Nov. 27, 1934. F. G. MANSON 1,981,871

INFLATABLE FLEXIBLE BOAT

Filed May 19, 1932

FIG. 1

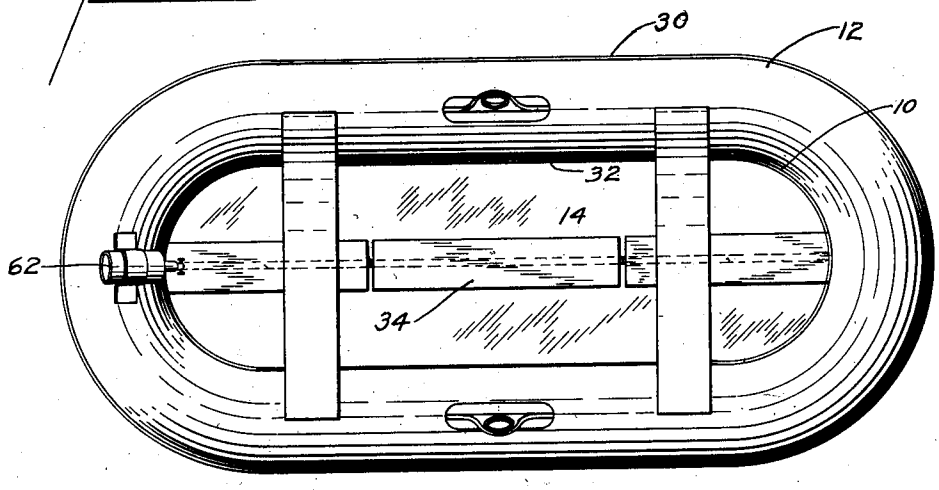


FIG. 2

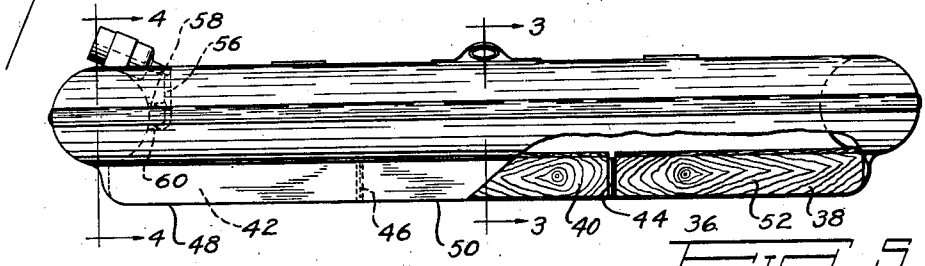


FIG. 3

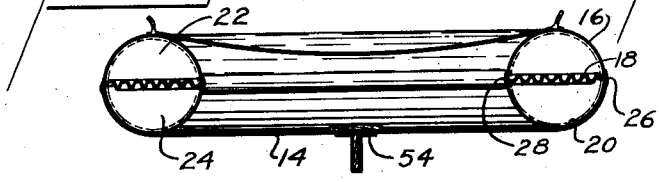


FIG. 5

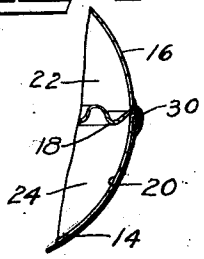
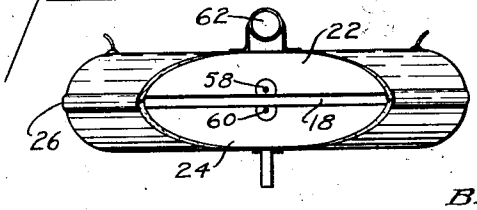


FIG. 4



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INFLATABLE FLEXIBLE BOAT

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3 Claims. (Cl. 9—2)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

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

My invention relates to inflatable devices and is particularly useful in connection with folding boats, rafts, life preservers and the like in which a plurality of independent gas compartments, that are simultaneously inflated, serve as a supporting medium therefor.

Heretofore in devices of this character the gas compartments were so designed that improper functioning or failure of the inflating means connected to any one of the compartments, when inflating under pressure, would cause the remaining compartment or compartments to take the full charge, which if not checked would result in a rupture thereof due to excessive pressure. Furthermore, failure to inflate any one of said compartments, or deflection thereof by reason of rupture, rendered the device unstable, insufficiently buoyant and therefore practically useless. It is, therefore, the primary purpose of my invention to provide an inflatable device of this character having certain novel features of construction such that it is possible for all but one of the compartments to be deflated and still provide a normal internal inflatable area in that one substantially equal to that of all the compartments.

It is a further object of my invention to provide in a device of this character a novel arrangement of the gas compartment so that any one of these compartments when properly inflated will support the load and maintain the device stable.

A further object of my invention is to provide in a device of this character a novel means whereby maneuverability in water is increased and the tendency of turning when rowing is decreased.

My invention consists in features of novelty hereinafter fully described and claimed.

For purposes of illustration I show my invention as applied to a folding inflatable boat, reference being had to the following description and accompanying drawing, in which:

Fig. 1 is a top plan view of a collapsible boat embodying my invention;

Fig. 2 is a side elevational view of Fig. 1;

Fig. 3 is a cross-sectional view taken on the line 3—3 of Fig. 2 showing the configuration of the common wall between the compartments in full line when each compartment is partially inflated and in dotted outline when one or the other of the compartments is fully inflated;

Fig. 4 is a cross-sectional view taken on the line 4—4 of Fig. 2; and

Fig. 5 is a fractional detail view.

