US008747174B1

(12) **United States Patent**
Chun et al.

(10) **Patent No.: US 8,747,174 B1**
(45) **Date of Patent: Jun. 10, 2014**

(54) **AMPHIBIOUS PROTECTION APPARATUS WITH INFLATABLE WALL MEMBERS AND ENHANCED ACCESS PORTS**

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(73) Assignee: **Hankookin, Inc.**, Raleigh, NC (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **14/162,770**

(22) Filed: **Jan. 24, 2014**

Related U.S. Application Data

(63) Continuation-in-part of application No. 13/586,150, filed on Aug. 15, 2012, now Pat. No. 8,668,539.

(60) Provisional application No. 61/524,059, filed on Aug. 16, 2011.

(51) **Int. Cl.**
B63C 9/06 (2006.01)

(52) **U.S. Cl.**
USPC **441/87**

(58) **Field of Classification Search**
USPC ..... 441/87; 244/140, 121, 100 R
See application file for complete search history.

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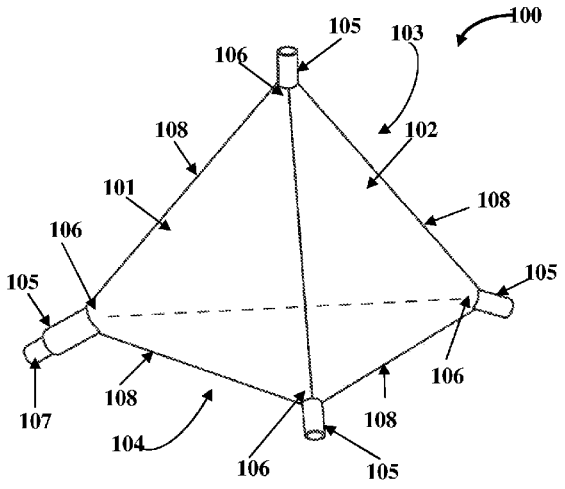
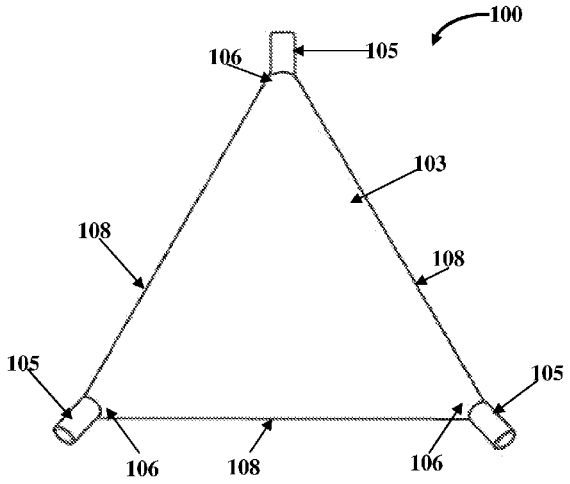
Primary Examiner — Lars A Olson
Assistant Examiner — Jovon Hayes
(74) *Attorney, Agent, or Firm* — Ash Tankha; Lipton, Weinberger & Husick

(57) **ABSTRACT**

An amphibious protection apparatus includes wall members that define an occupancy space for accommodating one or more users, and an access region for providing access to the occupancy space. Each wall member is foldably and detachably connected to each other. Each wall member includes a thick outer layer defining an outer enclosed space and an inner inflatable member having an inner enclosed space. The outer enclosed space accommodates the inner inflatable member. A fluid injected into the inner enclosed space inflates the inner inflatable member, thereby inflating each detachably connected wall member to form a buoyant enclosure that bounces on land and floats on water. The buoyant enclosure protects the accommodated users from impacts from different directions on land and water. The amphibious protection apparatus also includes an access port having an arrangement of lenses that enables magnification and viewing of objects present in an external environment.

24 Claims, 36 Drawing Sheets





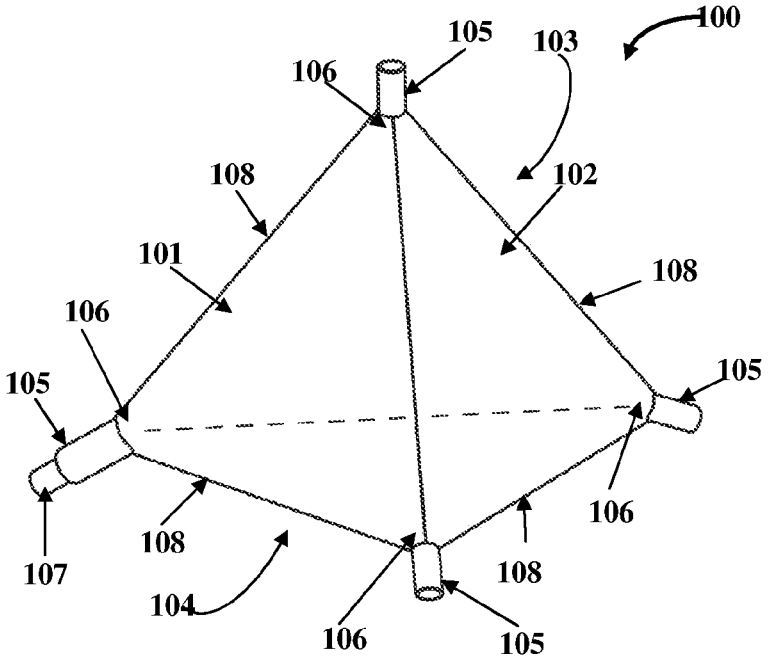

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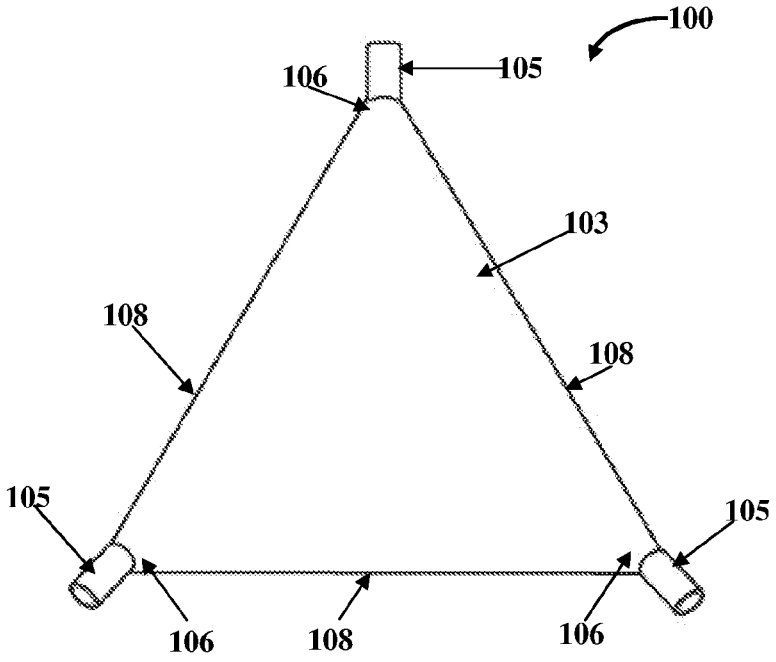
FIG. 1A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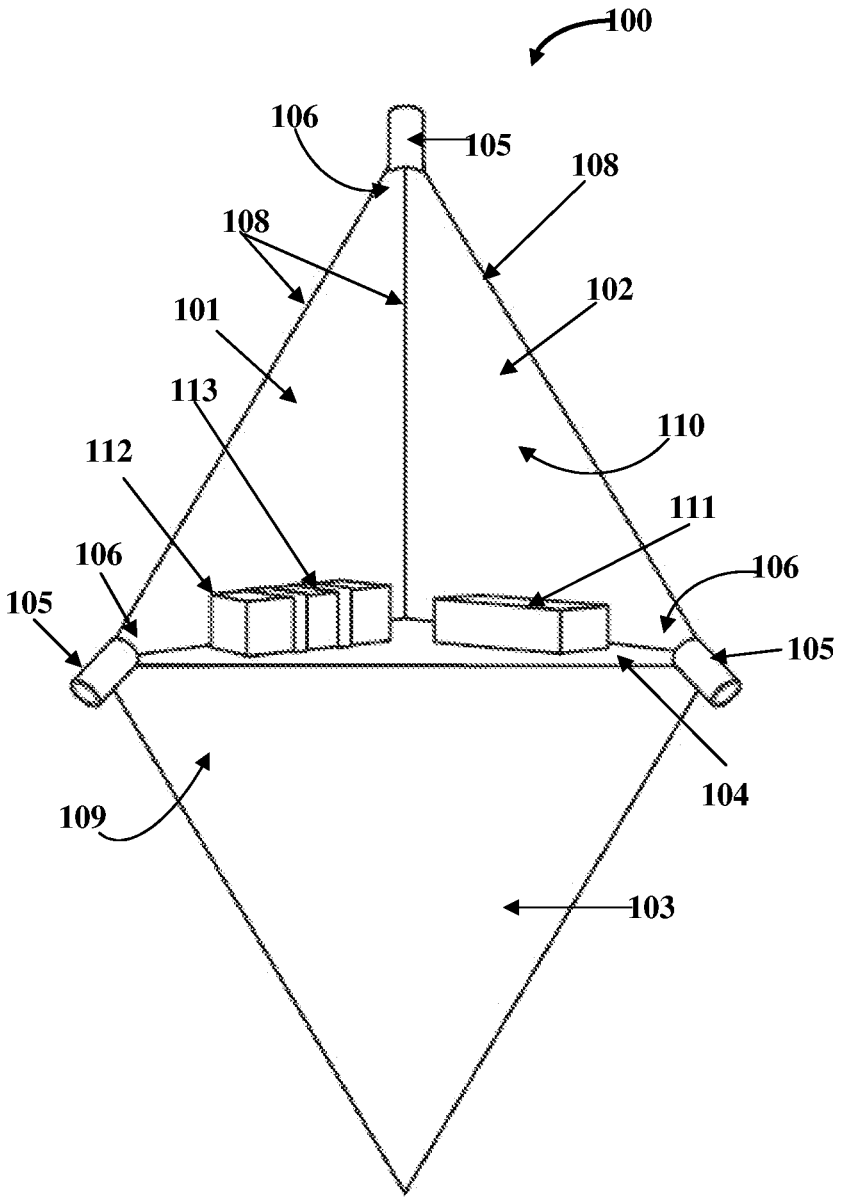
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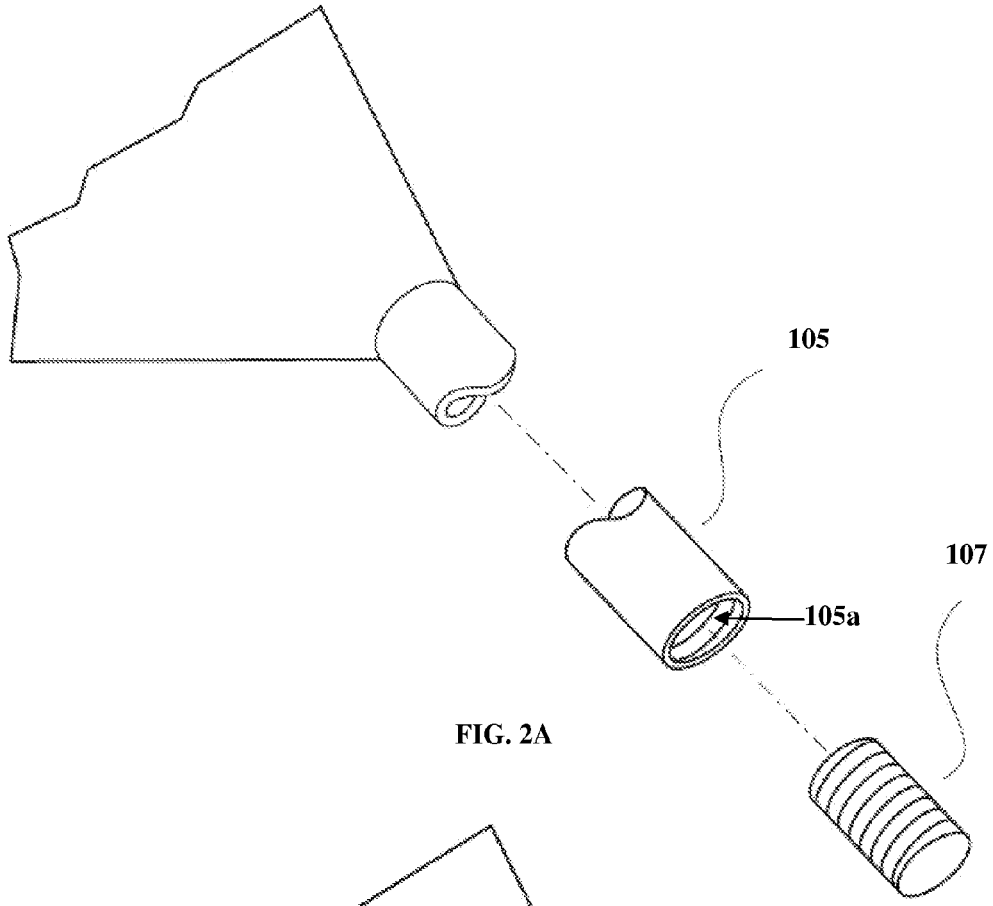
FIG. 1C



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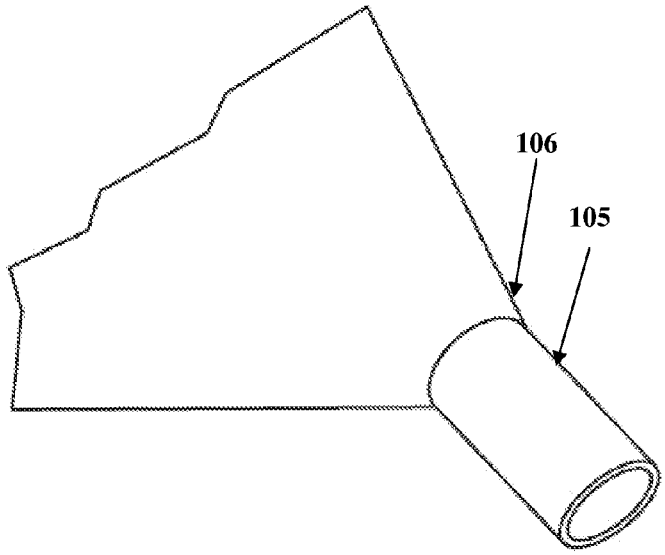
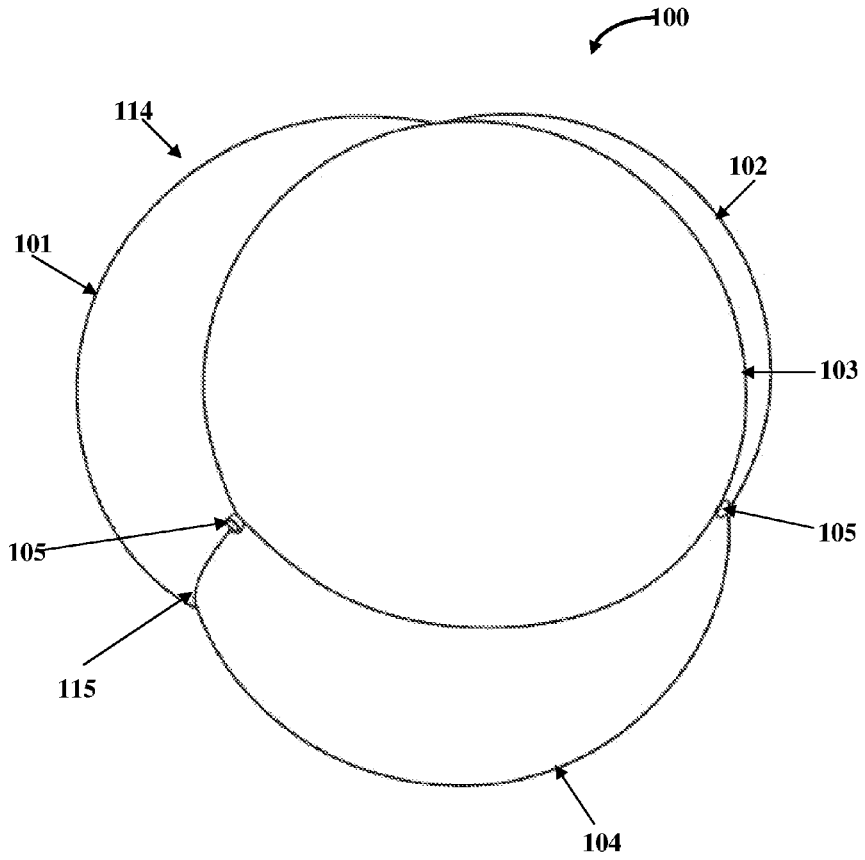


FIG. 2B



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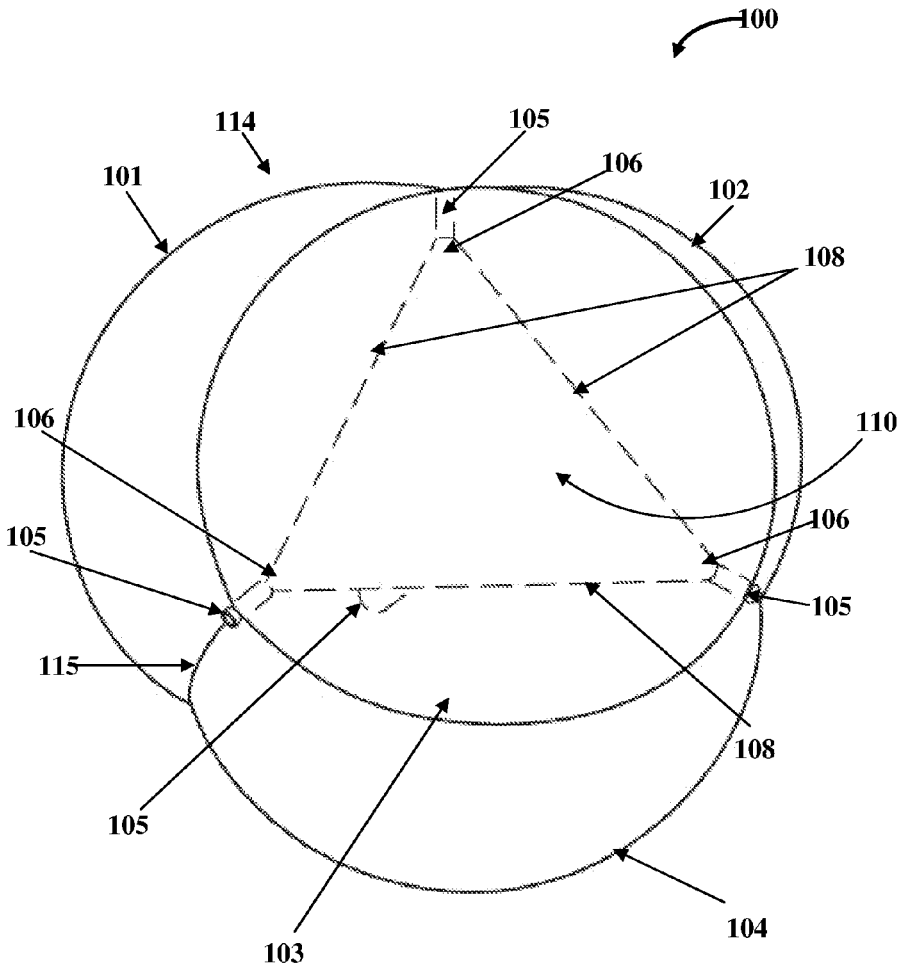
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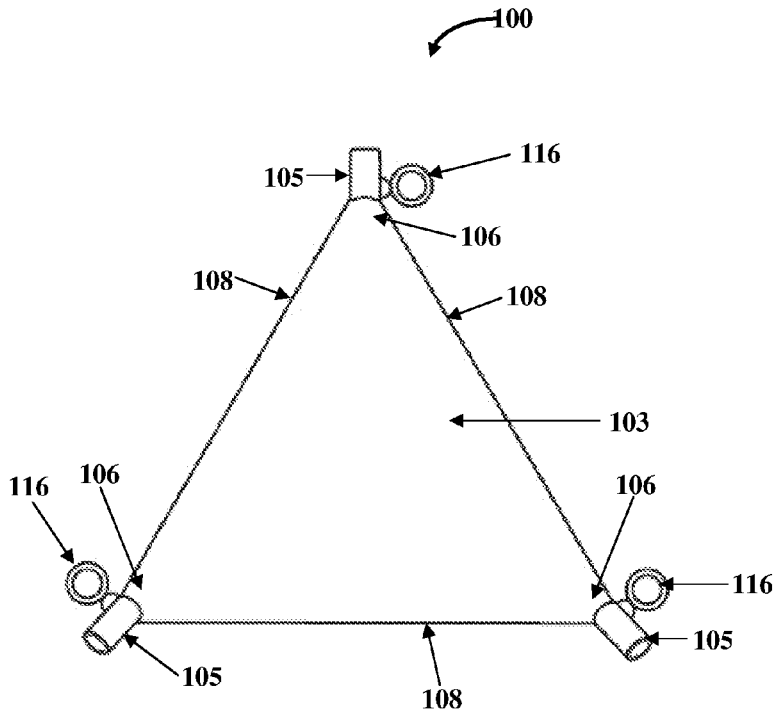
FIG. 3B



