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(54) Improvements relating to sailing catamarans.

(57) A catamaran comprises a support frame 2 to which are connected a pair of planing hulls 1. These hulls do not incorporate any keel or rudder members, but instead a keel and rudder are each connected centrally of the frame 2. In this case the keel 8 is in the form of a skeg on which is mounted a rudder 9 as part of a single skeg rudder assembly 7. This unit is positioned well to the rear of the mast base mounting 3.

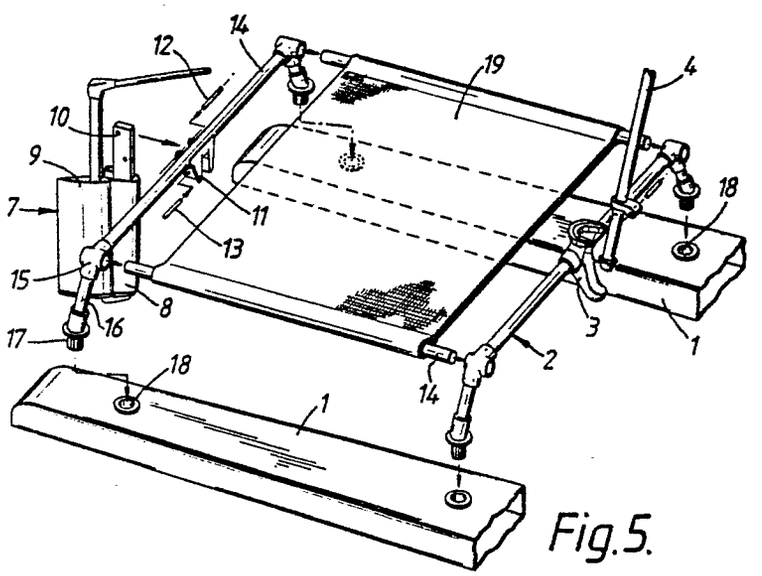

Fig.5.

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Improvements relating to Sailing Catamarans

It is an objective of this invention to provide a sailing catamaran which is relatively small and light-weight in construction and therefore easily transportable as well as having good speed and manoeuvrability characteristics.

In accordance with the present invention there is provided a sailing catamaran comprising a pair of planing hulls interconnected by a support frame which supports the mast and sail, a rudder and a keel member both mounted on the support frame rearwardly of the mast base mounting, with the keel towards the rear of the support frame, and both positioned along the centreline between the two hulls.

The novel combination of planing hulls with a rearwardly mounted keel and the rudder and keel positioned along the centreline, provides excellent speed characteristics and also enables the mast to be set well back from the forward end of the catamaran so that it is less liable to tip over in a forward direction during sailing. The keel could be separate from the rudder, possibly with the rudder mounted closely behind the mast base mounting. Ideally however the keel and rudder will be mounted close together towards the rear of the support frame. The preferred arrangement has the keel and rudder in the form of a skeg rudder.

Speed is achieved by utilising planing hulls which do not themselves incorporate any form of standard keel or dagger plate. It may be preferred that only the rear portions of the planing hulls should be formed with substantially vertical side faces which will provide significant resistance to sideways thrust whilst the catamaran is being sailed. This assists in the control of the direction of the catamaran during sailing, in combination with the rudder and keel.

It is preferred that the rudder and the keel should be pivotally mounted on the support frame so that they can be pivoted into a condition where the normally forward edges thereof lie substantially in the same plane as the bases of the two hulls. This allows the catamaran to be sailed to shore through shallow waters.

If the sail is connected to the mast by a wishbone rig, then conventional mast stays can be eliminated and also the sail can rotate through 360° for safety and simplicity.

The support frame is ideally constructed as an assembly which can be disconnected from the hulls and broken down into individual parts. This enables the catamaran to be transported easily, for example on a car roof rack.

The invention may be performed in various ways and a preferred embodiment thereof will now be described with reference to the accompanying drawings, in which:-

Figure 1 is a side view of a sailing catamaran of this invention;

Figures 2 and 3 are plan and front view of the main parts of the catamaran shown in Figure 1;

Figure 4 shows sections through a planing hull of the catamaran;

Figure 5 shows details of a support frame of the catamaran; and

Figures 6 and 7 are a side view and a horizontal section respectively of the skeg rudder used on the catamaran.

