J. H. McPARTLAND.

APPARATUS FOR RAISING SUNKEN VESSELS.

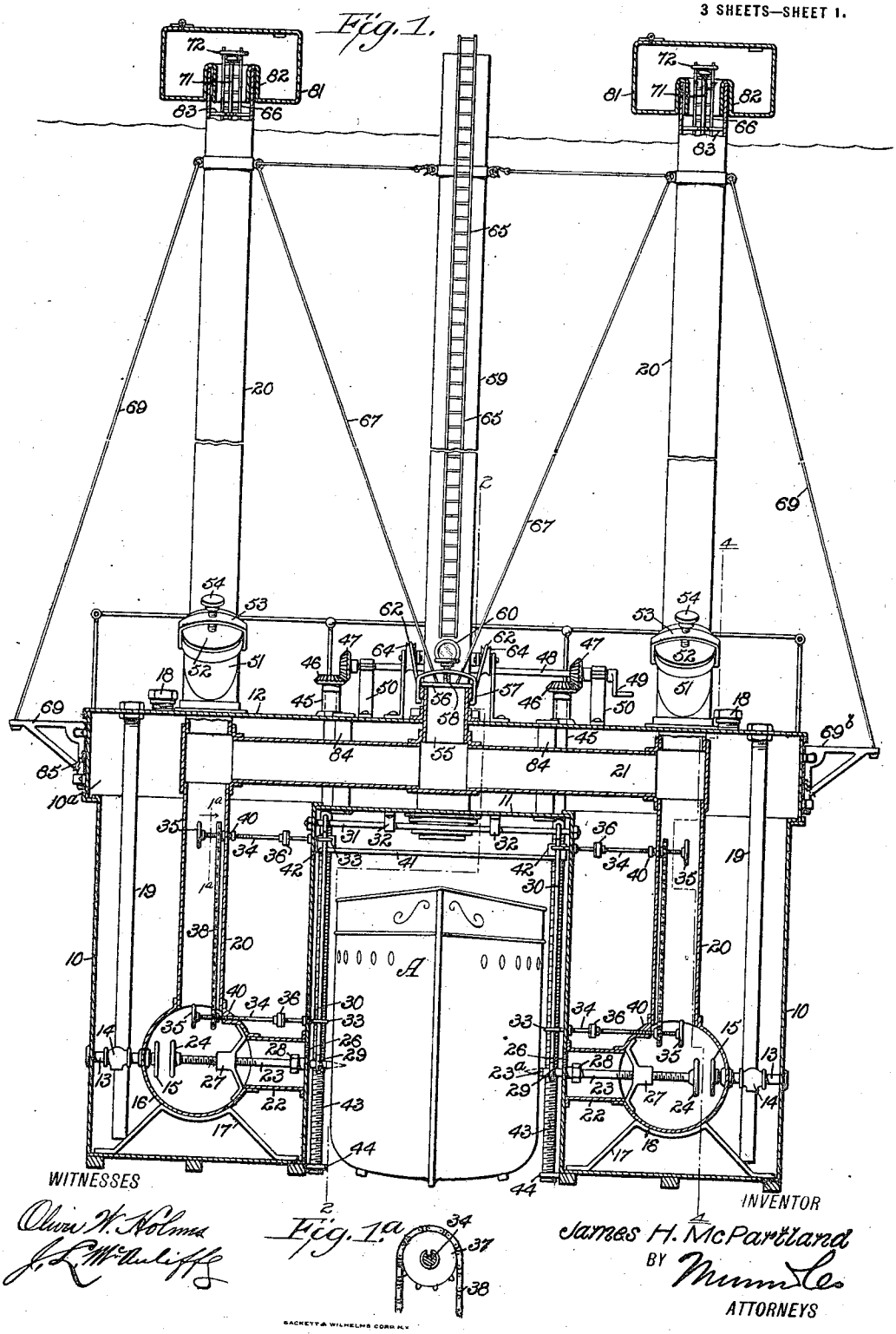
APPLICATION FILED JAN. 25, 1917.

1,259,762.

Patented Mar. 19, 1918.

3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

Oliver W. Holmes

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Fig. 1a.

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3 SHEETS—SHEET 2.

