2016

PATENT ATTORNEYS

EXAMINATION

PAPER E

Patent Attorney Practice in New Zealand
Including Interpretation and Criticism of Patent Specifications

Regulation 158 (1) (e)

Duration: 4 hours (plus 10 minutes for reading)

You are approached to act for Rolly Acres, and his company, Rolly Acres Ltd (RAL).

Rolly Acres is the co-inventor, and RAL is a joint-owner, of New Zealand patent number 567890 (NZ567890) for a double skin sphere.

NZ567890 has a priority date of 3 October 1997, was granted in October 2000, and is currently in force.

RAL operates the very successful ZORB business utilising two versions of the well-known ZORB® inflatable transparent orb – ZORB I and ZORB II. ZORB II was introduced in early 2003.

Rolly Acres has had a falling out with his co-inventor, Sluis Gately. Sluis Gately's company, Sluis Gately Ltd (SGL) is the other co-owner of the Zorb business and NZ567890. Rolly Acres and Sluis Gately had agreed they would only commercialise the patent jointly.

Sluis Gately, through SGL has now started up a competing business called ORBsome utilising a product which is identical to ZORB II, called the ORB™. On the ORBsome website, Sluis Gately asserts he is the sole inventor of the ZORB. Rolly Acres says that the ORBs are constructed using the same confidential technology utilised in constructing the ZORB I and ZORB II product, and described in NZ567980.

Unlike the original ZORB I, the ORBsome product can be used for a variety of sports including bubble soccer, foot golf and sumo-type wrestling.

Before coming to see you, Rolly Acres wrote a letter to Sluis Gately complaining about the ORBsome product and that Sluis Gately was breaching their agreement and was infringing NZ567890.

In response SGL said that Rolly Acres had been brainwashed by "fat cat corporate dudes" who had expressed interest in investing in RAL and that NZ567890 wasn't worth the paper it was written on. SGL said the idea had been done before. Enclosed with SGL's letter were four documents, attached as prior art 1, 2, 3, and 4.

SGL also refers to NZ Design 123456 filed in late 2003 for the ZORB II product, which featured photos of that product, and which lapsed when the second renewal fee wasn't paid.

Rolly Acres and RAL want you to review all the materials and provide advice to him and RAL about what has happened and what they can do to protect the ZORB business.

Questions

1. Does the ORBsome product infringe NZ567890? If not, why not? 35 marks

   Note: As part of your answer you must undertake a full infringement analysis comparing each of the claims to the ORBsome product.

   Would your answer be different if the ORBsome business was operated under a licence from SGL to ORBsome Ltd (a company unconnected with Sluis Gately or Rolly Acres)? Why?

2. Is NZ567890 valid in light of the materials provided by SGL? Describe any relevant grounds of challenge that may be available for challenging the validity of NZ567890. And who could pursue any such challenge? 40 marks

3. Based on your conclusions to 1 and 2, what other investigations could you make, or actions would you take and what other advice would you provide? If your advice includes that NZ567890 should be amended identify possible features that should be claimed in any amended claims. 25 marks

Documents

A. NZ 567890

B. Pictures of ZORB I and ZORB II

C. Pictures of ORBsome product

Prior art 1. Picture of Leonardo Da Vinci in an orb shape

Prior art 2. US 3806156

Prior art 3. US 4489932

Prior art 4. FR 2493167 (English translation and drawings)

DOCUMENT A

567890

PATENTS ACT 1953

COMPLETE SPECIFICATION

1. Double Skin Sphere

2. Rolly Acres of 12B Mistletoe Place, Browns Bay, Auckland, New Zealander

   Sluis Gately of 21 Martin Avenue, Mt Albert, Auckland, New Zealander

HEREBY **declare the invention, for which ~~I~~/we pray that a patent may be granted to ~~me~~/us and the method by which it is to be performed, to be particularly described in and by the following statement:**

3. This invention relates to amusement devices.

Various inflatable amusement devices are known, ranging from ordinary beach balls and inflatable toys to inflatable castles, boxing rings and the like on which people can bounce around.

The object of the present invention is to combine the amusement value of a bouncing inflatable apparatus with manoeuvrability, particularly suitable for use outdoors, and which safely encapsulates the user within the amusement device.

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Accordingly, in a first aspect, the invention substantially consists in an amusement device, including a substantially round outer skin, a substantially round inner skin spaced at least partly therefrom, by multiple internal tensioned lines, said outer and inner skins defining an enclosed pressurisable or inflatable space therebetween, and said inner skin further defining an interior cavity.

Preferably said interior cavity is large enough to accommodate a human being.

Preferably said interior cavity is in communication with or accessible from outside the apparatus.

Preferably said pressurisable outer space is provided with valve means for inflating and deflating of said inflatable space.

Preferably said skins comprise a plurality of joined panels.

Preferably said skins comprise, when inflated, truncated icosahedrons.

Preferably at least portions of said skins are substantially transparent.

Preferably said skins are substantially flexible.

One presently preferred embodiment of the invention will now be described with reference to the accompanying drawings, wherein

Figure 1 Shows a diagrammatic partially cutaway front view of the apparatus according to the invention, with both skins and some of the connecting means shown,

Figure 2 Shows a flat pattern of a truncated icosahedron, as used for the preferred form of each skin,

Figure 3 Shows the location of connecting means on individual panels of the outer skin according to one form of the invention,

Figure 4 Shows the location of connecting means on individual panels of the inner skin according to one form of invention,

Figure 5 Shows a connecting means in accordance with the invention,

Figure 6 Is an isometric diagrammatic view showing the arrangement of connecting means between individual panels of the outer and inner skins,

Figure 7 Is an isometric diagrammatic view of one version of the communication or accessway between the outside of the apparatus and the interior cavity within the inner skin,

Figure 8 Is an isometric view of a construction frame used for manufacturing the apparatus according to one preferred form of the invention,

Figure 9 Is a top view of the construction frame of Figure 8, and

Figure 10 Is a perspective view of a valve means as herein described for use in an amusement apparatus according to one presently preferred form of the invention.

Referring now to the drawings, an amusement apparatus (1) is provided, which in at least the presently preferred form, comprises a first or outer skin (2) and a second or inner skin (3) which is positioned substantially within the outer skin (2) and which is spaced at least partly from the outer skin (2).

The outer and inner skins (2) and (3), being so spaced, define an enclosed pressurisable or inflatable space (4) therebetween.

The inner skin (3) defines within itself an interior cavity (6), which is in communication with or accessible from outside the apparatus (1) by way of communication or accessway (5).

In Figure 7 an accessway (5) is shown as comprising a tunnel (5a) which may preferably be cylindrical or approximately cylindrical and in this case has a hexagonal cross-section, extending between outer skin (2) and inner skin (3).

The accessway (5) and the interior cavity (6) are dimensioned so as to safely accommodate a human being. For example, the accessway (5) may be approximately 60cm in diameter, forming crawlway or tunnel (5a). In the presently preferred embodiment of the apparatus described herein, the outer skin diameter when inflated is

about 3 meters and the inner skin diameter when inflated is about 2 meters, which is adequate to accommodate most people.

The inner and outer skins are preferably substantially spherical once the apparatus is inflated or pressurised. It has been found that such skins may advantageously be constructed of individual panels of sheet material.

One advantageous construction has been found to be the truncated icosahedron that is constructed of a series of individual hexagonal and pentagonal panels (7), as shown in an exploded plan in Figure 2.

The presently preferred form of the invention shown in the drawings includes only two skins. However, it is also envisaged that other forms of the apparatus may be constructed within the scope of the invention, having three or more skins.

It is preferable that at least part of each skin be transparent, to allow a user (9) inside the interior cavity (6), to see out of the apparatus.

In one preferred form of the invention a suitable material which has been found advantageous for construction of the inner skin (3) is 0.75mm thick PVC plastic sheet which may preferably be transparent and may be coloured or uncoloured. The outer skin (2) which does not have to directly bear the weight of a user (9), may be made of a lighter plastic, such as for example 0.5mm PVC plastic sheet.

It is apparent that many other materials will be suitable provided they fulfil the fundamental construction requirements of the apparatus.

In one preferred form of the invention, the panels for constructing the apparatus are cut in panels (7) as shown in Figures 3 and 4 and glued together to form the plan in Figure 2, using a suitable adhesive. PVC sheet may be effectively glued with the adhesive sold under the trade mark ADOS AP81.

In order to maintain the inflatable space between the skins, the inner and outer skins (2) and (3) are connected, in the preferred form of the invention, by connection means (12).

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One presently preferred construction employs attachment means (8) positioned along the edges and around the centre of each of the pentagonal and hexagonal panels (7) making up the skins (2) and (3), as shown in Figures 3 and 4. The small circles show the positions of the attachment means (8).

Figure 5 shows one suitable form of connection and attachment means (12) and (8) according to one presently preferred form of the invention. The first attachment means (8A) as shown comprises a first T-joint (10A) to be attached to the skin panel, and a triangular ring (11) to receive and retain the connection means (12).

The second attachment means (8B) as shown comprises a second T-joint (10B) to be attached to a skin panel and a hook or clip (13).

The attachment means (8A) and (8B) are connected to one another by connection means (12). In the presently preferred form of the invention the connection means (12) comprise a series of flexible cords such as, for example, nylon braid (15).

In the preferred form of the invention, attachment means (8A) and (8B) such as shown in Figure 5 are attached to the surfaces of each skin, i.e. the inner surface of the outer skin (2) and the outer surface of the inner skin (3). For example, the attachment means (8A) and (8B) may be glued to the skins with a suitable adhesive.

The connection means (12), for example nylon braid (15), is strung between the attachment means (8A) and (8B). Figure 6 shows a suitable pattern of connections between two hexagonal panels (7) one from each skin.

