SUBSTITUTE SPECIFICATION

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TITLE OF THE INVENTION

Spherical floating house for living and sailing on the sea without sway (pitch and roll) from waves, storms...

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application No. 63/654,998, filed 06/02/2024. The entire contents of which are incorporated by reference herein.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable.

REFERENCE TO A SEQUENCE LISTING, LARGE TABLE, OR COMPUTER PROGRAM LISTING APPENDIX

Not Applicable.

BACKGROUND OF THE INVENTION

1. Field of invention

The present invention relates to the design and manufacturing of floating houses for permanent habitation on seas and oceans. More particularly, this invention relates to a spherical watercraft structure (an external sphere that can slide freely around the internal spherical habitat) that eliminates the swaying, pitching, and rolling motions commonly experienced in conventional ships and floating structures, thereby providing a stable, comfortable, and safe living environment on water.

2. Description of related art

Most existing ships and watercraft have a longitudinal shape and frequently sway because of the waves, causing discomfort and chaotic movement of interior objects. In stormy weather, this swaying can escalate to structural damages or even flipping over in extreme conditions. The uncomfortable motion caused by waves makes conventional ships unsuitable for permanent comfortable living, particularly for extended periods on open seas.

Floating villas and houseboats are spacious homes that are comfortable to live in, but only when used on waters with little or no waves. These structures lack the stability required for operation in open ocean conditions where wave action is significant. When subjected to substantial wave activity, floating villas experience the same uncomfortable motion and safety concerns as traditional ships.

Traditional ships are subject to swaying discomfort and dangers from external factors such as storms, heavy waves, and strong winds. The constant motion creates an unstable living environment that prevents people from utilizing the vast uninhabited water-covered areas of Earth's surface (approximately 70% of it) for permanent habitation.

There exists a need for a floating structure that combines the spaciousness and comfort of a floating villa with the stability needed to withstand ocean conditions, while eliminating the swaying, pitching, and rolling motions that make conventional watercraft unsuitable for permanent comfortable living.

BRIEF SUMMARY OF THE INVENTION

The present invention is a floating house (watercraft) which allows humans to live permanently on seas and oceans without experiencing the swaying, pitching, and rolling motions common to conventional ships. The invention solves the limitations of existing watercraft by providing a stable, comfortable, and safe living environment through an innovative double spherical structure design.

The main concept is the stability against waves, which interact with the floating house on water. This stability is assured by an external sphere that can slide freely around an internal spherical habitat. Both spherical components have most of the heavy weight located at the bottom of their lower hemisphere, ensuring gravitational stability in a default (horizontal) position.

The invention is composed of two spherical components in which the external sphere rotates freely around the internal spherical habitat, when moved by interaction with the water. This process is accomplished by well-lubricated rotative structural balls (symmetrically distributed on the internal spherical structure), which touch tangentially the external sphere. The rotative structural balls are more numerous at the bottom, where the pressure and weight are greater, and less frequent towards the top.

The external bottom weight (containing batteries) and the additional protection / reinforcement layer attached to the underwater area of the lower hemisphere ensure that the external sphere gravitationally returns to its default position after each movement (due to the contact / friction with the water). The internal bottom weight, including batteries and the heavy load (water tanks, food storage, etc.) from the lower part of the internal structure ensures that the internal habitat is kept gravitationally in its default horizontal position of the floors. As a result, users live without sway, quite similar to the living in houses on land.

The watercraft can maintain itself in a desired location using GPS coordinates and appropriate software, which starts and controls the electric propeller motors appropriately. When the distance from the desired location exceeds a user-set value (number of meters), the system automatically returns the watercraft to the designated position.

Due to the free movement of the exterior sphere relative to the interior habitat, which always remains in the same position (secured gravitationally by the weight of the water tanks and the batteries located at the base), there is no pitch and roll for the occupants.

The upper hemisphere of the external sphere contains mobile parts (like petals) that can be moved up and down, keeping the top level (the yard of the house) open or closed (partially or completely). When appropriate safe conditions exist, users keep the petals open for better exposure of solar panels to sunlight (also for the wind turbines energy generators) allowing them to enjoy sunny days, leave the house, bring supplies, or to perform other activities in fresh air. For dangerous situations such as bigger waves, too strong winds, storms, or intrusion attempts, the petals can be closed completely to increase safety.

