(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 248 566 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
10.11.2010 Bulletin 2010/45

(51) Int Cl.:
A63G 29/00 *(2006.01)* ***A63G 31/08*** *(2006.01)*

(21) Application number: **10161771.0**

(22) Date of filing: **03.05.2010**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR
Designated Extension States:
BA ME RS

(30) Priority: **04.05.2009 DK 200900578**

(71) Applicant: **TOFTEBO MASKINFABRIK ApS**
4771 Kalvehave (DK)

(72) Inventor: **Lerche Andersen, Klaus**
4771, Gammel Kalvehave (DK)

(74) Representative: **Roerboel, Leif**
Budde Schou A/S
Vester Søgade 10
1601 Copenhagen V (DK)

(54) **Play apparatus**

(57) By the invention a play apparatus (10) comprising a hollow shell body (20) comprising a first compartment (22) for accommodating one or more children (4), an access opening (26) providing access by the one or more children (4) to the compartment (22), and a hub (70) for rotation of the hollow shell body (20) around at least one axis (12), characterized by the hollow shell body (20) comprising first and second shell parts (30, 32) joined together, the hub (70) being positioned in a second compartment (24) between the first and second shell parts (30, 32), the hub (70) comprising one or more bearings (92) adapted to receive a fixed axle (12) so that the hollow shell body (20) may rotate around the fixed axle (12), and by the axle (12) passing through an opening (36) in the hollow shell body (20), the opening (36) further defining a plain bearing for the axle (12) is provided. A method of producing the play apparatus (10) is also provided.

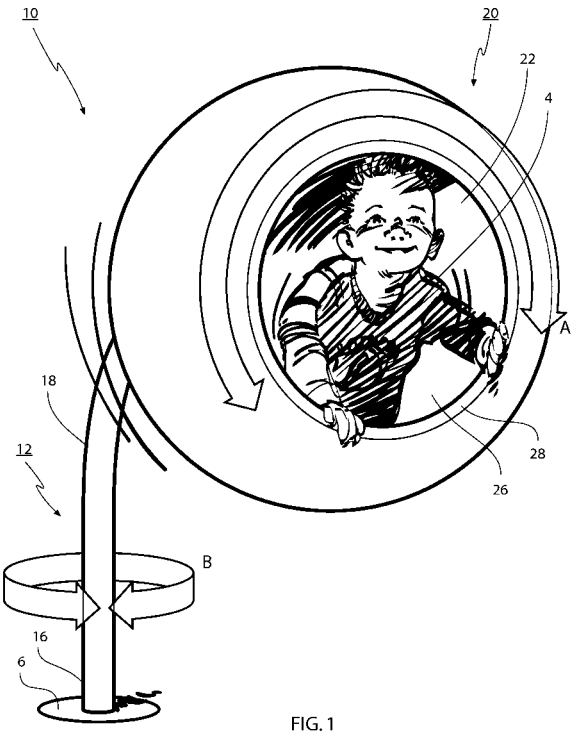


FIG. 1

EP 2 248 566 A1

Description

[0001] The present invention relates to a rotatably supported play apparatus as well as a method of producing the play apparatus. The play apparatus accommodates one or more children in a compartment and rotates due to the changing weight distribution as the one or more children move around in the compartment.

[0002] Play apparatuses, which can accommodate a child and which by movements of the child undergo a rotation or pendulum movement around a symmetry axis are known, one example being US 20020091002, which shows a barrel-shaped object placed horizontally or with a minor slope angle on rollers, and where a child may crawl in through at least one free end and by its activity cause the barrel to rotate. Further rotating play and exercise apparatuses are described in amongst other US20030056735, GB2161711 and US3119612.

[0003] A so-called "play barrel", which is made of impact-proof plastic, and which children can crawl into during play is known. However, no means for suspension of this barrel are provided so that it can make mill- or pendulum movement.

[0004] The above described play apparatuses however have several drawbacks, the most important being that the safety, of a child utilizing one of these play apparatuses, is not guaranteed. Typically the known rotating play apparatuses do not adequately prevent access by the child to potentially dangerous mechanical parts, thus presenting a serious risk of bodily injury or death to the child utilizing the play apparatus.

[0005] Further, the construction of known play apparatuses is generally complicated, and any attempt to bolster the safety of the child utilizing the play apparatus would come at a significant increase in complexity of the construction methods. As the required safety devices are not inherently incorporated in the previously known construction methods their incorporation would further result in increased labor and cost. Consequently it is an object of the present invention to increase the safety for a child utilizing a play apparatus by preventing access by the child to mechanical parts.

[0006] It is a further object of the present invention to increase the versatility for use by different children of a play apparatus.

[0007] It is yet a further object of the present invention to simplify the construction of a play apparatus.

[0008] The above objects are obtained by a play apparatus according to claim 1.

[0009] In preferred embodiments of the play apparatus according to the invention the hollow shell body is rotationally molded. The hollow shell body is preferably molded from thermoplastics such as polypropylene.

[0010] In preferred embodiments of the play apparatus according to the invention the hollow shell body has a diameter sufficient to accommodate one or more children within the first compartment. The sufficient diameter also depends on the age and size of the one or more children, however typically the hollow shell body may have a diameter from about 0.5 m to about 2 m or even larger.

[0011] In preferred embodiments of the play apparatus according to the invention the hollow shell body is substantially spherical, but other shapes are possible, such as a spheroid, a cube, a prism, other polyhedrons etc.

[0012] In the context of the present invention the term child or children is to be understood as comprising any individual playing in or with the play apparatus.

[0013] In preferred embodiments of the play apparatus according to the invention the access opening has a diameter sufficient to allow one or more children to enter and exit the first compartment. As an example the access opening may have a diameter of about 0.3 to about 1.5 m.

[0014] In preferred embodiments of the play apparatus according to the invention the axis intersects the access opening.

[0015] This is advantageous as it lessens the risk that the one or more children fall out of the hollow shell body during rotation.

[0016] In preferred embodiments of the play apparatus according to the invention the access opening comprises a circumferential protective border.

[0017] This is advantageous as it protects and provides a good handhold for the one or more children playing in the play apparatus. The protective border may be made of rubber or plastics or metal.

[0018] In preferred embodiments of the play apparatus according to the invention the hub comprises one or more bearings.

[0019] The one or more bearings may be rolling element bearings such as ball bearings or plain bearings.

[0020] In preferred embodiments of the play apparatus according to the invention the hub is attached to the hollow shell body by bolts and nuts.

[0021] In preferred embodiments of the play apparatus according to the invention the at least one axis is a substantially horizontal axis.

[0022] In preferred embodiments of the play apparatus according to the invention the first shell part is larger than the second shell part.

[0023] In preferred embodiments of the play apparatus according to the invention the present invention the fixed axle is made of steel.

[0024] In preferred embodiments of the play apparatus according to the invention the fixed axle is hollow.

[0025] This is advantageous as it reduces the material needed and the weight of the axle.

[0026] In preferred embodiments of the play apparatus according to the invention the first and second shell parts are joined by bolts and nuts, or alternatively adhesive.

[0027] In preferred embodiments of the play apparatus according to the invention the play apparatus further comprises a stiffening plate mounted to the first shell part.

[0028] This is advantageous as the stiffening plate stiffens the hollow shell body and further prevents bolts or nuts, or other fastening means used to attach the hub to the first shell part, or the second shell part to the first shell

part, from harming the parts of the hollow shell body that the nuts or bolt heads bear against. Washers may also be provided in preferred embodiments of the play apparatus according to the invention to protect the hollow shell body from the bolts and/or nuts.

[0029] In preferred embodiments of the play apparatus according to the invention the fixed axle comprises a first end to be received by the one or more bearings, an intermediate bent portion, and a second end rotatably supported by a substrate.

