Feb. 13, 1945. P. P. SMITH 2,369,615

SECTIONAL VESSEL

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FIG 1

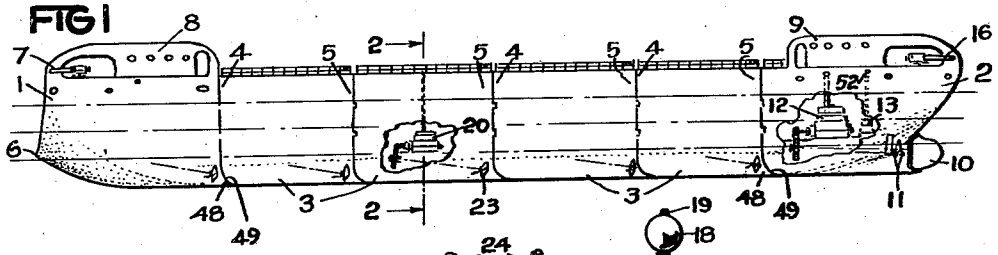


FIG 2

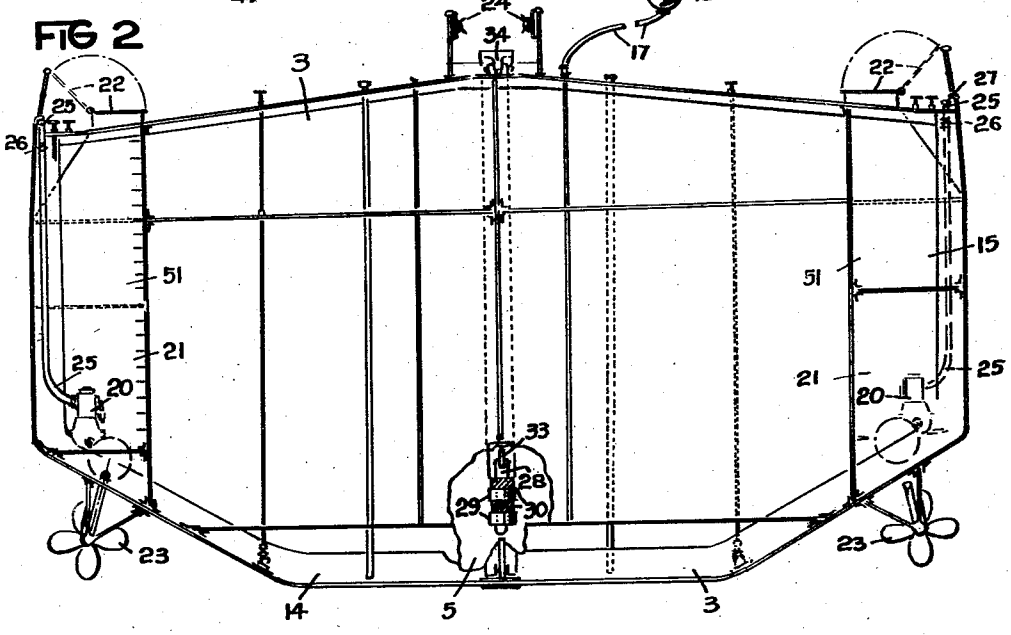


FIG 3

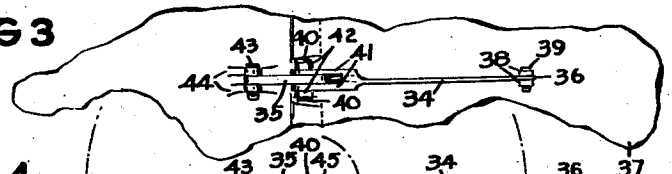
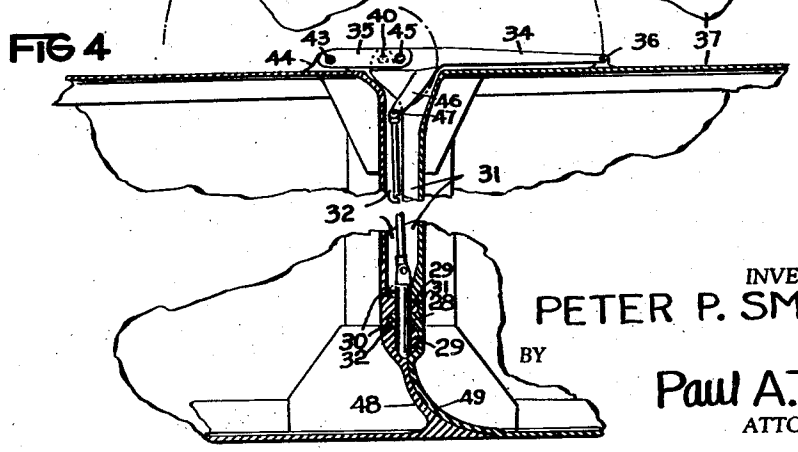