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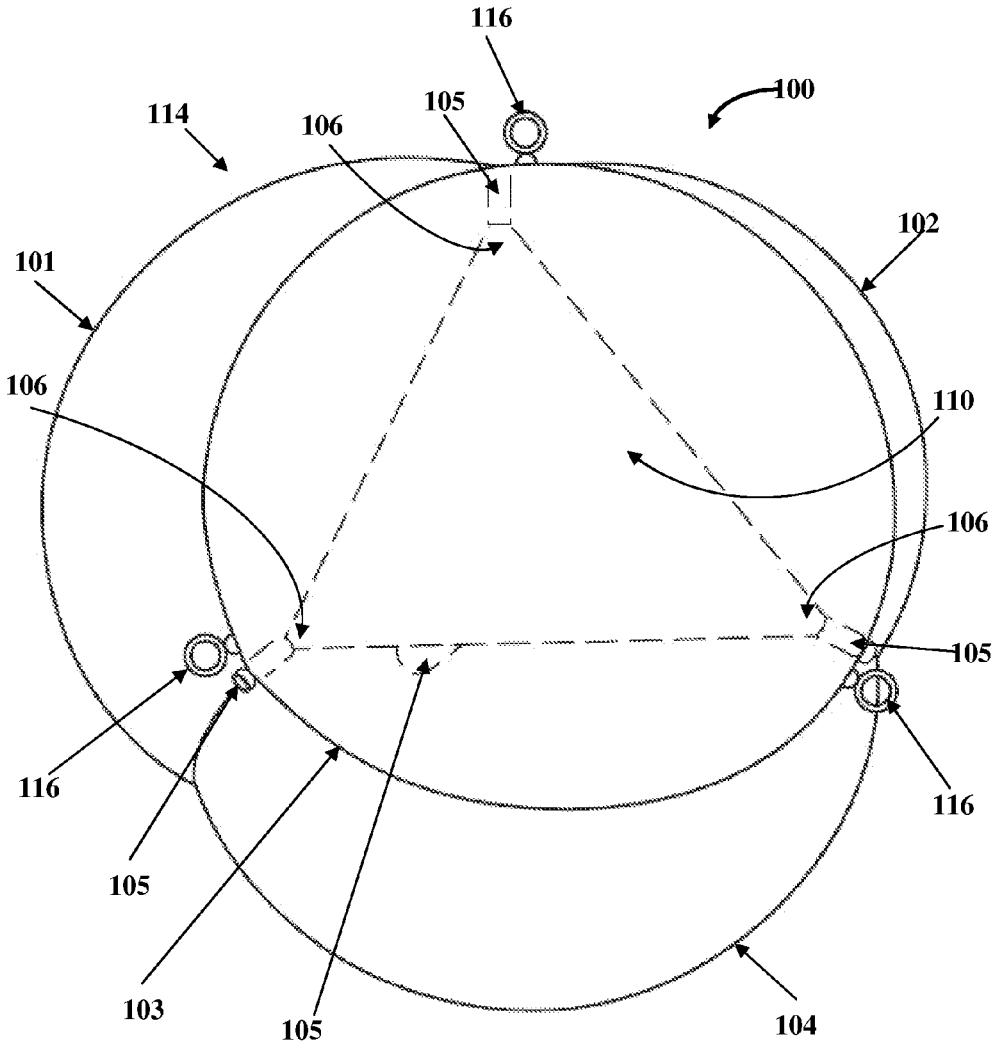
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FIG. 4B

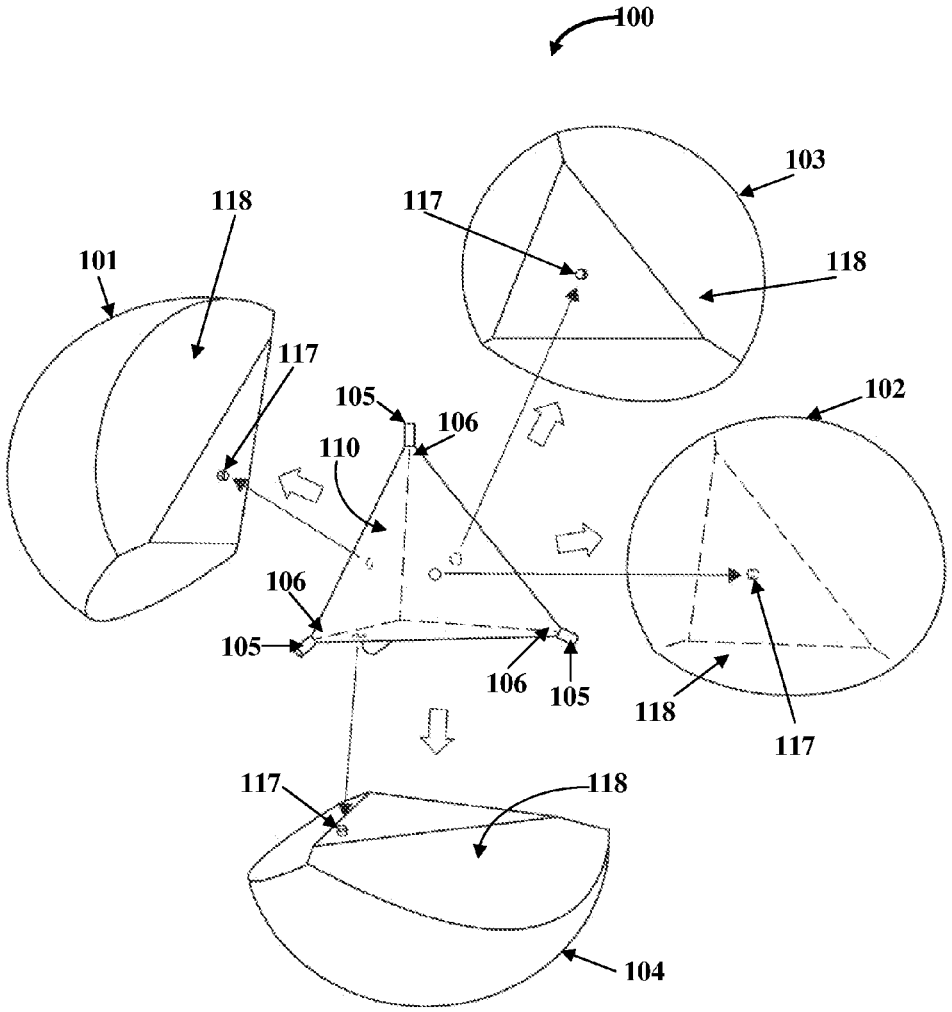
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FIG. 5

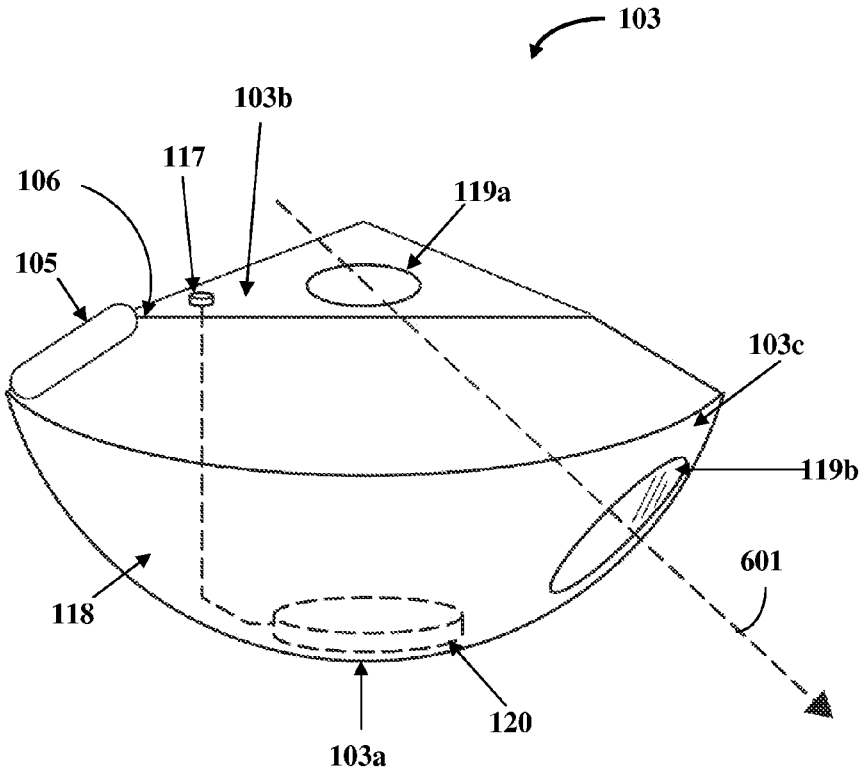

FIG. 6

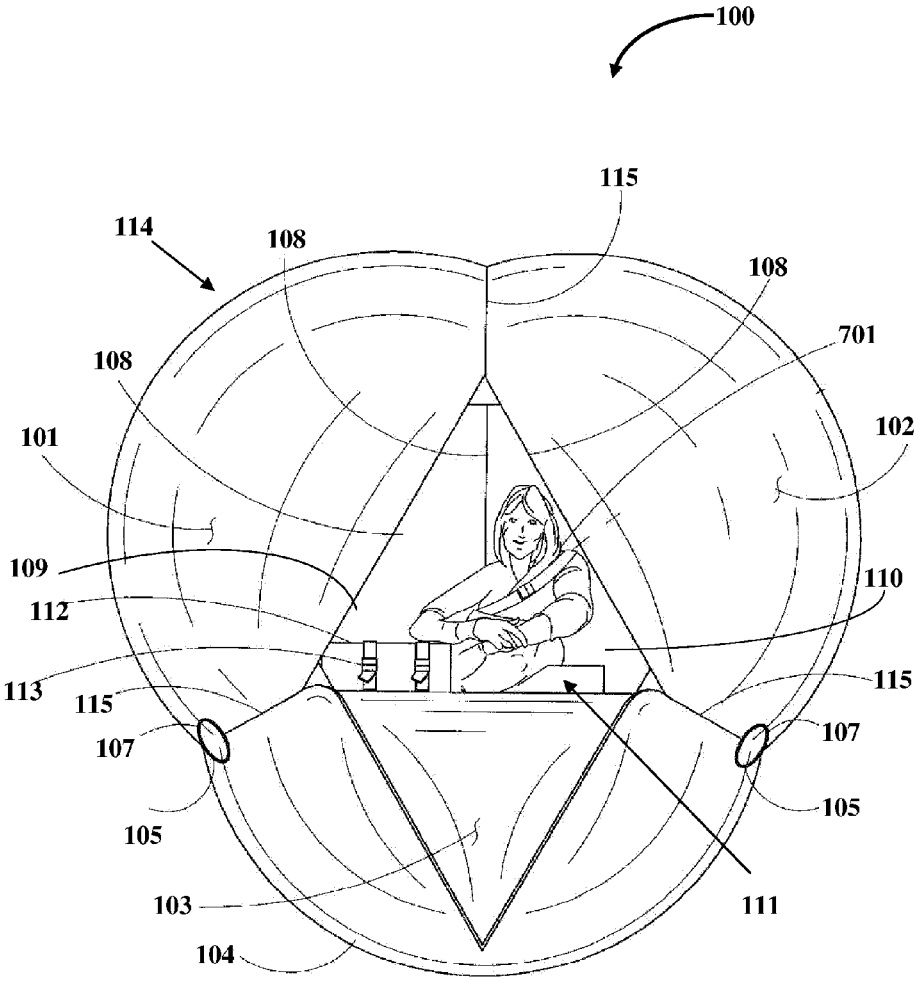
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FIG. 7

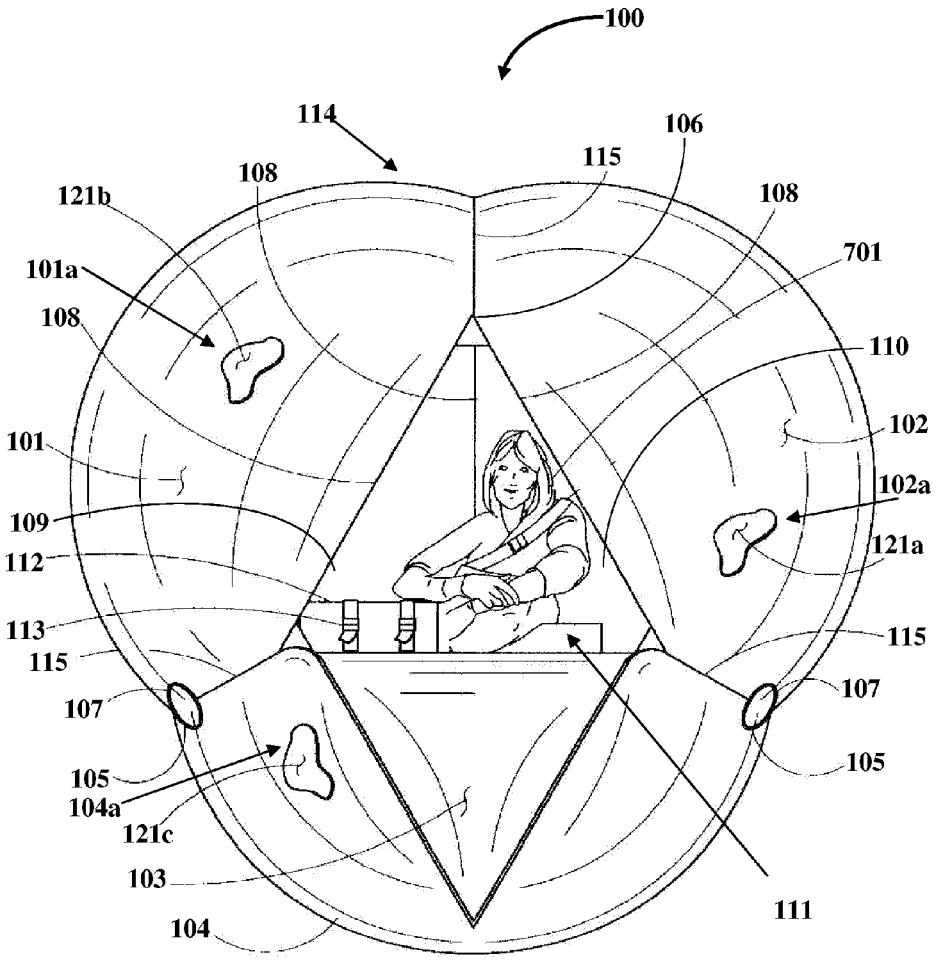
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FIG. 8

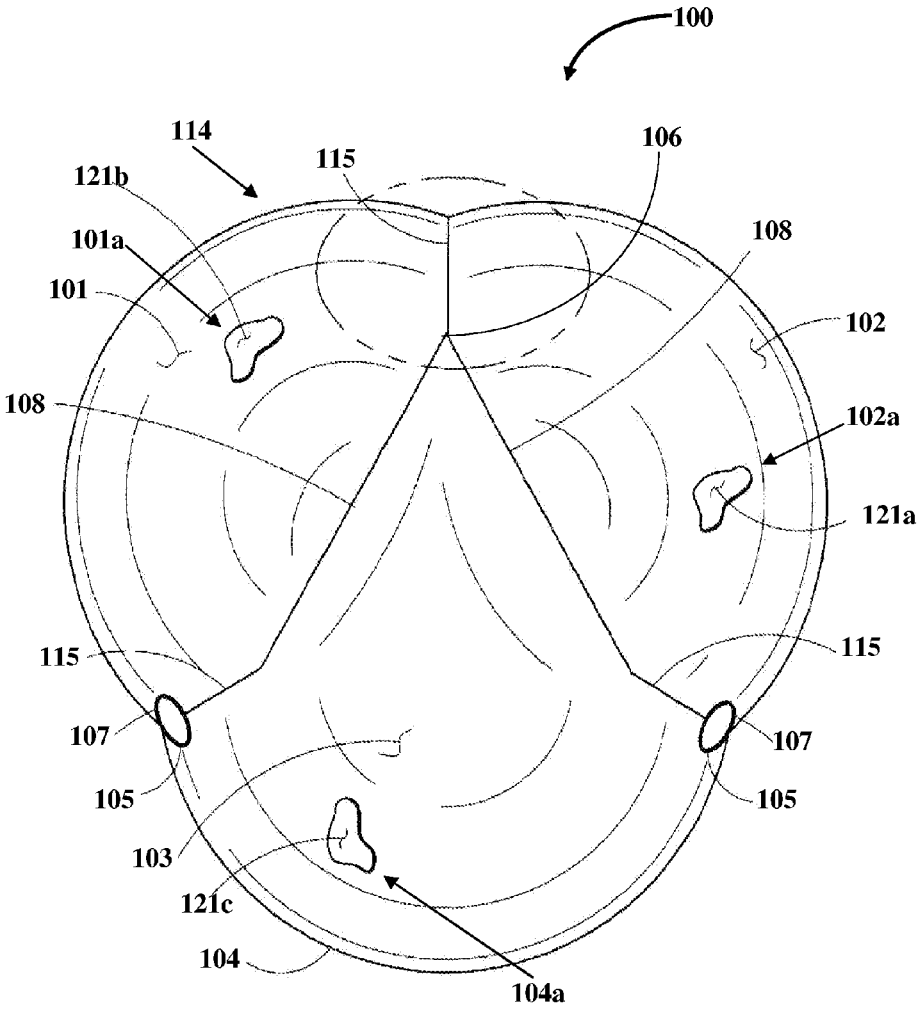
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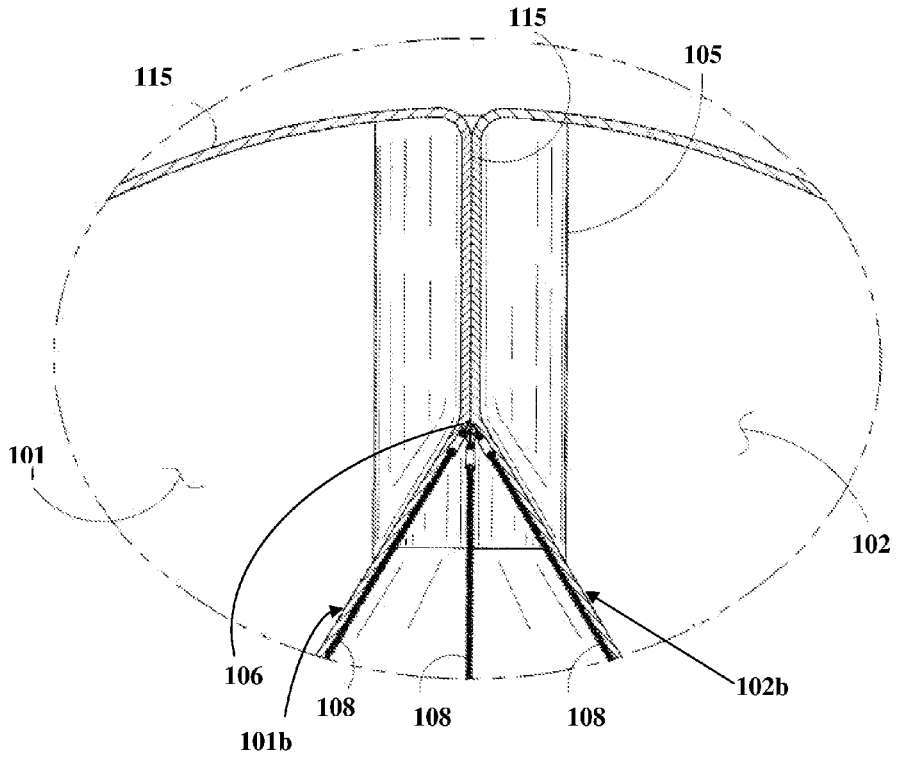
FIG. 9



