

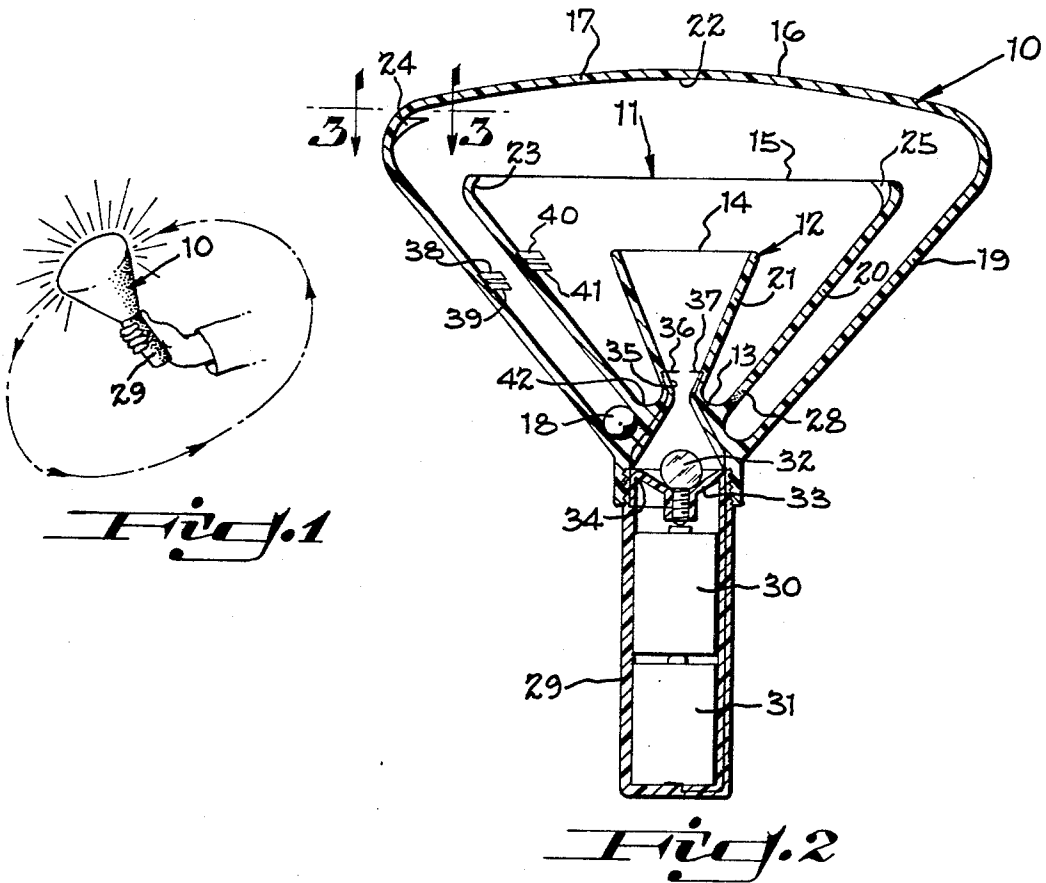
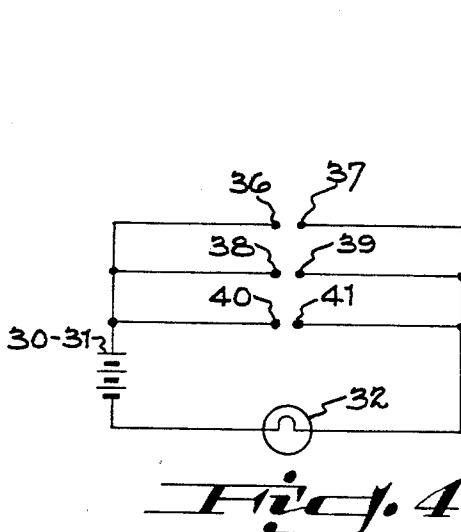
July 9, 1968

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3,391,935

ILLUMINATING BALL PROJECTOR-CATCHER

Filed March 7, 1966



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3,391,935

ILLUMINATING BALL PROJECTOR-CATCHER

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Filed Mar. 7, 1966, Ser. No. 532,259
7 Claims. (Cl. 273-95)

This invention relates to an amusement device. More particularly, this invention relates to an amusement device which is to be gyrated by hand, the gyratory movement permitting a ball to be rotated within an outer receptacle and to be projected inwardly toward an inner receptacle.

