T. M. VAUGHAN.

SPRING MOTOR FOR MECHANICAL TOYS.

APPLICATION FILED MAR. 9, 1918.

1,277,791. Patented Sept. 3, 1918.

Fig. 1.

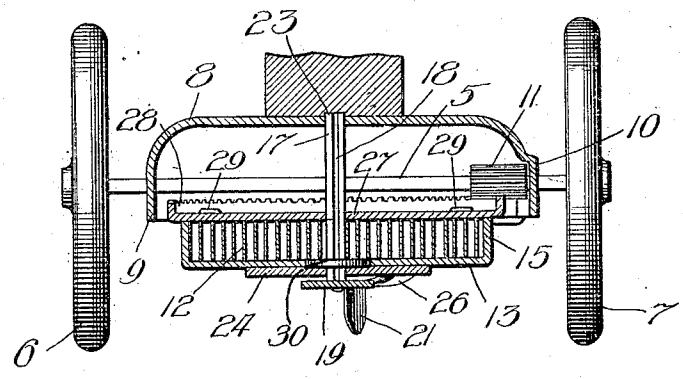


Fig. 2.

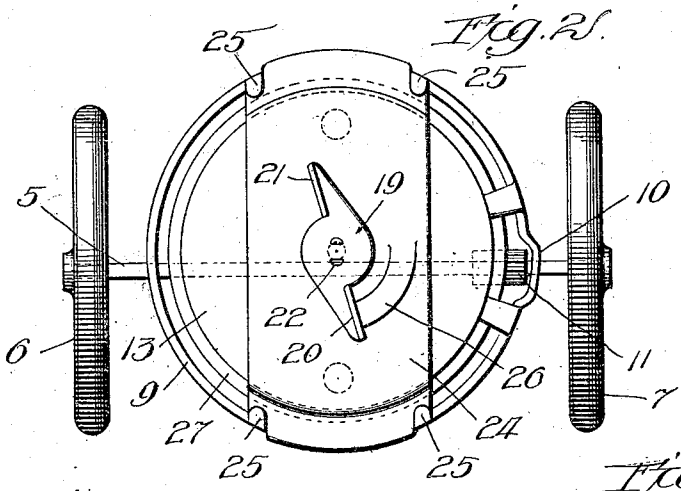


Fig. 3.

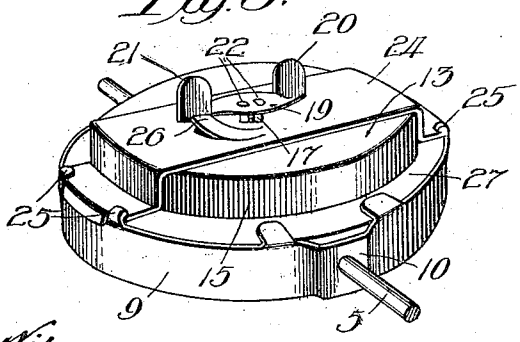
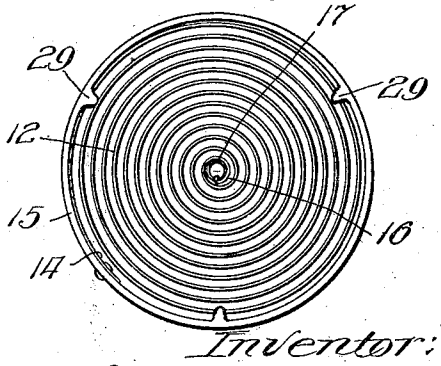


Fig. 4.



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SPRING-MOTOR FOR MECHANICAL TOYS.

1,277,791. Specification of Letters Patent. Patented Sept. 3, 1918.

Application filed March 9, 1918. Serial No. 221,411.

To all whom it may concern:

Be it known that I, THOMAS M. VAUGHAN, a citizen of the United States, residing at Bryan, in the county of Williams and State of Ohio, have invented certain new and useful Improvements in Spring-Motors for Mechanical Toys, of which the following is a specification.

The present invention has to do with certain improvements in spring motors for mechanical toys and the like. One of the objects of the invention is to provide a spring motor of very simple construction and which can be readily and cheaply manufactured from a minimum number of parts which can be stamped out from sheet metal and assembled at a very low cost of manufacture. Another object is to provide a very compact structure and one which can be built from a minimum number of parts. Another object is to so relate the parts to each other that they can be readily assembled or taken apart for purposes of construction and repair.

Other objects and uses of the invention will appear from a detailed description of the same which consists in the features of construction and combinations of parts hereinafter described and claimed.

In the drawing:

Figure 1 shows a vertical section through a spring motor embodying the features of my invention as the same may be applied to the driving axle of a toy vehicle;

Fig. 2 shows a bottom plan view corresponding to Fig. 1;

Fig. 3 shows a perspective view of the assembled motor, the same being inverted; and

Fig. 4 shows a top view of the spring as the same is seated into the spring box.

