Nov. 6, 1962 F. GERBRACHT 3,061,845

COLLAPSIBLE AMPHIBIOUS CATAMARAN

Filed Feb. 17, 1960 4 Sheets-Sheet 1

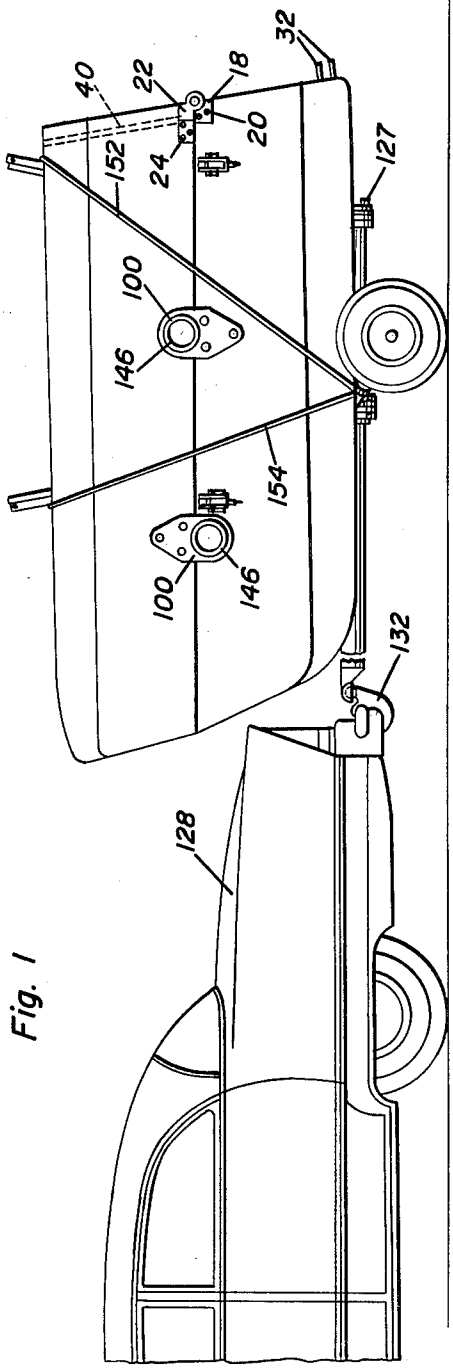


Fig. 1

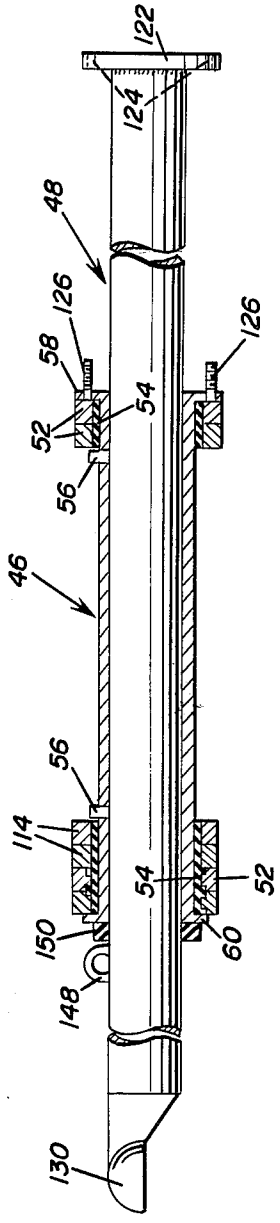


Fig. 11

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COLLAPSIBLE AMPHIBIOUS CATAMARAN

