Nov. 10, 1964 J. H. NELLIGAN 3,156,068

RETURN TOP HAVING CONICAL APERTURES FOR PRODUCING SOUND

Filed Sept. 8. 1961

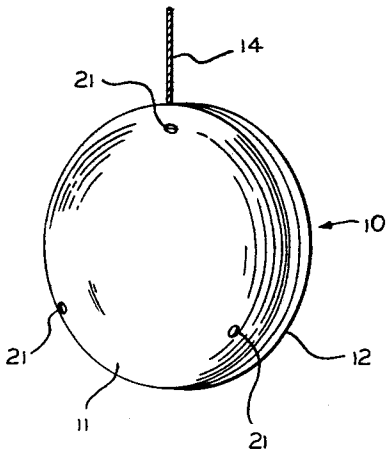


FIG.1

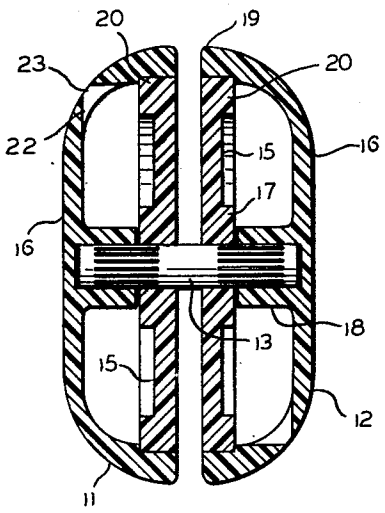


FIG.2

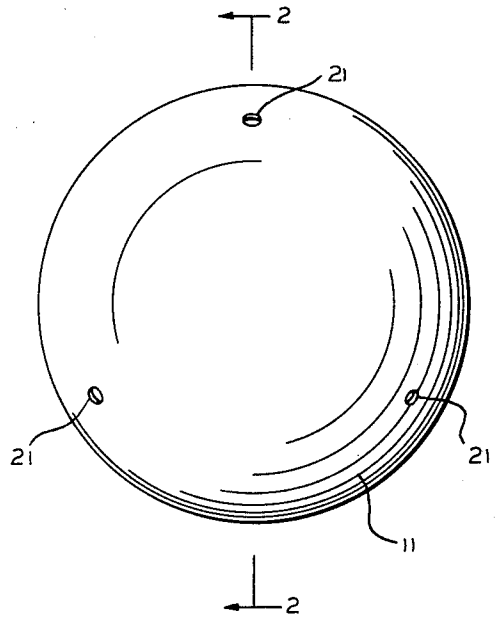


FIG.3

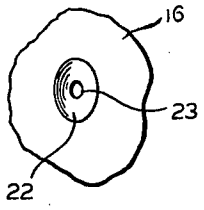


FIG.4

INVENTOR.

JAMES H. NELLIGAN

United States Patent Office 3,156,068 Patented Nov. 10, 1964

3,156,068

RETURN TOP HAVING CONICAL APERTURES FOR PRODUCING SOUND

James H. Nelligan, Luck, Wis., assignor to Donald F. Duncan, Inc.

Filed Sept. 8, 1961, Ser. No. 137,946
2 Claims. (Cl. 46—61)

The present invention is directed to new and useful improvements in return tops of the type sold in the trade under the trademark "Yo-Yo."

This general type of top is characterized by a pair of half sections which are held together by an axle. Spinning of the top is accomplished by a string attached to the axle of the two sections. The major purposes of the present invention are to effect improvements in noise making facilities for tops of this type as well as to facilitate the fabrication of such tops, these and other purposes being more apparent in the following specification and claims, when taken with the accompanying drawings in which:

FIGURE 1 is a perspective view of the top embodying the present invention;

FIGURE 2 is a sectional view of the top illustrated in FIGURE 1, the section being taken on line 2—2 of FIGURE 3;

FIGURE 3 is a front view of the top illustrated in the FIGURES 1 and 2; and

FIGURE 4 is a diagrammatic view illustrating a portion of the top illustrated in FIGURES 1, 2 and 3.

Like elements are designated by like characters throughout the specification and drawings.

With particular reference now to the drawings and in the first instance to FIGURE 1, the numeral **10** generally designates a return top which is comprised of a pair of substantially identical half sections **11** and **12** held together by an axle or pin **13**. The two half sections are so shaped as to present outwardly convex surfaces, and when assembled on the pin **13**, they define a generally elliptical shape, as is best seen in FIGURE 2. A string **14** is fixed to the pin **13** so that the string may be wound about the pin **13** to allow subsequent spinning of the top by pulling on the string in a manner well known to the art.

In accordance with the invention, each of the half sections **11** and **12** is formed from a pair of molded members. An inner plate-like member **15** provides the inner face of the half section and an outer member **16** provides the outer face of each half section. Plate-like member **15** includes a hub **17** formed around the axis thereof and the outer member **16** includes an inwardly directed hub **18** formed about its axis. The plate-like inner members **15** have a diameter such that they are received within the inwardly facing ends **19** of the outer member **16**. The peripheral edge of member **15** may be secured to the inner surfaces of the outer member **16** by any suitable means as by plastic welding or through use of adhesives.

