Oct. 6, 1970 W. W. PEARCE 3,531,892

ILLUMINATED SPINNING TOY

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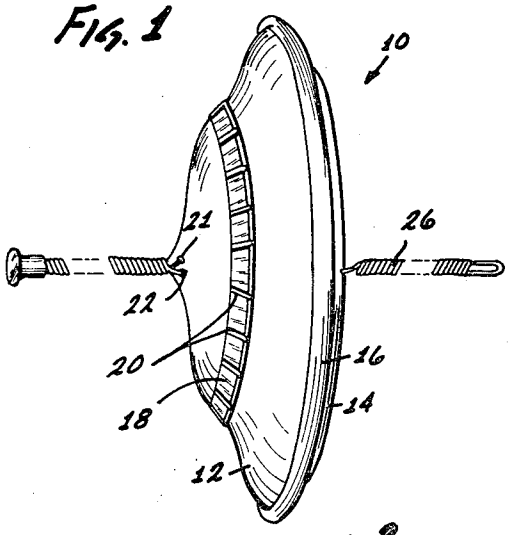
Fig. 1



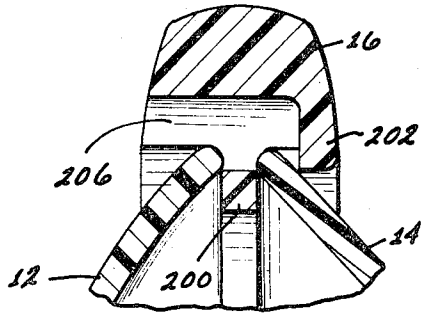
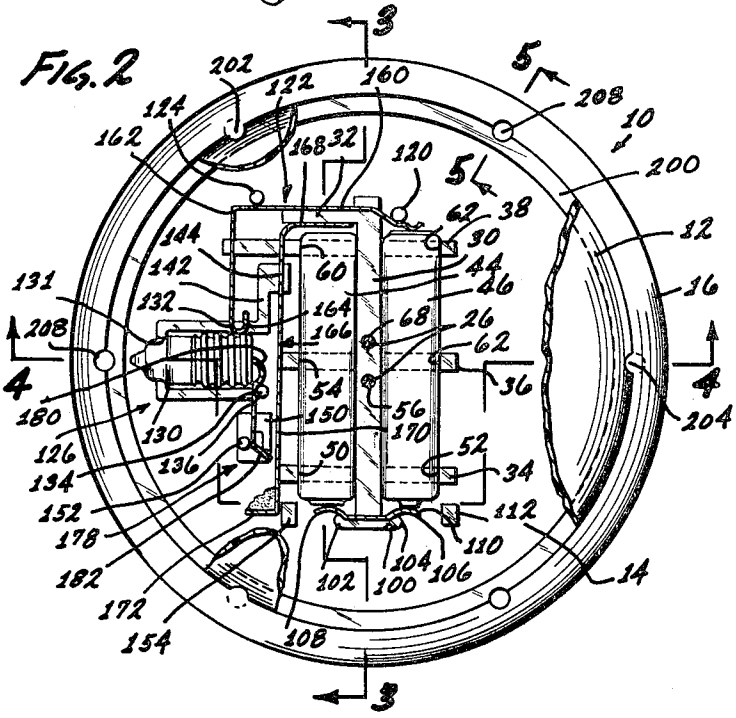