[0030] This is advantageous as it allows the play hollow shell body to rotate around two axes.

[0031] However, in other embodiments of the play apparatus according to the invention the axle is fixed in the substrate. The substrate may be the ground, or may be block of concrete placed in the ground or above the ground.

[0032] In preferred embodiments of the play apparatus according to the invention the play apparatus further comprises a rotation driven part positioned within the second compartment and rotationally connected to the axle. In further preferred embodiments of the play apparatus according to the invention the rotation driven part is chosen from the group comprising a brake, an electrical generator, a sound generating device, a device limiting the extent of rotation of said hollow shell body, a spiral torsion spring, a ratchet allowing unidirectional rotation only, a flywheel, a rotational speed governor or combinations thereof.

[0033] This is advantageous as it may increase the safety for a child playing in the play apparatus, for example when the rotation driven part is a brake, rotational speed governor or a device limiting the extent of rotation of the hollow shell body, but may also provide additional enjoyment to the child playing in the play apparatus when the rotation driven part is a spiral torsion spring, a ratchet allowing unidirectional rotation only, a sound generating device, or a flywheel. Further, when the rotation driven part is an electrical generator, the electrical energy obtained may be used to energize lights on or within the play apparatus.

[0034] In preferred embodiments of the play apparatus according to the invention the opening in the hollow shell body closely matches the diameter of the fixed axle.

[0035] In preferred embodiments of the play apparatus according to the invention the opening in the hollow shell body defines a plain bearing for the axle.

[0036] This is advantageous as a plain bearing comprises a close contact between hole and shaft, thus preventing any access to the mechanical parts in the second compartment by the child, and in that the plain bearing may relieve the axle and the hub of some of the bending forces imparted thereon due to the weight of the hollow shell body and any child or children playing in the play apparatus.

[0037] In a second aspect of the play apparatus according to the present invention a method of producing the play apparatus according to the first aspect of the present invention is provided.

[0038] The play apparatus according to the invention increases the safety for a child utilizing the play apparatus by preventing access by the child to mechanical parts by containing the mechanical parts in a second compartment between the shell parts forming the hollow shell body.

[0039] The play apparatus according to the invention may preferably have an increased versatility for use by different children by further comprising a rotation driven part. The method according to the invention simplifies the construction of the play apparatus according to the invention by reusing the second shell part, which is removed for the creation of a first shell part comprising a first compartment and an access opening to the first compartment, to form the second compartment when joined to the first shell part.

[0040] The invention and its many advantages will now be described in more detail with reference to the accompanying figures in which:

Fig. 1 shows a perspective view of the play apparatus according to the present invention,

Fig. 2 shows a side view of first and second embodiments of the play apparatus according to the present invention,

Fig. 3 shows a section view of a mold and a cast body for the manufacture of the play apparatus according to the present invention,

Fig. 4 shows a section view of the cast body being further processed into the first and second shell parts of the hollow shell body of the play apparatus according to the present invention,

Fig. 5 shows a section view of the attachment of the hub to the first shell part of the hollow shell body of the play apparatus according to the present invention,

Fig. 6 shows a section view of the first shell part with attached hub of the hollow shell body of the play apparatus according to the present invention, further showing a protective border mounted to the access opening of the first shell part,

Fig. 7 shows a section view of the assembly of the first and second parts of the hollow shell body of the play apparatus according to the present invention,

Fig. 8 shows a section view of a play apparatus according to the present invention having an axle rotatably supported by a substrate, and

Fig. 9 shows an enlarged section view of the second compartment between the first and second parts of

the hollow shell body of the play apparatus according to the present invention.

[0041] Fig. 1 shows a perspective view of the play apparatus, in its whole designated the reference numeral 10, comprising an axle, in its whole designated the reference numeral 12, comprising a first end, designated the reference numeral 14, not shown in Fig. 1, rotatably supporting a hollow shell, in its whole designated the reference numeral 20. A first compartment, designated the reference numeral 22, is provided in the hollow shell body 20, and is accessible through an access opening, designated the reference numeral 26, the access opening comprising a protective border, designated the reference numeral 28, along the circumference of the access opening 26.

[0042] Protective border 28 has the purpose of protecting a child during entry/exit of the first compartment 22, and general play with the play apparatus 10, as well as other children or adults playing with the play apparatus 10, from the edges of the access opening 26 which may be rough due to the production method of the play apparatus 10 as will be described in further detail below. The protective border 28 may be made from steel, rubber or plastics.

[0043] The hollow shell body 20 further comprises a second compartment, designated the reference numeral 24, which is not shown in Fig. 1, which will be described in more detail in relation to Figs. 7-9 below.

[0044] The axle 12 further comprises a second end, designated the reference numeral 16, which is rotatably supported by a base, designated the reference numeral 6, which base 6 in Fig. 1 is mounted in the ground, designated the reference numeral 2. An intermediate bent portion, designated the reference numeral 18, having a bend of approximately 90 degrees, although larger or smaller bends are possible, is provided between the ends 14, 16 of the axle 12.

[0045] Fig. 1 further shows a child, designated the reference numeral 4, playing in the play apparatus 10 by moving around in the first compartment 22, whereby the shell body 20 may rotate and/or make a mill or pendulum movement, as indicated by the double arrow A, due to the changing weight distribution as the child 4 moves around within the first compartment 22.

[0046] Further, hollow shell body 20 may be rotated by manual application of force by the child 4, or another child, group of children or adults, standing on the ground 2 next to the hollow shell body 20. Further, as indicated by the double arrow B, the axle 12 may be rotated around the axis of the second end 16 of the axle 12 by child 4, another child, group of children or adults, standing on the ground 2, thus allowing rotation of the hollow shell body 20 and the first compartment 22 around two axes.

[0047] Fig. 2A shows a section view of a preferred embodiment of the play apparatus 10, i.e. where hollow shell body 20 is substantially spherical. However, as is shown in Fig. 2B showing a section view of an alternative embodiment, in its whole designated the reference numeral 10^{I}, a barrel shaped hollow shell body, in its whole designated the reference numeral 20^{I}, is also possible. Further shapes such as a spheroid, a cube, a prism, other polyhedrons etc are also possible as will be described in more detail below.

[0048] With reference to Fig. 2A, the play apparatus 10 is constructed from first and second shell parts, designated the reference numerals 30 and 32 respectively, joined by bolts, not shown, and nuts, one of which is designated the reference numeral 100. Fig. 2A also shows the base 6 which may be anchored in a hole dug in the ground 2, for example by pouring concrete around the base 6.

[0049] Further details of the construction of the play apparatus 10 will be evident from the discussion related to Figs. 3-9 below.

[0050] In Fig. 2B features different from those in Fig. 2A are referenced by X^{I}, where X is the reference numeral of the corresponding feature in Fig. 2A. The play apparatuses 10 and 10^{I} are substantially alike, the only difference being a barrel shaped first shell part 30^{I} resulting in a barrel shaped hollow shell part 20^{I}, and the addition to a portion of the exterior of the hollow shell body 20^{I} in Fig. 2B of a friction layer, designated the reference numeral 34^{I}, for example comprising rubber, for providing a surface on which a child or other user of the play apparatus 10^{I} may sit, crawl, walk, run or stand upon. Such a friction layer may also be provided on the hollow shell body 20 of the play apparatus 10 shown in Fig. 2A, as well as on the interior surfaces of the first compartments 22 and 22^{I}, respectively.

[0051] The production method of the play apparatus 10 will now be described in more detail with reference to Figs. 3-9.