The hubs **17** and **18** are adapted to abut against one another as appears in FIGURE 2. The hub **17** has an aperture formed therein for alignment with a recess in the hubs **18** so that the pin or axle **13** may be received therethrough. The opposite end portions of the pin or axle **13** are provided with a series of grooves so as to present a roughened surface to hold the pin within the hubs **17** and **18** by frictional engagement therewith.

The axle **13** has a length such, with relation to the dimensions of the holes in the hubs, that the two half sections of the top are held in spaced apart relation, as appears in FIGURE 2, when the pin **13** is fitted within the hubs.

The inner plate-like members **15** may include a peripheral flange **20** to provide an enlarged bearing surface which abuts against the inner surface of the outer members at the ends thereof.

As thus defined, each of the half sections **11** and **12** provide internal chambers of rather substantial volume extending around the axis of the pin **13**.

Each of the outer members **16** has a plurality of apertures **21** drilled through the wall thereof along lines which are generally radial with respect to the minor curve of the elliptical form of the half sections or, in other words, perpendicular to a tangent to the curved end portions of the sections. The axis of these apertures is directed along a line in intersecting relation to the axis of the pin **13** while being inclined thereto and inclined to the inner faces of the half sections. These apertures are thus located near the peripheral ends **19** of the half sections.

Before the inner and outer members of the half sections are assembled together, the inner surfaces of the outer members **16** next to the apertures **21** are beveled as at **22**. This beveling may be performed by a counter sinking tool thus providing a rather well defined sharp edge **23** surrounding each aperture. As will be noted in the drawings, the beveled surfaces have the form of a right cone with its axis coincident with the axis of the associated aperture.

Each half section is provided with a plurality of apertures so formed. It is advantageous to utilize three such apertures **21** as appears in FIGURE 1, with the three apertures in each section being spaced apart by an angle of 120° with respect to the axis of the pin **13**.

In use, the player spins the top **10** through manipulation of the string **14** in the well known manner. At average or above average spinning speeds the top emits a pleasing whistling sound. The apertures, when formed in the manner herein illustrated and described, provide a distinct and relatively loud sound. In theory, it can be assumed that the whistling sound is accomplished by movement of air into and out of the internal chambers of the half sections **11** and **12** and past the sharp edges surrounding the several apertures. One aperture alone will not produce a whistling sound of the plural apertures and for this reason it appears that the whistling sound is produced by movement of air into and out of the internal chambers of the half sections and past the sharp edges of the apertures.

The pitch of the whistling sound may be varied by varying the number of apertures in each half section and by varying the size of the apertures. A dual pitch whistling sound can be accomplished by providing a different number of apertures in the two half sections **11** and **12**.

The top is fabricated advantageously through the use of the inner and outer members of each half section. In this connection the inner and outer members are easily molded, then drilled to provide the apertures and then simply press fitted over the pin **13**. The press fitting is sufficient to hold the several members in the assembled position illustrated in FIGURE 2 although if desired the inner and outer members of each section may be fixed together as by suitable adhesives or by welding plastic at the adjoining surfaces of the members.

It is advantageous to employ apertures having the size and proportions illustrated in the drawings. The apertures, at the outer surface of the half section, are preferably .150 inch in diameter. Two, three or four apertures of the size illustrated in the drawing may be used for the whistle producing effect. In this connection one hole alone will not produce the effect, while more than four holes of the size and proportions illustrated in the drawings decrease the whistle effect.

Whereas I have shown and described an operative form of the invention, it should be understood that this show-

ing and description thereof should be taken in an illustrative or diagrammatic sense only. There are many modifications in and to the invention which will fall within the scope and spirit thereof and which will be apparent to those skilled in the art. The scope of the invention should be limited only by the scope of the hereinafter appended claims.

I claim:

1. A whistling return top including a pair of substantially identical half sections, each half section being defined by a wall having an outer convex surface and an inner plate-like portion joined to the periphery of said wall, each half section including a chamber extending around the axis of each half section and between the plate-like portion and said wall, at least one half section including at least two apertures directed through the outer surface, each aperture being directed along an axis in intersecting relation to the axis of each section while being inclined thereto, each of said apertures having a generally right conical form with the conical axis thereof

generally coincident with its axis of direction, the smaller diameter of the aperture being at the outer surface of said wall to thereby provide a relatively sharp edge around each aperture at the outer surface, said apertures being spaced from each other and located near the peripheral rim of said half section, whereby upon spinning of the two half sections, air may pass into and out of said chamber through said apertures for a noise-producing effect.

2. The structure of claim 1 wherein each half section has at least two similarly formed apertures spaced about the axis thereof.

References Cited in the file of this patent

UNITED STATES PATENTS

2,015,649	Amell	Oct. 1, 1935
2,629,202	Stivers et al.	Feb. 24, 1953
2,645,881	Frangos	July 21, 1953
2,940,212	Bond	June 14, 1960