Fig. 5

Fig. 2



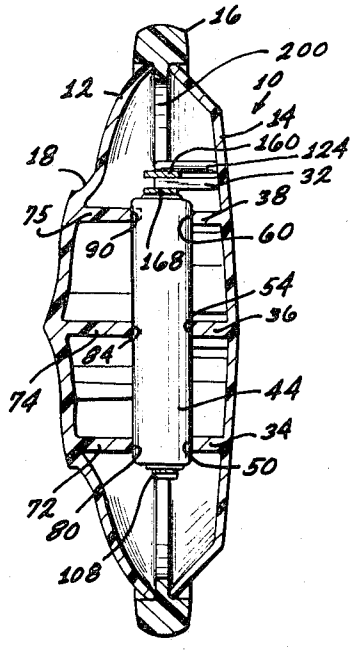


Fig. 3

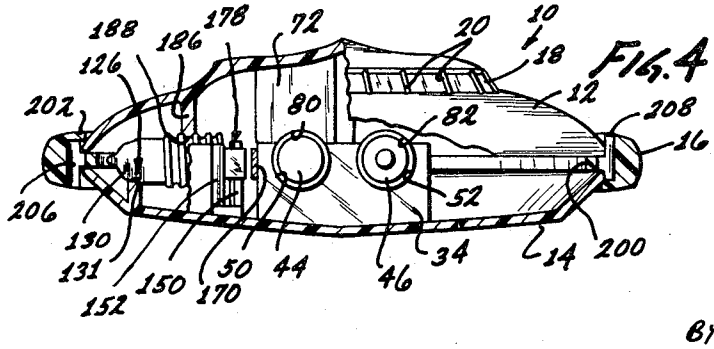


Fig. 4

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ILLUMINATED SPINNING TOY

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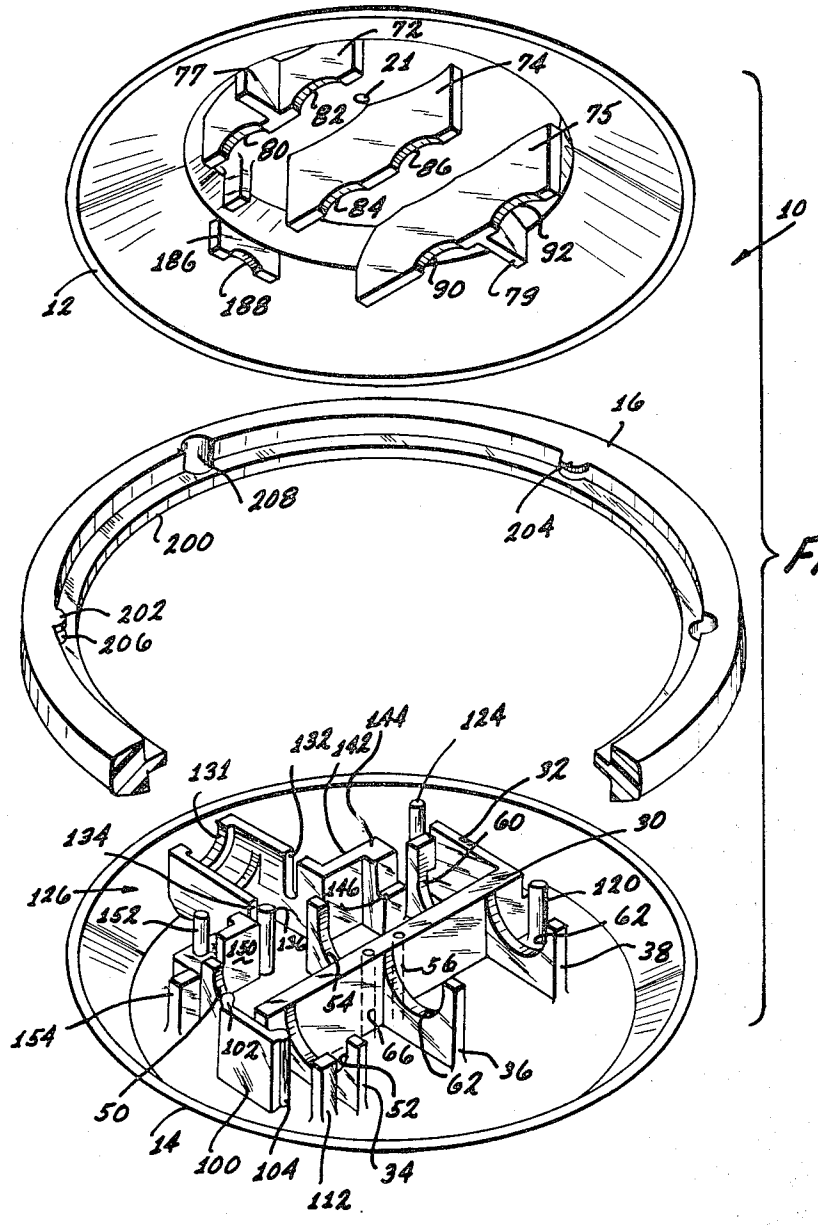

