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Thorpe

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[54] **CENTREBOARD CASING CONSTRUCTIONS FOR SAILING BOATS**

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[52] **U.S. Cl.** **114/138,** 114/132

[51] **Int. Cl.** **B63b 41/00**

[58] **Field of Search** 114/127–141

[56] **References Cited**

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Primary Examiner—Trygve M. Blix

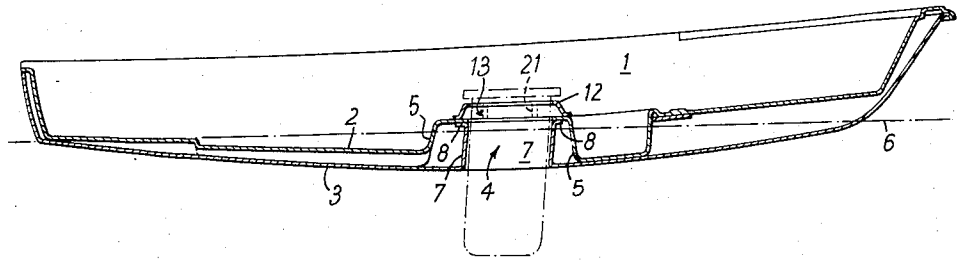
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[57] **ABSTRACT**

A device for extending the vertical height of a centreboard slot in a sailing boat hull comprising a vertically extending casing the lower part of which has a horizontal extending aperture adapted for alignment with the upper end of the slot in the hull, and a resilient gasket for connecting and sealing the casing to the hull.

18 Claims, 4 Drawing Figures



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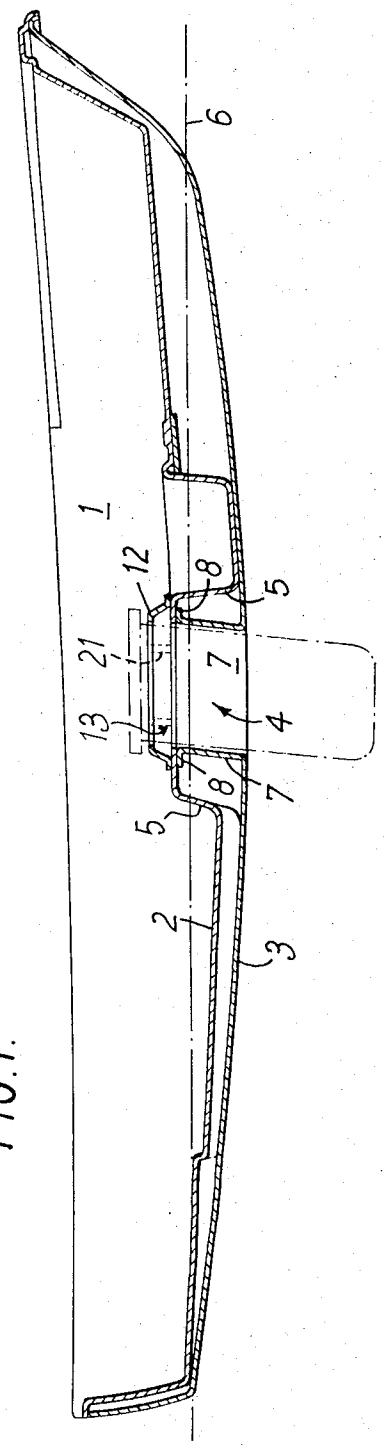


FIG. 1.

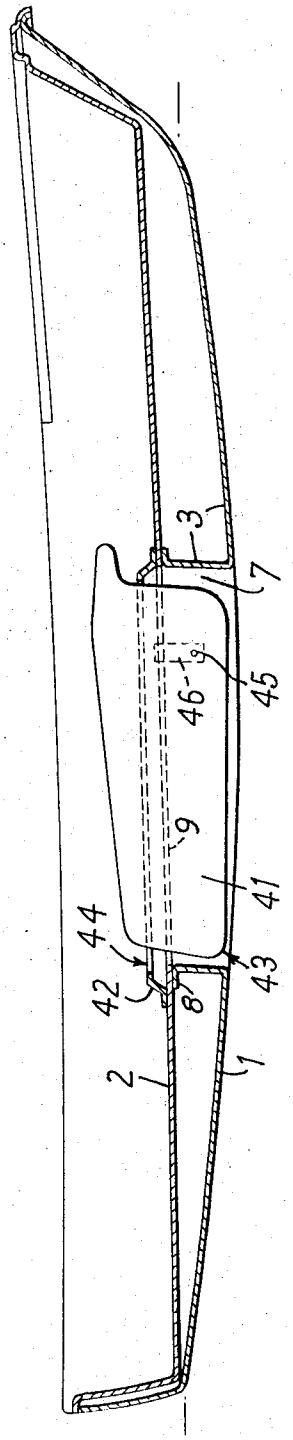


FIG. 4.

