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(54) **ROTATING PLAYGROUND ELEMENT**

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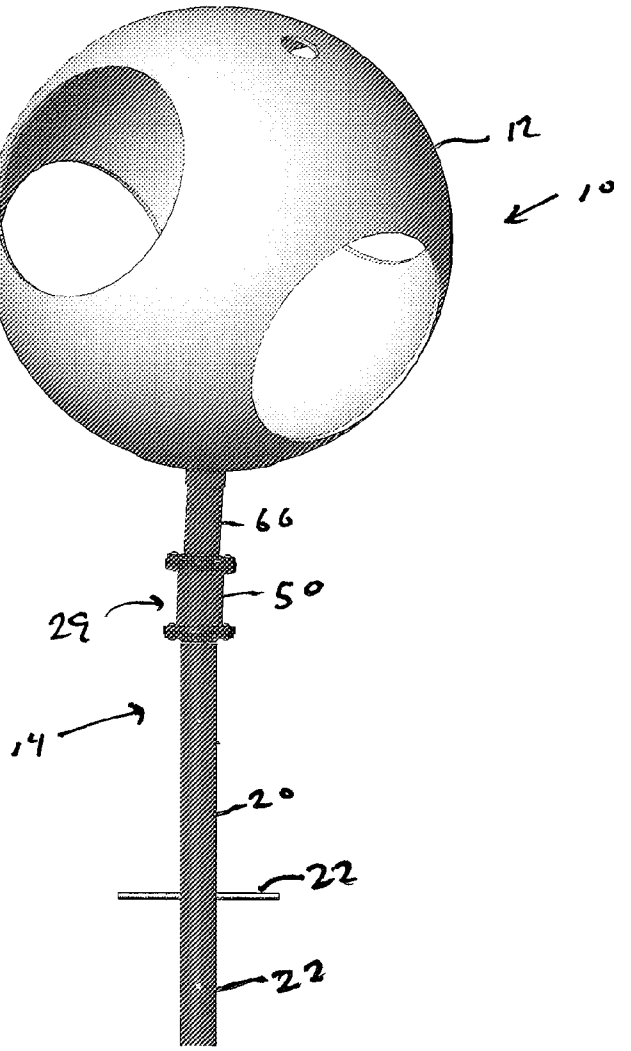
(57) **ABSTRACT**

A standalone playground element comprises a lower support tube defining an axis A1, a central support member defining an axis A2 and which is mounted to the lower support tube to be rotatable relative to the lower support tube, an upper stand tube mounted to the central support member to be rotatable relative thereto about an axis A3 which is canted relative to the axis A1, and a hollow member secured to a free end of the upper stand tube. The hollow member is capable of being rotated about the axis A3 and orbiting about the axis A1.



