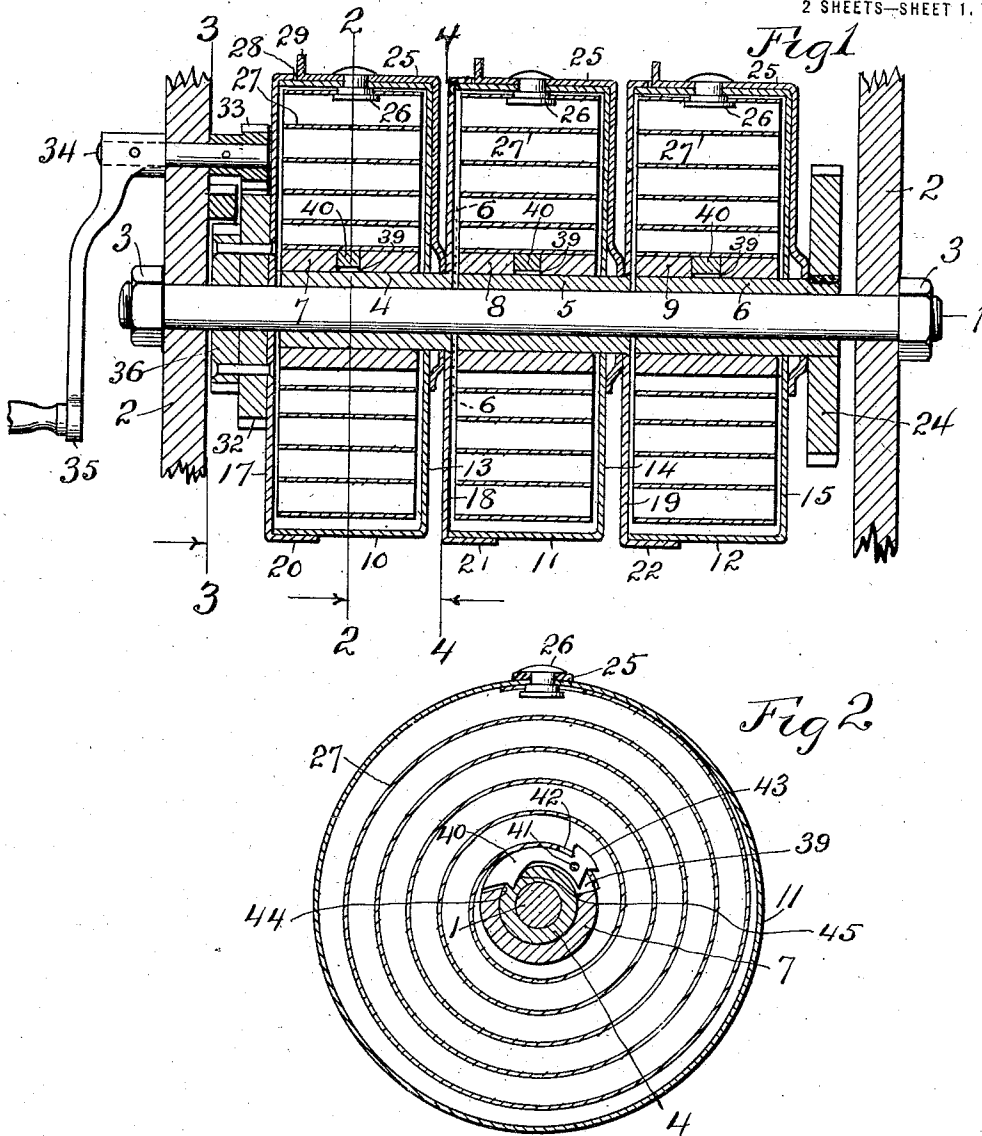


G. A. HOOVER.
 SPRING MOUNTING.
 APPLICATION FILED OCT. 16, 1918.

1,298,716.

Patented Apr. 1, 1919.