[0052] Fig. 3 shows a section view of a generally spherical mold, in its whole designated the reference numeral 40, comprising first and second mold parts, designated the reference numerals 42 and 44 respectively, held together along first and second flanges, designated the reference numerals 46 and 48 respectively, the first mold part 42 comprising a flat wall part, designated the reference numeral 50, and containing a cast body, designated the reference numeral 60, for the manufacture of the play apparatus 10 according to the present invention.

[0053] The cast body 60 has been cast through rotational molding: a plastic substrate is positioned within the mold 40 which is subsequently heated to melt the plastic and bi-axially rotated so that the plastic is evenly deposited on the inner surfaces of the mold 40, whereafter the mold 40 is cooled and the mold parts 42 and 44 separated to liberate the cast body 60 as shown in Fig. 4.

[0054] Fig. 4 shows a section view of the cast body 60 being further processed by cutting along line X-X into the first and second shell parts 30 and 32 which are to become the hollow shell body 20 of the play apparatus 10 according to the present invention upon assembly as described below. The cast body 60 further comprises, op-

posite to the line X-X, a wall portion, designated the reference numeral 62.

[0055] As previously stated, the mold, and consequently the cast body, may have numerous other shapes such as spheroid, a cube, a prism, other polyhedrons, but preferable shapes are those where a portion of the cast body may be cut off and used to form a second compartment as will be described in more detail with reference to Figs. 7-8 further below.

[0056] To simplify the cutting of the cast body 60 the mold 40 can be modified to produce a cast body having a circumferential groove or rib along cutting line X-X.

[0057] In Fig. 5 the cast body 60 has been separated into the first and second shell parts 30 and 32 as indicated by arrow C. A hub, in its whole designated the reference numeral 70, comprising first and second fastening plates, designated the reference numeral 82 and 86, respectively, spaced apart by hollow cylinders, one of which is designated the reference numeral 86, a sleeve, designated the reference numeral 90, for receiving and retaining an axle by a screw, designated the reference numeral 96, not shown in Figs. 5-6, driven into a radial screw hole, designated the reference numeral 94, and bearings, one of which is designated the reference numeral 92, not shown in Fig. 5, is subsequently attached to the exterior of the wall portion 62 of the first shell part 30 while a stiffening plate, designated the reference numeral 72, is introduced into the first compartment 22 and attached to the interior surface of the wall portion 62 using a first plurality of bolts, one of which is designated the reference numeral 74, and a first plurality of nuts, one of which is designated the reference numeral 76, the bolts 74 passing through a first plurality of holes provided in the stiffening plate 72, the wall portion 62 and in the stiffening plates 82-84 with corresponding hollow cylinders 86, one hole of each plurality being designated the reference numerals 78, 64 and 88, respectively, to engage the first plurality of nuts 76.

[0058] The holes 64 in the wall portion 62 may be drilled after the molding of the cast body 60, or may advantageously be created during the molding by providing a mold having interior protrusions on the interior surface of the flat wall part 50 of the mold 40, thus dispensing with the need for drilling the holes.

[0059] The wall portion 62 further comprises a second plurality of holes, one of which is designated the reference numeral 66, which will be described in more detail with reference to Fig. 7 below.

[0060] The holes 78 in the stiffening plate 72 may be drilled, punched or created by other suitable techniques dependent on the material of the stiffening plate 72.

[0061] The stiffening plate 72 further comprises a second plurality of holes, one of which is designated the reference numeral 80, which will be described in more detail with reference to Fig. 7 below.

[0062] In order to prevent any sharp edges, possible resulting from the cutting shown in Fig. 4, and to provide a handhold during play in the play apparatus 10, the protective border 28 is then fastened to the circumference of the access opening 26, as shown in Fig. 6, which further shows the first shell part 30 with attached hub 70 and stiffening plate 72.

[0063] As an alternative or in addition to including the protective border 28 as shown in Fig. 6, the first mold part 42 may advantageously be designed to produce an alternative cast body having an increased circumferential thickness at the cutting line X-X, thus resulting in an access opening having a thicker edge, which may subsequently be smoothened as needed by machining or grinding to prevent any sharp edges and provide a handhold during play in the play apparatus 10.

[0064] Fig. 6 further shows the bearings 92 which allow the fastening plates 82 and 84 including the hollow cylinder 86, and thereby the thereto connected first shell part 30, to rotate relative the sleeve 90, and vice versa. The bearing 92 is typically a ball bearing, which is known in the art, comprising an inner race fastened to the sleeve 90, and an outer race fastened to the fastening plates 82 and 84 and/or the hollow cylinders 86, further comprising balls running between the races. However, other types of bearings, including other types of rolling element bearings and plain bearings are possible.

[0065] Further, although two bearings 92 are shown in Figs. 6-9, one, or more bearings may be used.

[0066] Fig. 6 also shows the second shell part 32 being provided with a hole, designated the reference numeral 36, which may be drilled or molded as previously described.

[0067] Fig. 7 shows a section view of the assembly of the first and second parts 30 and 32 of the hollow shell body 20 of the play apparatus 10 according to the present invention. The first end 14 of the axle 12 is passed through the hole 36 and into the sleeve 90 of the hub 70 to be retained therein by driving the screw 96 through the radial screw hole 94 to engage the first end 14. Upon attachment of the first end 14 of the axle 12 to the hub 70 the second shell part 32 may be advanced along the first end 14 of the axle 12 towards the first shell part 30 to cover the hub 70 and form the second compartment 24, whereby the hub 70 becomes enclosed in the second compartment 24.

[0068] The second shell part 32 is further provided with a second plurality of holes, one of which is designated the reference numeral 38, which are used in combination with the second plurality of holes 80 and 66 in the stiffening plate 72 and wall portion 62, respectively, to allow a second plurality of bolts, one of which is designated the reference numeral 98, to pass through the holes 80, 66 and 38 to engage the second plurality of nuts 100, thus joining the shell parts 30 and 32 to form the hollow shell body 20 of the play apparatus 10 according to the present invention.

[0069] Subsequently, as shown in Fig. 8, the second end 18 of the axle 12 is mounted into the base 6 in the ground 2. The base 6 may comprise a sleeve placed in a hole in the ground whereby uncured concrete is poured

around the sleeve, the concrete the being then allowed to cure, rotation between the sleeve and the second end 16 of the axle 12 being possible, or alternatively the second end 16 of the axle 12 may be non-rotatably attached to the base 6 by allowing the concrete to contact the second end 16 of the axle 12 directly.

[0070] As previously stated, the mold 40 shown in Fig. 3 could have numerous shapes to produce cast bodies of numerous shapes, including for the alternative play apparatus 10^{I} shown in Fig. 2B. As is evident from Figs. 7-8 the joining of the shell parts 30 and 32 form the hollow shell body 20 comprising the second compartment 24 which is non-accessible by the child 4 or other children or users of the play apparatus. Thus it should be ensured that a differently shaped cast body may be cut in such a way that the shell bodies can be joined so that the second compartment 24 is formed, and that the child 4 or other children or users of the play apparatus 10 are prevented access to the second compartment 24.

[0071] In Figs. 3-9 the wall portion 62 is shown as being substantially flat, and it is also preferred that the wall portion 62 is flat to simplify assembling the shell parts 30, 32 with the hub 70 and the stiffening plate 72, however alternative embodiments having non-flat wall portions 62, such as a spherical cap shaped wall portion, are possible as long as the hub 70, the stiffening plate 72 and the second shell part 32 can be securely fastened to the first shell part 30.

[0072] In advantageous embodiments of the play apparatus 10 according to the present invention the second compartment may further comprise a rotation driven part, designated the reference numeral 102, attached to the hub 70 or the wall portion 62 as shown in Fig 9. The rotation driven part 102 is driven by a pinion, designated the reference numeral 104, engaging a gear, designated the reference numeral 106, fixed to the first end 14 of the axle 12. As the hollow shell body 20 rotates around the axle 12 the rotation driven part 102 rotates around the gear 106 causing the pinion 104 to rotate, thus driving the rotation driven part 102.