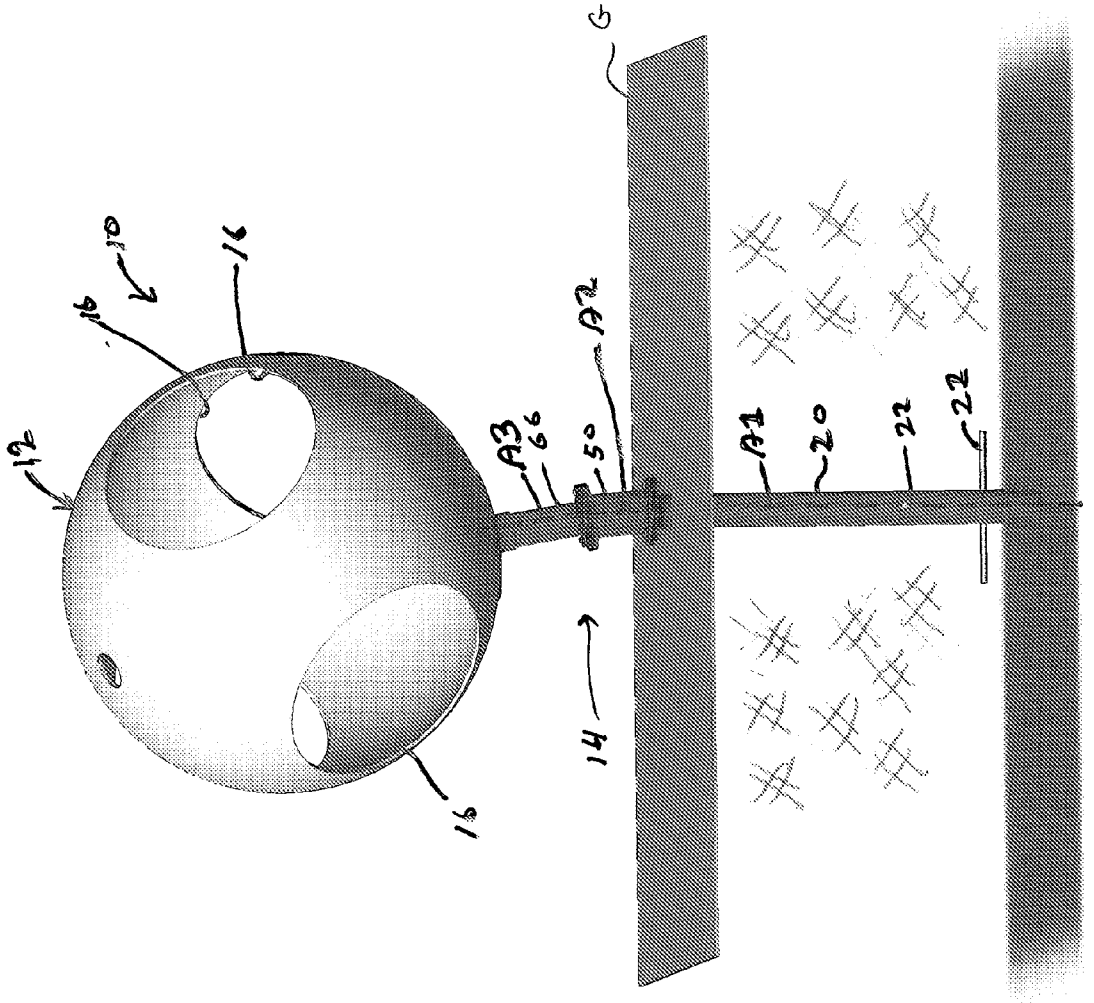

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FIG 1

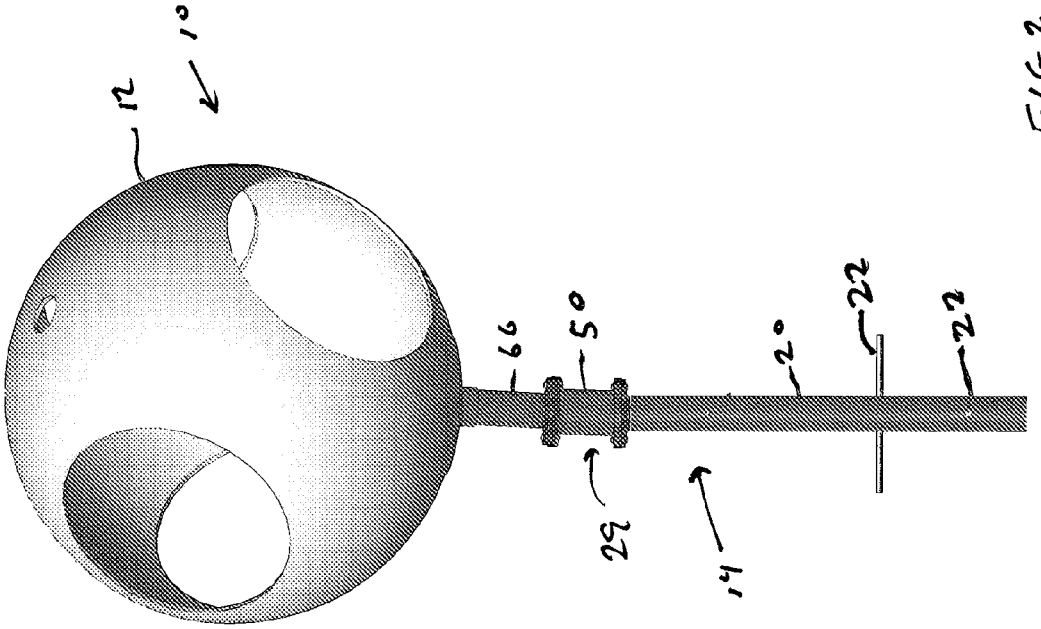


FIG 2

FIG 3

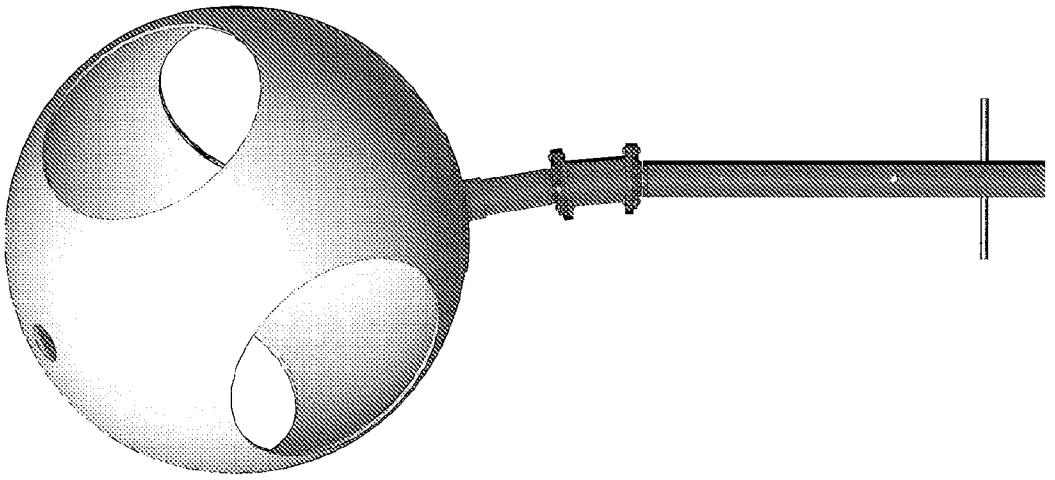
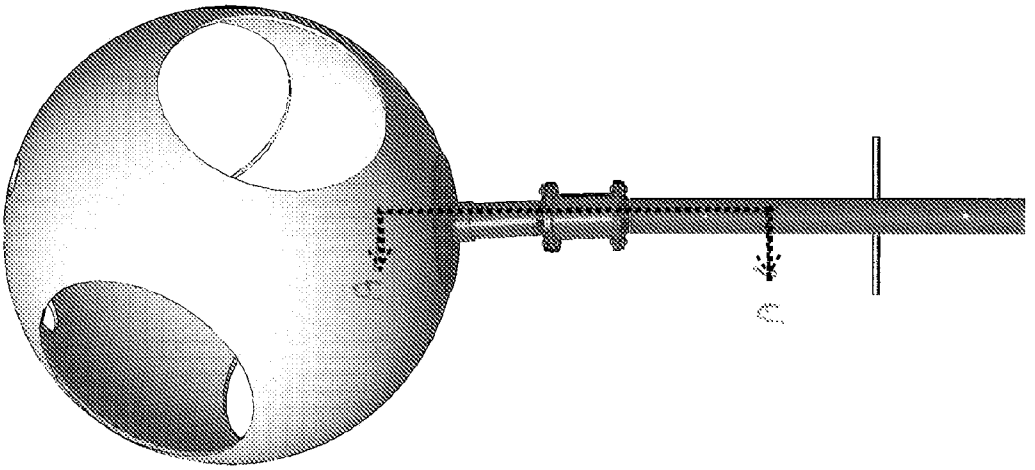