2 SHEETS—SHEET 1.



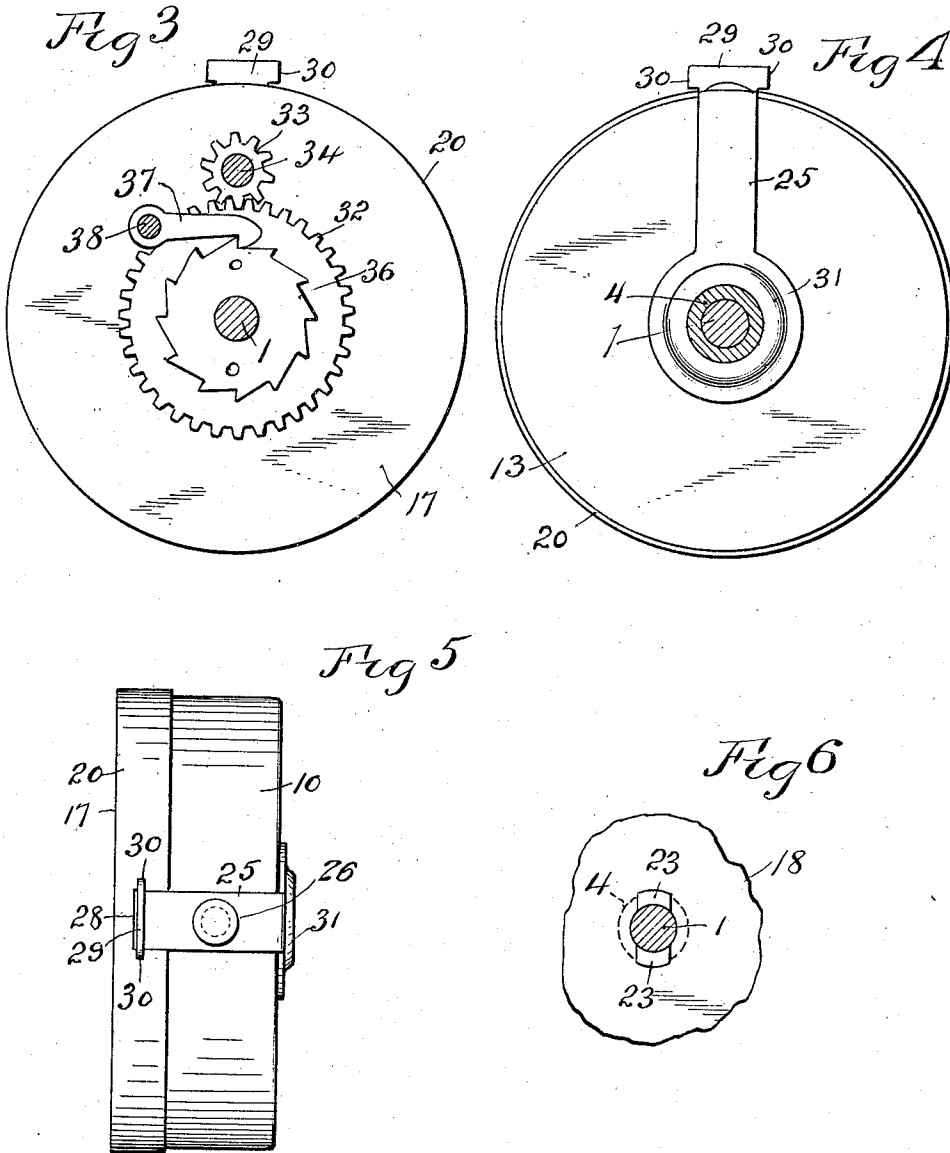
WITNESS:

R. Hamilton

INVENTOR.
George A. Hoover
 BY
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 His ATTORNEY

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UNITED STATES PATENT OFFICE.

GEORGE A. HOOVER, OF SALLISAW, OKLAHOMA.

SPRING-MOUNTING.

1,298,716.

Specification of Letters Patent.

Patented Apr. 1, 1919.

Application filed October 16, 1918. Serial No. 258,475.

To all whom it may concern:

Be it known that I, GEORGE A. HOOVER, a citizen of the United States, residing at Sallisaw, in the county of Sequoyah and State of Oklahoma, have invented a certain new and useful Improvement in Spring-Mountings, of which the following is a specification.

My invention relates to improvements in spring mountings.

It relates particularly to the type of spring mountings in which a coil spring of the convolute type is mounted in a drum to which the outer end of the spring is attached, the inner end of the spring being attached to an arbor rotatable relatively to the drum.

