# United States Patent [19]

**Fortin**

[11] **3,739,410**

[45] **June 19, 1973**


[54] **COLLAPSIBLE BOAT WITH V-SHAPED PNEUMATIC FLOAT**


[76] Inventor: **Bernard Marie Charles Fortin,** 16, rue Dinanderie, Rouen, France



[22] Filed: **Dec. 23, 1970**

[21] Appl. No.: **100,927**

[30] **Foreign Application Priority Data**

Jan. 20, 1970 France ..... 7001841

[52] **U.S. Cl.** ..... **9/2 A,** 114/61

[51] **Int. Cl.** ..... **B63b 7/08**

[58] **Field of Search** ..... 9/2 A, 2 C, 2 S, 9/2 R, 1 R; 114/61



[56] **References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 3,416,171 | 12/1968 | Hennebutte | 9/2 A |
| 3,473,502 | 10/1969 | Wittkamp | 114/61 X |
| 3,608,112 | 9/1971 | Irgens | 9/2 A |



*Primary Examiner*—Milton Buchler
*Assistant Examiner*—Carl A. Rutledge
*Attorney*—Wolfe, Hubbard, Leydig, Voit & Osann



[57] **ABSTRACT**

This invention relates to a boat intended mainly for sail navigation, comprising a v-shaped pneumatic float forming part of a collapsible structure comprising a forward and a stern transversal board resting on the float and which are linked together by at least one longitudinal beam, the forward tip of the float also being connected to said structure by bars positioned in accordance with the edges of a pyramid having its summit fixed on the forward tip of the float and its base fixed to the structure.


