a construction whereby a plurality of such pairs of tandem springs may be connected together so that advantage may be taken of the combined length of the entire set of springs, in order that a "long running" motor may be produced.

In carrying out my invention, I make use of the structures illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of my improved spring box. Fig. 2 is a vertical axial section thereof. Fig. 3 is a vertical section on line *a*—*a*, of Fig. 1. Fig. 4 is a vertical section on line *b*—*b*, of Fig. 1. Fig. 5 is a section on line *c*—*c*, of Fig. 1. Fig. 6 illustrates a slight modification of the barrel connecting device, with the parts separated. Fig. 7 is a vertical section on line *d*—*d*, of Fig. 6, showing the locking devices connected. Fig. 8 is a vertical axial section of a plurality of spring boxes connected up in tandem.

Similar reference numerals refer to like parts throughout the specifications and drawings.

In the preferred form of my improvement, I have shown the spring box as made up of two telescoping cups, 1 and 2, mounted upon the sectional shaft 3, 4. In the marginal periphery of the cup 2, I cut a plurality of L-shaped slots 5, (only one of these slots appears in Fig. 1, the others being obscured). In the margin of the cup 1, I cut a plurality of lugs or hooks 6, locating them in such a position that when the two cups are telescoped together, the slots 5, and the hooks 6, will register and interlock, as clearly shown in Figs. 1 and 5, when given a slight twisting motion; a reverse twisting motion will serve to unlock the cups, and permit of their separation, as will be readily understood.

The sectional shaft is made up of the two parts 3 and 4, in axial alinement with each other, with their adjacent ends provided respectively with the deep socket 7, and the reduced end 8, nicely fitted together, so that one section may rotate upon and independently of the other. The sectional shaft extends through the central apertures 9 and 10, respectively, in the plain heads of the cups 1 and 2, so that said cups may rotate freely upon the shaft.

Within the two telescoped cups 1 and 2, and mounted for free rotation upon the shaft 3, 4, is the separator disk 11, which is

of a diameter to pass freely within the cup 2, and rest against the edge of the cup 1, as shown in Fig. 2, thus forming two separated spring chambers, within which are located the spiral springs 12 and 13. These springs are oppositely coiled, as will be seen from an inspection of Figs. 3 and 4. As a means for securing the outer apertured ends of the springs 12 and 13 respectively to the rims of the cups 1 and 2, the hooks 14 and 15, are cut out of the metal and pressed inwardly, as shown. The ends of the springs 12 and 13, readily take over these hooks, so that when the springs are wound up, the springs will be firmly secured to the cups 1 and 2.

To each of the shaft sections 3 and 4, are rigidly secured the hooks 16 and 17, respectively, with their outer hooked ends oppositely directed, as shown in Figs. 3 and 4. The inner ends of the springs 12 and 13, being provided with apertures, readily take over these hooks 16 and 17, and a rotation of shaft section 3, will cause a corresponding winding up of the spring 12; the latter will carry with it the cup 1, which, being connected to the cup 2, will wind up the spring 13, as will be readily understood. If, now the end of shaft section 4, has rigidly mounted thereon, a gear wheel x, engaging a train as y the power or tension of the wound-up springs will expend itself through such train of gears.

If desired, I may make the two cups 1 and 2 of the same diameter, and secure to their edges the hooks 18 and 19, as shown in Figs. 6 and 7, so that when the cups are brought together and given a relative twist, the hooks 18 and 19, will interlock and thus secure the two cups together.

Inasmuch as the springs are oppositely coiled, it is clear that when they are under tension, there will be no tendency for either of the interlocking devices above described, to separate; but when the springs have "run down", the two cups may be given a reverse twist in order to disengage the interlocking hooks, after which the two cups may be separated for inspection or repair, as desired.

Where a longer running motor is desired, the sectional shaft may be lengthened, and a plurality of the spring boxes mounted thereon, as illustrated in Fig. 8. In this case, the shaft sections 20 and 21 are substantially the same in structure as above described, with the exception that the reduced portion 22, is much longer, and has mounted upon it the sleeves 23 and 24. The spring barrels 25, 26 and 27, are each the same in construction as above described, and the inner ends of the springs within each barrel are secured to the hooks of adjacent sections of the shaft; that is to say, spring 28 is connected to section 20; spring 29, is connected to sleeve 23; spring 30, is connected to sleeve 23; springs 31 and 32, are connected to sleeve 24; and spring 33, is connected to shaft section 21. The winding up of shaft section 20, while section 21, remains stationary, will result in putting all of the springs under a uniform tension, which may be let off in the manner heretofore described, through appropriate gear trains.

I have not thought it necessary to illustrate the entire motor structure, as such devices are well known to those familiar with the art, and the specific application of my improvements will be readily understood.

This application, so far as it relates to the means for interlocking the two spring cups 1 and 2, is a division of my prior application for improvements in phonographs, Ser. No. 592,818, filed November 17, 1910, and reference is made to that application for a full understanding of one class of spring motors to which the improvements herein described are applicable.

I claim:

1. In a spring box for spring motors, the combination of a sectional box, a spring secured within and to each section of said box, and means for detachably connecting said box sections by a relatively twisting motion of said box sections.

2. In a spring box for spring motors, the combination of a box comprising a pair of telescoping sections, a hook upon the inner section and a corresponding slot upon the other section for engagement to lock said sections together.

3. In a spring box for spring motors, the combination of a sectional shaft, a pair of telescoping spring cups mounted upon said shaft, means for interlocking said cups together comprising an L-shaped slot in one section and a hook upon the other section for engagement with said slot.

4. In a spring box structure for spring motors, the combination of a sectional shaft, a separate spiral spring secured at its inner end to each of said shaft sections, a spring cup inclosing each of said springs, and loosely mounted upon said shaft, and means for interlocking said spring cups by a relatively twisting motion.

5. In a spring box structure for spring motors, the combination of a shaft composed of alined and independently rotatable sections, a sectional spring barrel composed of a pair of telescoping spring cups, said barrel being rotatably and concentrically mounted upon said shaft, and means for de-

tachably connecting said cups together by a relatively twisting motion, spiral springs located within and having their outer ends connected respectively to each of said cup sections, and their inner ends connected respectively to said shaft sections, a plurality of L-shaped slots upon one of said cup sections, a plurality of hooks upon the other of said cup sections, whereby said cups may be connected together by a relatively twisting motion.

This specification signed and witnessed this 29th day of March 1911.

PLINY CATUCCI.

Witnesses:
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