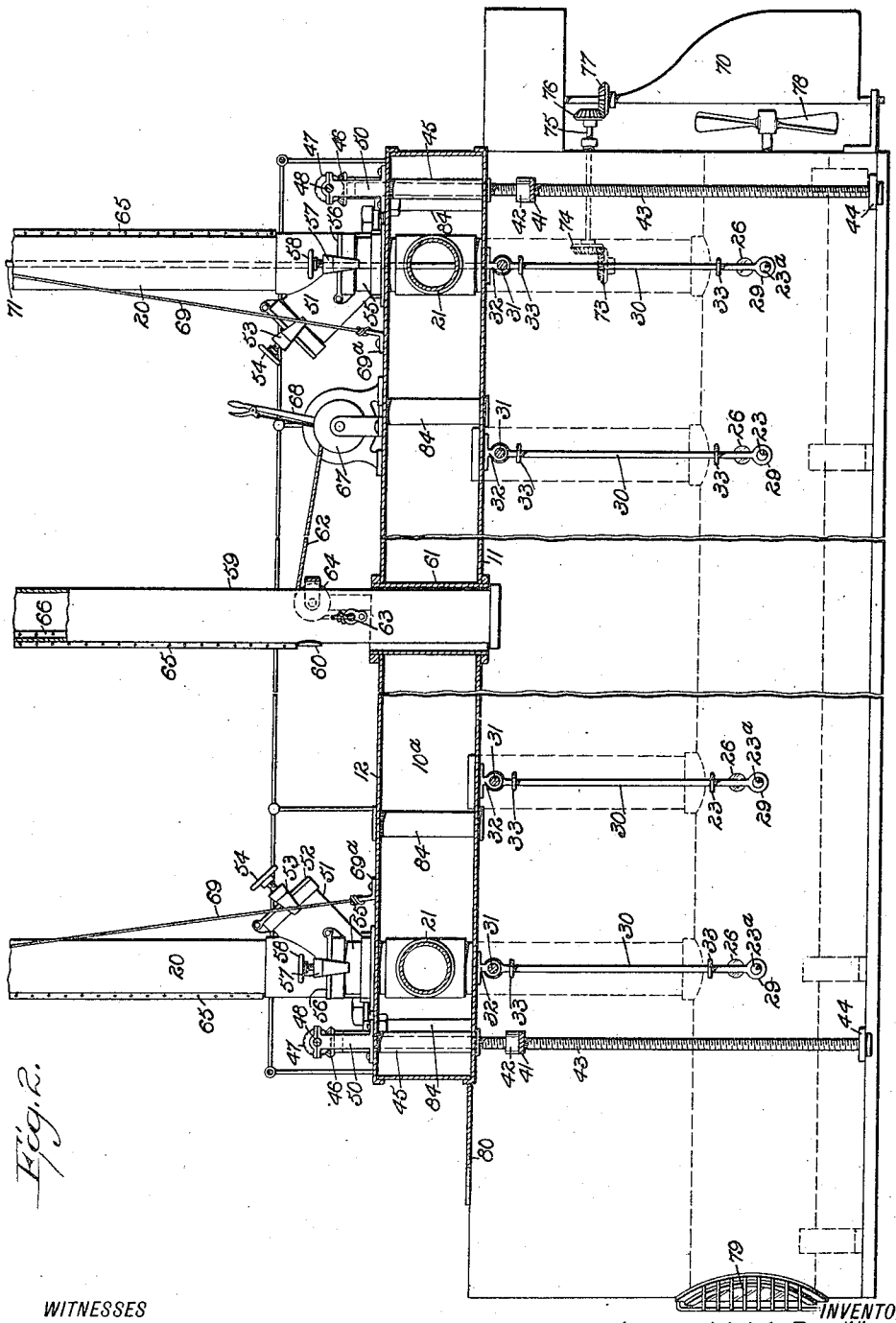


Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 4.

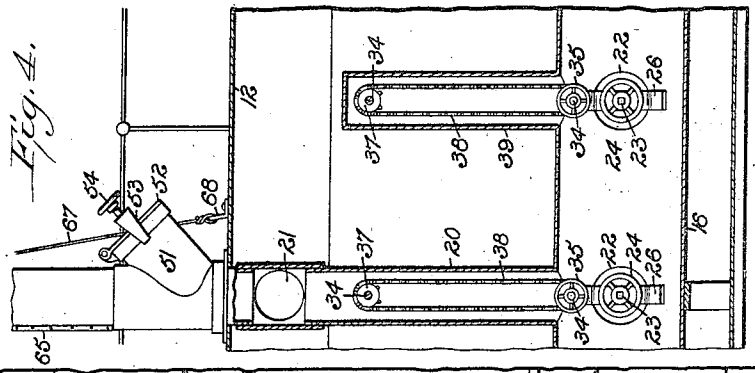


Fig. 3.

