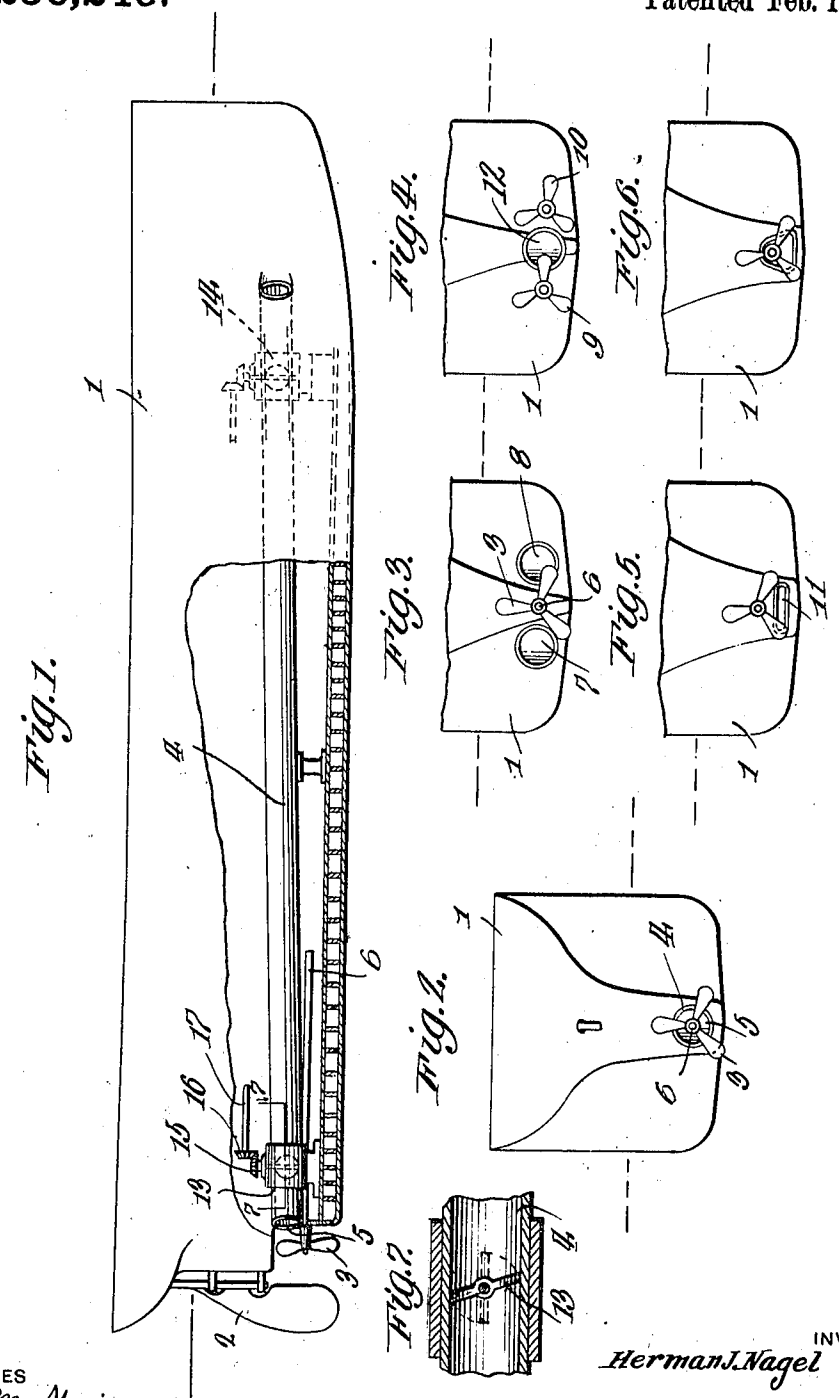
H. J. NAGEL.

BOAT.

APPLICATION FILED JUNE 6, 1917.

1,256,246.

Patented Feb. 12, 1918.



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BOAT.

1,256,246. Specification of Letters Patent. Patented Feb. 12, 1918.

Application filed June 6, 1917. Serial No. 173,177.

To all whom it may concern:

Be it known that I, HERMAN J. NAGEL, a citizen of the United States, residing at Alliance, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Boats, of which the following is a specification.