**10 Claims, 12 Drawing Figures**

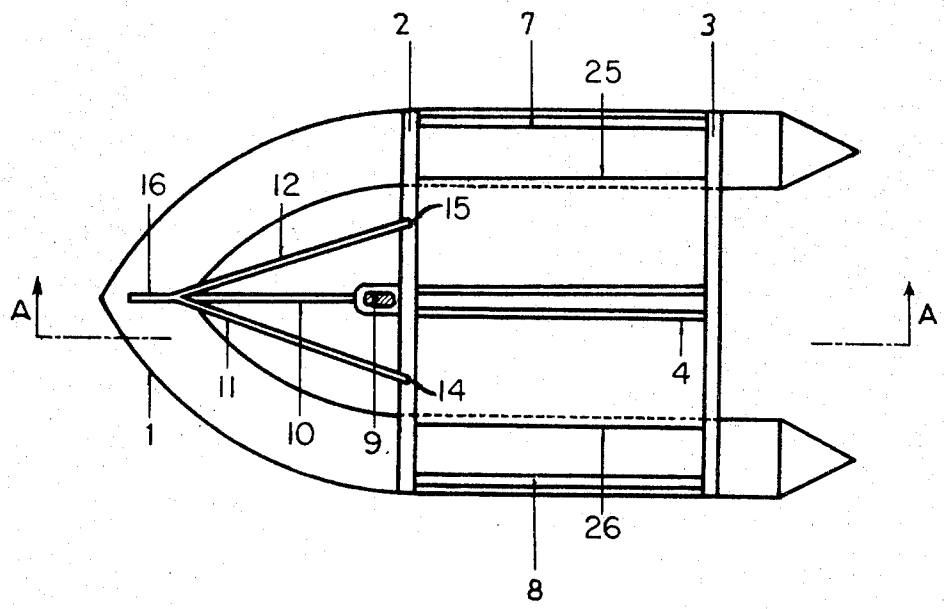


Fig.1

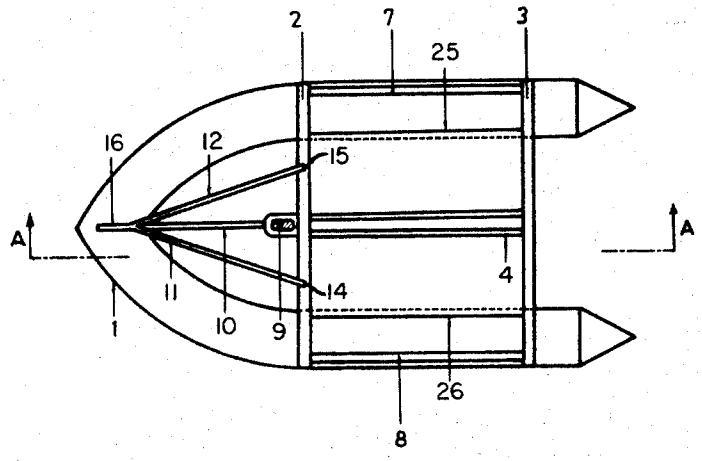



Fig.2

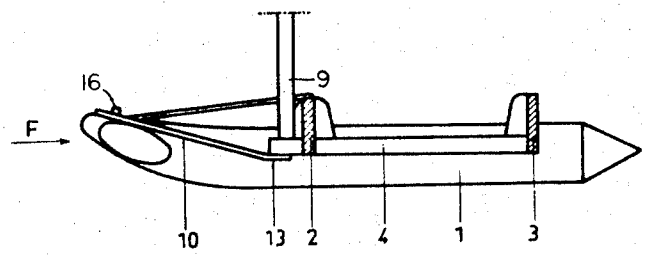



Fig.3

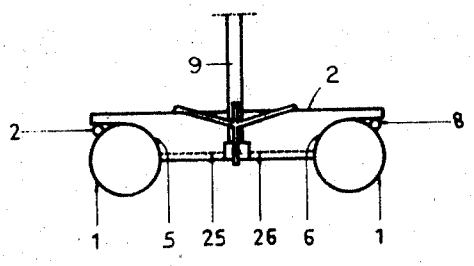


Fig.4

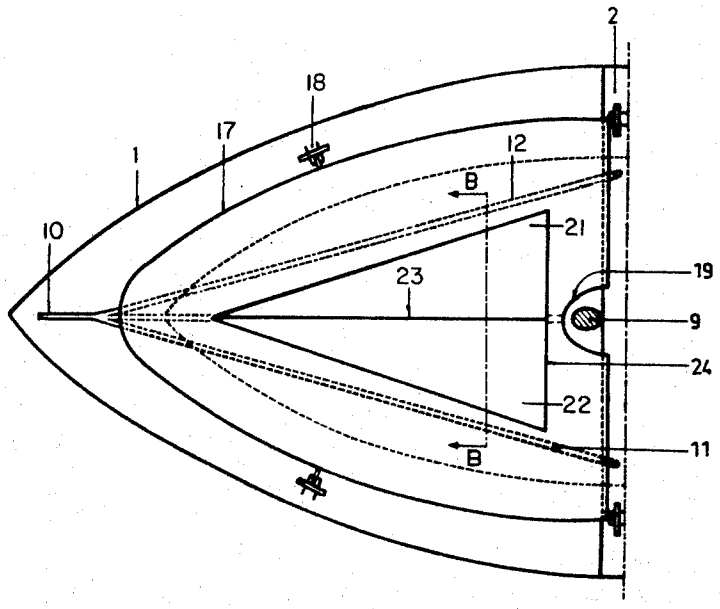



Fig.5

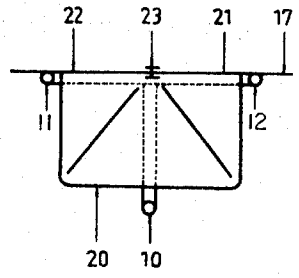



Fig.6

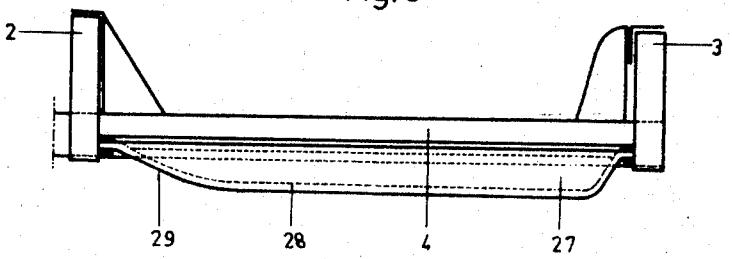