In one presently preferred form of the invention, the connection means (12) comprise lengths of nylon braid (15), each having a tied loop at each end. One end is tied to the triangular ring (11) on the first attachment means (8A), while the other end is clipped to a second attachment means (8B) by way of closable hook or clip (13).

As each braid is connected to the second attachment means (8B) a sleeve means (14), for example, a plastic pipe or cylinder, can be pushed over the closable hook or clip (13) to prevent the hook or clip (13) from coming unfastened in use.

DOCUMENT A

In the presently preferred form of the apparatus (1) as shown in the drawings, the inner skin (3) has two attachment means (8A) or (8B) for the connection means (12) along each edge of each hexagonal and pentagonal panel (7), and a further six for pentagons and seven for the hexagons arranged around the centre of each panel (7).

The outer skin (2) has three attachment means (8A) or (8B) along the edge of each hexagonal or pentagonal panel (7) and a further six for the pentagons and seven for the hexagons arranged around the centre of each panel (7).

It will be appreciated however that the number and precise arrangement of these attachment means (8) will depend on the size of the various elements of the apparatus (1) and the strength of the materials used. The number and positioning of the attachment means (8) needs to be selected to maintain a suitable spacing between the outer and inner skins (2) and (3), to enable the apparatus (1) to be used and to provide adequate support for the user (9).

It is also envisaged within the scope of the invention that other forms of connection means may be utilised between the skins.

The gluing of the panels (7) to one another has presented some challenges in practice. It has been found advantageous to construct a construction frame (16) as shown in Figures 8 and 9.

The frames (16) have been constructed to aid in the construction of the skins (2) and (3) to reduce the number of movements of the plastic sheet which are required when applying the glue.

A valve means is preferably provided to enable the space (4) between the inner and outer skins (2) and (3) to be inflated or pressurised. A recessed valve similar to that used in air beds and other inflatable toys may be used, or a valve (17) may be constructed, consisting of two lengths of plastic sheet material (18) and (19) glued along their long edges, and placed so as to communicate with the outside and inside of the outer skin (2). This valve forms a tube when air is forced through it and collapses when the space is pressurised.

DOCUMENT A

Both skins (2) and (3) must be made airtight to enable the apparatus (1) to be inflated and the space (4) between the skins (2) and (3) pressurised. It may be necessary to reinforce the plastic corners to maintain airtightness, and this may be done for example by gluing.

Once each skin (2) and (3) is airtight and the attachment means (8) have been securely attached to each skin, the inner skin (3) is inserted into the outer skin (2) through a hole in the outer skin (2) which becomes the outer door of the accessway (5)

The apparatus is then inflated or pressurised by pumping air into the space (4) through valve means (not shown in Figure 1).

As the space (4) is inflated and pressurised the inner skin (3) is attached to the outer skin (2) using the connection means (12) and the attachment means (8). It is advantageous to do this gradually as inflation goes on, to ensure that no part of the connection and attachment means (12) and (8) is forced to take an excessive amount of strain at one time.

Many variations may be envisaged of the apparatus which have not been described are nevertheless encompassed within the scope of the invention.

For example, the sizes and ratios of the inner and outer skin may be varied, and depending on these ratios and the strengths of the materials used, more or fewer attachment means for the connection means may be used and they may be arranged in various configurations.

The skins may not necessarily be a truncated icosahedron, but may be constructed of, for example triangular panels, or orange-type segments

Likewise, the accessway (5) may be larger or smaller than that shown and may be of various shapes.

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In use, according to the invention, the apparatus will be inflated. In order to avoid condensation problems, it is generally preferable to inflate the apparatus with relatively cool air and/or dry air. Once the space between the inner and outer skins is fully pressurised, the apparatus will take on the approximate form of a double skinned sphere having an internal cavity (6) accessed from the outside via an accessway (5).

A person may then position themselves in the internal cavity (6) by moving through the accessway (5) and can then play with the apparatus (1) by moving their body weight, thus causing the apparatus (1) to move around. It is envisaged that this would principally be an outdoor activity or one suited to large indoor spaces, such as stadiums, for safety reasons.

The apparatus (1) may be provided with traction means (not shown) to provide it with more traction, particularly in the water, such as fins, ropes, or other means to increase friction between the apparatus and the water.

It will be further appreciated that the present invention may be constructed partially or wholly of a variety of types of material suitable for the construction of such apparatus.

Although this invention is described by way of example and with reference to possible embodiments thereof it is to be understood that modifications or improvements may be made hereto without departing from the scope of spirit of the invention.

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WHAT WE CLAIM IS

1. An amusement device, which consists of a substantially round outer skin, with a substantially round inner skin spaced at least partly therefrom, said outer and inner skins being comprised of multiple joined panels, said inner and outer skins defining an enclosed pressurisable or inflatable space therebetween, said enclosed space consisting of a single airtight space, and said inner skin further defining an interior cavity, said interior cavity being accessible by a user from the exterior of the device by means of one accessway.

2. An amusement device as claimed in claim 1 wherein the inner skin is at least partly spaced from, and connected to, the outer skin by multiple tensioned lines.

3. A method of assembly of an amusement device comprising: forming a substantially round outer skin and a connected substantially round inner skin, such that the outer and inner skins define an enclosed pressurisable or inflatable space therebetween and the inner skin further defining an interior cavity accessible from the exterior of the device by means of a single accessway.

4. The use of an amusement device as claimed in claim 3 by a user who enters the interior cavity of the device via the single accessway.

5. An amusement device substantially as herein described, with reference to the accompanying drawings

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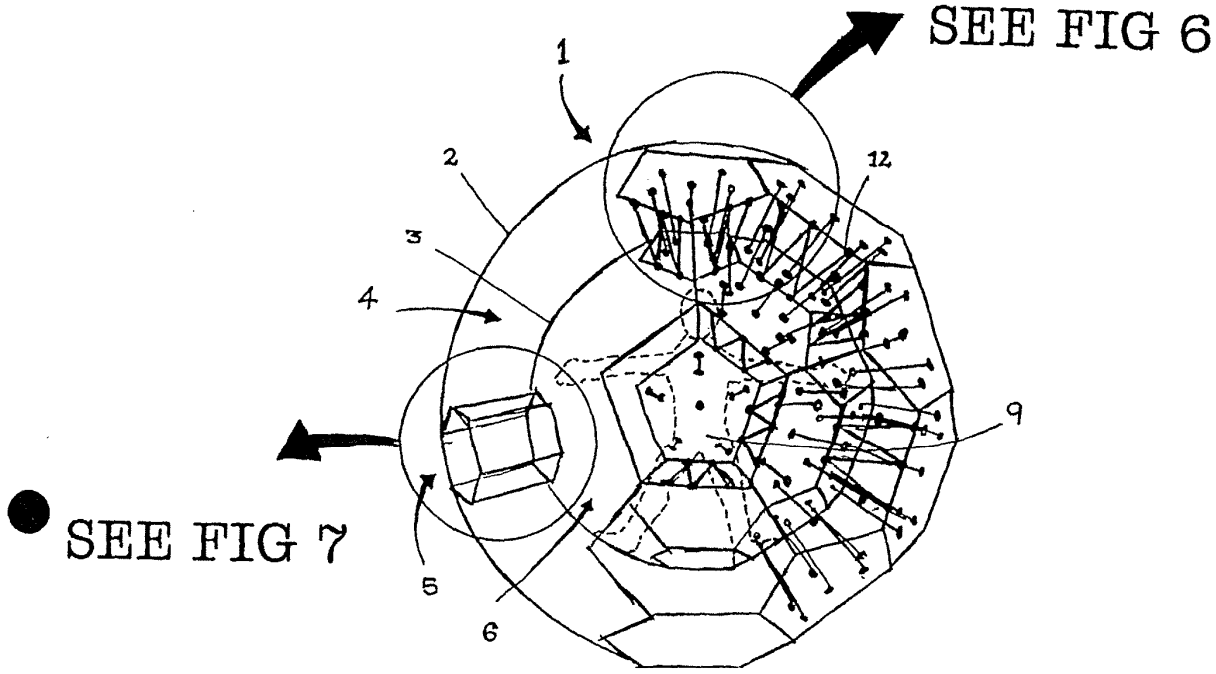

Fig 1

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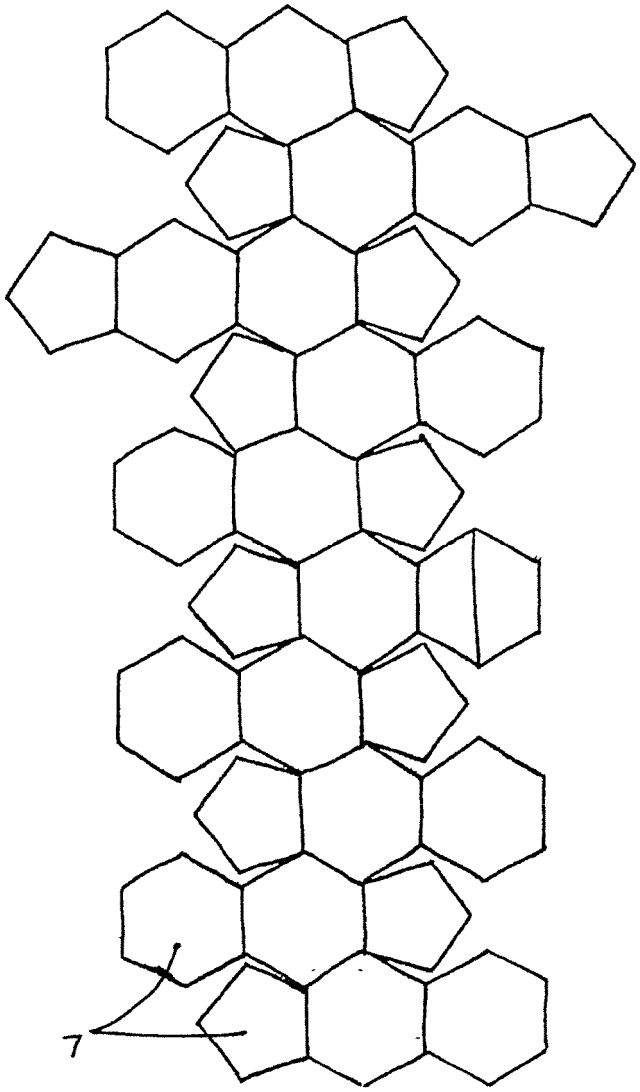

