Feb. 7, 1967 F. D. RUBIO 3,302,322

WHIRLING TOY

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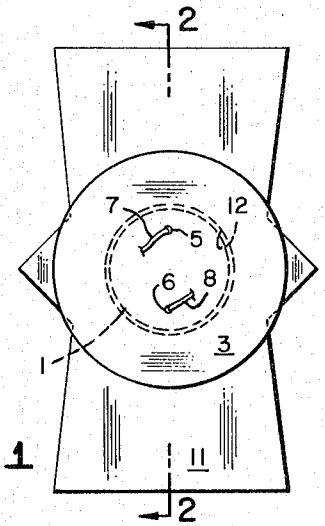


FIG. 1

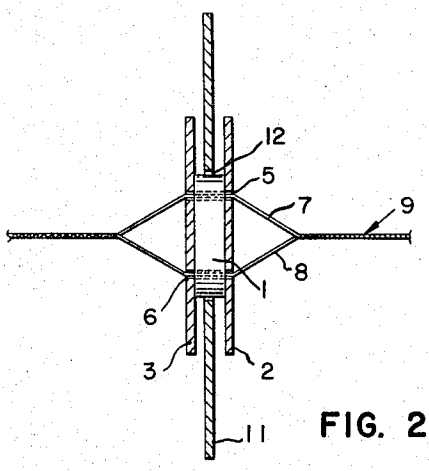


FIG. 2

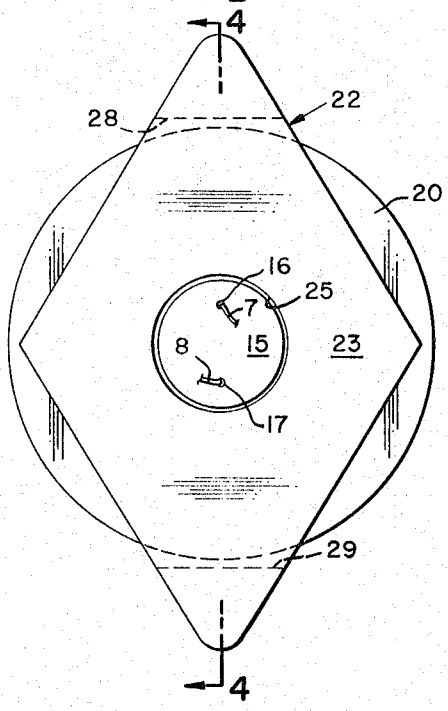


FIG. 3

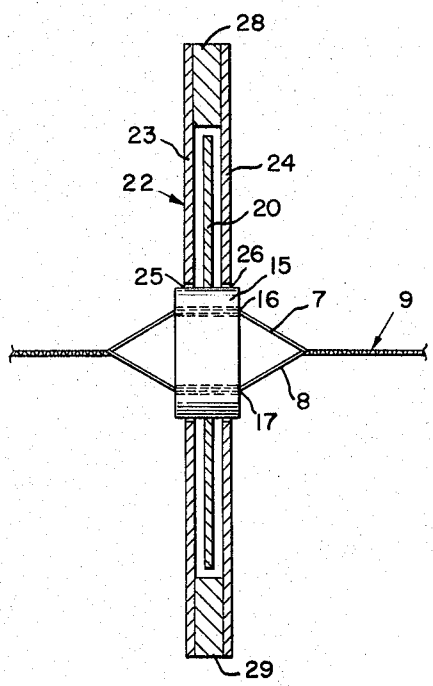


FIG. 4

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WHIRLING TOY

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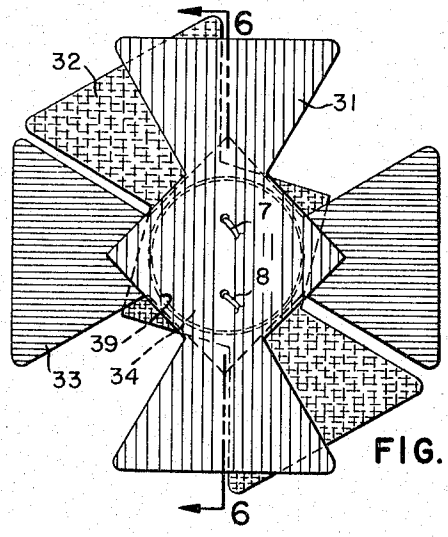


