July 5, 1949. N. C. MIMOPOULOS 2,474,855

MULTIPLE PROPELLER DRIVE

Filed Feb. 7, 1945 2 Sheets-Sheet 1

Fig. 1.

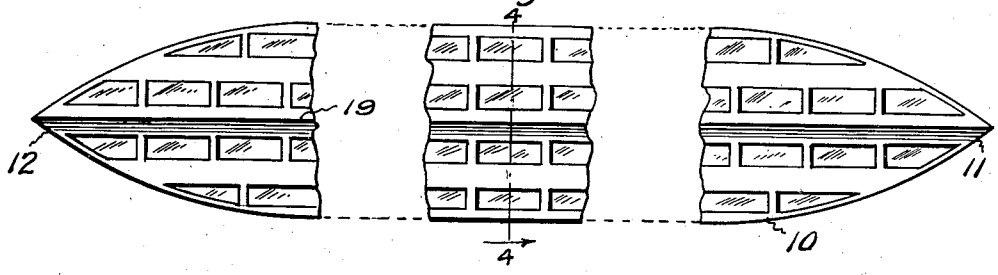


Fig. 2.

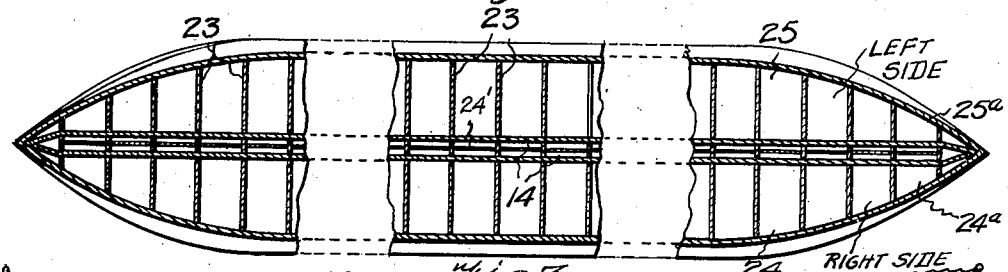


Fig. 3.

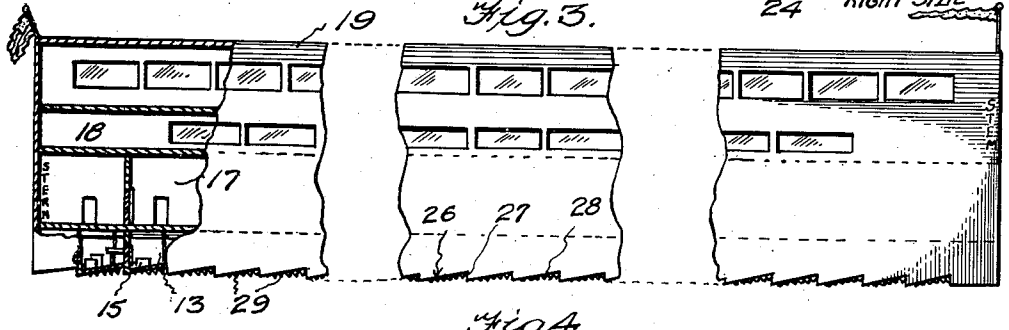
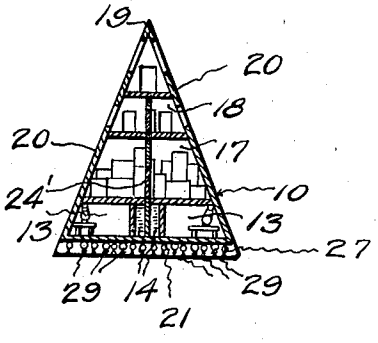


Fig. 4



INVENTOR.
NICHOLAS C. MIMOPOULOS
BY
Victorios Nicholson
HIS ATTY.

July 5, 1949. N. C. MIMOPOULOS 2,474,855

MULTIPLE PROPELLER DRIVE

Filed Feb. 7, 1945 2 Sheets-Sheet 2

Fig. 5.

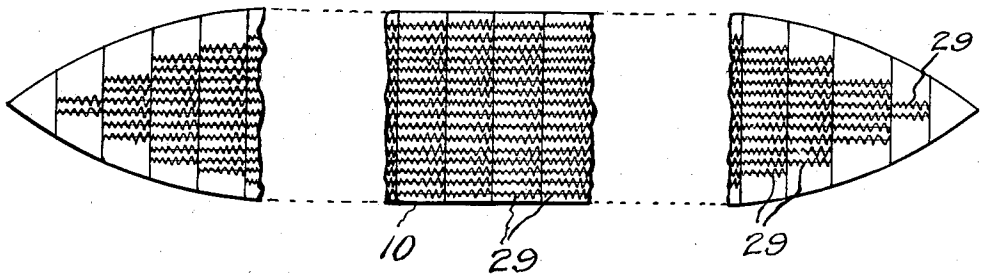


Fig. 6.