FIG 4



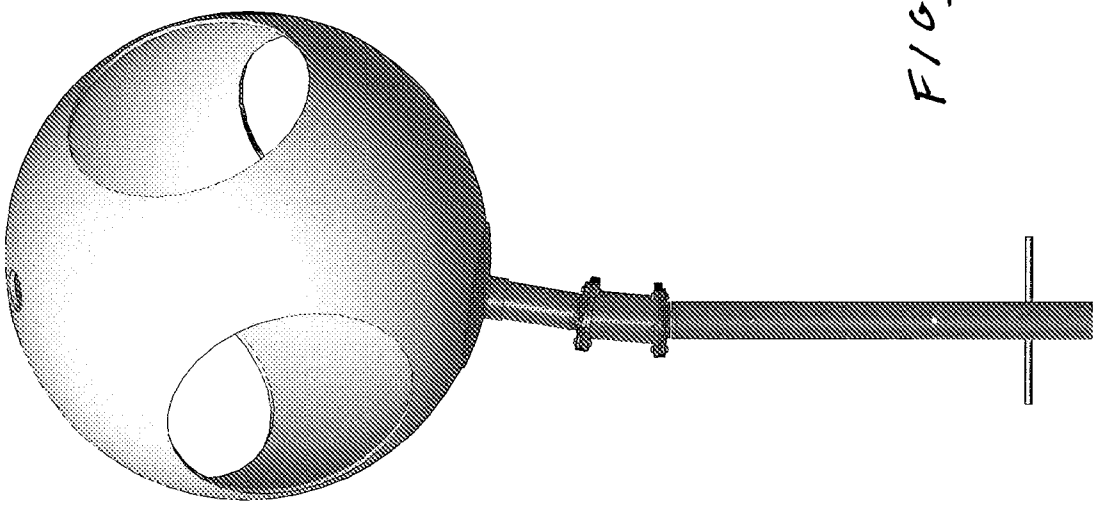


FIG 5

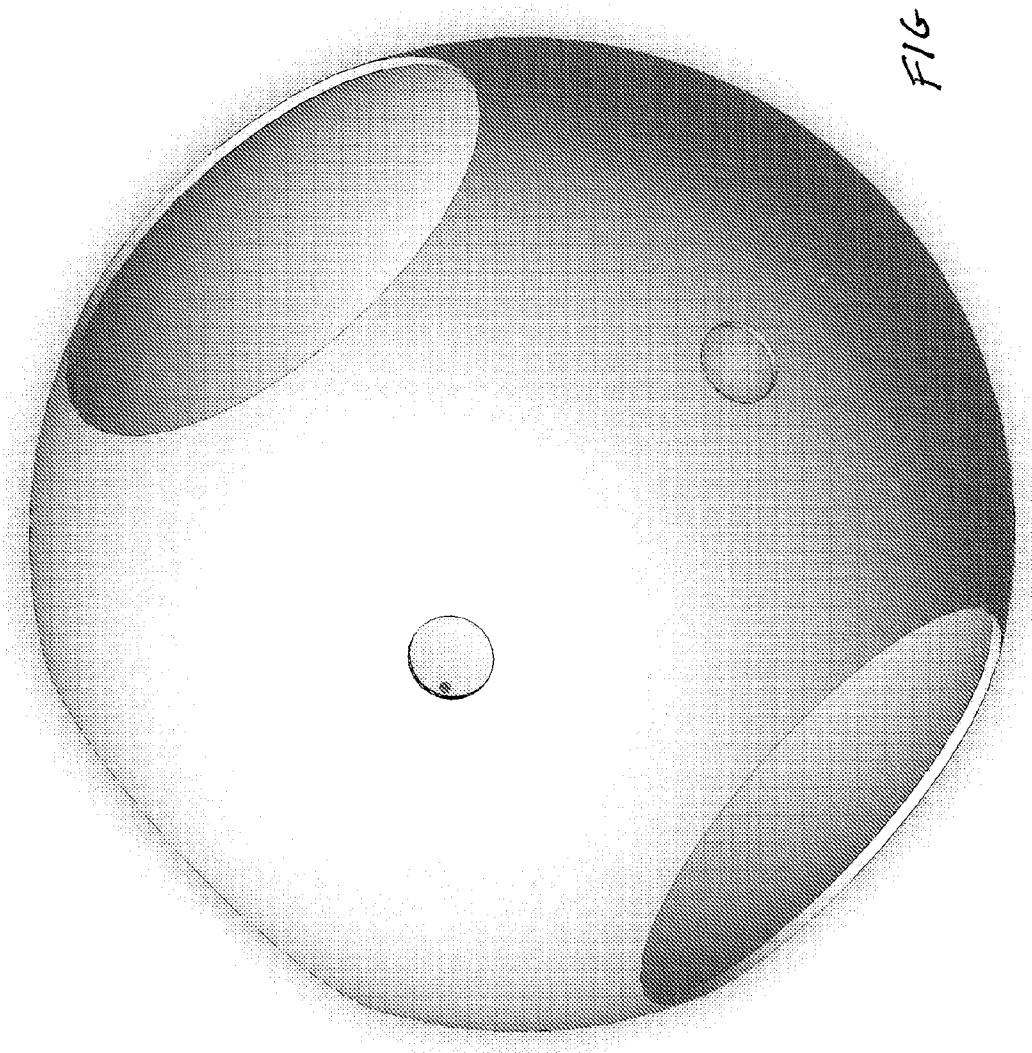


FIG 6

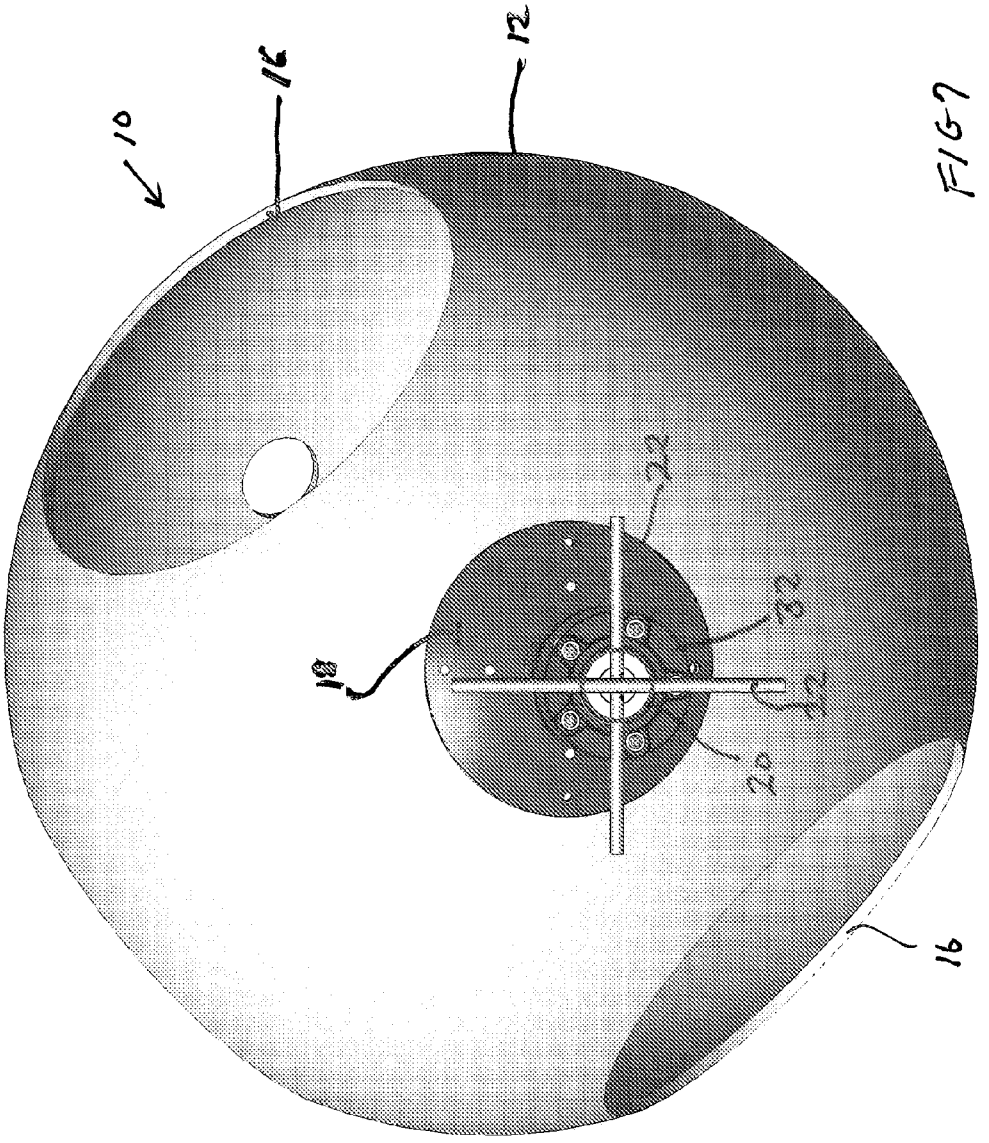


FIG 7

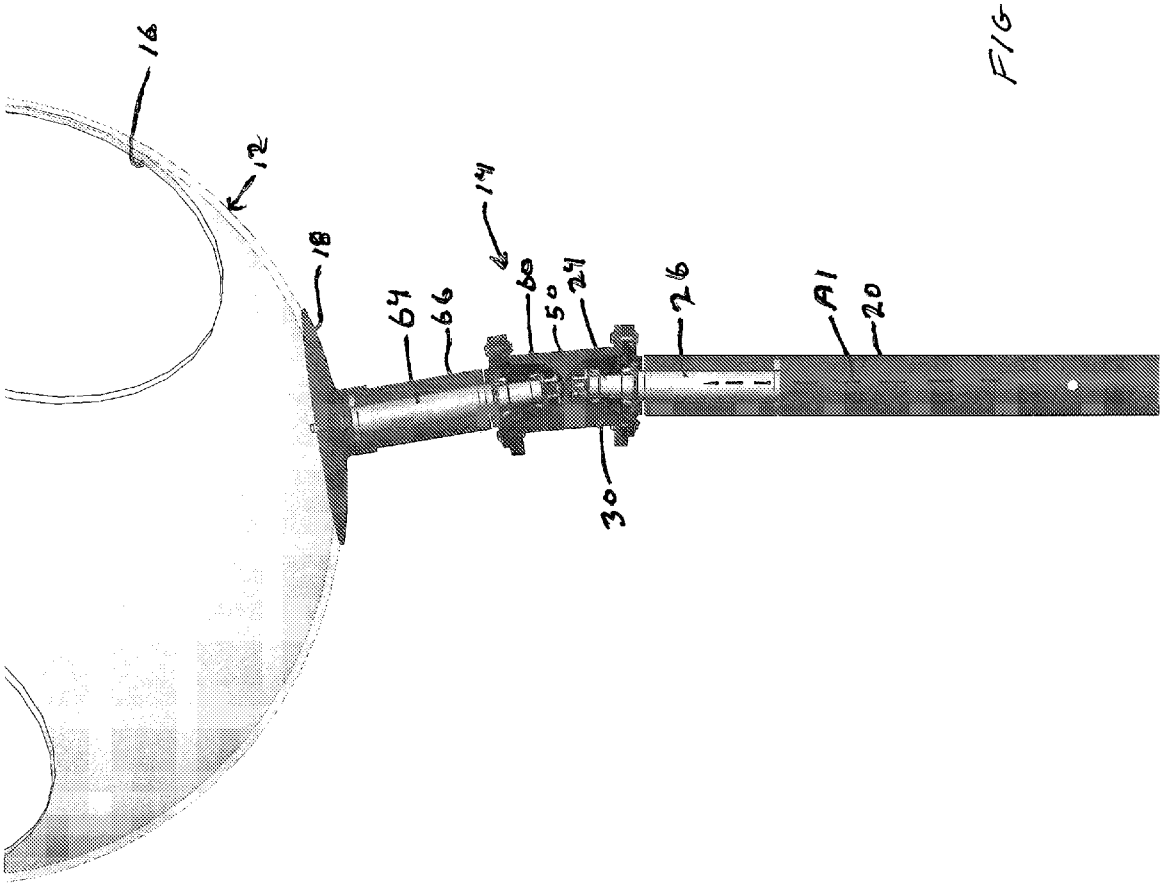


FIG 8

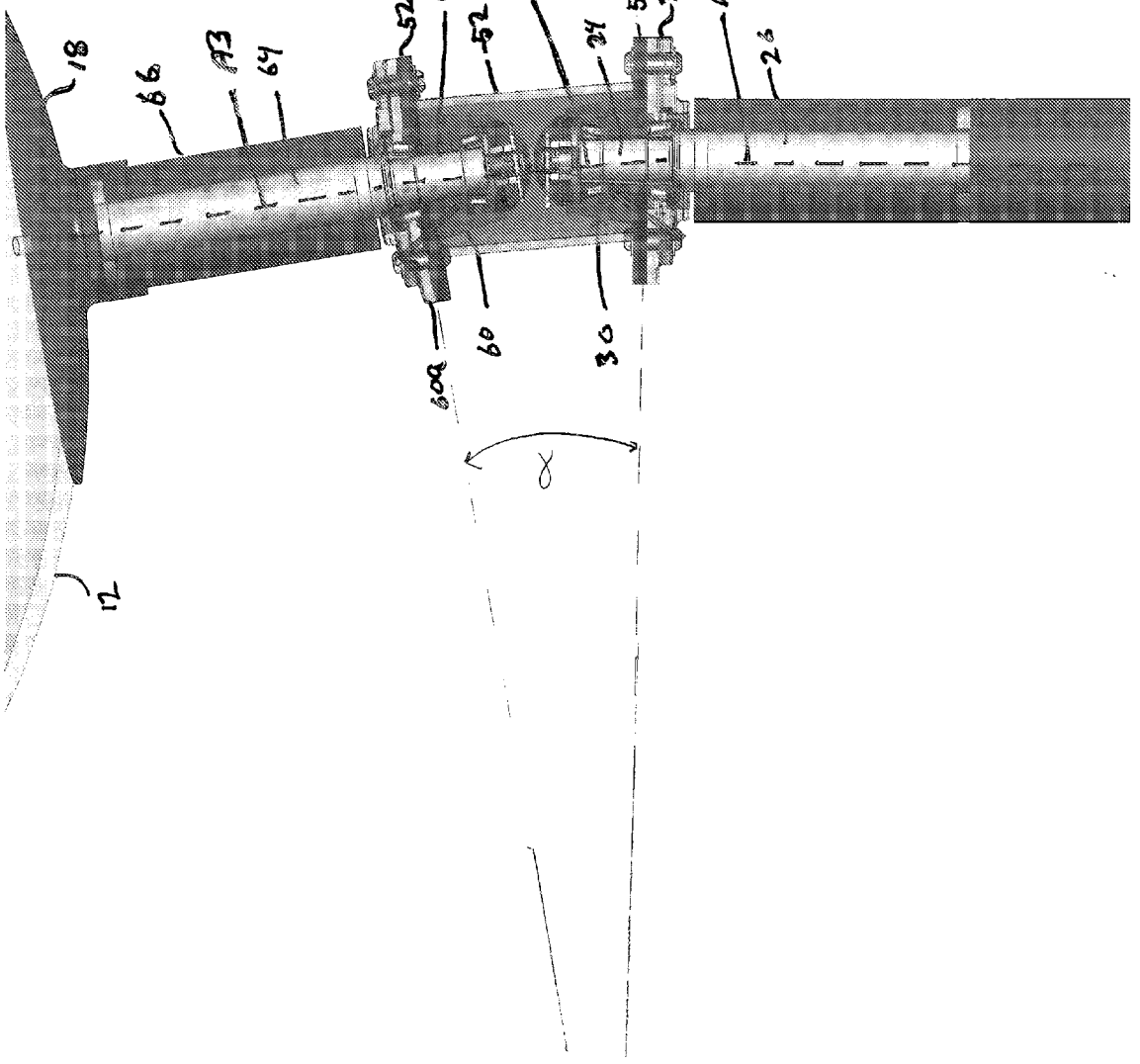


FIG 9

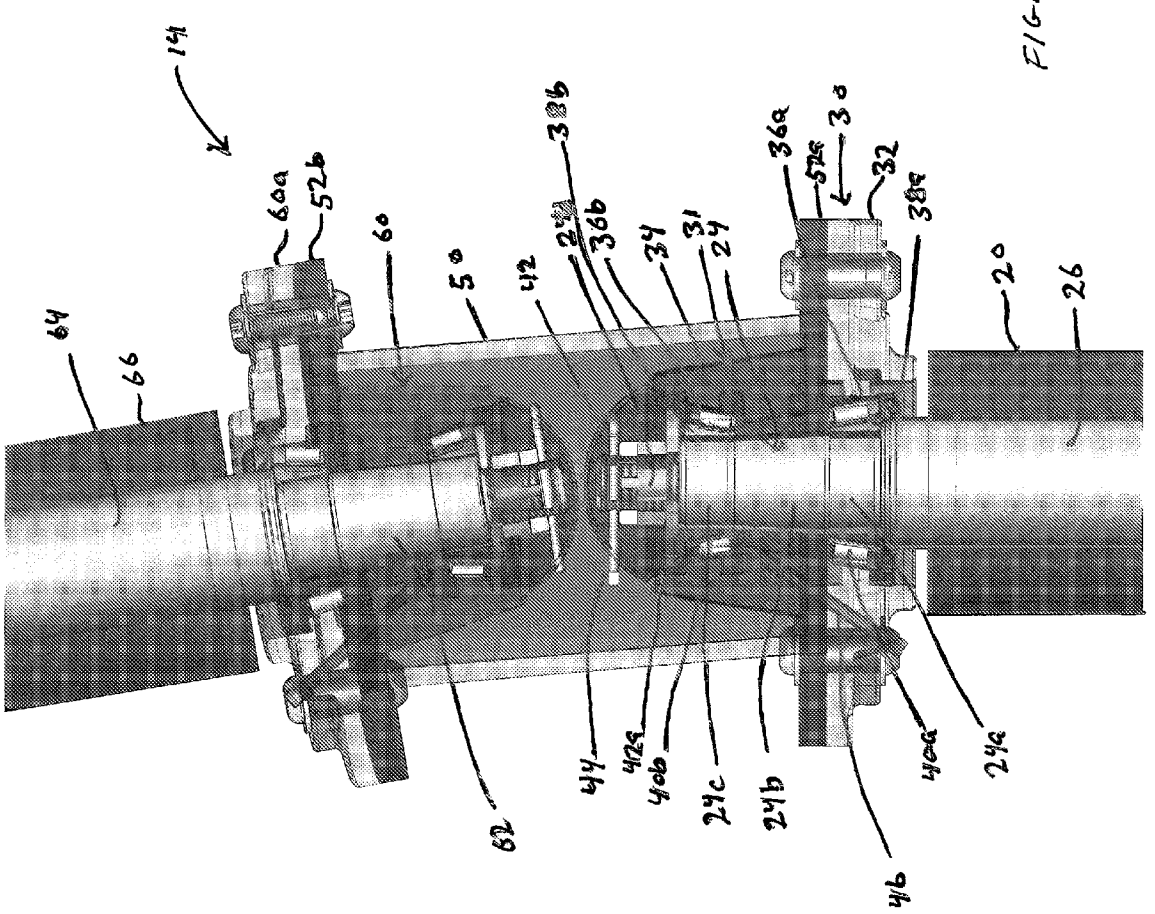

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FIG-10

ROTATING PLAYGROUND ELEMENT

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. App. No. 61/885,703 filed Oct. 2, 2013, entitled Rotating Playground Element, and which is incorporated herein by reference.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not Applicable.

BACKGROUND OF THE INVENTION

[0003] This invention relates to playground equipment, and in particular, to a rotating stand-alone playground element which provides motion in at least two planes.

[0004] Children most enjoy playground elements (such as merry-go-rounds, see-saws, etc.) that allow them to interact with each other. Such playground elements often provide for motion and operate such that the equipment can be pushed or operated with a child on the equipment to give the child a "ride" on the playground element.