FIG 4



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FIG 5

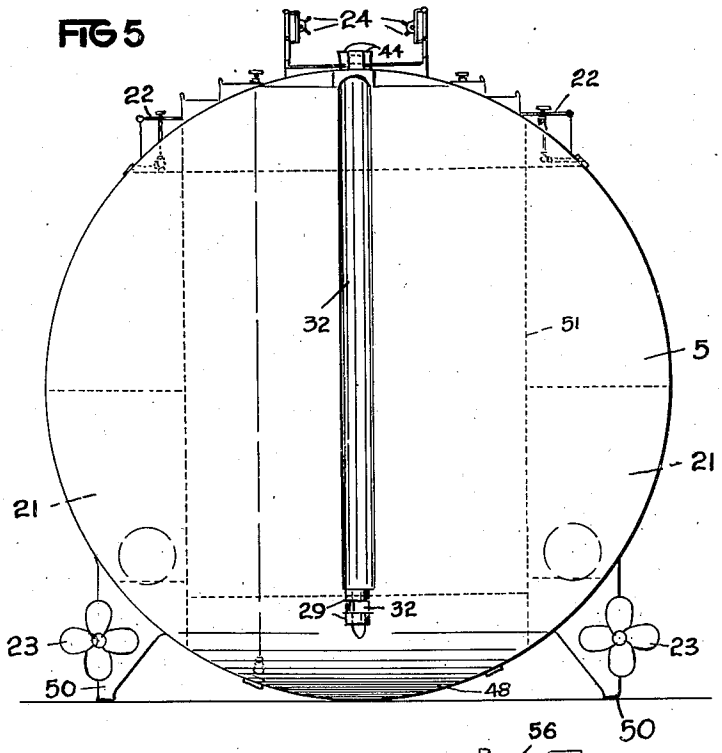


FIG 6

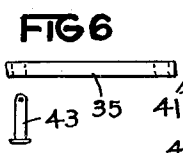


FIG 7

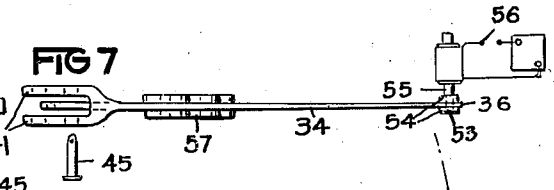


FIG 8

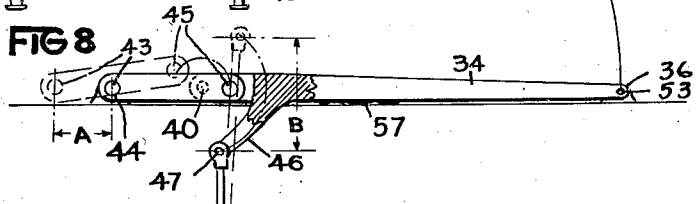
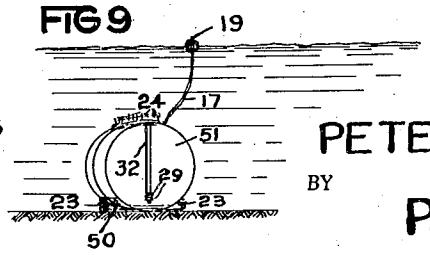
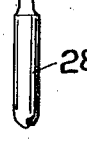


FIG 9





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2,369,615

SECTIONAL VESSEL

Peter P. Smith, Teaneck, N. J.

Application March 13, 1942, Serial No. 434,483

3 Claims. (Cl. 114—77)

My invention relates to a vessel constructed so that its several sections may be easily detached one from the other or may be attached to provide a sea-going ship. Among the purposes and objects of my invention are to provide:

A plurality of self aligning ship sections.

Detachable ship sections and propelling means for each section.

A plurality of sinkable sections detachably secured to each other to form a ship and also tanks, when separated, which may be hidden beneath the surface, then raised and self-propelled on the surface.

A detachable ship section and a means for sinking and raising it.

A ship section locking device which draws one section toward another section.

A sectional vessel and protecting guns.

A sectional vessel having a ram on its forward section for sinking submarines.

A sectional vessel, each section of which has a surface for resting on the bottom separately or when the sections are joined together.

A sectional vessel having ballast and trimming tanks and swash bulkheads.

An air raising mechanism for raising sections of a sectional vessel to the surface.

Scuttling valves or sea cocks and deck operating handles for sinking sections of a sectional vessel to the bottom.

I accomplish these and other objects by the construction herein set forth and shown in the accompanying drawings froming a part hereof in which:

Fig. 1 is a side elevation of my vessel.

Fig. 2 is a section at 2—2, Fig. 1.