The prior art

There are, of course, many hand held spinning and whirling devices known in the prior art which depend on the centrifugal force caused by their gyration to produce the device's play or amusement value. For example, toys are known which provide a circular runway around which a ball may be made to travel through gyration of the runway itself, the ball being maintained in operational relationship with the runway through centrifugal force. Also, toys are known which provide a cup that is flexibly secured to a base. A ball is placed in the cup and, through centrifugal force brought about by gyratory movement of the base, may be made to run up and down the walls of the cup while rotating therein.

These types of devices may be generally classed as toys only, there being no particular skill or game involved with their use and their appeal being directed primarily toward youngsters.

There are also many different types of aerial projectile devices where the projector and catcher, or the projector and target, are integrated into one device or game. For example, it is known to secure a post within an enclosure, the post being somewhat less in height than the height of the enclosure and having arms upwardly protruding from its free end. A ball is placed in the enclosure and the objective is to put the ball on the top of the post, between the arms, by random movement or manipulation of the enclosure.

The invention

The amusement device according to the present invention contemplates the combination of a plurality of nested receptacles, and a ball adapted to move from the outer receptacle to the inner receptacle. The receptacles, in their operative position, flare upwardly and outwardly and are maintained in the nesting position, while having their side walls spaced from each other, by structure which join their lower portions together.

The spacing between the side walls of the receptacles, though not critical, must be sufficient to allow movement or rotation of the ball between them. Also, the top portion of the inner receptacle is open at its upper or top end and is downwardly spaced below the top portion of the outer receptacle a distance greater than the diameter of the ball. The outer receptacle may be provided with a dome or cover for its top end to keep the ball within the receptacles.

Fixed to the upper end of each outer receptacle is at least one deflector ramp. The deflector ramp protrudes inwardly, toward the center of the device, and has at least one curved surface which cooperates with the side wall of the receptacle to engage the ball and project it inwardly. That is, as the ball rotates about the inner surface of an outer receptacle, it eventually engages, and moves up and over, the ramp surface, the ramp projecting the ball inwardly toward an inner receptacle.

Any intermediate receptacles, i.e., those between the inner and outer receptacles, may be provided with escape

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holes to further enhance the game aspects of the invention for other than youngsters. The escape holes are sufficiently large and situated so that, when the ball is in an intermediate receptacle and gyration of the device stops, the ball may pass through the escape hole back to the outer receptacle.

The device also may be provided with a battery, a light bulb, and contacts placed about the surfaces of the receptacles about which the ball rotates. As the ball rotates over a pair of contacts, it would momentarily close an electrical circuit, thereby causing the light to flash. The flashing light gives the device a pleasing effect and enhances its attractiveness to youngsters.

It has been an objective of this invention to provide an amusement device which integrates attributes of both toys and games into one device, thereby providing an amusement device which may be attractive to any age group.

It has been another objective of this invention to provide an amusement device which may be held and operated in one hand.

It has been yet another objective of this invention to provide an amusement device wherein a ball is employed within a series of receptacles, the ball moving from receptacle to receptacle upon gyration of the device.

It has been a further objective of this invention to provide an amusement device of the type having a ball within a series of receptacles wherein ramps are provided on the outer receptacles, the ramps being engageable with the ball to project it inwardly toward the inner receptacles.

It has been still another objective of this invention to provide an amusement device of the type having a ball within a series of receptacles wherein there is provided a battery and light bulb for effecting a pleasing light effect during operation of the device.

It has been yet a further objective of this invention to provide an amusement device of the type having a ball within a series of receptacles, the device being provided with a battery and the receptacle walls being provided with a series of contacts whereby a light is made to flash upon rotation of the ball over the contacts.