The petals of the external sphere create a large solar panel surface in both closed and open modes. The battery banks can be charged through both wind turbines energy generators (mounted on the top level / in the yard) and solar panels (on the outside and inside of the sphere's petals, also additional solar panels located on the surface above water of the external sphere. These ways to fuel the batteries (located at the bottom of the house) offer sufficient energy to power many household devices and the electric motors used for propulsion. There are additional ways to generate energy that can be mounted in the yard, for example, fitness bikes with dynamos.

The internal spherical structure can have multiple levels (floors/stories), allowing users to have access to more facilities such as water storage, food storage, rooms (bathroom, kitchen, living room, etc.), besides swimming pool, playground etc. and even a garden in the yard from the top floor. The external sphere may contain corresponding small, secured video cameras in some areas that allow users to have a view of the exterior environment, useful especially when the petals are closed.

The spherical shape of this invention significantly increases the floatability in comparison with typical ships, as the spherical shape assures the best floatability.
People can use satellite internet connection for communication, online work or entertainment. Users can live a comfortable, self-sustaining life on the sea, utilizing mainly solar energy (and the wind turbine energy generators, when the petals are opened) to power various electrical devices, for example, water maker, oven, refrigerator, computers, and other household appliances, in addition to fishing and gardening.

The freedom, safety, and comfort given by this invention will allow many people to live and travel on open sea in chosen locations all around the globe, including more exotic climates (e.g. equatorial and subequatorial areas). Initially, communities of floating spherical house owners will live closely near the shore, but in time, these communities will expand, allowing people to populate bigger areas of the seas and oceans. By using free resources such as solar power, wind energy, and seafood, the problems of overpopulation will be reduced, also decreasing global warming.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a spherical floating house sample, with petals (1) extended.
FIG. 2 is a front view of the spherical floating house, with petals (1) extended.
FIG. 3A is a front view of the spherical floating house, with petals (1) closed.

FIG. 3B is a front view of the spherical floating house, with petals (1) closed, with four electric engines with propellers for propulsion (2).

FIG. 4 is a vertical cross-sectional side view of the spherical floating house assembly, with petals (1) extended.

FIG. 5A is a vertical cross-sectional front view of the spherical floating house, with petals (1) extended. It shows the double spherical structure in its default position, gravitationally assured, illustrating more components such as the internal spherical structure (4), the external sphere (3), the rotative structural balls (10).

FIG. 5B is a vertical cross-sectional front view of the spherical floating house, with petals (1) extended. It shows an additional armor layer (35), the domestic water basin (41), the wastewater basin (42), the drinking water basin (43) and a corresponding umbrella (40). A proximity radar (44) will be placed at the top of the mast.

FIG. 6 is a vertical cross-sectional front view of the spherical floating house, with petals extended (1). It shows the double spherical structure when the external sphere (3) slides due to waves hitting it, while keeping the internal spherical structure (4) in its default position, due to the stabilizing weight located at its base (13).

FIG. 7 is a perspective cross-sectional view of the spherical floating house, with two petals (1) extended and four closed (two not being displayed).

FIG. 8A is a perspective view of a big part from the internal spherical structure (4) showing the distribution of the rotative structural balls (10). The rotative structural balls (10) are proportionally denser in the lower part and sparser in the upper part, because the weight pressing on the rotative structural balls is much greater at the bottom than at the top of the internal spherical habitat.

FIG. 8B is a perspective view of the rotative structural ball mechanism.

FIG. 8C is a perspective cross-sectional view of the rotative structural ball mechanism.

FIG. 8D is a perspective view of a big part from the internal metallic (steel) structure (30) of the internal spherical structure (4), the rotative structural ball mechanisms being screwed into it.

FIG. 9A is a perspective front view of an electric motor mechanism (17) used for actuating the petals.

FIG. 9B is a perspective view of the electric motor mechanism (17) for actuating the petals, mounted on the external sphere (3) and connected to one petal (1) with a strong metal elongation (24).

FIG. 9C is a cross-sectional side zoomed view of the electric motor mechanism (17) for actuating the petals, mounted on the external sphere (3) and connected to one petal (1) with a strong metal elongation (24).

FIG. 10 is a perspective view of the spherical floating house assembly showing one petal (1) in the closed position.

FIG. 11 is a perspective view of the spherical floating house assembly showing one petal (1) in a slightly open position.

FIG. 12 is a perspective view of the spherical floating house assembly showing one petal (1) in the horizontal open position.

FIG. 13 is a perspective view of the spherical floating house assembly showing one petal (1) in the maximum open position.

FIG. 14A is a cross-sectional side view of the petal blocking mechanism (28) in its default position, whenever the electric motor mechanism responsible for actuating the petals (17) is inactive.

