E. S. SAVAGE.

TOY.

APPLICATION FILED APR. 15, 1915.

1,187,660.

Patented June 20, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

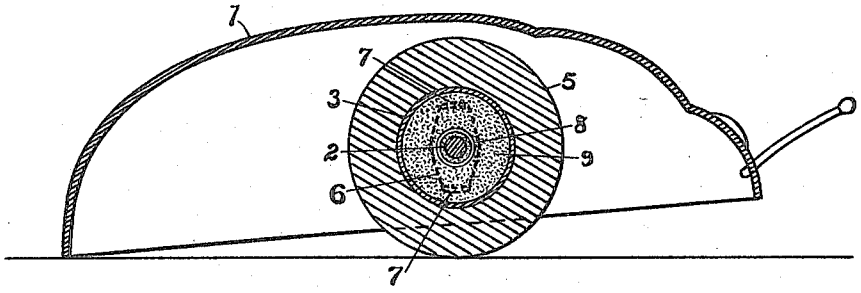


Fig. 2.

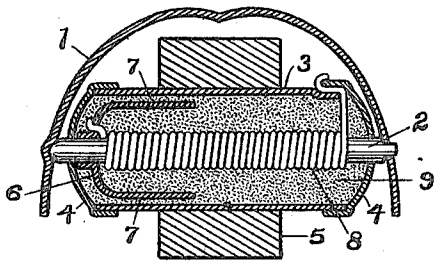
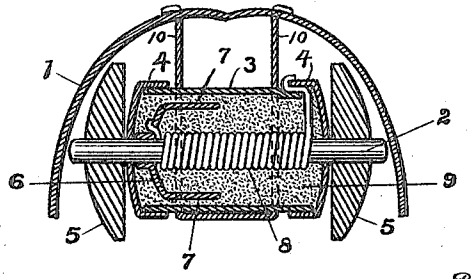


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

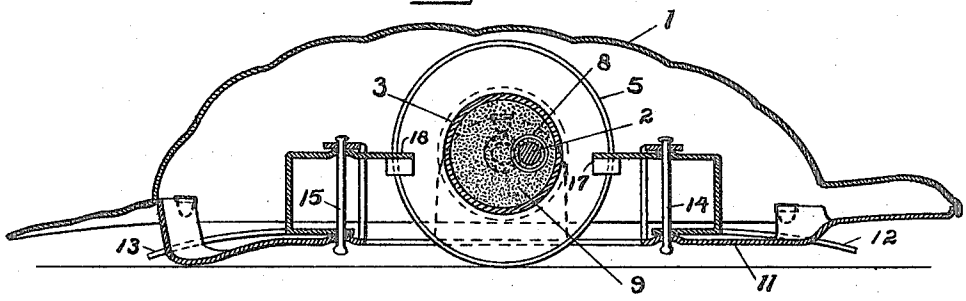
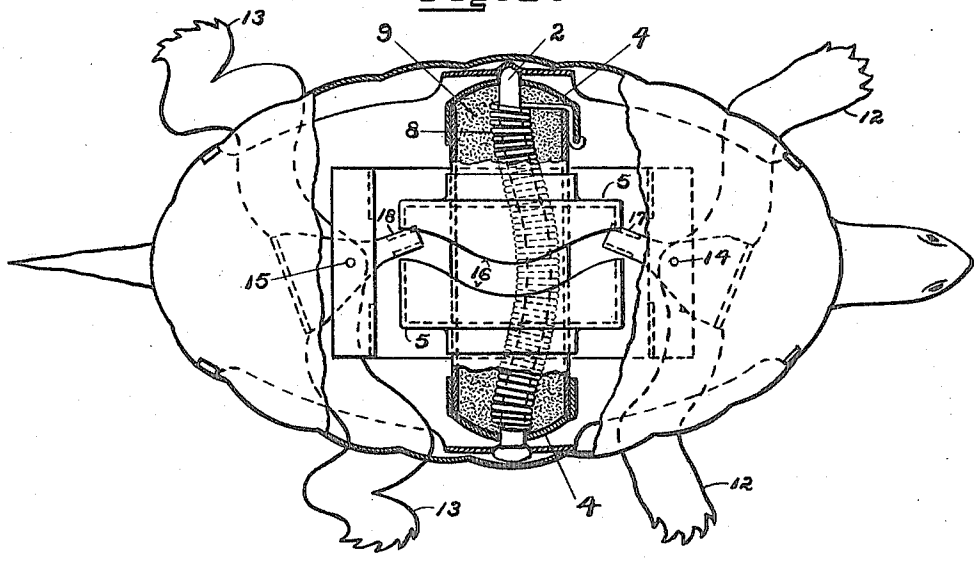


Fig. 5.



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1,187,660. Specification of Letters Patent. Patented June 20, 1916.

Application filed April 15, 1915. Serial No. 21,513.

To all whom it may concern:

Be it known that I, EDWARD S. SAVAGE, of the city of Rochester, State of New York, have invented certain new and useful Improvements in Toys, of which the following is a specification.

