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NOISE MAKING TOY

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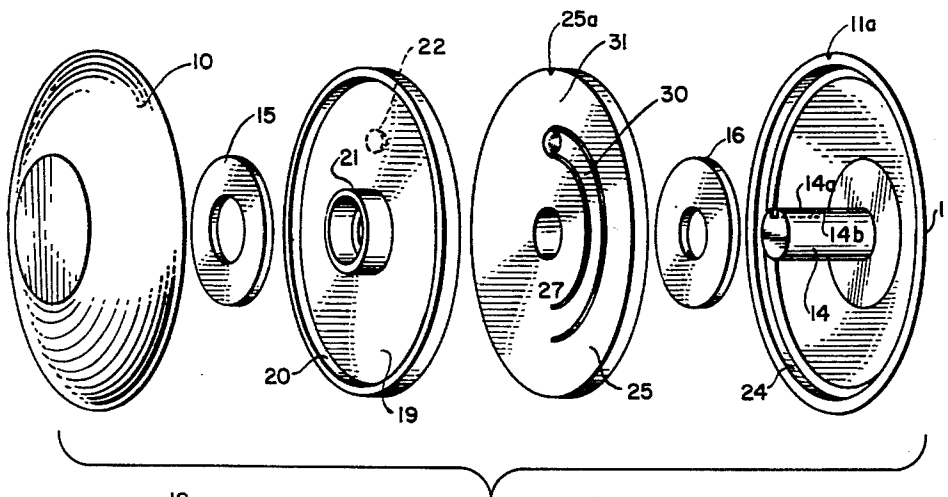


Fig. 1

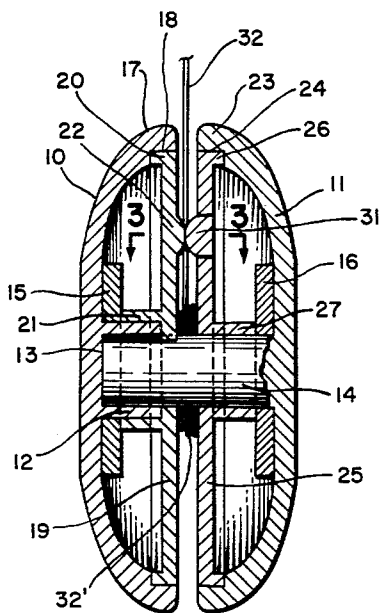


Fig. 2

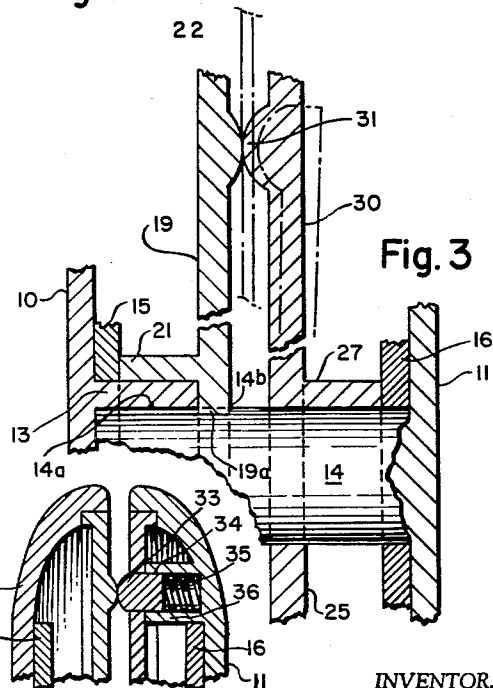


Fig. 4

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6 Claims. (Cl. 46-61)

This invention relates to toys, and more particularly to the type of toy commonly known as a Yo-yo and an improvement therein which renders the device audible during its spinning movement.

It is a primary object of this invention to provide a Yo-yo embodying a sound producing mechanism which is actuated by the spinning movement of the Yo-yo on its operating string.

Another object of the present invention is to provide an improved Yo-yo which operates as a free spinning top in the conventional manner and at the same time produces an exciting sound effect.

It is a further object of this invention to provide a Yo-yo toy which simulates in appearance and operation the conventional spinning top and also provides a sound effect by the intermittent actuation of a mechanism therein by the relative movement of the Yo-yo and the operator's string.

It is a still further object of the invention to provide an audible Yo-yo device having a diaphragm mechanism and a striking member which is actuated by the spinning movement of the device on the operating string.

Still another object of the invention is to provide an audible Yo-yo toy having an interior anvil and spring-tensioned hammer member which are actuated by the relative movement of the Yo-yo and operating string.

Another object of the invention is to provide an audible Yo-yo spinning top having flexibly mounted, normally engaging sound-producing members centered in the grooved portion thereof in a manner to be intermittently actuated by the relative spinning movement of the Yo-yo and the winding action of the operating string.