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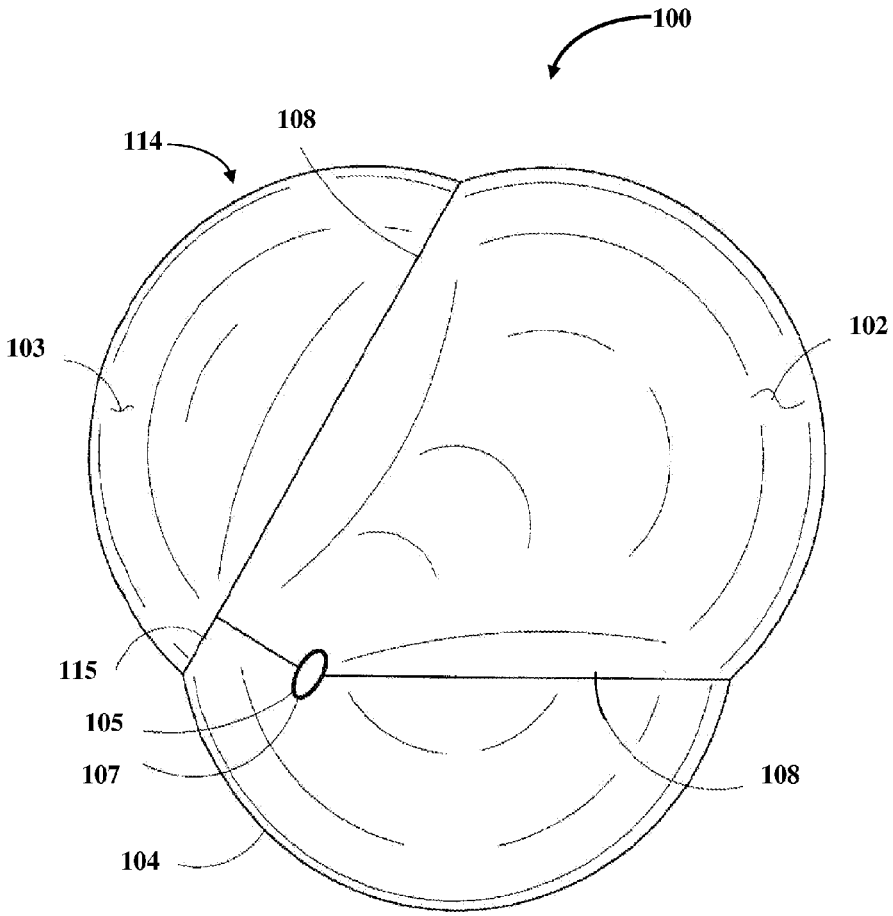

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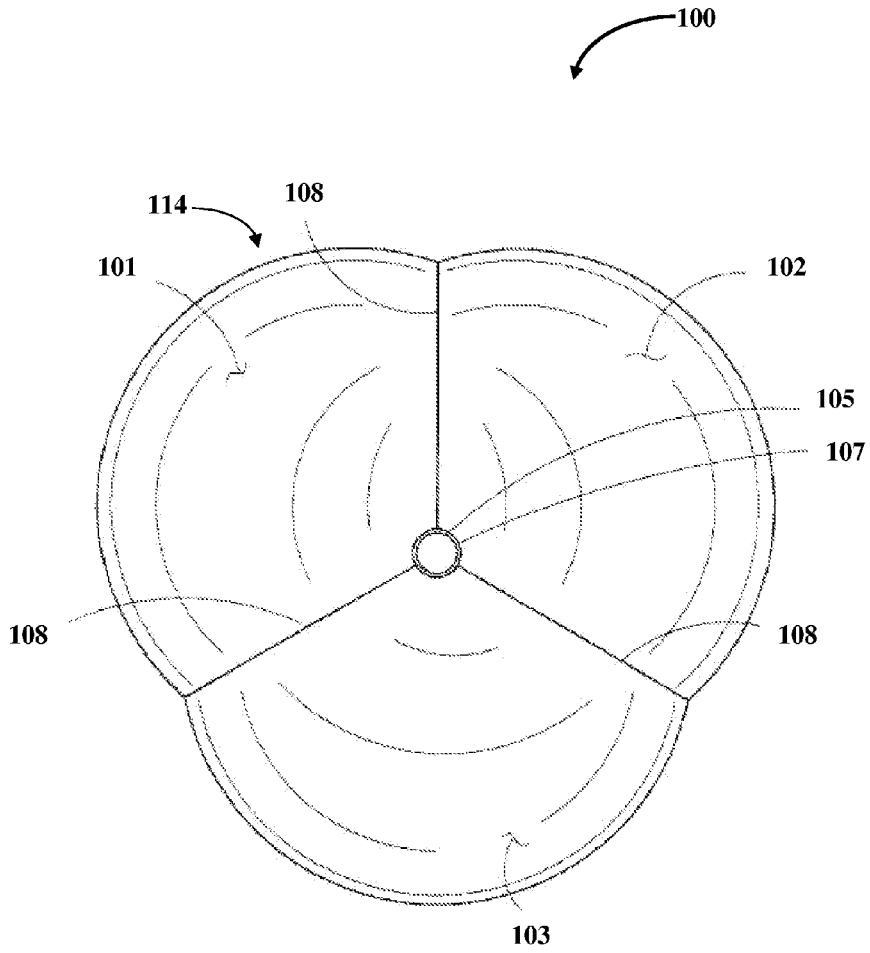


FIG. 12

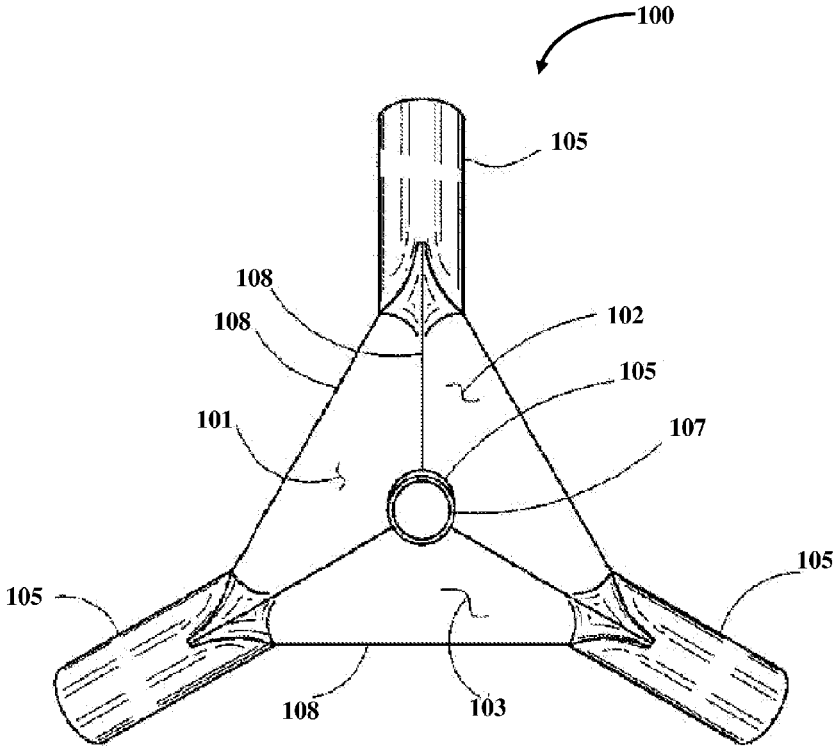
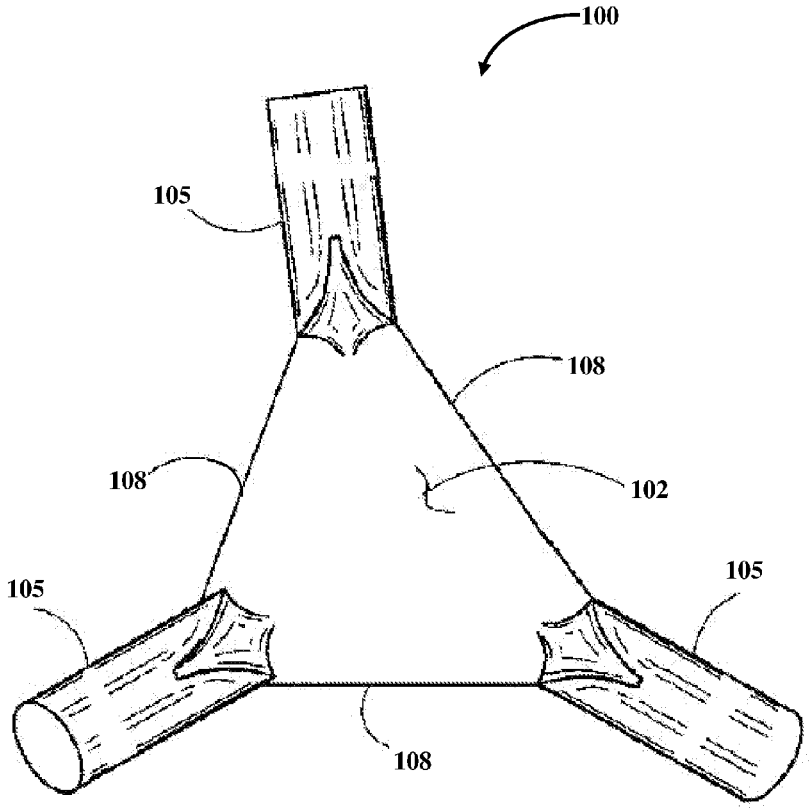


FIG. 13A



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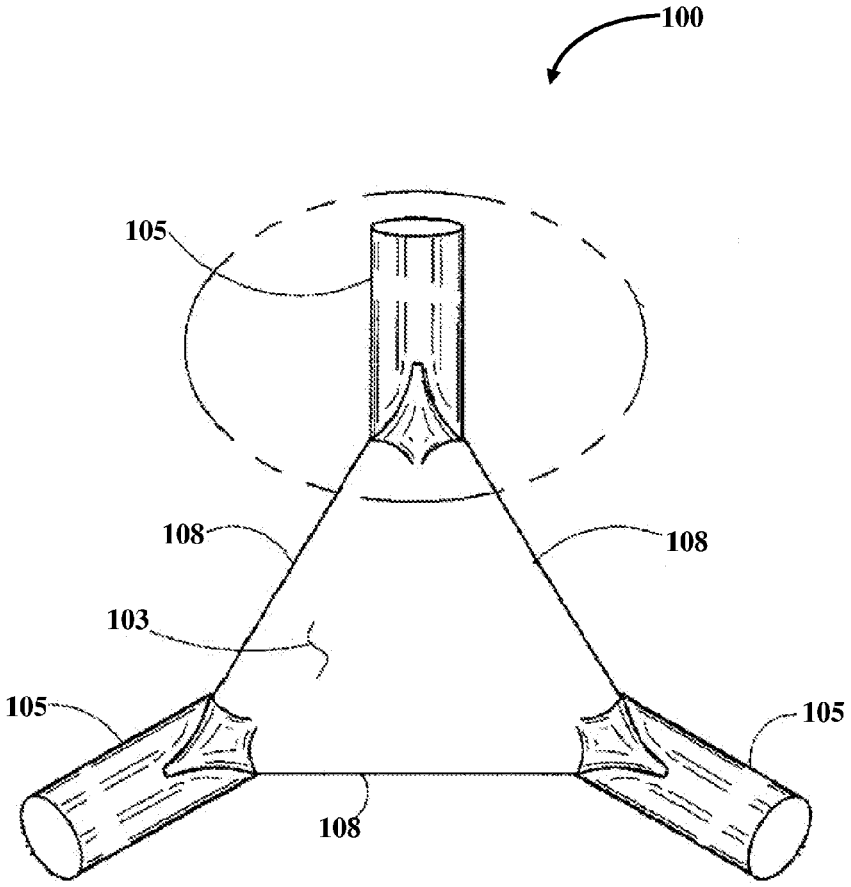

FIG. 13C

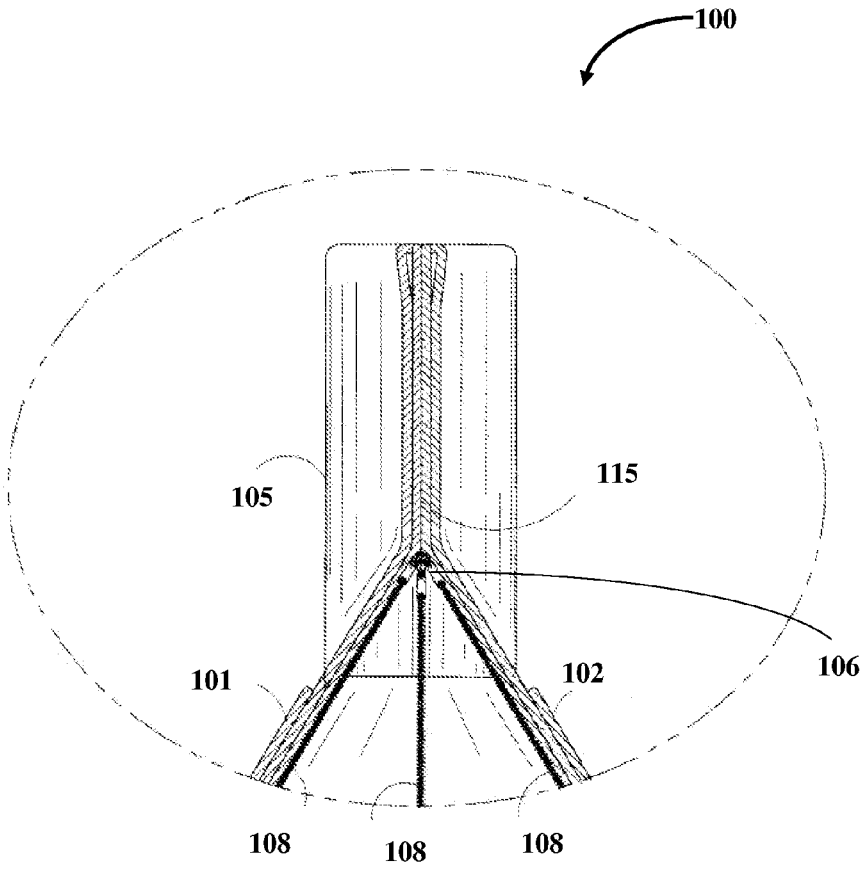

FIG. 13D

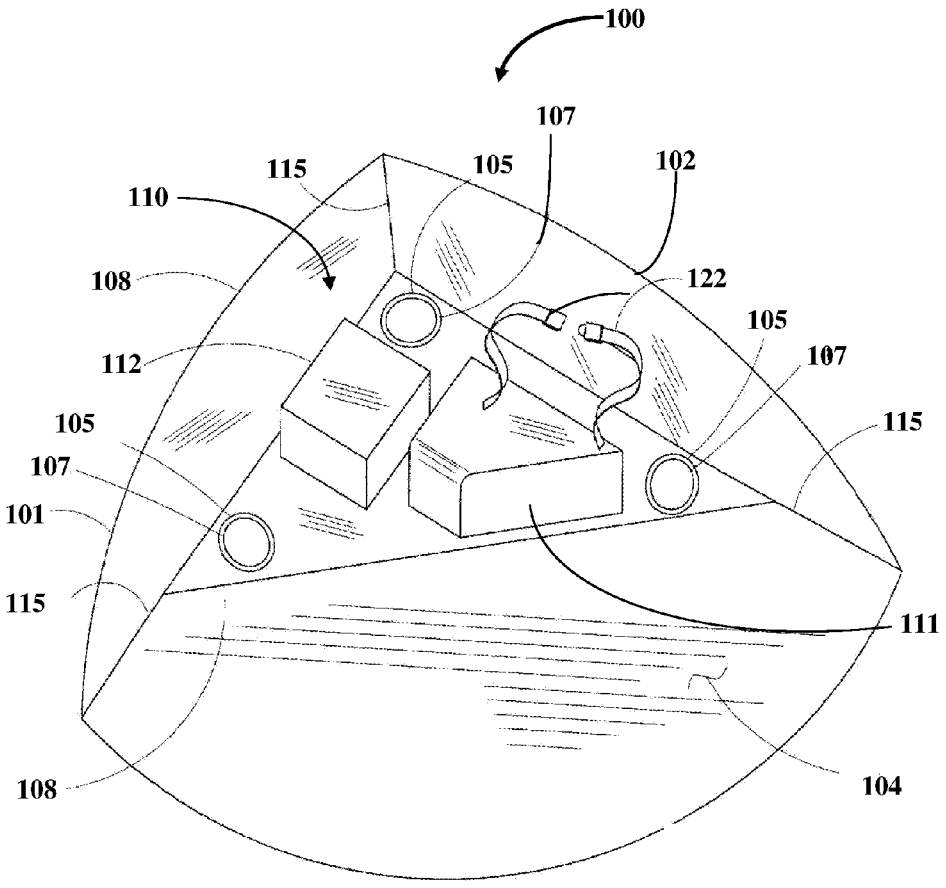
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FIG. 14A

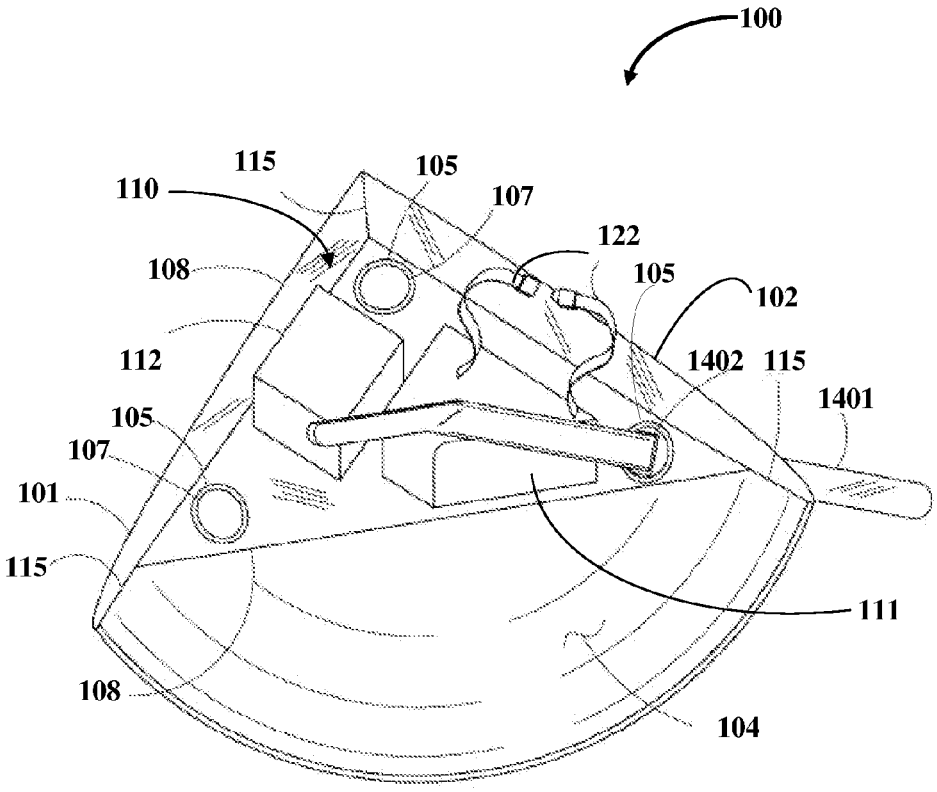
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FIG. 14B

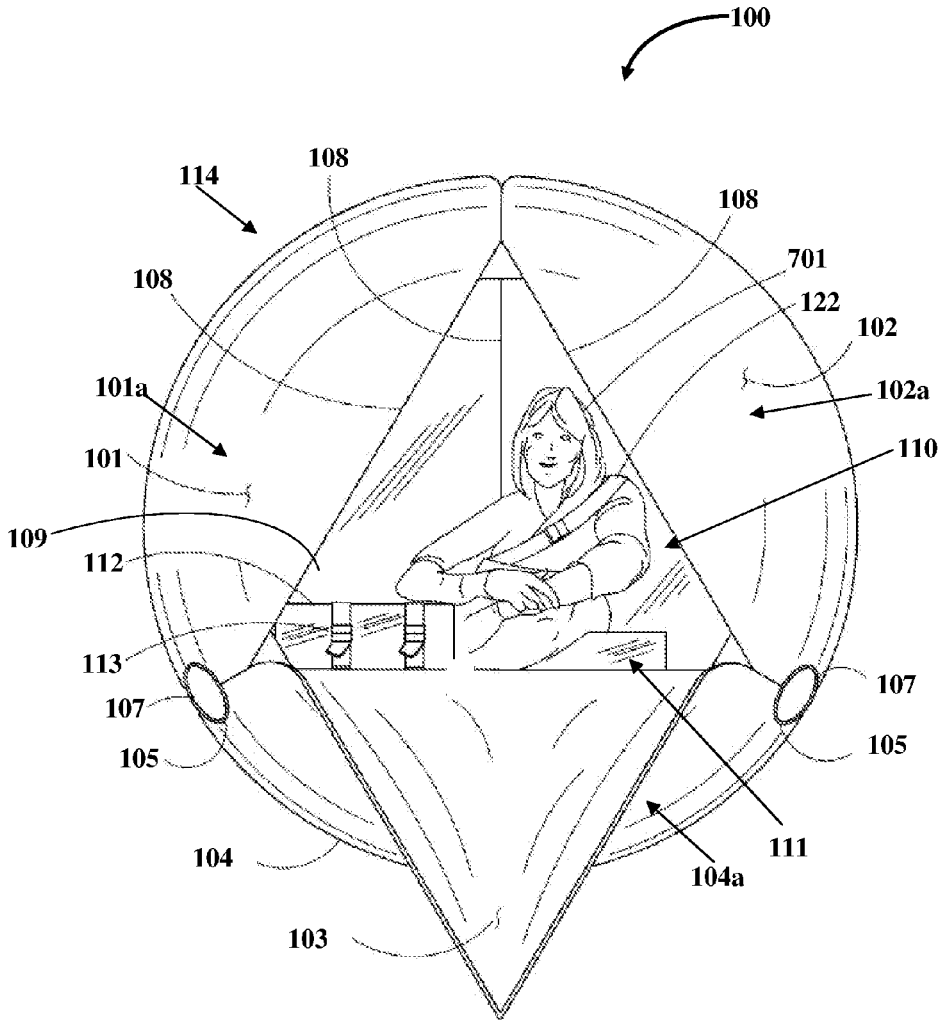
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FIG. 15A

