

Oct. 6, 1970

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3,531,892

ILLUMINATED SPINNING TOY

Filed Feb. 19, 1969

2 Sheets-Sheet 1

Fig. 1

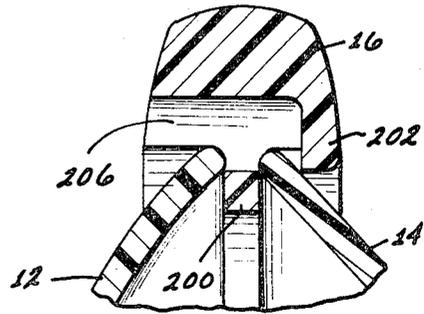
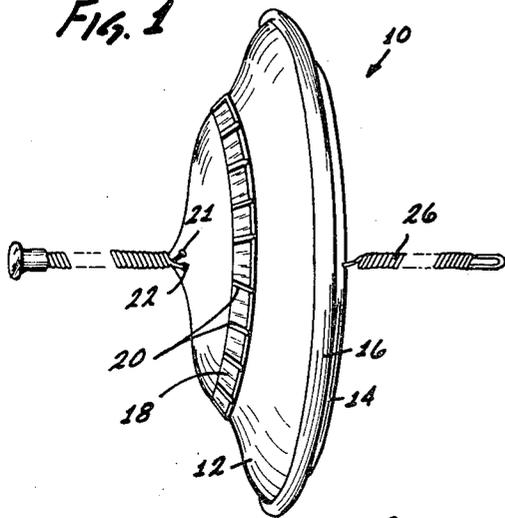


Fig. 5

Fig. 2

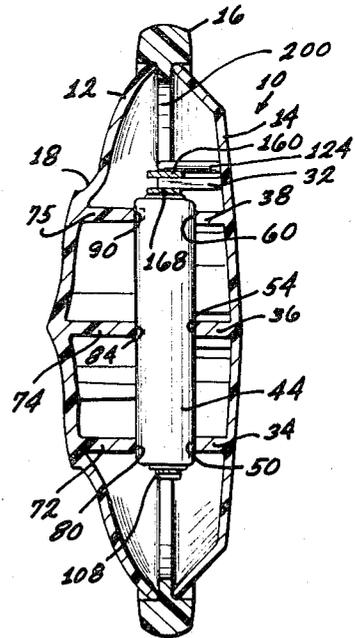
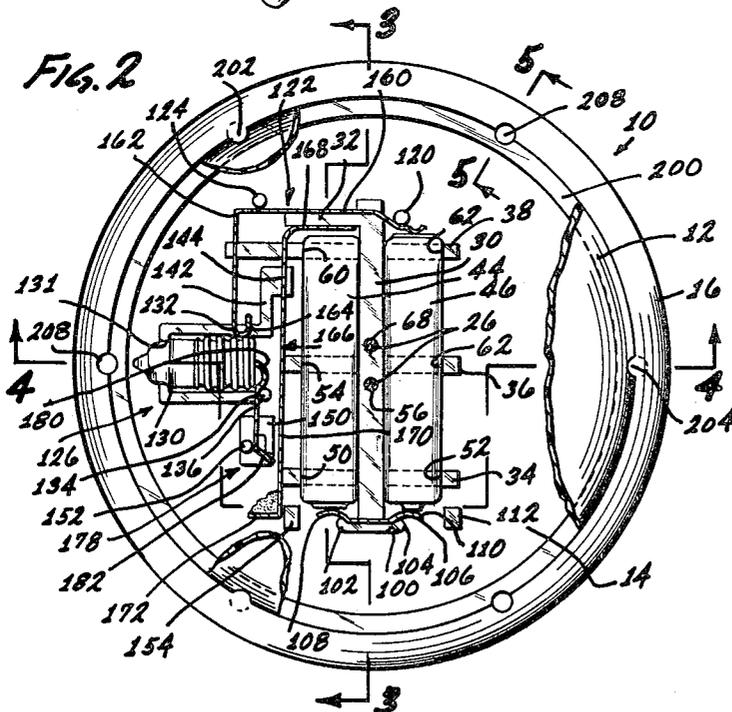