FIG. 5

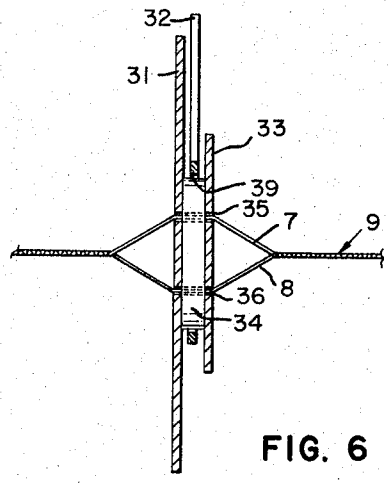


FIG. 6

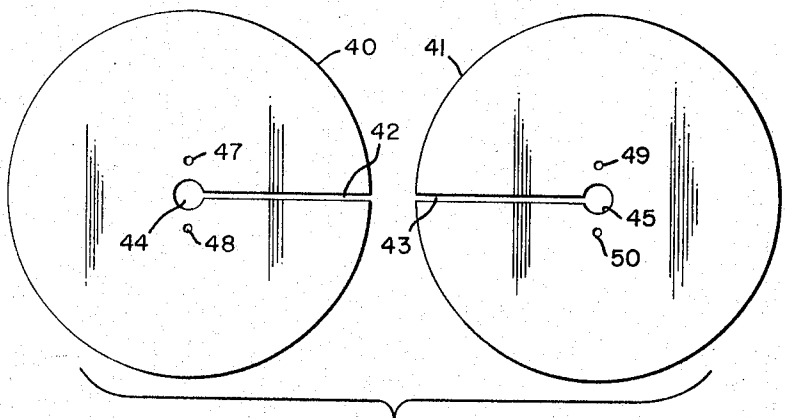


FIG. 7

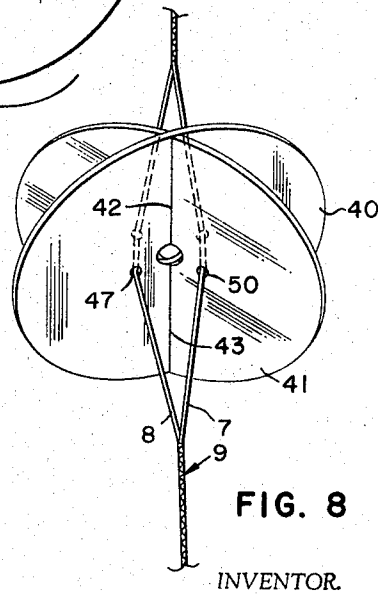


FIG. 8

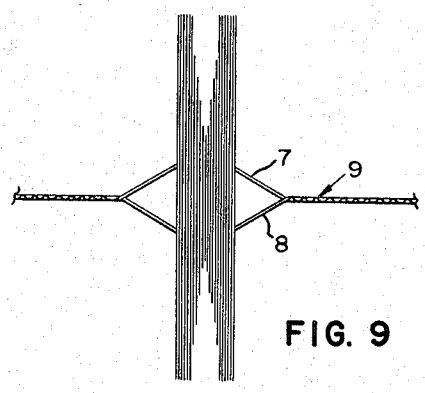


FIG. 9

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WHIRLING TOY

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1 Claim. (Cl. 46—62)

This invention relates to whirling toys of the type wherein a rotor is rotated at high speed in opposite directions successively by means of a loop of cord or the like which includes a pair of opposed lengths which are passed through parallel bores in the rotor. An example of the type of toy on which the present invention is an improvement is shown in U.S. Patent No. 2,595,990 to Steiner, dated May 6, 1952.

The general method of operation of the type of toy involved herein is well known and briefly involves the use of a rotor of some sort rotated at high speed by means of a loop of a string which is twisted so that when it is alternately tensioned and relaxed the twist of the string reverses and causes reversal of the direction of rotation of the rotor.

The main object of the present invention is to generally improve the toys of this character by providing a more interesting and enjoyable effect than has heretofore been possible with prior art devices of like nature.

Another object of the invention is the provision of a whirling toy which is extremely inexpensive to manufacture and which gives a unique and pleasing sound effect to enhance the enjoyment of the toy.