The sailing catamaran shown in the drawings comprises a pair of planing hulls 1 held together by a support frame 2 which incorporates a mounting 3 for a mast 4 carrying a sail 5 and a wishbone boom 6. Centrally of the rear strut of the frame 2 there is mounted a skeg rudder 7. As shown in Figure 6 in particular, this skeg rudder comprises a skeg 8, at the rear end of which is pivotally mounted on rudder 9. A support member 10 attached to the skeg 8 is mounted in a bracket 11 by means of a pivot pin 12. A locking pin 13 restrains the skeg rudder against pivoting during normal sailing use but with the locking pin 13 removed, the skeg rudder can tilt backwards so that the normal forward edge 20 will be generally parallel with the plane of the bases of the two hulls 1.

Each planing hull has a generally flat lower surface and Figure 4 illustrates the change in section along the length of the planing hull (from front to rear) at the points marked 1 to 7. As can be seen, the rear portion of each planing hull has substantially vertical side faces which therefore provide resistance to sideways motion (in combination with that provided by the skeg rudder 7) towards the rear only of the catamaran.

The support frame 2 is constructed from a number of struts 14 interconnected by socket joints 15. Legs 16 terminate in tubular feet 17 which are vertically disposed and will be mounted within sockets 18 in the planing hulls 2. A trampoline 19 is supported by the struts 14. This support frame can readily be dismantled for storage purposes.

Although a wishbone rig is preferred, the frame is equally suitable for rigging with a conventional mast and stays.

The use of planing hulls allows a short catamaran to exceed the established performance/length criteria which limit conventional displacement catamarans. Planing hulls have inherently less lateral force generation capability than displacement forms. This fact is used to advantage by concentrating the keel force at the rear of the

craft. This rearward keel force allows a more rearward mast position and rearward raking of the mast. Both of these reduce the diagonally forward roll-over moment which limits the performance of conventional catamarans; indeed the mast rake also provides a lift element which enhances planing performance. Keels are more efficient at generating side force than hulls.

The novel frame design allows a single centrally mounted keel in the form of a skeg rudder. Since this is designed to be a unit functioning in the same way as a flapped aerofoil, very high lift (keel force) forces can be generated at excellent efficiencies. The design of the skeg rudder is important and in general is most efficient when the chord (width) of the skeg is less than 25% of the chord of the rudder. The shallow draft of the planing hulls combined with the pivoting of the skeg rudder allows the craft to be sailed in very shallow water (less than 1 ft. deep). An alternative to the skeg-rudder is to replace it with a single pivoting keel mounted in the same rear beam position and provide a single pivoting central forward rudder mounted from the front beam behind the mast support box.

The use of an unstayed mast with a wishbone style sail support has two advantages. Firstly, compression loads on the frame and mast are avoided, allowing a light construction. Also, full 360° sail rotation is possible thus providing great simplicity and safety, especially for beginners.

The hulls are most efficient if the sidewalls are vertical throughout and this feature can be utilised provided it is combined with suitable plan and profile shapes, hull characteristics can be achieved whereby a limited amount of sidethrust (keel effect) is provided by the hulls which aids stability at speed and in particular provides a force which tends to turn the craft into the wind if excessive angles of 'heel' are reached. This limited sidethrust is much less than that provided by conventional deep 'V' catamaran hulls and always works in conjunction with the skeg-rudder.

Claims

1. A sailing catamaran comprising a pair of planing hulls interconnected by a support frame which supports the mast and sail, a rudder and a keel member both mounted on the support frame rearwardly of the mast base mounting, with the keel towards the rear of the support frame, and both positioned along the centreline between the two hulls.

2. A catamaran according to claim 1, wherein the keel and rudder are mounted close together towards the rear of the support frame.

3. A catamaran according to claim 2, wherein the keel and rudder together form a skeg rudder.

4. A catamaran according to claim 1, wherein the the rudder is mounted closely behind the mast base mounting.

5. A catamaran according to any one of claims 1 to 4, wherein only the rearward portions of the hulls are formed with substantially vertical side faces.

6. A catamaran according to any one of claims 1 to 5, wherein the rudder and the keel are pivotally mounted on the support frame for pivoting into a condition where the normally forward edges thereof lie substantially in the same plane as the bases of the two hulls.

7. A catamaran according to any one of claims 1 to 6, wherein the support frame is formed as an assembly which can be disconnected into a compact state.

8. A sailing catamaran having any novel combination of features and as described in the accompanying specification and with reference to and as illustrated in the accompanying drawings.