Fig. 3

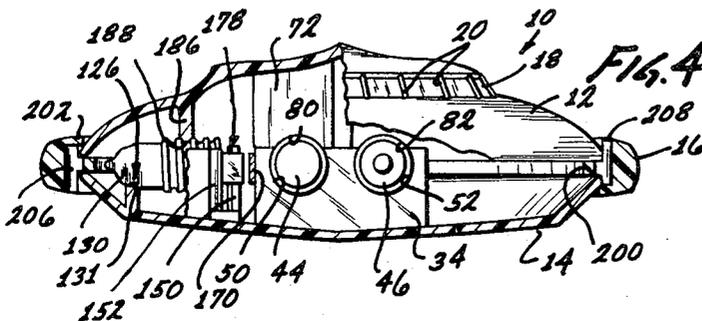


Fig. 4

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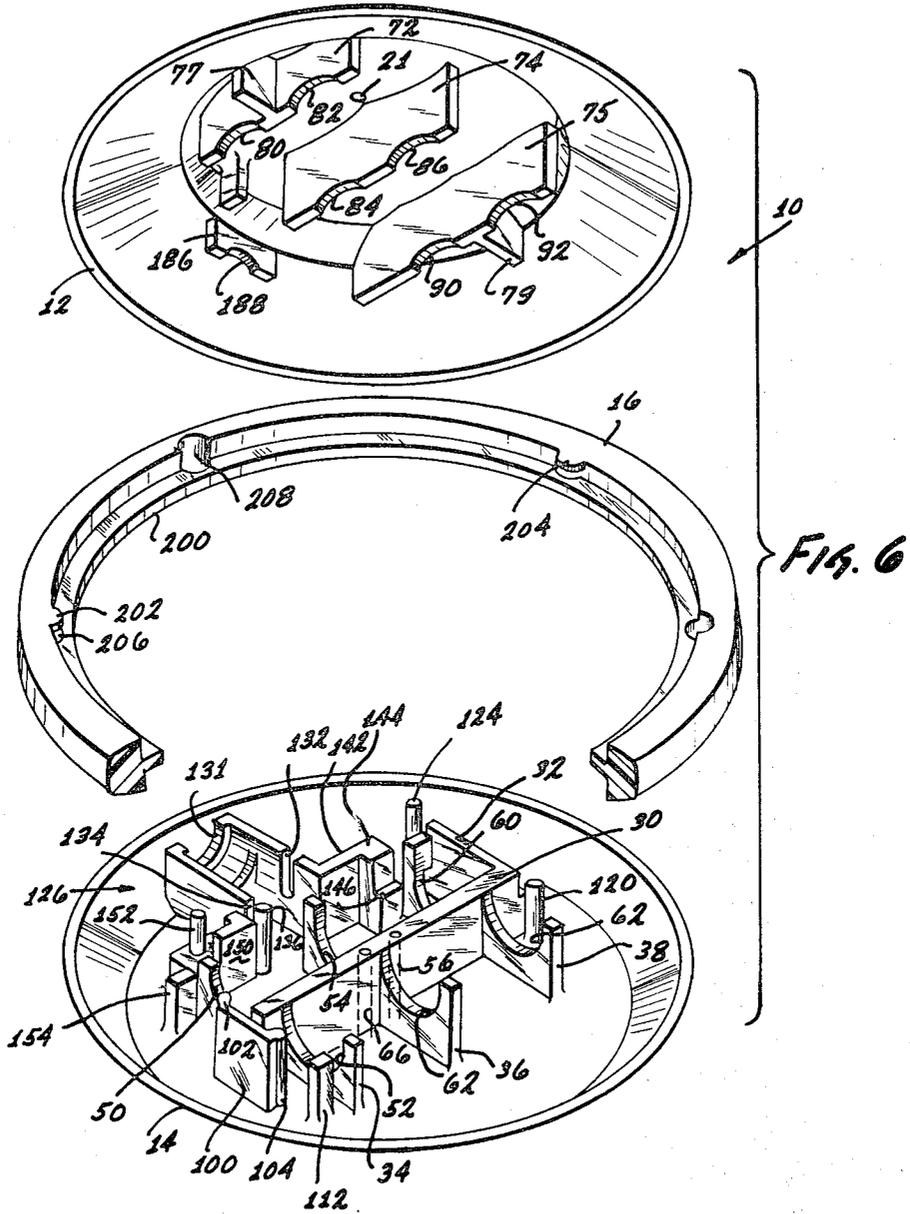


FIG. 6

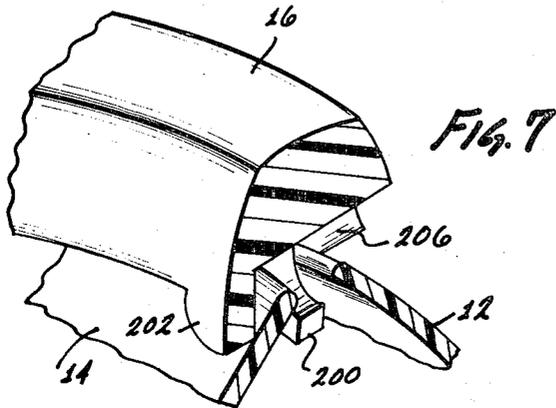


FIG. 7

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3,531,892

## ILLUMINATED SPINNING TOY

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Filed Feb. 19, 1969, Ser. No. 800,601

Int. Cl. A63h 1/32, 33/26

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 configuration. 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 universal 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 illuminat-

ing 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 configured 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

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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 spinning 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