Yet another object of the invention is to produce a Yo-yo having inner diaphragms forming the grooved portion thereof, one of which diaphragms has a tensioned hammer thereon, with another diaphragm providing a vibrating member for magnifying the sound effect created by the intermittent actuation of the hammer due to the relative movement of the winding operating string and spinning of the top.

The novel features which are believed to be characteristic of the present invention, both as to its apparatus and method of operation, together with other objects and advantages thereof, will be better understood from the following description considered in connection with the accompanying drawing in which a presently preferred embodiment of the invention is illustrated by way of example. It is to be expressly understood, however, that the drawing is for the purpose of illustration and description only, and is not intended as a definition of the limits of the invention.

Figure 1 is a perspective, schematic view of applicant's device prior to assembly;

Figure 2 is a vertical sectional view of the assembled Yo-yo;

Figure 3 is an enlarged partial sectional view of the assembled mechanism and sound-producing means; and

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Figure 4 is a partial view in vertical cross section of a modification of the sound-producing mechanism.

A preferred embodiment of the invention comprises dual, substantially spheroidal Yo-yo casing or cover members 10 and 11, respectively. In outer configuration these cover members 10 and 11 are identical, and they only differ slightly insofar as their inner structure is concerned. Casing or cover 10 is preferably molded from one of the numerous commercially available synthetic resins, such as polystyrene, and has projecting inwardly thereof a short hub 12, bored or recessed at 13 to receive the cylindrical aligning pin or member 14 which is initially formed or cast with the beforementioned opposing plastic cover 11. Balancing weighted washers 15 and 16 are fitted on the hub 12 and aligning member 14, respectively, immediately adjacent the inside surfaces of covers 10 and 11, respectively.

The outer edge 17 of cover 10 has an encircling, inner notched portion 18 which is adapted to receive in either a press fit or cemented relationship, the plastic diaphragm generally referred to as 19. Diaphragm 19 has a slightly enlarged or extended circular edge portion 20 which is suitably attached in the encircling notch 18 of cover member 10. A laterally projecting hub 21 on diaphragm 19 is journaled on the inwardly projecting, somewhat smaller hub portion 12 previously described. A nub or nipple 22 is molded into the inner face of diaphragm 19, which actually forms one side of the deep groove in the toy.

The outer edge 23 of cover or casing member 11 also has an encircling, inner, notched portion 24, which in turn is adapted to receive plastic diaphragm 25 that has an extended circular outer edge 26 which is suitably fitted in or cemented to the notched portion 24.

Struck from, or initially molded into the face of diaphragm 25 is an arcuate portion 30 which not only has the flexibility of the plastic material from which it is fabricated, but also the spring action attending its particular mounting in the diaphragm 25 itself. The length of the arcuate spring element 30 will vary the strength of the spring action desired. Molded with, or attached to the end of arcuate spring 30 is an inwardly projecting hammer or striking member 31. The nub or nipple 22 and hammer 31 are normally in engagement in tensioned manner, with their engaging faces centrally disposed in the Yo-yo's deep groove, directly in the path of the winding string 32 which is attached at its inner end to the aligning pin or member 14. The outer end of the string obviously is held in the operator's hand or encircles his finger.

A modification of the spring-actuated hammer or striker mechanism 31 is shown in Figure 4. In this instance the hammer or striker comprises a projecting lug 33 that is slideable through an opening 34 formed in the face of diaphragm 25, and is spring-loaded by means of a spring 35 carried in the housing 36 integrally molded on the inner face of cover member 11. The spring-loaded hammer 33 engages nipple 22 in exactly the same manner as previously described with respect to hammer 31. The exact structural arrangement of striking parts on one side or another is immaterial as long as they are in aligned tensioned engagement.

Operation of the device is extremely simple. Spinning of the Yo-yo and winding of the string 32 in the deep groove portion results in the intermittent actuation of the spring-tensioned hammer 31 against the nipple 22. The fast winding string and spinning top causes a snapping action of the striking mechanism, which creates a sharp intermittent attack of the hammer 31 against the nipple 22 on diaphragm 19. The sound resulting from this rapid striking action is produced in magnified volume by the vibratory effect of plastic diaphragm 19,

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The unusual gyrations of the spinning top, together with the exciting sound, makes this device not only an improved, but an entirely different toy. The disposition of nipple 22 and hammer 31 centrally of the deep groove and away from the winding string insures a substantially level string-winding mechanism and prevents bunching of the string on either side.

There are several critical factors involved in the concept of the invention disclosed herein. The adjacent faces of diaphragms 19 and 25 must be so spaced that the nipple 22 and hammer 31 are normally in contact. Also, the diameter of the pin 14, spacing between diaphragms 19 and 25, and the inner extremity of spring 30 must be such that sufficient space is provided within the device to permit the string 32 to assume the coiled configuration shown in Figure 2 without this coil being in pressure contact with spring 30 whereby nipple 22 and hammer 31 are separated. Should nipple 22 and hammer 31 be separated a distance greater than the thickness of string 32 for the above reason, the invention would be rendered inoperative insofar as noise making is concerned, until the coil 32' is sufficiently reduced in diameter that it no longer contacts spring 30.