Fig. 7

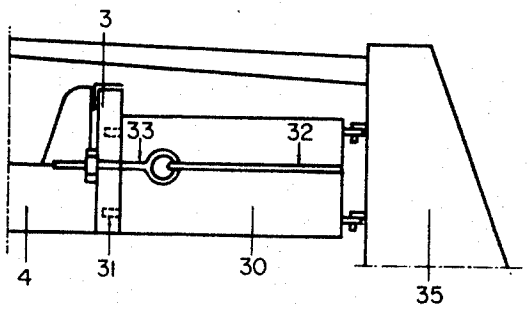



Fig. 8

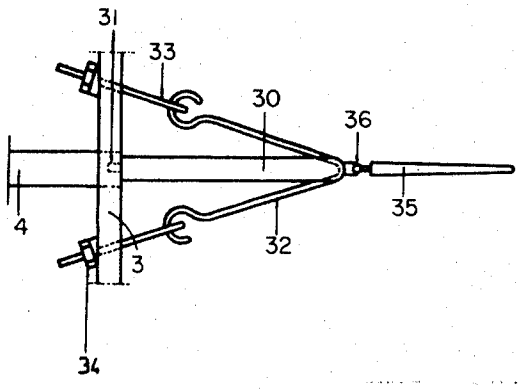


Fig.9

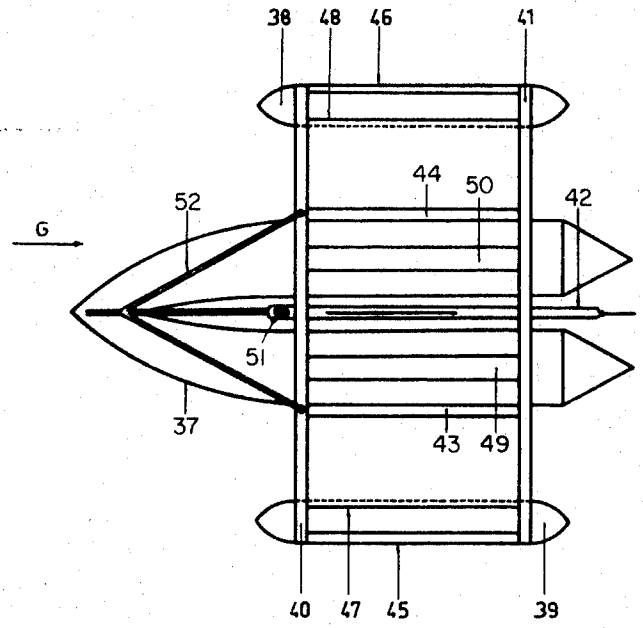

38
48
46
41
44
50
42
52
G
51
37
43
49
40
47
45
39

Fig.10

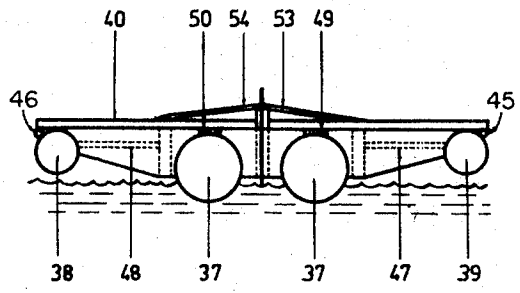

40
50
54
53
49
46
45
38
48
37
37
47
39

Fig.11

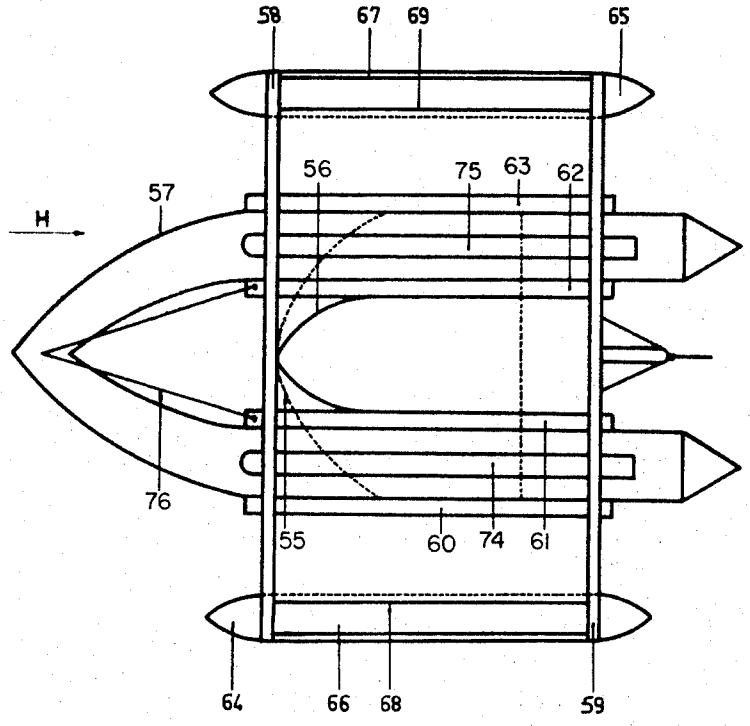
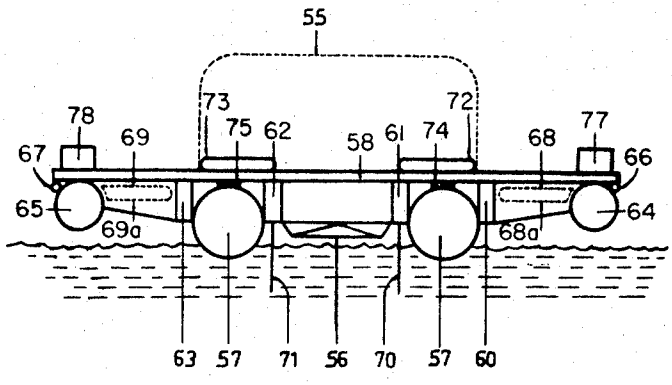