FIG. 2.

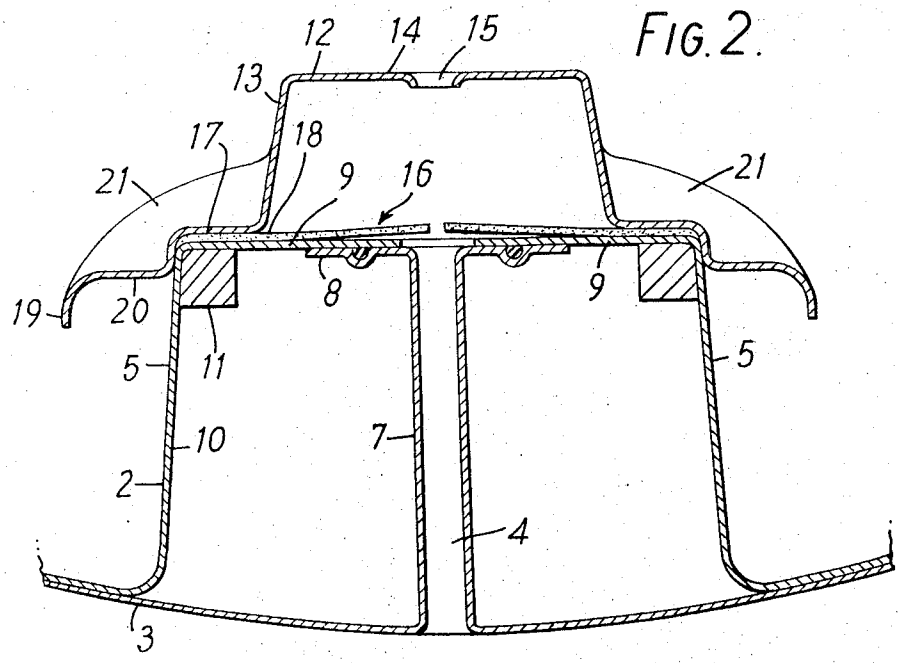
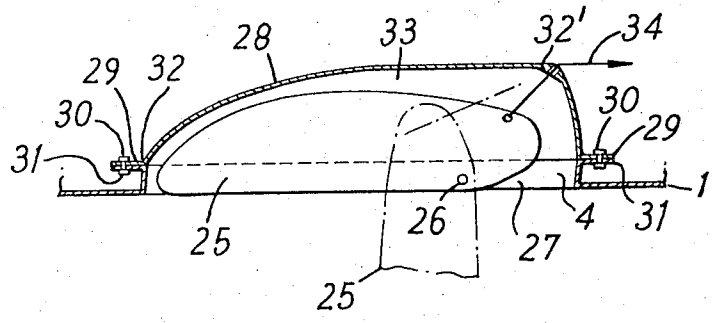

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FIG. 3.


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CENTREBOARD CASING CONSTRUCTIONS FOR SAILING BOATS

This invention relates to centre-board casing constructions for sailing boats.

The term centre-board will be used throughout the specification to include not only centre-boards which can be lowered from a boat hull by rotating about a pivot but also dagger boards which are merely moved vertically up and down and any other kind of device which is utilised to increase the wetted area of a sailing boat hull and which projects from the hull through a slot therein. Such devices are sometimes referred to as drop keels or even centre plates, the later usually referring to devices made from metal and such boards, plates or keels may be arranged on the centre line of the hull or to one side thereof. For example, it is known to provide two "centre-boards" one towards each side of the hull and catamarans and asymmetric hulls sometimes have asymmetric arrangements.

In any case, it is always necessary to provide a slot in the hull which extends upwardly to a point which is higher than the water line of the hull concerned to prevent water entering the boat unless the top of the slot is sealed. Sealing the top of the slot can however present difficulties especially in the case of a pivoted rotating centre-board because it means that the top of the slot must be high enough to accommodate the full width of the board when it is retracted and this, in some circumstances can be higher than the gunwhale of the boat. In these circumstances therefore it is necessary for the top of the slot to be open but for it to be high enough above the water line to prevent the entry of water. Similarly in the case of a dagger board which is merely pushed up and down through the slot it is necessary to be able to handle the upper end of the board which requires it to project from the upper end of the slot.