This invention relates to an improvement in boats, and more particularly to a hull construction to be embodied in the building of a boat or ship.

An object of my invention is to provide a hull construction which takes advantage of the displacement principle of boat building to use the water of flotation to stabilize or ballast the ship or boat.

A further object resides in forming and designing the hull in such a way that the speed of the ship or boat will increase due to lessening of the displacement and a better distribution of the working load upon the propeller.

A still further object is to so construct the hull that the provision of the water ballast and the accomplishment of the object as herein before mentioned will place a quantity of water at such a point that the boiler and engine rooms, and other spaces within the hull of the vessel, will be cooled.

Yet another object lies in providing gate or valve means to govern and control the degree in which the structure of my invention is to be permitted to be operative.

With the above and other objects in view, which will be in part described and in part understood from the specification, and drawings, and claims, my invention consists in certain novel features of construction and combinations of parts which will be hereinafter fully set forth.

In the drawings:—

Figure 1 is a view in elevation of the hull of a ship or boat and with parts in section to illustrate one adaptation of my invention;

Fig. 2 is a stern end view of a hull with the invention embodied therein;

Fig. 3 is a fragmentary view similar to Fig. 2 showing a modified construction;

Fig. 4 shows one adaptation of the invention in conjunction with a twin screw vessel;

Fig. 5 is a view similar to Fig. 3 illustrating a modified construction;

Fig. 6 is a fragmentary view showing yet another modification; and,

Fig. 7 is a detailed sectional view showing one means which might be employed to control the degree of operativeness of the structure which view is taken on the line 7—7 of Fig. 1.

My invention is applicable to practically any type of ship or boat, and might even be applied in conjunction with a paddle wheel boat, although it is perhaps particularly adaptable in conjunction with screw propelled boats. In the present disclosure, the hull 1 of the boat is shown as being of that type having a more or less rounded and undercut stern, although I desire to have it understood that the invention is equally adaptable for application with a pointed stern or a transom stern boat or ship. As is illustrated, the rudder 2 is mounted in the undercut formation of the stern of the boat, and the propeller 3 is also embraced within the outline of the boat, the rudder and wheel being thus so disposed that they are protected by the keel of the boat. A hollow and substantially tubular member 4 is mounted and built in the hull 1 of the boat or ship and has the forward end thereof raised somewhat and opening through the hull below the water line, the remaining end being inclined downwardly and rearwardly to open through the hull as shown at 5. By arranging the tubular member in this way, it extends substantially parallel with the keel of the boat, or in line with the direction of travel, and at the same time has the forward end elevated and the rear end opening just slightly above the keel. The chamber is constructed to have both ends thereof open and thus the water of flotation can fill within the tube and will flow therethrough when the boat is in motion.

It is preferable that the propeller 3 be carried by the propeller shaft 6 in such relation that it works at the lower end of the tubular chamber 4, or adjacent thereto. In Fig. 2 I have illustrated the propeller as working directly centrally behind the open rear end of the chamber 4, and in this relative disposition of the parts, perhaps the best action is accomplished, although as the description progresses it will be seen that other adaptations might be resorted to.

In the use of a vessel hull constructed after the manner of my invention, as the motor ship is launched, the forward and rear ends of the chamber 4 will be submerged and water will be contained therein in a column or pillar. Water pillars will thus be provided in the hull below the water line, and this column or pillar of water acts to stabilize the boat and also draws and holds the center of gravity down within the hull. By raising the chamber in the manner as set forth and then disposing the propeller as is stated, the propeller works more evenly as a greater volume of water is provided and due to the fact that the pillar or column moves through the chamber when the propeller is operating or when the boat is in motion, a substantially even pressure upon the propeller blades is attained. Further than this, the formation of the chamber and the angular disposition of the same, in the manners heretofore set forth, will change the hull design to such an extent that as the boat is moved forward, the hull will be lifted. As the chamber is extended for a considerable distance throughout the length of the hull of the boat or vessel, and a comparatively large volume of water is accommodated, it will be appreciated that the engine room or other compartment within the hull of the boat will be cooled, and that the circulation of the water through the chamber will act to draw off the heat from the campartments within the hull.