Filed Feb. 17, 1960 4 Sheets-Sheet 2

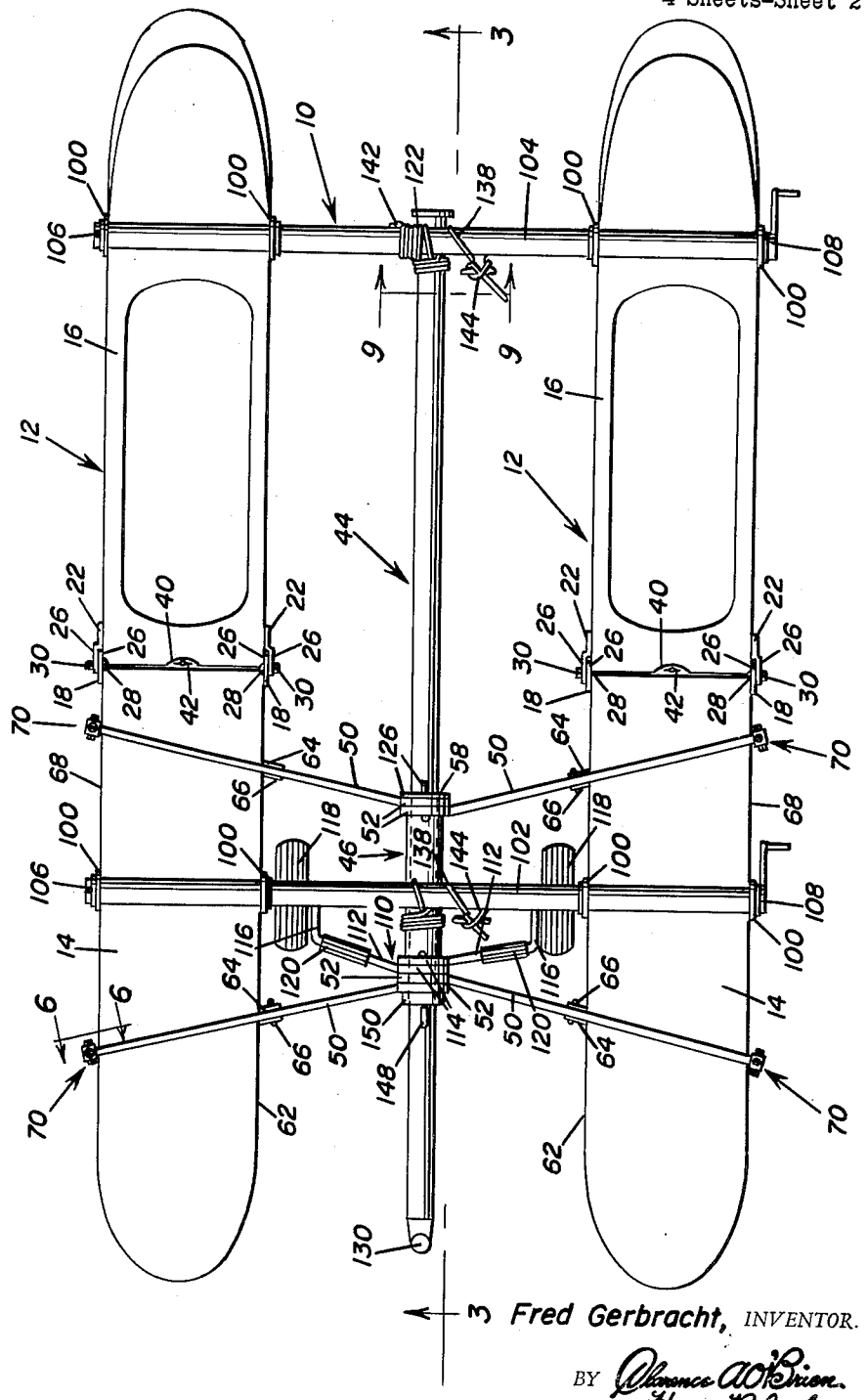


Fig. 2

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COLLAPSIBLE AMPHIBIOUS CATAMARAN

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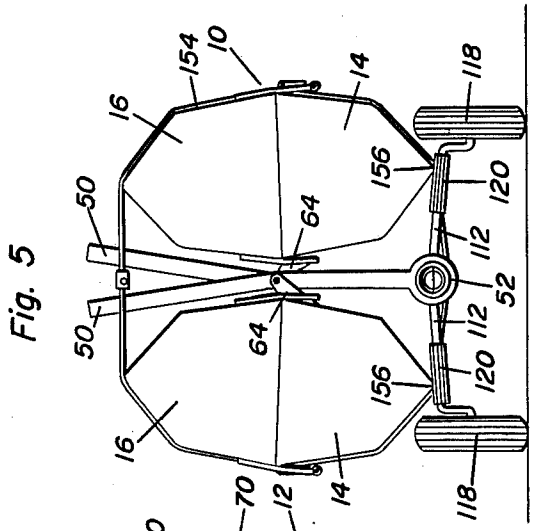


Fig. 5

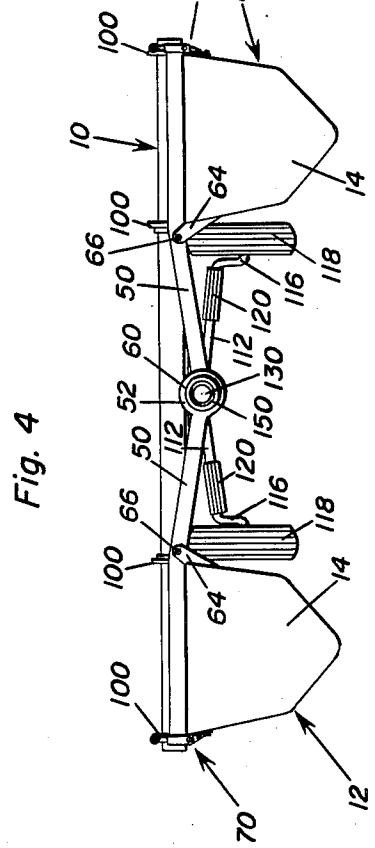


Fig. 4

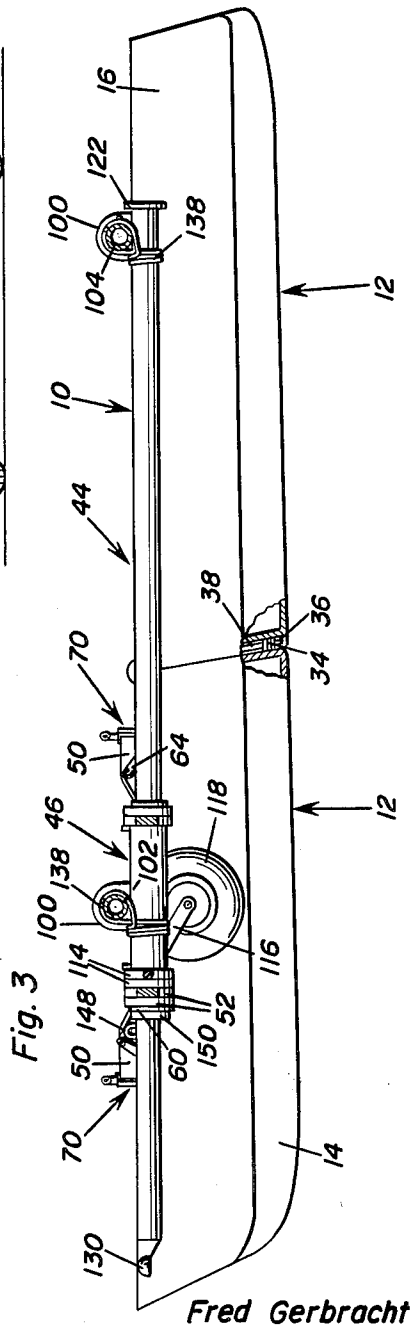


Fig. 3

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COLLAPSIBLE AMPHIBIOUS CATAMARAN

