June 14, 1955 S. KUTCHAR 2,710,587

SHIP HULL AND RUDDER STRUCTURE

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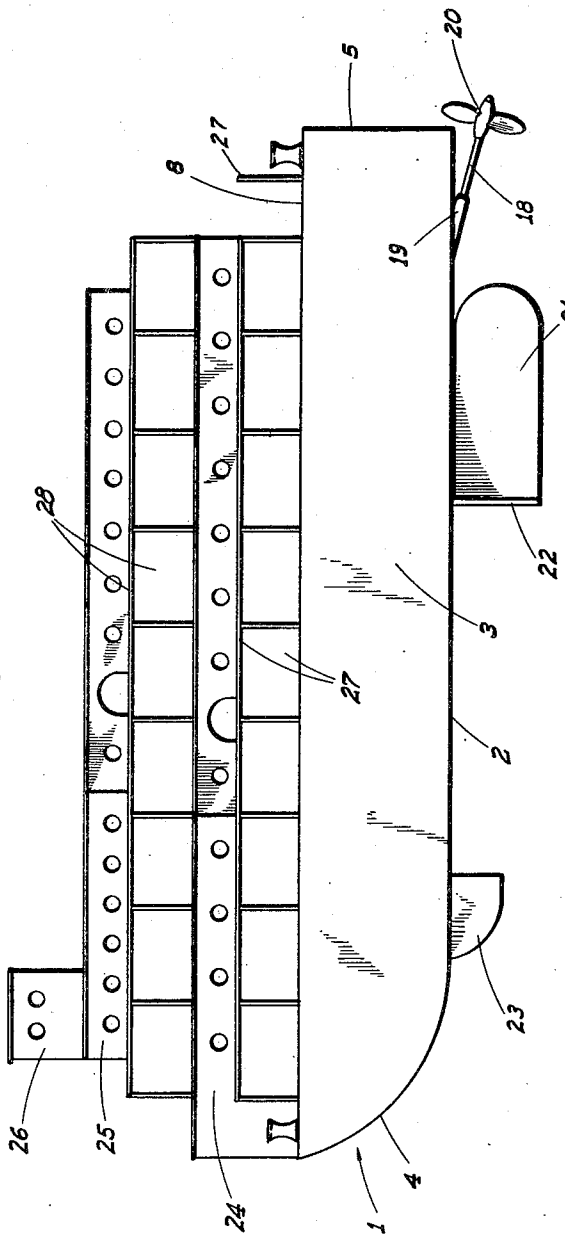


