

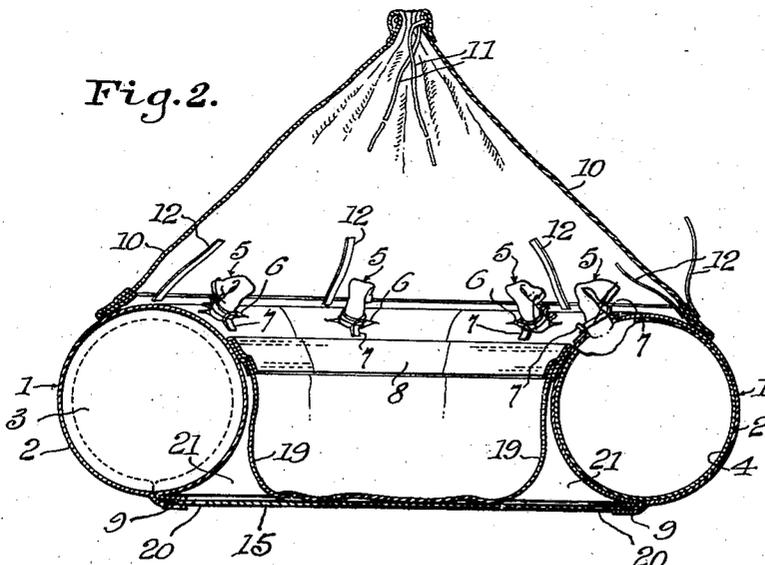
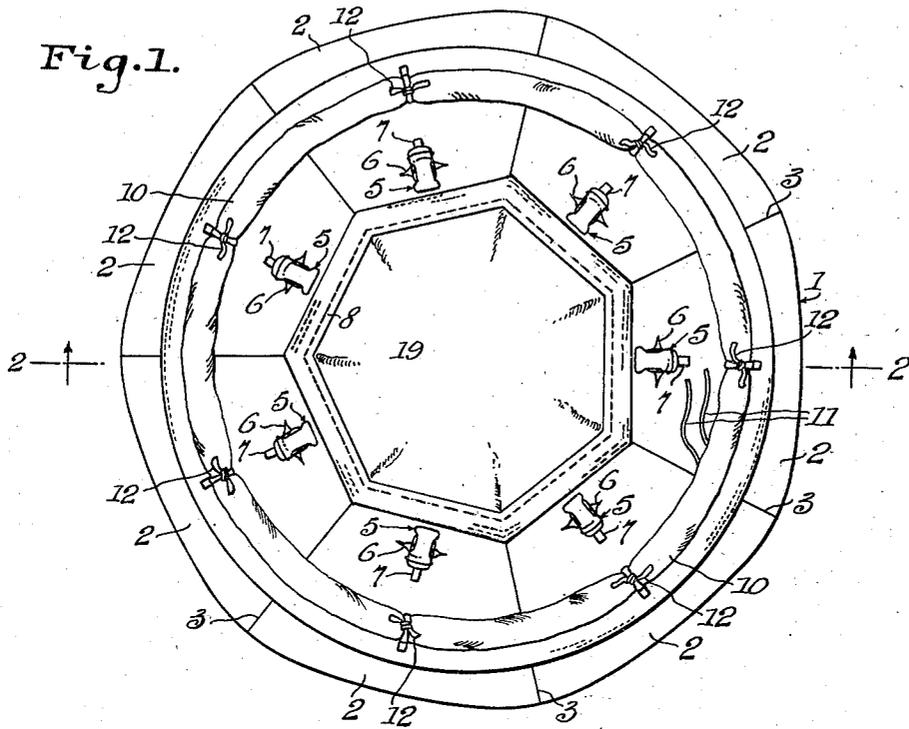
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C. H. KEARNY

2,407,666

BOAT

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Inventor

Cresson H. Kearny  
Francis H. Vanderwerker and  
Joseph H. Escoe  
Attorneys

# UNITED STATES PATENT OFFICE

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BOAT

Cresson H. Kearny, United States Army,  
Fort Clayton, C. Z.