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Fig. 6

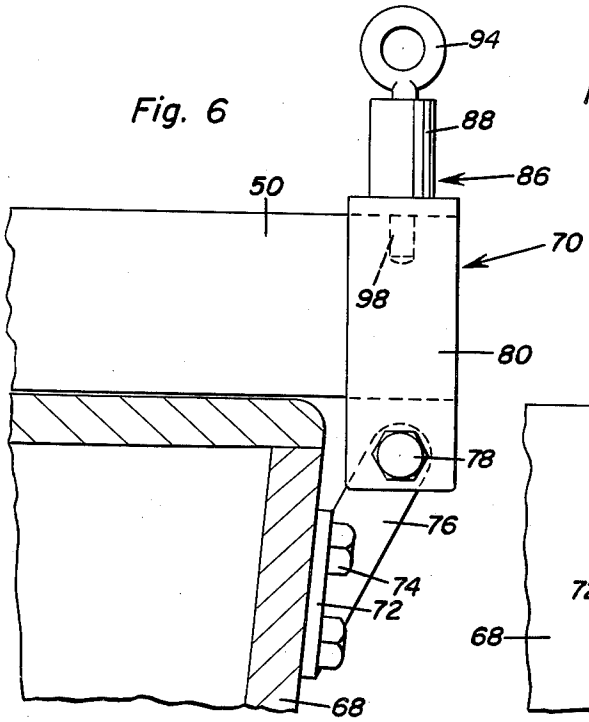
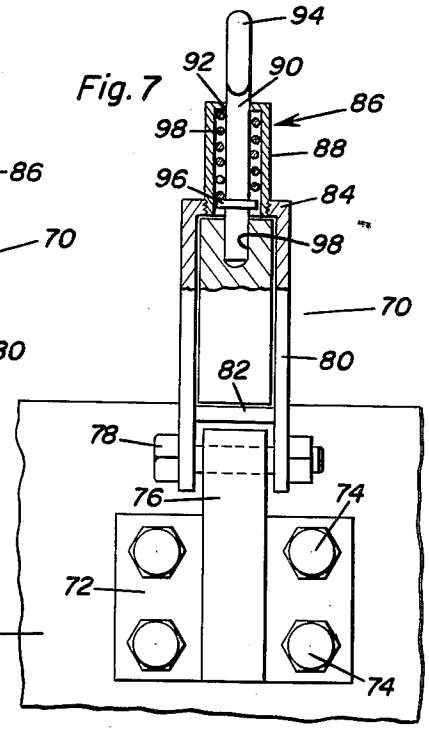


Fig. 7



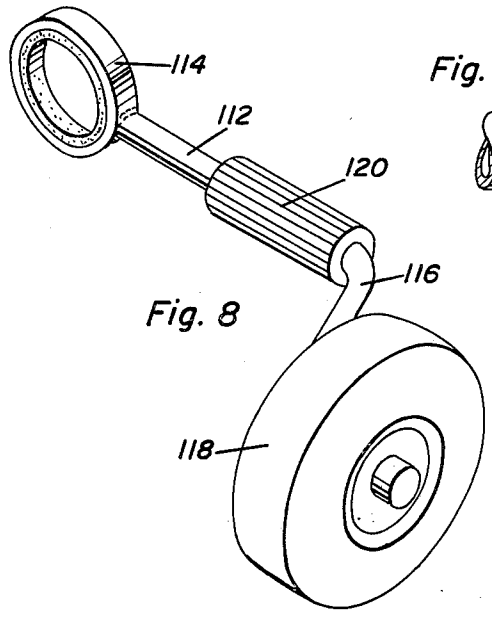


Fig. 8

Fig. 9

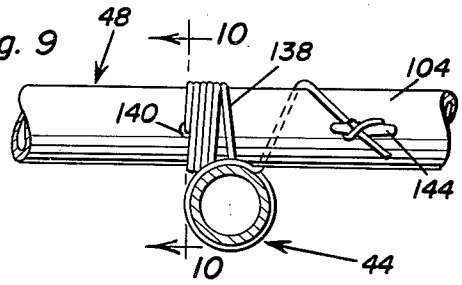
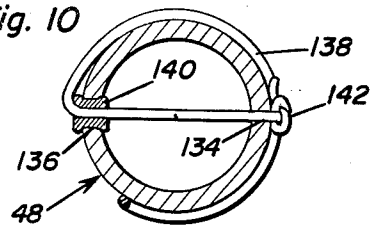


Fig. 10



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3,061,845

COLLAPSIBLE AMPHIBIOUS CATAMARAN

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Filed Feb. 17, 1960, Ser. No. 9,375
9 Claims. (Cl. 9—2)

This invention relates to a novel and useful collapsible catamaran, and more particularly to a catamaran which has been specifically designed to be trailed behind a draft vehicle.