58
67
69
65
56
75
63
62
57
H
76
55
60
74
61
64
66
68
59

Fig.12


55
73
72
78
69
75
62
58
61
74
68
77
67
66
65
64
69a
68a
63
57
71
56
70
57
60

# COLLAPSIBLE BOAT WITH V-SHAPED PNEUMATIC FLOAT

This invention relates to a collapsible boat with V-shaped pneumatic float intended mainly, but not exclusively, for sail navigation.

Boats having a V- or U-shaped pneumatic float are already known; these are ordinary inflatable boats. Boats, such as catamarans, having two separate pneumatic floats connected by a suitable structure, are also known. In comparison with these known boats, the use of a V- or U-shaped pneumatic float, in accordance with the invention, to manufacture boats similar to catamarans provides a certain number of advantages which will be seen from the description which follows.

In accordance with the invention, the boat comprises: a V-shaped pneumatic float forming part of a collapsible structure comprising a forward and a stern transversal board resting on the float and which are linked together by at least one longitudinal beam, the forward tip of the float also being connected to said structure by bars positioned in accordance with the edges of a pyramid having its summit fixed on the forward tip of the float and its base fixed to the structure.

The invention also comprises certain other arrangements mentioned hereinafter and used at the same time as the main arrangement set forth hereinabove.

The invention aims more particularly at certain methods of applying and producing these arrangements; even more particularly, and by virtue of new industrial products, it aims at boats of the type in question so improved, as well as the components and tools peculiar to their creation.

Simply as an example, and to facilitate understanding of the invention, a description of particular embodiments of the invention are given below, represented schematically and unrestrictively in the accompanying drawings, in which:

FIG. 1 is a plan view of a boat manufactured in accordance with the invention;

FIG. 2 is a section view along vertical plan A—A in FIG. 1;

FIG. 3 is a view of this boat in the direction of arrow F in FIG. 2, with the forward part of the float removed;

FIG. 4 is a plan view of a deck of flexible material to equip the boat;

FIG. 5 is a section view along vertical plan B—B in FIG. 4;

FIG. 6 shows, in side elevation, the boat's deck planking;

FIGS. 7 and 8 represent, respectively, elevation and plan views of the boat's rudder assembly;

FIG. 9 is a plan view of a variation of a boat in acordance with the invention;

FIG. 10 is a view of this variation in the direction of arrow G in FIG. 9, with the forward part of the V-shaped float removed;

FIG. 11 is a plan view of another variation of a boat in accordance with the invention; and

FIG. 12 is a view of this other variation in the direction of arrow H in FIG. 11, with the forward part of the V-shaped float removed.

If it is proposed to manufacture a boat in accordance with the invention and, more particularly, in accordance with what appear to be the most suitable method of application and methods of manufacturing its various parts, the following, or a similar, method is followed.