Fig 2

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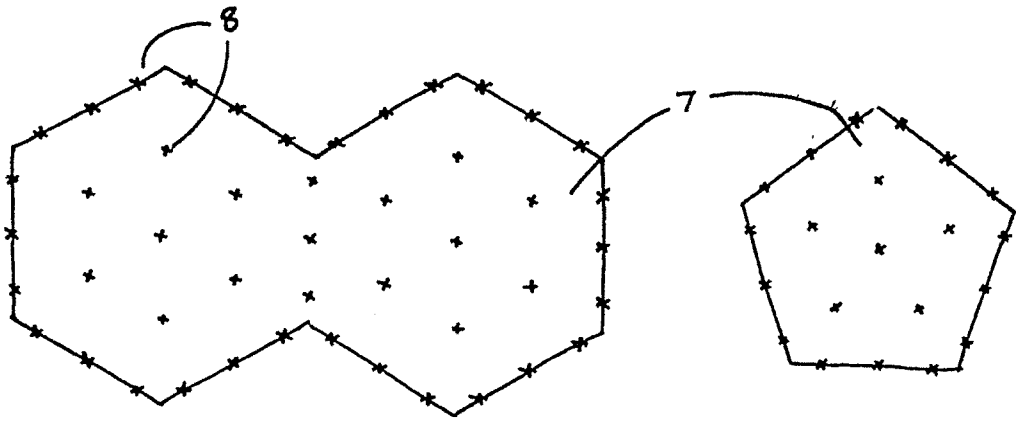

Fig 3

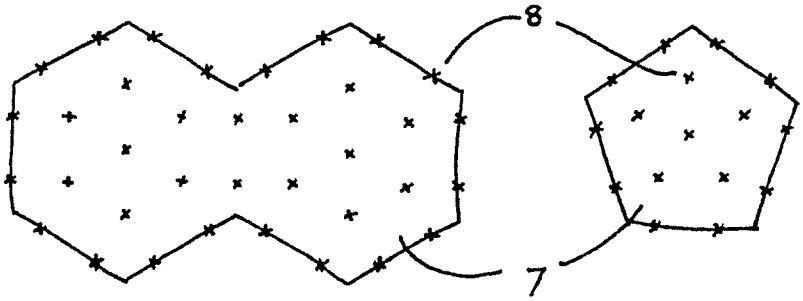

Fig 4

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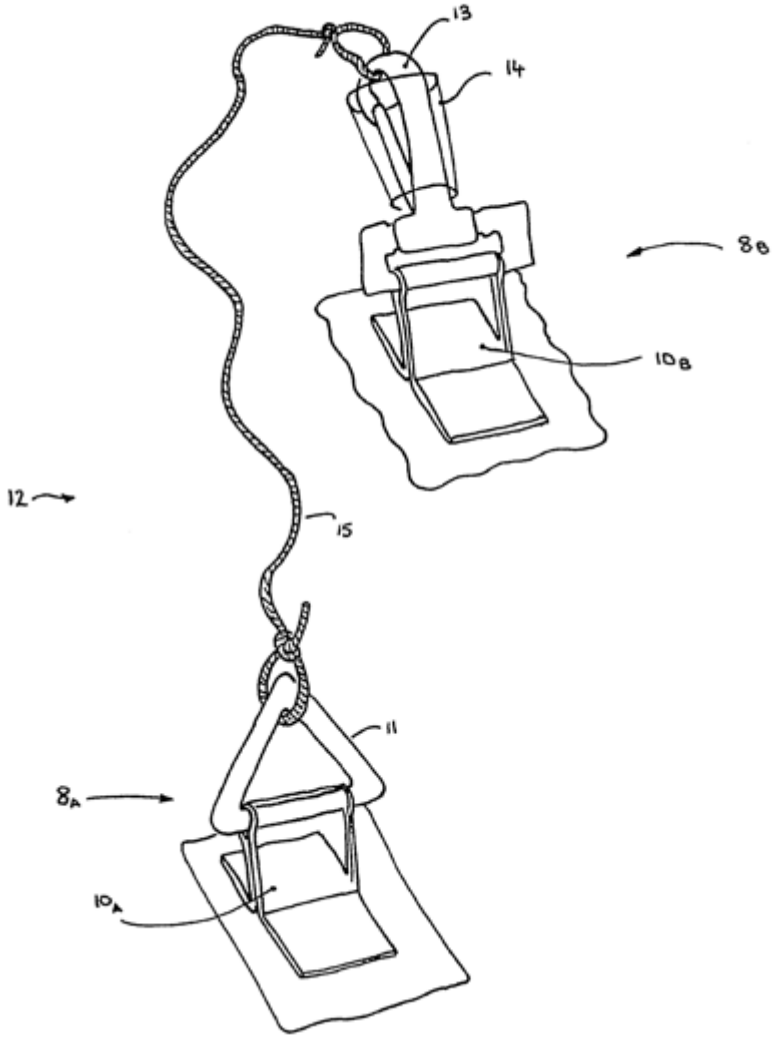

Fig 5

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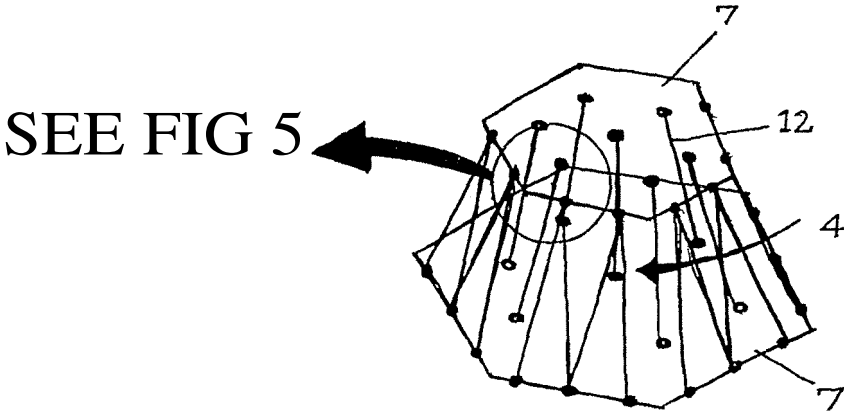

Fig 6

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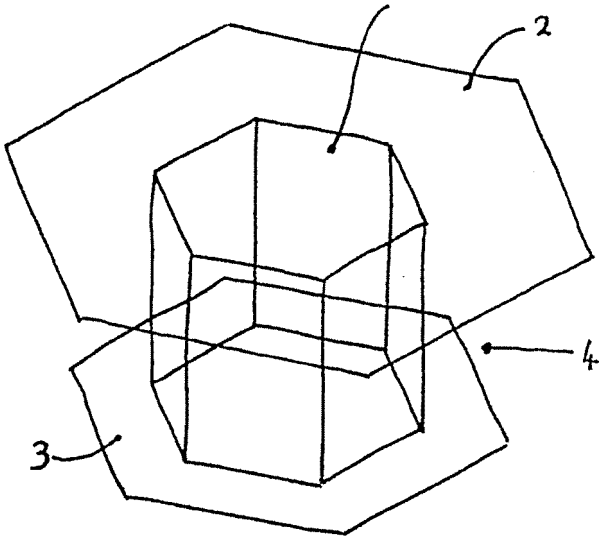

Fig 7

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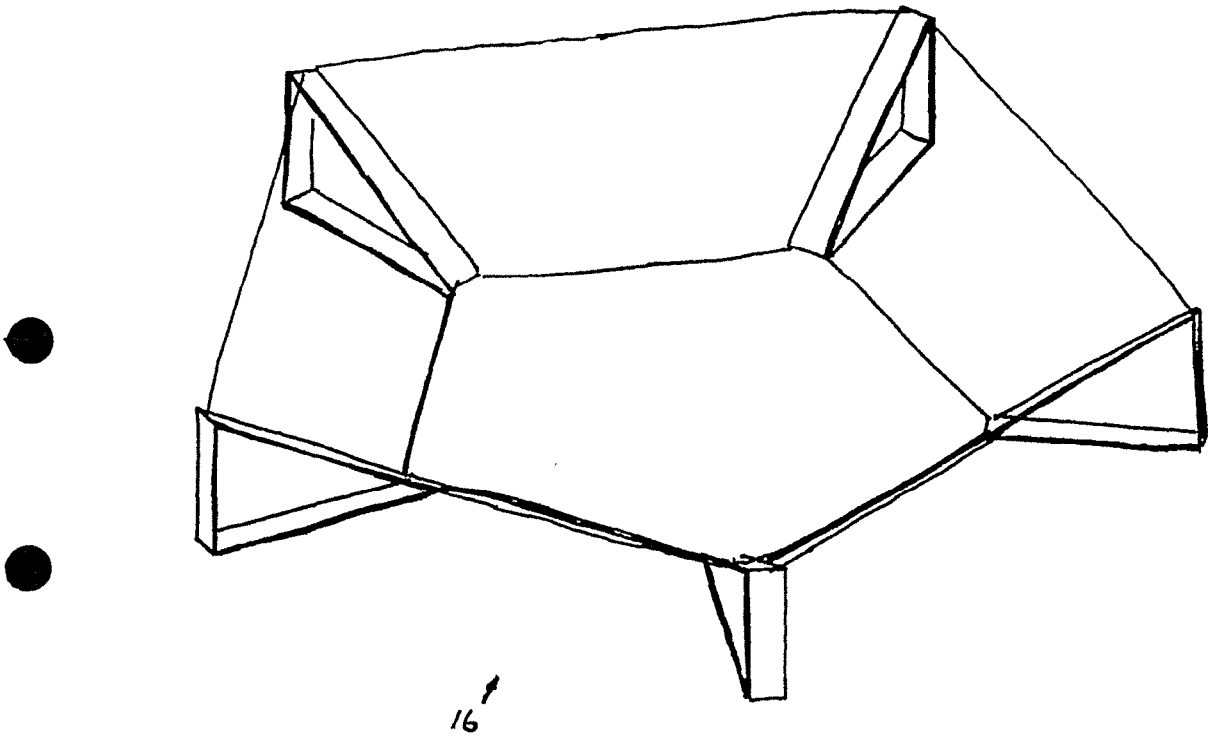