Although two washers 15 and 16 are shown herein as a means of adding weight to the invention, it will be apparent that this is their only function. The weight necessary to cause the assembly as shown in Figure 2 to rotate and climb back up string 32 may be provided by other means, such as cover members 10 and 11 of sufficient weight, or the use of a weighted pin 14. When such other weight means are employed, the washers 15 and 16 can, of course, be eliminated without in any way changing the operation of the invention as above described.

To assure proper alignment of the hammer 31 or lug 33 with nipple 22 in assembling the invention, it has been found convenient to form notches 25a and 11a on the circumferential edge portions of diaphragm 25 and member 11, respectively. A slot 14a is formed in pin 14 and extends longitudinally in the exterior surface thereof from the free end of the pin to a point 14b thereon. Notch 11a and slot 14a are in a common plane that passes through the longitudinal axis of pin 14. In the assembly of diaphragm 25 and member 11, notches 11a and 25a are disposed in aligned positions.

Diaphragm 19 (Figure 3) has a narrow, inwardly extending tooth 19a formed as a part thereof that is in radial alignment with nub 22, and this tooth is adapted to slidably engage slot 14a. Unless tooth 19a so engages the slot 14a, it is impossible to assemble the invention in the form shown in Figures 2, 3 and 4. Thus, it is impossible to so assemble the invention that the hammer 31 or lug 33 will be out of alignment with nub 22.

When the alternate form of the invention is used, the notch 11a, slot 14a, and the longitudinal centerline of housing 36 are all in the same common plane. Likewise in the alternate form, notch 25a and the center of opening 34 are in radial alignment. Although other means may be employed for proper assembly of the preferred and alternate forms of the invention, those above described have been found most convenient.

It will be obvious to those skilled in the art that various changes may be made in the invention, without departing from the spirit and scope thereof, and therefore the invention is not limited by that which is shown in the drawing and described in the specification, but only as indicated in the appended claims.

I claim:

1. A noise making toy comprising: a first cover member having an integrally formed, outwardly projecting peripheral edge portion and a first centrally disposed hub; a second cover member of the same size as said first cover member that also has an integrally formed, outwardly projecting peripheral edge portion as well as a centrally disposed pin that engages said first hub to hold

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said first and second members together, with said peripheral edge portions thereof being in adjacent transversely spaced relationship; a first resilient diaphragm that has the circumferential edge portion thereof in abutting contact with said peripheral edge portion of said first member, which first diaphragm has a first centrally disposed bore formed therein and a second hub in axial alignment with said bore, which second hub engages said first hub, with said pin extending through said bore; a second resilient diaphragm that has the circumferential edge portion thereof in abutting contact with said peripheral edge portion of said second member, said second diaphragm being formed with a centrally disposed second bore and a third hub in axial alignment with said second bore through which said pin extends, with said second diaphragm being transversely spaced from said first diaphragm; transversely movable noise making means supported from said second diaphragm, said noise making means normally being in forceful contact with said first diaphragm; and a string affixed to said pin that may wind on or unwind therefrom as said toy rotates, said string being narrower than said transverse spacing between said first and second diaphragms, which string momentarily separates said noise making means from said first diaphragm each time said top completes one revolution, and said noise making means making a noise each time said noise making means returns into forceful contact with said first diaphragm.

2. A noise making toy as defined in claim 1 wherein said noise making means is a spring-loaded striker that is at all times urged into contact with said second diaphragm.

3. A noise making toy as defined in claim 1 wherein said noise making means is an elongate portion of said second diaphragm that can pivot transversely relative thereto, and a hammer is provided that is mounted on the free extremity of said elongate portion, with said hammer at all times being urged into contact with said first diaphragm.

4. A noise making toy as defined in claim 1 wherein said noise making means comprises a tubular housing that extends toward said first diaphragm from said second cover member and is in axial alignment with a bore formed in said second diaphragm, a cylindrical striker is slidably mounted in said housing, and a compressed helical spring is mounted in said housing that is in contact with said striker and continuously urges same to move in a direction to contact said first diaphragm.

5. A noise making toy as defined in claim 1 wherein said first diaphragm is provided with a projecting tooth and a nub that is contactable by said noise making means, and said pin has a longitudinally extending slot formed therein that is slidably engaged by said tooth to prevent rotation of said first diaphragm relative to said pin to maintain said nub in alignment with said noise making means.

6. A noise making toy as defined in claim 1 wherein first and second weighted washers are provided which increase the kinetic energy of said toy when same is rotating, with the first of said washers being mounted on said first hub and disposed between the interior surface of said first cover member and the outer end of said second hub, and said second washer being mounted on said pin positioned between the free end of said third nub and the interior surface of said second cover member.

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