The boat chosen as an example is of the catamaran type and is made up of a V-shaped pneumatic float **1** forming part of a collapsible structure comprising a forward transversal board **2**, a stern transversal board **3**, and a longitudinal beam **4**. Boards **2** and **3** rest, by means of their suitably-hollowed out ends **5, 6**, on the inflated arms of float **1** to which they are fixed, preferably by strops. Boards **2** and **3** are connected by longitudinal beam **4**, to which they are fixed by means of removable joints. In addition, the ends of boards **2** and **3** are connected by collapsible longitudinal bars **7** and **8**, parallel to beam **4**, resting on the floats and serving to hold fast the bracing. The mast **9** is placed in front of board **2**, with its base housed in longitudinal beam **4**.

In accordance with the invention, the forward tip of float **1** is connected to the boat structure by bars **10, 11, 12**, positioned in accordance with the edges of a pyramid having its summit fixed on the forward tip of float **1** and its base fixed to the structure. In this example, the said pyramid is triangular, lower bar **10** being fixed at **13** to the front of beam **4** and the two upper bars **11** and **12** being fixed, at **14** and **15** respectively, on the upper part of forward board **2**. The relatively large distance between fixing points **13, 14** and **15** in relation to each other makes the pyramid of bars **10, 11** and **12** and, consequently, the fixing of the forward part of float **1**, very rigid. This pyramid of bars also serves to obtain, at **16**, a rigid fixing for the forward stay of mast **9**.

The pyramid of bars **10, 11, 12** may also be used to support a shelter-deck **17** of flexible material fixed, by means of toggles and loops, such as **18**, on the forward part of float **1** and on the forward board **2**. The deck **17** is notched at **19** to allow for mast **9**. A pyramid-shaped bag **20** is fixed to advantage under deck **17**, this bag being housed inside the pyramid of bars. Bag **20** opens and closes on a level with deck **17** by means of turned-down pieces **21, 22** fitted with zips **23, 24**. This bag **20** serves as a locker for sails or other objects.

The boat is fitted with a deck made up of two half-decks **25, 26**, held in position by central beam **4** and forward board **2** and rear board **3**. The half-decks may be flat, as illustrated at **25** and **26**, but in accordance with one characteristic of the invention, they may also form a dish **27** whose bottom **28** is on a lower level than the bottom of the beam, this bottom **28** rising towards the front **29**. One advantage of this arrangement is that these dish-shaped half-decks can, if necessary, provide a certain amount of buoyancy if float **1** should be partially deflated.

The strops fixing the structure to the floats pass through bights fixed to the half-decks to ensure that the whole is completely attached.

As can be seen in FIG. 1, the back of stern board **3** is left clear, to allow for the fixing of an outboard motor in the middle of it. If the boat is to be fitted with a rudder, a part **30** is placed at the back of board **3**, in the extension of beam **4**, centered by pins **31** and held in position by hook-stirrups **32** fitting into the eyes of stay-tighteners **33**, whose threaded ends receive nuts **34** resting against the inside wall of board **3**. The rudder **35** articulates at **36** on extension piece **30**.

The central beam also serves as a tail fin support. In preference, this tail fin pivots.

As a variation, the boat in accordance with the invention may have a V-shaped pneumatic float **37** whose inflated arms are very close together, and two lateral pneumatic floats **38** and **39**. In this way, a boat similar to a trimaran is produced, with one central and two lateral floats. However, the boat so produced has various advantages over the trimaran, which is supported asymmetrically by its central float and one or other of its lateral floats, and thus always has a list. Thanks to its V-shaped float **37**, the boat in accordance with the invention is supported symmetrically, lateral floats **38** and **39** intervening only when the boat has a lateral list, in order to ensure safety. Moreover, for equal transversal stability, this arrangement allows the width of the boat to be reduced in relation to the trimaran.

In this variation, the boat structure comprises forward transversal board **40** and stern transversal board **41** connected by three longitudinal beams, central **42** and lateral **43, 44**, and two longitudinal bars **45, 46**. This structure also comprises decks **47, 48**, and beams **49, 50**, spreading the load over the inflated arms of float **37** and ensuring fixing of these inflated arms to the structure.

The boat comprises a mast **51** and a pyramid of bars **52** similar to that already described. The longitudinal beams and the boards are assembled by means of vertical bolts. Panels **53, 54**, form a deck covering the upper part of the float.

As a variation, the boat in accordance with the invention may include a cabin **55** whose dish-shaped planking **56** is positioned between the inflated arms of V-shaped float **57**. This arrangement allows the utilizable height of the cabin to be augmented, and increases security, particularly when the boat is overloaded.