Fig 8

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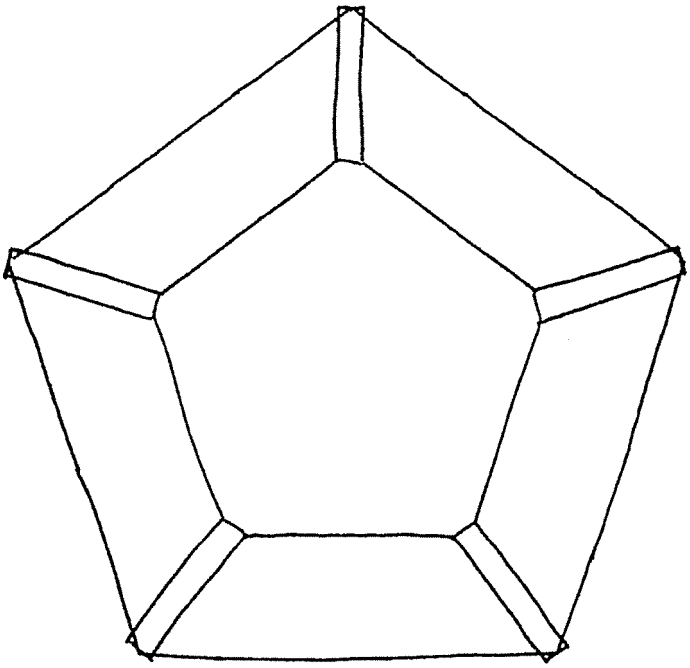

Fig 9

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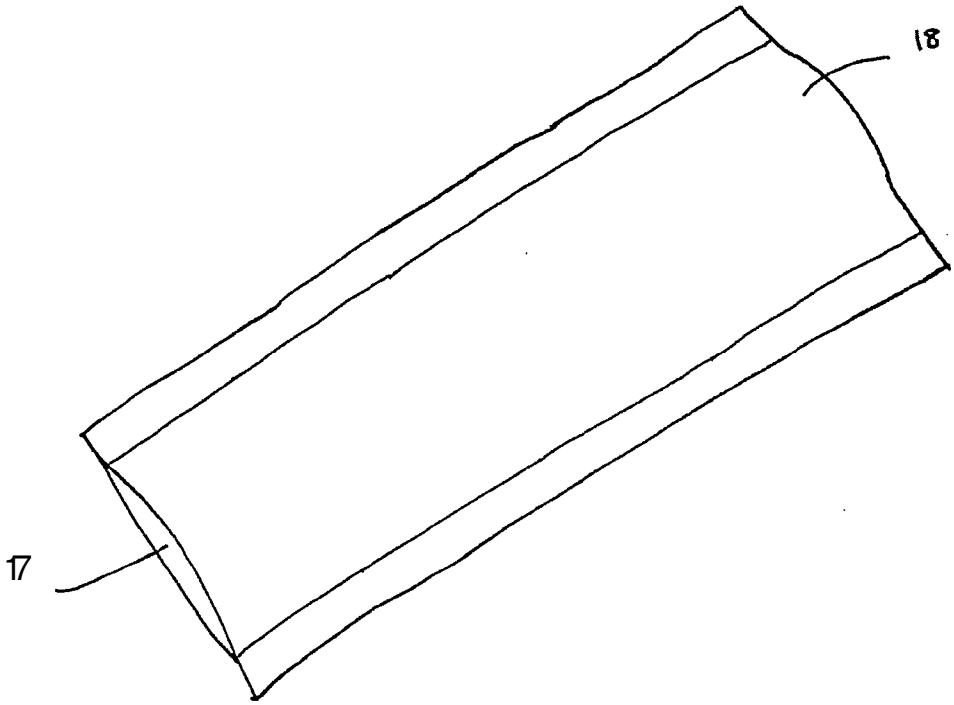


Fig 10

DOCUMENT B

ZORB I

DOCUMENT B

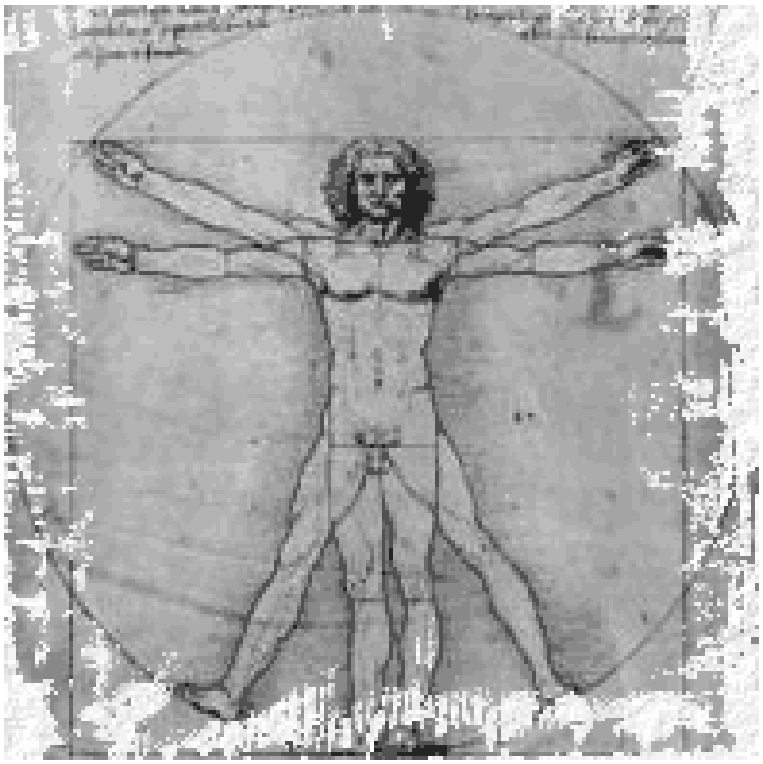
ZORB II

DOCUMENT C

ORBsome product

PRIOR ART 1

Da Vinci picture



PRIOR ART 2

United States Patent [19]

Tidwell

[11] **3,806,156**

[45] **Apr. 23, 1974**

[54] **ROLLING VEHICULAR TOY**

[75] Inventor: **Felix Tidwell,** APO San Francisco, Calif.

[73] Assignee: **The Raymond Lee Organization, Inc.,** New York, N.Y. ; a part interest

[22] Filed: **June 27, 1972**

[21] Appl. No.: **266,717**

[52] **U.S. Cl.** ..... **280/206,** 115/20, 272/1 B, 272/33

[51] **Int. Cl.** **A63g 29/00**

[58] **Field of Search** ..... 280/206, 206 X; 115/20; 272/1 B

[56] **References Cited**

UNITED STATES PATENTS

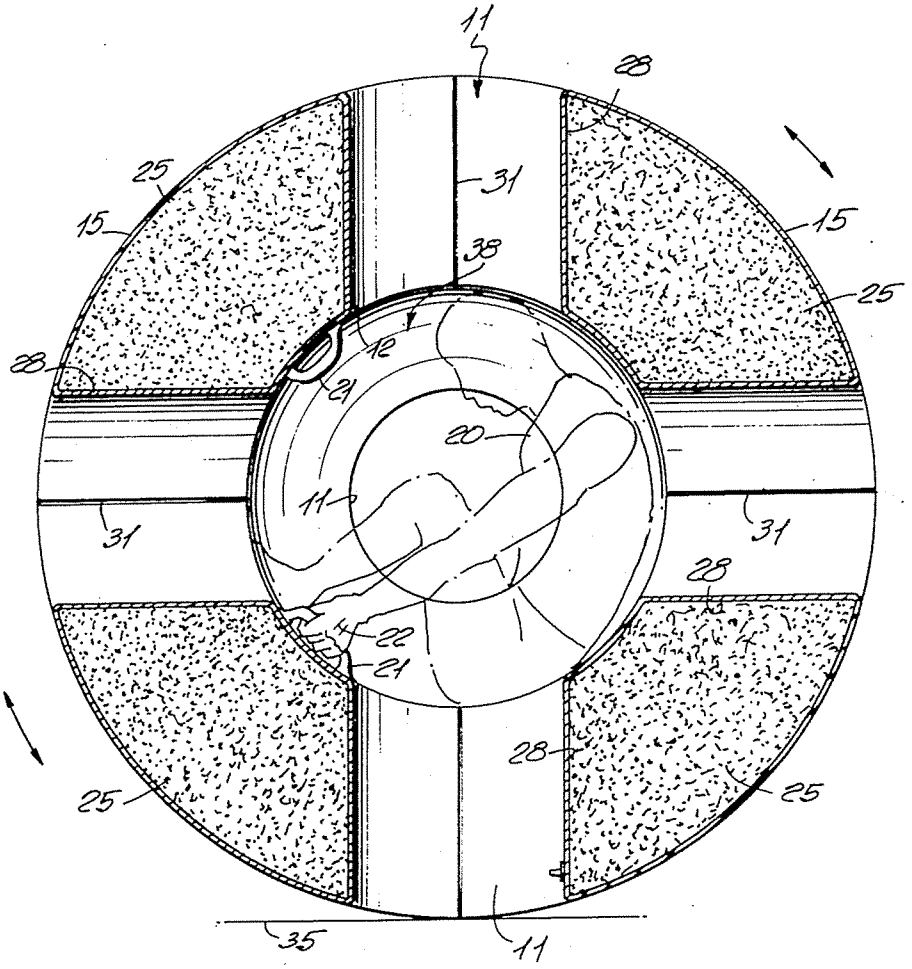
2,938,727	5/1960	Nosak	280/206 X
3,460,828	8/1969	Curlee	280/206

Primary Examiner—Robert J. Spar
Assistant Examiner—Ross Weaver
Attorney, Agent, or Firm—Howard I. Podell

[57] **ABSTRACT**

A spherical inflated device to be used as a rolling toy, with an internal spherical seating section connected to the exterior of the device by one or more cylindrical passage holes. Handholds are fitted in the internal seating section to enable the occupant to shift his weight and thus provide motion and direction control to the device. The device may be fabricated by means of combining a series of independently formed inflated shaped sections.