The numeral 10 designates a collapsible or folding boat that is made from a suitable waterproof material and also one that is capable of retaining air or other suitable gas without undue loss or seepage over a desired length of time. In the present instance I prefer the use of a fabric such as duck backed with a layer of rubber, although flexible rubber sheeting or cloth impregnated with rubber may be used. This boat is generally of oblong rectangular form in plan and includes an inflatable part 12 of frame-like form that is substantially cylindrical in cross-section and a flexible bottom 14. The inflatable part is preferably formed of three endless strips of suitable rubberized material, having the same form and size. These three strips or pieces 16, 18 and 20 are superposed one above the other with the rubber surfaces of the bottom and top pieces constituting the outer layers, presenting inwardly and the rubber surface of the intermediate layer may adjoin the rubber surface of either the top or bottom layer, it being readily obvious that in vulcanizing the three layers along the inner and outer edges a leak-proof bond of the three layers along these edges will be obtained and two independent, non-communicating compartments 22 and 24, having the layer 18 as a common partition so that when these compartments are inflated the top and bottom layers 16 and 20 respectively will assume a substantially cylindrical form in cross-section and the intermediate or common layer 18 will be more or less crinkled and assume a position depending upon the difference in the pressures on opposed sides thereof. If the pressure is equal on opposite sides the intermediate layer 18 will assume the position shown in Fig. 3; if the pressure of the air or gas is greater on the one side than on the other then it will be distended towards the side of lower pressure. If, however, the pressure of the gas is on one side or the other and of sufficient quantity then the intermediate compartment will be fully distended and assume a semi-cylindrical form as shown in dot and dash outline, or dotted outline as shown in Fig. 3.

The flexible bottom 14 is preferably formed from the same kind of material used in the construction of the pneumatic frame 12 and is of substantially the same over-all dimensions as the strips forming said frame so as to enclose the space bounded by the frame and extend on all sides to the central horizontal plane of the frame. The bottom may be secured to the inflatable part by superposing one above the other and vulcanizing or cementing the same together at their

peripheral edge portions and along corresponding areas to provide sealed joint along the longitudinal perimeter of the boat. A finished appearance is given to the joints 26 and 28 by folding the jointed inner and outer edges of the strips 16, 18 and 20 downwardly and covering the same by vulcanizing thereto strips 30 and 32 made of rubberized material.

The bottom of the boat is provided with a center keel 34 preferably extending substantially the length of the boat and serving to stabilize the same laterally as well as to improve the steering qualities. In the construction of this keel there is provided a flexible part in the form of a narrow trough 36 and bracing members 38, 40 and 42 therefor. The tube is made from flexible waterproof material and is provided with a plurality of partitions 44 and 46 to form pockets 48, 50 and 52 for the reception of the bracing or stiffening members 38, 40 and 42 respectively. This tube is also provided with a lateral flange 54 extending entirely around the upper portion thereof and is secured to the bottom of the boat by vulcanizing or cementing the flange to the lower surface of the bottom. The stiffening members are made of plywood and preferably are T-shaped in form. In order that the T-shaped members may be readily placed in and removed from these pockets the bottom of the boat is provided with central longitudinal slits corresponding in number to the pockets. The arrangement of the T member is such that the vertical portion thereof is disposed in the pockets and the horizontal portion thereof lies against the upper surface of the bottom.

Provision is made for inflating each compartment independently and the arrangement of the inflating means and the compartments is preferably such that in inflating either or both of said compartments the common layer will be capable of having for a given gas pressure the same configuration for every cross-section of the inflatable part. To this end a manifold 56 having check valve inflating tubes 58 and 60 is provided for communicating with compartments 22 and 24 respectively. Tube 58 is connected to layer 16 and tube 60 to layer 20. Both tubes have their inwardly presenting ends substantially flush with the inner surface of the layers 16 and 20 respectively to permit unobstructed distension of the partition and their outwardly extending ends are jointed together to form a common inlet with which a gas supply container 62 is in communication and is readily detachably connected thereto in the manner well known in the art.

It will, of course, be understood that if it is desired to have more than two compartments in the inflatable part, that it will only be necessary to multiply the number of layers in accordance with the number of compartments desired. It will be further understood that various changes and modifications may be made in my invention by those skilled in the art without departing from the spirit thereof and it is expressly understood that my invention is not to be limited except by the appended claims.

I claim:

1. In a folding boat comprising, a flexible bottom, an inflatable part connected to the bottom and serving when inflated as the supporting medium therefor, and a keel associated with said bottom for stabilizing said boat, said keel comprising a flexible, longitudinal pocket and a complemental member adapted to be received in said pocket for shaping said pocket.

2. An inflatable boat comprising, a flexible bottom, and an inflatable part connected to the bottom and serving when inflated as a supporting medium therefor, said bottom comprising a flexible longitudinal pocket and a complementary member within said pocket for shaping the same into a keel.

3. An inflatable boat comprising, a flexible bottom, and an inflatable part connected to the bottom and serving when inflated as a supporting medium therefor, said bottom comprising a flexible longitudinal pocket and a T-shaped member associated with said pocket and with the side portions of the bottom adjacent said pocket to provide a keel for said boat.

FRANK G. MANSON.