Fig. 1

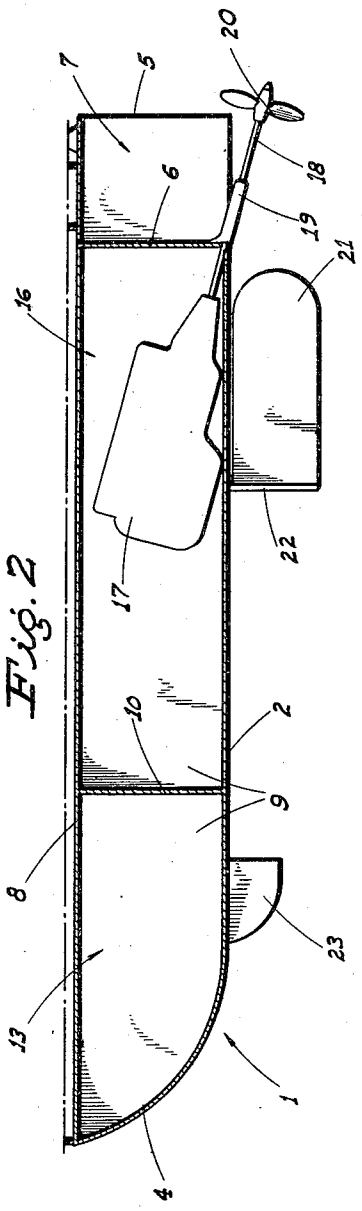


Fig. 2

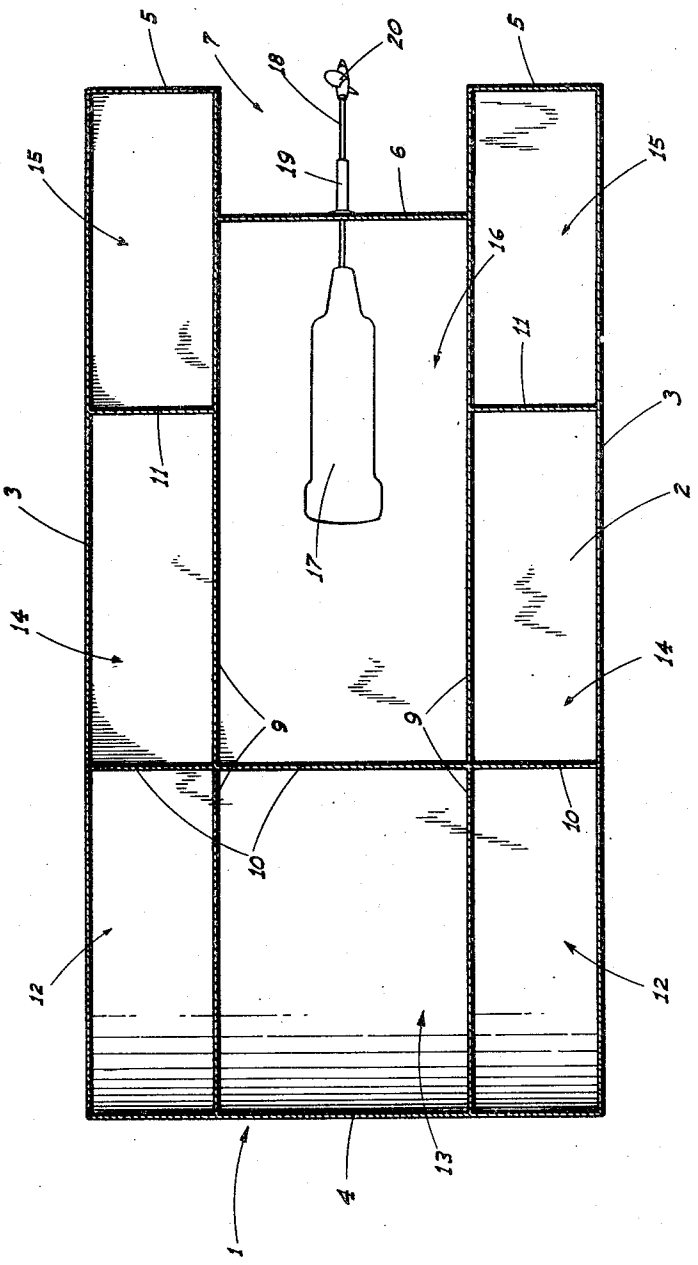
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Fig. 3