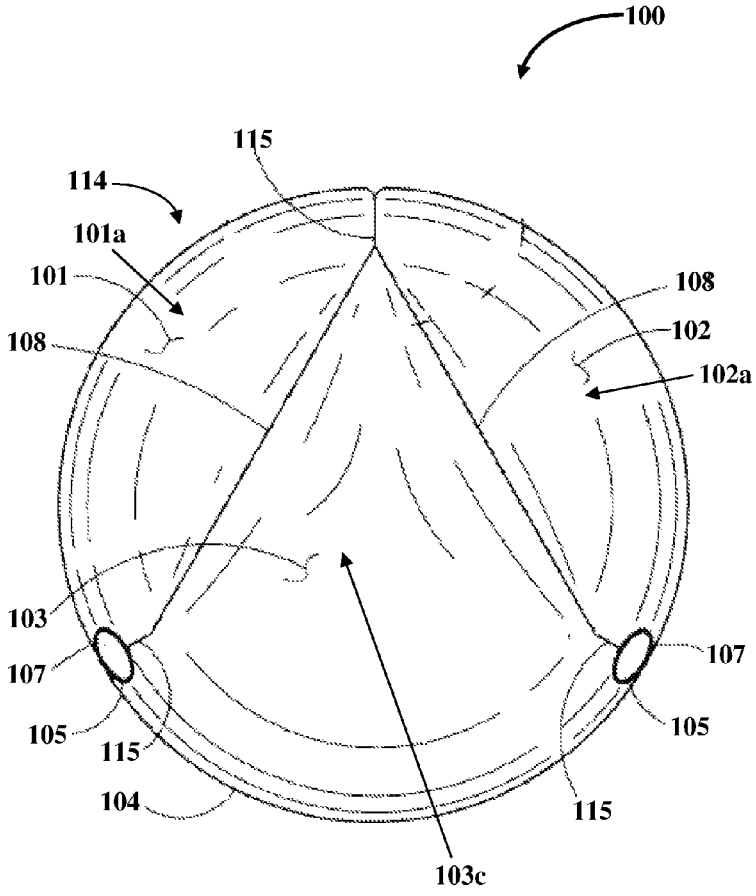
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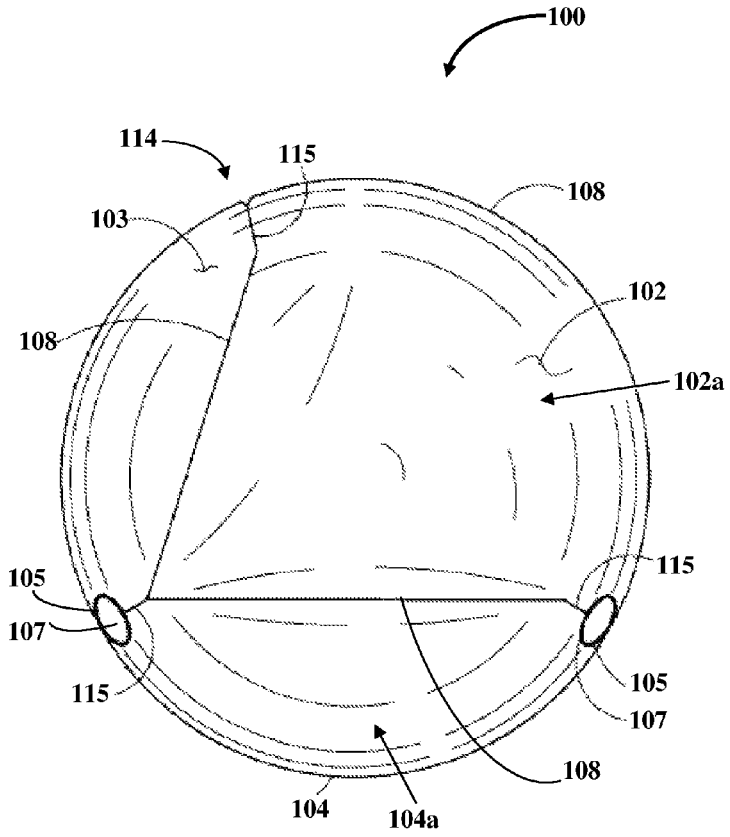
FIG. 15B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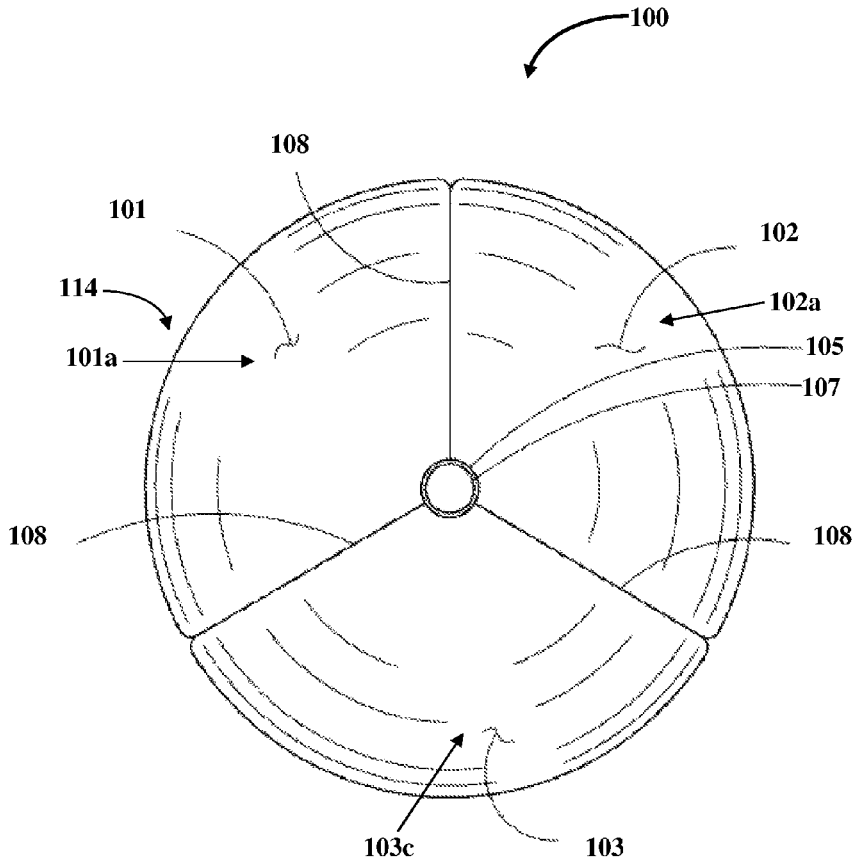

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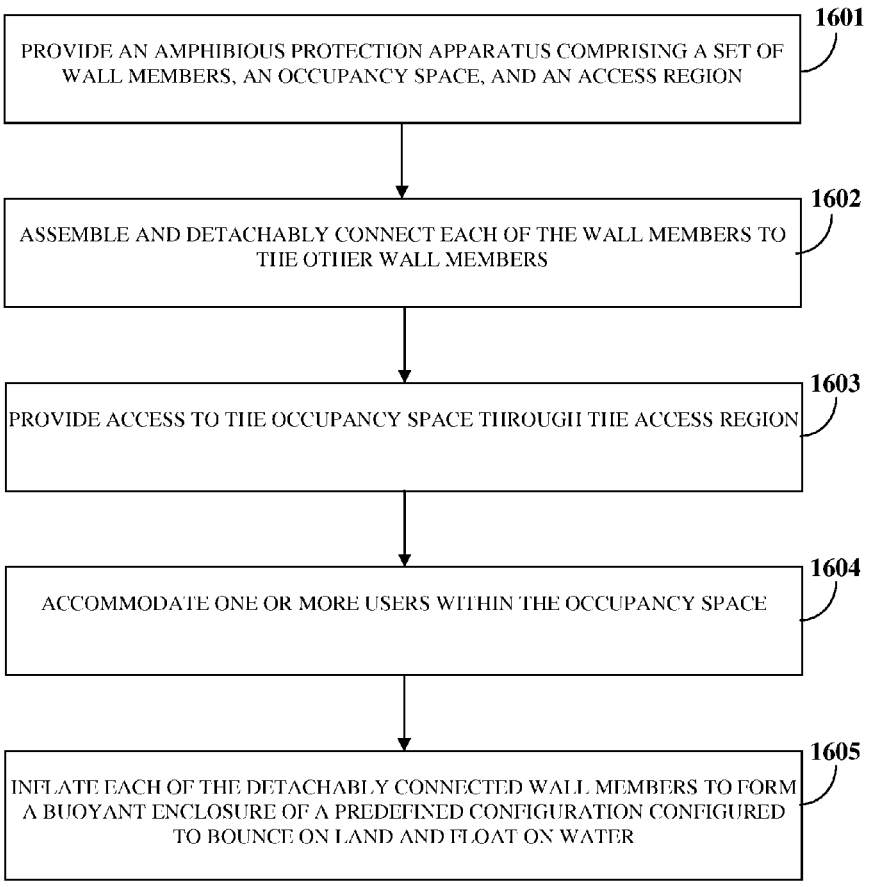
PROVIDE AN AMPHIBIOUS PROTECTION APPARATUS COMPRISING A SET OF WALL MEMBERS, AN OCCUPANCY SPACE, AND AN ACCESS REGION
1601
ASSEMBLE AND DETACHABLY CONNECT EACH OF THE WALL MEMBERS TO THE OTHER WALL MEMBERS
1602
PROVIDE ACCESS TO THE OCCUPANCY SPACE THROUGH THE ACCESS REGION
1603
ACCOMMODATE ONE OR MORE USERS WITHIN THE OCCUPANCY SPACE
1604
INFLATE EACH OF THE DETACHABLY CONNECTED WALL MEMBERS TO FORM A BUOYANT ENCLOSURE OF A PREDEFINED CONFIGURATION CONFIGURED TO BOUNCE ON LAND AND FLOAT ON WATER
1605

FIG. 16

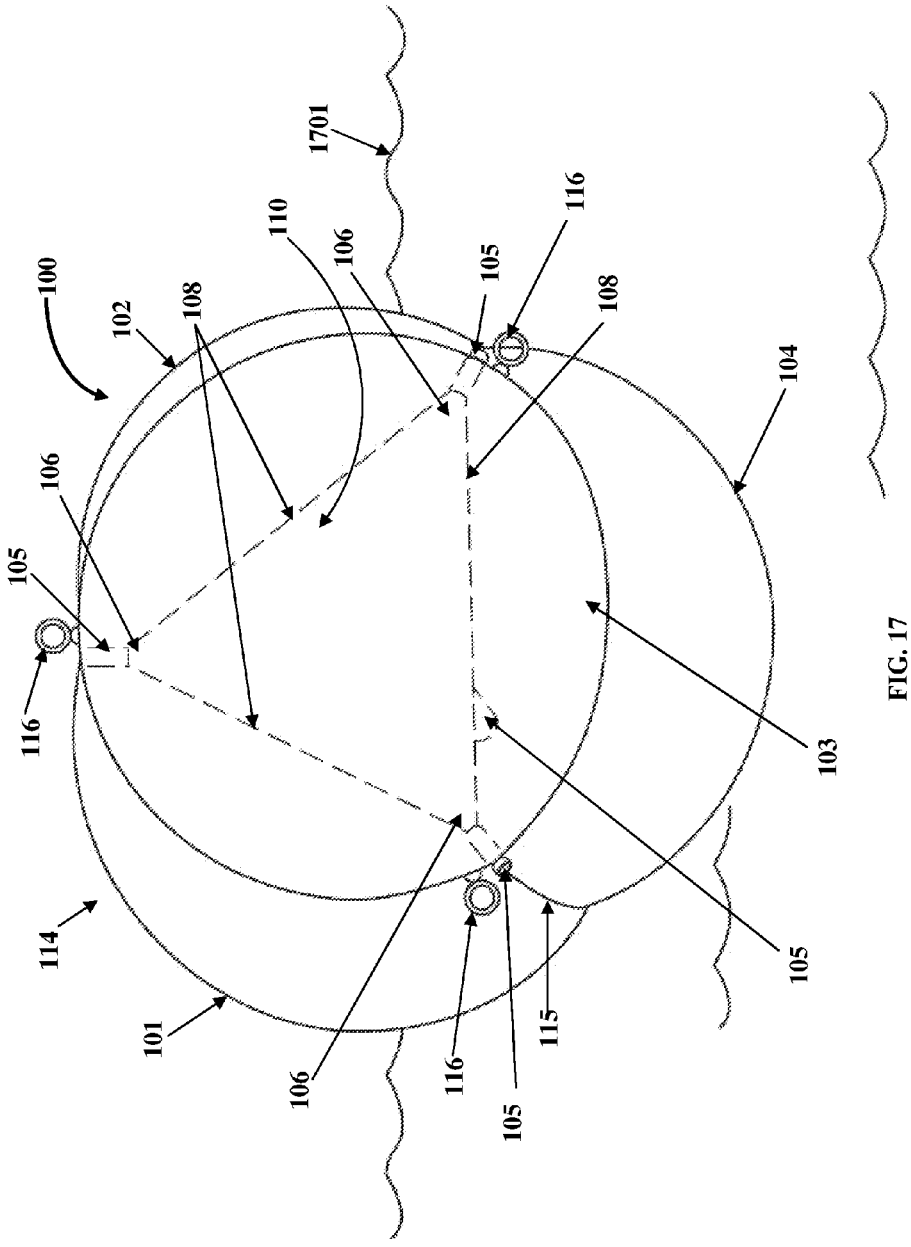
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FIG. 17

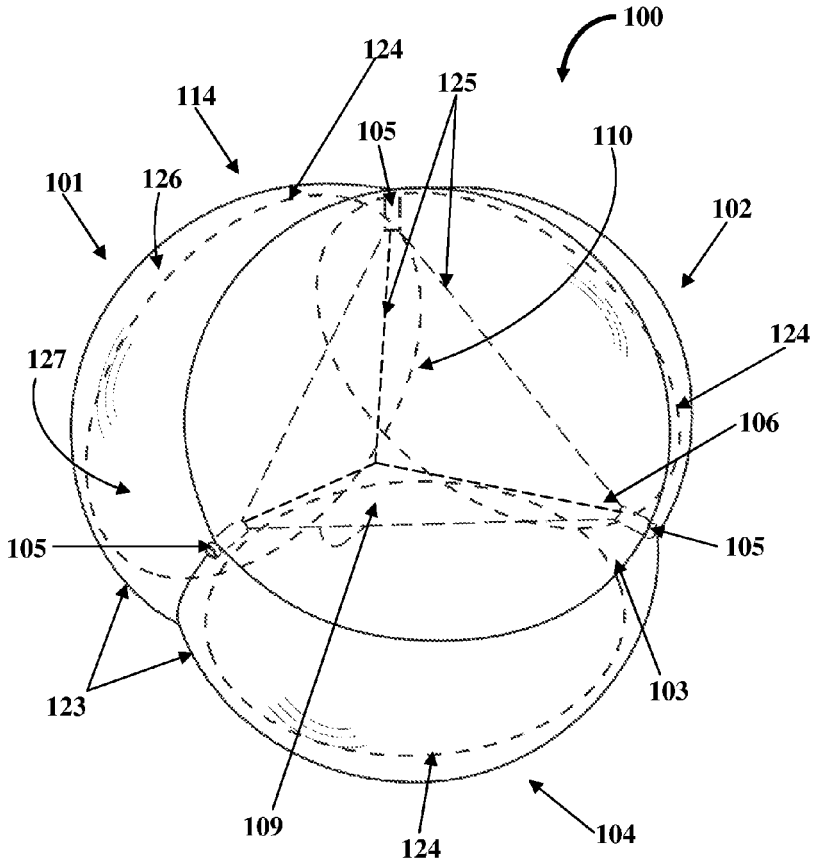
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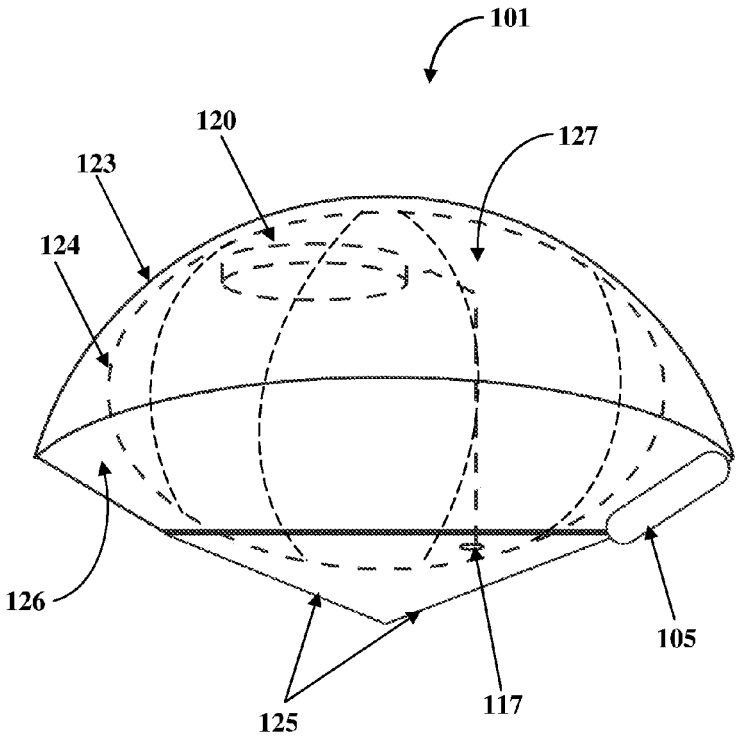
FIG. 18



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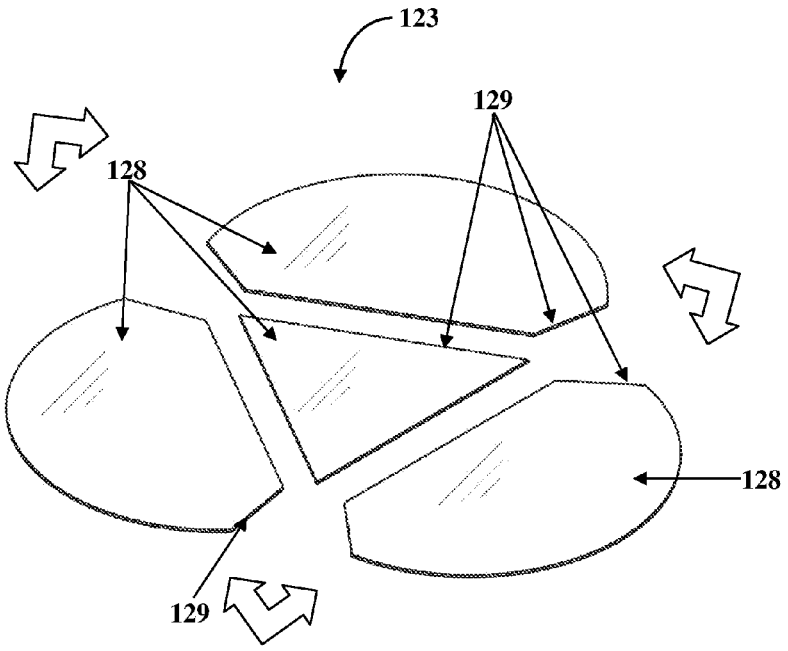
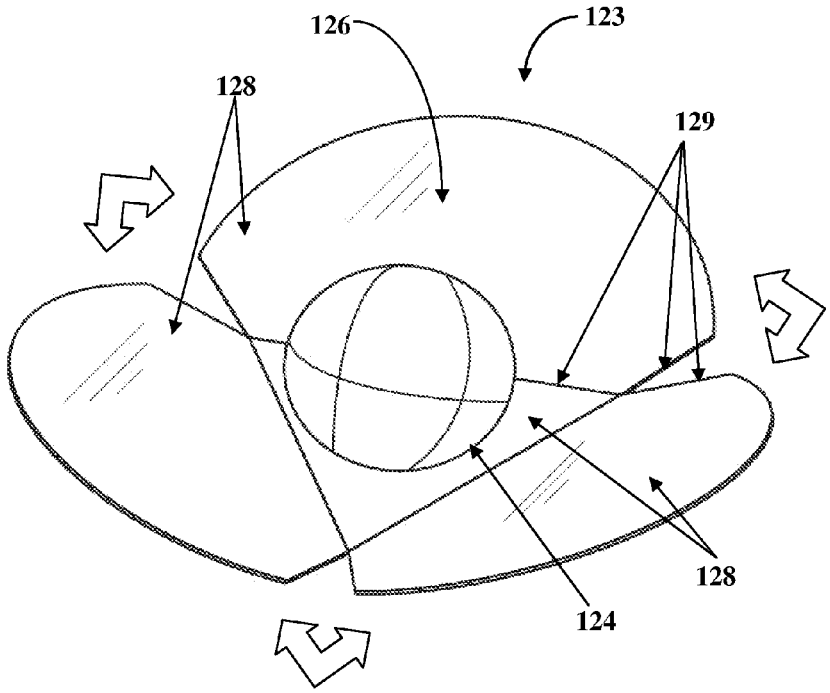