Certain broader features of this invention for which I now solicit a patent are set forth in my prior application Serial No. 879,128 filed December 26, 1914 of which this application is a continuation. Figures 1 and 2 herein having been copied from that case. Some after appended claims will be found generic to the species illustrated in Figs. 1 and 2 and others to Figs. 2, 4 and 5. In my earlier application I have disclosed and claimed the broad invention of a method of and means for controlling motion in mechanical toys whereby the motion is controlled within the toy itself and a steady comparatively slow action or application of the motive is secured without the use of the usual complex and more expensive train of gears and other devices.

This application is confined to a particular embodiment of the broad invention wherein my objects are to produce a slow and steady rotary motion and to assemble the actuating spring the retarding means and the moving part in a most self contained and compact form; and my invention consists in the novel construction shown in the accompanying drawings, in which—

Fig. 1 is a vertical section taken longitudinally and Fig. 2 is a vertical section taken transversely, of one form of the invention. Fig. 3 is a vertical section taken transversely of a modified form of the invention and Fig. 4 is a vertical longitudinal section and Fig. 5 is a plan partly in section of another application of the invention.

Referring by numerals to the accompanying drawings, 1 is the body portion which may be made to represent a living creature, a moving vehicle or any animate object which may be simulated in a mechanical toy.

In Fig. 1 and Fig. 2 the body is a sheet metal stamping in the form of a bug. The body is supported a little forward of its center of gravity by the shaft 2 about which the cylinder 3 revolves. The cylinder 3 is closed at both ends by the caps 4 having center holes which serve as bearings. A wooden roller which acts as a tractor is fitted tightly to the cylinder 3. A friction piece 6 fits tightly on the shaft 2 and has two arms 7 which extend parallel to the shaft and close to but not in contact with the inner surface of the cylinder. The coiled spring 8 is attached at one end to the shaft or to the friction piece and at the other end to the cylinder or cylinder cap. The space within the cylinder surrounding the shaft, spring and friction piece, is filled or partly filled with a viscous material such as soft pitch or thick molasses. This viscous material sticks to the inner surface of the cylinder 3 and to the arms of the friction piece causing a resistance which effectually prevents rapid revolution of the cylinder and its roller 5 but permits the cylinder to turn slowly until the spring is completely unwound. The spring is wound by holding the top in the hand and drawing it backward while pressing the roller against some surface such as a table or floor. In action the rotation of the roller draws the toy forward slowly until the spring is unwound. Obviously the speed of motion depends upon the strength of the spring and the nature of the viscous substance employed.

In Fig. 3 the body is a sheet metal stamping in the form of a bug having the same shape as that shown in Fig. 1 and Fig. 2. This form is similar to the one described above except that the shaft 2 revolves and carries the tractor rollers 5 while the cylinder 3 is fixed being attached to the body portion by means of the supports 10.

Fig. 4 and Fig. 5 show another application of my invention with certain new features, in which the body 1 is a sheet metal stamping in imitation of a turtle and is carried by the lower shell 11 which also carries the leg members 12 and 13 which are pivoted at 14 and 15 respectively. The shell 11 is supported a little ahead of its center of gravity by the shaft 2 which is fixedly connected to the shell at the ends of the shaft. The cylinder 3 is closed at both ends by the caps 4 having center holes which serve as bearings on which the cylinder revolves. A tractor roller 5 attached to the cylinder is formed of two drawn sheet metal shells identical in shape with curved lateral edges. The shells are placed face to face with a uniform space between forming a peripheral double track cam 16. The spring 8 is coiled about the shaft 2 being attached at one end to the shaft and at the other end to the cylinder 3. Arms 17 and 18 are carried by the leg members and coöperate with

the cam 16, so that rotation of the roller 5 will cause oscillation of the leg members. The space within the cylinder 3 is filled with a viscous material and the function of the friction piece described in connection with Fig. 1 and Fig. 2 is performed in this case by the offset portion of the curved shaft 2.

I prefer to use a truly viscous material such as those mentioned above, but it is obvious that there are equivalent materials not perhaps technically viscous which would give substantially the same results, the function of this element being to cling to or yield slowly before the action of the part to be retarded.

I claim as my invention:

1. In a mechanical toy, the combination with a body and a rotary element connected thereto, of a chamber within the rotary element, a fixed part within the chamber, a spring in the latter for driving the rotary element connected thereto and to the fixed part and retarding means within the chamber coöperating with the rotary element and with the fixed part.

2. In a mechanical toy, the combination with a body and a rotary element connected thereto, of a chamber within the rotary element, a fixed part within the chamber, a spring in the latter for driving the rotary element connected thereto and to the fixed part and retarding means for the rotary element consisting of a viscous body confined within the chamber in contact with the walls of the latter and with the fixed part.

3. In a mechanical toy, the combination with a body and a rotary element attached thereto, of a chamber surrounding a shaft one of which latter parts being fixed and the other forming a part of said rotary element, a spring for driving the rotary element coiled about said shaft and inclosed within the chamber, and a retarding device for the rotary element consisting of a viscous body confined within the cylinder in contact with the walls thereof and with the shaft.