[0005] Designers are continuously looking for new and exciting playground elements that will provide children with a fun "ride".

BRIEF SUMMARY

[0006] Briefly stated, a standalone playground element comprises a lower support tube defining an axis A1, a central support member mounted to the lower support tube to be rotatable relative to the lower support tube; the central support member defining an axis A2; an upper stand tube mounted to the central support member to be rotatable relative thereto about an axis A3 which is canted relative to the axis A1, and a hollow member secured to a free end of the upper stand tube; whereby the hollow member is capable of being rotated about the axis A3 and orbiting about the axis A1. The central support member comprises a spacer tube having a lower end lying in a first plane and an upper end lying in a second plane, the first and second planes being angled relative to each other.

[0007] The axis A2 can be angled relative to either or both of the axes A1 and A3, if desired.

[0008] In accordance with an aspect of the standalone playground element, the standalone playground element includes upper and lower bearing assemblies to facilitate movement of the hollow member.

[0009] The lower bearing assembly rotates relative to a lower axle. The lower bearing assembly comprises a housing defining an outer race, a cone journaled about the lower axle and which defines an inner race. A plurality of bearing elements is positioned between the inner and outer races, such that the lower axle and the lower bearing assembly housing are rotatable relative to each other. The lower axle extends from either the lower support tube or the bottom of the spacer tube, and the lower bearing assembly housing is rotationally fixed to the other of the bottom end of the spacer tube and the lower support tube.

[0010] The upper bearing assembly rotates relative to an upper axle. The upper bearing assembly comprising a housing defining an outer race, a cone journaled about the upper axle and defining an inner race. A plurality of bearing elements are positioned between the inner and outer races, such that the upper axle and the upper bearing assembly housing are rotatable relative to each other. The upper axle extends from either the upper stand or an upper end of the spacer tube and the upper bearing assembly housing is rotationally fixed to the other of the upper end of the spacer tube and the upper stand tube.

[0011] The hollow element is preferably sized to enable a child to fit within the hollow element. The hollow element can define a closed geometric shape, with at least one opening sized to enable a child to gain entry to the interior of the geometric shape. In one embodiment, the hollow element is generally spherical in shape.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0012] FIG. **1** is a perspective view of a rotating playground element, showing a ground level;

[0013] FIG. **2** is a front elevational view of the rotating playground element;

[0014] FIG. **3** is a right side elevational view of the rotating playground element;

[0015] FIG. **4** is a back elevational view of the rotating playground element;

[0016] FIG. **5** is a left side elevational view of the rotating playground element;

[0017] FIG. **6** is a top plan view of the rotating playground element;

[0018] FIG. **7** is a bottom plan view of the rotating playground element;

[0019] FIG. **8** is a vertical cross-sectional view of the rotating playground element, taken along line A-A of FIG. **4**;

[0020] FIG. **9** is an enlarged portion of the cross-sectional view of FIG. **8**; and

[0021] FIG. **10** is an enlarged portion of the cross-sectional view of FIG. **9**.