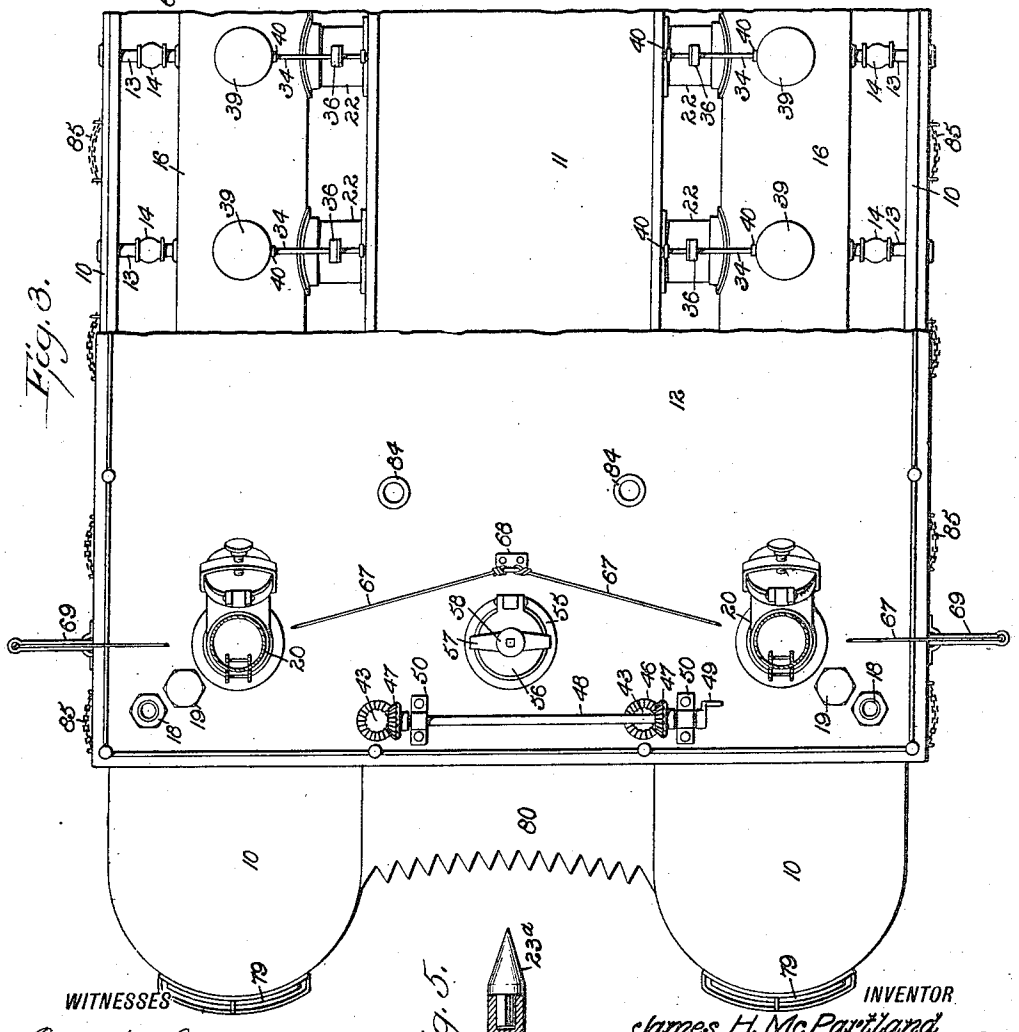


Fig. 5.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR RAISING SUNKEN VESSELS.

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Application filed January 25, 1917. Serial No. 144,396.

To all whom it may concern:

Be it known that I, JAMES H. McPARTLAND, a citizen of the United States, and a resident of Houlton, in the county of Aroostook and State of Maine, have invented a new and Improved Apparatus for Raising Sunken Vessels, of which the following is a full, clear, and exact description.

The prime object of my invention is to produce an apparatus in the form of a submergible marine vessel of the catamaran type adapted to be positioned over the vessel to be raised so that the latter will occupy the space between the spaced hulls of the catamaran, the respective hulls having gripping means operable from the interior of the hulls to engage the sunken vessel, whereby as the catamaran rises following the ejection of the submerging water, the sunken vessel will be raised to be carried to shoal water or placed on sunken lighters or the like such as are adapted to be caused to rise by pumping or forcing water therefrom.

A further object of my invention is to provide in connection with a submergible raising apparatus, internal working chambers and stand pipes rising therefrom to any desired height to extend above the surface of the water when the raising vessel is submerged.