From the above it will be appreciated that the housing in which the slot is provided must, of necessity, occupy a considerable amount of space vertically in an open hull, that is, a hull which is not decked over. The fact that the housing extends into the hull effectively prevents such open hulls being stacked within each other for transport and storage purposes. In certain circumstances when the hulls are deep a certain amount of stacking can be achieved but in relatively shallow hulls with centre-board housings of the necessary height it is not possible and the present invention is intended to provide a device and a construction of a sailing boat which will enable such stacking to take place.

According to the present invention a device for extending the vertical height of a centre-board slot in a sailing boat hull comprises a vertically extending casing the lower part of which has a horizontally extending aperture adapted for alignment with the upper end of the slot in the hull, and means for connecting and sealing the casing to the hull.

Thus, the hull of the boat can be made without a centre-board housing of conventional kind, or with one of only a short vertical height so that the hulls can be stacked one within the other. When it is necessary to use the boat however or it has been delivered from the manufacturer, it is merely necessary to fasten in place the device set forth to complete a centre-board slot which is deep enough for operational use.

In one preferred embodiment the aperture in the casing has a horizontal width and a length which are substantially the same as the upper end of the slot in the hull but in another construction the width of the aperture may be greater than the width of the upper end of the slot in the hull thus virtually forming a hollow chamber over the slot.

As mentioned above the slot in the hull may be merely in the bottom of the hull or it may be continued upwardly by a short centre-board housing which is integral with the hull.

If the device is for use with a dagger board or deep centre board then the aperture in the casing may be arranged to also open vertically upwards and the upward part of the aperture will thus preferably be substantially the same as the width of the upper part of the slot in the hull.

In a convenient construction the lower part of the casing is provided with a horizontally projecting flange adapted for connection to the hull, that is the floor of the craft or the small centre-board housing if one is provided.

Preferably each side of the casing spaced apart across the width of the aperture is provided with a horizontally extending toe rail under which the crew of the craft can hook their tows when sitting out if the craft is a sailing dinghy.

Each toe rail may be arranged to project downwardly from a horizontally extending flange provided on the casing and this flange can be an extension of the flange which is adapted for connection to the hull when the device is intended for use with a short centre-board housing.

Conveniently the casing can be made from a plastics material such as glass fibre.

If the casing is intended for connection to the floor of the hull then means may be provided for pivoting a rotating centre-board within it.

The invention also includes a sailing boat having a centre-board slot in its hull and provided with a device for extending its vertical height as set forth above.

The slot may be formed in the sailing boat in a vertically extending centre-board housing integral and projecting upwardly from the bottom of the boat and to which the casing is connected.

Preferably the centre-board housing has a sealing surface which surrounds the slot and to which the casing is connected and a resilient gasket may be provided between the casing and the sealing surface on the housing.

In constructions in which the width of the aperture in the lower end of the casing is wider than the upper end of the slot in the centre-board housing a resilient gasket may be provided which extends inwardly from the sealing surface to project over the edge portions of the slot.

In one preferred construction the vertically extending sides of the centre-board casing are hollow and are closed at the upper ends by the sealing surface.

A construction of this type can conveniently be achieved by making the sailing boat from a plastics material such as fibre glass.

Also included in the invention is a kit of parts for assembling the sailing boat including a device as set forth above and a hull adapted to receive it. Such a kit of parts enables the manufacturer to stack the boats for transport or storage purposes and the device in the

form of a casing is only assembled into the hull when the craft is delivered,

The invention may be performed in many ways and some embodiments will now be described by way of example and with reference to the accompanying drawings in which:

FIG. 1 is a cross-sectional side view of a sailing boat embodying the invention;

FIG. 2 is an enlarged view of part of the centre-board housing of the boat shown in FIG. 1;

FIG. 3 is a part sectional side elevation of an alternative construction;

FIG. 4 is a cross-sectional side view of a boat including another alternative construction.