The above mentioned, as well as other objectives and advantages of the present invention, will be more readily apparent from the following detailed description of the drawings which illustrate the preferred embodiment of the invention.

The detailed description

In the drawings:

FIGURE 1 is a diagrammatic view of the way in which it is contemplated the amusement device of this invention be used,

FIGURE 2 is a cross sectional view of the amusement device formed in accordance with the principles of this invention,

FIGURE 3 is a cross sectional view taken along lines 3-3 of FIGURE 2,

FIGURE 4 is a wiring diagram of the circuit employed in the amusement device.

As can readily be observed from FIGURE 2, the preferred embodiment of the amusement device contemplated by this invention includes, in nesting position, an outer cone or receptacle 10, an intermediate cone 11, and an inner cone 12. The cones, in their operative or nesting position, flare upwardly and outwardly with their apexes joined together as at 13 to form a unified structure. Each of the three cones has a top or upper end portion 14, 15 and 16 respectively, the upper ends 14, 15 of the inner cone and the intermediate cone being open and downwardly spaced, in step like fashion, from the upper end 16 of the outer cone. The outer cone 10 is provided with a dome or cover 17 secured to its upper end 16 which

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encloses the inner cones 11, 12 within the outer cone 10. A ball 18 is also provided which rotates within the nested receptacles during operation of the device. The cones and dome are preferably formed of a transparent plastic material such as, for example, polystyrene. The ball is preferably of a heavy material such as, for example, steel.

While distances are not critical in the device, certain minimum criteria must be observed. The distance between walls 19, 20, and 21 of the inner cone 12, intermediate cone 11, and outer cone 10 must be greater than the diameter of the ball so that the ball may freely rotate between them when the device is gyrated. Also, the distance between underside 22 of the dome and rim 23 of the intermediate cone must also be greater than the diameter of the ball so that it may be projected inwardly.

The outer cone 10 and the intermediate cone 11 are each provided with a deflector ramp 24, 25 on their upper ends 16, 15 which project inwardly, as generally seen from FIGURE 2. The ramps 24, 25 are provided with two, oppositely flaring, curved surfaces 26, 27, as seen from FIGURE 3, each of which merges into walls 19, 20 of the cones 10, 11 in such manner that a ball rotating about the walls may be engaged by the ramp and projected inwardly toward an inner cone. The oppositely flaring curved surfaces 26, 27 on the ramps 24, 25 are provided to allow the ball to be projected inwardly whether it engages the ramp from a clockwise or a counterclockwise direction.

The intermediate cone is supplied with one or more escape holes, one of which, for illustrative purposes, is depicted at 28 in FIGURE 2. The escape holes 28 must be larger than the ball 18 to permit the ball to pass through them. The relationship of the escape holes to the device as a whole will be explained below.

A hollow handle 29 depends from the apex of the outer cone 10 and is provided for ease of gyrating the device as well as providing storage for the batteries 30, 31 used by light bulb 32. The light bulb 32 is held in electrical contact with the batteries 30, 31 by being maintained in a fixed position with seat 33. The seat 33 is secured to the inside of the handle, as at 34, and is provided with threads for engagement with threads on the light bulb 32.

The light bulb 32 provides the amusement device with some attributes of a toy by enhancing its play value for those of a younger age. At bottom 35 of the inner cone 12, there are provided a pair of spaced conductive contacts 36, 37, the location and space between the contacts being made such that when a metallic ball, clad with a highly conductive metal such as, for example, copper, is in the bottom of the inner cone it will bridge the contacts and cause the light bulb 32 to become illuminated.

In the preferred embodiment of the device, there are a number, the number being dictated by nothing more than personal preference, of pairs of contacts located in a random manner about inner surfaces of the cones. Two pairs of the contacts, 38, 39 and 40, 41, shown by way of illustration only, are depicted in FIGURE 2. The randomly located contacts are also spaced so that the ball may bridge them when rolling across them. Thus, a flashing effect of the light bulb 32 may be obtained as the ball 18 rotates about the inner surfaces of the cones 10, 11 and 12.