Fig. 6

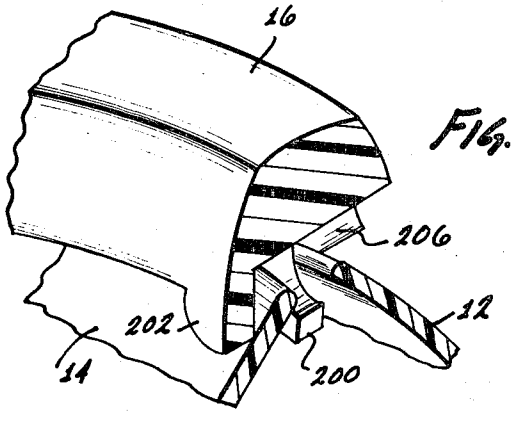

Fig. 7

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ILLUMINATED SPINNING TOY

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U.S. Cl. 46—228 3 Claims

ABSTRACT OF THE DISCLOSURE

The device is an illuminated spinning toy of the type which is in the form of a disc and which is normally caused to rotate by way of twisted cords extended axially through openings in the disc. The disc is formed of upper and lower molded plastic domes and a peripheral rim part, the parts being constructed to snap together so that the rim part holds the domes together in a disc configuraion. Within the domes are integral webs and projections which serve to position and hold the batteries, a light bulb and the spring contacts that provide circuit connections to the light bulb. One of the spring contacts has a mass attached to it so it functions as a universl centrifugal switch to cause the light to be illuminated when the disc is rotated.

SUMMARY OF THE INVENTION

The invention is a toy and more particularly an illuminated spinner toy. It is of the type which takes the form of a disc which in a preferred form of the invention has a configuration which is ordinarily thought of as being that of a flying saucer. The toy is of a type wherein strings or cords pass axially through openings in the disc by whirling the disc in its plane about an axis, the disc then rotating first in one direction and then the other about its axis as the cords twist and untwist in response to axial pull.

The invention provides improvements in a toy of this type whereby it can be made extremely fascinating and entertaining as such. In the preferred form of the invention the housing is made of plastic parts including a clear plastic rim which is able to transmit light and when the illuminating circuit is closed the entire rim appears illuminated. In the preferred form of the invention the housing is formed of upper and lower plastic domes and the plastic rim is provided with snap means so that all three parts snap together and are held in assembled relationship without other parts. This construction is one of the further novel features of the invention.

The upper and lower domes are provided with integral internal webs and/or projections which serve to position and hold the batteries and the light bulb within the housing as well as spring contact members which provide the electrical circuit to the light bulb. One of the spring contact members is provided with a mass attached to it which is spaced from the center so that whenever the device spins at a given speed this contact member will be actuated by centrifugal force to close the contacts and energize the light bulb and illuminate the clear plastic peripheral rim. The upper and lower domes preferably are made of plastic that is not transparent like the clear plastic rim part, although these parts may be made of translucent material or reflective material to enhance the display effect provided by the light being transmitted by the clear plastic rim.

In the light of the foregoing the primary object of the invention is to provide improvements in a toy of the type described whereby to make the toy more fascinating and entertaining and accordingly, more useful.