FIG. 14B is a cross-sectional front view of the petal blocking mechanism (28) in its default position, whenever the electric motor mechanism responsible for actuating the petals (17) is inactive.

FIG. 15 is a cross-sectional side view of the petal blocking mechanism (28) in the retracted position, whenever the electric motor mechanism responsible for actuating the petals (17) is active.

FIG. 16 is a cross-sectional side view of the petal blocking mechanism (28) in its default position, and the additional blocking mechanism (31) in its default position.

FIG. 17A is a cross-sectional view of a petal (1), depicting its associated / surrounding rubber gasket (29).

FIG. 17B is a perspective view of a petal (1), depicting its associated rubber gasket (29).

FIG. 18 is a perspective view of a sample embodiment of the uppermost level of the internal spherical structure (4).

FIG. 19 is a perspective view of the spherical floating house in a docked configuration, illustrating the method by which individuals may embark onto and disembark from the structure.

FIG. 20A is a schematic representation vertical cross-sectional side view of the spherical floating house, depicting petal (1) in an open position and illustrating the manual petal-closing mechanism (46).

FIG. 20B is an enlarged detailed view of the area indicated in FIG. 20A, illustrating the hook (47) of the manual petal-closing mechanism (46) connected with the petal (1).

FIG. 21 is a schematic representation vertical cross-sectional side view of the spherical floating house, showing one petal (1) in the vertical open position, revealing functionality of the manual petal closing mechanism (46).

FIG. 22 is a schematic representation vertical cross-sectional side view of the spherical floating house, showing one petal (1) in the closed position, revealing functionality of the manual petal closing mechanism (46).

FIG. 23A is a vertical side view of the manual petal closing mechanism (46), comprising a hook (47) attached to a steel cable (48) that passes over a pulley (49) mounted on the mast (6) and connects to manual winch (50) supported by a robust metallic stand (51).

FIG. 23B is an enlarged perspective detail view of the area indicated in FIG. 23A, illustrating the manual winch (50) with the steel cable (48) wound thereon, and the hook (47).

DETAILED DESCRIPTION OF THE INVENTION

The present invention will now be described in detail with reference to the accompanying drawings. The same reference numerals are used throughout the figures to designate the same or corresponding elements.

The invention relates to a spherical floating house assembly configured to provide stable, comfortable and safe living conditions on seas and oceans, without the swaying, pitching and rolling motions typical of conventional vessels. The floating house comprises a double spherical structure with an outer sphere that interacts with the water / waves and a bigger than half part of an inner sphere (a little bit smaller), with well-lubricated rotative structural balls symmetrically distributed on it (that touch tangentially the external sphere), this second (internal) one housing the living spaces and remaining gravitationally stabilized through the heavy load from its lower area (the internal spherical structure being, actually, like an incomplete sphere, missing most of its upper hemisphere).

As shown in FIGS. 1, 5A, 5B, 6 and 7, the spherical floating house assembly comprises an external sphere (3) surrounding an internal spherical structure (4). As seen in FIG. 1, the upper area of the external sphere (3) is divided into 8 sections / petals. Each petal (1) is a curved panel covered with flexible solar panels on both sides and is configured to move between a fully closed position (FIG. 10 and with all the petals closed FIG. 3A, 3B), intermediate open positions (FIGS. 11–12), usual open position (FIG. 1) and a maximum open position (FIG. 13).

As illustrated in FIG. 5A, a mast (6) is provided from the bottom of the internal spherical structure (4) to the top (not touching the external sphere with the petals closed), which supports the interior staircase (8) around it, also the wind turbines (5) that can be mounted on the top floor (the yard) to generate additional electrical power. As illustrated in FIGS. 1–7, a solar panel covered surface (7) is formed on the upper portions (above the water) of the external sphere (3), increasing the total area available for harvesting solar energy. The round ladder (8) from around the mast (6) facilitates access to all floors (12).

Double Spherical Structure and Stabilization System

The internal arrangement of the double spherical structure is illustrated in FIGS. 4–7. The internal spherical structure (4) defines the primary habitat volume and contains multiple floors of living spaces (12), including areas for sleeping, cooking, sanitation, storage and other domestic activities. The external sphere (3) forms a protective shell that contacts the surrounding water and responds to wave motion.