Further objects of the invention are to provide for operating a steering gear from the upper end of one or more of the stand pipes; to provide an observation tube which may be lowered between the hulls for locating the sunken vessel and then raised to present no obstruction between the hulls; and to provide movable stays between the hulls to brace the same when being driven on the surface and adapted to be moved to a position to offer no obstruction to the sunken vessel.

Other objects of the invention will appear as the description proceeds.

Reference is to be had to the accompanying drawings forming a part of this specification in which similar reference characters indicate corresponding parts in all the views.

Figure 1 is a transverse vertical section of an apparatus constituting one embodiment of my invention;

Fig. 1^a is a detail in section on the line 1^a—1^a Fig. 1;

Fig. 2 is a longitudinal vertical section on the line 2—2, Fig. 1;

Fig. 3 is a partial plan view with parts broken out;

Fig. 4 is a fragmentary longitudinal vertical section on the line 4—4, Fig. 1;

Fig. 5 is a fragmentary detail showing a terminal of one of the gripping devices.

In carrying out my invention, a vessel is provided of the catamaran type having hulls 10 spaced to accommodate therebetween a sunken vessel indicated at A, Fig. 1. A suitably constructed bottom 11 extends between the hulls and a deck 12 extends across the vessel and is elevated above the bottom 11, providing an interior transverse space 10^a above the bottom 11, establishing connection between the two hulls over the bottom 11 so that the hulls and the space 10^a may receive water for submerging the vessel.

A suitable number of sea valves 14 are provided in transverse inlet pipes 13, the valve wheels or other handles 15 being within longitudinal cylinders 16 constituting working chambers. The said cylinders are suitably supported as by rests 17. The numeral 18 indicates air inlets in the deck 12 to which hose (not shown) may be connected whereby to direct compressed air into the interior of the vessel to expel the water which is adapted to pass out through vertical discharge pipes 19 that extend from the deck 12 to near the bottom of the hulls 10.

Rising from the working chamber 16 of each hull 10 is a suitable number of stand pipes 20 which are of any desired height in practice, whereby to extend above the surface of the water when the apparatus is otherwise submerged. The stand pipes 20 at each side are connected by transverse tubes or passages 21 so that workmen may pass freely from one working chamber 16 to the one at the opposite side of the vessel.

Branch chambers 22 in the form of tubes extend laterally from the working chamber 16 toward the inner sides of the hulls 10 and in said lateral chambers transversely disposed gripping devices 23 are arranged, preferably in the form of threaded spindles, the outer pointed ends 25 of which are advantageously removable. The spindles obviously may be operated by any suitable means, there being conventionally shown for the purpose hand wheels 24 in the cham-

bers 16. The threaded portions of the spindles turn in threaded bearings 27 in the chambers 16 and in suitable bearings 28 at the inner sides of the hulls 10. The numeral 26 indicates observation windows at the opposed sides of the hulls adjacent to the grips 23. The arrangement is such that after the catamaran has been submerged over the vessel A to be raised, the spindles 23 may be advanced to cause their ends 25 to penetrate the opposite sides of the sunken vessels and firmly grip the same, it being understood in practice that these grips will be of sufficient number and strength to give a substantial sustaining support to the gripped sunken vessel so that when the water in the hulls 10 and the space 10^a is displaced and the raising apparatus rises, the sunken vessel A will be raised.

The apparatus in practice is of a capacity to accommodate large sunken vessels, and, therefore, when a small sunken vessel is to be raised, the spindles 23 will need to be advanced toward each other a much greater distance than in the case of a large vessel, for which reason I provide steadying means between the hulls 10. Said means consists of eyes 29 embracing the respective spindles 23, said eyes being formed on the lower ends of depending rods 30 which are slidably hung on a transverse rod 31 supported in hangers 32 or the like in the under side of the bottom 11, between the hulls 10. The rods 30 are adapted to be moved to or from the opposed sides of the hulls 10 by transverse actuating rods 34, having upper and lower eyes 33 embracing said rods 30, the rods 34 having handles 35. The handles 35 of certain of the rods 34 are within the stand pipes 20 while others are in vertical housings 39. Each rod 34 has a swivel joint or any other suitable universal joint so that the outer threaded end of each rod may turn in threaded bearings 40 for advancing the eyes 33 to move the rods 30. The actuating rods 34 are provided with chain wheels 37 over which chains 38 run to operate the upper and lower rods of a pair in unison.

