Oct. 21, 1924. 1,512,136

E. C. RECHEL

SPRING MOTOR

Filed Sept. 1, 1922

FIG. 1.

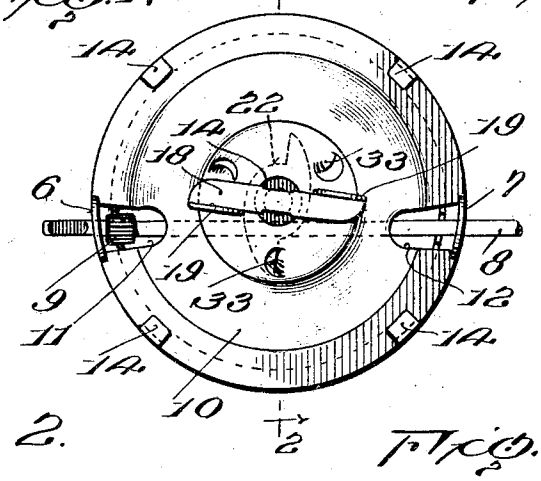


FIG. 6.

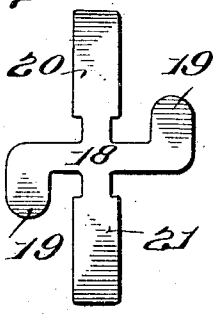


FIG. 2.

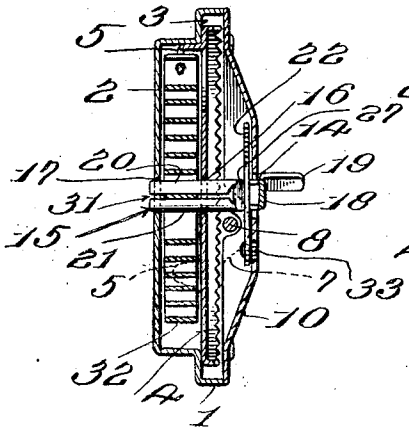


FIG. 3.

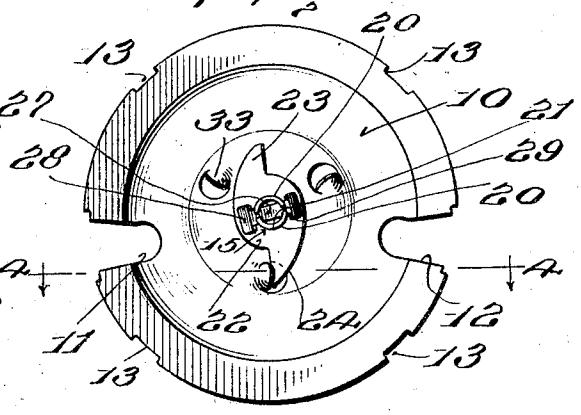


FIG. 4.

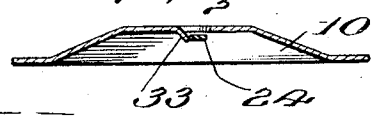
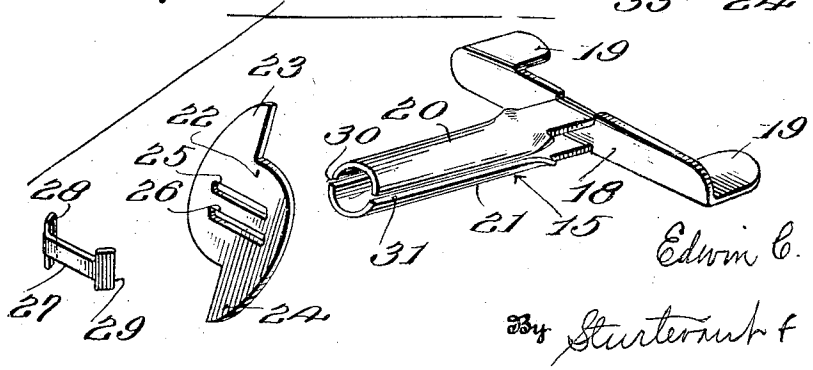


FIG. 5.



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UNITED STATES PATENT OFFICE.

EDWIN C. RECHEL, OF KEENE, NEW HAMPSHIRE.

SPRING MOTOR.

Application filed September 1, 1922. Serial No. 585,661.

To all whom it may concern:

Be it known that I, EDWIN C. RECHEL, a citizen of the United States, residing at Keene, in the county of Cheshire, State of New Hampshire, have invented certain new and useful Improvements in Spring Motors, of which the following is a description, reference being had to the accompanying drawing and to the figures of reference marked thereon.

The invention relates to improvements in spring motors.

The present invention relates to improvements in certain features of construction disclosed in the patent granted to H. T. Kingsbury, June 12, 1917, for a spring motor for mechanical toys and the like.

The primary object of my invention is to provide a simple, cheap and effective winding shaft adapted to be applied to spring motors of different structures and having certain details of construction and combination of parts hereinafter more fully described.

In the accompanying drawings:—

Figure 1 is a top plan view of my improved motor;

Fig. 2 is a transverse sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a rear plan view of the cover plate of the gear housing showing the pawl attached to the winding shaft;

Fig. 4 is a transverse sectional view of Fig. 3 showing one of the ratchet teeth engaging the pawl;

Fig. 5 is a perspective view of the winding shaft and pawl in separated relation; and

Fig. 6 is a plan view of the blank from which the winding shaft is formed.