[0022] Corresponding reference numerals will be used throughout the several figures of the drawings.

DETAILED DESCRIPTION

[0023] The following detailed description illustrates the claimed invention by way of example and not by way of limitation. This description will clearly enable one skilled in the art to make and use the claimed invention, and describes several embodiments, adaptations, variations, alternatives and uses of the claimed invention, including what I presently believe is the best mode of carrying out the claimed invention. Additionally, it is to be understood that the claimed invention is not limited in its application to the details of construction and the arrangements of components set forth in the following description or illustrated in the drawings. The claimed invention is capable of other embodiments and of being practiced or being carried out in various ways. Also, it is to be understood that the phraseology and terminology used herein is for the purpose of description and should not be regarded as limiting.

[0024] Referring initially to FIGS. **1-7**, a rotating playground element **10** comprises a hollow member **12** mounted on a support member **14**. The hollow member **12** is illustratively shown to be a sphere or ball, but could be any desired three dimensional shape. For example, the hollow member **12** could be a polyhedron (such as a pyramid or a platonic solid, e.g., a tetrahedron, a cube, an octahedron, a dodecahedron, or an icosahedron). Alternatively, the member could be oval or egg shaped. The hollow member **12** has a plurality of open-

ings **16** which are shown to be circular, but could be any desired shaped, to admit access to the interior of the hollow member **12**. Further, although shown as a closed member with openings, the hollow member **12** could be opened at its top, and therefore could define an upwardly opening basket or bowl, for example. As long as children can access the interior of such baskets or bowls, such hollow members may not need the openings **16**. The hollow member **12** has a dimension (e.g., diameter) sufficiently large to allow at least one child to sit in the hollow member. Similarly, at least one of the openings **16** are sufficiently large to allow a child to climb through the opening to enter, or gain access to the interior of, the hollow member. The hollow member **12**, if spherical, can, for example, have a diameter of 3' (about 100 cm), and the openings **16**, if circular, can have a diameter of about 2' (about 60 cm).

[0025] The hollow member **12** is fixed to a mounting plate **18**, which in turn is operatively connected to the support member **14**. The hollow member **12** can be fixed to the mounting plate **18** in any desired manner, including bolting, welding, interlocking elements, or combinations thereof.

[0026] The support member **14** comprises a lower post **20**, a majority of which is below ground level G. A pair of rods **22** extends through the lower post **20** near a lower end of the post. The rods **22** are spaced from each other axially along the post **20**. As can be appreciated, the rods **22** will extend into the ground surrounding the lower post **20** to help prevent the lower post **20** from rotating relative to the ground. Although two rods **22** are shown, only one rod could be used, or three or more rods could be used. Additionally, the rods could be replaced with paddles which would have generally vertically extending surfaces. Such paddles would also be effective in preventing rotation of the support post relative to the ground. The lower post **20** defines a first axis A1, which is shown to be generally vertical. A lower axle **24** extends upwardly from the top of the lower post **20**. The lower post **20** is shown to be hollow, at least at an upper end thereof, and the lower axle **24** can comprise, or extend from, an inner post **26** which fixedly mounted within the hollow upper end of the lower post **20** and is sufficiently long to extend above the upper end of the lower support post **20**. The lower axle **24** is parallel to (and preferably co-axial with) the axis A1 defined by the lower support post **20**. As best seen in FIG. **10**, the lower axle **24** has a lower, generally cylindrical, surface **24***a*, a central tapered surface **24***b*, and an upper, generally cylindrical, surface **24***c*. A pin **24***d* extends from the end of the axle **24**.

[0027] A central support member **29** comprising a spacer tube **50**, a lower bearing assembly **30** and an upper bearing assembly **60** is mounted on top of the support post **20**. The lower bearing assembly **30** is positioned on top of the lower axle **24**. The lower bearing assembly comprises body **31** having a bottom mounting plate **32** with a truncated conical portion **34** extending upwardly from the plate. The conical portion is smaller in diameter than, and concentric with, the mounting plate **32**. The bearing assembly body **31** defines a hollow area having an inner surface. The body inner surface defines lower and upper outer races **36***a,b* which are aligned with the lower and upper generally cylindrical surfaces **24***a,c* of the axle **24**, respectively. Corresponding lower and upper bearing cones **38***a,b* are journaled about the lower and upper generally cylindrical surfaces **24***a,c* of the lower axle **24** and in alignment with the outer races **36***a,b*. Lastly, a series of lower and upper bearings **40***a,b* (such as cylindrical or tapered roller bearings) are located between the cones **38***a,b* and the outer races **36***a,b*. The bearings **40***a,b* are held in position relative to each other by respective upper and lower bearing cages. Thus, the lower bearing assembly **30**, and in particular, the body **31**, can rotate relative to the lower axle **24** about the axis A1.

[0028] A closure **42** is positioned on top of the bearing body **31**. The closure **42** defines an opening sized and shaped to grippingly fit over the pin **24***d*. A rod **44** extends radially into the closure **42** and through the pin **24***d* to fix the closure to the axle pin **24***d*. The closure **42** includes a stem portion **42***a* which is received in a countersunk recess in the upper surface of the bearing assembly body **31**. The bearing assembly **30** is sealed to retain grease within the bearing assembly. A grease port **46** is provided to introduce grease into the bearing assembly should it become necessary to replace grease that has degraded or otherwise leaked from the bearing assembly.

