Dec. 7, 1965 P. L. ALLEGRETTI 3,221,697

BOATS WITH TWO OR MORE HULLS

Filed Aug. 1, 1963 3 Sheets-Sheet 1

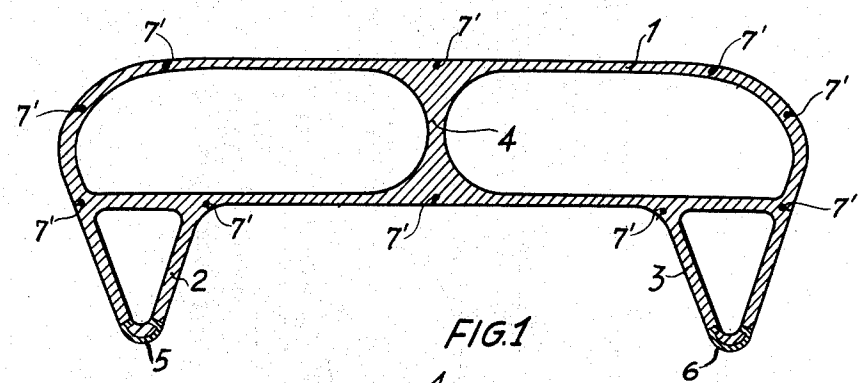


FIG.1

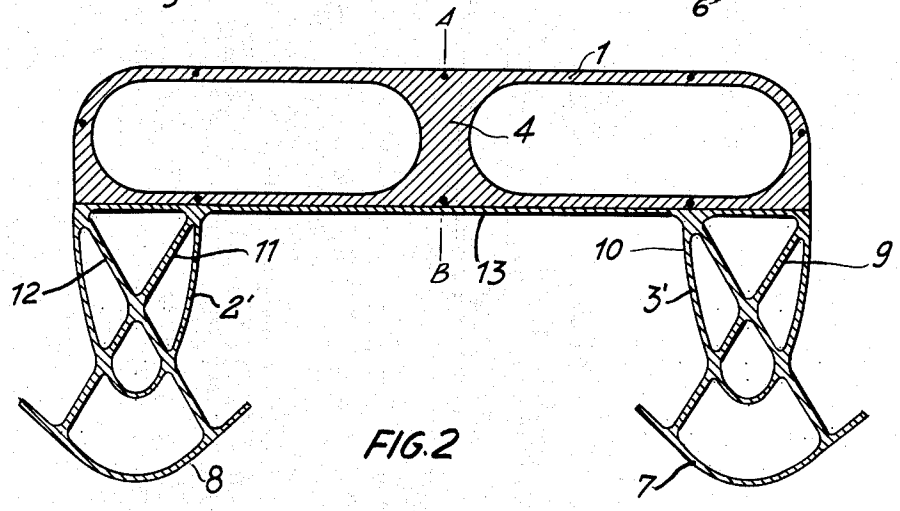


FIG.2

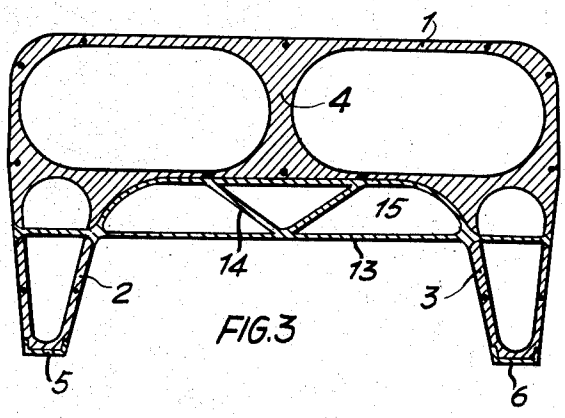


FIG.3