In order to provide bracing means between the hulls transverse stays 41 are provided and adapted for vertical movement so as to be disposed at the bottom of the hulls or adjacent thereto when there is no vessel A between the hulls, the stays being adapted to be brought to an elevated position to afford no obstruction to the sunken vessel. For the purpose each stay has nuts or internally threaded eyes 42 thereon at the ends through which fixed vertical screws 43 extend, said screws being carried through the bottom 11, the space 10^a, and the deck 12, through bearings or thimbles 45 extending from the said bottom to the said deck. At the upper ends the screws have suitable means for turning the same in unison, there being shown bevel pinions 46 thereon meshing with similar pinions 47 on a transverse shaft 48 provided with suitably turning means here shown as a crank handle 49, said shaft turning in bearings on standards 50 on the deck 12. Thus the screws 43 may be turned to raise or lower the stays 41 as desired.

In connection with the stand pipes 20 manholes 51 may lead thereto at the deck, said manholes having covers 52 secured by clamps 53 and screws 54. Also, in order to afford access from the deck to the transverse passage-ways or tubes 21, manholes 55 are provided having covers 56 secured by clamps 57 and clamp screws 58.

In order that observations may be taken below the bottom 11, I provide a vertical observation tube 59 in the form of a stand pipe and having an observation window 60 therein at the front. The said tube 59 is vertically movable through a thimble 61 extending from the bottom 11 to the deck 12 and may be raised or lowered by cables 62 secured as at 63 to said tube and running over sheaves 64 to a winch 67 which may be actuated and controlled in any suitable manner, the numeral 68 indicating a lever associated with the winch. External ladders 65 and internal ladders 66 are provided in connection with the stand pipes 20 and observation tube 59. The numeral 69 represents stays for the stand pipes 20, certain of the stays being suitably secured at their lower ends to any fixed element on the deck as at 69^a, the outer stays being secured at their lower ends to outriggers 69^b on the outer sides of the hulls 10.

In order to operate the steering means from the top of the rear stand pipes 20, a rudder 70 is controlled by steering rods 71 extending vertically in said stand pipes, the numeral 72 indicating the steering wheels. The rod 71 is suitably geared with the rudder, there being indicated a bevel pinion 73 on said rod, meshing with a similar pinion 74 on a horizontal shaft 75 which has a second pinion 76 in mesh with a pinion 77 on the rudder post. It is to be understood that each hull has a propeller 78, and in practice the apparatus will have suitable engines (not shown). The numeral 79 indicates an observation window which is provided at the front of each hull 10. The numeral 80 indicates a toothed transverse blade extending between the hulls forwardly at about the level of the bottom 11 to shear off or deflect any obstructions above the deck of the sunken vessel.

I provide floatable tops 81 for the stand pipes 20 adapted to be reached by boats. The said floating tops 81 are provided with annular grooves 82 to fit over the tops of the stand pipes 20, there being central openings in said tops 81 so that the workmen can pass to and

from said stand pipes. Thus, if the apparatus should be submerged to an unexpected depth, the tops 81 may float away, thereby insuring safety to the workmen who will not enter the stand pipes 20 until the apparatus is positioned above the vessel to be raised. The numeral 83 indicates bearings for the steering rods 71 near the upper ends of the stand pipes 20.

It is to be understood in practice that the submergible vessel will be fully equipped with all precautionary features and conveniences such as telephones, bulkheads, valves, and like expedients in the interest of safety. Along the sides of the vessel, chains 85 or other convenient means will be provided for the attachment of pontoons in case the load to be lifted cannot otherwise be raised. I would mention that the outriggers 69^b may be swung against the sides of the hulls when not in use.

The numeral 84 indicates vertical tubes or thimbles extending through the deck 12 and bottom 11 to permit of a chain being passed therethrough and looped under the sunken vessel, whereby to exert a positive lifting pull on the sunken vessel by the aid of any convenient winch on the raised vessel, when the former is embedded in a sandy or muddy bottom.

I wish to state in conclusion that although the illustrated example constitutes a practical embodiment of my invention, I do not limit myself strictly to the mechanical details herein illustrated, since manifestly the same can be considerably varied without departure from the spirit of the invention as defined in the appended claims.

Having thus described my invention I claim as new, and desire to secure by Letters Patent:

1. In an apparatus for raising a sunken vessel, a submergible hollow body having a space at the under side thereof at the approximate center to accommodate the vessel to be raised, transversely disposed gripping devices movable axially through the opposed walls of the submergible body at the sides of the said space, means at the interior of the submergible body to operate said gripping devices, and means whereby to admit water to the hollow body or to displace the water.