Fig. 3 is a fragmentary detail and plan of one of the section locking levers.

Fig. 4 is a fragmentary sectional elevation of one of the section locking devices.

Fig. 5 is an end elevation of a modification of a section.

Fig. 6 is a plan of one of the draw links.

Fig. 7 is a plan of one of the lock levers.

Fig. 8 is a detail showing the movement of one of the lock levers and draw links.

Fig. 9 is a perspective view showing a section on the bottoms under water.

Similar reference characters refer to similar parts throughout the several views of the drawings and in the specification to follow.

My sectional vessel or ship is of particular interest in war time and its construction and features are particularly adapted to reduce the damage which may be caused by submarines and air craft and to meet the demand for carrying and storing oil and gasoline.

It is the purpose of this detailed specification, to illustrate by description and drawings an embodiment, and to suggest by one of the many modifications possible to suit my invention to the uses for which it is adapted. The details herein described are not intended to limit the breadth or scope of my invention but rather to make this my disclosure more easily understood.

To those skilled in the art to which this invention pertains, after a study of this disclosure, modifications may be suggested without departing from the principles underlying my invention or the appended claims which set it forth.

My sectional ship is adapted to rest in the docks from which the water has been removed; either in its whole assembly of parts or the sectional or a part of them may be separately drydocked. The sections may be fabricated or built in remote parts and in places not commonly employed in the building of ships and the parts may later be assembled at any desired port for the voyage at sea or to a far off land.

Referring to the drawings and particularly to Fig. 1, I have shown my vessel as having a forward or bow section 1, an after or stern section 2 and one or a plurality of intermediate sections 3, which may be duplicates or may be so constructed at their forward ends 4 as to mate with and be secured to the after ends 5 of another section.

The forward section 1 is preferably provided with an extended stem iron or ram 6 and guns 7 and utility space 8 such as crews quarters, galley, and stores, and steering gear, etc. The steering gear may, however, be provided in the stern section 2 and other utility space 9.

The stern section 2 may also be provided with the rudder 10, propellers 11, engine room and engines 12, including pumps, electrical equipment and air compressor 13 which is used to force the water out of the ballast tanks 14 and trimming tanks 15 which may be of various sizes and capacities in the various sections best suited to sink and raise the sections or their ends and sides as desired. The guns 16 are provided aft to augment the guns 7 forward in driving off attackers.

I have provided a hose 17 which may be supplied with compressed air from the compressor 13 or from any other source of compressed air to force the water from the various tanks used in sinking and trimming the sections. The hose 17 may be provided with a float buoy 18 and suitable detachable hose connection 19 which may

also serve to locate the section when on the bottom as well as to provide a means of attaching a hose for compressed air to raise the section to the surface of the water.

Each and all of the sections may be propelled on the surface even though separated from the other sections by the engines 20 which are in pairs one on each side of the section in the engine rooms or wells 21 which are accessible through the deck hatches 22. The engines may be geared to the propeller shafts to the twin screws 23. The controls 24, for the engines 20 are carried to the top and to a central control station so that one man may handle both engines and so positioned that an operator may increase or decrease the speed of either engine of the pair to steer the section or to turn it around or reverse its direction from ahead to astern. Thus, one section may proceed under its own power up to another section and then be connected to it or the reverse may be the case as a section may back into the section which is to follow it when assembled.

The engines 20 may all operate together in addition to the main engines 12 or separately and only when propelling the individual section. The pipes 25 for exhausting the gases of combustion may be provided with check valve 26, preventing the inflow of water when the section is submerged or each may be capped 27 and thus made water tight.

To lock each section to another, I have provided the bottom pins 28 which engage the bosses 29 on the after ends and 30 on the forward ends. On the forward ends of the section above the bosses 29 and 30 in both the forward and after ends of the conjoining sections, I have provided the vertical grooves or recesses 31 and on the after ends, the grooves 32 which form wells when the sections are joined and the wells receive the pin operating rods 33 which are swingingly secured at their bottom ends to the pins and at their tap ends to the lock levers 34 which combine with draw links 35 to draw the tops of the sections toward each other when it is desired to lock them in place and also simultaneously force the pins 28 into the bosses, thereby locking the sections firmly together. A plurality of bosses, pins and lock levers and draw links may be provided to give the desired strength.

The operation of the locking device may be better understood by referring to Figs. 3, 4, 6, 7 and 8. The levers 34 combine with the links 35 to form a toggle joint which, as the sections are brought together, so increase the leverage as to exert extreme tension on the links with little effort on the end 36 of the lever which is locked onto the deck 37 by the bosses 38 and pins 39 which pass through the end of the lever and through the bosses.