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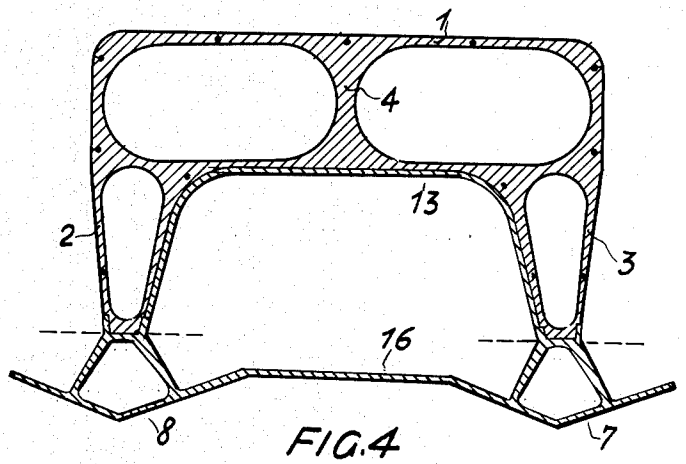


FIG.4

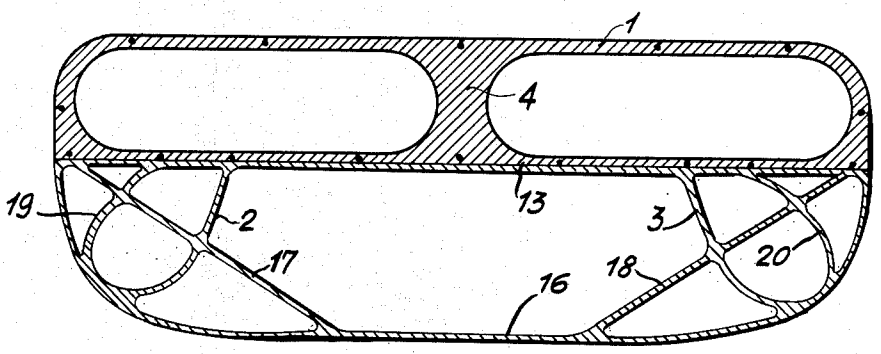


FIG.5

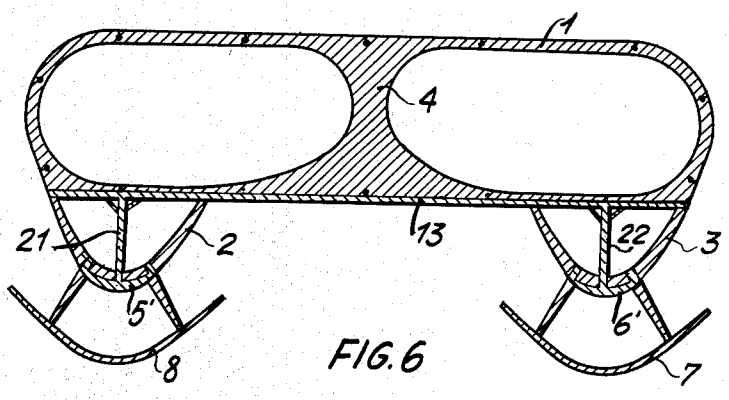


FIG.6

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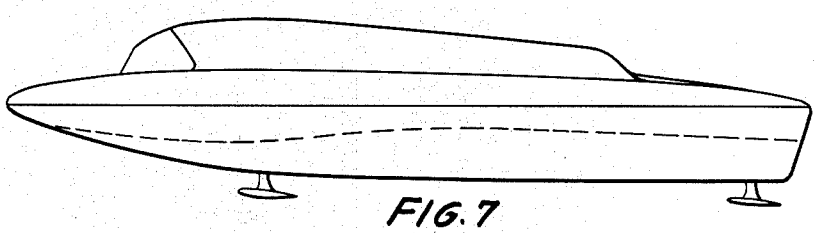


