H. MAXIM.

WAR VESSEL.

APPLICATION FILED MAR. 8, 1907.

1,028,472.

Patented June 4, 1912.

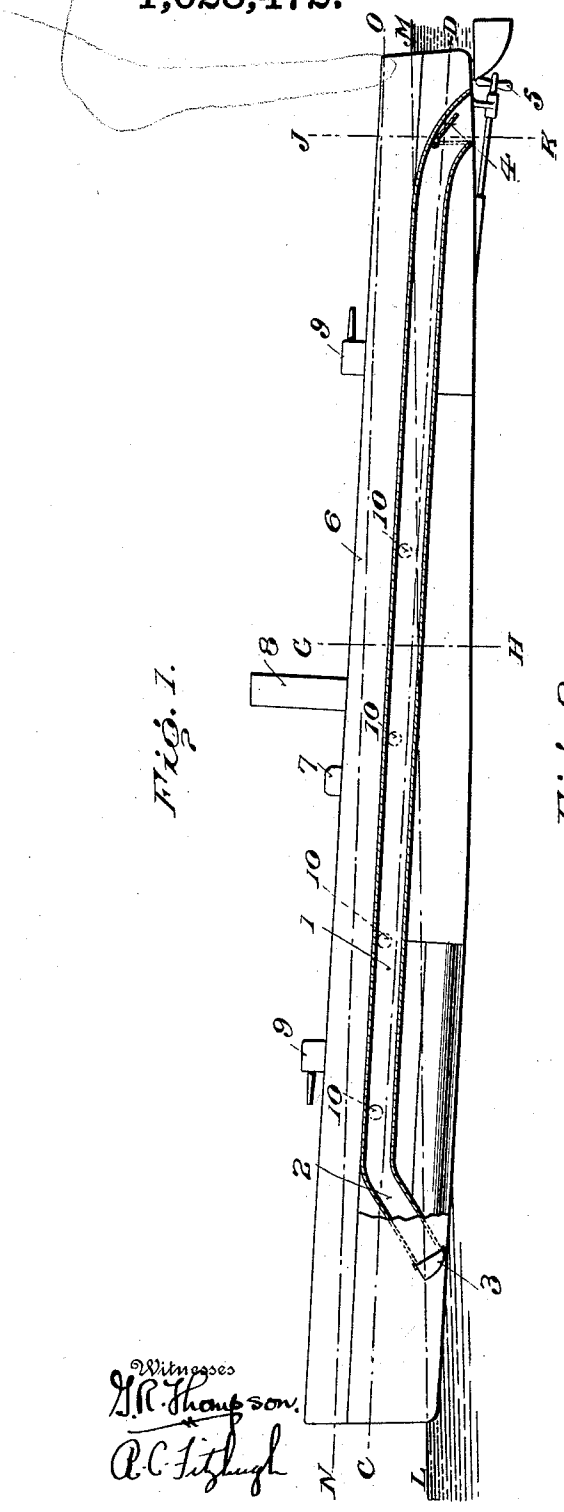

Fig. 1.

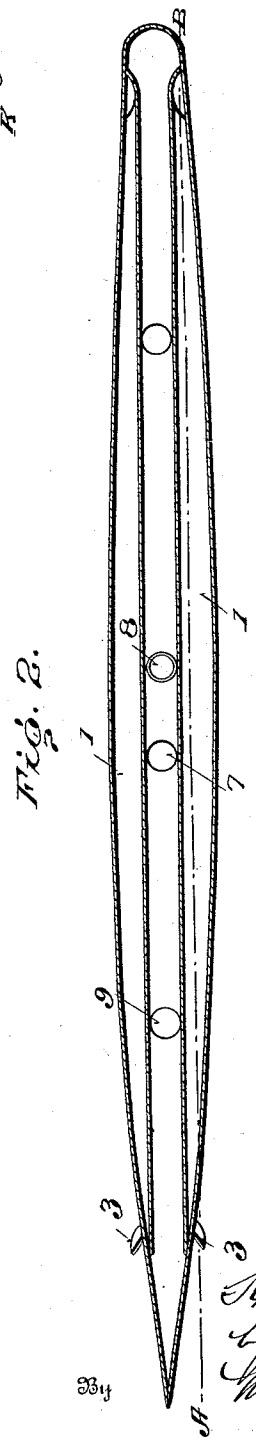

Fig. 2.

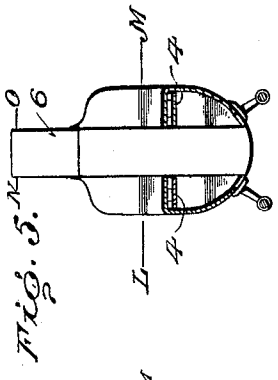

Fig. 5.