Another object is to improve the lighting or illuminating display effects possible in a toy of the type described by way of having a clear peripheral rim on the housing so that light is transmitted all around the periphery from the interior.

Another object is to simplify and make more economical, means and methods of manufacturing a toy of the type described while at the same time improving its strength, durability and effectiveness.

Another object is to provide an improved and simplified centrifugal switch in a toy of the type described for energizing a light bulb when the toy is rotating whereby to provide illumination entirely around the clear plastic rim of the toy.

Another object is to achieve economy in a toy of the type described by minimizing the number and complexity of parts and making it possible to hold all parts assembled simply by snap joints.

Further objects and additional advantages of the invention will become apparent from the following detailed description and annexed drawings, wherein:

FIG. 1 is a view of a preferred form of the invention;

FIG. 2 is a plan view partly broken away of the form of the invention shown in FIG. 1;

FIG. 3 is a sectional view taken along line 3—3 of FIG. 2;

FIG. 4 is a sectional view taken along the line 4—4 of FIG. 2;

FIG. 5 is a sectional view taken along the line 5—5 of FIG. 2;

FIG. 6 is an exploded perspective view of the upper and lower domes and intermediate ring;

FIG. 7 is a perspective sectional view showing the snap joints between the domes and ring.

Referring now more in detail to the drawings, FIG. 1 shows a preferred form of the invention wherein the toy is in the form of a disc shaped housing **10** having an upper dome **12**, a lower dome **14** and continuous peripheral rim **16**. The parts when assembled together form a disc shaped housing as shown and in the preferred form of the housing the configuration and contour is such to make it resemble the shape or configuration generally ascribed to flying saucers. The upper dome **12** has an intermediate circular rib **18** which has spaced transverse ribs or embossments **20** to enhance the resemblance of the device to a flying saucer.

The disc shaped housing has holes **21** and **22** on opposite sides as will be described adjacent to its axis through which strings or cords may pass as shown in FIG. 1 the cords being designated at **26**. The ends of these cords can be held in either hand and then the housing **10** can be whirled in its own plane about a central axis to twist the cords on either side. Then by exerting axial pulls on the cords on opposite sides the disc can be made to spin in one direction and then the other twisting and untwisting the cords. Batteries, contacts, a light bulb, and a centrifugal switch are provided in the housing to provide illumination when the disc rotates in various attitudes, the peripheral rim being transparent or translucent in order to transmit light.

The light bulb, batteries and spring contacts are held in position within the disc as will be described, the three parts of the disc, that is, the upper and lower domes and peripheral rim being snapped together with these parts holding the bulb, batteries and spring contacts in position.

FIGS. 2 through 5 illustrate the configurations of the domes and the manner in which the domes and the peripheral rim snap together holding the parts within the disc so formed. The domes are internally configurated to receive and hold the bulb, batteries and snap contacts without separate fastening means and the two domes and peripheral rim snap together and are held without sepa-

rate fastening devices, the assembly being accomplished without tools.

FIGS. 2, 3 and 4 show the parts assembled whereas FIG. 6 shows the upper and lower domes and peripheral rims separated from each other and in perspective.

Preferably the parts, that is, the upper and lower domes and peripheral rim are fabricated by an injection molding process from materials such as plastic although other processes could be used. As will be seen in FIG. 6 the lower dome **14** has integral inwardly extending projections and webs as does the upper dome **12**, these projections and webs providing means for holding the internal parts in position without separate fasteners. Referring to the lower dome **14** it has a central transverse web or rib **30** having a transverse end part **32**. Extending transversely to the rib or web **30** are three additional webs or ribs **34**, **36** and **38** which are normal to the web **30**, and each of these webs has in it arcuate recesses to receive and hold the two batteries **44** and **46** which may be flashlight batteries. The arcuate recesses in web **34** are designated at **50** and **52**; in the web **36** they are designated at **60** and **62**. The web **30** has two axial bores in it as designated at **66** and **68** which align with the holes **21** and **22** in the dome **12**. As may be observed the webs **34**, **36** and **38** form a cradle for the two batteries **44** and **46**.