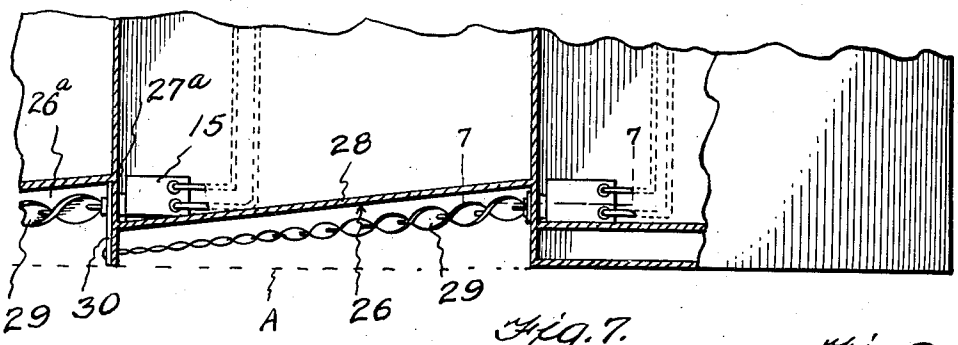


Fig. 7.

Fig. 9.

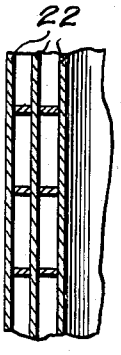
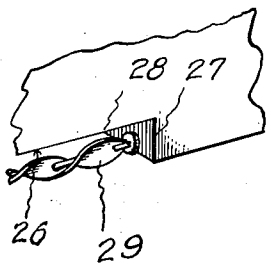
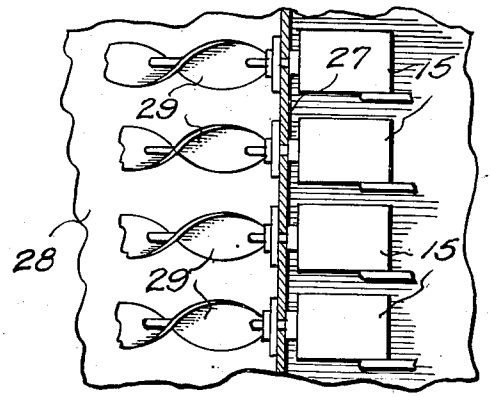


Fig. 8.





INVENTOR.

NICHOLAS C. MIMOPOULOS

BY

Soterios Nicholson

HIS ATTY.

Patented July 5, 1949

2,474,855

UNITED STATES PATENT OFFICE

2,474,855

MULTIPLE PROPELLER DRIVE

Nicholas C. Mimopoulos, Berkeley, Calif.

Application February 7, 1945, Serial No. 576,590

2 Claims. (Cl. 115—37)

1

This invention relates to ships, and has for one of its objects the production of a simple and efficient ship which is so constructed as to greatly increase the speed of the ship, as well as to increase the safety and maneuverability thereof.

A further object of this invention is the production of a ship, the bottom of which is serrated, arranged in a series of step-like formations having transversely extending vertical and rearwardly and downwardly inclined walls to provide recesses for receiving driving propellers for the ship.

Another object of this invention is the production of a simple and efficient ship having a flat bottom and tapering sides which converge at the top of the ship, the tapering sides protecting the ship from aerial attack by providing projectile deflecting means upon the top of the ship.

Other objects and advantages of the present invention will appear throughout the following specification and claims.

In the drawings:

Figure 1 is a top plan view of the ship, certain parts being broken away;

Figure 2 is a horizontal sectional view;

Figure 3 is a side elevational view partly in section;

Figure 4 is a transverse sectional view taken on line 4—4 of Figure 1;

Figure 5 is a bottom plan view;

Figure 6 is an enlarged longitudinal sectional view of a portion of the ship, certain parts being shown in elevation;

Figure 7 is an enlarged horizontal sectional view taken on line 7—7 of Figure 6;

Figure 8 is a fragmentary perspective view of a portion of the hull of the ship; and

Figure 9 is a vertical sectional view of a modified form of the side wall construction of the ship.

By referring to the drawings, it will be seen that 10 designates the hull of the ship which is provided with a stem 11 and stern 12. The hull 10 is provided with an understructure 13 which contains a fuel tank or tanks 14 extending longitudinally through the center of the hull 10, and upon either side of the tank or tanks 14 are located Diesel engines 15 for driving the propellers 29. Machine shops and other work shops are also located in this understructure 13.