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The invention described herein may be manufactured and used by or for the Government for governmental purposes, without payment to me of any royalty thereon.

This invention relates generally to boats, more particularly it is directed to boats made of flexible air-tight materials and adapted to be inflated for use, and which may be deflated to permit the boats to be folded and stored in a small space.

One of the objects of the invention is to provide an inflatable boat, which utilizes trapped water as a stabilizing means and including independent compartments forming a housing for inflatable members, with means for readily inflating the members.

Another object of the invention is to provide a boat including an inflatable body member, having an opening therein, compartments provided in said body member, inflatable members provided in said compartments, a flap secured to said body member, and an inner lining secured directly to said flap and adapted to fit in said opening in the body member.

Another object of the invention is to provide a flexible false bottom for an inflatable boat, said false bottom stitched across the boat bottom and containing apertures for ingress and egress of water for ballast whereby the flexible false bottom becomes taut upon inflation of said boat.

Another object of the invention is to provide an inflatable boat of such construction that it offers the minimum resistance to passage through water.

Another object of the invention is to provide an inflatable boat including means whereby the force exerted by the downward pressure produced by the weight of the occupant or occupants of the boat is balanced so as to cause little, if any, torque to be exerted on the walls of the boat.

A still further object of the invention is to provide an inflatable boat including an impermeable, translucent spray screen which may be quickly placed in operative position for trapping solar energy, catching rain water for drinking purposes, also for protecting passengers and cargo from the elements, and readily placed in an inoperative position when not in use.

These and other objects and advantages of my invention will become apparent upon a consideration of the following detailed description when taken in conjunction with the accompanying drawing in which:

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Fig. 1 is a plan view of my boat with the spray screen in its stored position; and

Fig. 2 is a cross-sectional view along the line 2—2 of Fig. 1 with the spray screen in an operative position.

Referring to the drawing, it will be seen that there is provided a housing or body member 1 which, in the present case, is illustrated as having an approximately toroidal shape but may be rectangular or have any suitable type of formation and is formed of a plurality of compartments or segments 2. The walls of the body member 1 may be made of any suitable material and need not be waterproof. The compartments 2 are sewed together and provided with cloth partitions 3 sewed to the inner side of the seam line between the compartments 2.

Each air compartment 2 contains a pneumatic member such as a bladder or other suitable flexible air container 4, made preferably of Vynalite material and having all-round dimensions exceeding that of the compartment adapted to contain it, thereby eliminating practically all stresses on the inflated member. In this connection it is to be understood that the bladders may be easily and quickly removed and/or replaced, even while the boat is in actual service. Any suitable type of self-closing valves 5, preferably having a wide aperture and operated at low pressure by the breath or suitable pump are provided for inflating the individual bladders 4, and when the bladders are inflated they conform closely to the shape of the compartments 2. Within each compartment 2 is a slit-like opening 6 through which the throats of the valves 5 extend. These slits 6 extend from the upper sides of the compartments 2 to the inside of the bladders 4. To facilitate the inserting of the throats of the valves 5 through the slits 6, the slits may be cut over-size and provided with tie tapes 7 to secure the valves 5 after they are in position.

A lining 19 in which the occupant or occupants of the boat may sit is stitched directly to a flap 8 of the fabric forming the housing 1 for the bladder members 4. This lining 19, which is preferably made of one or more sheets, of which one or more may be waterproof, need be only a flat seamless sheet with puckers around the edges in order to give a cup-like form to this stitched-in, suspended lining. In order that the occupant or occupants of the boat may remain dry, only this lining 19 need be waterproof; all the rest of the boat can be constructed of permeable fabric pieces connected by ordinary stitching without waterproofing.