FIG. 20A



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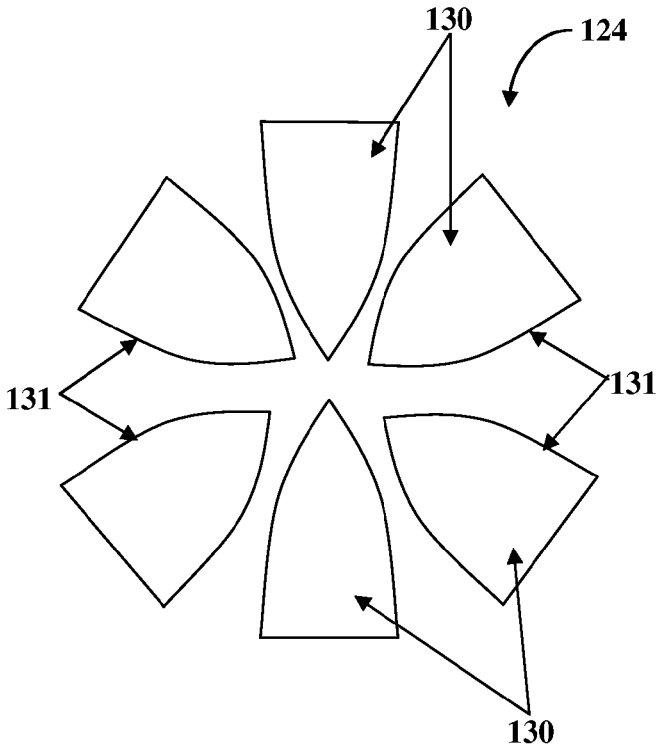

FIG. 21A

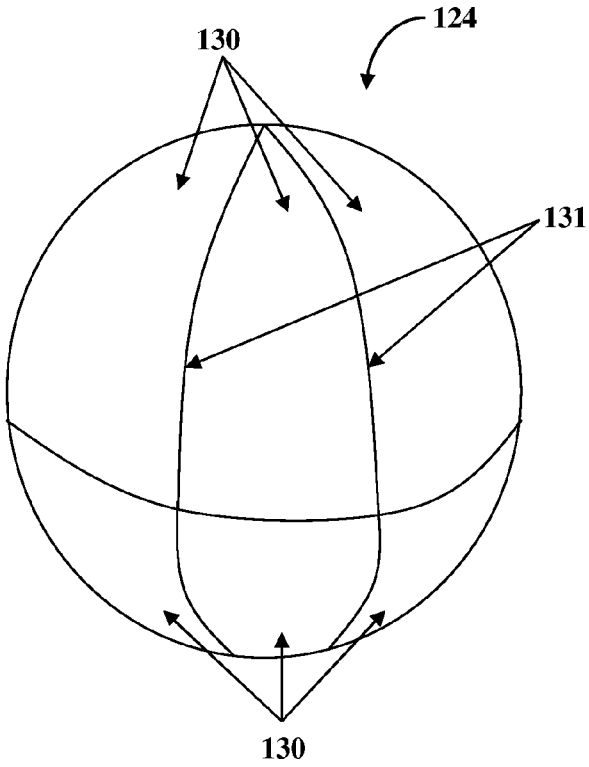

FIG. 21B

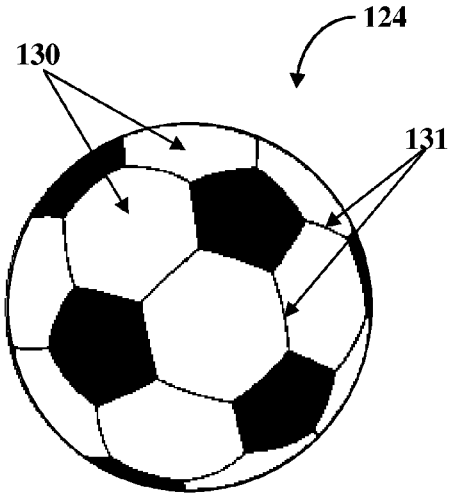

FIG. 21C

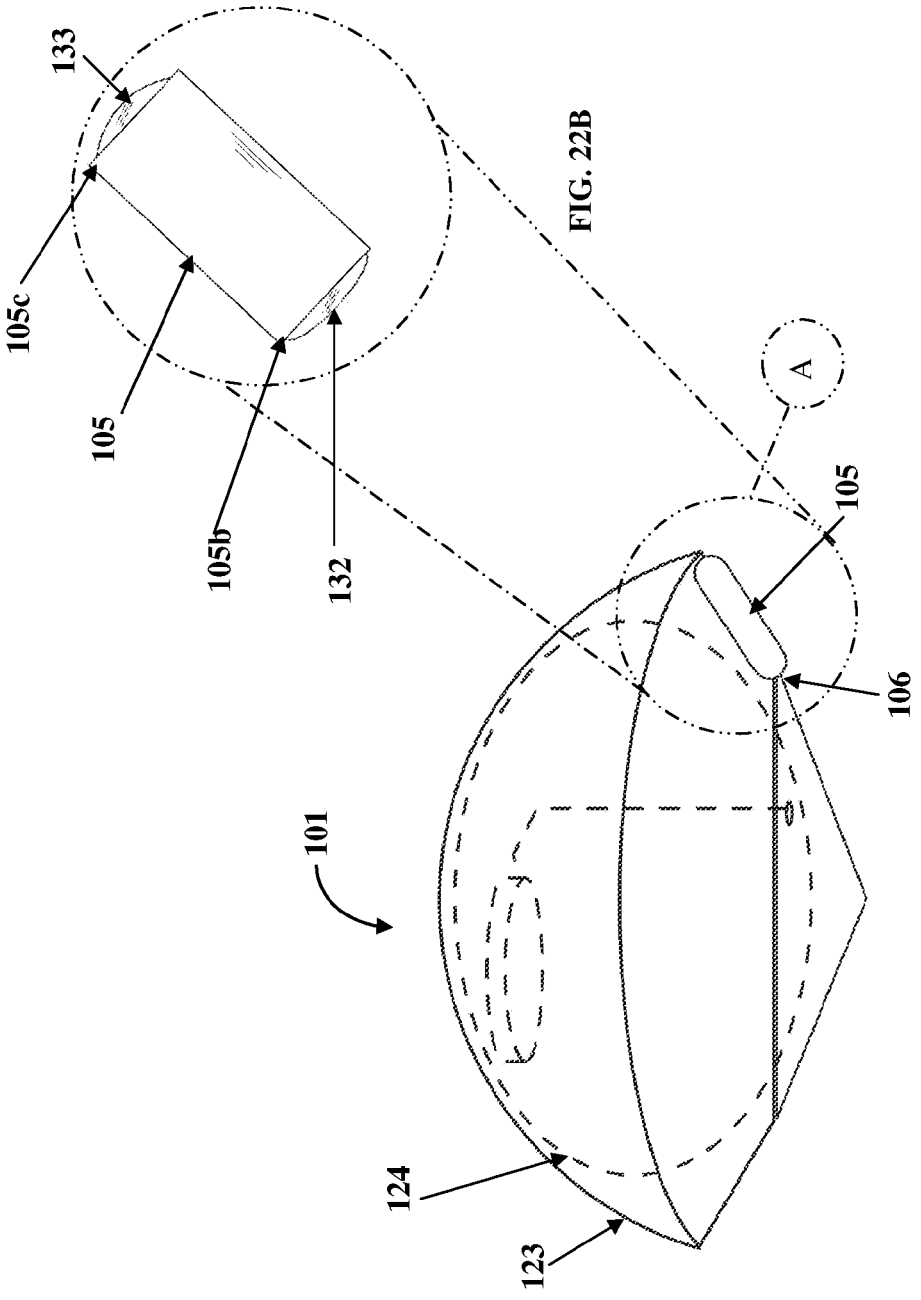

FIG. 22B

FIG. 22A

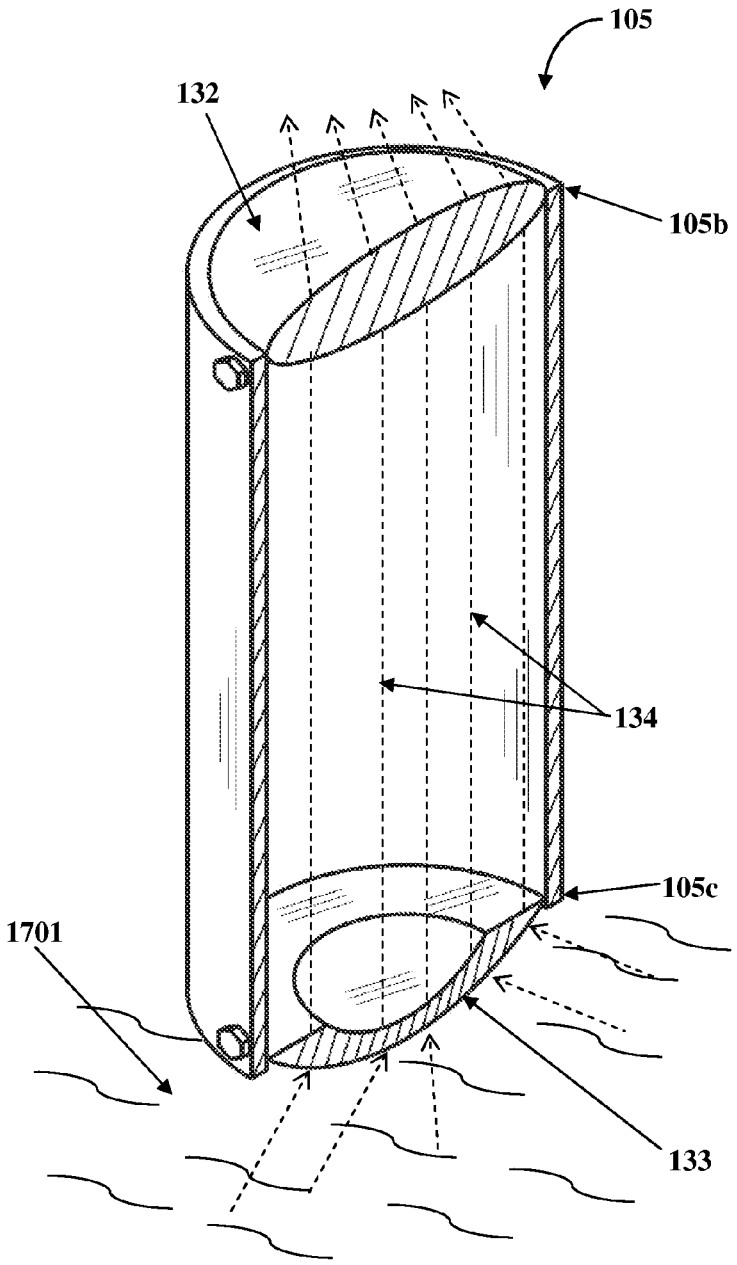

FIG. 23

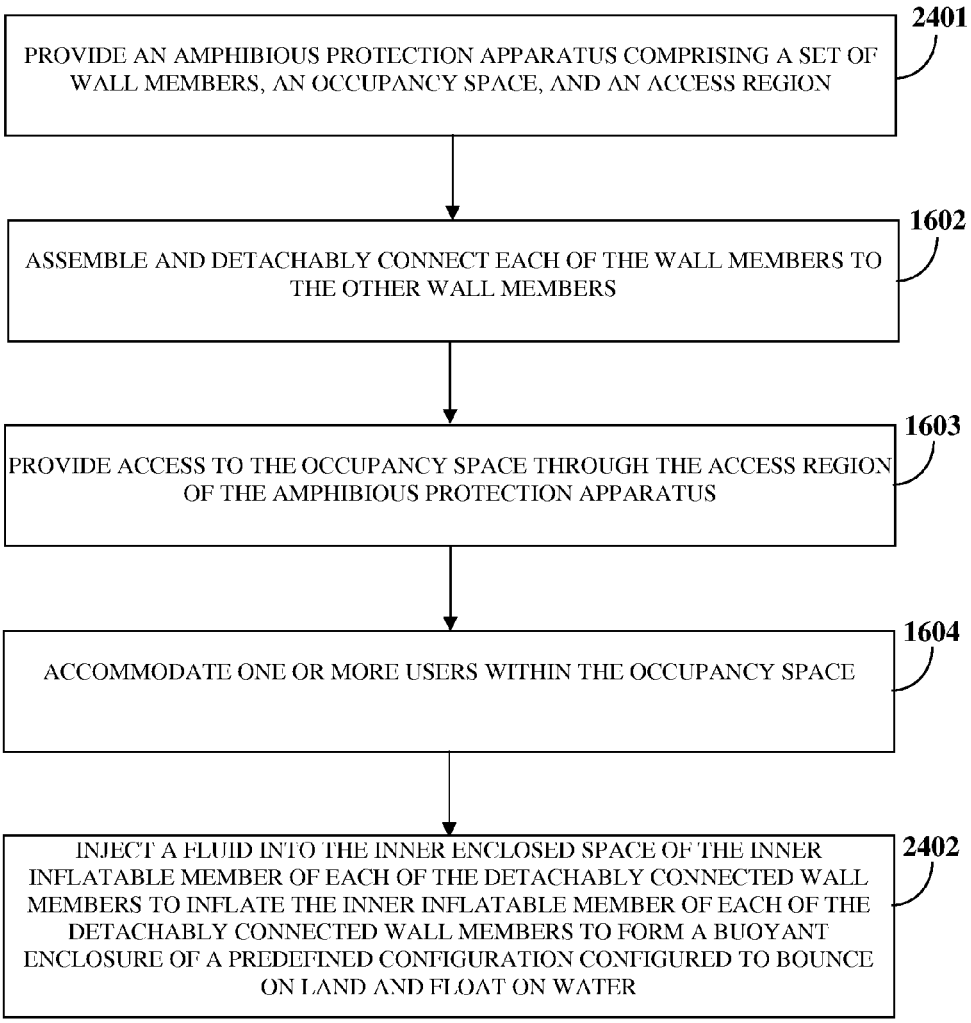
PROVIDE AN AMPHIBIOUS PROTECTION APPARATUS COMPRISING A SET OF WALL MEMBERS, AN OCCUPANCY SPACE, AND AN ACCESS REGION
2401
ASSEMBLE AND DETACHABLY CONNECT EACH OF THE WALL MEMBERS TO THE OTHER WALL MEMBERS
1602
PROVIDE ACCESS TO THE OCCUPANCY SPACE THROUGH THE ACCESS REGION OF THE AMPHIBIOUS PROTECTION APPARATUS
1603
ACCOMMODATE ONE OR MORE USERS WITHIN THE OCCUPANCY SPACE
1604
INJECT A FLUID INTO THE INNER ENCLOSED SPACE OF THE INNER INFLATABLE MEMBER OF EACH OF THE DETACHABLY CONNECTED WALL MEMBERS TO INFLATE THE INNER INFLATABLE MEMBER OF EACH OF THE DETACHABLY CONNECTED WALL MEMBERS TO FORM A BUOYANT ENCLOSURE OF A PREDEFINED CONFIGURATION CONFIGURED TO BOUNCE ON LAND AND FLOAT ON WATER
2402

FIG. 24

AMPHIBIOUS PROTECTION APPARATUS WITH INFLATABLE WALL MEMBERS AND ENHANCED ACCESS PORTS

CROSS REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part application of non-provisional patent application Ser. No. 13/586,150 titled "Amphibious Protection Apparatus", filed in the United States Patent and Trademark Office on Aug. 15, 2012, which claims priority to and the benefit of provisional patent application No. 61/524,059 titled "Personal Protective and Flotation Device", filed in the United States Patent and Trademark Office on Aug. 16, 2011. The specifications of the above referenced patent applications are incorporated herein by reference in their entirety.

BACKGROUND

During dangerous situations, for example, disastrous natural calamities in water and on land such as a tsunami, flash floods, etc., or other calamities such as sailing accidents, falling from high altitudes, etc., which may lead to drowning, impact from sharp objects and heavy objects, being trapped under confined spaces for prolonged periods of time, etc., there is a need for an apparatus that provides safety to a potential victim, for example, by preventing water from reaching the victim, by cushioning the potential victim against harmful impacts, etc.

In such disastrous situations, people do not have time to react since impact is fast and comes from all directions and the event is of a sudden nature. A lifejacket, which is typically used in these situations, does not protect a victim from external impact from different directions. Therefore, there is a need for an apparatus that can be fabricated and is usable in a short period of time and that protects a victim from impact from multiple directions in land and water.

Hence, there is a long felt but unresolved need for a versatile amphibious protection apparatus that is configured for use on land and water, that provides safety to one or more users in dangerous situations, that bounces on land and floats on water, and that protects one or more users accommodated therein from impact from multiple directions.

SUMMARY OF THE INVENTION

This summary is provided to introduce a selection of concepts in a simplified form that are further disclosed in the detailed description of the invention. This summary is not intended to identify key or essential inventive concepts of the claimed subject matter, nor is it intended for determining the scope of the claimed subject matter.

The amphibious protection apparatus disclosed herein addresses the above mentioned needs for a versatile apparatus configured for use on land and water and that provides safety to one or more users in dangerous situations such a natural calamities, that bounces on land and floats on water, and that protects one or more users accommodated therein from impact from multiple directions. The amphibious protection apparatus disclosed herein protects the users during disastrous natural calamities in water and on land such as a tsunami, flash floods, etc., and other calamities such as sailing accidents, falling from high altitudes, etc., from drowning, impacts from sharp objects and heavy objects, being trapped under confined spaces for prolonged periods of time, etc. The amphibious protection apparatus disclosed herein is configured to inflate and expand at the time of use.

The amphibious protection apparatus disclosed herein comprises a set of wall members that define an occupancy space, and an access region. Each of the wall members is foldably and detachably connected to each other. In an embodiment, the amphibious protection apparatus disclosed herein further comprises a fastener connected at a periphery of each of the wall members. The fastener is configured to attach and detach each of the wall members. The fastener is, for example, a zipper, a hook and loop fastener such as Velcro® of Velcro Industries, etc. Each of the wall members is configured as an inflatable air receptacle with an enclosed space. The enclosed space is configured to be inflated by a fluid, for example, air injected into the enclosed space. Each of the detachably connected wall members can be inflated to form a buoyant enclosure of a predefined configuration configured to bounce on land and float on water. The predefined configuration of the buoyant enclosure formed by the inflation of each of the detachably connected wall members is, for example, a polyhedral configuration such as a tetrahedron, a spherical configuration, a cubic configuration, a cuboidal configuration, etc.

Each of the wall members is made of a flexible and impact resistant material to absorb shock and cushion one or more users accommodated within the occupancy space of the amphibious protection apparatus from impact of external objects such as sharp objects, heavy objects, etc. In an embodiment, the amphibious protection apparatus disclosed herein further comprises an inflation unit operably connected to each of the wall members. The inflation unit is configured to inject a fluid, for example, air into the enclosed space in each of the wall members to instantly inflate each of the wall members. In an embodiment, the amphibious protection apparatus disclosed herein further comprises a valve operably positioned on each of the wall members. The valve is configured to inject a fluid, for example, air into the enclosed space of each of the wall members for inflating each of the wall members or to eject the fluid out of the enclosed space of each of the wall members for deflating each of the wall members.

The occupancy space of the amphibious protection apparatus disclosed herein is defined within the detachably connected wall members. The occupancy space is configured to accommodate one or more users. The buoyant enclosure encloses the accommodated users within the occupancy space to protect the accommodated users from impacts from different directions on land and in water. The access region of the amphibious protection apparatus disclosed herein is defined by opening one of the detachably connected wall members. The access region is configured to provide access to the occupancy space. In an embodiment, the amphibious protection apparatus disclosed herein further comprises a seating member rigidly positioned on a bottom wall member within the occupancy space. The seating member is configured to seat one or more users. In another embodiment, the amphibious protection apparatus disclosed herein further comprises a restraining system operably connected to the seating member. The restraining system is configured to be fastened on each user's body to secure each user within the occupancy space and to protect each user from contacting the wall members.

In an embodiment, the amphibious protection apparatus disclosed herein further comprises one or more buoyancy members attached to an external surface of each of the wall members. The buoyancy members are configured to provide buoyancy to bounce and float the amphibious protection apparatus on land and water respectively, and to provide

shock absorbing characteristics to the amphibious protection apparatus. In an embodiment, the amphibious protection apparatus disclosed herein further comprises an access port positioned at a vertex where at least three of the wall members meet. The access port is configured, for example, to introduce a navigation member such as a rudder into the occupancy space for navigating the amphibious protection apparatus on water, to allow entry of air into the occupancy space, to dispose waste matter from the occupancy space, etc. In an embodiment, the amphibious protection apparatus further comprises a plug operably connected to the access port. The plug is configured to internally seal the access port for preventing a fluid external to the occupancy space, for example, water from entering the occupancy space.