The catamaran type of pleasure craft is becoming increasingly popular inasmuch as it affords maximum stability and higher speeds whether being used as a sail or motor boat. When used as a sail boat, the catamaran type of hull greatly resists heeling in a strong wind and therefore the majority of the wind is not spilled out of the sails, with the result being that the catamaran sailboat is considerably faster than sailboats of conventional design. The catamaran type of hull offers a much more pleasing ride inasmuch as the forces of rough water and waves are usually divided between the two hull assemblies, with the result being that there is considerably less pitching of the hull structure. Further, the catamaran type of hull includes a pair of relatively long and narrow hull assemblies secured together in spaced parallel relation, and these two hull assemblies are capable of supporting greater loads with less resistance to passage through the water. Conventional types of hulls designed to carry similar loads have a wider beam than the aggregate beam of the hull assembly of a catamaran type of hull, and therefore the conventional hull structure offers greater resistance to its passage through the water than does the catamaran type of hull. Although the conventional type of hull structure may be elongated considerably in an attempt to reduce the beam of the structure while still maintaining its ability to carry a given load, the extreme length of convertional hulls of this type in proportion to their width makes them highly susceptible to rolling and pitching from side to side while the spaced parallel relation of the hull assemblies of a catamaran type of hull tend to greatly stabilize the hull and reduce the tendency to roll to a minimum.

Although the catamaran type of hull has the advantages of being faster and more stable than the conventional type of hull, it presents considerable problems when it is desired to trail hulls of this type behind a draft vehicle. Most catamarans are usually slightly less than half as wide as they are long, and therefore a twenty foot catamaran type of hull would have an over-all beam of approximately ten feet. Of course, an over-all beam of ten feet would render it next to impossible to trail a catamaran twenty feet in length over roads to and from the point of use. Of course, in some instances special permission can be obtained from highway authorities to trail extremely wide loads, but it is extremely doubtful that highway officials would permit the owner of a catamaran type of hull having a beam of ten feet or more to become in the habit of trailing his craft behind a draft vehicle each time he wanted to use the catamaran.

It is therefore the main object of this invention to provide a catamaran hull structure which will be both amphibious and collapsible with regard to its length and width whereby it may be conveniently and legally towed behind a draft vehicle.

A further object of this invention, in accordance with the preceding object, is to provide a wheeled supporting assembly for the catamaran hull which may be moved into an operational position when it is desired to trail the hull construction over highways and the like.

Yet another object of this invention, in accordance with the preceding objects, is to provide a wheeled supporting

assembly which will automatically be extended from a retracted position when the catamaran hull construction is in an extended and operational position to an extended position when the catamaran hull construction is collapsed and/or folded into the position to be trailed behind a draft vehicle.

Still another object of this invention is to provide a collapsible amphibious catamaran whose spaced and parallel hull assemblies each include a pair of longitudinally aligned forward and aft hull sections which are pivotally secured at their adjoining ends for rotation about horizontally disposed axes whereby the aft portion may be folded over the forward portion for reducing the over-all length of the hull construction as well as its over-all width.

Another object of this invention, in accordance with the preceding objects, is to provide an elongated, longitudinally extending support and bracing assembly secured between the hull assemblies with radius rods secured between the support and bracing assembly and the hull assemblies whereby the hull assemblies may be pivoted from positions on opposite sides of the support and bracing assembly to positions closely adjacent each other and above the support and bracing assembly.

Yet another object of this invention, in accordance with the immediately preceding object, is to provide a means whereby the outer end portions of the radius rods may be pivotally secured to corresponding hull assemblies in a manner enabling the hull assemblies to be pivoted about their connection with the radius rods as they are pivoted to a position above the support and bracing assembly whereby the bottom surfaces of the hull assemblies will be maintained lowermost with the hull assemblies in an upright position.

A still further object, in accordance with the immediately preceding object, is to provide the support and bracing assembly with a wheeled supporting assembly so that the wheeled supporting assembly may be disposed slightly below the support and bracing assembly but between the hull assemblies when they are in the extended position and disposed below the hull assemblies when they are in the collapsed position.

A final object to be specifically enumerated herein is to provide a collapsible amphibious catamaran hull construction which will conform to conventional forms of manufacture, be of simple construction and easy to operate so as to provide a device that will be economically feasible, long lasting and operable by substantially every person capable of handling a pleasure craft.

These, together with other objects and advantages which will become subsequently apparent, reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a side elevational view of the collapsible amphibious catamaran shown in a collapsed position and attached to a draft vehicle;

FIGURE 2 is a top plan view of the collapsible catamaran shown in the extended position and assembled and ready for use as a pleasure craft on the water;

FIGURE 3 is a longitudinal vertical sectional view taken substantially upon the plane indicated by the section line 3—3 of FIGURE 2;

FIGURE 4 is a front elevational view of the catamaran shown in FIGURE 2;

FIGURE 5 is a front elevational view of the catamaran in collapsed state and ready to be trailed behind a draft vehicle;

FIGURE 6 is an enlarged fragmentary transverse vertical sectional view taken substantially upon the plane

indicated by the section line 6—6 of FIGURE 2 showing the manner in which the spaced hull assemblies are secured to an extended position;

FIGURE 7 is an enlarged fragmentary side elevational view of the assemblage shown in FIGURE 6;

FIGURE 8 is an enlarged perspective view of one side of the wheeled supporting assembly;

FIGURE 9 is an enlarged fragmentary transverse vertical sectional view taken substantially upon the plane indicated by the section line 9—9 of FIGURE 2;

FIGURE 10 is an enlarged longitudinal vertical sectional view taken substantially upon the plane indicated by the section line 10—10 of FIGURE 9; and

FIGURE 11 is an enlarged longitudinal vertical sectional view of the elongated support and bracing assembly taken substantially upon a plane passing through the longitudinal center line of the center beam and showing the manner in which the drawbar is slidably disposed therein.

Referring now more specifically to the drawings, the numeral **10** generally designates the collapsible catamaran comprising the present invention which includes a pair of spaced hull assemblies each generally designated by the reference numeral **12**. Each of the hull assemblies **12** includes a forward hull section **14** and an aft hull section **16**.