A false bottom 15, containing apertures or holes 20 is provided, which apertures 20 are adapted to permit the ingress and egress of water used for water ballast. The false bottom 15 is stitched to the flap 9 so as to be taut across the bottom of the bladder housing 1 when the boat is inflated. Little, if any, torque is exerted on the walls of the boat when the occupant or load exerts downward pressure, since the lining 19 is so adjusted that, when the occupant or occupants of the boat or load exerts pressure, the false bottom is also simultaneously depressed.

As can readily be seen from a consideration of Fig. 2, the lining 19 on the right tends to rotate the bladder housing 1 on the right counter-clockwise, whereas the pressure on the false bottom 15 tends to rotate the bladder housing 1 on the right clockwise, and on the left the lining 19 and false bottom 15 tends to rotate the housing 1 in reverse directions. As a result of this balancing of stresses, the housing 1 is not rotated or twisted when a load is in the boat, but is merely forced inwardly to a smaller size. This forcing inward is easily resisted by the pressure of air or other gases in the bladders 4.

The water which enters the small apertures 20 will become temporarily entrapped as regards sudden movements tending to tip or to overturn the boat and, together with the air space 21, will act to stabilize the boat in the manner described in the copending application Serial No. 416,329, filed October 24, 1941, now Patent No. 2,391,906, dated January 1, 1946. However, the water ballast will cause no decrease in the load carrying ability of the boat, since this water is free to escape slowly through the small apertures 20 after the load is decreased or shifted.

If increased rigidity for the bottom 15 or for the whole boat is desired, a light weight flooring made of plywood or similar substance (not shown) may be placed on the upper side of the lining bottom 19 if desired.

In order to protect the occupant or load of the boat against cold, spray, waves, rain, wind and other inconveniences or danger, and in order to provide a closed space around the occupant or load, which an occupant can heat with his body heat and breath, a spray-screen or shield 10 of lightweight impermeable material is connected by stitching, directly to the fabric of the bladder housing.

This spray-screen or shield 10 which is of a substantially cylindrical or tubular form is attached to the housing 1 and is closable by means of a drawstring 11, so that it can be closed completely over the occupant's head and forming a conical shaped structure or shelter over and around said boat. Furthermore, this spray-screen 10, especially if made of translucent ma-

terial, traps solar energy in the closed space around the occupant after the manner of a greenhouse or closed tent. Furthermore, the spray-screen 10 serves admirably to catch rain and thus provide the occupant with drinking water whenever rain falls. While the boat is being inflated, or at other times when the spray-screen is not wanted, the spray-screen is rolled up and tied down to the bladder housing by means of tie strings 12.

It is apparent that by providing a jacket or suit into which the boat may be placed, and inflating one or more of the bladders 4 wholly or partially in order to give buoyancy to the wearer of the jacket, a life jacket results which, when the wearer desires, may be easily and rapidly converted to a boat.

While I have described my invention with particularity, it is to be understood that I do not wish to be limited to the particular details and assemblies illustrated since various modifications within the spirit of the invention will suggest themselves to those skilled in the art.

Having described my invention, what I claim as new and wish to secure by Letters Patent is:

1. A boat comprising a body member including a central opening and adapted to be inflated, an outer flexible bottom member attached to a lower portion of said body member and arranged to become taut upon the inflation of said body member and an inner member adapted to carry a load and attached to an upper inner side of said body member, said inner member extending into said central opening in said body member and engaging said bottom member whereby the torque produced by a load on said outer bottom member tending to twist the body member in one direction is balanced by the torque produced by the load upon the inner member tending to twist the body member in an opposite direction.

2. An inflatable boat including a plurality of inflatable pneumatic elements individually housed in a multi-compartment housing, said housing having an opening therein, a plurality of valve members mounted through said housing for inflating said pneumatic elements, a flexible bottom member attached to said housing and adapted to become taut when said pneumatic elements are inflated and a load inclosure member attached to said housing member and extending into the opening in said housing member into engagement with the bottom member whereby the torque in one direction produced by the action of a load upon said bottom member is balanced by the torque in another direction produced by the action of the load upon said load inclosure member.

CRESSON H. KEARNY.