FIG. 7

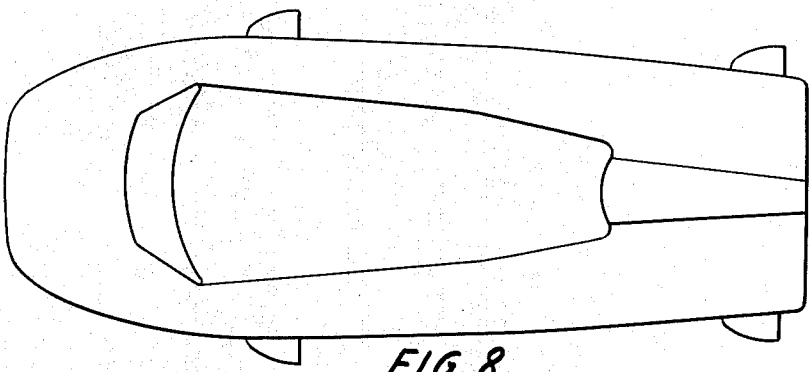


FIG. 8

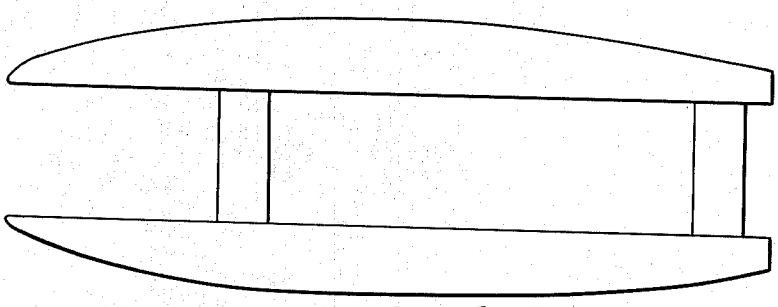


FIG. 9

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United States Patent Office 3,221,697
Patented Dec. 7, 1965

3,221,697

BOATS WITH TWO OR MORE HULLS

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3 Claims. (Cl. 114—66.5)

There are known boats having two or more hulls which are interconnected and are variably called: Catamaran, Trimaran, etc.

Such boats, whether provided or not with upholding fins, wave detecting skates and the like, offer obvious advantages but are subject to stresses which cannot be neglected and which are particularly significant in the zone of the longitudinal symmetry plane of said boats.

It is an object of the present invention to provide a boat with two or more hulls, of the type above mentioned, which is reinforced to make the boat particularly resistant to lengthwise stresses and above all to crosswise stresses, that occur in the zone along the longitudinal symmetry plane of the boat.

According to the preferred embodiment, said structure comprises at least a vertical reinforcing partition or septum located in the symmetry plane zone (general embodiment).

According to another embodiment, the boat is provided with an extensive framework in addition to the reinforcing structures described above.

According to another form of embodiment, the boat has at least one additional reinforcing structure interconnecting two or more hulls, with reinforcing structures formed on two separate fins to strengthen the structure of the boat and achieve the object mentioned above.

According to another form of embodiment, the boat has at least one reinforcing structure connecting each hull or all hulls to other parts of boat which permits the extension and the enlarging of the deck between hulls above that which is normally possible.

According to another form of embodiment, the boat has at least one additional reinforcing structure connecting parts of the boat different from the hulls and also connecting separate fins located along the length of the hulls.

According to another form of embodiment, the boat has at least one additional reinforcing structure connecting structures forming the frame, variously extending between adjacent hulls, to obtain the above mentioned object and to increase the rigidness together with the elasticity of the boat.

According to another form of embodiment, the boat has at least one additional reinforcing structure connecting variously heterogeneous structures, including also the separate fins located along the longitudinal portions of the hulls.

In all the above mentioned embodiments, vertical partitions (septums), additional reinforcing structures and frame structures can be included in the same boat. To clarify the idea of the invention, the enclosed drawings show some non-limiting, preferred forms of embodiments of the boat.

FIG. 1 is a cross-sectional view of a two-hull boat, having a reinforcing partition (septum) located in the zone of the symmetry plane of the boat and a reinforcing to the lower portions of hulls.

FIG. 2 is a cross sectional view similar to FIG. 1 showing a different embodiment wherein the boat is reinforced additionally with a structure which connects the hulls immediately below the body of the boat, and includes separated fins, which in turn are connected to the central body with cross-reinforcing structures, the cross section being taken through the fins.

FIG. 3 is a view similar to FIG. 2 showing another embodiment connecting the two hulls.

FIG. 4 is a view similar to FIG. 2 of still another embodiment which shows a lower connection between fins.

FIG. 5 is a view similar to FIG. 2 of still another embodiment which shows a structure where the connection between hulls is obtained by curvilinear members which asure a lower structural weight.