Another object of the invention is the provision of a novel combination of whirling members contributing to form a rotor which changes in color as the rotation of the toy is reversed. In this connection, by the present invention a wide variety of different colors may be achieved with only two or three elements composing the rotor as distinguished from more complicated devices involving a plurality of elements and which do not provide the variety of color provided by the present invention.

Yet another object of the invention is the provision of a whirling toy which is formed to provide a pair of relatively deflectible members constituting a rotor and which members deform to a different shape while rotating at high speed.

Other objects and advantages of the present invention will be apparent from the following specification and from the drawings wherein:

FIG. 1 is a side elevation of one form of the invention.

FIG. 2 is a vertical cross section taken in a plane indicated by lines 2—2 of FIG. 1.

FIG. 3 is a side elevation of another form of the invention.

FIG. 4 is a vertical cross section taken in a plane indicated by lines 4—4 of FIG. 3.

FIG. 5 is a side elevation of still another form of the invention.

FIG. 6 is a vertical cross section taken in a plane indicated by lines 6—6 of FIG. 5.

FIG. 7 is an exploded view showing the two portions of another modified form of the invention.

FIG. 8 is a perspective of the assembly of the two portions of FIG. 7 in combination with the two opposed lengths of a loop of cord.

FIG. 9 is an end elevation of the assembly of FIG. 8 showing the assembly whirling with the two portions thereof deflected to closely adjoining relationship.

In detail, and first with reference to FIGS. 1 and 2, one form of the invention comprises a central hub 1 having a circular periphery and to the opposite ends of which are fixedly secured a pair of circular disks 2, 3 respectively (FIG. 2). A pair of through bores 5, 6 are formed

through both the central hub 1 and the disks 2, 3 and through which bores the opposed lengths 7, 8 of the cord generally designated 9 are passed.

At this point it will be noted that the combination of the central hub 1 and the disks 2, 3 constitute a rotor which can be rotated at a high speed in opposite directions by manipulation of cord 9 in the well known manner. Hub 1 and disks 2, 3 being integrally connected together would constitute an elementary form of the type of toy herein involved. By the present invention enjoyment of the toy is enhanced by the provision of a central member 11 which is preferably considerably larger than the disks 2, 3 and may be shaped in almost any shape desired; the shape shown in FIG. 1 being only an example. The central member 11 is provided with a central hole 12 which is slightly larger than the outside diameter of the hub 1 so that the member 11 may rotate relative to the hub 1 and, of course, relative to the disks 2 and 3 that are fixedly secured relative to hub 1.

In operation of the device shown in FIGS. 1 and 2 rotation of the toy in the usual manner causes the central member consisting of hub 1 and disks 2 and 3 to rotate carrying the central member 11 with them. However, upon reversal of the hub 1, the member 11 tends to overrun and thus move in a direction opposite to the movement of the central portion of the rotor. As best seen in FIG. 2, disks 2, 3 are spaced apart sufficient distance to loosely receive the member 11 therebetween so that upon reversal of the toy the member 11 strikes against the sides of disks 2, 3 thereby causing a rattling sound very similar to the sound of a rattlesnake. Although the elements of the device of FIGS. 1 and 2 may be made of pressed paperboard or like inexpensive material, it is preferably made of a colorful plastic having good wearing qualities.

The particular method of securing hub 1 to disks 2, 3 is not critical and a good adhesive may be employed. However, if a stronger structure is desired small diameter extensions of hub 1 may be passed through complementarily formed holes in disks 2, 3 to further enhance the strength of the assembly.

Another form of the invention is shown in FIGS. 3 and 4 wherein a central hub 15 is provided having a pair of bores 16, 17 formed therethrough for receiving the cord lengths 7, 8. Fixedly secured to the periphery of the hub 15 is a relatively large central circular disk 20 which of course rotates with the central hub 15 as the latter is actuated by cord 9.

Rotatably mounted on the hub 15 is an exterior rotor generally designated 22 which consists of a pair of spaced apart opposed sideplates 23, 24 provided with central apertures 25, 26 respectively for rotatably supporting plates 23, 24 on central hub 15. A pair of spacers 28, 29 are secured between opposite plates 23, 24 at points outwardly of the periphery of the central disk 20 so that the rotor 22 rotates as a unit relative to the central hub 15.