The levers swing on the pins 40 which engage their bifurcated ends 41 as well as the bosses 42 secured to the forward ends and on the decks of each section. The links receive the pins 43 which detachably secure one end to the bosses 44, the other ends of the links are detachably secured to the levers 34 by the pins 45. The bosses 44 are secured to the after end of each section and when the lever is swung to the position shown in Figs. 4 and 8, the three pins 40, 43 and 45 are on a dead center line preventing movement under the extreme stress to which they may become subjected.

The operating rods 33 are connected to the levers 34 by the arms 46 and pins 47 and the arms by being so shaped as to extend down into the recesses 31 and 32, permit nearly a half revolution and extend upwardly when the lever is at its unlocked position, permitting greater travel of the pins 47 than the pins 45, thus causing a greater vertical travel B than the travel A of the sections as they are drawn together.

The number and position of the locking devices, as well as the disposition and size of the ballast and trimming tanks may be modified to suit the shape and usable space in each section. The size and arrangement of the machinery and the space required also determine the nature of the tanks as contrasted with the cargo space. In some cases, oil or gasoline may be replaced with water when the section is sunk to the bottom or to trim it to assist in joining the sections to which it may be secured.

The after bottom end of each section is preferably provided with an extended sweep 48 which cooperates with the rounded forward bottom curved or beveled end 49 of the conjoining section to guide one section into place with another. Likewise, the bosses 29 and 30 and the recesses between and at their ends guide the sections into their proper alignment.

The modification shown in Fig. 5, in which the sections are shown as cylindrical, the propellers or twin screws 23 are protected and the sections are supported from rolling in a seaway and on the bottom by the bilge keels 50.

I have shown, in dotted lines 51, some of the bulkheads both fore and aft and thwart ships such as for the engine spaces in the sections and the bottoms for the various tanks. These, however, may be varied considerably to suit the size and service of my sectional vessel.

In Fig. 1, I have shown light, mean and load water lines, unbroken lines, and propelling means below them so that at all times the propellers are under water and thus suitable to operate my vessel under any load and sea conditions.

The compressor 13 is preferably provided with a side or deck connection 52 suitable to attach to the hose 17 for raising the intermediate sections from the bottom.

In Figs. 7 and 8, I have shown the pins 53 suitable to normally lock the end of the levers 34 to the deck by means of the bosses 54. The pin 53 may be secured to or formed integral with the solenoid core 55 which may be operated by the switch 56 to withdraw the pin from said lever permitting the end of lever to be raised to unlock one section from the other.

The end levers 34 may be raised and moved away from their dead centers to which they are placed when the sections are locked together, by the spring or other lever operating means 57. Compressed air or hydraulic cylinders may be substituted for the spring lever operating means in some cases and the switch 56 may be located near the pilot of my sectional vessel to release the sections from their locked together relation in emergency, such as may occur when one of the sections is torpedoed. The damaged section may be left to sink or drift away from the other sections which may again be connected together without the damaged one.

Having thus described one of the embodiments of my invention in detail, I desire the scope to be limited only to the underlying principles and to the appended claims which set forth my invention.

I claim:

1. In a sectional vessel, a bow section and stern section and intermediate sections secured thereto

and to each other, each of said sections mating when united with the adjacent sections, and deck levers locking each of the sections to adjacent sections and lever operating and releasing means to unlock the sections from each other comprising a draw link swingingly secured to said lever at one end thereof and detachably secured to the adjacent section to draw two of said sections together and lock pins and bosses at the bottom of adjacent sections and operating rods swingingly secured to said deck levers moving said pins into and out of engagement with said bosses by the movement of said lever.

2. In a sectional vessel, a bow section and stern section and intermediate sections secured thereto and to each other, each of said sections mating when united with the adjacent sections, and deck levers locking each of the sections to adjacent sections and lever operating and releasing means to unlock the sections from each other comprising a draw link swingingly secured to said lever at one end thereof and detachably secured to the adjacent section to draw two of said sections together and lock pins and bosses at the bottom of adjacent sections and operating rods swingingly secured to said deck levers moving said pins into and out of engagement with said bosses by the movement of said lever, and separate propelling means for said intermediate sections to operate each section independently of each other section.

3. In a sectional vessel, a bow section and stern section and intermediate sections secured thereto and to each other, each of said sections mating when united with the adjacent sections, and deck levers locking each of the sections to adjacent sections and lever operating and releasing means to unlock the sections from each other comprising a draw link swingingly secured to said lever at one end thereof and detachably secured to the adjacent section to draw two of said sections together and lock pins and bosses at the bottom of adjacent sections and operating rods swingingly secured to said deck levers moving said pins into and out of engagement with said bosses by the movement of said lever, and separate propelling means for said intermediate sections to operate each section independently of each other section and means for steering each section independently of the other sections when separated from other sections.

PETER P. SMITH.