My invention pertains more particularly to spring motors for toys in which the parts are made of sheet metal but the same could be used in many places where a light motor is desired and, therefore, I do not desire to limit myself to the application of the motor as it could be used in many places.

Referring now to the drawings, 1 represents the casing which as shown is of circular form and has a central depressed portion 2 forming the flat shoulder or flange 3 upon which the flat face of the crown gear 4 rests. The crown gear 4 are provided on its flat face at intervals with inwardly extending lugs 5 which lie close to the straight walls of the central depressed portion and serve as guides for the crown gear, as will be readily understood.

The casing 1 at oppositely disposed sides are provided with upwardly extending ears 6 and 7 having openings in which is arranged the shaft 8 rigidly carrying the pinion gear 9 meshing with the teeth of the crown gear 4 and thereby the shaft is rotated, as will be later described.

The casing is closed by the cover plate 10 and is of a crown or saucer form, having on opposite sides the cut-away portions 11 and 12 to allow for the free rotation of the shaft 8. The said cover plate is provided around its periphery with the notches 13 into which extends the ears 14 carried by the casing and the same are turned over and clamp the cover plate to the casing.

The cover plate 10 is provided with an opening 14 through which passes the winding stem 15, and the said stem also passes through an opening 16 in the crown gear 4 and through the opening 17 in the casing 1. whereby the same is rotatably supported. The winding stem is formed of a sheet of metal of the form shown in Fig. 6 of the drawings. In forming the winding stem, the handle portion 18 has ears 19 which are bent laterally, as shown in Fig. 5, the two portions 20 and 21 forming the shaft or stem proper is then bent laterally in the opposite direction. The pawl 22 is of the form shown in Fig. 5, having the winged portions 23 and 24 and the two parallel slots 25 and 26 through which the portions 20 and 21 of the stem pass.

The key 27 which has the laterally turned end portions 28 and 29 is then placed between the portions 20 and 21. The said portions 20 and 21 are then shaped in the form of a shaft with the two oppositely arranged slots 30 and 31. It is understood that the stem is first passed through the cover plate 8 before the pawl is placed in position, and after the shaft like member is formed, the winding stem is rotatably supported by the cover plate and removable therewith. By this construction, it will be seen that the laterally turned ends 28 and 29 of the key 27 engages the pawl and prevents any twisting thereof.

When assembled, a coil spring 32 has one end so bent as to enter one of the slots in the stem by sliding it through the open

hollow end and the opposite end of the spring is attached to one of the lugs 5. The inner face of the cover plate 10 is provided with inwardly bent portions 33 which form teeth to engage the winds of the pawl and allow the shaft to be wound in one direction but prevent the backward movement of the shaft or stem. The shape of these teeth is shown in Figs. 3 and 4, as hereinbefore stated, to allow for the ready rotation of the shaft in one direction.

In the assembled position of all the parts, as shown in Fig. 2, the winding stem is readily rotated and by holding the shaft 8 the spring is wound upon the stem. I have not shown the invention applied as it could be used wherever a comparatively light motor is possible, as heretofore stated.

It is obvious that minor changes in the details of construction and the arrangement of the parts may be made without departing from the spirit of the invention as set forth in the appended claims.

Having thus described the invention, what I claim as new is:—

1. A winding stem for a spring motor made from an integral sheet metal blank formed with a handle portion and two laterally disposed portions bent laterally into opposition to form a round shaft.

2. The combination of a winding stem formed from a single blank to provide a handle portion and a shaft portion, a pawl suitably perforated to receive said shaft portion therethrough, said shaft portion being suitably deformed to lock said pawl to said winding stem.

3. The combination of a winding stem formed from a single blank to provide a handle portion and laterally bent opposed shaft portions, a pawl constructed and arranged to receive said shaft portions and to be locked in position by the deformation of said shaft portions to form the shaft.

4. A sheet metal winding stem made from a blank having a portion suitably bent to form a handle, and lateral portions bent into opposition and mounted to form a slotted shaft.

5. The combination with a motor casing, a cover plate therefor, a winding stem formed from a single blank to provide a handle portion and a shaft portion passing through the aperture in the cover plate, a pawl located on said shaft portion on the opposite side of said cover and locked thereon by the deformation of said shaft whereby said winding stem is held from movement in either direction relative to said cover plate by said handle and by said pawl.

6. A winding stem made from a blank formed with a handle portion and two laterally extending flat stem portions, a pawl through which the stem portions pass and are held against rotation, said stem portion being shaped to form a round shaft and having slots whereby a winding spring may be secured thereto.

7. A winding stem made from a blank formed with a handle portion and laterally extending flat stem portion, a pawl having two slots through which the stem portions pass, a key between the stem portion for holding the pawl against twisting, and the stem portion being then shaped to lock the key in position and to form a round shaft with a slot for securing a spring thereto.

8. A winding stem for the purpose described, made from a blank formed with a handle portion intermediate its end, and two flat stem portions bent laterally, a pawl having two slots through which the stem portions pass, a key between the stem portions and having broad ends engaging the pawl and holding it against twisting, the stem portions being then shaped to lock the key in position and to form a round shaft with a slot for securing a spring thereto.

In testimony whereof, I affix my signature.

EDWIN C. RECHEL.