In operation the device of FIGS. 3, 4 is similar to that of FIGS. 1 and 2 except that the outer rotor 22 rotates relative to the inner disk 20 which is fixed relative to central hub 15. The result is that upon reversal of rotation of the device the sides 23, 24 strike the rotor 20 thus causing a rattling sound which varies in pitch with the speed of rotation of the device.

Another form of the invention is shown in FIGS. 5 and 6 wherein three members 31, 32, 33 of substantially identical shape are employed. These members may be generally elongated but are reduced in cross sectional extent adjacent their central portions to provide a greater amount of material at the periphery to enhance the speed

of rotation. It will be understood, however, that the particular shape of the members is not critical.

Member 32 is interposed between members 31 and 33 as best seen in FIG. 6 and the outer members 31, 33 are fixedly secured to opposite ends of a central hub 34. Bores 35, 36 are formed through central hub 34 and the outer members 31, 33 for receiving therethrough the opposite lengths 7, 8 of the string 9. As stated above, the members 31, 33 are generally elongated and are preferably positioned with their long dimensions at right angles to each other so that major portions of the areas of both members are visible from one side of the toy. The central member 32 has substantially the same shape as outer members 31, 33 except it is provided with a central opening 39 for receiving the central hub 34 therein so that member 32 is rotatably supported relative to said central hub and relative to the outer members 31, 33.

In operation of the device of FIGS. 5 and 6, the shifting of the central member 32 relative to the outer members 31, 33 when the direction of the toy is reversed results in the central member having different proportions of its total area visible to the viewer from one end of the toy. If the members 31, 32 and 33 are of different color as indicated in FIG. 5 the result is that a variation in color of the overall toy results upon each reversal. If, for example, the outer members 31, 33 are blue and red as indicated and the central member 32 is yellow, a color resulting from the combination of blue and red, i.e. purple, will result when the central member 32 is disposed entirely behind member 31. If, on the other hand, central member 32 completely obscures member 33 then the combination resulting from a combination of yellow and red, that is orange, will result. As the central member 32 assumes different positions intermediate said two mentioned positions the resulting color is one intermediate the two mentioned combined colors. This automatic provision of different colors enhances greatly the enjoyment of the toy.

Another form of the invention is shown in FIGS. 7, 8 and 9. In this case a pair of disks 40, 41 of identical shape are provided with radially extending slots 42, 43 respectively and with central apertures 44, 45 so that the two disks may be brought together into perpendicularly intersecting relationship as shown in FIG. 8. Holes 47, 48 are formed in disk 40 on opposite sides of the central aperture 44 and disk 41 is similarly provided with holes 49, 50. These smaller holes receive the opposite lengths 7, 8 of the cord 9 therethrough so that when the assembly is assembled as shown in FIG. 8 the device may be rotated at a high speed. In FIG. 9 there is shown schematically the result of such rotation. Since the heavy areas of the disks 40, 41 are normally fairly close to the

cord 9, they tend to move radially outwardly due to centrifugal force when the toy is rotated at high speed. The result is that the rather wide structure shown in FIG. 8 becomes extremely narrow as shown in FIG. 9 when the device is rotating at high speed. However, when the reversal of direction takes place the device returns to its shape of FIG. 8. It will be understood that the material of disks 40, 41 need not necessarily be flexible because the effect above described results from the two disks hinging about the diameter on which slots 42, 43 are disposed. The result is that although the disks tend to remain with their planes at right angles to each other in a position of rest as shown in FIG. 8 the hinging effect above described results in the disks swinging toward each other at their outer ends when the toy is rotating at high speed.

It will be apparent that the invention provides an extremely entertaining toy without the expense inherent in many of the prior devices in which somewhat similar objects are sought to be achieved. In each embodiment of the invention the described structure may be made at an extremely low cost since the elements employed and the method of assembly are simple.

The very specific description given of the preferred forms of the invention should not be taken as restrictive as it will be apparent that various modifications in design may be resorted to by those skilled in the art without departing from the scope of the following claim.

I claim:

A whirling toy comprising:

a pair of circular disks each provided with a radially extending slot permitting said disks to be interfitted along a common diameter and with the planes of said disks perpendicular to each other,

said disks each being provided with a pair of holes respectively spaced from the center of each disk and with one length of a loop of cord passed through a pair of holes respectively on a pair of adjacent semicircular portions of said disks and with the other length of said loop of cord passed through the holes in the other pair of adjacent semicircular portions of said disks.

References Cited by the Examiner

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