The internal spherical structure (4) and the external sphere (3) are mechanically decoupled and connected only through tangential contact with a plurality of lubricated rotative structural balls (10) which allow the external sphere (3) to rotate freely relative to the internal spherical habitat (4). The inner spherical structure (4) remains in a substantially vertical orientation of its mast (6) due to the action of gravitational force on its mass, which is concentrated around 75% in its lowest portion. Its center of gravity is positioned below the geometric center, allowing the lower portion of the inner spherical structure to produce a self-stabilizing effect. As a result, wave-induced motion of the external sphere (3) does not directly transfer as pitching or rolling to the internal spherical habitat (4), so that occupants experience minimal or no sway.

As best seen in FIGS. 5A, 5B and 6, the internal spherical structure (4) is provided with an internal bottom weight (13) located at or near its lowest portion. The internal bottom weight (13) may contain batteries, water containers (with a kind of torus shape, but using optimally the entire available volume), food storage and other heavy components that are desirably placed low in the structure. Concentrating such heavy elements in the lower region produces a low center of gravity for the internal spherical structure (4), which causes it to be gravitationally influenced towards a default horizontal orientation for the floors of living spaces (12).

The external sphere (3) is similarly provided with an external bottom weight (9) at the lowest portion of the outer shell, besides an additional thicker layer of high strength steel (35) around the lower underwater surface, as illustrated in FIG. 5B, also, for assuring a better resistance at possible impacts. The external bottom weight (9) may contain batteries powered by solar panel surfaces (7) located on the upper part of the external sphere (3) and on both sides of the petals (1). The external bottom weight (9) together with the additional armor layer (35) ensure that, after the external sphere (3) is displaced by waves action, it always returns gravitationally to a default position in which the external bottom weight (9) is situated back to the lowermost position.

FIG. 6 illustrates the behavior of the double spherical structure under the action of waves. While interacting with an agitated sea, the external sphere (3) is free to slide and rotate around the internal spherical structure (4) by means of the lubricated rotative structural balls (10). At the same time, the internal spherical habitat (4) remains substantially in its default horizontal position of its floors (with its mast oriented vertically) due to the stabilizing effect of the internal bottom weight (13). Thus, the external sphere (3) absorbs wave motion, while the internal spherical structure (4) maintains a stable orientation, allowing occupants to stay in the living spaces (12) without experiencing significant rolling or pitching.

Required mainly for the case when the petals are opened, two rubber gaskets (11a and 11b) are disposed between the two spheres, surrounding the inner spherical structure (4) and being attached to it, first one (11a) located at the top of the exterior of the inner sphere (4), the second one (11b) being located lower, as it is illustrated in FIG 7. These rubber gaskets (11a and 11b) seal the gap between the spheres, preventing impurities, mostly the water, from entering the space where the rotative structural balls (10) operate, the region delimited by them corresponding to the usual exposing (uncovering) that might occur due to the external sphere sway caused by waves up to 3 or 4 meters high. Right under the second rubber gasket (11b) there are light sensors distributed symmetrically, which trigger automatically the petals closing whenever one of them is exposed to the outside / daytime light. Such exposure may occur during stormy conditions, when the sea or ocean produces heavy waves that are significantly larger in amplitude and/or height than those typically encountered during calm or fair weather. A motion tracking sensor is positioned within the bottom weight (9) of the external sphere. The sensor is configured to detect when the external sphere is tilted beyond a predetermined threshold angle. Upon detecting such a tilt which could occur, for example, during heavy waves at nighttime and result in exposure of the second rubber gasket (11b), the sensor automatically triggers the closure of the petals. These gaskets contribute to the long-term reliability of the rotative structural balls (10).

As shown in FIG. 8A (also in 8D), the rotative structural balls (10) are not uniformly distributed over the entire surface of the internal spherical structure (4). Instead, the rotative structural balls (10) are proportionally denser in the lower part and sparser in the upper part. This is because the weight pressing on the rotative structural balls (10) is greater at the bottom than at the top of the internal spherical habitat. The increased number of rotative structural balls (10) in the lower region allows the system to carry the higher loads encountered there, while the reduced number in the upper region saves material where the load is lighter.

As illustrated in FIG. 8D, the internal spherical structure (4) includes an internal high strength steel structure (30) which contains the corresponding threaded holes for the rotative structural balls mechanism (10) to be screwed into them. Corresponding spaces are provided all over the interior of the internal spherical structure (4), which are enabling a user to replace the lubricant, or even to replace the rotative structural balls (10) with new ones, during maintenance procedures.