A midstructure 17 is located above the understructure 13 and constitutes a cargo space, the bottom of the midstructure being the light water line and the top of the midstructure being the load water line (flotation plane).

The superstructure 18 is located above the mid-

2

structure and contains the living quarters of the crew and passengers, the recreational, hospital, and other facilities.

The top structure is located above the superstructure 18 and contains the administrative quarters, kitchens, dining rooms, recreational facilities, life boats, defensive and offensive arms and the like. While the ridge 19 of the roof is shown as a straight line, it should be understood that this ridge 19 may be formed on the arc of a circle, curved or shaped to a desired conformation.

As shown in Figure 4, it will be noted that the sides 20 of the ship are inclined toward the ridge 19 from the transversely extending horizontal bottom 21, thereby defining a hull which is double wedge-shaped in cross-sectional area from its horizontal bottom 21 to the ridge 19. The sides 20 are preferably inclined at an angle of 73°. This inclination will tend to protect the ship from aerial attack by deflecting projectiles dropped thereon.

The sides of the ship may be built with a double wall or a triple wall, as indicated at 22 in Figure 9, the walls being spaced to provide open areas therebetween. These areas, from the bottom to the load water line only, may be used for storage of extra fuel oil or any other kind of useful liquid. The ship may be partitioned horizontally, as at 23, to provide any desired number of parts or suitable compartments for various purposes above described. The ship may be divided into equal halves by means of a central partition wall 24' extending longitudinally from stem to stern and vertically from keel to deck. The fuel tanks 14, as shown in Figure 4, are located upon opposite sides of the central partition wall 24'. These halves are designated as the right side and the left side—see Figure 2.

In order to accomplish greater speed, which is one of the main objects of the invention, the floor or bottom of the understructure 13 is serrated, shaped in such a manner as to allow the installation and unobstructed operation of many propellers, as shown in Figures 3 and 5. This understructure is buit in sections or cells, the sections to the right of the center being designated as 24, and the left section as 25. The respective right and left sections are arranged in transverse alignment. It is advisable that each cell or section be independent from the adjacent ones, that is, completely separated and closed. These cells may be provided with doors, bulkheads, etc. to furnish communication longitudinally as well as laterally and also with the midstructure of the

ship. Any suitable emergency exit may be provided and the cells may constitute floodable compartments to insure greater safety.

The bottom 21 of the ship is provided with a plurality of indentations, as at 26, throughout the length of the ship from stem to stern, these indentations extending transversely of the bottom, from side to side of the ship. Each indentation 26 is provided with a vertical wall 27 and a rearwardly and downwardly inclined wall 28 extending to the bottom end of the vertical wall 27^a of the next rearwardly located indentation 26^a. These indentations 26 and 26^a extend from a point at the rear of the forward sections or cells 24^a and 25^a to the stern of the ship and across the entire transverse area of the bottom of the ship.

Tapering screw propellers 29 are carried within these indentations or recesses 26. These propellers extend longitudinally of the recesses 26 and parallel to the inclined walls 28 thereof, as shown in Figures 3, 5, 6 and 7. As shown in Figure 5, the propellers 29 are arranged upon the bottom of the ship in transverse rows within the indentations 26 and increase in nmuber from two or more at the stem and stern to sixteen or more amidship. These propellers 29 are fitted in the indentations 26 with their large ends adjacent the vertical walls 27 of the recesses 26 and the tapered extremities of the propellers are suspended from and journaled upon the hangers 30. The hangers 30 are suspended from the vertical walls of the next succeeding indentations. Each propeller 29 is perferably operated by a separate Diesel engine or other driving mechanism which may be controlled from any desired location in the ship.

When actually constructing the ship, the propellers are preferably spaced laterally about four feet apart, two propellers being located in the first indentation, six in #2 indentation, ten in #3 indentation, and so forth, until the number becomes sixteen toward midship. It is preferable to employ 344 propellers in the type of ship illustrated.

Since the structure of the ship is in the form of a double wedge of equal proportions, the number and positions of the cells are in perfect balance in the fore-body and after-body, as well as in the right and left side of the ship. Longitudinally, the 344 propellers are in parallel rows so that their combined activity will result in parallel forces of propulsion. Each propeller is preferably metallic, carried by a metallic shaft in the form of a screw, and is preferably twenty feet long. Each screw propeller is about twelve inches in diameter at its head and tapers to about four inches in diameter at its rear end which rear end is supported, as at 30, to reduce vibration to the minimum.