1 Claim, 4 Drawing Figures



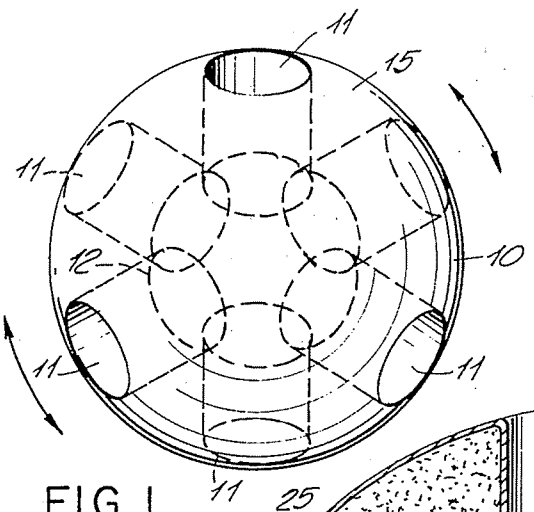


FIG. 1

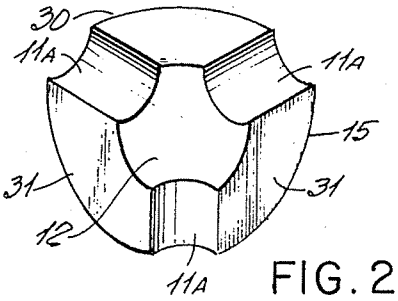


FIG. 2

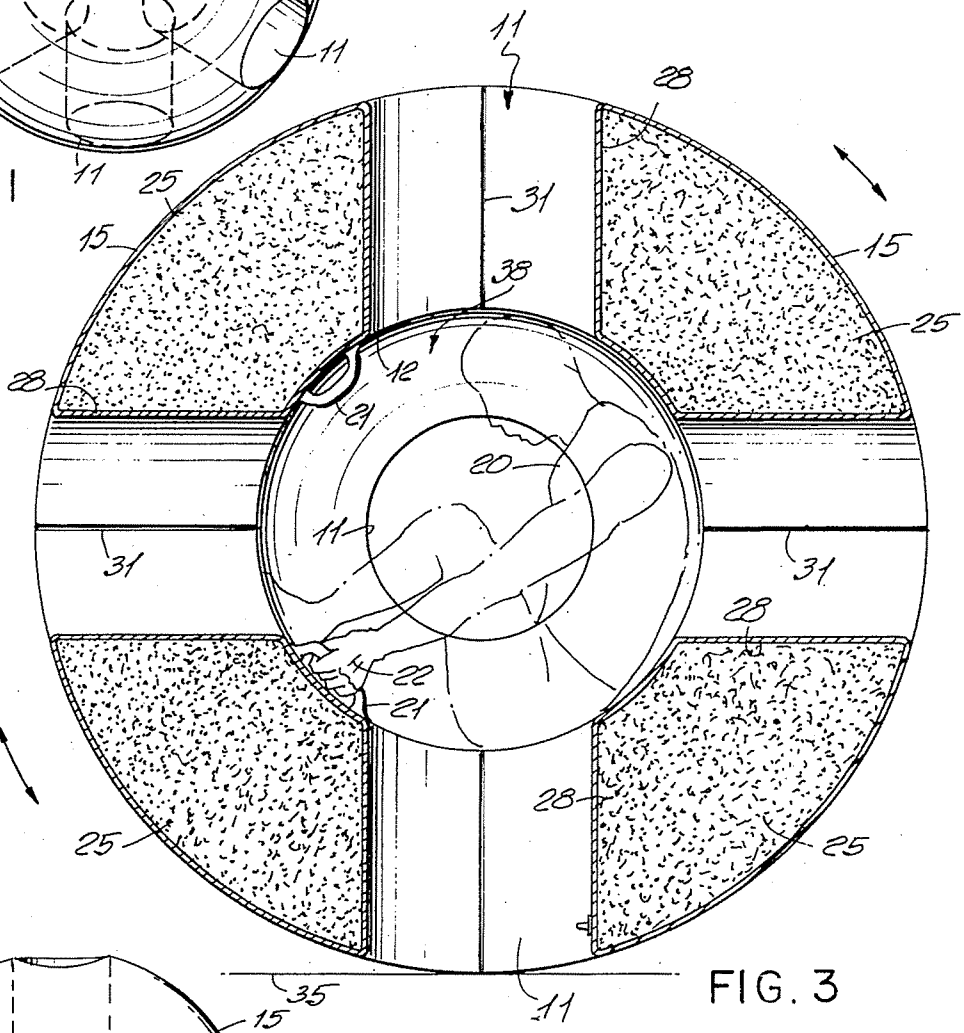


FIG. 3

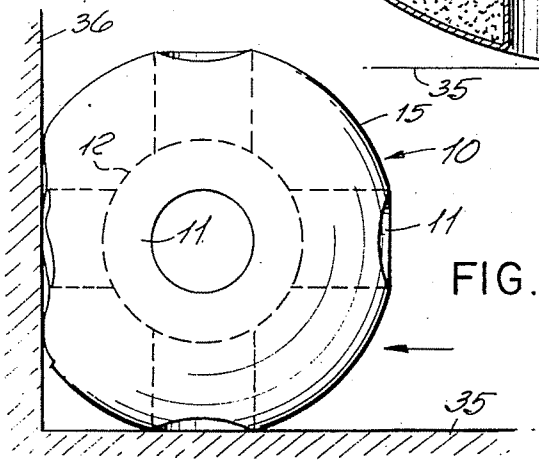


FIG. 4

ROLLING VEHICULAR TOY

SUMMARY OF THE INVENTION

This invention relates to a rolling or tumbling toy, in which a seated occupant may roll. The device is of a generally spherical shape, and is formed to shape by inflated plastic sheeting.

An advantage of this device is that the internally seated occupant is protected from injury of impact, when the rolling device is brought to an abrupt halt, by the shock absorbent qualities of the inflated toy.

A further advantage of the device is that the seated occupant may shift his weight by means of mounted handholds so as to put the device into motion and to control the direction of said motion.

The device is in the general shape of a spherical shell within a concentric larger spherical shell. The space between the two spherical shells is inflated with air. Egress to the inner sphere, in which the occupant sits, is through any one of several tubular tunnels linking the inner shell with the external shell.

BRIEF DESCRIPTION OF THE DRAWING

The objects and features of the invention may be understood with reference to the following detailed description of an illustrative embodiment of the invention, taken together with the accompanying drawing in which:

FIG. 1 is an elevation view of the rolling toy;

FIG. 2 is a perspective view of a section of the rolling toy;

FIG. 3 is a cross-section, in elevation, of the rolling toy and the seated occupant; and

FIG. 4 is an elevation view of the rolling toy at the moment of impact with a vertical surface, indicating the shock absorbing qualities of the toy.

DESCRIPTION OF THE PREFERRED EMBODIMENT:

Turning now descriptively to the drawing, in which similar reference characters denote similar elements throughout the several views, FIG. 1 illustrates the toy **10** formed with an external spherical shell **15** fastened to an internal concentric spherical shell **12** with tubular radially oriented tunnels **11** joining the internal spherical shell **12** with the external shell **15** to provide egress to and from the interior **38** of the toy **10.**

As shown in FIG. **3,** the occupant **20** rests in an umbilical position in the interior **38** with his hands **22** grasping one or more of the several handholds **21** which are fastened to the interior shell **12.** The inflated space **25** between the inner shell **12** and the external shell **15** may be reinforced by internal partitions in addition to the walls **28** of tubes **11.** Alternatively, as shown in FIG. **2,** the device **10** may be formed by joining together several shapes **30,** each shape **30** being in the form of a partial unit so that the surfaces **31** when joined together by an adhesive become an internal partition of the completed spherical toy **10.** The concave surfaces **11A** are joined to form the complete tube **11** leading between the inner seating section and the outside of the toy **10.**

Section **30,** shown in FIG. **2,** when joined to seven other similar shapes, by applying adhesive to plane surfaces **31** and joining said plane surfaces together, forms a rolling toy **10** with six radial tunnels **11** between the inner occupant area and the external shell **15.**

FIG. **4** illustrates the manner in which the toy **10** absorbs shock when it rolls along the ground **35** into a vertical wall **36.** The external spherical surface is flattened along the area of impact with the internal inflated air distributing the force of impact evenly throughout the area of the internal shell **12** and the external shell **15.**

Since obvious changes may be made in the specific embodiment of the invention described herein, it is indicated that all matter contained herein is intended as illustrative and not as limiting in scope.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A spherical shaped device adaptable for use as a rolling and tumbling toy which consists of an external spherical surface joined to an internal concentric spherical surface by open radially oriented cylindrical tubes with the space between the internal surface and the external surface sealed and inflated with air to maintain the spherical shape of the device, said device being formed by the joining together of eight identical inflated shapes with

each of said inflated shapes being in the general form of a quarter segment of a concave hemisphere, with two of the walls of the inflated shape being in the form of concentric spherical contours, and with each of three other side walls of the inflatable shape lying on mutually perpendicular planes to each other with each of said side walls being formed as a flat sheet, and with the intersection between each pair of adjacent side walls being formed in a concave circular shape so that when eight of said inflatable shapes are joined together by adhesive coated along their flat joined side walls, the concave shape of the intersection of each pair of adjacent side walls of each set of four adjacent shapes is in the form of a radical tube leading from the exterior to the interior cavity of the formed sphere, with the interior surface of the formed sphere being in the shape of a hollow concentric sphere, where the walls of each of the inflatable shapes are formed of plastic sheeting.