A pair of hinge plates **18** is fixedly secured to the upper surfaces of opposite sides of the forward hull sections **14** at the rear ends thereof by means of suitable fasteners **20** and a pair of hinge plates **22** is secured to the upper surfaces of the opposite sides of the aft hull portions or sections **12** adjacent the forward ends thereof by means of any suitable fasteners **24**. Corresponding hinge plates **18** and **22** are provided with registering apertured ears **26** which overlap each other and rotatably receive pivot bolts **28** that are secured therethrough by means of fasteners **30**.

Each of the forward hull sections **14** is provided with a pair of vertically aligned eyes **32** which project rearwardly of the sections **14** adjacent their lower surfaces, and the aft hull sections **16** are provided with eyes **34** which project forwardly therefrom adjacent the lower surfaces thereof and are receivable between the eyes **32** and registerable therewith to receive therethrough the lower diametrically reduced end **36** of the connecting pin **38**.

It will be noted (see FIGURE 3 in particular) that the connecting pin **38** extends upwardly within the recesses **40** formed in the forward ends of the aft hull sections **16**. The upper ends of the connecting pins **38** are provided with suitable handles **42** which may be grasped from above to extract the diametrically reduced end portion **36** of the connecting pin **38** from within the aligned eyes **32** and **34**.

It is to be noted that each of the hull sections **14** and **16** comprises a complete hull having lower water-tight surfaces and that, from a comparison between FIGURES 1 and 3 of the drawings, the aft hull sections **16** may be folded over the forward hull sections **14** as illustrated in FIGURE 1 from a position illustrated in FIGURE 3. The connecting pin **38** is of course utilized to maintain the forward and aft hull sections **14** and **16** in logitudinally aligned relation.

An elongated support and bracing assembly, generally referred to by the reference numeral **44**, is secured between the hull assemblies **12** and includes a hollow center beam generally referred to by the reference numeral **46** having a drawbar generally referred to by the reference numeral **48** slidably disposed therethrough. The center beam **46** has rotatably secured thereto the innermost ends of the radius rods **50**. The inner ends of the radius rods **50** are provided with collars **52** which encircle the center beam **46**. It will be noted (see FIGURE 11) that there is a cylindrical resilient bushing **54** disposed about the opposite ends of the center beam **46** which are encircled by the collars **52**. The collars **52** and the resilient bushings **54** are restricted against movement longitudinally of the center beam **46** toward each other by means of stop pins **56** which are secured to the center beam **46**. The rear resilient bushing **54** is restricted against movement away from the front bushing **54** by means of a stop flange **58** carried by the rear end of the center beam **46** and the forward resilient bushing **54** is restricted against forward movement by means of a stop flange **60** formed on the forward portion of the center beam **46**.

Secured to the inner side walls **62** of the forward hull sections **14** is a pair of bifurcated mounting brackets **64** whose furcations are provided with aligned apertures which receive therethrough pivot pins **66** that are also passed through suitable apertures (not shown) formed through the midportions of the radius rods **50**. The outer end portions of the radius rods **50** extend beyond the outer side walls **68** of the forward hull sections **14** and are secured in overlying relation to the upper surfaces of the hull sections **14** by means of a latch assembly generally designated by the reference numeral **70**.

With particular attention now directed to FIGURES 6 and 7 of the drawings, it will be noted that the outer side walls **68** of the forward hull sections **14** have a mounting plate **72** of the latch assemblies **70** secured thereto in any convenient manner such as by fasteners **74**. The mounting plate **72** has projecting upwardly and outwardly therefrom an apertured lug **76** which rotatably receives therethrough a pivot bolt **78** which is also passed through the apertured free ends of a generally U-shaped bracket **80**. The free ends of the bracket **80** have a brace **82** secured therebetween for affording maximum strength and the bight portion **84** of the bracket **80** has a latch assembly generally designated by the reference numeral **86** secured thereto. The latch assembly **86** includes a cylindrical body **88** in which there is disposed a longitudinally extending latch pin **90**. The latch pin **90** extends through a suitable aperture **92** formed in the upper end thereof and is provided with an eye **94** on its upper end. The lowermost portion of the latch pin **90** disposed within the cylindrical body **88** is provided with a radially extending stop collar **96** which slidably engages the internal surfaces of the cylindrical body **88**. A compression spring **98** is disposed between the upper end of the cylindrical body **88** and the upper surfaces of the stop collar **96** to resiliently urge the latch pin in a downward direction. It will be noted that the U-shaped bracket **80** is pivotally secured to the apertured lug **76** and after the free end portions of the radius rods **50** are positioned in contacting overlying relation with the upper surfaces of the hull section **14**, the U-shaped bracket **80** is pivoted upwardly to embrace the extreme adjacent end of the radius rod **50** with the latch pin **90** being retracted, whereupon the lowermost end of the latch pin **90** below the stop collar **96** may be allowed to seat in the blind bore **98** formed in each of the radius rods **50**. In this manner, the free end portions of the radius rods **50** are maintained in overlying contacting relation with the upper surfaces of the hull sections **14**.

Each of the hull sections **14** and **16** has secured to its inner and outer side walls a pair of upwardly extending journal supports **100**. The journal supports **100** may be secured to the side surfaces of the hull sections **14** and **16** in any convenient manner and it is to be noted that the journal supports **100** on each of the hull sections **14** and **16** are transversely aligned. Front and rear transverse stabilizer bars **102** and **104** are secured between corresponding end portions of the forward and rear sections **14** and **16** and have their opposite end portions rotatably journaled in the journal supports **100**. It will be noted that the journal supports **100** also slidably receive the transverse stabilizer bars **102** and **104**. A retaining pin **106** is removably secured through corre-

sponding end portions of the transverse stabilizer bars 102 and 104 to prevent withdrawal of those end portions of the stabilizer bars from the journal supports 100 and a crank 108 is secured to the other corresponding end portions of the transverse stabilizer bars 102 and 104 to prevent withdrawal of those end portions from the journal supports 100.