Rotative Structural Ball Mechanism

Details of the rotative structural ball mechanism are shown in FIGS. 8B and 8C. Each rotative structural ball (10) is housed in a “bearing kind” steel assembly which includes a rotative structural ball gasket (14) that holds grease / lubricant (16) around the ball (39). The lubricant (16) facilitates smooth rolling motion and reduces friction and wear between the ball (39) and its surrounding surfaces. The threaded section (15) of the rotative structural ball mechanism enables secure fastening to the internal spherical structure (4) into the corresponding holes from its internal high strength steel structure (30) and facilitates straightforward maintenance from inside the spherical habitat, by allowing the mechanism to be easily screwed in and unscrewed. The lubricant can be, for example, marine-grade grease, which is formulated to withstand severe conditions, heavy loads, including direct contact with saltwater (just as a precaution).

The rotative structural ball gasket (14) and the rubber gaskets (11a and 11b) work together to maintain a sealed environment around the “bearing system”, keeping contaminants out and lubricant (16) in. This arrangement allows the external sphere (3) to rotate freely relative to the internal spherical habitat (4) for long periods with minimal maintenance.

Propulsion System

As illustrated in FIGS. 1–7, the spherical floating house assembly further comprises electric engines with propellers for propulsion (2). These electric engines with propellers (2) are mounted closer to the center of gravity (which is always underwater) such that they can apply thrust to move the entire assembly in a desired direction. FIG. 3A illustrates a two-engine configuration, while FIG. 3B illustrates the recommended four-engine configuration. In the four-engine configuration, the watercraft can maintain forward propulsion even if one of the engines becomes inoperative. Upon detection of such failure, the corresponding engine located on the opposite side of the inoperative engine will be temporarily deactivated, thereby allowing the watercraft to operate using only two diametrically opposed remaining engines. This configuration enables the user to continue navigating the watercraft until maintenance can be performed.

The electric engines with propellers (2) are powered by the batteries housed in the external bottom weight (9) and/or in the internal bottom weight (13), which are charged by solar panels (7) and wind turbines (5).

The propulsion system can be controlled manually by occupants or automatically by onboard control electronics. For example, the electric engines with propellers (2) may be operated in coordinated fashion to move the spherical floating house assembly forward, backward, or to rotate it around a vertical axis. The propulsion system may also be used in station-keeping mode, where low levels of thrust are applied to counteract water motion and wind so that the assembly remains near a desired location, as determined using GPS technology.

Petal Structure and Movement

The petals (1) play multiple functional roles. Each petal (1) has solar panels (7) on both sides. When closed, the petals (1) form a compact, protective shell that shields the spherical floating house assembly from harsh weather, storms, providing security for the occupants (FIGS. 3A–3B). When opened to various angles, petals (1) expose better its solar panels to sunlight while allowing access to the outside environment.

FIGS. 10–13 illustrate several positions of an individual petal (1). FIG. 10 shows a petal (1) in the fully closed position, in which the petal (1) contributes to a continuous spherical outer surface. FIG. 11 shows the petal (1) in a slightly open position, FIG. 12 shows it in a horizontal open position, and FIG. 13 shows it in a maximum open position. These figures demonstrate that petals (1) can be placed in a range of intermediate positions to optimize solar exposure, provide shading or protection against stronger winds, besides allowing ventilation and offering access to the exterior.

The actuation of the petals (1) is accomplished by an electric motor mechanism (17) as shown in FIGS. 9A–9C. The electric motor mechanism (17) is mounted on two stands (18) that are secured to the external sphere (3). A bigger top gearwheel (20) is mounted on a top gearwheel shaft (19), while a smaller bottom gearwheel (22) is mounted on a bottom gearwheel shaft (23). An electric motor (21) is operatively connected to the bottom gearwheel shaft (23) to supply rotational power, thereby driving the top gearwheel (20) in either a clockwise or counterclockwise direction.

A strong metal elongation (24) connects the top gearwheel (20) to the petal (1). When the electric motor (21) rotates the top gearwheel (20) via the bottom gearwheel (22), the strong metal elongation (24) causes the petal (1) to move between its closed and open positions.

In FIG. 9A, the electric motor mechanism (17) is shown in a perspective front view, illustrating the general arrangement of the gearwheels (20 and 22), shafts (19 and 23), electric motor (21) and stand (18). FIG. 9B shows the electric motor mechanism (17) mounted on the external sphere (3) and connected to a petal (1) by the strong metal elongation (24). FIG. 9C offers a cross-sectional side view of the same arrangement, making clearer the structural connections between the external sphere (3), the stand (18), the gearwheels (20, 22) and the petal (1).