* * * * *

PRIOR ART 3

United States Patent [19]

Young

[11] **Patent Number: 4,489,932**

[45] **Date of Patent: Dec. 25, 1984**

[54] **AMUSEMENT DEVICE**

[76] Inventor: **Gary L. Young,** 3405 Sinton Rd. #199, Colorado Springs, Colo. 80907

[21] Appl. No.: **435,944**

[22] Filed: **Oct. 22, 1982**

[51] **Int. Cl.**[3] **A63G 1/12**

[52] **U.S. Cl.** **272/36**

[58] **Field of Search** ..... 272/28 R, 1 B, 1 R, 272/32, 33 R, 33 A, 33 B, 34, 35, 36, 114, 115; 434/34, 57, 136, 139, 140; 280/78, 206, 207, 208, 28.5; 180/21; 441/78; 74/471 XY; 119/29; D19/63; 104/68, 77, 78

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Assistant Examiner—Arnold W. Kramer
Attorney, Agent, or Firm—Richard W. Hanes

[57] **ABSTRACT**

An amusement device is disclosed which comprises a generally spherically shaped hollow shell structure having an interior sufficiently large to accomodate a human being and including an opening with a removable hatch cover to permit a human being to enter the shell structure. The shell structure is supported in a support frame on casters so that the shell structure can be rocked or rotated in any direction when the user shifts his weight within the shell structure.

5 Claims, 13 Drawing Figures

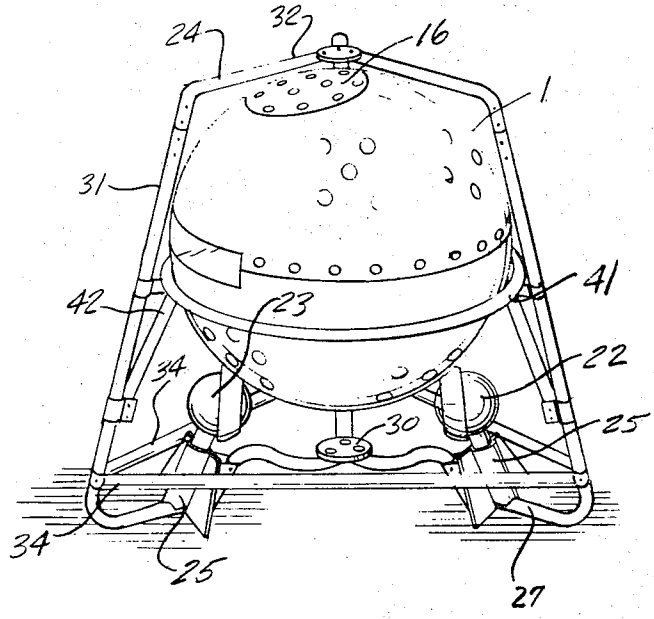
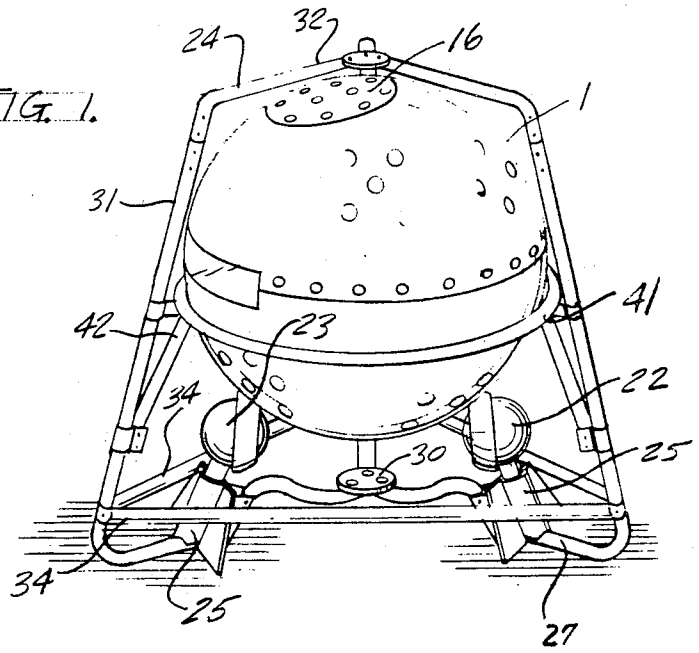


FIG. 1.



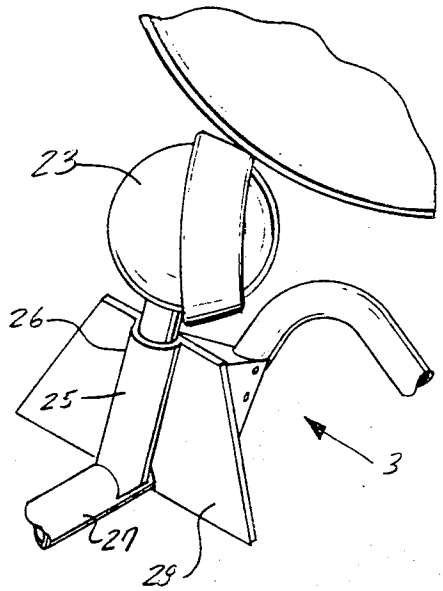


FIG. 2.

FIG. 3.

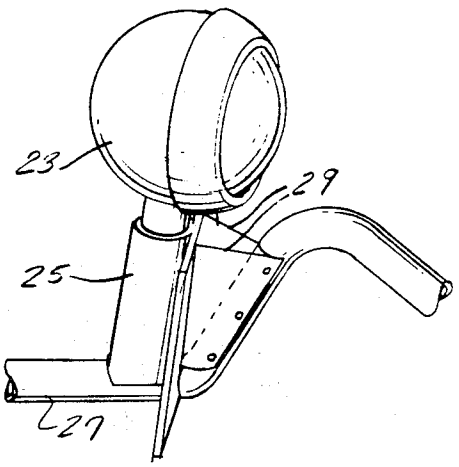


FIG. 4.

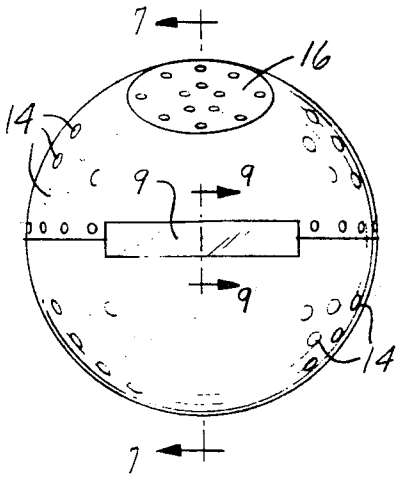


FIG. 5.

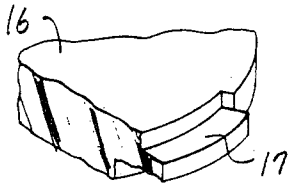


FIG. 6.

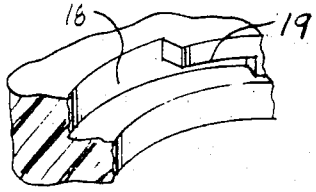


FIG. 7.

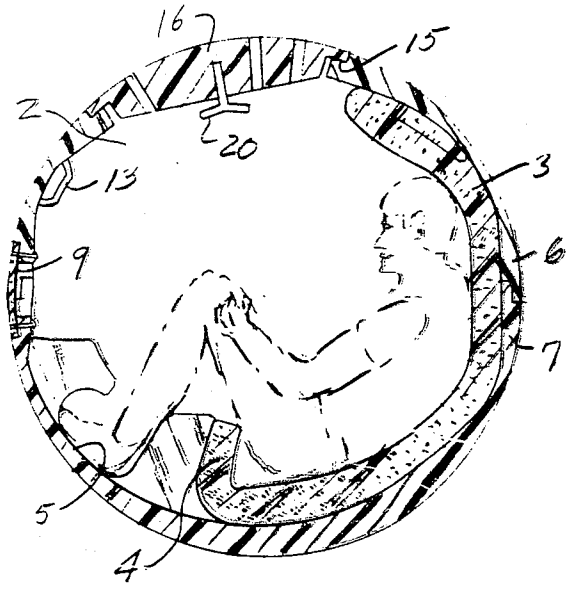


FIG. 8.

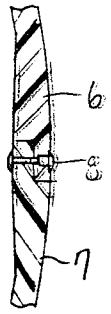


FIG. 9.

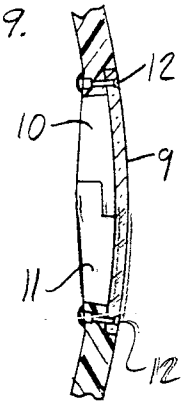


FIG. 10.