Integral with the top dome **12** and extending downwardly therefrom are comparable webs **72**, **74** and **75** each of which has a pair of arcuate recesses to come down over and straddle and hold the batteries **44** and **46**. The recesses in web **72** are identified at **80** and **82**; in the web **74** they are designated at **84** and **86**; and in the web **75** they are designated at **90** and **92**. FIG. 3 illustrates how the webs hold the batteries in position.

At one end of the web **30** is a transverse web **100** which is spaced from the end of the web **30**, this web having beads **102** and **104** at its ends. A spring contact member **106** is held between the web **100** and the contacts at the ends of the two batteries **44** and **46** as may be seen in FIG. 2 the ends of the contact member **106** being bent or deformed as shown at **108** and **110** for this purpose. Adjacent to the web **34** is an integral rectangular post or projection **112** for a purpose which will be described presently.

Adjacent the other end of the web **30** is an extending integral post **120** which assists in holding an angular spring contact member **112** as may be seen in FIG. 2. Adjacent the end of the transverse web part **32** is another integral cylindrical post **124** which also assists in holding the spring contact **122** as will be described presently.

Referring to the dome **14** it has an integral extending formation **126** forming a cradle for the miniature light bulb **130** as may be seen in FIGS. 2 and 4. At the end of this integral structure is an arcuate recess **131** through which the bulb extends as shown in FIG. 2 with the threaded part being received in the cradle. In one side of the cradle **126** is a slot **132** adapted to receive a spring contact and in the other side of the cradle there is a slot like opening **134** between one end of the side of the cradle and an upstanding cylindrical integral projection **136** extending from the dome **14**. At one side of the cradle **126** is an extending integral web **142** having a short transverse and extension part **144** having a cutout in it forming a square shoulder **146**. This shoulder is adjacent the end of the transverse web **38**.

Adjacent the cylindrical projection **136** is an integral web **150** and adjacent to it is a cylindrical post or projection **152** leaving a space or a slot between these parts. Adjacent to the end of the transverse web **34** is a rectangular vertical post or projection **154**.

The spring contact **122** is angular as shown having an angular part **160** the end of which is bent inwardly to engage a contact at the end of the battery **46**, being positioned between this end and post **120** the post **121** being positioned on the other side of the part **160** of this contact. As may be seen the part **160** of the contact is between the transverse web **32** and the post **124**. Contact member **122** has another angular part **162** the end part of which is bent into a loop as shown at **164** and this end part extends through the slot **132** so as to come into contacting engagement with the threaded end contact part of the bulb **130**.

Numeral **166** designates another contact member having an angular end part **168** which is positioned between the transverse web **132** and the contact at one end of the battery **44**. The contact member **166** has an angular part **170** which fits in between the web **144** and the end of web **38**, in the shoulder **146** and it bears against the ends of the webs **34** and **36**. Its end part as designated at **172** is bent at a right angle and in the angle there is secured a mass of solidified solder or the like so as to provide sufficient weight to be effected by centrifugal action when the spinner is rotating.

Numeral **178** designates a further contact which fits in the slot **134** having a bent end part **180** which bears against the contact at the inner end of the bulb **130**. The end part of this contact is bent over as shown at **182** and it is held between the post **150** and the cylindrical post **152** as shown. The effect of centrifugal force is to move the end of member **170** outwardly into electrical contact with contact **178** to complete the circuit to energize the bulb **130**.

Referring to the upper dome **12** on the outside of the webs **72** and **75** are transverse webs **75** and **75** that align with the web **30** in the bottom dome **14**. There is also an integral web **186** having a recess **188** in it, this web being parallel to the web **30** and positioned to come down over the light bulb **130** and hold it in position in its socket or recess as may be seen in FIG. 4.