Referring to the construction shown in the drawing, I will first state that in the different figures I have shown only a fragmentary portion of the vehicle to which the motor is attached, this being done for the purpose of simplifying the drawing, since this invention relates particularly to the spring motor itself. Manifestly the motor may be attached to any suitable vehicle.

The driven shaft or axle is designated by the numeral 5. It is shown as driving the wheels 6 and 7, but manifestly may be used for the purpose of driving any other elements or devices. An inverted cup-shaped box 8 has the downwardly depending flange 9 within which the shaft or axle 5 is journaled. At one side this housing is provided with an extension or enlargement 10 for the accommodation of the pinion 11 mounted on the shaft or axle 5 and by which said shaft or axle is driven.

The coiled power spring 12 is located in a cup-shaped housing 13, the outer end 14 of the spring being attached to the flange 15 of the cup-shaped housing, and the inner end 16 of the spring being connected to the winding stem 17. This winding stem is shown as comprising a hollow tube having a slot 18 in one side, into which slot is hooked the inner end of the spring. The lower end of the winding stem carries the key 19 having the finger pieces 20 and 21. This key may be conveniently fastened to the stem 17 by providing said stem with a pair of downwardly projecting lugs 22 which pass through perforations in the key and are thereafter riveted over against the outer face of the key, as is well shown in Figs. 2 and 3.

The upper end 23 of the winding stem is journaled in the housing 8. The lower end of said stem is journaled in a bridge plate 24 which extends across the housing 8, as shown in Figs. 1, 2, and 3, being connected thereto by the ears 25. This bridge plate also serves as a support against which the spring box 13 rests, as shown in Fig. 1, the spring box being centered in its rotation by the stem 17.

The bridge plate 24 is provided with one or more ears or catches 26 stamped out from its surface and against which the key engages during the process of winding.

On the upper edge of the spring box 13 there is noted an annular gear plate 27. This plates is provided with an upwardly projecting toothed flange 28, the teeth of which mesh with the pinion 11 for the purpose of driving the shaft 5. This plate 28 is connected to the spring box 13 by a plurality of ears 29 on the flange 15 of the spring box, which ears are passed through the plate 27 and then riveted over against its upper surface. It is to be observed that by the use of this arrangement the spring box and gear are brought into a unitary self-contained structure, the spring being totally inclosed and protected.

The spring box 13 is provided with a central circular opening for the accommodation of a circular locking plate 30 which is con-

nected to the stem 17 and holds said stem in place by resting against the upper surface of the bridge plate 24. Manifestly any other suitable arrangement might be adopted for holding the winding stem in place.

It will be observed that practically all of the parts of the spring motor herein disclosed can very readily be made from sheet metal stampings, thereby obviating the necessity of using castings and also obviating the use of machine tool processes.

While I have herein shown and described only a single embodiment of the features of my invention, still it will be understood that I do not limit myself to the said embodiment except as I may do so in the claims.

I claim:

1. A spring motor for a mechanical toy comprising, in combination, an inverted dish-shaped sheet metal stamping, a shaft extending transversely through the flanges of the same, toy wheels on the ends of said shaft, a pinion on the shaft adjacent to the inner face of the said flange, a bridge plate spanning the space inclosed by the flange and having its end portions secured to the flange, a cup-shaped spring box above the said bridge plate, a coiled spring within said spring box, an annular gear plate secured to the upper edge of the flange of the spring box and having an upwardly extending toothed flange, the teeth whereof are in mesh with the aforesaid pinion, a winding stem extending vertically through the bridge plate and spring box and having its upper end journaled in the first mentioned inverted dish-shaped stamping, a suitable connection between the inner end of the coiled spring and the stem, a suitable connection between the outer end of the coiled spring and the spring box, a winding key on the lower exposed end of the stem, and an ear downwardly depending from the bridge plate adapted to engage the key for the purpose of preventing backward movement thereof, substantially as described.

2. A spring motor for a mechanical toy comprising, in combination, an inverted dish-shaped sheet metal stamping, a shaft journaled in the flange thereof and extending across the space inclosed by said flange, a pinion on said shaft adjacent to the inner face of the flange, a bridge plate spanning the space inclosed by the flange and having its end portions secured to the flange, a spring box above the bridge plate and comprising a dish-shaped sheet metal stamping in combination with an annular gear plate closing the upper end thereof and having an upwardly extending toothed flange, the teeth whereof are in mesh with the pinion aforesaid, a coiled spring within the spring box, a winding stem for the coiled spring, and a key on the lower end of the winding stem, substantially as described.

THOMAS M. VAUGHAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."