4. In a mechanical toy, the combination with a body and a rotary element attached thereto, of a shaft provided with an offset portion, a chamber inclosing the offset portion of said shaft, one of which latter parts being fixed and the other forming a part of and turning with said rotary element, a spring for driving the rotary element coiled about said shaft also inclosed within the chamber and retarding means for the rotary element consisting of a viscous body confined within the chamber in contact with the walls of the latter and with the fixed part.

5. In a mechanical toy, the combination with a body and a rotary element connected thereto of a two part retarding member comprising a chamber and a frictional part therein one of said parts being fixed and the other forming a part of and turning with said rotary element, a spring also housed within the chamber and connected to the fixed part and the rotary part, and a viscous body confined within the chamber in contact with the walls of the latter and with the frictional part.

6. In a mechanical toy, the combination with a body and a rotary element connected thereto of a chamber within the rotary element, a fixed shaft extending through the chamber about which the rotary element revolves, a fixed part carried by said shaft within the chamber, a spring for driving the rotary element coiled about said shaft also arranged in the chamber and retarding means for the rotary element consisting of a viscous body confined within the body in contact with the walls of the latter and the fixed part.

7. In a mechanical toy, the combination with a body and a rotary element connected thereto, of a chamber within the rotary element, a fixed shaft extending through the chamber about which the rotary element revolves, said shaft being provided with an offset portion within the chamber, a spring for driving the rotary element coiled about the shaft also inclosed within the chamber and reacting against the shaft, and a retarding device for the rotary element consisting of a viscous body confined within the chamber in contact with the walls thereof and with the shaft.

8. In a mechanical toy, the combination with a body and a rotary element connected thereto, of a cylinder arranged to turn axially with said rotary element, said cylinder being closed at the ends forming a closed chamber, a shaft extending longitudinally through the cylinder and having bearings in the cylinder ends, said shaft being provided with an offset portion within the chamber, a spring for driving the rotary element coiled about the shaft also inclosed within the chamber and reacting against the shaft and a retarding device for the rotary element consisting of a viscous body confined within the cylinder in contact with the walls thereof and with the shaft.

9. In a mechanical top, the combination with a rotary element adapted to roll upon the ground and a body supported thereby, of a chamber within the rotary element, a fixed part within the chamber, a spring for driving the rotary element and retarding means within the chamber coöperating with the rotary element and with the fixed part.

10. In a mechanical toy, the combination with a rotary element adapted to roll upon the ground and a body supported thereby, of a chamber within the rotary element, a fixed part within the chamber, a spring in the latter for driving the rotary element connected thereto and to the fixed part and retarding means within the chamber coöperat-

ing with the rotary element and with the fixed part.

11. In a mechanical toy, the combination with a rotary element adapted to roll upon the ground and a body supported thereby, of a chamber within the rotary element, a fixed part within the chamber, a spring for driving the rotary element and retarding means for the latter consisting of a viscous body confined within the chamber in contact with the walls of the latter and with the fixed part.

12. In a mechanical toy, the combination with a rotary element adapted to roll upon the ground and provided with a chamber, of a shaft extending axially through the chamber and having bearings in the latter, a body fixed to and supported by the shaft, a spring for driving the rotary element and a retarding device arranged within the chamber to coöperate with the rotary element and with the relatively fixed shaft.

13. In a mechanical toy, the combination with a rotary element adapted to roll upon the ground and provided with a chamber, of a shaft extending axially through the chamber and having bearings in the walls of the latter, said shaft being provided with an offset portion, a body fixed to and supported by the shaft, a spring for driving the rotary element and a retarding device for the latter consisting of a viscous body confined within the chamber in contact with the walls thereof and with the shaft.

14. In a mechanical toy, the combination with a rotary element adapted to roll upon the ground, of a cylinder extending axially therethrough and having cap pieces at the ends forming a closed chamber, a shaft extending longitudinally through the chamber and having bearings in the cap pieces, said shaft being provided with an offset portion, an arch shaped hollow body or shell spanning the rotary element to cover the same and fixed to and supported by the ends of the shaft, a spring for driving the rotary element coiled about the shaft and reacting against the latter, and a retarding device for the rotary element consisting of a viscous body confined within the chamber in contact with the walls thereof and with the shaft.

15. In a mechanical toy, the combination with a body, mechanism for imparting locomotion to the body embodying a spring and a fixed part and a movable part connected thereto, of movable legs projecting from the body and connected to the said mechanism and a retarding device for regulating the action of the spring upon both the legs and the locomotive mechanism comprising a viscous material in joint contact with the aforesaid fixed and movable parts.

16. In a mechanical toy, the combination with a rotary element adapted to roll upon the ground and provided with a peripheral cam, of a body supported thereby, legs pivoted to the body, and coöperating with the cam to be actuated thereby, a chamber within the rotary element, a fixed part within the chamber, a spring for driving the rotary element and retarding means for the latter consisting of a viscous body confined within the chamber in contact with the walls of the latter and with the fixed part.

EDWARD S. SAVAGE.

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