The object of my invention is the provision of novel means for releasably attaching the inner end of the spring to the arbor in a manner such as to prevent the bending or breaking of the spring in case that the latter is wound and the arbor or drum is suddenly released through accident or otherwise.

A further object of my invention is the provision of novel means for reinforcing the drum so that a drum of relatively light material may be employed with a relatively strong spring, without danger of bending or distorting the drum due to the tension of the spring thereon.

Still another object of my invention is the provision of a slip cover for the open end of the drum combined with means for holding the cover from circumferential movement on the drum and with the elimination of rivets, screws and similar devices, such as are commonly used for fastening the cover on the drum.

My invention provides further a reinforcing member for the drum which increases the bearing surface of the drum on the arbor and also serves as a spacer between two drums mounted on the same axial support.

My invention contemplates further the employment of a plurality of drums mounted on the same axial support combined with novel means for connecting the drum units so that the power of their combined springs may be employed for power purposes.

The novel features of my invention are hereinafter fully described and claimed.

In the accompanying drawings, which illustrate a preferred embodiment of my invention,

Figure 1 is a vertical sectional longitudinal view of my improvement embodied in a plurality of connected drums mounted on a common axial support.

Fig. 2 is a cross section on the line 2—2 of Fig. 1.

Fig. 3 is a cross section on the line 3—3 of Fig. 1.

Fig. 4 is a cross section on the line 4—4 of Fig. 1.

Fig. 5 is a plan view of one of the drums.

Fig. 6 is a cross section on the line 6—6 of Fig. 1.

Similar reference characters designate similar parts in the different views.

1 designates a support comprising a horizontal cylindrical bar mounted in the opposite sides 2 of a suitable casing, a portion of which is shown, in Fig. 1.

Nuts 3 mounted respectively on the screw-threaded ends of the bar 1 bear against the outer sides 2 of the casing so as to retain the bar therein.

Rotatably mounted on the bar 1 are three tubular arbors 4, 5, and 6, on which are respectively revolubly mounted three sleeves 7, 8 and 9.

Three cylinders 10, 11 and 12 are provided respectively with closed ends 13, 14 and 15 which are respectively rotatably mounted on the arbors 4, 5 and 6, and in which are respectively mounted the sleeves 7, 8 and 9.

The opposite ends of the cylinders 10, 11 and 12 are normally respectively closed by slip caps 17, 18 and 19, said caps being provided respectively with peripheral annular flanges 20, 21 and 22, which respectively embrace the cylinders 10, 11 and 12.

The cap 17 is rotatable on the bar 1 and the caps 18 and 19 are respectively rigidly secured to the right ends of the arbors 4 and 5, as viewed in Fig. 1, in the manner shown in Fig. 6. Upon referring to Fig. 6, it will be seen that the adjacent end of the arbor 4 is provided with two diametrically opposite end projections 23 fitted in holes provided therefor in the cover 18 so as to hold the arbor from turning in the cover.

The right end of the arbor 6, as viewed

in Fig. 1, has rigidly secured to it a rotary driving member, which may comprise a spur gear wheel 24, from which power may be taken to drive a phonograph playing mechanism of a music box or such other purpose as may be desired.

For reinforcing the cylinders 10, 11 and 12, and for holding the covers 17, 18 and 19, from circumferential movement on the cylinders 10, 11 and 12, respectively, I provide a reinforcing member comprising a right-angled strap 25 attached to the periphery of the cylinder 10, 11 or 12, as the case may be, by means of a rivet 26, which is adapted to be inserted through the outer end of a coil spring 27 of the convolute type, mounted in the cylinder and embracing the sleeves 7, 8 or 9, as the case may be.

Each of the flanges 20, 21 and 22 is provided in its edge with a recess 28 into which the adjacent reinforcing member 25 extends and is fitted to hold the cap from circumferential movement. Each member 25 is provided with an outwardly extending projection 29 provided at opposite edges with arms 30, Fig. 5, and Fig. 4, which extend over the outer side of the flange of the cover, so that the pull of the wound spring 27 will be exerted through the rivet 26 and the arms 30 upon the outer side of the flange of the cover, thereby reinforcing the drum.