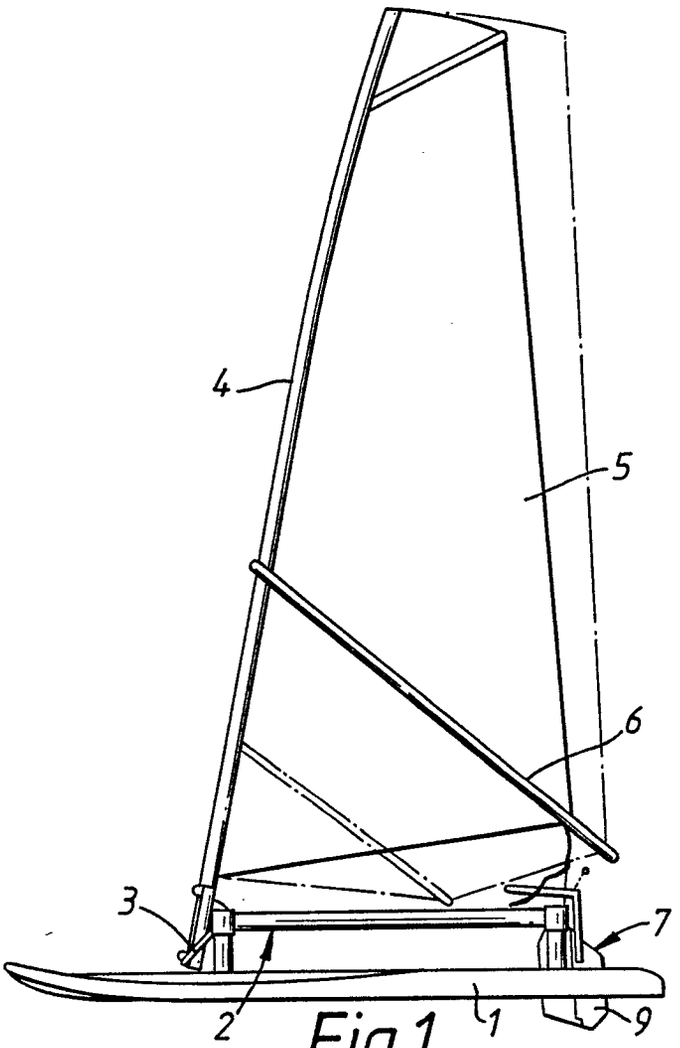

Fig.1.

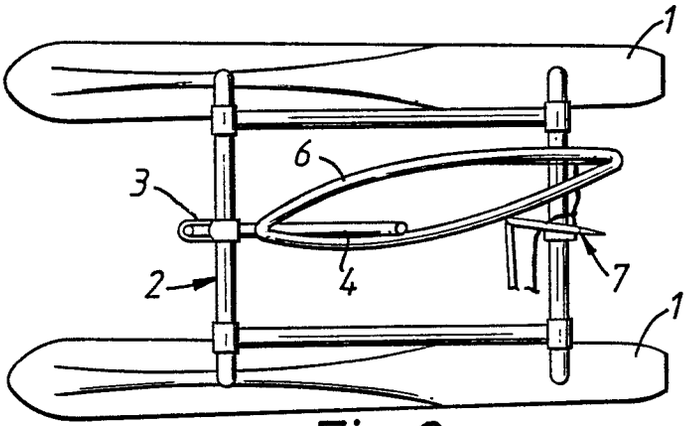

Fig.2.

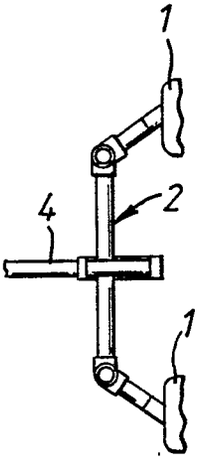

Fig.3.

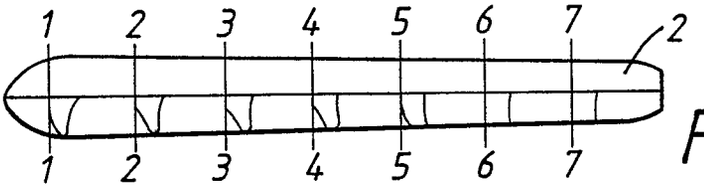

Fig.4.