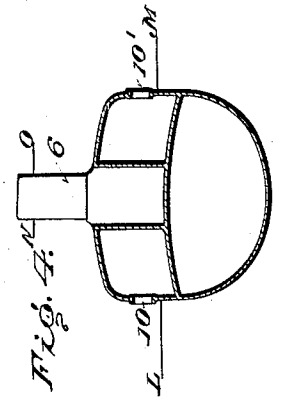

Fig. 4.

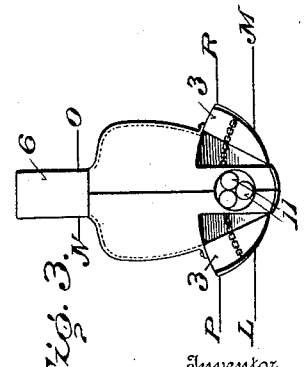

Fig. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

HUDSON MAXIM, OF NEW YORK, N. Y.

WAR VESSEL.

1,028,472. Specification of Letters Patent. Patented June 4, 1912.

Application filed March 8, 1907. Serial No. 361,395.

To all whom it may concern:

Be it known that I, HUDSON MAXIM, of the borough of Brooklyn, city of New York, county of Kings, State of New York, have invented a new and useful Improvement in War Vessels, which invention is fully set forth in the following specification.

The present invention relates to improvements in war vessels, and has particular reference to torpedo boats of the submarine or semi-submersible class.

The object of the invention is mainly to provide a more rapid and efficient means than heretofore for the immersion and emergence of war vessels. Heretofore, water has been taken aboard by opening sea valves in the bottom or sides of the boat to let the water flow in by gravity for its immersion, and to remove this water, it has been necessary to resort to the slow process of pumping out the compartments. This slow pumping-out process has many disadvantages.

In carrying out the present invention, means are provided for taking on water to fill the immersion compartments by the inertia of the water, and may be in opposition to the force of gravity, in a similar manner to that practised for taking water for the supply of locomotives on railroad lines, where the water is scooped up from a trough underneath the train, the inertia of the water being sufficient to cause it to flow up an inclined plane into the water tank for its reception, before it has time to fully participate in the forward motion of the rapidly moving locomotive. A special advantage of this method is that the water may be raised to compartments above the water-line, where it will serve to protect, in many instances, interior compartments from the fire of an enemy. I provide preferably two or more compartments running longitudinally, one on each side of the vessel, nearly its entire length, and also preferably above the normal water-line of the vessel, or the compartments may consist of several compartments connected with one another. Near the prow of the boat each compartment communicates with a passage or pipe extending downward and forward below the water-line. The lower end of the downward extending pipe or passage is provided with a large sea valve, which may be opened and closed at will by any suitable means controlled by the pilot or other operator in the lookout tower or engine room. At or near the rear of the boat, the immersion compartments are provided with downward and rearwardly projecting pipes or passages, preferably one on each side of the boat, having their openings just forward of the screw propellers and provided with large sea valves, which may be likewise opened and closed at will in the same manner that the sea valves already mentioned can be manipulated. The immersion compartments may have a turtle-back deck for their lower wall and the side of the boat for the outer wall, while the inner wall may be located as far inward as may be necessary to provide sufficient water space for any desired immersion of the boat. The water compartments may run longitudinally and parallel with the longitudinal axis of the boat, or the compartments may dip or descend slightly toward the stern of the boat. When running at moderate speed, the prow of the boat, as is well known, tends to slightly raise itself in the water, while the stern becomes depressed, and as the speed is increased, the stern sinks still lower, while the prow is elevated still more. When the immersion compartments are empty, the boat will run upon the surface of the water with about the same degree of immersion as the ordinary torpedo boat. In this position the boat can travel with the same speed and freedom of movement as any over-water torpedo boat. When, however, about to go into action, and it is desirable to escape injury from the shots of an enemy, or to become less conspicuous, the forward sea valves are opened, and outward-projecting wings or gates serve to direct the flow of water into the ascending tubes or passages connected with the water-tight compartments, the inertia of the water causing it to flow up the inclined plane provided by the lower and rearward wall of the passage, due to the high speed at which the torpedo boat is traveling. These passages, and the sea valves or inlet gates may be made of any suitable dimensions, in order to provide for exceedingly rapid filling of the immersion compartments, the rear sea valves, or those located near the stern of the boat are, of course, closed, before filling the immersion compartments, and as soon as the compartments are filled, the inlet valves or forward sea valves, are closed. It is obvi-

ous that this method of effecting the immersion of a war vessel would be much more rapid than can be effected by the usual form of sea valve.