[0073] The rotation driven part may for example be a hydraulic brake whereby an agitator disposed in an oil bath within the hydraulic brake agitates the oil causing a friction force thus restricting the rotation speed of the hollow shell body 20. This may be useful for preventing potentially unsafe rotation speeds.

[0074] Alternatively the rotation driven part 102 may comprise a electrical generator, a sound generating device, a device limiting the extent of rotation of said hollow shell body, a spiral torsion spring, a ratchet allowing unidirectional rotation only, a flywheel, a rotational speed governor or combinations thereof providing increased safety, enjoyment and/or usefulness by different users, in the play apparatus 10 according to the present invention.

[0075] Optionally a counterweight, designated the reference numeral 108, may be provided opposite the rotation driven part 102 to counterbalance the weight of the rotation driven part 102.

[0076] Depending on the size and space needed by the rotation driven part 102 and the gear 106 the second shell part 32 may be modified as needed to cover the hub 70, the gear 106 and the rotation driven part 102 in order to form the second compartment 24, for example by modifying the shape of the first part 42 of the mold 40.

[0077] The hole 36 in the second shell part 32 should preferably be fabricated to have substantially the same inner diameter as the outer diameter of the first end 14 of the axle 12. This has the advantage that the child 4, or any other child, group of children or adults are prevented from gaining access to the second compartment 24, thus increasing the safety of the play apparatus 10.

[0078] A further advantage is that the hole 36 in the second shell part 32 may act as a plain bearing or bushing as the hollow shell body 20 rotates around the first end 14 of the axle 12. This may relieve the first end 14 and the hub 70 of some of the bending forces imparted thereon due to the weight of the hollow shell body 20 and the child 4 playing in the play apparatus 10.

[0079] In analogy with previously mentioned possible modifications of the mold 40 to achieve various advantageous embodiments, the mold 40 may be modified to produce a cast body 60 resulting in an increased thickness of material around the hole 36 in the second shell part 32 to further increase the load supporting properties of a plain bearing realized by the hole 36 / the first end 14 of the axle 12 interface.

[0080] As is evident from Fig. 8 and Fig. 9 the play apparatuses 10 and 10^{I} according to the present invention provides a high level of safety for children and other users of the play apparatus as the rotational connection between the axle 12 and the hollow shell body 20 is enclosed in the second compartment 24. To even further enhance safety the nuts 100 and the bolt heads of bolts 74 and 98 may be covered by plastic or rubber caps.

[0081] Further, as shown in Figs. 3-8, the method of producing the play apparatuses 10 and 10^{I} according to the present invention is simple and conserves material as the cutting of the cast body 60 provides both the access opening 26 as well as the second shell part 32 used to cover the hub 70. Additionally only one molding step is required, further rationalizing the method.

[0082] Although Figs. 3-8 shows a method for producing the play apparatus 10, the same method is applicable for producing the alternative play apparatus 10^{I} upon modification of the mold 40 to obtain a cast body resulting in the alternative first shell part 30^{I}. The mold 40 may be otherwise modified to yield cast bodies having numerous other shapes such as spheroid, a cube, a prism, or other polyhedrons.

[0083] Although the present invention has been described above with reference to specific advantageous embodiments of the system and method according to the invention, it is however contemplated that numerous amendments and variations may be provided without deviating from the spirit of the invention as defined in the

appended claims and the invention is therefore deemed to be understood in the broadest sense of the claims.

List of parts with reference to the figures

A. Double arrow indicating possible rotation
B. Double arrow indicating possible rotation
C. Arrow indicating separation
X-X. Cut line
2. Ground
4. Child
6. Base
10. Play apparatus
10^{I}. Play apparatus (second embodiment)
12. Axle
14. First end
16. Second end
18. Intermediate bent portion
20. Hollow shell body
20^{I}. Hollow shell body (second embodiment)
22. First compartment
24. Second compartment
26. Access opening
28. Protective border
30. First shell part
30^{I}. First shell part (second embodiment)
32. Second shell part
34^{I}. Friction layer (second embodiment)
36. Hole
40. Mold
42. First mold part
44. Second mold part
46. First flange
48. Second flange
50. Wall part
60. Cast body
62. Wall portion
64. Hole
66. Hole
70. Hub
72. Stiffening plate
74. Bolt

(continued)

76. Nut
78. Hole
80. Hole
82. First fastening plate
84. Second fastening plate
86. Hollow cylinder
88. Hole
90. Sleeve
92. Bearing
94. Radial screw hole
96. Screw
98. Bolt
100. Nut
102. Rotation driven part
104. Pinion
106. Gear
108. Counterweight

Claims

1. A play apparatus (10) comprising:

a hollow shell body (20) comprising a first compartment (22) for accommodating one or more children (4),
an access opening (26) providing access by said one or more children (4) to said compartment (22), and
a hub (70) for rotation of said hollow shell body (20) around at least one axis (12),
characterized by
said hollow shell body (20) comprising first and second shell parts (30, 32) joined together,
said hub (70) being positioned in a second compartment (24) between said first and second shell parts (30, 32),
said hub (70) comprising one or more bearings (92) adapted to receive a fixed axle (12) so that said hollow shell body (20) may rotate around said fixed axle (12), and,
said axle (12) passing through an opening (36) in said hollow shell body (20), said opening (36) further defining a plain bearing for said axle (12).

2. The play apparatus (10) according to claim 1, said hollow shell body (20) being rotationally molded.

3. The play apparatus (10) according to any preceding

claim, said axis intersecting said access opening (26).

4. The play apparatus (10) according to any preceding claim, said access opening (26) comprising a circumferential protective border (28).

5. The play apparatus (10) according to any preceding claim, said play apparatus (10) further comprising a stiffening plate (72) mounted to said first shell part (30).

6. The play apparatus (10) according to any preceding claim, said fixed axle (12) comprising a first end (14) to be received by said one or more bearings (92), an intermediate bent portion (18), and a second end (16) rotatably supported by a substrate (18, 2).

7. The play apparatus (10) according to any preceding claim, said play apparatus (10) further comprising a rotation driven part (102) positioned within said second compartment (24) and rotationally connected to said axle (12).

8. The play apparatus (10) according to claim 7, said rotation driven part (102) being chosen from the group comprising a brake, a generator, a sound generating device, a device limiting the extent of rotation of said hollow shell body, a spiral torsion spring, a ratchet allowing unidirectional rotation only, a flywheel, a rotational speed governor or combinations thereof.

9. A method of producing the play apparatus (10) according to any preceding claim comprising the steps of:

rotationally molding a plastic material into a cast body (60),
cutting said cast body (60) along a cutting line (X-X) into first and second shell parts (30, 32), said first shell part (30) comprising a first compartment (22) comprising an access opening (26), attaching a hub (70) to the exterior shell of said first shell part (30),
characterized by,
passing a fixed axle (12) through said second shell part (32) and into said hub (70), and,
joining said first and second shell parts (30, 32) so that said hub (70) becomes positioned in a second compartment (24) between said first and second shell parts (30, 32).

10. The method according to claim 9, further comprising the step of:

providing a rotation driven part (102) within said second compartment and rotationally connecting said rotation driven part (102) to said axle (12) prior to said joining of said first and second shell parts (30, 32).

11. The method according to any of the claims 9-10, further comprising the step of:

attaching a protective border (28) to said access opening (26).

12. The method according to any of the claim 10-11, further comprising the step of:

attaching a stiffening plate (72) to said first shell part (30).