In an embodiment, the amphibious protection apparatus disclosed herein further comprises a rescue identifier, for example, a bright color, an array of lights, audio indicators, etc., defined or positioned on the external surface of each of one or more of the wall members. The rescue identifier is configured for identification by rescuers. In another embodiment, the amphibious protection apparatus disclosed herein further comprises one or more storage compartments connected to one or more of the wall members within the occupancy space. The storage compartments are configured to store multiple supplies, for example, food supplies, oxygen tanks, a first aid kit, safety equipment, helmets, etc. In an embodiment, the amphibious protection apparatus disclosed herein further comprises one or more viewing members disposed on one or more of the wall members. The viewing members are configured to aid the accommodated users to view outside the amphibious protection apparatus from within the occupancy space.

The buoyant enclosure of the predefined configuration formed by the inflation of each of the detachably connected wall members allows the amphibious protection apparatus disclosed herein to bounce on land and float on water, thereby protecting the users accommodated within the occupancy space accessed through the access region, from impacts from different directions on land and in water, and providing safety to the accommodated users on land and water.

In an embodiment, each wall member of the amphibious protection apparatus disclosed herein comprises an outer layer of a predetermined thickness and an inner inflatable member. The outer layer of each wall member defines a wall periphery. The wall periphery of the outer layer of each wall member is connected to the wall periphery of the outer layer of another wall member. In an embodiment, the amphibious protection apparatus disclosed herein further comprises a fastener connected at the wall periphery of the outer layer of each wall member. The fastener attaches and detaches each wall member. The fastener is, for example, a zipper, a hook and loop fastener, etc. The outer layer of each wall member is made of a flexible and impact resistant material to absorb shock and cushion the accommodated users from impact of external objects. The outer layer of each wall member defines an outer enclosed space. The outer enclosed space accommodates the inner inflatable member. In an embodiment, the outer layer of each wall member comprises multiple material segments of predefined shapes. As used herein, the phrase "material segments" refers to elemental portions or cut pieces of a fabrication material which are fastened or sutured at their respective edges or peripheries to manufacture the outer layer or the inner inflatable member of each wall member. Each material segment of the outer layer defines a segment periphery. The segment periphery of each material segment of the outer layer is fastened to the segment periphery of another material segment to form the outer enclosed space for the accommodation and inflation of the inner inflatable member.

The inner inflatable member comprises an inner enclosed space. A fluid injected into the inner enclosed space of the inner inflatable member inflates the inner inflatable member. The inflation of the inner inflatable member of each of the detachably connected wall members forms a buoyant enclosure of a predefined configuration, for example, a polyhedral configuration, a cubic configuration, a cuboidal configuration, a spherical configuration, etc., configured to bounce on land and float on water. In an embodiment, the inner inflatable member of each wall member is airtight and conforms to a shape defined by the outer layer of each wall member when inflated. In an embodiment, the inner inflatable member of each wall member comprises multiple material segments of predefined shapes. Each material segment of the inner inflatable member defines a segment periphery. The segment periphery of each material segment is fastened to the segment periphery of another material segment to form the inner enclosed space for receiving the fluid injected into the inner inflatable member.

In an embodiment, the amphibious protection apparatus disclosed herein further comprises an inflation unit operably connected to each wall member. The inflation unit injects the fluid into the inner enclosed space of the inner inflatable member of each wall member to instantly inflate each wall member. In an embodiment, the amphibious protection apparatus disclosed herein further comprises a valve operably positioned on each wall member. The valve injects the fluid into or ejects the fluid out of the inner enclosed space of the inner inflatable member of each wall member for inflation and deflation of each wall member respectively.

The buoyant enclosure formed by the inflation of the inner inflatable member of each of the detachably connected wall members protects the users accommodated within the occupancy space defined by the detachably connected wall members from impacts from different directions on land and water. In an embodiment, the amphibious protection apparatus disclosed herein further comprises a double convex lens positioned at one end of the access port that is proximal to the occupancy space, and a convexo concave lens positioned at a distal end of the access port that is exposed to an external environment. The arrangement of the double convex lens and the convexo concave lens in the access port magnifies external objects present in the external environment. The double convex lens and the convexo concave lens are made of, for example, plastic. In an embodiment, the double convex lens and the convexo concave lens further preclude entry of foreign objects into the occupancy space through the access port.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing summary, as well as the following detailed description of the invention, is better understood when read in conjunction with the appended drawings. For the purpose of illustrating the invention, exemplary constructions of the invention are shown in the drawings. However, the invention is not limited to the specific methods and structures disclosed herein. The description of a structure or a method step referenced by a numeral in a drawing carries over to the description of that structure or method step shown by that same numeral in any subsequent drawing herein.

FIG. **1**A exemplarily illustrates an isometric view of an amphibious protection apparatus prior to inflation.

FIG. **1**B exemplarily illustrates a front elevation view of the amphibious protection apparatus prior to inflation.

FIG. **1**C exemplarily illustrates a front elevation view of the amphibious protection apparatus prior to inflation, showing an open access region.

FIG. **2**A exemplarily illustrates a partial exploded view showing an access port and a plug.

FIG. **2**B exemplarily illustrates a partial view showing an access port extending from a vertex.

FIGS. **3**A-**3**B exemplarily illustrate isometric views of the amphibious protection apparatus after inflation.

FIG. **4**A exemplarily illustrates a front elevation view of the amphibious protection apparatus prior to inflation, showing ring members.

FIG. **4**B exemplarily illustrates an isometric view of the amphibious protection apparatus after inflation, showing the ring members.

FIG. **5** exemplarily illustrates an exploded view of the amphibious protection apparatus after inflation.

FIG. **6** exemplarily illustrates a perspective view of one of the inflated wall members of the amphibious protection apparatus, showing an inflation unit and viewing members.

FIG. **7** exemplarily illustrates a front elevation view of the amphibious protection apparatus, showing an open access region.

FIG. **8** exemplarily illustrates a front elevation view of an embodiment of the amphibious protection apparatus, showing buoyancy members.

FIG. **9** exemplarily illustrates a front elevation view of the embodiment of the amphibious protection apparatus, showing a closed access region.

FIG. **10** exemplarily illustrates an enlarged view of an access port of the amphibious protection apparatus after inflation of the wall members.

FIG. **11** exemplarily illustrates a right side elevation view of the amphibious protection apparatus with inflated wall members.

FIG. **12** exemplarily illustrates a plan view of the amphibious protection apparatus with inflated wall members.

FIG. **13**A exemplarily illustrates a plan view of the amphibious protection apparatus prior to inflation of the wall members.

FIG. **13**B exemplarily illustrates a right side elevation view of the amphibious protection apparatus prior to inflation of the wall members.

FIG. **13**C exemplarily illustrates a front elevation view of the amphibious protection apparatus prior to inflation of the wall members.

FIG. **13**D exemplarily illustrates an enlarged view of an access port of the amphibious protection apparatus prior to inflation of the wall members.

FIG. **14**A exemplarily illustrates a cutaway view of the amphibious protection apparatus, showing an occupancy space defined by the detachably connected wall members.

FIG. **14**B exemplarily illustrates a cutaway view of an embodiment of the amphibious protection apparatus, showing a navigation member inserted into one of the access ports.

FIG. **15**A exemplarily illustrates a front elevation view of an embodiment of the amphibious protection apparatus, showing an open access region.

FIG. **15**B exemplarily illustrates a front elevation view of the embodiment of the amphibious protection apparatus shown in FIG. **15**A, showing a closed access region.

FIG. **15**C exemplarily illustrates a right side elevation view of the embodiment of the amphibious protection apparatus shown in FIG. **15**A.

FIG. **15**D exemplarily illustrates a plan view of the embodiment of the amphibious protection apparatus shown in FIG. **15**A.

FIG. **16** illustrates a method for providing safety to one or more users from impacts from different directions on land and water.

FIG. **17** exemplarily illustrates an application of the amphibious protection apparatus on water.

FIG. **18** exemplarily illustrates a front perspective view of an embodiment of the amphibious protection apparatus.

FIG. **19** exemplarily illustrates a perspective view of a wall member of the embodiment of the amphibious protection apparatus shown in FIG. **18**.

FIG. **20**A exemplarily illustrates a top perspective view of multiple material segments forming an outer layer of a wall member of the embodiment of the amphibious protection apparatus.

FIG. **20**B exemplarily illustrates a front perspective view of an inner inflatable member positioned within an outer enclosed space of the outer layer to form the wall member of the embodiment of the amphibious protection apparatus.

FIG. **21**A exemplarily illustrates a top view of multiple material segments forming an inner inflatable member of a wall member of the embodiment of the amphibious protection apparatus.

FIG. **21**B exemplarily illustrates a front perspective view of an inner inflatable member of a wall member of the embodiment of the amphibious protection apparatus, formed by multiple material segments.

FIG. **21**C exemplarily illustrates a front perspective view of an inner inflatable member of the embodiment of the amphibious protection apparatus, having the shape of a soccer ball.

FIG. **22**A exemplarily illustrates a perspective view of a wall member of another embodiment of the amphibious protection apparatus, showing an access port.

FIG. **22**B exemplarily illustrates an enlarged view of the access port marked by a portion A in FIG. **22**A, showing an arrangement of a double convex lens and a convexo concave lens at the opposing ends of the access port.

FIG. **23** exemplarily illustrates an isometric sectional view of the access port of the embodiment of the amphibious protection apparatus, showing the arrangement of the double convex lens and the convexo concave lens at the opposing ends of the access port.

FIG. **24** exemplarily illustrates an embodiment of the method for providing safety to one or more users from impacts from different directions on land and water using the embodiment of the amphibious protection apparatus shown in FIG. **18**.

DETAILED DESCRIPTION OF THE INVENTION

FIG. **1**A exemplarily illustrates an isometric view of an amphibious protection apparatus **100** prior to inflation. The amphibious protection apparatus **100** disclosed herein comprises a set of wall members **101**, **102**, **103**, and **104**. The wall members **101**, **102**, **103**, and **104**, for example, a left wall member **101**, a right wall member **102**, a front wall member **103**, and a bottom wall member **104** are foldably and detachably connected to each other. Each of the wall members **101**, **102**, **103**, and **104** is configured as an inflatable air receptacle with an enclosed space **118** as exemplarily illustrated in FIGS. **5**-**6**. The enclosed space **118** is configured to be inflated by a fluid, for example, air injected into the enclosed space **118** via a valve **117** positioned on each of the wall members **101**, **102**, **103**, and **104** as exemplarily illustrated in FIGS. **5**-**6**. In an embodiment, the amphibious protection apparatus **100** disclosed herein further comprises a fastener **108** con-

nected at a periphery, for example, **101***b*, **102***b*, etc., of each of the wall members **101**, **102**, etc., as disclosed in the detailed description of FIG. **10**.

In an embodiment, the amphibious protection apparatus **100** disclosed herein further comprises an access port **105** positioned at a vertex **106** where at least three of the wall members **101**, **102**, **103**, and **104** meet as disclosed in the detailed description of FIGS. **2**A-**2**B and FIG. **10**. The access port **105** is configured, for example, to introduce a navigation member **1401** such as a rudder into an occupancy space **110** defined by the detachably connected wall members **101**, **102**, **103**, and **104**, as exemplarily illustrated in FIG. **14**B, for navigating the amphibious protection apparatus **100**, to allow entry of air into the occupancy space **110**, to dispose waste matter from the occupancy space **110**, etc. In an embodiment, the amphibious protection apparatus **100** further comprises a plug **107** operably connected to the access port **105** as disclosed in the detailed description of FIG. **2**A.

FIG. **1**B exemplarily illustrates a front elevation view of the amphibious protection apparatus **100** prior to inflation. Each of the wall members **101**, **102**, **103**, and **104** of the amphibious protection apparatus **100** exemplarily illustrated in FIGS. **1**A-**1**C, is made of a flexible and impact resistant material, for example, a strong resilient rubber, a nylon coated material, a silicone coated material, etc., that is air tight and can absorb shock and cushion a user **701** accommodated within the occupancy space **110** as exemplarily illustrated in FIGS. **7**-**8** and FIG. **15**A, from impact of external objects. The materials used for construction of the wall members **101**, **102**, **103**, and **104** may be commercially available strong, flexible, water-resistant or air tight materials used, for example, in water rafting tubing, parachutes, lifesavers, etc. The materials used for constructing the wall members **101**, **102**, **103**, and **104** comprise, for example, polyvinyl chloride (PVC) tarpaulin, thermoplastic elastomers, polyester fabrics, synthetic fibers, etc. In order to increase the strength of each of the wall members **101**, **102**, **103**, and **104**, a rubber and a silicone can be fused into strong nylon fabrics for constructing the wall members **101**, **102**, **103**, and **104**. Each of the wall members **101**, **102**, **103**, and **104** is pre-shaped in its collapsed state, and folded like an automobile airbag. When inflated with a fluid, for example, air, the wall members **101**, **102**, **103**, and **104** take their expanded shape as exemplarily illustrated in FIGS. **3**A-**3**B and FIG. **4**B.

FIG. **1**C exemplarily illustrates a front elevation view of the amphibious protection apparatus **100** prior to inflation, showing an open access region **109**. The amphibious protection apparatus **100** disclosed herein comprises wall members **101**, **102**, **103**, and **104** that define an occupancy space **110** for accommodating one or more users **701** as exemplarily illustrated in FIGS. **7**-**8** and FIG. **15**A, and an access region **109** to allow the users **701** to enter the occupancy space **110**. Each of the wall members **101**, **102**, **103**, and **104** are detachably connected to define the occupancy space **110** that is configured to accommodate one or more users **701**. As exemplarily illustrated in FIG. **1**C, the amphibious protection apparatus **100** disclosed herein is constructed and arranged such that a user **701** is able to enter the occupancy space **110** through the access region **109** and be seated in the occupancy space **110**. The access region **109** of the amphibious protection apparatus **100** disclosed herein is defined by opening one of the detachably connected wall members **101**, **102**, **103**, and **104**, for example, the front wall member **103** as exemplarily illustrated in FIG. **1**C, FIGS. **7**-**8**, and FIG. **15**A. The access region **109** is configured to provide access to the occupancy space **110**.

In an embodiment, the amphibious protection apparatus **100** disclosed herein further comprises a seating member **111** rigidly positioned on the bottom wall member **104** within the occupancy space **110**. The seating member **111** is configured to seat one or more users **701** as exemplarily illustrated in FIGS. **7**-**8** and FIG. **15**A. In another embodiment, the amphibious protection apparatus **100** disclosed herein further comprises one or more storage compartments **112** connected to one or more of the wall members **101**, **102**, **103**, and **104** within the occupancy space **110**. The storage compartments **112** are configured to store multiple supplies, for example, food supplies, oxygen tanks, a first aid kit, safety equipment, helmets, manually inflatable air cushions, etc. As exemplarily illustrated in FIG. **1**C, FIGS. **7**-**8**, FIGS. **14**A-**14**B, and FIG. **15**A, a single storage compartment **112** is connected to the bottom wall member **104**. The storage compartment **112** has storage tie down straps **113** for securely and firmly storing the supplies.

FIG. **2**A exemplarily illustrates a partial exploded view showing an access port **105** and a plug **107**. The access port **105** extends from a vertex **106** as exemplarily illustrated in FIG. **2**B. The plug **107** operably connected to the access port **105** is configured to internally seal the access port **105** for preventing a fluid external to the occupancy space **110**, for example, water from entering the occupancy space **110**. The plug **107** is configured, for example, as a screw head as exemplarily illustrated in FIG. **2**A. The inner surface **105***a* of the access port **105** comprises a screw lining that is configured to engage with the plug **107**. A user **701** accommodated within the occupancy space **110** as exemplarily illustrated in FIGS. **7**-**8** and FIG. **15**A, can engage the plug **107** into the access port **105**, from within the occupancy space **110**, to form a seal and can disengage the plug **107** from the access port **105** to open the access port **105**. The user **701** accommodated within the occupancy space **110** may insert the plug **107** into the access port **105** to seal the access port **105**.

FIGS. **3**A-**3**B exemplarily illustrate isometric views of the amphibious protection apparatus **100** after inflation. Each of the detachably connected wall members **101**, **102**, **103**, and **104** exemplarily illustrated in FIGS. **1**A-**1**C, is inflated to form a buoyant enclosure **114** exemplarily illustrated in FIGS. **3**A-**3**B and FIG. **4**B, of a predefined configuration configured to bounce on land and float on water. The predefined configuration of the buoyant enclosure **114** formed by the inflation of each of the detachably connected wall members **101**, **102**, **103**, and **104** is a polyhedral configuration, for example, a tetrahedron as exemplarily illustrated in FIGS. **3**A-**3**B, FIG. **4**B, FIGS. **7**-**9**, FIGS. **11**-**12**, and FIG. **17**. The scope of the amphibious protection apparatus **100** disclosed herein is not limited to the buoyant enclosure **114** being formed in a polyhedral configuration but may be extended to include a buoyant enclosure **114** formed in a spherical configuration as exemplarily illustrated in FIGS. **15**A-**15**D, a cubic configuration, a cuboidal configuration, and other functionally equivalent configurations.

FIG. **4**A and FIG. **4**B exemplarily illustrate a front elevation view and an isometric view of the amphibious protection apparatus **100** prior to and after inflation respectively, showing ring members **116**. In an embodiment, the amphibious protection apparatus **100** disclosed herein further comprises ring members **116** rigidly attached to and extending outwardly from the wall members **101**, **102**, **103**, and **104**. The ring members **116** are configured to anchor the amphibious protection apparatus **100** to a stabilizing object (not shown), for example, through a hook and cable arrangement to preclude or limit the movement of the amphibious protection

apparatus **100** and to prevent the amphibious protection apparatus **100** from drifting away on water.

FIG. **5** exemplarily illustrates an exploded view of the amphibious protection apparatus **100** after inflation. As exemplarily illustrated in FIG. **5**, each of the wall members **101**, **102**, **103**, and **104** of the tetrahedral amphibious protection apparatus **100** is configured in the shape of, for example, an equilateral triangle that can be inflated into a partial sphere. The length of a side of each of the wall members **101**, **102**, **103**, and **104** is, for example, from about one meter for a small sized amphibious protection apparatus **100** to about two meters for a large sized amphibious protection apparatus **100**. As exemplarily illustrated in FIG. **5**, each of the wall members **101**, **102**, **103**, and **104** inflates to form partial spheres. The thickness of each partial sphere is, for example, from about 0.5 meters to about 1 meter to provide a sufficient buffer for strong impacts. In an embodiment, the amphibious protection apparatus **100** disclosed herein further comprises a valve **117** operably positioned on each of the wall members **101**, **102**, **103**, and **104**. The valve **117** is configured to inject a fluid, for example, air into the enclosed space **118** of each of the wall members **101**, **102**, **103**, and **104** for inflating each of the wall members **101**, **102**, **103**, and **104**. The valve **117** is also configured to eject a fluid, for example, air out of the enclosed space **118** of each of the wall members **101**, **102**, **103**, and **104** for deflating each of the wall members **101**, **102**, **103**, and **104**. The inflation of the wall members **101**, **102**, **103**, and **104** is disclosed in the detailed description of FIG. **6**.

FIG. **6** exemplarily illustrates a perspective view of one of the inflated wall members, for example, the front wall member **103** of the amphibious protection apparatus **100**, showing an inflation unit **120** and viewing members **119***a* and **119***b*. In an embodiment, the amphibious protection apparatus **100** disclosed herein further comprises an inflation unit **120** operably connected to each of the wall members **101**, **102**, **103**, and **104** exemplarily illustrated in FIG. **5**, at a location a safe distance away from the user **701** accommodated within the occupancy space **110** exemplarily illustrated in FIGS. **7-8** and FIG. **15**A. For example, the inflation unit **120** is positioned within the enclosed space **118** of the front wall member **103** at an apex **103***a* of the wall member **103** as exemplarily illustrated in FIG. **6**. Similarly, the inflation unit **120** is positioned within the enclosed space **118** at the apex of each of the other wall members **101**, **102**, and **104**. In an embodiment, the inflation unit **120** is, for example, a generally cylindrical canister operably connected to the valve **117** positioned on an inner surface **103***b* of the wall member **103**, which is opposite to the apex **103***a* of the wall member **103** as exemplarily illustrated in FIG. **6**. The valve **117** on each of the wall members **101**, **102**, **103**, and **104** exemplarily illustrated in FIG. **5**, activates the corresponding inflation units **120**, for example, by triggering an electric pulse.

On activation by the valve **117**, the inflation unit **120** injects a fluid, for example, air into the enclosed space **118** in each of the wall members **101**, **102**, **103**, and **104** to instantly inflate each of the wall members **101**, **102**, **103**, and **104**. In an embodiment, the user **701** exemplarily illustrated in FIGS. **7-8** and FIG. **15**A, may manually pump a fluid, for example, air into the enclosed space **118** of each of the wall members **101**, **102**, **103**, and **104** through the valve **117** using an air pump (not shown). The air pump is, for example, a mechanical pump or an electrical pump that injects a small amount of air into the enclosed space **118** in each of the wall members **101**, **102**, **103**, and **104** via the valve **117**. In an embodiment, compressed gas expands or inflates the left wall member **101**, the right wall member **102**, the front wall member **103**, and the bottom wall member **103**. The air may be pumped into the enclosed space **118** within each of the wall members **101**, **102**, **103**, and **104**, for example, using an internal air inflation system similar to a system that inflates an automobile airbag, and an external air pump. The internal air inflation system uses a mixture of air generating compounds, for example, sodium azide, potassium nitrate, and silicon oxide, and an electric impulse that generates a temperature of about 300° C. to inflate each of the wall members **101**, **102**, **103**, and **104**.