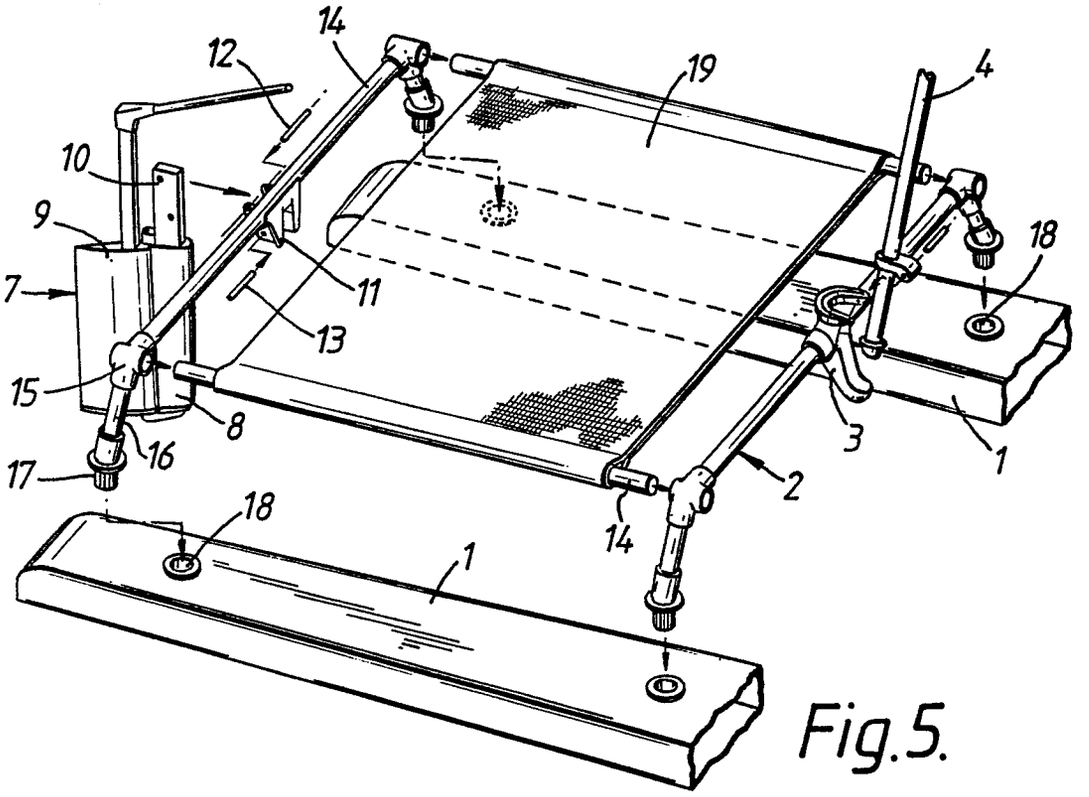

Fig.5.

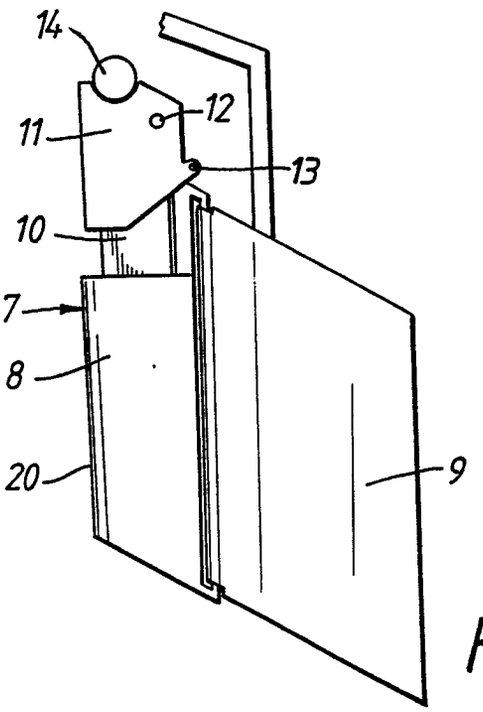

Fig.6.

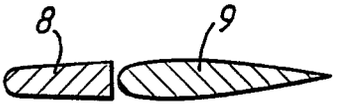

Fig.7.

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EUROPEAN SEARCH REPORT

Application Number

EP 89 30 7251

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	FR-A-2 588 216 (CHAUVEAU) * Page 1, line 17 - page 2, line 12; page 4, line 4 - page 5, line 4 *	1-5	B 63 B 35/79 B 63 B 1/12
A	FR-A-2 579 953 (BRUN) * Page 4, line 5 - page 5, line 25 *	1,4,6,7	
A	US-A-2 712 293 (M. O'HIGGINS) * Column 1, lines 15-26; column 2, lines 9-12; column 3, lines 4-24 *	1,2,6	
A	WO-A-8 400 134 (JENSEN) * Page 1, lines 12-17; page 4, lines 18-36 *	1,7	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

B 63 B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	27-10-1989	MARECHAL S.

CATEGORY OF CITED DOCUMENTS

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