[0029] The spacer tube **50** comprises upper and lower flanges **52***a,b* and is mounted by means of its lower flange **52***a* to the mounting plate **32** of the lower bearing assembly **30**. The spacer tube **50** surrounds, and extends beyond, the truncated conical portion **34** of the lower bearing assembly **30**. Because the spacer tube **50** is mounted to the bearing assembly body **31**, the spacer tube will rotate about the axis A1 relative to the lower support tube **20**. The spacer tube **50** is canted relative to the lower support tube, and defines an axis A2 which defines an angle alpha of about 5-10° relative to the axis A1 of the lower support tube **20**. Thus, while the lower end of the spacer tube **50** is concentric (and co-axial) with the lower support tube **20**, the upper end of the spacer tube is not. Hence, as the lower end of spacer tube **50** rotates about the axis A1, the center of upper end of the spacer tube will orbit around the axis A1. Additionally, as seen in FIG. **9**, the upper flange **52***b* of the spacer tube **50** is canted relative to the lower flange **52***a* of the spacer tube **50**, and thus, the flanges lie in planes that are not parallel to each other. The flanges **52***a,b* define an angle α relative to each other, of between about 5° and about 15°. The upper flange **52***b* need not be perpendicular to the axis A2.

[0030] The upper bearing assembly **60** is mounted by way of its flange **60***a* to the upper flange **52***b* of the spacer tube **50**. The upper bearing assembly **60** is identical to the lower bearing assembly **30**, and thus need not be described herein. However, it will be seen that the upper bearing assembly **60** is inverted or upside down relative to the lower bearing assembly **30**. Because the spacer top flange **52***b* is canted relative to the spacer bottom flange **52***a*, the upper bearing rotates about an axis A3 that is canted relative to the axis A1, and is offset from (or angled relative to) the axis A1 by about 5-15°.

[0031] The upper bearing assembly **60** receives (or is journaled about) an upper axle **62**. The upper axle **62** is identical to the lower axle **24**. As with the axle **24**, the upper axle **62** includes a post **64**. The post **64** is received in an upper stand tube **66**, such that the upper stand tube and the axle **62** are rotationally fixed relative to each other. The mounting plate **18** to which the hollow member **12** is mounted is secured to the upper end of the upper stand tube **66**. As noted, the rotating portion of the upper bearing assembly rotates relative to the spacer tube **50** about an axis A3. Thus, the upper stand tube **64**, and hence the hollow member **12**, will rotate about the axis A3.

[0032] The hollow element **12** is supported by the lower tube **20**, the central support member **29** and the upper stand tube **64**, and these components, in combination comprise the support **14**. The hollow element **12** can rotate about the axis

A3. Further, the hollow element **12** can orbit about the axis A1. This orbital motion would be in a plane that is generally perpendicular to the axis A1. As can be appreciated, the hollow member **12** can be rotated without orbiting, or can orbit without rotating. However, it is anticipated that children will most enjoy orbiting the hollow member about the axis A1 while rotating the hollow member about the axis A3.

[0033] As various changes could be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. For example, the axis A2 of the spacer tube **50** could be co-linear (i.e., parallel to) the axis A1 of the lower support tube. However, the flanges **52***a* and **52***b* of the spacer tube would still be canted relative to each other, such that the axis A3 of the upper support tube **66** is angled relative to the axis A1 of the lower support tube **20**. The playground element **10** is shown and described with the axle posts **26** and **64** extending up from the lower support tube **20** and extending down from the upper stand tube **66**, respectively, and thus the mounting flanges of the bearing assemblies are fixed to the spacer tube **50**. However, this could be inverted, whereby the axle posts (and hence the axles) extend from opposite ends of the spacer tube, and the bearing assembly flanges could be secured to the lower support tube **20** and the upper stand tube **66**. These examples are merely illustrative.

1. A standalone playground element comprising:

a lower support tube defining an axis A1;

a central support member mounted to the lower support tube to be rotatable relative to the lower support tube; the central support member defining an axis A2; said central support member comprising a spacer tube having a lower end lying in a first plane and an upper end lying in a second plane, said first and second planes being angled relative to each other;

an upper stand tube mounted to the central support member to be rotatable relative thereto; the upper stand tube rotating about an axis A3 which is canted relative to the axis A1; and

a hollow member secured to a free end of the upper stand tube; whereby said hollow member is capable of being rotated about the axis A3 and orbiting about the axis A1.

2. The standalone playground element of claim **1** wherein said axis A2 is angled relative to the axis A1.

3. The standalone playground element of claim **2** wherein the axis A3 is angled relative to the axis A2.

4. The standalone playground element of claim **1** including:

a lower bearing assembly and a lower axle; said lower bearing assembly comprising a housing defining an outer race, a cone journaled about said lower axle and defining an inner race; and a plurality of bearing elements positioned between said inner and outer races, whereby said lower axle and said lower bearing assembly housing are rotatable relative to each other; said lower axle extending from one of said lower support tube and a bottom of said spacer tube and said lower bearing assembly housing being rotationally fixed to the other of said bottom end of said spacer tube and said lower support tube; and

an upper bearing assembly and an upper axle; said upper bearing assembly comprising a housing defining an outer race, a cone journaled about said upper axle and defining an inner race; and a plurality of bearing elements positioned between said inner and outer races, whereby said upper axle and said upper bearing assembly housing are rotatable relative to each other; said upper axle extending from one of said upper stand and an upper end of said spacer tube and said upper bearing assembly housing being rotationally fixed to the other of said upper end of said spacer tube and said upper stand tube.

5. The standalone playground element of claim **4** wherein said lower axle extends upwardly from said lower support tube, said upper axle extends downwardly from said upper stand tube, and said lower and upper bearing assembly houses are rotationally fixed to lower and upper ends, respectively, of said spacer tube.

6. The standalone playground element of claim **1** wherein said hollow element is sized to enable a child to fit within the hollow element.

7. The standalone playground element of claim **1** wherein said hollow element defines a closed geometric shape, with at least one opening sized to enable a child to gain entry to the interior of the geometric shape.

8. The standalone playground element of claim **7** wherein said hollow element is generally spherical in shape.

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