The structure comprises the forward **58** and stern **59** transversal boards connected by four longitudinal beams **60, 61, 62, 63**, arranged in pairs on either side of the inflated arms of float **57**. The lateral pneumatic floats **64, 65** are fixed at the ends of boards **58** and **59**. The structure is completed by longitudinal bars **66, 67** and by outer planking **68, 69**.

The boat may be fitted with one or two tripod masts. Pivoting tail fins or drop keels **70,71** are housed in beams **61, 62**. Cabin bunks **72, 73** are placed above the inflated arms of the float and distribution beams **74, 75**.

A four-bar pyramid **76** similar to those already described is positioned at the front of the boat.

Above each lateral float **64, 65**, is placed a bench **77, 78** whose hollow, watertight interior forms a ballast-tank. These ballast-tanks are filled by means of a pump placed in the cockpit and pipes which also shift ballast from one tank to the other to balance the list. Reservoirs formed by hollow planking **68a, 69a** may also be used as ballast-tanks.

It goes without saying that the invention is not limited to the application methods and embodiments represented and described hereinabove; it also covers all variations of them.

What is claimed is:

**1.** A boat intended mainly for sail navigation and comprising a pneumatic float defined by inflatable tubes joined to one another to form the point of a V constituting the bow of the boat, said boat being characterized by a collapsible structure fixed to and resting on said inflatable tubes, said collapsible structure comprising a stern transversal board and a forward transversal board, at least one longitudinal beam joining said boards, said collapsible structure being positioned at a level higher than that of the water line of said boat, and stiffening bars linking the point of the V of said float to said forward transversal board, said stiffening bars defining a pyramid having its summit fixed to said V-shaped point of said float.

**2.** A boat as defined in claim **1** in which said stiffening bars define a triangular pyramid and comprise one lower bar fixed to said longitudinal beam and two upper bars fixed to said forward transversal board, said longitudinal beam being provided with a drop keel well.

**3.** A boat as defined in claim **1** further including a dish-shaped deck rising in the direction of said V-shaped point.

**4.** A boat as defined in claim **3** in which said deck constitutes the deck of a cabin, said boat further comprising two lateral pneumatic floats, and four longitudinal beams joining said forward and stern transversal boards.

**5.** A boat as defined in claim **4** in which two of said longitudinal beams each pivotally receive a drop keel.

**6.** A boat as defined in claim **4** further including benches each having a hollow and watertight interior and defining a ballast tank, at least one bench being placed above each of said lateral floats.

**7.** A boat as defined in claim **4** further including hollow decks constituting reservoirs and used as ballast tanks, said hollow decks being fixed between said inflatable tubes and said lateral floats.

**8.** A boat as defined in claim **1** in which a bridge of flexible material is fixed to said float and to Said forward transversal board, said bridge being provided with a bag.

**9.** A boat intended mainly for sail navigation and comprising a pneumatic float defined by inflatable tubes linked to one another to form a V-shaped point and constituting the bow of the boat, said boat being characterized by a collapsible structure fixed to and resting on said inflatable tubes, said collapsible structure comprising a stern transversal board and a forward transversal board, at least one central longitudinal beam joining said boards and provided with a drop keel well, said collapsible structure being located on a level higher than that of the water line of the boat, stiffening bars linking the point of the V of said float to said forward transversal board, said stiffening boards defining a pyramid having a summit fixed to the V-shaped point of said float, and a rudder pivotally mounted on a collapsible extension of said central longitudinal beam beyond the rear of said stern transversal board.

**10.** A boat intended mainly for sail navigation and comprising a pneumatic float defined by two inflatable tubes linked to one another to form a V-shaped point and constituting the bow of the boat, said boat being characterized in that said two tubes are placed close to one another and in that said boat further comprises two lateral pneumatic floats, a collapsible structure fixed to and resting on said two tubes as well as on said two lateral floats, said collapsible structure comprising a stern transversal board and a forward transversal board, said boards being joined by at least one central longitudinal beam and by two lateral longitudinal beams, and stiffening bars connecting the V-shaped point of the float to said forward transversal board, said stiffening bars defining a pyramid having its summit fixed to the V-shaped point of said float.

* * * * *