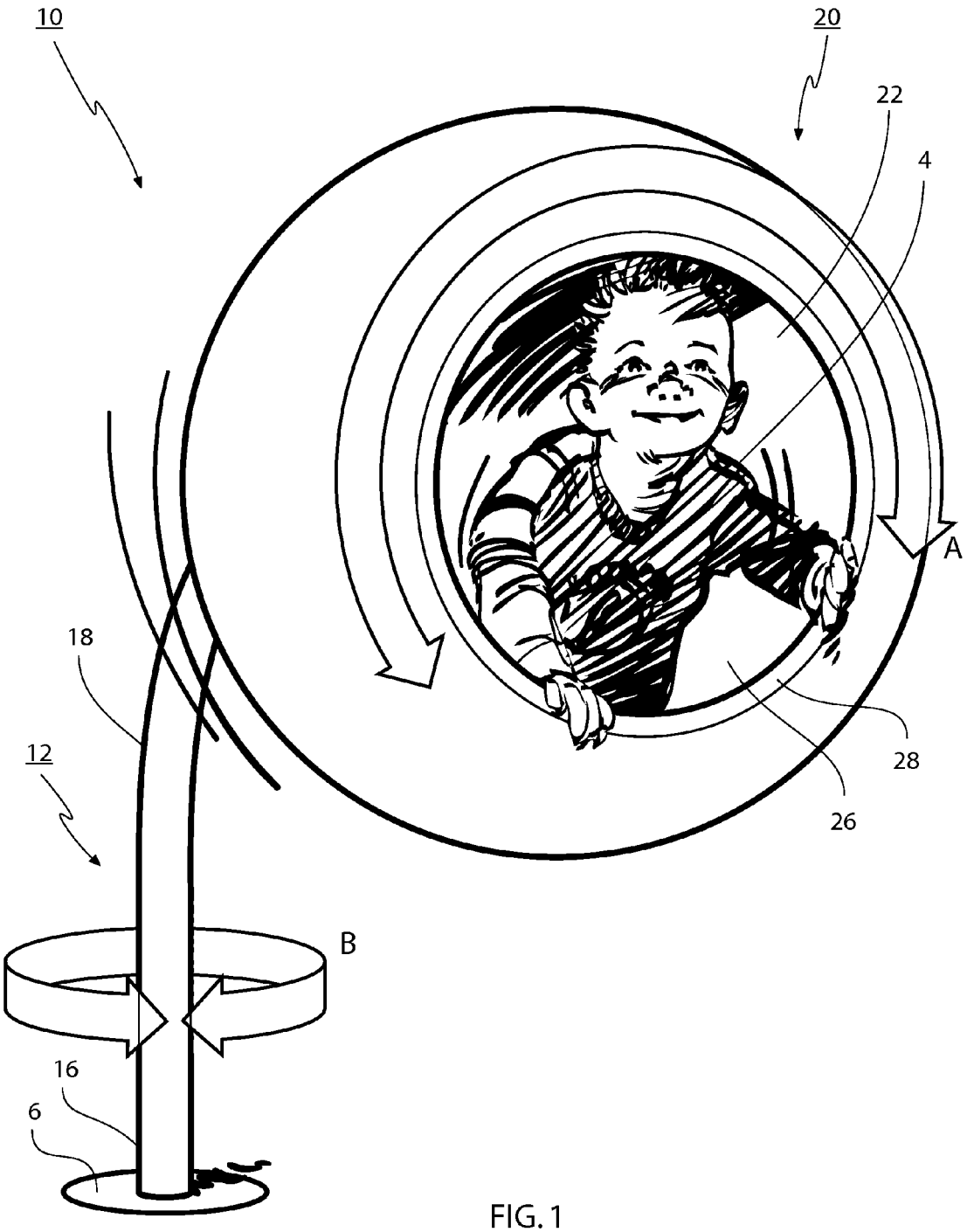


FIG. 1

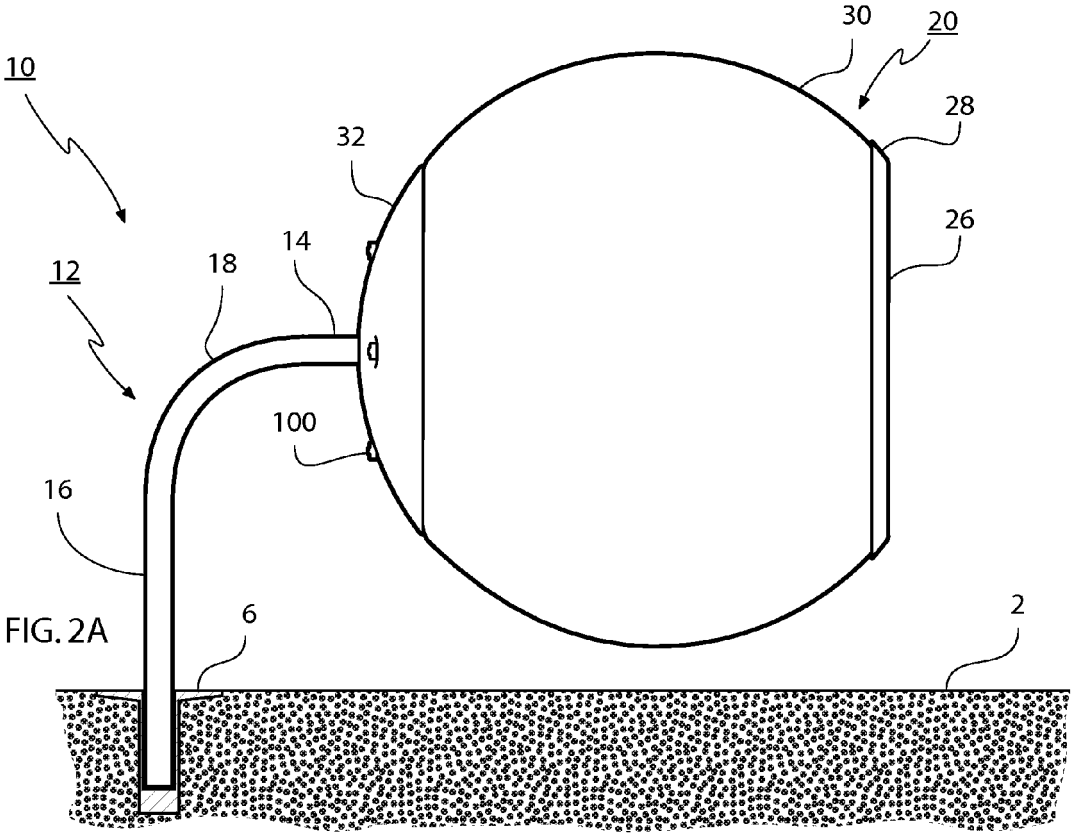

10
12
18
14
32
30
20
28
26
100
16
6
2

FIG. 2A

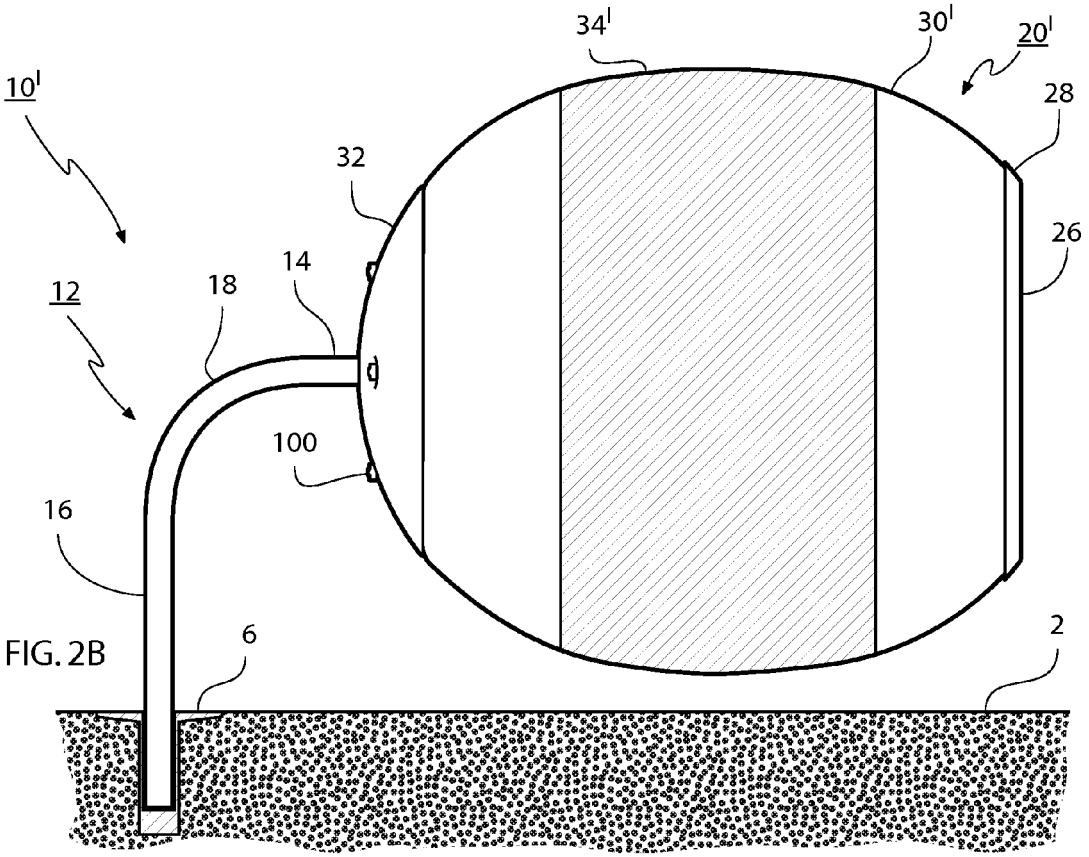

10'
12
18
14
32
34'
30'
20'
28
26
100
16
6
2

FIG. 2B

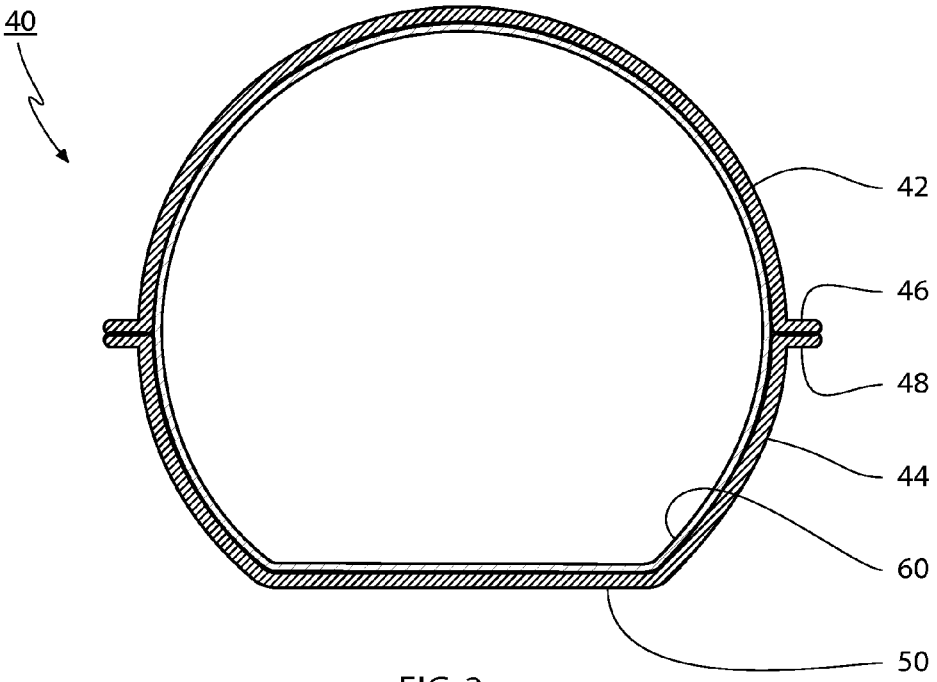


FIG. 3

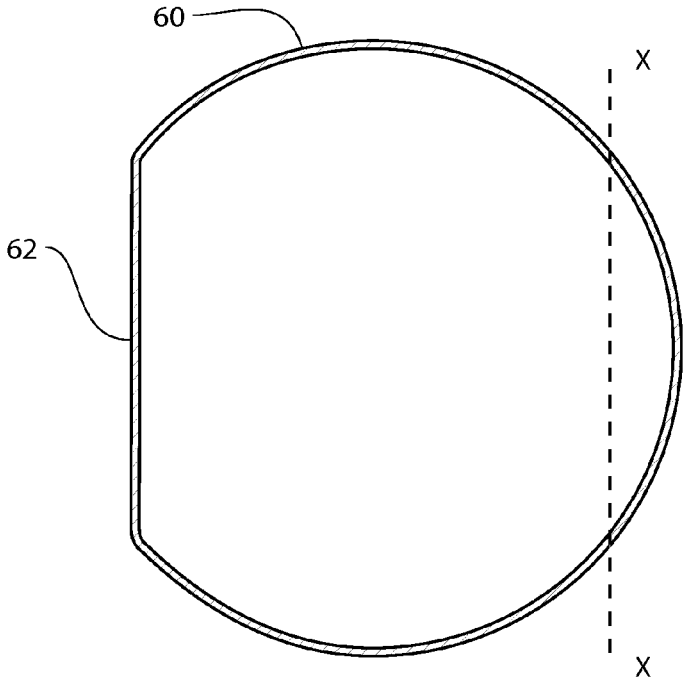


FIG. 4

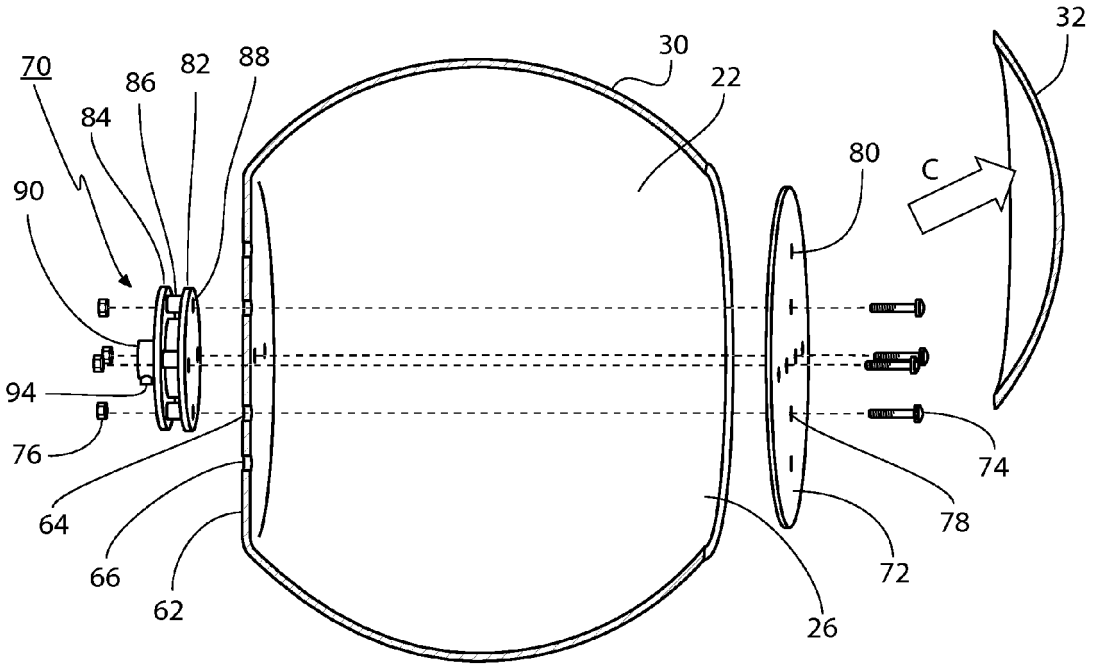

70
86
82
88
84
90
94
76
64
66
62
30
22
80
C
32
74
78
72
26

FIG. 5

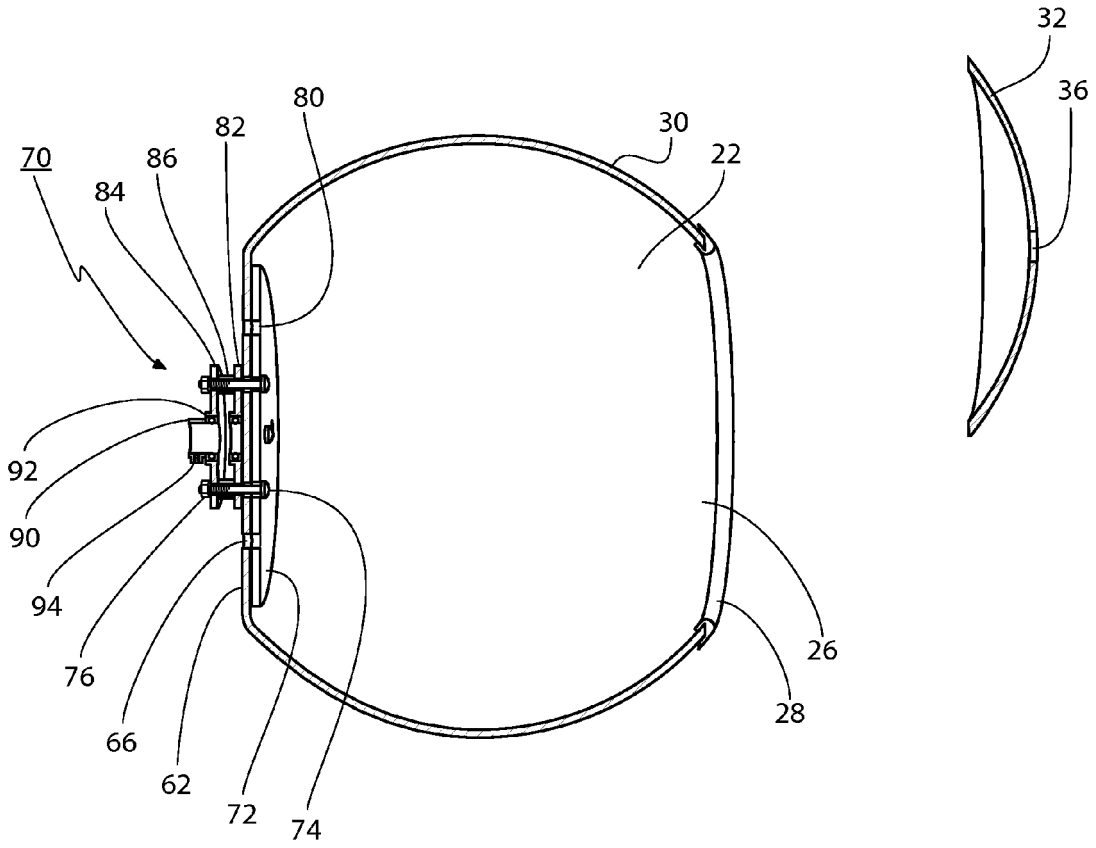

32
36
80
82
30
70
86
22
84
92
90
94
76
66
62
72
74
26
28

FIG. 6