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Fig. 4

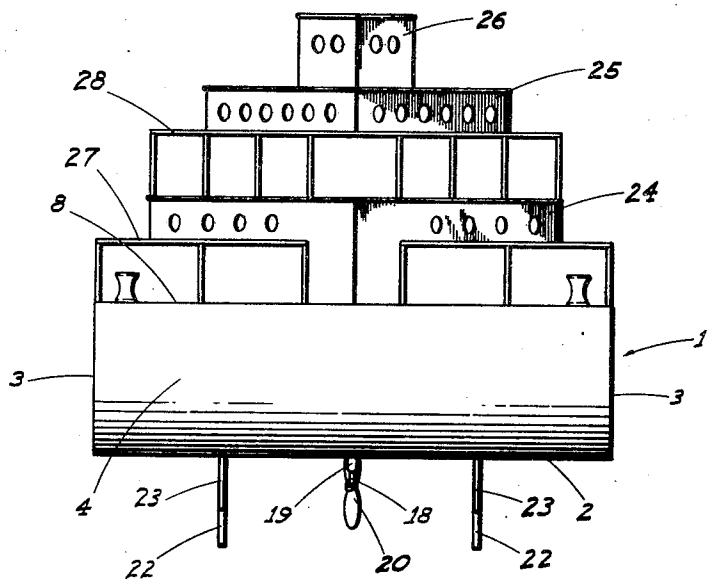
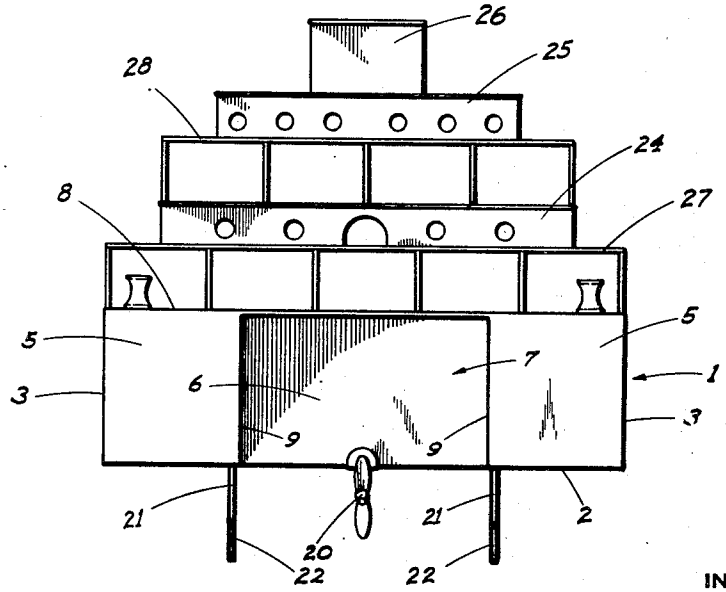


Fig. 5



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SHIP HULL AND RUDDER STRUCTURE

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Application August 15, 1952, Serial No. 304,546

2 Claims. (Cl. 114—163)

This invention relates in general to water craft.

In particular the invention is directed to, and it is an object to provide, a novel ship structure, especially with respect to the construction of the hull.

Another important object of the invention is to provide a ship hull which, while capable of substantial speed, is strong and seaworthy; the hull structure affording a maximum of safety, being compartmented in a manner so that a rupture caused by collision, or a mine in time of war, does not cause sinking of the ship.

An additional object of the invention is to provide a ship hull which is of a form which does not tend to roll or rock unduly; the hull riding the water with ease, resisting the stresses and strains of sea operation, and having such balance that there is no tendency to capsize.

A further object of the invention is to provide a ship hull designed to facilitate construction and maintenance thereof.

It is also an object of the invention to provide a ship hull which incorporates a hold for cargo, and—if desired—supports above-deck cabins for crew or passengers.

A still further object of the invention is to provide a practical and reliable ship hull, and one which will be exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings:

Fig. 1 is a side elevation of a ship embodying the present invention.

Fig. 2 is a longitudinal sectional elevation of the same, with the above-deck cabins broken away.

Fig. 3 is a sectional plan view of the hull taken on line 3—3 of Fig. 2.

Fig. 4 is a front end elevation of the ship.

Fig. 5 is a rear end elevation of the same.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 indicates the hull generally, which hull is substantially rectangular in plan.

The hull 1 includes a bottom 2, sides 3, and a full-width bow 4; the latter being rounded, curving forwardly and upwardly from the bottom 2, as shown.

The stern of the hull is indicated at 5, and a central portion of such stern, indicated at 6, is offset forwardly in the hull to form a rearwardly and downwardly opening pocket 7.

The hull 1 is covered in its entirety with a deck 8, which deck also overlies the pocket 7.

Within the confines thereof, and below the deck 8, hull 1 is compartmented in the following manner:

Laterally inward from each of the sides 3 there is a full-length, longitudinal partition or bulkhead 9; the rear portions of said partitions 9 forming the sides of the pocket 7 rearwardly of the center part 6 of the stern.