In the boat according to the invention shown in FIGS. 1 and 2 the hull 1 is formed from two glass fibre mouldings, the inner moulding 2 nesting within the outer moulding 3. A slot 4 is provided in the hull on the centre line and extends upwardly through a housing 5 to a point where it is about 1 inch higher than the water line of the hull when floating, this water line being indicated by line 6 in FIG. 1. The construction of the hull is such that the vertically extending walls 7 of the slot 4 are formed by the outer moulding 3, the upper end of these walls 7 having an outwardly projecting flange 8 which extends all around the slot 4 and which is sealed to a co-operating flange 9 which extends inwardly from walls 10 which are provided on the inner mould 2 and which thus act as the outer surfaces of the centre-board housing and the walls of the housing as such therefore are hollow. A chock 11 is secured into the corners between the flange 9 and walls 10 to provide rigidity and the two moulds 2 and 3 are secured together where they engage one another by a suitable adhesive.

The vertical height of the short centre-board housing which is thus produced is low enough to enable a number of such hulls to be stacked within each other thus considerably reducing the amount of space required for storage or transport.

With this short casing the boat would be unsuitable for sailing because although the centre-board housing is above the water line any excessive loading or a rough sea would tend to cause water to enter the hull through the top of the slot and in order to obviate this and raise the effective height of the centre-board slot 4 a device in the form of a casing 12 is provided. This is made from glass fibre in a similar manner to the hull and comprises vertically extending walls 13 the upper ends of which project inwardly to form flanges 14 which terminate in a slot 15. The lower end of the casing has an aperture 16 the width of which transverse to the centre line of the hull is greater than the width of the upper end of the slot 4 but the slot 15 is of substantially the same width of the slot 4 and the length of the slot 15 along the longitudal axis of the boat is also the same as the slot 4. The slot 15 thus enables the aperture 16 in the casing to open vertically upwards.

The lower part of the casing 12 is provided with a horizontally projecting flange 17 provided with holes (not shown) through which screws are passed to secure the flange to the flanges 8 and 9 of the housing the screws being accommodated in the chock 11. In order to provide effective sealing a gasket 18 made from foam neoprene is provided between the flange 17 and the flange 9 and the upper surface of the flange 9 thus acts as a sealing surface on the housing, this surface surrounding the slot 4.

Each side of the casing spaced apart across the width of the aperture 16 is provided with a horizontally extending toe rail 19 which projects downwardly from a horizontally extending flange 20. This toe rail is for the use of the crew of the boat when they desire to sit out so that they can hook their toes beneath the toe rail 19 to support themselves.

In order to stiffen the toe rail transversely extending webs 21 are provided in the moulding.

From the above description it will be appreciated that a manufacturer can construct boats as set forth above and despatch them or store them nested or stacked one within the other. On arrival or when required for use the casing 12 is screwed into position and the craft can be safely used, a dagger board shown in broken lines in FIG. 1 is located in the slots 4 and 15 in known fashion and it can of course be completely removed if desired, without water entering the craft.

It will be seen from FIG. 2 that the gasket 18 is continued over the edge of the slot 4 and thus acts as a seal around the dagger board to further prevent water splashing upwardly through the slot 15 or into the interior of the casing 12.

In FIG. 3 a construction is shown which can be used for a rotating centre-board. In this construction similar reference numerals are used for similar parts. The hull 1 is provided with a centre-board slot 4 of very short vertical height but of much longer length than that shown in FIGS. 1 and 2 to accommodate a rotating centre-board 25 which is carried on a pin 26 which passes through suitable holes in walls of the centre-board housing 27. In this construction the height of the housing is considerably below the water line of the craft so a device according to the invention is provided to raise the height of the slot 4. This device comprises a casing 28 shaped to accommodate the plate and of similar transverse width to the slot 4 and having flanges 29 around its lower periphery which can be connected by nuts and bolts 30 to flange 31 which extends around the upper periphery of the housing 27. A sealing gasket 32 is provided between the flanges 29 and 31 to seal the joint.

In this construction the upper end of the slot 33 provided in the casing 28 and within which the board moves is closed apart from a small aperture 32 through which passes a control line or lines 34, these lines being used to raise or lower the centre-board.

Once again a construction is provided which enables boats to be nested one within the other when the casing 28 and centre-board 25 are not in position.

In an alternative construction (not shown) the arrangement is very similar to that shown in FIG. 3 but the short housing 27 is omitted, merely a slot being provided in the bottom of the hull. The sides of the casing 28 are extended lower so that the flange 29 can be bolted directly to the bottom of the hull 1 and the pivot pin 26 is carried in the walls of the casing 28. With this construction the centre-board can be pre-mounted in the casing 28 and the whole assembly then secured to the bottom of the boat. When the casing 28 is removed, together with the centre-board the bottom of the boat is completely clear.