The other ends of the reinforcing members 25 are respectively revolubly mounted on the arbors 4, 5 and 6 and are each provided with a raised or cupped portion 31, which serves as a spacer between the cylinders 10, 11 and 12 and between the spur gear 24 and the cylinder 12.

Any desired means may be provided for turning the cylinder 10 so as to wind the spring 27 mounted therein and the two other springs 27 mounted respectively in the cylinders 11 and 12. In the drawing, I have shown attached to the outside of the cover 20 a spur gear wheel 32 which meshes with a pinion 33 secured upon a horizontal shaft 34 extending through and rotatably mounted in the adjacent side 2 of the casing, and outside of the casing having secured to it a crank handle 35.

Secured concentrically to the gear wheel 32 is a ratchet wheel 36 which is engaged by a pawl 37 pivotally mounted on a horizontal inwardly extending stud 38 which is mounted in the side wall 2 of the casing.

The inner ends of the springs 27 respectively embrace the sleeves 7, 8 and 9. Said sleeves are each provided with a circumferential slot 39, as best shown in Fig. 2. Respectively pivoted in the slots 39 are three pawls 40, each pawl being pivoted to the adjacent sleeve by a longitudinal pin 41. Each of the springs 27 near its inner end is provided with a hole 42 adapted to receive therethrough an outwardly flaring projec-

tion 43, which is provided on the outer side of each pawl and by which the inner end of the adjacent spring 27 is held when the adjacent cylinder is turned in a direction to wind the spring.

Each sleeve 4, 5 and 6 is provided with a longitudinal peripheral tooth 44, preferably formed by cutting a longitudinal peripheral groove 45 in the sleeve, as shown in Fig. 2.

To wind the springs 27, the gear 24 being held from turning rapidly by the mechanism, not shown, which it drives, the crank handle 35 is turned so as to turn the cover 17 and the cylinder 10 counter-clockwise, as viewed in Fig. 3, through the intermediacy of the gears 32 and 33 and shaft 34.

The spring 27 in the cylinder 10 is thus wound and in being wound, carries with it the adjacent pawl 40, which in turn rotates the sleeve 4 together with the cover 18 to which it is attached and the cylinder 11 in a direction such that the spring 27 in the cylinder 11 will be wound, thereby turning the sleeve 5, cover 19 and cylinder 12, through the intermediacy of the pawl 40 which engages the sleeve 5. The turning of the cylinder 12 will wind the spring 27 therein, which in turn will be held at its inner end by the pawl 40 which engages the sleeve 6 attached to the gear wheel 24.

The crank handle 35 is turned in the manner described until all the springs 27 are wound, the pawl 37 holding the cylinder 10 from retraction. The gear wheel 24 may then be utilized for transmitting power to any desired mechanism from the wound springs 27.

In case a spring should break, no damage will be done to the other two springs when they are thus suddenly released, as the pawls 40 will slip around with the unwinding springs out of engagement with the toothed sleeves with which they engage.

By the employment of the reinforcing members 25, which assist the cylinders in supporting the springs, the cylinders may be made of relatively thin material without danger of collapsing or distortion due to the strain placed upon them by the inward pull of the wound springs.

I do not limit my invention to the structure shown and described, as modifications, within the scope of the appended claims, may be made without departing from the spirit of my invention.

What I claim is:—

1. In a spring mounting, a support, an arbor revoluble thereon and having a ratchet tooth, a drum revoluble on the axis of the arbor, a coiled spring having one end attached to the drum, a sleeve revoluble on the arbor and having a circumferential slot therethrough, and a pawl attached to the other end of the spring and pivoted to the sleeve in said slot and adapted when the

spring is being wound to engage said ratchet tooth and to rotate said arbor and adapted to slip over said tooth when the spring is being unwound relatively to the arbor.

5 2. In a spring mounting, a support, two arbors revoluble thereon, two revoluble drums one attached to and revoluble with one of said arbors, a driving member attached to the other arbor, two coil springs
10 respectively attached to said drums, and two ratchet means respectively connecting said springs with said arbors and arranged to drive said arbors when the springs are being wound and to be released from driving
15 engagement with the arbors when the springs are being unwound relatively to the arbors.