By wirelessly controlling the electric motor mechanisms (17), it is possible to open or close one petal (1), several petals (1) or all petals (1) simultaneously or in specific sequences. This allows the occupants or an automated control system to adapt the configuration of the petals (1) to environmental conditions, energy needs and personal preferences.

As shown in FIG. 14A–14B the petal blocking mechanism (28) by default prevents any movement of the petal (17), due to its weight, or because of the wind or any other force applied to it, by positioning a rigid metal plate (25) between the teeth of the top gearwheel

(20). The metal plate (25) is pushed into this blocking position by one or more springs (26) that urge the metal plate (25) upward. As illustrated in FIG. 15, right before the electric motor mechanism for actuating the petals (17) is energized to move a petal (1), corresponding electromagnets (27) are simultaneously energized and attract the metal plate (25) downward, withdrawing it from engagement with the teeth of the top gearwheel (20) so as to permit rotation of the top gearwheel (20) and corresponding movement of the petal (1).

In FIG. 16 an additional blocking mechanism (31) can be seen, which stops the rotation of the smaller gearwheel (22). The double blocking of both gearwheels is required especially for the case of severe storms capable of generating huge waves, which can rotate the external sphere (3) in a position with the closed petals under the water. In this case, the internal spherical structure could apply outward pressure through the rotative structural balls (10) onto the inner surfaces of the closed petals for few seconds, until the external sphere (3) starts moving back gravitationally

To prevent water from entering the internal habitat when the petals are in the complete closed position, each petal (1) is provided with a gasket (29), as illustrated in FIG. 17A and FIG. 17B. In this case, the corresponding gaskets come into contact with one another (compressing each other), thereby forming an appropriate seal that stops water ingress into the internal habitat.

Manual closing (lifting) of a petal:

As illustrated in FIGS. 20-23, the cable (48) from the manual winch (50), best seen in FIG. 23B, is passed through the pulleys (49) on the mast (6) and then the hook (47) is attached to the petal (1) as seen more clearly in FIG. 20B; the crank is rotated a little to straighten/tension the cable and the ratchet is locked, then the petal is unlocked electrically and the crank is operated to raise it. After the petal is blocked from the remote control, the ratchet can be unlocked and the tension on the cable relieved, in order to disconnect the hook from the petal and to tighten the cable completely back on the drum.

Energy Collection and Power Management

The spherical floating house assembly is designed to be largely self-sufficient in terms of energy. The petals (1) are equipped with solar panels (7) on both sides, and the upper region (from above the water) of the external sphere (3) forms a solar panel covered surface (7). When the petals (1) are opened, the solar panels located on their inner surface

are oriented to receive direct sunlight, while the panels on their outer surfaces may receive reflected or indirect light. When the petals (1) are closed, the solar panel covered surface (7) on the external sphere (3) continues to collect solar energy.
The solar panels charge batteries located in the external bottom weight (9) and in the internal bottom weight (13). Wind turbines (5) mounted on the top floor (the yard) generate also electrical power when wind conditions are favorable. The stored electrical energy is used to supply the electric engines with propellers (2), the petal movement electric motor mechanisms (17), interior lighting, heating, cooling, water purification systems, household appliances and onboard electronics.
Because of the large available surface area for solar panels and the presence of wind turbines (5), the spherical floating house can operate largely autonomously from an energy point of view (furthermore, as seen in FIG. 18, the inhabitants can use the fitness bikes with dynamos (45) to generate additional electricity, while working out). The energy system is thus well suited for long-term habitation in remote marine environments.
Mention: In the event of a lightning strike, the petals being closed in such atmospheric conditions, a 30x2 mm copper metal strip, properly fixed (the first piece of it on the side of the petal and the other in its continuation on the outer sphere to the underwater area), will conduct the electrical discharge into the water, with a heating of just about 20 °C (the contact between the two pieces being assured whenever the petal is fully closed).

Interior Layout and Living Spaces

Within the internal spherical habitat (4), the floors of living spaces (12) are arranged to take advantage of the spherical volume while maintaining comfortable, horizontal surfaces for occupants. The gravitational stabilization provided by the internal bottom weight (13) ensures that all floors (12) remain level, even when the external sphere (3) is moving in response to waves.
The floors of living spaces (12) can be organized into multiple levels, including but not limited to sleeping areas, a kitchen, bathrooms, storage areas, technical room and recreational spaces. Video cameras connected to display screens can be incorporated so that occupants can observe the external environment when the petals (1) are closed.
A sample of the uppermost level, illustrated in FIG. 18, which is the yard of the spherical floating house, can contain an appropriate swimming pool (32), a playground area (33) and

a vegetable garden (34) located right into the center, around the mast (6) and its attached round ladder (8).