FIG. 6 is a view similar to FIG. 2 of still another embodiment which shows a further change, in which the boat has a reinforcing structure for the hulls located immediately under the body of the boat, the two hulls being provided with separated supporting fins.

FIGS. 7, 8 and 9 are respectively the lateral and the top plan views at two different levels of a Catamaran with supporting fins of the type to which the structures of the present invention are applied.

Referring to FIGURE 1: the boat, seen in cross section along a vertical plane, comprises the body **1** and the hulls **2** and **3**. According to the invention, the body **1** is reinforced along longitudinal axial plane by the reinforcing partition or septum **4**, more than one such partition can be included back of the first in the longitudinal direction and all may be connected by the tubular structure **7'**.

The two hulls **2** and **3** are reinforced in the lower parts at **5** and **6** by standard reinforcing structures.

In FIG. 2 the body **1** is again provided with one or more reinforcing partitions **4**, etc., while the hulls **2'** and **3'** are provided with supporting fins **7** and **8** and are reinforced from within by ribbing members **9** and **10**, **11** and **12**; said hulls are further interconnected by a reinforcing auxiliary connecting structure **13**, located immediately under the body **1**. All these reinforcements cooperate to better resist crosswise stresses to which the boat is subjected and which stresses are especially well developed along the longitudinal plane of symmetry passing through A–B.

In the embodiment of FIG. 3, the two hulls **2** and **3**, reinforced at **5** and **6** are connected together by an auxiliary reinforcing structure **13**, **14**, **15** located immediately below the body **1** and formed in several sections, all preferably above the water line of the boat.

In FIG. 4, the two hulls **2** and **3** are provided with supporting fins **7** and **8**, which are connected to the superstructure by the means **13** and are also connected together by structure **16**; the reinforcing support **13** is located immediately under the hull and the reinforcing means **16** is preferably submerged.

In FIG. 5 the connecting means between the two hulls **2** and **3**, comprises tubular members including structure **16**, which is preferably submerged and braces **17**, **18**, **19**, **20** that jointly form a curvilinear assembly assuring rigidity, elasticity and a lower structural weight. Immediately below the body **1** is the emergent, connecting structure **13**.

In the embodiment of FIG. 6, in addition to the connecting means **13** there is provided the reinforcing structures **21** and **22** of the hulls **2** and **3** respectively, terminating in the reinforcements **5'**, **6'**, the separate supporting fins being shown at **7** and **8**.

All above said structures can be applied to the Catamaran shown as an example in FIGURES 7, 8, 9. Naturally the form of the boat can be of any kind. As for the connections and additional reinforcing structures, it is pointed out, by way of example only, that they can:

(a) be located at any height with respect to the upper, central or lower parts of the hulls, or be completely or

partially immersed or emerged with respect to the water line, or alternatively immersed or emerged with respect to the water line;

(b) be of different type and number. If a plurality, they can be connected at the same or at different heights;

(c) be bonded to the hulls and to other parts of the boat, to a structure or frame independently of the hulls, and can even be tubular to increase the rigidity thereof;

(d) be constructed in one or more sections;

(e) be constructed to form multiple transversal and longitudinal connections extending at least partially and, preferably for the complete width, or length, or width and length of the boat;

(f) be constructed to perform the function of fins, even supporting fins;

(g) be constructed to form the supports for propelling members of any type or characteristics, for rudders, etc., such as are required for stable and safe navigation.

What is claimed is:

1. A boat having at least two hulls and a superstructure connecting the hulls and adapted to ride above the water in which said hulls are immersed, said superstructure comprising a hollow frame and reinforcing partitions extending across said hollow frame symmetrical to the longitudinal plane of symmetry of the boat,

similar supporting fins attached to each of said hulls, a first additional reinforcing structure connecting adjacent edge portions of the fins of the two hulls.

2. The boat as defined in claim 1 comprising a second reinforcing structure extending from the fin structure on one of said hulls along the interior side of the corresponding hull, along the lower side of the superstructure, the interior side of the next hull and to the fin structure of said next hull.

3. The boat as defined in claim 2 wherein said first additional reinforcing means is convexly curved.

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