2. In an apparatus for raising a sunken vessel, a submergible hollow body presenting at the under side thereof a space to accommodate the vessel to be raised, a water-tight working chamber within the said hollow body, a stand pipe rising from the said working chamber and extending above the hollow body to a height to project above the surface of the water when the body is submerged, means extending from the working chamber laterally through the adjacent wall of the said body, and adapted to grip the sunken vessel when positioned in the said space, and means to admit water to the said hollow body or to cause displacement of said water to submerge or raise said body.

3. In an apparatus for raising sunken vessels, a submergible vessel of the catamaran type, having hulls spaced to position the raising vessel over the one to be raised with the latter between the hulls, water-tight working chambers in the said hulls, stand pipes rising from the said working chambers and extending above the body of the submergible vessel to a height to project above the water when said vessel is submerged, a transverse passage connecting said stand pipes, transversely disposed gripping tools in said hulls extending at their outer ends through the opposed sides of the respective hulls, the inner ends of the said gripping tools being within the respective working chambers, and means to actuate said gripping devices.

4. In an apparatus for raising sunken vessels, a submergible vessel of the catamaran type, having hulls spaced to position the said raising vessel over the one to be raised, with the latter between the hulls, gripping devices extending through the opposed sides of the respective hulls into said space, means within the hulls to operate said gripping devices to engage or disengage the sunken vessel, steadying and guiding means in the said space for the outer ends of the gripping devices, and means operable from within the hulls to move said guiding means toward and from each other in said space as the gripping devices are caused to move outward or to recede.

5. In an apparatus for raising sunken vessels, a submergible vessel of the catamaran type, having hulls spaced to position the said raising vessel over the one to be raised, with the latter between the hulls, gripping devices extending through the opposed sides of the respective hulls into said space, means within the hulls to operate said gripping devices to engage or disengage the sunken vessel, rods in said space adjacent to the hulls, said rods having steadying and guiding means for the gripping devices, and means extending through the opposite walls of the hulls and engaging said rods, and means within the hulls to operate the last-mentioned means to move said rods toward or from each other as the gripping devices are caused to move outward or to recede.

6. In an apparatus for raising sunken vessels, a submergible vessel of the catamaran type having hulls spaced to position the raising vessel when submerged over the one to be raised with the sunken vessel between said hulls, and stay means between the said hulls, said stay means being movable to a lowered position or to a raised position to permit entrance of the sunken vessel between the hulls.

7. In an apparatus for raising sunken vessels, a submergible vessel of the catamaran type having hulls spaced to position the raising vessel when submerged over the one to be raised with the sunken vessel between said hulls, transverse stay bars disposed between the hulls, vertical screws supported on the hulls at opposite sides of the stays between the same, threaded elements on the said stay bars in engagement with the said screws, and means to actuate the screws from the deck of the submergible vessel to raise or lower the said stay bars.

8. In an apparatus for raising sunken vessels, a submergible vessel having a space at the under side thereof to accommodate the vessel to be raised, means to secure the sunken vessel to the submergible vessel, and an observation tube vertically movable to extend into the said space for submarine observation, or to a raised position to present no obstruction to the entrance of the sunken vessel.

9. In an apparatus for raising sunken vessels, a submergible vessel having a space at the under side thereof to accommodate the vessel to be raised, means to secure the sunken vessel to the submergible vessel, and an observation tube vertically movable to extend into the said space for submarine observation, or to a raised position to present no obstruction to the entrance of the sunken vessel, the said observation tube being of a height to extend above the body of the submergible vessel to an extent to project above the surface of the water when the body is submerged.

10. In an apparatus for raising sunken vessels, a submergible vessel presenting a space at the under side thereof to accommodate the vessel to be raised, a working chamber in said submergible vessel, a stand pipe rising from said working chamber and extending above the body of the submergible vessel to a height to project above the surface of the water when the vessel is submerged, and steering means for said vessel, said steering means including a rudder, a steering wheel adjacent to the top of the stand pipe, and operative connections between the said steering wheel and the rudder.

11. In an apparatus for raising sunken vessels, a submergible vessel presenting a space at the under side thereof to accommodate the vessel to be raised, a working chamber in said submergible vessel, a stand pipe rising from said working chamber and extending above the body of the submergible vessel to a height to project above the surface of the water when the vessel is submerged, and a floatable top detachably supported on said stand pipe.

JAMES HUGH McPARTLAND.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."