As has been stated, the arrangement of the parts might be varied, and in Fig. 3 I have illustrated the propeller as working at substantially the same position as is shown in Fig. 2, but here two tubular members 7 and 8 are provided, one being positioned upon each side of the propeller. These chambers might be brought in closely adjacent the propeller shaft or moved out toward the side of the hull, and it will be seen that in this way the balance of the water columns could be more evenly distributed and could be thrown to act at a greater distance from the center of gravity on each side of the keel, to thus accomplish greater leverage in the righting of the hull when the same rolls, or to hold the hull against rolling.

In Fig. 4 I have illustrated an adaptation in which twin propellers are employed and a single chamber placed between the propellers is used. If desired, two chambers might be provided so that each of the propellers 9 and 10 would work adjacent the open lower end of one of the chambers, but in the present adaptation I have shown the chamber 12 as opening substantially centrally between the propellers.

In the disclosure as shown in Fig. 5, I have illustrated an irregularly shaped chamber, and while this chamber partakes of a flat elliptical formation in cross section, it will be evident that the cross sectional design of the chamber might be varied to take a number of other forms and that the object and purpose of the invention would yet be accomplished.

One change in the cross sectional form of the chamber, which incorporates substantially a combination of the chamber 11 as shown in Fig. 5 with the chamber 4 illustrated in Fig. 2, is disclosed in Fig. 6, and as has been stated, other changes in the formation and design of the chamber might be resorted to.

While the structure as herein before described will operate efficiently in that the water can flow into and through the tubular chamber, it is perhaps advisable that valves be provided in the ends of the tubular chamber as shown at 13 and 14. The valves in the head and in the stern ends of the chambers can be regulated independently of each other, or might be connected to be simultaneously opened and closed, and to accomplish operation of the valves, the gears 15 are provided on the valve stems to mesh with gears 16 carried by the shafts 17, these shafts to be rotated in any desired and suitable manner. By constructing the valves substantially after the manner shown in Fig. 7, when they are brought to the closed relation they will present substantially fluid tight bulk-heads across the ends of the tubular chamber, and thus if the valve in the head end of the chamber be opened and the stern valve be closed, the chamber will contain a passive water column, which acts as a ballast for the ship; and at the same time, this setting of the valve will have a further advantage in that the hull will offer greater resistance to passage through the water and consequently the boat can be brought to a quicker stop. On the other hand, if the front and rear valves are closed, the chambers will carry a water column as ballast, which column will be entirely independent of the main volume of the water of flotation, and also when the two valves are closed provision might be made to exhaust the liquid contents of the chamber, however, as such means does not form a part of my invention, it is not here shown.

From the foregoing it will be seen that a construction is provided which is embodied in the hull as the same is built, or which might be built into old hulls, and which accomplishes the purposes and objects as set forth above, and also it will be noted that the water column passing through the chamber will give greater efficiency to the propeller and will equalize the strain thereon.

While I have shown and described only certain specific adaptations, it will be apparent that a number of changes and modi-

fications from the structure herein disclosed might be resorted to, and hence I wish to be limited only to such points as may be set forth in the claims.

I claim:—

1. A boat comprising a hull having a tubular chamber built therein to rise in a gradual incline from the stern to the bow end and having the ends thereof opening below the water line of the hull, and means to be set to close the ends of the chamber.

2. A boat including a hull having driving means of the screw type, a chamber of substantially tubular form arranged within the hull to have both of its ends open below the water line and having one end opening adjacent the propeller, and means to be set to close the ends of the chamber.

3. A boat including a hull having driving means of the screw propeller type, a chamber of substantially tubular form built into the hull to open at the stern adjacent the propeller and to extend upwardly in a gradual incline to open adjacent the bow of the hull below the water line, and means to close the tubular chamber against the passage of water therethrough.

4. A boat including a hull having propulsion means of the screw type arranged to propel the boat by acting upon the water of flotation, a substantially tubular and open ended chamber mounted within the hull to extend substantially throughout the length thereof with the stern end opening adjacent the propeller from which point the tubular chamber is extended in a gradual incline upwardly to have the forward end open adjacent the bow of the hull below the water line, valves mounted in the forward and stern ends of said tubular chamber, and means by which said valves are adjusted to the opened and closed positions.

In testimony whereof, I affix my signature in presence of two witnesses.

HERMAN J. NAGEL.

Witnesses:
E. E. DAVIS,
WM. M. ROACH.