3. In a spring mounting, a support, two arbors revoluble thereon and provided each with a ratchet tooth, two revoluble drums
20 one attached to and revoluble with one of said arbors, a driving member attached to the other arbor, two coil springs respectively attached to said drums, and two ratchet means each including a pawl attached to the adjacent spring and adapted to engage the
25 ratchet tooth of the adjacent arbor when the spring attached to the pawl is being wound.

4. In a spring mounting, a support, two arbors revoluble thereon and having each a
30 ratchet tooth, two revoluble drums one attached to and revoluble with one of said arbors, two coil springs respectively attached to said drums, two sleeves respectively rotatable on said arbors, and two
35 pawls respectively carried by said sleeves and adapted to respectively engage said ratchet teeth, and respectively secured to said springs.

5. In a spring mounting, a support, two
40 arbors revoluble thereon, two revoluble drums, one attached to and revoluble with one of said arbors, a driving member attached to the other arbor, means for rotating the other drum, two coil springs respectively
45 attached to said drums, and two ratchet means respectively connecting said springs with said arbors and arranged to drive the arbors when the springs are being wound and to be released from driving
50 engagement with the arbors when the springs are being unwound relatively to the arbors.

6. In a spring mounting, a support, two arbors revoluble thereon, each having a
55 ratchet tooth, two revoluble drums, one attached to and revoluble with one of said arbors, means for rotating the other drum, a driving member attached to the other arbor, two coil springs respectively attached to said drums, two members rotatable relatively to
60 said arbors, and two pawls respectively carried by said rotatable members and respectively secured to said springs and adapted to respectively have driving engagement with said ratchet teeth.

65 7. In a spring mounting, a drum comprising a cylinder having an open end and a closed end and a slip cover for the open end, a reinforcing member on the periphery of the cylinder having means for engaging and holding the cover from circumferential

70 movement on the cylinder, and means connected with the cylinder and the reinforcing member for engaging and holding one end of a coil spring adapted to be mounted in said cylinder.

8. In a spring mounting, a drum comprising a cylinder having an open end and a closed end and a slip cover for the open end, the cover having a recess, a reinforcing member on the periphery of the cylinder
80 fitted in said recess to hold the cover from circumferential movement on the cylinder, and means connected with the cylinder and the reinforcing member for engaging and holding one end of a coil spring adapted to
85 be mounted in said cylinder.

9. In a spring mounting, a cylinder having an open end and a closed end and a slip cover on the open end having a peripheral flange embracing the cylinder and provided
90 in its edge with a recess, a reinforcing member on the periphery of the cylinder fitted in said recess to hold the cover from circumferential movement on the cylinder and projecting over the outer side of the flange of
95 the cover, and means connected with the cylinder and the reinforcing member for engaging and holding one end of a coil spring adapted to be mounted in said cylinder.

10. In a spring mounting, a support, a drum mounted axially on said support and comprising a cylinder having an open end and a closed end and a slip cover on the open end, a reinforcing member mounted on
105 said support and on the periphery of said cylinder and having means for engagement with the cover for holding the latter from relative circumferential movement on the cylinder, and means connected with the cylinder and the reinforcing member for
110 engaging and holding one end of a coil spring adapted to be mounted in said cylinder.

11. In a spring mounting, a support, a drum mounted axially thereon and comprising
115 a cylinder having an open end and a closed end and a slip cover on the open end provided with a recess, a reinforcing member mounted on said support and on the periphery of said cylinder and fitted in said
120 recess to hold the cover from relative circumferential movement, and means connected with the cylinder and the reinforcing member for engaging and holding one end of a coil spring adapted to be mounted
125 in said cylinder.

12. In a spring, a support, a drum mounted axially thereon comprising a cylinder having an open end and a closed end and a slip cover on the open end having a recess, a reinforcing
130

member mounted on said support and on the periphery of the cylinder and fitted in said recess to hold the cover from circumferential movement relative to the cylinder and extending over the outside of the cover, and means connected with the cylinder and the

reinforcing member for engaging and holding one end of a coil spring adapted to be mounted on said cylinder.

In testimony whereof I have signed my name to this specification.

GEORGE A. HOOVER.