Although the wiring of the device has been eliminated from FIGURE 2 for purposes of clarity, it will be understood that each pair of contacts communicates with the batteries 30, 31 and the light bulb 32 through adequate wiring. A wiring diagram depicting the circuitry is set forth in FIGURE 4.

In operation, the ball 18 is initially placed within the outer cone 10, as seen in FIGURE 2. The amusement device is then held and gyrated in a manner which causes the ball to rotate around the inner surface of the outer cone 10, as can best be seen from FIGURE 1. The centrifugal force caused by the rotation of the ball 18 drives

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it up the side walls of the outer cone 10 until it engages the deflector ramp 24. Upon engaging the deflector ramp 24, the ball 18 is projected inwardly, as previously explained and, depending on the skill of the person using the device, will fall into either the inner cone 12 or the intermediate cone 11. Of course, during rotation the ball 18 may or may not bridge the contacts spaced about the inner surfaces of the outer and intermediate cones. This alternative bridging of the contacts causes the light bulb 32 to flash, thereby providing a pleasing effect.

If the ball lands within the inner cone 12, it will engage the contacts 36, 37 thus causing the light bulb 32 to become illuminated. However, if the ball lands within the intermediate cone 11, the device will have to be continuously gyrated, otherwise the ball will drop to the bottom 42 of this intermediate cone and will pass through the escape hole 28 back to the outer cone 10. As previously mentioned, the intermediate cone 11 is also provided with a deflector ramp 25 so that after being deflected into the intermediate cone, it is possible to again project the ball inwardly upon continuous gyration of the device, this time into the inner cone 12.

Once within the inner cone 12, the ball 18 may be easily returned to the outer cone 10 by merely turning the device upside down and allowing the ball to roll across the dome 17 toward the outer cone.

While the preferred embodiment of the amusement device has been shown with an intermediate cone, it will be understood that the device may also be used without an intermediate cone in substantially the same manner. Likewise, the light bulb and related circuitry are not absolutely essential to the use of this invention, as will readily be understood by those skilled in the art.

I claim:

1. An amusement device comprising at least two nested receptacles, a ball contained in one of said receptacles and being movable between said receptacles, said receptacles, in their operative position, flaring upwardly and outwardly and having their bottom portions joined together, the inner receptacle being open at its upper end and being inwardly spaced, above its bottom portion, from said outer receptacle a distance greater than the diameter of said ball, an inwardly projecting ramp fixed to the upper end portion of said outer receptacle and being engageable by said ball to project said ball inwardly, whereby, as said device is rotated said ball will move upwardly and over said ramp, said ramp projecting said ball inwardly toward said inner receptacle.

2. An amusement device as set forth in claim 1 wherein said ramp presents two opposing curved surfaces which cooperate with the upper end portion walls of said outer receptacle so that said ball may engage said ramp during clockwise as well as counterclockwise rotation.

3. An amusement device as set forth in claim 1 including a dome secured to said outer receptacle.

4. An amusement device as set forth in claim 1 wherein each of said receptacles is conical in shape.

5. An amusement device as set forth in claim 1 including,

a handle depending from the apex of said outer cone, a light bulb within said handle, at least one battery within said handle, connector means, including a pair of contacts, connecting said bulb to said battery; said contacts being mounted on the base portion of said inner receptacle, whereby said light bulb becomes illuminated upon the touching of said pair of contacts by said ball.

6. An amusement device as set forth in claim 5 wherein said connector means includes a plurality of contact pairs connecting said bulb to said battery, said plurality of contact pairs being mounted on the inner surfaces of each of said receptacles.

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7. An amusement device as set forth in claim 1 including

at least one intermediate receptacle interposed between said inner and outer receptacles and spaced from them by a distance greater than the diameter of said ball,

an inwardly projecting ramp fixed to the upper end portion of said intermediate receptacle and being engageable by said ball to project said ball inwardly, and

wall structure defining at least one escape hole in each of said intermediate receptacles, said escape hole

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having a diameter greater than the diameter of said ball whereby said ball may pass therethrough.

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