Boarding and Disembarking

In FIG. 19 when the spherical floating house (4) is docked at a port pontoon (37) at sea or ocean (36), where waves motion is insufficient to cause the movement of the external sphere (3), passengers can embark and disembark via a retractable ladder (38) located in the opening formed between two consecutive petals (1) in their fully open position.

Operation in Marine Environments

In operation, the spherical floating house assembly floats on the surface of a body of water (sea or ocean) with the external sphere (3) partially submerged. When waves impact the external sphere (3), it is free to rotate around the internal spherical structure (4) via the lubricated rotative structural balls (10), while the internal spherical habitat (4) remains substantially upright due to the internal bottom weight (13). The external bottom weight (9) together with the additional armor layer (35) help the external sphere (3) return to the default orientation after each disturbance.

By combining the double spherical structure, the rotative structural ball system, the internal and external bottom weights (13, 9), the petal system with solar panels, the electric propulsion system (2), and the energy collection elements including solar panels (7) and wind turbines (5), the invention creates a floating habitat that offers high stability, safety and autonomy for permanent or long-term living on open water.

Although specific embodiments and configurations have been illustrated in FIGS. 1–19 and described above, variations and modifications in the arrangement of elements, dimensions, materials and control systems may be made without departing from the spirit and scope of the invention as defined by the claims.

Additional info / mentions

- Two appropriate compressed air tanks are used in cases when the petals must remain completely closed for longer periods of time (which are refilled when the petals are opened).
- If there is not enough Sun or wind to generate power for loading the batteries at a minimum level needed to unlock / lock the petals, those two fitness bikes with

dynamos can be used because the manual closing / opening of the petals is still using the electrical blocking / unblocking, and those corresponding electromagnets are not requiring much electrical power. On the Control panel (also on the remote control for moving the petals), besides the “up” and “down” corresponding buttons, which are using automatically the unlock and lock functions at each moving, there are separate buttons for unlocking / locking each petal (the electrical “up” and “down” moving has also an altogether / at once option).

- It is recommended the diametrically opposed corresponding placement of the heavier objects, for the assurance of a symmetrical distribution of their weight (to not affect the default horizontal position of the floors).
- For each electrical pump used with the water tanks there is a corresponding manual pump. It is recommended to keep the water tanks almost full (level sensors will be used).
- Rainwater from the open umbrella (40) on the mast can be collected (also for making drinkable water) through a corresponding flexible gutter, which is surrounding its border and has some holes for attaching appropriate hoses).
- The electric motors with propellers used for propulsion will have a appropriate shield made of high strength steel.
- As shown in FIG. 5B, the proximity radar (44) can be placed at the top of the mast.

CLAIMS

1. A spherical floating house watercraft for habitation on seas and oceans, comprising:

   an internal spherical structure configured to provide multiple floors of living spaces for one or more occupants;

   an external sphere, surrounding the internal spherical habitat, is in contact with the water;

   a plurality of lubricated rotative structural balls disposed symmetrically on the exterior of the internal spherical structure contact tangentially the external sphere allowing it to move (rotate) freely relative to (around) the internal habitat;

   an internal bottom weight positioned in the lowest portion of the internal spherical structure and comprising batteries, water containers, and food storage, the internal bottom weight being configured to gravitationally maintain the internal habitat in a default horizontal orientation of the floors (living spaces);

   an external bottom weight positioned in the lowest portion of the external sphere comprising batteries, plus the additional armor layer, the external bottom weight being configured to gravitationally return the external sphere toward a default orientation after wave-induced move (rotation); and

   at least two electric propulsion units mounted on the watercraft and powered by the batteries are configured to move the watercraft through water;
   wherein, when waves act on the external sphere, it rotates relative to the internal spherical structure via the lubricated rotative structural balls while the internal sphere remains substantially in the default orientation, due to the internal bottom weight.

2. The spherical floating house watercraft of claim 1, further comprising two gaskets around the internal spherical habitat, fixed on it, and almost touching the external

sphere, one right at a top region of the internal spherical structure, and the second one at an appropriate distance under the first, these gaskets being configured to prevent impurities, including the water, from entering between the spheres where the lubricated rotative structural balls operate.