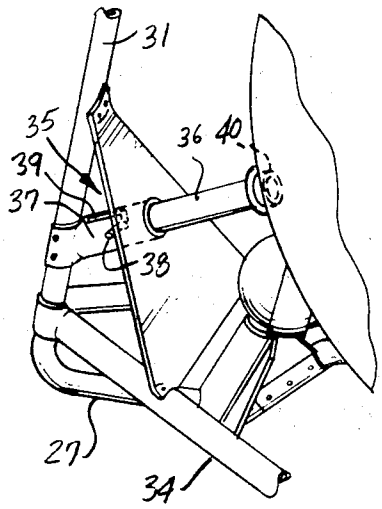


FIG. 12.

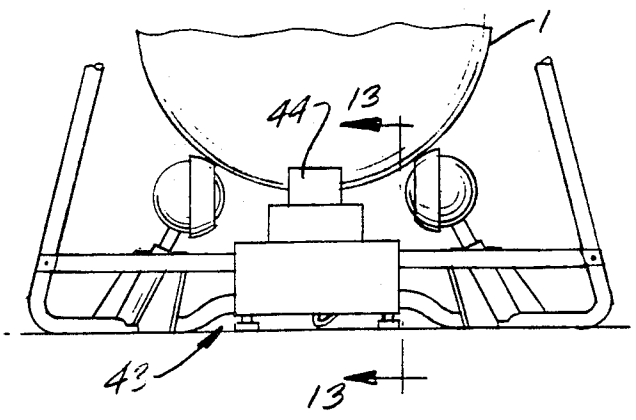


FIG. 11.

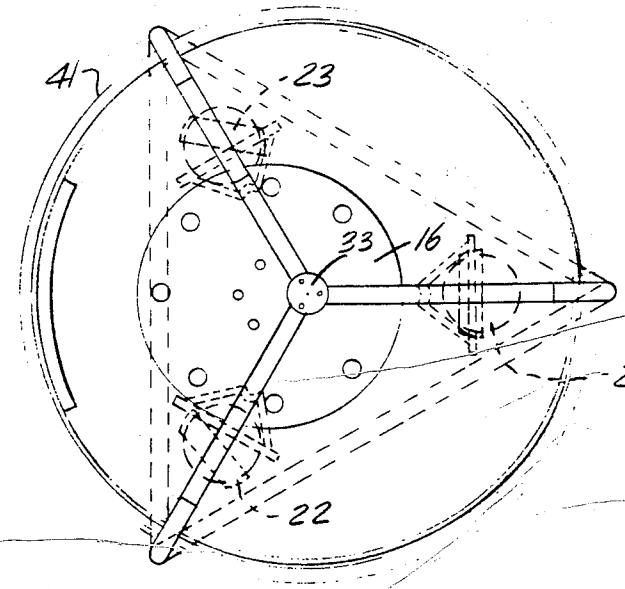
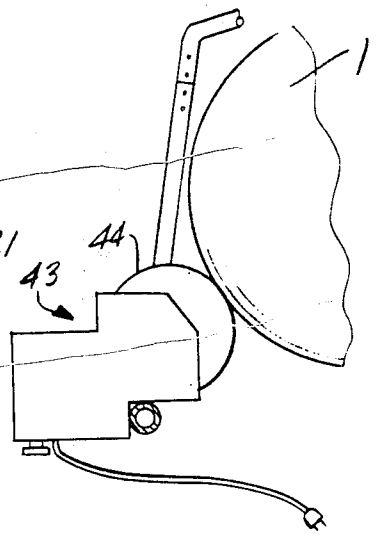


FIG. 13.



AMUSEMENT DEVICE

BACKGROUND AND SUMMARY OF THE INVENTION

The present invention relates to an amusement device within which an occupant, such as a child, may rotate by shifting his weight so as to put the device into motion and to control the direction of the motion.

Amusement devices of the aforementioned type have I° been known for many years. For example, in U.S. Pat. No. 1,521,133 a ring-shaped device is disclosed "which is preferably started on a slight incline so as to give it sufficient momentum to continue tumbling on down a hill with a youngster firmly seated therein. The motion of a child in this device is limited to somersault motion as the device rolls down the hill. This known device is also disadvantageous in that it requires a relatively large amount of space for use, hence is normally for outdoor use only, and it poses considerable risk of injury to the user from shock during the wheeling motion and also from impact when the rolling device is brought to an abrupt halt.

Spherical amusement devices for accommodating an occupant have also been proposed as in U.S. Pat. Nos. 3,066,95 and 3,806,156 for example. In these devices the user may enjoy the sensation of rolling end over end, sideways or otherwise. In the device disclosed in U.S. Pat. No. 3,066,951, the spherical shell is made of aluminum. To reduce injury and help absorb 30 shock the interior of the aluminum shell is covered with a resilant shock absorbing material such as foam rubber.

The device in U.S. Pat. 3,806,156 is an inflatable spherical device wherein the space between two: spherical shells is inflated with air. The shock absorbent qualities of the inflated structure to protect the occupant from injury on impact when the rolling device is brought to an abrupt halt. While such a known spherical amusement device is safer than the metal ring-shaped type of device referred to above, this known inflatable spherical device is nevertheless disadvantageous in that it is more complexed and expensive to manufacture, is relatively bulky and inconvenient to use requiring large amounts of space for, use — hence normally is for outdoor use only, and does not entirely eliminate the risk of injury to the occupant.

One recent attempt to avoid at least some of the aforementioned problems associated with these known spherical amusement devices is disclosed in U.S. Pat. No. 4,272,093, wherein it is proposed to limit the travel 50 of the generally spherical shell or housing of the amusement device by means of a ring having a curved wall which is placed about the spherical shell. The spherical shell can be rolled up on the curved wall portion of the ring, permitting the shell to roll back toward the other 55 parts of the curved wall portion. Spikes are used to secure the ring to the ground outdoors. Weights may be substituted for spikes if the device is to be used indoors. However, this known device is relatively bulky and inconvenient for indoor use because of the size of the 60 ring and the weights needed to support it. The motion of the user in such a device is also relatively limited because the rolling or rotational movement of the shell is constantly stopped and redirected by the surrounding ring.

An object of the present invention is to provide an improved amusement device of the type described which avoids the aforementioned disadvantages associated with the known devices. More particularly, an object of the present invention is to provide an amusement device which permits the user to enjoy the sensation of rolling end over end, sideways or otherwise, without danger of injury, and which is relatively economical to construct, compact and easy to use, and can be used indoors or outdoors. These and other objects of the present invention are attained by providing an amusement device comprising a generally spherically shaped hollow shell structure having an interior sufficiently large to accommodate a human being and including means permitting a human being to enter said shell structure, and means for supporting said shell structure for rotation in any direction.

According to a disclosed, preferred embodiment of the invention the means permitting a human being to enter the shell structure includes a hatch opening in the shell structure and a hatch cover for closing the opening. The means for supporting the shell structure-for rotation in any direction includes a plurality of casters upon which the shell structure is supported. The casters are connected to a support frame of the device which surrounds the shell structure. A safety ring is provided in close spaced relationship about the shell structure to support the shell structure in the event one of the casters enters the hatch opening when the hatch cover is removed. The safety ring is connected to the support frame of the device.

While rocking or rotational movement of the device may be *effected* by the user shifting his weight, according to an additional feature- of the invention a drive motor means is provided for rotating the shell structure. The drive motor means includes a multi-directional friction drive wheel which engages the outer surface of the shell structure. Means are provided for remotely controlling the drive motor means from within the shell structure.

As a further feature of the invention a stop is provided for selectively preventing rotation of the shell structure. The stop includes a rod which is connected to the support frame of the device for movement between a retracted position and an extended position. An opening is provided in the shell structure for receiving the end of the rod when the rod is in the extended position thereby preventing rotation of the shell structure so that a user may safely enter and leave the spherical shell structure.

These and other objects, features and advantages of the present invention will become more apparent from the following description when taken in connection with the accompanying drawings which show, for purposes of illustration only, one embodiment in accordance with the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a an elevational view from the side of an amusement device according to the invention;

FIG. 2 is a side view, partially cut away of a caster for supporting the spherically shaped hollow shell structure of the invention;

FIG. 3 is an elevational view, partially cut away, taken in the direction of arrow 3 in FIG. 2 and illustrating the connection between the caster and the support frame of the device;

FIG. 4 is a front elevational view of the sherical shaped hollow shell structure of the invention;

FIG. 5 is a perspective view of the hatch cover, partially cut away, for the spherically shaped hollow shell structure of the invention;

FIG. 6 is a cross-sectional view of the spherically shaped hollow shell structure around the hatch opening with the hatch cover removed;

FIG. 7 is a cross-sectional view of the spherically shaped hollow shell structure taken along the line 7—7 in FIG. 4;

FIG. 8 is a partial cross-sectional view of the spherically shaped hollow shell structure of the invention at the joint of the two hemispheres thereof;

FIG. 9 is a cross-sectional view of the spherically shaped hollow shell structure taken along the line 9—9 of FIG. 4 and illustrating a joint at the point of a window in the capsule;

FIG. 10 is an elevational view of a portion of the device of the invention illustrating a stopping mechanism for stopping the rotational movement of the spherically shaped hollow shell structure;

FIG. 11 is a top view of the amusement device of the invention;

FIG. 12 is a side view, partially cut away, of the amusement device of the invention schematically illustrating a motorized remote-control multi-directional friction drive wheel for the shell structure; and

FIG. 13 is a cross-sectional view taken along the line 13—13 of FIG. 12 and further illustrating the motorized remote-control multi-directional friction drive wheel of the invention.