In FIG. 3 the centre-board is shown in broken lines in its lowered position.

In the construction shown in FIG. 4 the various parts of the boat are indicated by similar reference numerals to those used in FIGS. 1 and 2 and the hull construction

is similar including the hollow sides to the centre-board casing. In this arrangement however a pivoting centre-board **41** is used. A casing **42** extends the vertical height of the centre-board slot **43** in a similar manner to that described with reference to FIGS. **1** and **2** and the upper end of the casing **42** is again provided with a slot-like opening **44** through which the centre-board **41** projects when it is in its raised position as shown in full lines in FIG. **4.** The centre-board is located on a pin **45** carried between a pair of hangers **46** each hanger **46** being in the form of an inverted L-shaped bracket. Each of the horizontally extending arms of the brackets rest on the flanges **8** and **9** and are secured by nuts and bolts so that the vertically extending arm of the bracket projects down the side of the wall **7** of the slot **43.** The pin **45** is carried between these hangers **46** and thus locates the centreboard in the housing so that it can pivot about the pin in known fashion.

This is a particularly useful construction as it enables the weight of the centre-board on its pin **45** to be more evenly distributed onto the glass-fibre hull and a plate of maximum chord can be used without having to provide a very high casing. It will be appreciated that the height of the casing **42** is of course above the water line level of the hull when it is afloat.

I claim:

1. A new article of manufacture comprising a device for extending the vertical height of a centre-board slot in a sailing boat hull of the type including a hull bottom having a centre-board slot therethrough and the slot extending above the hull bottom through a centre-board housing projecting upwardly from the hull bottom, said device including a vertically extending casing the lower part of which has a horizontally extending aperture adapted for alignment with an upper end of the slot in the centre-board housing, said aperture being of a horizontal length to have received therein the full horizontal dimension of the centre-board for which said device is intended, and connecting means for connecting and sealing the lower part of the casing to the upper part of the centre-board housing.

2. A device as claimed in claim **1** in which the aperture has a horizontal width and length which are substantially the same as the upper end of the slot in the centre-board housing.

3. A device as claimed in claim **1** in which the width of the aperture is greater than the width of the upper end of the slot in the centre-board housing.

4. A device as claimed in claim **1** in which the aperture in the casing also opens vertically upwards.

5. A device as claimed in claim **4** in which the width of the upper part of the aperture is substantially the same as the width of the upper part of the slot in the centre-board housing.

6. A device as claimed in claim **1** in which the connecting means includes the lower part of the casing being provided with a horizontally projecting flange for connection to the centre-board housing.

7. A device as claimed in claim **1** in which each side of the casing spaced apart across the width of the aperture is provided with a horizontally extending toe rail.

8. A device as claimed in claim **7** in which each toe rail projects downwardly from a horizontally extending flange provided on the casing.

9. A device as claimed in claim **1** in which the casing is made from a plastics material.

10. A device as claimed in claim **8** in which the casing is made from glass fibre.

11. A device as claimed in claim **1** in which the casing is provided with means for pivoting a rotating centre-board.

12. A sailing boat including a hull having a bottom and a centre-board housing projecting upwardly from said bottom in sealed relation thereto, and a centre-board slot in said hull, said slot extending through said bottom of said hull and vertically upwardly therefrom through said centre-board housing, and said hull being provided with a device extending the vertical height of the centre-board slot, said device including a vertically extending casing the lower part of which has a horizontally extending aperture in alignment with the upper end of the slot in the hull, and connecting means on the lower part of the casing connecting and sealing the casing to the hull above said hull bottom in upwardly slot extending relation to said centre-board housing.

13. A sailing boat as claimed in claim **12** in which the centre-board housing has a sealing surface which surrounds the slot at the upper end thereof and to which the casing is connected.

14. A sailing boat as claimed in claim **13** in which said connecting means includes a resilient gasket is provided between the casing and the sealing surface on the housing.

15. A sailing boat as claimed in claim **14** in which the width of the aperture in the lower end of the casing is wider than the upper end of the slot in the centre-board housing and the resilient gasket extends inwardly from the sealing surface to project over the edge portions of the slot.

16. A sailing boat as claimed in claim **13** in which the vertically extending sides of the centre-board housing are hollow and are closed at their upper ends by the sealing surface.

17. A sailing boat as claimed in claim **12** made from a plastics material.

18. A sailing boat as claimed in claim **12** in which the casing has means depending therefrom into said slot for pivoting a rotating centre-board.

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