As pointed out in the foregoing, the upper and lower domes **12** and **14** are held together in snap engagement by the peripheral rim **16**. The rim **16** has a rounded exterior as shown and it has an intermediate internal annular flange or rib **200**. The rim **16** on one side has three inwardly extending angularly spaced, lugs two of which may be seen at **202** and **204** in FIG. 6, these lugs being spaced from the rib **200**. There are three similar lugs on the opposite side of the rim **16** equally angularly spaced between the lugs **202**, **204** and **206** on the side of the rim **16** that is visible in FIG. 6. At the position of each of the lugs there is opposite the lug, an axial hole through rim **16** and through the annular rib **200**. One of these holes can be seen at **206** in FIG. 6 and also at **208**, the latter being opposite one of the lugs on the other side of the rib looking at FIG. 6.

FIGS. 5 and 7 illustrate how the edges of the upper and lower domes **12** and **14** and the rib **16** are brought into inter-engagement and snap together so that these parts and all the internal parts are held together merely by assembling them as described without the use of rivets, screws or other types of fasteners. The edges of the domes are held to the rib **16** by the lugs such as the lug **202** shown in cross section in FIG. 7. In assembling the parts, the edge of a dome is slipped under lugs on one side of the rim **16** and then the opposite edge of the rim is forced under a lug on the rim **16** at the other side.

From the foregoing it will be observed that the parts comprising the batteries, the bulb and the spring contacts can be assembled in the positions as shown in FIG. 2. The upper dome **12** is then simply brought down over the lower dome, the webs on the upper dome coming down into position over the webs of the lower dome in the manner described to hold all of the parts in position. The upper dome is assembled to the lower by the rim **16** as described so that the article becomes a unitary disc shaped simulated flying saucer with all parts securely held together without screws or other types of fasteners. It may be observed that the fabrication of the device is very simple comprising only the three main plastic parts and the internal parts which are the batteries, spring contacts and bulb. The cords are, of course, assembled

through the bores **66** and **68** and the holes **21** and **22** and corresponding holes in the other disc. The operation or use is as described in the foregoing. The disc can be rotated in various attitudes the centrifugal switch being universal and serving to energize the bulb and illuminate the device at various speeds and in various attitudes.

From the foregoing those skilled in the art will readily understand the nature of the construction of the invention its operation and the manner in which it achieves all the advantages as set forth in the foregoing, as well as the many additional advantages that are apparent from the detailed description.

The foregoing disclosure is representative of a preferred form of the invention and is to be interpreted in an illustrative rather than a limiting sense the invention to be accorded the full scope of the claims appended hereto.

What is claimed is:

1. A spining toy comprising a housing of disc shape having holes adapted to receive cords for rotating the housing, means comprising a battery and a light within the housing whereby visible illumination may be provided, switch means responsive to centrifugal force, said switch comprising contacts including a contact in the form of a flexible blade having a mass attached to it whereby the said contact is able to move in response to centrifugal force to close a circuit to provide the illumination, said housing comprising parts including an upper dome and a lower dome snap fitted into a peripheral rim part, said upper and lower domes and peripheral rim part having mutually engageable lugs whereby the rim part holds the upper and lower domes together in the configuration of a disc, said upper and lower domes being of

integral molded construction each dome having integral inwardly extending webs aligned with webs on the other dome to form cradles for positioning and holding batteries and a light bulb within the toy, spring contact members for providing circuit connections between the battery means and a light bulb, said integral extending webs having openings adapted to receive and hold the contact members in a position to provide a circuit between battery means and a light bulb, the batteries, bulb, and contacts being held in position is said cradles by the webs on the domes, the entire assembly being held together without fastening devices.

2. A device as in claim **1** wherein said peripheral rim part is made of material capable of transmitting light so that when the bulb is energized the periphery only of the device is illuminated.

3. A device as in claim **2** wherein said peripheral rim part is separate from the domes and is attachable thereto.

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U.S. Cl. X.R.

46—61, 62