With reference now to FIGURES 2, 8 and 11 of the drawings, it will be noted that the support and bracing assembly 44 includes a wheeled supporting assembly generally designated by the reference numeral 110. The wheeled supporting assembly 110 includes a pair of torsion rods 112 having collars 114 on their inner ends which encircle the rear portion of the forward resilient bushing 54. The outer ends of the torsion rods or bars 112 are provided with crank arms 116 with transversely extending spindles (not shown) formed on their outer ends on which wheels 118 are rotatably journalled. It will be noted that the torsion bars 112 are each provided with an encircling resilient bumper 120 whose purpose is to be hereinafter more fully set forth.

The rear end of the drawbar 48 is provided with a radially extending stop flange 122 which is provided with a plurality of apertures 124 for receiving therethrough the fasteners 126 which project rearwardly from the stop flange 58. The rearmost ends of the fasteners 126 may be secured through the apertures 124 in any convenient manner such as by threaded fasteners (not shown). The drawbar 48 is secured in the forwardmost position when the catamaran 10 is in a collapsed position in preparation to be trailed behind a draft vehicle 128. The forward end of the drawbar 48 is provided with a conventional form of trailer hitch 130 for engagement with a hitch element 132 secured to the rear of the vehicle 128.

With particular attention now directed to FIGURES 9 and 10 of the drawings, it will be noted that each of the transverse stabilizer bars 102 and 104 is provided with a pair of aligned apertures 134 and 136 for the purpose of securing one end of a line 138 to the transverse stabilizer 102 and 104. The aperture 136 has a resilient grommet 140 secured therein and the free end of the line 138 is passed through the grommet 140 and thereafter through the aperture 134 whereupon it may be knotted as at 142 to prevent its withdrawal. The grommet 140 insures that the line 138 will not be chafed as it passes through the aperture 136. Each of the transverse stabilizer bars 102 and 104 is also provided with a suitable cleat 144 for the purpose of securing the other end of the line 138 in a manner to be hereinafter more fully set forth.

It will be noted that the journal supports 100 are also provided with resilient sleeves 146, thereby resiliently mounting the outer ends of the transverse stabilizer bars 102 and 104 to the hull sections 14 and 16. It is to be noted that if it is desired suitable means may be provided in the form of stop pins removably secured to the transverse stabilizer bar 104 for preventing inward movement of the hull sections 16 toward each other when the catamaran 10 is in the extended position. Further, the drawbar 48 is provided with a combination towing and stop eye 148 to which a mooring line (not shown) may be secured and which is used as a stop element for restricting further rearward movement of the drawbar 48 through the center beam 46. The eye 148 will engage the resilient collar 150 which is disposed about the drawbar 48 between the stop flange 60 and the eye 148 to stop rearward movement of the drawbar 48 in the center beam 46.

In operation, assuming that the catamaran is in a collapsed state such as that shown in FIGURES 1 and 5, the lines 152 and 154 may be removed to enable the rear hull sections 16 to be pivoted toward positions in longitudinal alignment with the corresponding forward hull sections 14. It is to be noted that if it is desired suitable turnbuckles (not shown) may also be utilized to

retain the catamaran in a collapsed position with the turnbuckles secured between the uppermost free ends of the radius rods 50. After the lines 152 and 154 have been removed, the aft hull sections 16 are pivoted into longitudinal alignment with the forward hull sections 14 and the connecting pin 38 may be moved downwardly through the recess 40 until its lowermost diametrically reduced end portion 36 is passed through the aligned eyes 32 and 34 to secure corresponding hull sections 14 and 16 in longitudinal alignment. The drawbar 48 may then be disconnected from the towing vehicle 128 and the threaded fasteners 127 (see FIGURE 1) may be removed to enable relative movement between the stop flanges 58 and 122, whereupon the drawbar 48 may then be slid longitudinally and rearwardly of the center beam 46. Inasmuch as the keels 156 (see FIGURE 5) are resting upon the resilient bumpers 120, the hull assemblies 12 will be maintained in their closely adjacent spaced relation. The catamaran 10 may then be rolled on the supporting wheels 118 into the water, whereupon the torsion rods 112 will rotate about the center beam 46 to lower the wheels 118. The transverse stabilizer bars 102 may then be passed through the resilient sleeves 146 in the journal supports 100 and the free end of the lines 138 may be passed several times about the center beam 46. By passing the free end of the lines 138 several times about the center beam 46, that end of the line will be at least temporarily secured about the center beam. The cranks 108 may then be manipulated to rotate the transverse stabilizer bars 102 and 104 which function as winches to wind the lines 138 thereabout in order to raise the center beam 46 relative to the hull assemblies, whereupon the radius rods 50 will have their free ends pivoted downwardly, thereby increasing the spacing between the hull assemblies 12. During the movement of the hull assemblies 12 away from each other, the opposite end portions of the stabilizer bars 102 and 104 will slide through the journal supports 100 until the stabilizer bars 50 are substantially horizontally disposed as illustrated in FIGURE 4 of the drawings. The free ends of the lines 138 may then be passed around the corresponding stabilizer bars in a direction opposite to the direction in which the stabilizer bars were rotated one or more times and the free ends of the lines 138 may then be firmly secured to the cleats 144. In this manner, it is not necessary to provide a means to prevent rotation of the transverse stabilizer bars 102 and 104, and the stabilizer bars have their midportions securely fastened to the adjacent portions of the drawbar 48 and center beam 46.