In an embodiment where instantaneous inflation is not required, air can be pumped electrically from tubes (not shown) positioned inside the occupancy space **110** proximal to the seating member **111** exemplarily illustrated in FIG. **1**C, FIGS. **7-8**, FIGS. **14**A-**14**B, and FIG. **15**A. The tubes are connected to each of the wall members **101**, **102**, **103**, and **104** via the valve **117**.

In another embodiment, the amphibious protection apparatus **100** disclosed herein further comprises one or more viewing members **119***a* and **119***b* disposed on each of the wall members **101**, **102**, **103**, and **104**. As exemplarily illustrated in FIG. **6**, an inner viewing member **119***a* on the inner surface **103***b* of the wall member **103** corresponds to an outer viewing member **119***b* on the outer surface **103***c* of the wall member **103**. The viewing members **119***a* and **119***b* allow a user **701** accommodated within the occupancy space **110** to view from inside the occupancy space **110** to the outside of the amphibious protection apparatus **100**. The line of vision that allows the user **701** to view outside of the amphibious protection apparatus **100** is represented by an arrow **601** in FIG. **6**. The viewing members **119***a* and **119***b* are configured to aid the accommodated user **701** to view outside the amphibious protection apparatus **100** from within the occupancy space **110**. The viewing members **119***a* and **119***b* are, for example, oval shaped and made from a clear resilient plastic material for visualization during navigation.

FIG. **7** exemplarily illustrates a front elevation view of the amphibious protection apparatus **100**, showing an open access region **109**. A user **701** may enter the occupancy space **110** defined by the detachably connected wall members **101**, **102**, **103**, and **104** through the access region **109**. The user **701** unfastens the fastener **108** that connects the front wall member **103** to the left wall member **101** and the right wall member **102** to open the access region **109** and enter into the occupancy space **110** or exit out of the occupancy space **110**. Although FIGS. **7-8** and FIG. **15**A exemplarily illustrate accommodation of a single user **701** within the occupancy space **110**, the amphibious protection apparatus **100** can be constructed in multiple different sizes to accommodate more than one user **701**. The buoyant enclosure **114** formed by inflation of the detachably connected wall members **101**, **102**, **103**, and **104** encloses the accommodated user **701** on all sides within the occupancy space **110**. The user **701** accommodated within the occupancy space **110** can enclose himself/herself within the occupancy space **110** by fastening or closing the fastener **108** that connects the front wall member **103** to the left wall member **101** and the right wall member **102**.

The buoyant enclosure **114** of the predefined configuration formed by the inflation of each of the detachably connected wall members **101**, **102**, **103**, and **104** allows the amphibious protection apparatus **100** to bounce on land and float on water, thereby protecting the user **701** accommodated within the occupancy space **110** accessed through the access region **109**, from impacts from different directions on land and water, and providing safety to the accommodated user **701** on land and water. The amphibious protection apparatus **100** therefore cushions the user **701** from impact from multiple directions,

provides a floating support to float on water, and acts as a buffer against sudden and hard impact.

FIG. **8** exemplarily illustrates a front elevation view of an embodiment of the amphibious protection apparatus **100**, showing buoyancy members **121***a*, **121***b*, and **121***c*. The amphibious protection apparatus **100** disclosed herein comprises the wall members **101**, **102**, **103**, and **104**, the occupancy space **110**, and the access region **109** as disclosed in the detailed description of FIGS. **1**A-**1**C. In an embodiment, the amphibious protection apparatus **100** disclosed herein further comprises one or more buoyancy members **121***a*, **121***b*, and **121***c*, for example, a right side buoyancy member **121***a*, a left side buoyancy member **121***b*, and a bottom buoyancy member **121***c* attached, for example, to the external surfaces **101***a*, **102***a*, and **104***a* of the wall members **101**, **102**, and **104** respectively. The buoyancy members **121***a*, **121***b*, and **121***c* are configured to provide buoyancy to bounce and float the amphibious protection apparatus **100** on land and water respectively, and to provide and facilitate shock absorbing characteristics to the amphibious protection apparatus **100** on land and in water. Each of the buoyancy members **121***a*, **121***b*, and **121***c* are configured as pockets that contain an article or a material, for example, a foam based air seal cushion that provides sufficient buoyancy and a cushioning effect for the amphibious protection apparatus **100**, when the amphibious protection apparatus **100** comes in contact with external objects. The buoyancy members **121***a*, **121***b*, and **121***c* are glued and adhere, for example, to the external surfaces **101***a*, **102***a*, and **104***a* of the wall members **101**, **102**, and **104** respectively, for providing additional protection against impact.

The amphibious protection apparatus **100** disclosed herein is configured to protect the user **701** accommodated within the occupancy space **110** when the amphibious protection apparatus **100** is dropped from an altitude, for example, an elevated location such as a cliff, elevated floors of a building, a mountain, etc., to a surface below, for example, a ground surface. The amphibious protection apparatus **100** protects and cushions the user **701** in all 360° angles from a sudden impact. The amphibious protection apparatus **100** also provides protection during a sports activity, for example, rolling down a high mountain during mountain climbing, white water rafting, etc. The amphibious protection apparatus **100** also provides a cushioning effect to escape from a disaster, for example, during a fall from an altitude from a vertical height such as a high rise building, while jumping out of an aircraft, etc.

FIG. **9** exemplarily illustrates a front elevation view of the embodiment of the amphibious protection apparatus **100**, showing a closed access region **109**. The access region **109** exemplarily illustrated in FIG. **8**, is defined by opening, for example, the front wall member **103**. The front wall member **103** is constructed and arranged to be a door like structure, whereby the front wall member **103** opens and closes to permit a user **701** access to the occupancy space **110** of the amphibious protection apparatus **100**. After entering into the occupancy space **110** defined by the detachably connected wall members **101**, **102**, **103**, and **104**, the user **701** may close the access region **109** created by the front wall member **103** using the fasteners **108** that connect the front wall member **103** to the left wall member **101** and the right wall member **102**.

FIG. **10** exemplarily illustrates an enlarged view of an access port **105** of the amphibious protection apparatus **100** after inflation of the wall members **101**, **102**, **103**, and **104**. An access port **105** is positioned at a vertex **106** where at least three of the wall members **101**, **102**, **103**, and **104** meet. The access port **105** is configured, for example, to introduce a navigation member **1401** such as a rudder into the occupancy space **110**, as exemplarily illustrated in FIG. **14**B, for navigating the amphibious protection apparatus **100**, to allow entry of air into the occupancy space **110**, to dispose waste matter from the occupancy space **110**, etc. The fasteners **108** are connected at the peripheries, for example, **101***b*, **102***b*, etc., of the wall members **101**, **102**, etc. The fastener **108** is configured to attach and detach each of the wall members **101**, **102**, **103**, and **104**. The fastener **108** is, for example, a water proof zipper or a hook and loop fastener such as Velcro® of Velcro Industries.

As exemplarily illustrated in FIG. **10**, the left wall member **101** is partially and rigidly connected to the right wall member **102** using a permanent seal **115**. The remaining portion of the periphery **101***b* of the left wall member **101** is detachably connected to the remaining portion of the periphery **102***b* of the right wall member **102** using the fasteners **108**. The fasteners **108** are stitched to the peripheries, for example, **101***b*, **102***b*, etc., of the wall members **101**, **102**, etc., and coated, for example, with rubber or silicone for creating an airtight or a water tight seal. The fasteners **108** similarly fasten the peripheries of the front wall member **103** to the peripheries **101***b* and **102***b* of the left wall member **101** and the right wall member **102** respectively. Each access port **105** further incorporates a plug **107** exemplarily illustrated in FIG. **2**A, configured to internally seal the access port **105** for preventing a fluid external to the occupancy space **110**, for example, water from entering the occupancy space **110** of the amphibious protection apparatus **100**.

FIG. **11** exemplarily illustrates a right side elevation view of the amphibious protection apparatus **100** with inflated wall members **102**, **103**, and **104**. The wall members **102**, **103**, and **104**, the fasteners **108**, the access port **105**, the plug **107**, and the permanent seal **115** between the wall members **102**, **103**, and **104** exemplarily illustrated in FIG. **11**, are disclosed in the detailed descriptions of FIGS. **1**A-**10**.

FIG. **12** exemplarily illustrates a plan view of the amphibious protection apparatus **100** with inflated wall members **101**, **102**, and **103**. The wall members **101**, **102**, and **103**, the fasteners **108**, the access port **105**, and the plug **107** exemplarily illustrated in FIG. **12**, are disclosed in the detailed descriptions of FIGS. **1**A-**10**.

FIGS. **13**A-**13**C exemplarily illustrate a plan view, a right side elevation view, and a front elevation view respectively, of the amphibious protection apparatus **100**, prior to inflation of the wall members **101**, **102**, **103**, etc. The amphibious protection apparatus **100** disclosed herein is stored for handling and transporting in a deflated and folded configuration as exemplarily illustrated in FIGS. **13**A-**13**C. The amphibious protection apparatus **100** disclosed herein is collapsed into a compact unit for handling and transporting. For usage in a dangerous situation, a user **701** exemplarily illustrated in FIGS. **7**-**8** and FIG. **15**A expands or inflates the wall members **101**, **102**, **103**, etc., of the amphibious protection apparatus **100** from their collapsed or deflated state at the time of use.

The user **701** inflates the wall members **101**, **102**, **103**, and **104** exemplarily illustrated in FIG. **1**A, sequentially. Before usage, the wall members **101**, **102**, **103**, and **104** are folded in their collapsed or deflated state. In an example, during operation, the user **701** first inflates the left wall member **101**, the right wall member **102**, and the bottom wall member **104**, which allows the user **701** to enter the occupancy space **110** and to be seated on the seating member **111** as exemplarily illustrated in FIGS. **7**-**8** and FIG. **15**A. The user **701** may then close the front wall member **103** and fasten the front wall member **103** in its collapsed or deflated state using the fas-

teners **108**. Without the tension from inflation, the user **701** can easily fasten the front wall member **103**. The user **701** then inflates the front wall member **103** and secures himself/herself within the occupancy space **110** defined by the connected and inflated wall members **101**, **102**, **103**, and **104**. After usage, the user **701** deflates the front wall member **103**, unfastens the front wall member **103** in its deflated state, exits the amphibious protection apparatus **100**, and then deflates the rest of the wall members **101**, **102**, and **104** and folds them back to their original collapsed or deflated states. The deflation process can be performed, for example, by opening a valve **117** positioned in each of the inflated wall members **101**, **102**, **103**, and **104** as exemplarily illustrated in FIGS. **5-6**, from inside the occupancy space **110** to eject the fluid, for example, air out of the enclosed space **118** of each of the wall members **101**, **102**, **103**, and **104**.

FIG. **13**D exemplarily illustrates an enlarged view of an access port **105** of the amphibious protection apparatus **100**, prior to inflation of the wall members **101**, **102**, **103**, and **104**. The access port **105** positioned at the vertex **106** where at least three of the wall members **101**, **102**, **103**, and **104** meet is disclosed in the detailed description of FIG. **10**.

FIGS. **14**A-**14**B exemplarily illustrate cutaway views of the amphibious protection apparatus **100**, showing the occupancy space **110** defined by the detachably connected wall members **101**, **102**, **103**, and **104**. In addition to the access ports **105**, the cutaway views of the amphibious protection apparatus **100** disclosed herein show a storage compartment **112**, a seating member **111**, and a restraining system **122**. The storage compartment **112** may be provided with storage tie down straps **113** as exemplarily illustrated in FIG. **1**C and FIGS. **7-8**. As exemplarily illustrated in FIGS. **14**A-**14**B, the storage compartment **112** is connected to the bottom wall member **104** within the occupancy space **110**. The storage compartment **112** is configured to store multiple supplies, for example, food supplies, oxygen tanks, a first aid kit, safety equipment, head helmets, etc., that may be utilized during a dangerous situation for providing safety and sustenance to the user **701** accommodated within the occupancy space **110**. The seating member **111** rigidly positioned on the bottom wall member **104** within the occupancy space **110** is configured to seat one or more users **701**. In another embodiment, the amphibious protection apparatus **100** disclosed herein further comprises a restraining system **122** comprising, for example, seat belts operably connected to the seating member **111**. The restraining system **122** is configured to be fastened on a user's **701** body part to secure the user **701** against contact with the wall members **101**, **102**, **103**, and **104**. The restraining system **122** secures the user **701** accommodated within the occupancy space **110** and protects the user **701** from contacting the wall members **101**, **102**, **103**, and **104**. The restraining system **122** retrains the user **701** on the seating member **111**.

In an embodiment as exemplarily illustrated in FIG. **14**B, one of the access ports **105** is configured to introduce a navigation member **1401** such as a rudder into the occupancy space **110** for navigating the amphibious protection apparatus **100** on water. The navigation member **1401** is inserted into one of the access ports **105**. A rudder bearing **1402** is integrated into each of the access ports **105** for flexibly positioning the navigation member **1401** within each of the access ports **105**. The user **701** accommodated within the occupancy space **110** turns or steers the navigation member **1401** through the access port **105** to steer and propel the amphibious protection apparatus **100** in water. In an embodiment, the amphibious protection apparatus **100** contains an oxygen source (not shown), for example, an oxygen air mixture, an oxygen generated canister, or any other apparatus to supply oxygen to the user **701** seated on the seating member **111** within the occupancy space **110** of the amphibious protection apparatus **100**. The oxygen source is stored, for example, in the storage compartment **112**.

FIGS. **15**A-**15**D exemplarily illustrates different views of an embodiment of the amphibious protection apparatus **100**. In this embodiment, inflation of each of the detachably connected wall members **101**, **102**, **103**, and **104** forms a buoyant enclosure **114** of a spherical configuration configured to bounce on land and float on water as exemplarily illustrated in FIGS. **15**A-**15**D. A front elevation view of this embodiment of the amphibious protection apparatus **100**, showing an open access region **109** is exemplarily illustrated in FIG. **15**A. A front elevation view of this embodiment of the amphibious protection apparatus **100**, showing a closed access region **109** is exemplarily illustrated in FIG. **15**B. A right side elevation view of this embodiment of the amphibious protection apparatus **100** is exemplarily illustrated in FIG. **15**C. A plan view of this embodiment of the amphibious protection apparatus **100** is exemplarily illustrated in FIG. **15**D.

In an embodiment, the amphibious protection apparatus **100** exemplarily illustrated in FIGS. **3**A-**3**B, FIG. **4**B, FIGS. **7-9**, FIGS. **11-12**, FIGS. **15**A-**15**D, and FIG. **17** further comprises a rescue identifier, for example, a bright color such as orange, red, etc., an array of lights, audio indicators such as whistles, etc., provided on the external surfaces **101***a*, **102***a*, **103***c*, and **104***a* of the wall members **101**, **102**, **103**, and **104** respectively. The rescue identifier is configured for easy identification by rescuers.

FIG. **16** illustrates a method for providing safety to one or more users **701** from impacts from different directions on land and water. The method disclosed herein provides **1601** the amphibious protection apparatus **100** comprising a set of wall members **101**, **102**, **103**, and **104**, an occupancy space **110**, and an access region **109** as disclosed in the detailed description of FIGS. **1-15**D. Each of the wall members **101**, **102**, **103**, and **104** is assembled and detachably connected **1602** to the other wall members **101**, **102**, **103**, and **104**. The amphibious protection apparatus **100** provides **1603** a user **701** with access to the occupancy space **110** through the access region **109**. The amphibious protection apparatus **100** accommodates **1604** one or more users **701** within the occupancy space **110**.

The user **701** accommodated within the occupancy space **110** inflates **1605** each of the detachably connected wall members **101**, **102**, **103**, and **104**, for example, by injecting a fluid such as air into the enclosed space **118** of each of the detachably connected wall members **101**, **102**, **103**, and **104** via the valve **117** in each of the wall members **101**, **102**, **103**, and **104** using an inflation unit **120** contained within the enclosed space **118** as exemplarily illustrated in FIG. **6**, an air pump (not shown), an internal air inflation system (not shown), or tubes (not shown) as disclosed in the detailed description of FIG. **6**. Inflation of each of the detachably connected wall members **101**, **102**, **103**, and **104** forms a buoyant enclosure **114** of a predefined configuration, for example, a polyhedral configuration as exemplarily illustrated in FIGS. **3**A-**3**B, FIG. **4**B, FIGS. **7-9**, FIGS. **11-12**, and FIG. **17**, a spherical configuration as exemplarily illustrated in FIGS. **15**A-**15**D, etc., that is configured to bounce on land and float on water. The buoyant enclosure **114** encloses the accommodated users **701** within the occupancy space **110** to protect the accommodated users **701** from impacts from different directions on land and water, thereby providing safety to the accommodated users **701** on land and water. The wall members **101**, **102**, **103**, and **104** are configured to resist impact on contact of the amphibious protection apparatus **100**

with external objects, for example, while the amphibious protection apparatus **100** floats on a surface of water. After usage, a user **701** can deflate the wall members **101**, **102**, **103**, and **104** and fold the wall members **101**, **102**, **103**, and **104** over each other into a compact unit for storage.

FIG. **17** exemplarily illustrates an application of the amphibious protection apparatus **100** on water **1701**. Consider an example of a situation of a natural calamity in water **1701** such as a tsunami, a flash flood, etc, where the user **701** requires an apparatus that provides safety. The user **701** employs the amphibious protection apparatus **100** disclosed herein for personal protection. The user **701** unfolds the amphibious protection apparatus **100** from its deflated or collapsed state and assembles the amphibious protection apparatus **100**. The user **701** fastens the wall members **101**, **102**, and **104** using the fasteners **108** provided at the peripheries, for example, **101***b*, **102***b*, etc., exemplarily illustrated in FIG. **10**, of each of the wall members **101**, **102**, and **104**. The user **701** then inflates the wall members **101**, **102**, and **104** of the amphibious protection apparatus **100** manually using a pump (not shown) or using the inflation unit **120** operably connected to the valve **117** on each of the wall members **101**, **102**, and **104** exemplarily illustrated in FIG. **6**. The user **701** enters the occupancy space **110** of the amphibious protection apparatus **100** through the access region **109** defined by opening the front wall member **103** in its collapsed state. The user **701** then inflates the front wall member **103** and fastens the front wall member **103** to the side wall members **101** and **102**, thereby forming the buoyant enclosure **114** that floats on water **1701**.

The user **701** then sits on the seating member **111** rigidly positioned on the bottom wall member **104** as exemplarily illustrated in FIGS. **7-8** and FIG. **15**A. The user **701** then fastens the restraining system **122** having, for example, a safety belt around the user's **701** body to secure himself/herself to the seating member **111** within the occupancy space **110** and to avoid contact with the wall members **101**, **102**, **103**, and **104**, and then secures his/her head using head gear such as a helmet stored in the storage compartment **112** rigidly positioned on the bottom wall member **104**. The user **701** inserts a navigation member **1401** such as a rudder through the access port **105** positioned at the vertex **106** where at least three of the wall members **101**, **102**, **103**, and **104** meet as exemplarily illustrated in FIG. **14**B, to navigate the amphibious protection apparatus **100** in water **1701**. The user **701** uses the viewing members **119***a* and **119***b* configured as sealed transparent windows provided, for example, on the front wall member **103** of the amphibious protection apparatus **100** as exemplarily illustrated in FIG. **6**, for visualization during navigation on water **1701**. Since the user **701** is completed enclosed within the buoyant enclosure **114** formed by the inflation of each of the detachably connected wall members **101**, **102**, **103**, and **104**, the amphibious protection apparatus **100** disclosed herein protects the user **701** accommodated within the occupancy space **110** from impacts from different directions in water **1701**, thereby providing safety to the accommodated user **701** in water **1701**. The amphibious protection apparatus **100** disclosed herein floats over water **1701**, resists sharp and heavy impacts, and can flow smoothly over fast moving water **1701**, and prevent the user **701** from drowning or from blunt trauma.

Consider another example where a user **701** is trapped at a high elevated location such as a high floor level of a high rise building engulfed by fire, where the user **701** requires an apparatus that provides safety. The user **701** employs the amphibious protection apparatus **100** disclosed herein for personal protection while escaping from the building by jumping from the high floor level to the ground. The user **701** unfolds and assembles the wall members **101**, **102**, **103**, and **104** of the amphibious protection apparatus **100**. The user **701** then inflates the wall members **101**, **102**, and **104** of the amphibious protection apparatus **100**. The user **701** enters the occupancy space **110** of the amphibious protection apparatus **100** through the access region **109** defined by opening the front wall member **103** in its collapsed state. The user **701** then fastens the front wall member **103** to the side wall members **101** and **102**, inflates the front wall member **103**, sits on the seating member **111** rigidly positioned on the bottom wall member **104**, fastens the restraining system **122** having, for example, a safety belt around the his/her body to secure himself/herself to the seating member **111** within the occupancy space **110** and to avoid contact with the wall members **101**, **102**, **103**, and **104**, and then secures the user's **701** head using head gear such as a helmet stored in the storage compartment **112** rigidly positioned on the bottom wall member **104**.