As stated above, each propeller 29 is operated by a separate Diesel engine or other driving mechanism so that its action may be independently controlled. When all of the propellers are in action, there will be a multiplicity (16 or more) of principal streams and many secondary ones rushing in parallel lines from stem to stern at an inclined angle of approximately 7 degrees to the bottom of the understructure. This inclination will avoid friction and will tend to push the ship upwardly, thereby facilitating salvaging operations when necessary.

The ship may be provided with any suitable number of holds on each side of the center thereof and these holds of the midstructure will correspond to the cells of the understructure—note Figure 3. Each hold is independent from its adjacent one and is completely separated and closed as stated above, as well as being connected with the adjacent ones laterally and longitudinally. These holds are also connected with the understructure and the superstructure of the ship by bulkheads. They are floodable compartments.

As shown in Figure 4 the superstructure is divided into two areas by the central partition wall and the purpose thereof is to duplicate the living quarters of the crew and passengers, the recreation, hospital, and other facilities of the modern ship, so that if one division is flooded or otherwise rendered unusable, the life activities of the ship may be carried on in the other area. Each area or division is independent from the other, is completely separate and closed as explained above, and is connected with the other division as well as with the midstructure and the top structure of the ship by bulkheads and watertight lids for emergency exit, loading and unloading operations, etc. These divisions are floodable compartments.

The top structure is completely covered by the sides of the ship as shown, and this top structure is provided with watertight doors and windows for ventilation, lighting, loading and unloading, as well as for defense, offense, and other purposes. The top structure may be connected with the superstructure by bulkheads and watertight lids. When the ship is loaded to capacity, its deck will be preferably about ten feet above water so that the ship will expose only an area of about thirty feet wide of its superstructure and top structure. This will render the ship less vulnerable to attack. Because of the structure of the ship, greater speed and maneuverability are obtained, which will add to its safety from attack, either by submarine, aircraft, or other enemy action.

From the foregoing its should be understood that the ship, because of its shape and acquired power, will possess more stability as well as speed, and that the propellers by being mounted in the manner illustrated and described will be shielded and protected, and at the same time may be selectively driven to maneuver the ship with greater facility, thereby permitting the ship to quickly turn or to follow a zig-zag line with rapid course-altering ability.

By noting Figure 6, it will be seen that the bottom extremities of all of the recesses or indentations are in longitudinal alignment and terminate on an imaginary line A extending longitudinally of the ship. In this way, the propellers will all be shielded or protected from injury by foreign objects, since these propellers and no parts thereof extend below the lower extremity of the ship, but are inset as shown.

It should be noted that certain detail changes may be employed without departing from the spirit of the invention, so long as such changes fall within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A ship of the class described comprising a hull having a bottom extending transversely in a substantially horizontal plane, said bottom having a plurality of successive indentations formed therein and extending from side to side entirely across said bottom, each indentation being defined by a vertical wall extending inwardly of the hull, and a downwardly and rearwardly inclined wall extending from a selected point on the vertical wall of one indentation to the outer end of

the vertical wall of the next succeeding indentation, a plurality of parallel propellers extending longitudinally of each indentation, the propellers being arranged in groups in the indentations and the number of propellers in each group progressively decreasing from amidship toward the stem and stern of the hull.

2. A ship of the class described comprising a hull having a transversely serrated bottom providing successive propeller-receiving recesses, each recess having a forward vertical wall and a rearwardly extending downwardly inclined wall extending entirely across the hull from side to side, propellers extending longitudinally of the recesses and arranged in groups the numbers of which progressively increase from the stem of the hull toward amidship, and from the stern of the hull toward amidship, and means for selectively operating each propeller.

NICHOLAS C. MIMOPOULOS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
38,824	Heaton	June 9, 1863
203,586	Brown	May 14, 1878
652,876	Andrade	July 3, 1900
722,572	Fehlman	Mar. 10, 1903
771,185	Stokes	Sept. 27, 1904
812,604	Sitzler	Feb. 13, 1906
888,586	Carroll	May 26, 1908
1,050,517	Chase	Jan. 14, 1913
1,090,830	Beeson	Mar. 24, 1914
1,134,670	Cizek	Apr. 6, 1915
1,154,471	Wolcott	Sept. 21, 1915
1,193,965	Ambrozy	Aug. 8, 1916
1,223,320	Curtiss et al.	Apr. 17, 1917
1,243,143	Corte	Oct. 16, 1917
1,310,533	Karton	July 22, 1919
1,413,383	Besson	Apr. 18, 1922
1,546,770	Wood	July 21, 1925
2,141,181	Geddes	Dec. 27, 1938