A transverse partition or bulkhead 10 extends from side to side of the hull rearwardly of the bow a distance approximately one-third the length of the hull.

Other transverse partitions or bulkheads 11 extend between the sides 3 and the corresponding longitudinal partitions 9, but do not extend between the latter; the transverse partitions 11 being disposed ahead of the stern 5 a distance approximately one-third the length of the hull.

With the foregoing arrangement of partitions or bulkheads, which of course are suitably connected and braced, the hull 1 is formed—below deck—with front outside compartments 12; a central front compartment 13; intermediate outside compartments 14; rear outside compartments 15; and an intermediate or power plant compartment 16 which is defined at the sides by the partitions 9, at the front by the transverse partition 10, and at the rear by the central part 6 of the stern.

The front outside compartments 12, central front compartment 13, and rear outside compartments 15 are formed to provide air or buoyancy chambers, while the intermediate outside compartments 14 are for cargo and fuel tanks.

A heavy-duty but relatively high speed power plant, indicated somewhat diagrammatically at 17, is mounted in the compartment 16, and drives a propeller shaft 18 which extends rearwardly at a downward incline through a stuffing box 19; the shaft 18 being fitted at its rear outer end with a propeller 20.

The power plant 17 has sufficient power to propel the ship forward at substantial speed; the design of the hull being such that its displacement is not great, and it rides easily along the water.

By the provision of the pocket 7 at the rear of the hull propeller efficiency is improved, and additionally the propeller is maintained with proper clearance with respect to the adjacent parts of the hull. Also, the rear outside compartments 15 of the hull 1, projecting as they do rearwardly from the central part 6 of the stern, have a somewhat pontoon effect, aiding in the flotation of the hull in a stable, easy riding manner.

Effective steering of the hull 1 is accomplished by means of transversely spaced rudders 21 which lie beneath the hull laterally on opposite sides of the longitudinal center line thereof; such dual rudders including rudder posts 22 which extend upwardly into the hull, being controlled in unison by suitable mechanism (not shown). Fixed fins 23 are attached to the bottom 2 in corresponding relation to, and in alinement with and ahead of, the rudders 21; the fins minimizing lateral drift at the bow when the ship is under way, and also serving to aid in sharp turning right or left under the control of the rudders 21.

The above-deck structure is optional, here being shown as including lower cabins 24; upper cabins 25; and a pilot house 26; the power plant 17 and the rudders 21 being controlled from the pilot house 26 in conventional manner.

It is preferred that the forward portion of the lower cabins 24 and upper cabins 25, as well as the pilot house 26, be pointed—as shown—to minimize wind resistance.

The lower cabins 24 and upper cabins 25 are surrounded by suitable railing structures, indicated at 27 and 28, respectively.

The design of the hull of the above described ship structure is such that in normal operation the ship rides the water easily, and is most seaworthy; the relatively wide beam of the hull resulting in a minimum of lateral rocking. Additionally, by reason of the described compartmentation of the hull, including the air chambers formed by the compartments 12, 13, 15, rupturing of the hull at any given point does not re-

sult in a sinking condition, as the remaining air compartments or chambers maintain the ship afloat.

From the foregoing description it will be readily seen that there has been produced such a structure as will fully appear by a perusal of the following specification and claims.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described the invention, the following is claimed as new and useful, and upon which Letters Patent are desired:

1. In a ship hull, means forming a substantially rectangular relatively wide pocket in the stern end of the hull open at the bottom and to the rear of the hull and extending above the waterline, a hull-driving screw propeller supported from the hull and disposed adjacent the rear and lower end of the pocket at a level substantially below the hull, and a pair of rudders operable in unison disposed below the hull laterally out from the sides and immediately ahead of the pocket.

2. In a ship hull, a pair of transversely spaced rudders operable in unison and mounted under the hull adjacent the stern, a pair of relatively short fixed fins alined with the rudders and mounted under the hull adjacent the bow, and a screw propeller of materially less diameter than the transverse space between the rudders disposed centrally and rearwardly of the rudders at a level substantially below the hull.

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