Upon movement of the hull assemblies 12 to an extended position, the free ends of the radius rods 50 are positioned in overlying contacting relation with the upper surfaces of the forward hull sections 14, and the latch assemblies 86 may then be engaged with those free end portions of the radius rods 50.

The torsion rods 112 may then have their free end portions lashed in an upper position between the hull sections 12, as illustrated in FIGURE 4, in any convenient manner.

If the catamaran 10 is to be used as a sailing craft, suitable rigging may then be secured in any convenient manner to the hull assemblies 12 and the support and bracing assembly 44 or, if it is to be used as a motor craft, suitable outboard motors may be secured either between the hull sections 12 on a suitable support (not shown) or a pair of outboard motors may be secured to the rear ends of the hull sections 16.

It is to be noted that the transverse stabilizer bars 102 and 104 are not rigidly secured to the drawbar 44 or the center beam 46 and that the innermost ends of the radius rods 50 are resiliently secured to the center beam 46 with the opposite end portions of each of the transverse stabilizer bars 102 and 104 being resiliently secured to corresponding hull sections 12. Thus, the abridgment

structure or support and bracing assembly 44 provides a support between the hull assemblies 12 having a certain amount of elasticity whereby non-parallel movement of the hull assemblies 12 relative to each other will be afforded to a limited extent which will enable the catamaran 10 to absorb maximum stresses without structural damage.

It is also to be noted that the catamaran 10, when in the collapsed position, is approximately one-quarter the size in plan area than its plan area when the catamaran 10 is in the extended or operational position. Additionally, it is to be noted that the collars 114 of the torsion bars 112 may be mounted about the center beam 46 against rotation relative thereto if it is desired and if the vertical height of the hull assemblies 12 is sufficient to afford clearance both between the lower surfaces of the wheels 118 and the water when the catamaran 10 is in the extended position illustrated in FIGURE 4 of the drawings, the torsion bars 112 could conveniently serve their intended purpose without being rotatably secured to the center beam 46.

Of course, when it is desired to collapse the catamaran 10, the steps hereinbefore set forth in connection with the extension of the catamaran to the operational position may be substantially reversed.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A collapsible amphibious catamaran comprising a pair of hull assemblies, an elongated support and bracing assembly secured between said hull assemblies in parallel spaced relation thereto, said support and bracing assembly mounting said hull assemblies for pivotal movement relative to said support and bracing assembly from between extending positions disposed in spaced relation on opposite sides of said support and bracing assembly and collapsed closely adjacent positions above said support and bracing assembly, said support and bracing assembly including a wheeled supporting assembly normally positioned between said hulls and above the lower surfaces thereof when said hulls are in the extended position and movable, as said hulls are pivoted to the collapsed position from above said hull assemblies, to a position depending from between said closely adjacent hull assemblies when the latter are in said collapsed positions, and removable support and winch means secured between said hull assemblies and said support and bracing assembly for pivoting said hull assemblies from said collapsed positions toward said extended positions, means operatively connecting said wheeled supporting assembly to said hull assemblies for movement of said wheeled supporting assembly toward its depending position in direct response to swinging movement of said hull assemblies to the extended positions.

2. A collapsible amphibious catamaran comprising a pair of hull assemblies, an elongated support bearing assembly secured between said hull assemblies in parallel spaced relation thereto, said support and bracing assembly mounting said hull assemblies for pivotal movement relative to said support and bracing assembly from between extended positions disposed in spaced relation on opposite sides of said support and bracing assembly and collapsed closely adjacent positions above said support and bracing assembly, said support and bracing assembly including a wheeled supporting assembly normally positioned between said hulls and above the lower surfaces thereof when said hulls are in the extended position and movable, as said hulls are pivoted to the collapsed position from above said hull assemblies, to a position depending from between said closely adjacent hull assemblies when the latter are in said collapsed positions, said support and bracing assembly including a plurality of radius rods and a longitudinally extending center beam, said radius rods each having one end pivotally secured to said beam for movement about a longitudinally extending axis and the other end portions of each of said radius rods being secured to one of said hull assemblies, means for pivotally securing the inside gunwales of said hull assemblies to an intermediate portion of corresponding radius rods for movement about the longitudinally extending substantially horizontally disposed axis and means releasably securing the other ends of said radius rods to the outside gunwales of said hull assemblies whereby, when said hull assemblies are pivoted to the collapsed positions, they may also be pivoted to substantially maintain the normal positions of rotation about their longitudinal axis with their bottom surfaces disposed lowermost and in substantial vertical alignment with their upper surfaces.

3. The combination of claim 2 wherein said wheeled supporting assembly includes laterally projecting support bars engaged by the bottom surfaces of the hull assemblies for support when said hull assemblies are in the collapsed position.

4. A collapsible amphibious catamaran comprising a pair of hull assemblies, an elongated support bracing assembly secured between said hull assemblies in parallel spaced relation thereto, said support and bracing assembly mounting said hull assemblies for pivotal movement relative to said support and bracing assembly from between extended positions disposed in spaced relation on opposite sides of said support and bracing assembly and collapsed closely adjacent positions above said support and bracing assembly, said support and bracing assembly including a wheeled supporting assembly normally positioned between said hulls and above the lower surfaces thereof when said hulls are in the extended position and movable, as said hulls are pivoted to the collapsed position from above said hull assemblies, to a position depending from between said closely adjacent hull assemblies when the latter are in said collapsed positions, said support and bracing assembly including a plurality of radius rods and a longitudinally extending center beam, said radius rods each having one end pivotally secured to said beam for movement about an axis extending longitudinally of said hull assemblies and the other end pivotally secured to one of said hull assemblies and including means releasably engageable with the corresponding hull assembly to lock that radius rod against pivotal movement relative to the corresponding hull assembly.