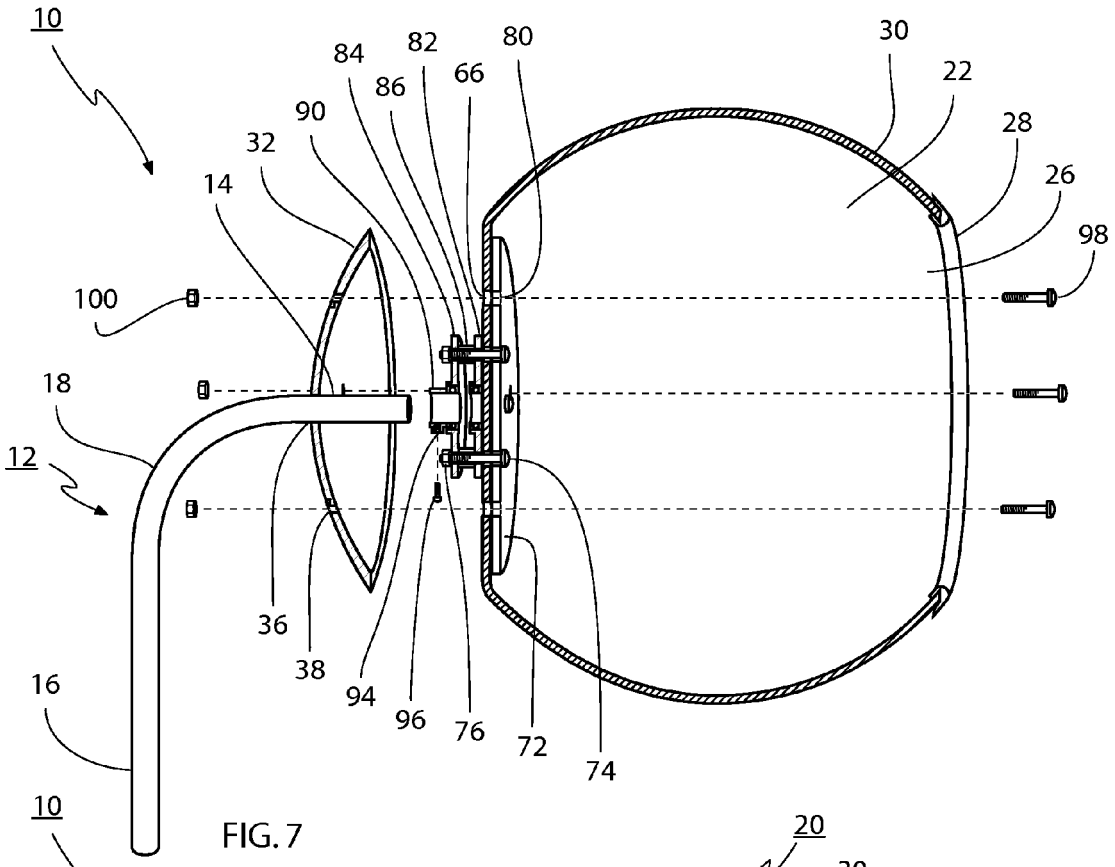

10
84
82
80
30
86
66
22
90
28
32
26
14
98
100
18
12
36
38
94
96
76
72
74
16

FIG. 7

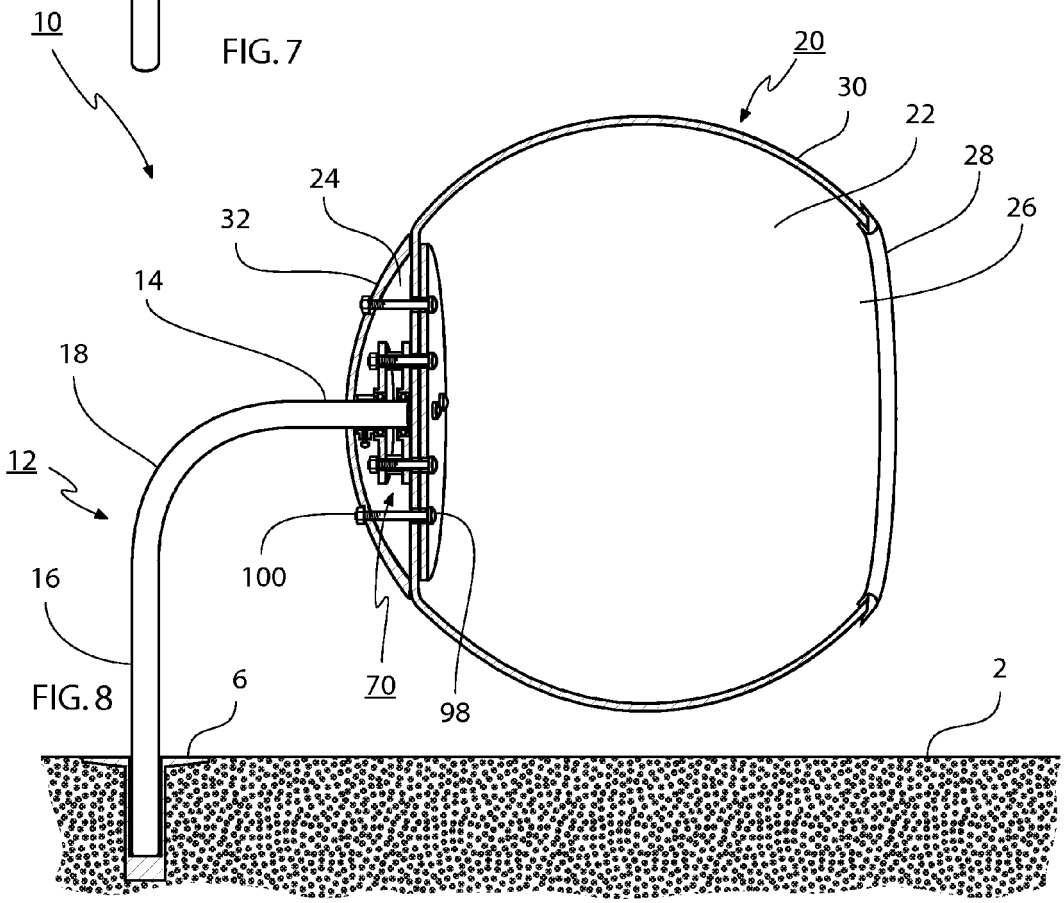

10
20
30
22
24
28
32
26
14
18
12
100
16
70
98
6
2

FIG. 8

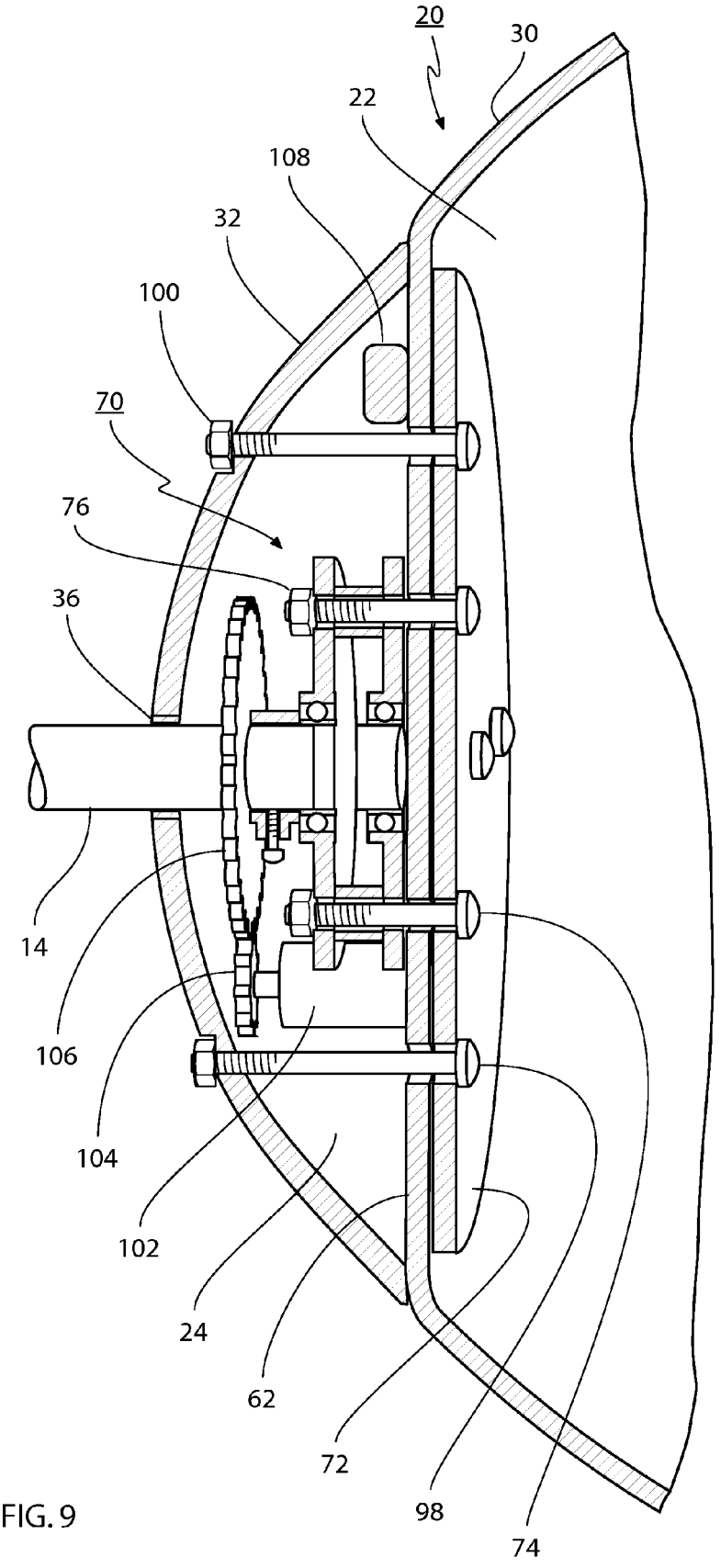


FIG. 9

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 10 16 1771

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	GB 2 161 711 A (SOUND LEISURE LTD) 22 January 1986 (1986-01-22) * abstract; figures *	1-12	INV. A63G29/00 A63G31/08