3. The spherical floating house watercraft of claim 1, wherein the lubricated rotative structural balls are more densely distributed in the lower region of the internal spherical structure and less densely distributed in the upper region of it.

4. The spherical floating house watercraft of claim 1, wherein each lubricated rotative structural ball is retained in a bearing kind assembly comprising a gasket configured to hold grease or lubricant around the ball and a threaded portion configured to secure the bearing assembly to the internal spherical structure.

5. The spherical floating house watercraft of claim 1, wherein the external bottom weight and the internal bottom weight together are configured to maintain a center of gravity of the watercraft below the geometric center of the watercraft.

6. The spherical floating house watercraft of claim 1, wherein each of the at least two electric propulsion units comprises an electric motor and propeller assembly configured to operate in at least one of: a transit mode to move the watercraft between locations, a maneuvering mode to assist with docking, and a station-keeping mode to maintain the watercraft within a predetermined distance of a target position.

7. The spherical floating house watercraft of claim 1, further comprising a plurality of petals, parts (sections) of the external sphere and mounted to (attached to) it, each petal being movable between a closed position in which all the petals together complete (reunite) the upper part of the external sphere and an open position in which the petals extend away from the external sphere.
8. The spherical floating house watercraft of claim 1, wherein each petal carries solar panels on both sides and the external sphere comprises a solar-panel-covered

surface (on its unsinkable region), the solar panels being electrically coupled to the batteries.

9. The spherical floating house watercraft of claim 1, further comprising a corresponding electric motor mechanism for each petal configured to actuate it, the electric motor mechanism comprising:
a stand mounted to the external sphere;
a bottom gearwheel on a bottom gearwheel shaft mounted on the stand;
a top bigger gearwheel on a top gearwheel shaft mounted on the stand;
an electric motor, operatively connected to the bottom smaller gearwheel shaft;
and a rigid elongation coupling the top gearwheel to the petal;
wherein rotation of the electric motor causes the petal to move between the closed and open positions.

10. The spherical floating house watercraft of claim 1, wherein each petal is movable in any of the intermediate positions between the closed position and a maximum open position, including at least a slightly open position, a substantially horizontal open position, and the maximum open position.

11. The spherical floating house watercraft of claim 1, further comprising a mast mounted on the internal spherical structure and a plurality of wind turbines on the top floor configured to generate electrical power for charging the batteries.

12. The spherical floating house watercraft of claim 1, further comprising an access structure including a round ladder mounted around the mast.

13. The spherical floating house watercraft of claim 1, wherein the internal sphere includes at least two floors of living spaces comprising one or more of a sleeping area, a kitchen, and a bathroom, besides the yard from above them, and wherein the internal bottom weight is positioned beneath the floors of living spaces.

14. The spherical floating house watercraft of claim 1, further comprising an electronic control system configured to:
receive position information from a satellite-based positioning system; and

control operation of the at least two electric propulsion units to maintain the watercraft within a predefined radius of a selected location.

15. The spherical floating house watercraft of claim 1, wherein the electronic control system comprises a wireless interface configured to receive control commands from at least one of a smartphone or a computer.

16. The spherical floating house watercraft of claim 1, wherein the internal sphere is configured to accommodate a circular gardening space surrounding the mast on the top level to support off-grid living, besides fishing and the using of electrical energy generated by the solar panels and the wind turbines.

17. The spherical floating house watercraft of claim 1, wherein the internal sphere is configured to be used with small exterior cameras mounted on the external sphere and interior displays configured to show images of the exterior environment surrounding the watercraft.

18. The spherical floating house watercraft of claim 1, further comprising two appropriate compressed air tanks used for the cases when the petals must remain completely closed for longer periods of time (which are refilled when the petals are opened).

ABSTRACT OF THE DISCLOSURE

A floating house watercraft for habitation on seas and oceans comprises a double sphere assembly, where the external sphere slides freely around the internal spherical structure via a plurality of lubricated rotative structural balls distributed symmetrically on it. Heavy loads including batteries and water tanks positioned in the lowest part of the internal spherical habitat maintain stability (gravitationally) in the default position, while weights at the bottom of the external sphere ensure gravitational return to a default position after wave-induced movement. The free sliding movement of the external sphere around the gravitationally stabilized internal structure eliminates swaying, pitching, and rolling motions (experienced in conventional ships). The external sphere features openable and closable petals with solar panels that, besides wind turbines, provide energy for household devices and electric motors. The spherical design provides optimal buoyancy and stability, enabling comfortable living on open seas without the discomfort and hazards of conventional watercraft.