5. The combination of claim 4 wherein each of said hull assemblies includes a pair of longitudinally aligned forward and aft hull sections pivotally secured together at their adjoining ends and adjacent their upper surfaces for movement about transversely extending and horizontally disposed axes whereby said aft sections may be folded over said forward sections, means for releasably securing said hull sections in longitudinaly aligned positions.

6. A collapsible amphibious catamaran comprising a pair of hull assemblies, an elongated support bracing assembly secured between said hull assemblies in parallel spaced relation thereto, said support and bracing assembly mounting said hull assemblies for pivotal movement relative to said support and bracing assembly from between extending positions disposed in spaced relation on opposite sides of said support and bracing assembly and collapsed closely adjacent positions above said support and bracing assembly, said support and bracing assembly including a wheeled supporting assembly normally positioned between said hulls and above the lower surfaces thereof when said hulls are in the extended po-

sition and movable, as said hulls are pivoted to the collapsed position from above said hull assemblies, to a position depending from between said closely adjacent hull assemblies when the latter are in said collapsed positions, said support and bracing assembly includes a plurality of radius rods and a longitudinally extending center beam, said radius rods each having one end pivotally secured to said beam for movement about a longitudinally extending axis and the other end portions of each of said radius rods being secured to one of said hull assemblies, said center beam being disposed between the forward portions of said hull assemblies and having a longitudinally extending drawbar slidably secured thereto for longitudinal movement therealong, said drawbar being disposed in its rearmost position with its major portion extending rearwardly of said center beam and between the rear portions of said hull assemblies when the latter are in the extended position, a rear transverse stabilizer bar removably secured between the rear portions of said hull assemblies, the rear portion of said drawbar being removably secured to the midportion of said transverse stabilizer bar, and a front transverse stabilizer bar removably secured between the forward portions of said hull assemblies and having its midportion removably secured to the forward portion of said center beam.

7. The combination of claim 6 including means for retaining said drawbar in its forwardmost position, the forward end of said drawbar having a trailer hitch secured thereto for attachment to a draft vehicle.

8. A collapsible amphibious catamaran comprising a pair of hull assemblies, an elongated support bracing assembly secured between said hull assemblies in parallel spaced relation thereto, said support and bracing assembly mounting said hull assemblies for pivotal movement relative to said support and bracing assembly from between extending positions disposed in spaced relation on opposite sides of said support and bracing assembly and collapsed closely adjacent positions above said support and bracing assembly, said support and bracing assembly including a wheeled supporting assembly normally positioned between said hulls and above the lower surfaces thereof when said hulls are in the extended position and removable, as said hulls are pivoted to the collapsed position from above said hull assemblies, to a position depending from between said closely adjacent hull assemblies when the latter are in said collapsed positions, said support and bracing assembly includes a plurality of radius rods and a longitudinally extending center beam, said radius rods each having one end pivotally secured to said beam for movement about a longitudinally extending axis and the other end portions of each of said radius rods being secured to one of said hull assemblies, said center beam being disposed between the forward portions of said hull assemblies and having a longitudinally extending drawbar slidably secured thereto for longitudinal movement therealong, said drawbar being disposed in its rearmost position with its major portion extending rearwardly of said center beam and between the rear portions of said hull assemblies when the latter are in the extended position, a rear transverse stabilizer bar removably secured between the rear portions of said hull assemblies, the rear portion of said drawbar being removably secured to the midportion of said transverse stabilizer bar, and a front transverse stabilizer bar removably secured between the forward portions of said hull assemblies and having its midportion removably secured to the forward portion of said center beam, including means on each of said hull assemblies for rotatably journalling and slidably receiving corresponding end portions of said transverse stabilizer bars, means secured to each of said stabilizer bars for effecting rotation thereof, and means on said stabilizer bars for securing opposite ends of a line thereto whereby said stabilizer bars may be used as winches to raise said center beam to position said hulls in the extended positions on opposite sides thereof.

9. A collapsible amphibious catamaran comprising a pair of hull assemblies, an elongated support and bracing assembly secured between said hull assemblies in parallel spaced relation thereto, said support and bracing assembly mounting said hull assemblies for pivotal movement relative to said support and bracing assembly from between extending positions disposed in spaced relation on opposite sides of said support and bracing assembly and collapsed closely adjacent positions above said support and bracing assembly, said support and bracing assembly including a wheeled supporting assembly normally positioned between said hulls and above the lower surfaces thereof when said hulls are in the extended position and movable, as said hulls are pivoted to the collapsed position from above said hull assemblies, to a position depending from between said closely adjacent hull assemblies when the latter are in said collapsed positions, and removable support and winch means secured between said hull assemblies and said support and bracing assembly for pivoting said hull assemblies from said collapsed positions toward said extended positions, said support and bracing assembly including a plurality of radius rods and a longitudinally extending center beam, said radius rods each having one end pivotally secured to said beam for movement about a longitudinally extending axis and the other end portions of each of said radius rods being secured to one of said hull assemblies, said center beam being disposed between the forward portion of said hull assemblies, a rear transverse stabilizer bar removably secured between the rear portions of said hull assemblies, a front transverse stabilizer bar removably secured between the forward portions of said hull assemblies and having its midportion removably secured to the forward portion of said center beam, means on each of said hull assemblies for rotatably journaling and slidably receiving the corresponding end portions of said transverse stabilizer bars, means secured to each of said stabilizer bars for effecting rotation thereof, and means on said stabilizer bars for securing opposite ends of a line thereto whereby said stabilizer bars may be used as winches to raise said center beam to position said hulls in the extended position on opposite sides thereof.

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