The user **701** is now enclosed inside the occupancy space **110** surrounded by the inflated wall members **101**, **102**, **103**, and **104**. Since the user **701** is completely enclosed within the buoyant enclosure **114** formed by each of the detachably connected and inflated wall members **101**, **102**, **103**, and **104**, the amphibious protection apparatus **100** protects the user **701** accommodated within the occupancy space **110** from impacts from all directions during a free fall from the high floor level to the ground below, thereby providing safety to the accommodated user **701** during the fall to the ground. The amphibious protection apparatus **100** disclosed herein can also be used to protect the user **701** from falling from an airplane, a mountain, and other high elevated locations. The structure, volume, and weight of the amphibious protection apparatus **100** relative to its size are configured to lower the speed with which the amphibious protection apparatus **100** falls from an elevated location.

In an embodiment, the amphibious protection apparatus **100** also provides protection during extreme sporting activities, for example, white water rafting which encounter rapid speed and fluid or solid impacts. The amphibious protection apparatus **100** can be used in situations such as unexpected flash urban flooding. The user **701** expands the left wall member **101**, the right wall member **102**, the bottom wall member **104**, and the open front wall member **103**. The expansion is accomplished in any manner effective to expand the amphibious protection apparatus **100**. The amphibious protection apparatus **100** provides a multipurpose function whereby it is contemplated that a life is saved because the amphibious protection apparatus **100** is not only buoyant, but while on water **1701**, the amphibious protection apparatus **100** would bounce off any articles encountered, for example, during a flood situation.

For purposes of illustration, the detailed description refers to accommodation of a seating member **111**, a restraining system **122**, storage compartments **112**, oxygen sources, supplies, etc., within the occupancy space **110** of the amphibious protection apparatus **100**; however the scope of the amphibious protection apparatus **100** disclosed herein may be extended to accommodate any other equipment and supplies required for safety.

FIG. **18** exemplarily illustrates a front perspective view of an embodiment of the amphibious protection apparatus **100**. The amphibious protection apparatus **100** disclosed herein provides safety from impacts from different directions on land and water to one or more users **701** exemplarily illustrated in FIGS. **7-8** and FIG. **15**A. The amphibious protection apparatus **100** disclosed herein comprises a set of wall mem-

bers **101**, **102**, **103**, and **104**, an occupancy space **110**, and an access region **109**. Each wall member, for example, **103** is foldably and detachably connected to another wall member, for example, **101**, **102**, and **104**. Each wall member, for example, **101** comprises an outer layer **123** of a predetermined thickness and an inner inflatable member **124** as disclosed in the detailed description of FIG. **19**. The outer layer **123** of each wall member **101** is made of a flexible and impact resistant material, for example, a strong resilient rubber, a nylon coated material, a silicone coated material, a thick fabric material, etc., to absorb shock and cushion the accommodated users **701** from impact of external objects. The outer layer **123** is not airtight but strong and resilient against pressure from air to form into a predetermined shape when inflated. The thickness of the outer layer **123** of each wall member **101** is based on the type of material used to enable the wall member **101** to withstand repetitive external forces and impacts from different directions. For example, if the outer layer **123** is made of a resilient rubber material that can withstand repetitive external force, the thickness of the outer layer **123** is selected, for example, within a range of about 4 mm to about 10 mm. The inner inflatable member **124** is, for example, a round balloon shaped bladder and is expandable.

FIG. **19** exemplarily illustrates a perspective view of a wall member **101** of the embodiment of the amphibious protection apparatus **100** shown in FIG. **18**. The outer layer **123** of each wall member **101** defines a wall periphery **125**. The wall periphery **125** of the outer layer **123** of each wall member, for example, **101** is connected to the wall periphery **125** of the outer layer **123** of another wall member, for example, **104** as exemplarily illustrated in FIG. **18**. In an embodiment, the amphibious protection apparatus **100** disclosed herein further comprises a fastener **108** as exemplarily illustrated in FIG. **10**, connected at the wall periphery **125** of the outer layer **123** of each wall member **101**. The fastener **108** attaches and detaches each wall member **101**. The fastener **108** is, for example, a zipper, a hook and loop fastener, etc. The outer layer **123** of each wall member **101** defines an outer enclosed space **126**. The outer enclosed space **126** accommodates the inner inflatable member **124**. The inner inflatable member **124** comprises an inner enclosed space **127**. A fluid, for example, air injected into the inner enclosed space **127** of the inner inflatable member **124** inflates the inner inflatable member **124**. The inflation of the inner inflatable member **124** of each of the detachably connected wall members **101**, **102**, **103**, and **104** forms a buoyant enclosure **114** as exemplarily illustrated in FIG. **18**. The buoyant enclosure **114** is of a predefined configuration, for example, a polyhedral configuration, a cubic configuration, a cuboidal configuration, a spherical configuration, etc., and is configured to bounce on land and float on water **1701** as exemplarily illustrated in FIG. **17**.

The detachably connected wall members **101**, **102**, **103**, and **104** define the occupancy space **110**. The occupancy space **110** accommodates one or more users **701** as exemplarily illustrated in FIGS. **7-8** and FIG. **15**A. The buoyant enclosure **114** formed by the inflation of the inner inflatable member **124** of each of the detachably connected wall members **101**, **102**, **103**, and **104** protects the accommodated users **701** from impacts from different directions on land and water **1701**. The access region **109** is defined by opening one of the detachably connected wall members **101**, **102**, **103**, and **104** as exemplarily illustrated in FIG. **1**C, FIGS. **7-8**, and FIG. **15**A. The access region **109** provides access to the occupancy space **110**.

In an embodiment, the amphibious protection apparatus **100** disclosed herein further comprises an inflation unit **120** operably connected to each wall member **101**. The inflation unit **120** injects the fluid into the inner enclosed space **127** of the inner inflatable member **124** of each wall member **101** to instantly inflate each wall member **101**. In an embodiment, the amphibious protection apparatus **100** disclosed herein further comprises a valve **117** operably positioned on each wall member **101**. The valve **117** injects the fluid into and ejects the fluid out of the inner enclosed space **127** of the inner inflatable member **124** of each wall member **101** for inflation and deflation of each wall member **101**.

FIGS. **20**A-**20**B exemplarily illustrate perspective views of multiple material segments **128** forming an outer layer **123** of a wall member **101** exemplarily illustrated in FIG. **19**. As used herein, the phrase "material segments" refers to elemental portions or cut pieces of a fabrication material which are fastened or sutured at their respective edges or peripheries to manufacture the outer layer **123** or the inner inflatable member **124** of the wall member **101**. A top perspective view of the material segments **128** forming the outer layer **123** of the wall member **101** of the embodiment of the amphibious protection apparatus **100** is exemplarily illustrated in FIG. **20**A. A front perspective view of an inner inflatable member **124** positioned within an outer enclosed space **126** of the outer layer **123** to form the wall member **101** of the embodiment of the amphibious protection apparatus **100** is exemplarily illustrated in FIG. **20**B. In this embodiment, the outer layer **123** of each wall member **101** comprises multiple material segments **128** of predefined shapes. Each material segment **128** of the outer layer **123** defines a segment periphery **129**. The segment periphery **129** of each material segment **128** is fastened to the segment periphery **129** of another material segment **128** as indicated by the arrows to form the outer enclosed space **126** as exemplarily illustrated in FIG. **20**B, for the accommodation and the inflation of the inner inflatable member **124**. The segment periphery **129** of each material segment **128** is, for example, sutured with strong nylon fiber or connected using a zipper that can be opened and closed as needed.

FIG. **21**A exemplarily illustrates a top view of multiple material segments **130** forming an inner inflatable member **124** of a wall member **101** of the embodiment of the amphibious protection apparatus **100**. The inner inflatable member **124** of each wall member **101** is airtight and conforms to a shape defined by the outer layer **123** of each wall member **101** when inflated. In an embodiment, the inner inflatable member **124** of each wall member **101** comprises multiple material segments **130** of predefined shapes, for example, curved triangle shapes as exemplarily illustrated in FIG. **21**A. Each material segment **130** of the inner inflatable member **124** defines a segment periphery **131**. The segment periphery **131** of each material segment **130** is fastened to the segment periphery **131** of another material segment **130** as exemplarily illustrated in FIG. **21**B, to form the inner enclosed space **127** for receiving the fluid injected into the inner inflatable member **124**. The segment periphery **131** of each material segment **130** is, for example, sutured with strong nylon fiber or connected using a zipper that can be opened and closed as needed. A front perspective view of the inner inflatable member **124** of a wall member **101** of the embodiment of the amphibious protection apparatus **100**, formed by multiple material segments **130** is exemplarily illustrated in FIG. **21**B.

FIG. **21**C exemplarily illustrates a front perspective view of an inner inflatable member **124** of the embodiment of the amphibious protection apparatus **100**, having the shape of a soccer ball. The material segments **130** may be of predefined shapes, for example, pentagon shapes, hexagon shapes, etc. These material segments **130** are fastened via their segment

peripheries **131** to form a soccer ball shaped inner inflatable member **124** when inflated as exemplarily illustrated in FIG. **21**C.

FIG. **22**A exemplarily illustrates a perspective view of a wall member **101** of another embodiment of the amphibious protection apparatus **100**, showing an access port **105**. FIG. **22**B exemplarily illustrates an enlarged view of the access port **105** marked by a portion A in FIG. **22**A, showing an arrangement of a double convex lens **132** and a convexo concave lens **133** at the opposing ends **105***b* and **105***c* of the access port **105**. The access port **105** is positioned at a vertex **106** where at least three of the wall members, for example, **103**, and **104** meet, as exemplarily illustrated in FIGS. **1**A-**1**C.

FIG. **23** exemplarily illustrates an isometric sectional view of the access port **105** of the embodiment of the amphibious protection apparatus **100**, showing the arrangement of the double convex lens **132** and the convexo concave lens **133** at the opposing ends **105***b* and **105***c* of the access port **105**. In this embodiment, the amphibious protection apparatus **100** disclosed herein further comprises the double convex lens **132** positioned at one end **105***b* of the access port **105** that is proximal to the occupancy space **110** exemplarily illustrated in FIG. **18**, and a convexo concave lens **133** positioned at a distal end **105***c* of the access port **105** that is exposed to an external environment, for example, water **1701**. The convexo concave lens **133** can be used to maximize viewing of the external environment. The arrangement of the double convex lens **132** and the convexo concave lens **133** magnifies external objects, for example, trees, barriers such as rocks, walls, etc., present in the external environment. Light rays **134** from water **1701** reflected from the trees or rocks are converged through the convexo concave lens **133**. The double convex lens **132** receives the light rays **134** and further converges the light rays **134** so that a user **701** can view the objects through the double convex lens **132**, for example, a magnifying lens. The double convex lens **132** can be used inside to enhance viewing of the external environment. The double convex lens **132** and the convexo concave lens **133** are, for example, made of plastic. In an embodiment, the double convex lens **132** and the convexo concave lens **133** also preclude entry of foreign objects, for example, elements external to the occupancy space **110** such as pebbles or rocks, waste matter, etc., into the occupancy space **110** through the access port **105**.

FIG. **24** exemplarily illustrates an embodiment of the method for providing safety to one or more users **701** exemplarily illustrated in FIGS. **7**-**8**, from impacts from different directions on land and water using the embodiment of the amphibious protection apparatus **100** shown in FIG. **18**. The amphibious protection apparatus **100** comprising a set of wall members **101**, **102**, **103**, and **104**, an occupancy space **110**, and an access region **109** as disclosed in the detailed description of FIGS. **18**-**19** is provided **2401**. Each of the wall members **101**, **102**, **103**, and **104** is assembled and detachably connected **1602** to the other wall members **101**, **102**, **103**, and **104**. The amphibious protection apparatus **100** disclosed herein provides **1603** one or more users **701** with access to the occupancy space **110** through the access region **109**. The amphibious protection apparatus **100** accommodates **1604** one or more users **701** within the occupancy space **110**. A user **701** actuates the inflation unit **120**, causing the inflation unit **120** to inject **2402** a fluid into the inner enclosed space **127** of the inner inflatable member **124** of each of the detachably connected wall members **101**, **102**, **103**, and **104** to inflate the inner inflatable member **124** of each of the detachably connected wall members **101**, **102**, **103**, and **104** to form a buoyant enclosure **114** of a predefined configuration configured to bounce on land and float on water **1701** as exemplarily illustrated in FIG. **17**. The buoyant enclosure **114** encloses the accommodated users **701** within the occupancy space **110** to protect the accommodated users **701** from impacts from different directions on land and water **1701**, thereby providing safety to the accommodated users **701** on land and water **1701**.

The foregoing examples have been provided merely for the purpose of explanation and are in no way to be construed as limiting of the present invention disclosed herein. While the invention has been described with reference to various embodiments, it is understood that the words, which have been used herein, are words of description and illustration, rather than words of limitation. Further, although the invention has been described herein with reference to particular means, materials, and embodiments, the invention is not intended to be limited to the particulars disclosed herein; rather, the invention extends to all functionally equivalent structures, methods and uses, such as are within the scope of the appended claims. Those skilled in the art, having the benefit of the teachings of this specification, may affect numerous modifications thereto and changes may be made without departing from the scope and spirit of the invention in its aspects.

We claim:

1. An amphibious protection apparatus for providing safety to one or more users from impacts from different directions on land and water, said amphibious protection apparatus comprising:

a set of wall members, each of said wall members being foldably and detachably connected to another of said wall members, said each of said wall members comprising an outer layer of a predetermined thickness and an inner inflatable member, said outer layer of said each of said wall members defining a wall periphery, said wall periphery of said outer layer of said each of said wall members connected to said wall periphery of said outer layer of another of said wall members, said outer layer of said each of said wall members defining an outer enclosed space, said outer enclosed space configured to accommodate said inner inflatable member comprising an inner enclosed space, said inner inflatable member configured to be inflated by a fluid injected into said inner enclosed space of said inner inflatable member, wherein said inflation of said inner inflatable member of each of said detachably connected wall members forms a buoyant enclosure of a predefined configuration configured to bounce on said land and float on said water;

said detachably connected wall members defining an occupancy space, said occupancy space configured to accommodate said one or more users, wherein said accommodated one or more users are protected by said buoyant enclosure formed by said inflation of said inner inflatable member of said each of said detachably connected wall members, from said impacts from said different directions on said land and said water; and

an access region defined by opening one of said detachably connected wall members, said access region configured to provide access to said occupancy space.

2. The amphibious protection apparatus of claim **1**, wherein said outer layer of said each of said wall members comprises a plurality of material segments of predefined shapes, wherein each of said material segments defines a segment periphery, wherein said segment periphery of said each of said material segments is fastened to said segment periphery of another of said material segments to form said outer enclosed space for said accommodation and said inflation of said inner inflatable member.

3. The amphibious protection apparatus of claim 1, wherein said inner inflatable member of said each of said wall members is airtight and configured to conform to a shape defined by said outer layer of said each of said wall members when inflated.

4. The amphibious protection apparatus of claim 1, wherein said inner inflatable member of said each of said wall members comprises a plurality of material segments of predefined shapes, wherein each of said material segments defines a segment periphery, wherein said segment periphery of said each of said material segments is fastened to said segment periphery of another of said material segments to form said inner enclosed space for receiving said fluid injected into said inner inflatable member.

5. The amphibious protection apparatus of claim 1, further comprising an access port positioned at a vertex where at least three of said wall members meet, wherein said access port is configured to perform one or more of: introducing a navigation member into said occupancy space for navigating said amphibious protection apparatus, allowing entry of air into said occupancy space, and disposing waste matter from said occupancy space.

6. The amphibious protection apparatus of claim 5, further comprising a double convex lens positioned at one end of said access port proximal to said occupancy space and a convexo concave lens positioned at a distal end of said access port exposed to an external environment, wherein arrangement of said double convex lens and said convexo concave lens in said access port is configured to magnify external objects present in said external environment.

7. The amphibious protection apparatus of claim 6, wherein said double convex lens and said convexo concave lens are made of plastic.

8. The amphibious protection apparatus of claim 6, wherein said double convex lens and said convexo concave lens are further configured to preclude entry of foreign objects into said occupancy space through said access port.

9. The amphibious protection apparatus of claim 1, further comprising a fastener connected at said wall periphery of said outer layer of said each of said wall members, wherein said fastener is configured to attach and detach said each of said wall members.

10. The amphibious protection apparatus of claim 9, wherein said fastener is one of a zipper and a hook and loop fastener.

11. The amphibious protection apparatus of claim 1, wherein said outer layer of said each of said wall members is made of a flexible and impact resistant material to absorb shock and cushion said accommodated one or more users from impact of external objects.

12. The amphibious protection apparatus of claim 1, wherein said predefined configuration of said buoyant enclosure formed by said inflation of said inner inflatable member of said each of said detachably connected wall members is one of a polyhedral configuration, a cubic configuration, a cuboidal configuration, and a spherical configuration.

13. The amphibious protection apparatus of claim 1, further comprising an inflation unit operably connected to said each of said wall members, wherein said inflation unit is configured to inject said fluid into said inner enclosed space of said inner inflatable member of said each of said wall members to instantly inflate said each of said wall members.

14. The amphibious protection apparatus of claim 1, further comprising a valve operably positioned on said each of said wall members, wherein said valve is configured to one of inject said fluid into and eject said fluid out of said inner enclosed space of said inner inflatable member of said each of said wall members for inflation and deflation of said each of said wall members.

15. A method for providing safety to one or more users from impacts from different directions on land and water, said method comprising:

providing an amphibious protection apparatus, comprising:

a set of wall members, each of said wall members being foldably and detachably connected to another of said wall members, said each of said wall members comprising an outer layer of a predetermined thickness and an inner inflatable member, said outer layer of said each of said wall members defining a wall periphery, said wall periphery of said outer layer of said each of said wall members connected to said wall periphery of said outer layer of another of said wall members, said outer layer of said each of said wall members defining an outer enclosed space, said outer enclosed space configured to accommodate said inner inflatable member comprising an inner enclosed space;

said detachably connected wall members defining an occupancy space; and

an access region defined by opening one of said detachably connected wall members;

assembling and detachably connecting said each of said wall members of said amphibious protection apparatus to said another of said wall members;

providing access to said occupancy space through said access region of said amphibious protection apparatus;

accommodating said one or more users within said occupancy space defined by said detachably connected wall members; and

injecting a fluid into said inner enclosed space of said inner inflatable member of each of said detachably connected wall members to inflate said inner inflatable member of said each of said detachably connected wall members to form a buoyant enclosure of a predefined configuration configured to bounce on said land and float on said water, wherein said buoyant enclosure encloses said accommodated one or more users within said occupancy space to protect said accommodated one or more users from said impacts from said different directions on said land and said water, thereby providing said safety to said accommodated one or more users on said land and said water.

16. The method of claim 15, wherein said outer layer of said each of said wall members comprises a plurality of material segments of predefined shapes, wherein each of said material segments defines a segment periphery.

17. The method of claim 16, further comprising fastening said segment periphery of said each of said material segments to said segment periphery of another of said material segments to form said outer enclosed space for said accommodation and said inflation of said inner inflatable member.

18. The method of claim 15, wherein said inner inflatable member of said each of said wall members is airtight and configured to conform to a shape defined by said outer layer of said each of said wall members when inflated.

19. The method of claim 15, wherein said inner inflatable member of said each of said wall members comprises a plurality of material segments of predefined shapes, wherein each of said material segments defines a segment periphery.

20. The method of claim 19, further comprising fastening said segment periphery of said each of said material segments to said segment periphery of another of said material seg-

ments to form said inner enclosed space for receiving said fluid injected into said inner inflatable member.

21. The method of claim **15**, wherein said injection of said fluid into said inner enclosed space of said inner inflatable member of said each of said detachably connected wall members to inflate said inner inflatable member is performed by an inflation unit operably connected to said each of said wall members.

22. The method of claim **15**, wherein said amphibious protection apparatus further comprises an access port positioned at a vertex where at least three of said wall members meet, wherein said access port is configured to perform one or more of: introducing a navigation member into said occupancy space for navigating said amphibious protection apparatus, allowing entry of air into said occupancy space, and disposing waste matter from said occupancy space.

23. The method of claim **22**, further comprising magnifying external objects present in an external environment by an arrangement of a double convex lens and a convexo concave lens in said access port, wherein said double convex lens is positioned at one end of said access port proximal to said occupancy space and said convexo concave lens is positioned at a distal end of said access port exposed to said external environment.

24. The method of claim **15**, wherein said amphibious protection apparatus further comprises a valve operably positioned on said each of said wall members, wherein said valve is configured to one of inject said fluid into and eject said fluid out of said inner enclosed space of said inner inflatable member of said each of said wall members for inflation and deflation of said each of said wall members.

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