A,D	US 2002/091002 A1 (SANDOZ JEAN-LUC [CH] ET AL) 11 July 2002 (2002-07-11) * abstract; figures *	1-12	
A,D	US 2003/056735 A1 (HULL MARTIN PHILIP [US]) 27 March 2003 (2003-03-27) * abstract; figures *	1-12	
A	US 4 710 129 A (NEWMAN GEOFFREY C S [GB] ET AL) 1 December 1987 (1987-12-01) * abstract; figures *	1-12	

TECHNICAL FIELDS SEARCHED (IPC)

A63G
B01F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	20 July 2010	Turmo, Robert

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

4

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 16 1771

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

20-07-2010

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2161711 A	22-01-1986	NONE	
US 2002091002 A1	11-07-2002	AT 288309 T	15-02-2005
		AU 5992200 A	22-01-2001
		DE 60017905 D1	10-03-2005
		DE 60017905 T2	16-03-2006
		EP 1189668 A1	27-03-2002
		WO 0102071 A1	11-01-2001
		FR 2796304 A1	19-01-2001
US 2003056735 A1	27-03-2003	US 2003159661 A1	28-08-2003
US 4710129 A	01-12-1987	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 20020091002 A **[0002]**
- US 20030056735 A **[0002]**
- GB 2161711 A **[0002]**
- US 3119612 A **[0002]**