DESCRIPTION OF THE DISCLOSED EMBODIMENT

Referring now to the drawings, the amusement device of the invention comprises a generally spherically shaped hollow shell structure **1** having an interior **2** sufficiently large to accommodate a human being such as a child as shown in outline in FIG. **7**. The spherical shell structure **1** is formed of a plastic material such as ABS, polyvinglchloride, polyethylene, acrylic polystyrine or polypropylene having a substantially hard and wear resistant outer surface. The shell structure is provided with a substantially thick, soft and resiliant rubber or foam lining material **3** over most of its internal surface so as to form a seat **4** for the occupant with an area **5** being provided for the feet of the occupant.

The shell structure **1** is split into two hemi-spherical portions **6** and **7** which are joined at their thickened edges by a cooperating tongue and groove arrangement and suitable fasteners **8** as shown in FIG. **8**. A window **9** is provided in the spherical shell structure **1** in the area of the joint between the hemi-spherical portions **6** and **7** opposite the occupant's seat **4**. The window **9** is formed of transparent plastic material which is placed over opposed cutouts or recesses **10** and **11** in the respective hemi-spherical portions **6** and **7**. Fasteners **12** are used to connect the window to the respective portions so that the window follows the contour of the spherical shell structure in the manner illustrated in FIG. **9**. A plurality of handles **13** are also secured to the interior surface of the spherical shell structure **1**. One such handle is illustrated in FIG. **7** of the drawings. The handles enable an occupant to firmly grip the shell structure from inside, and to impart rocking, rolling, tilting or pivoting movement to the spherical structure by throwing his weight from side to side while holding the handles.

A plurality of holes such as those shown at **14** in FIG. **4** are provided through the spherical shell structure **1** and lining **3** therein about the surface of the shell structure to provide adequate ventilation. A single, relatively large opening **15** is also formed in the upper portion of the hemi-spherical portion **6** to permit a human being to enter and exit from the shell structure. The opening **15** is normally closed during use by a removable hatch cover **16**. The hatch cover is secured in the opening **15** by a cooperating tongue and groove arrangement shown in FIGS. **5** and **6**. To close the opening **15** the hatch cover **16** is placed in the opening and rotated slightly so that the tongue or projection **17** thereon moves in the groove **18** in the surrounding shell structure to a position beneath the ledge **19** where the hatch cover is securely held in position. A knob **20** on the inside of the hatch cover **16** permits the hatch cover to be easily rotated from inside the shell structure for securing or removing the hatch cover. The hatch cover also can be easily removed from its secured position from the outside of the shell structure by placing ones fingers in the holes **14** therein and rotating the cover to the release position.

The spherical shell structure **1** is supported for rotation in any direction on three Shepherd casters **21**, **22** and **23**. The casters are connected to a support frame **24** of the device by brackets **25** which include an inclined, upstanding cylindrical member **26** which is mounted on a leg **27** of the support frame, a support plate **28** connected to the cylindrical member **25** and connecting flanges **29** extending between the support plate and the tubular leg **27** and being connected thereto by welding, for example. The support plate **28** extends laterally with respect to the tubular leg **27** and at a level with the lower surface thereof to provide additional stability to the support frame.

The support frame **24** includes a base portion formed of three outwardly extending tubular legs **27** which are connected at their inner ends beneath the shell structure **1** by means of a connecting plate **30**. The outer ends of the legs **27** are curved upwardly into inclined, upstanding tubular leg portions **31**. The tubular leg portions **31** extend to a height above the shell structure **1** where they are bent over to form essentially horizontally extending tubular leg portions **32** whose inner ends are connected to one another by means of a connecting plate **33** shown in FIG. **11**. Thus, the support frame **24** actually surrounds the shell structure **1**. Struts **34** extend between the respective tubular leg portions **31** at the lower ends thereof to provide additional rigidity to the support frame. The struts **34**, connecting plates **30** and **33**, connecting flanges **29**, support plates **28** and the various tubular leg portions of the support frame are formed of steel in the enclosed embodiment but may be other materials which provide the necessary strength and rigidity to support the shell structure **1** and the occupant during rotation. The tubular legs **27** and leg portions **31** and **32** of the support frame may be separate tubular members which are connected at their adjacent ends or each leg may be integral with its respective leg portions **31** and **32**, that is, formed by bending a single steel tube.

One safety feature of the amusement device of the invention is the provision of a stop mechanism **35**, see FIG. **10**, which permits the position of the spherical shell structure to be fixed such as during entry and exit from the shell structure. The stop mechanism **35** comprises a rod **36** which is telescopingly received in one end of a cylindrical tubular member **37**. The other end of the member **37** is fastened to a tubular leg portion **31**

of the support frame. A pin **38** connected to the rod **36** is received in a groove **39** in the tubular member **37** to permit moving the rod **36** between a retracted position and an extended position. An opening **40** is provided in the shell structure **1** for receiving the outer end of the rod **36** when the rod is in the extended position thereby preventing rotation of the shell structure.

An additional safety feature of the present invention involves the provision of a safety ring **41**. The ring encircles the spherical shell structure **1** in close spaced relationship thereto at a point beneath and inwardly from the widest diameter or mid portion of the shell structure. The ring **41** is connected to the tubular leg portions **31** of the support frame by means of support brackets **42**. The support ring is positioned so that it will support the shell structure **1** in the event that the shell structure drops slightly as a result of a caster failure or a caster entering the opening **15** when the hatch cover is removed.

A further, optional feature which may be provided on the amusement device of the invention is a drive motor means for rotating the shell structure. Such a drive motor means is shown schematically at **43** in FIGS. **12** and **13**. The drive motor means includes a friction drive wheel **44** which engages the outer surface of the shell structure **1** for driving the same. The friction drive wheel is driven by means of an electric motor which can be remotely controlled by a suitable control, not shown, from within the shell structure. Preferably, the friction drive wheel can be disengaged from driving contact with the shell structure so that, if desired, the occupant can rock or rotate the shell structure to carry out a number of random movements by simply changing his position.

While I have shown and described only one embodiment in accordance with the invention, it is understood that the same is not limited thereto but is susceptible of numerous changes and modifications as known to those skilled in the art. For example, the disclosed device of the invention is basically a plaything for children and its size is adjusted accordingly, however, larger spherical shell structures for use by adults are also understood to fall within the scope of this invention. Further, it is envisioned that a large number of attachments which might enhance the appearance of the apparatus and provide additional child appeal could be included as part of the device. I therefore do not wish to be limited to the details shown and described herein but intend to cover all such changes and modifications as are encompassed by the scope of the appended claims.

I claim:

1. An amusement device comprising:

a generally spherically shaped hollow shell structure having an interior sufficiently large to accommodate a human being including hatch means to permit ingress and egress from the interior of the shell structure;

a frame having an equilateral triangular ground plan base with upstanding leg portions from the apex of each base angle which converge to a common connection over the shell structure;

inverted castor means carried by the base frame at each of the three apexes thereof which castor means rotatably support the said shell structure for free rotation about the three mutually perpendicular axes of the shell.

2. An amusement device according to claim **1**, wherein a stop means is provided for selectively preventing rotation of said shell structure, said stop means including a rod which is connected to one of said leg portions for movement between a retracted position and an extended position and an opening in said shell structure for receiving said rod when the rod is in said extended position thereby preventing rotation of said shell structure.

3. An amusement device according to claim **1**, wherein a safety ring connected to said leg portions is provided in close spaced relationship about said shell structure at a point beneath and inwardly from the widest diameter or midportion of said shell structure to support said shell structure in the event it drops slightly from its normal supported position such as when said support means breaks.

4. An amusement device according to claim **1**, wherein a drive motor means is provided for rotating said shell structure.

5. An amusement device according to claim **4**, wherein said drive motor means includes a multi-directional friction drive wheel which engages the outer surface of said shell structure.

* * * * *

PRIOR ART 4

TRANSLATION OF FR2493167 – publication date January 1995

The present invention relates to an attraction, for one or more persons.

The general aspect of this is akin to that of a double walled sphere which can be inflated with air under pressure. Determining a buffer space (A), two spherical walls (1 and 2) of different diameter are joined producing a sphere with a compartment (B) for a user accessed by an entranceway (C), through the two walls.

The entranceway (C) may have stiffening hoops.

The user will not be in direct contact with the ground and the thickness of the spheres removes any shock from contact with the ground. This device can thus be used on a variety of surfaces, natural or artificial slopes, stairs, snow or water.

A valve (7) is provided through the outer casing permitting quick inflation by a pump.

To slow the rotation and therefore speed of the device, air can be released by the user via the valve.

A flexible flap (5) will ensure the waterproofness of the device maintaining low pressure, and thus avoiding the collapse of the device on the user.

During inflation or deflation of the device, it will be necessary to maintain the device away from the effects of wind or slope. A net covering the unit, whose meshes would be the sides of a polyhedron can be used to anchor the device in place while it is inflated or deflated.

In aquatic use, removable adaptions on the outer surface can improve the adhesion of the craft on the water. These adaptions can be of any shape (blades, cubes, inflated balloons).

For the construction of an apparatus, the two spheres are manufactured separately, then

assembled one within the other, connected by elongate connectors 3. Each sphere can be made from connected shaped flat portions of material (8).

Waterproofness and Access: A waterproof zipper (4) arranged around the entranceway will allow the connection of the two membranes and access to the inter-sphere space (A).

The use of thermoformed plastic allows the assembly of a sphere from joined curved segments.

PRIOR ART 4

CLAIMS

1. Mobile attraction that is movable by human power, characterized in that it consists of two spheres determining an inside compartment.

2. A double wall sphere according to claim 1, made of flexible and transparent plastic, connected together by tension, thereby determining a sealed space pressurised through a valve.

3. A double wall sphere according to previous claims, characterised in that it has a right of entrance and ventilation of the interior cabin, equipped with a safety valve to inflate or deflate the device.

4. A method of manufacturing a double wall sphere according to preceding claims.

PRIOR ART 4