When traveling at high speed, a boat naturally becomes depressed or lowered at the stern by the action of the screws, and the prow tends to rise and ride upon the water, the bottom of the boat becomes an inclined plane, which tends to raise the front of the boat, as an aeroplane is lifted when run rapidly forward on the air. When it is desired to effect the emergence of the boat, the outlet or stern valves are opened, and as the boat assumes an inclined position with respect to the horizon and the surface of the water, due to its speed, and on a line not at right angles with the line of attraction of gravitation, the water will rush downward and backward to escape through the outlet valves forward of the screws. The suction produced by the action of the screws tends to still further facilitate the exhaustion of the water from the immersion compartments, by lowering the external pressure of the sea at the outlet valves, so that the water within the immersion compartments will flow rapidly by its own weight outward through the valves behind the propellers, whereupon the immersion compartments, being voided of their water, the boat will again assume its original above-water position.

Referring to the drawings, Figure 1 is a longitudinal vertical section through the improved torpedo-boat, on the line A, B, Fig. 2. Fig. 2 is a horizontal longitudinal section on the line C, D, of Fig. 1. Fig. 3 is a front elevation; Fig. 4 is a cross-section on the line G, H, Fig. 1; and Fig. 5 is a cross-section on the line J, K, Fig. 1.

The water compartments 1, Fig. 1, are provided with downward and forwardly projecting passages 2, which communicate with the sea by means of inlet sea valves 3, adapted to be opened and closed at will by any suitable means not necessary here to describe, and which may be controlled by an operator either in the engine room or the pilot house. The water compartments 2, are also provided with outlet sea valves 4, which are opened and controlled in the same manner as the valves 3. The valves 4 are located preferably just forward of the propellers 5.

The boat is provided with a dispensable superstructure 6, which serves chiefly for the purpose of flotation when the boat is in a semi-submerged position, and to prevent it from going altogether below the surface. The flotation structure 6, not constituting any vital or indispensable portion of the boat, may be shot away without the boat proper suffering any material injury. A pilot house and lookout tower 7, and a smoke-stack 8, and, if desired, gun towers 9, 9, are made to intersect and project through and above the dispensable flotation structure 6.

The water compartments 1, may serve as living compartments for the officers and crew under normal conditions, and may be subdivided into state rooms if desired, all of the state rooms, however, being made to connect with one another in such wise as to permit the free flow of water through them. Port-holes 10 are preferably provided for light and air, but which are closed by suitable closures 10′ before going into action and before effecting the immersion of the craft.

The armament of the boat would depend somewhat upon the dimensions of the craft. If made very large, the gun turrets may carry torpedo guns large enough to throw from half a ton to a ton of high explosive. If, however, the boat be made small, comparable in size with the ordinary torpedo-boat or torpedo boat destroyer, the gun turrets would carry small quick-firing guns. Means are provided to carry, as a part of the armament, a considerable number of automobile torpedoes, adapted to be launched from submarine tubes 11, below the surface of the water, in rapid succession, by means described and explained in my U. S. Patent application Sr. No. 710,193.

When cruising about, with no expectation of immediately going into action, the boat will be normally immersed to the water line L, M, Fig. 1. When, however, an engagement is imminent, the inlet valves 3 are opened and the immersion compartments 1 are rapidly filled, and the vessel quickly sinks in the water to the line N, O, Fig. 1. As the boat might not be traveling then at full speed, it might lie on nearly a horizontal line. Therefore, the line N, O, will then become horizontal. When the boat is immersed to the line N, O, it is obvious that it would be very difficult for it to become seriously injured by the gun fire of an enemy, and would be able to advance under the very guns of a battleship and launch its automobile torpedoes to effect its destruction, or to bring to bear upon it at close range its torpedo guns. When, however, the action has ceased, the outlet sea valves 4, would be open, and the water will flow outward through them from the immersion compartments, and the swiftly revolving propellers will aid materially in rapidly drawing away this water, when the vessel will quickly rise to its normal emerged position. It is obvious that in discharging the water from the immersion compartments, it is necessary to admit air to replace the water. Means are provided for this, and which it is not necessary to show here.

What is claimed is:—

1. A war vessel having a water compartment for its immersion, a screw propeller,

and an outlet for said compartment immediately in front of and within the suction action of said propeller.

2. A war vessel having water compartments for its immersion, with downwardly and forwardly inclined inlet passages, and rearwardly and downwardly inclined outlet passages, and valves controlling said passages.

3. A war vessel having longitudinally extending oppositely disposed water compartments, with inlet channels extending in a rearward and upward direction from the exterior of the vessel to the interior thereof, and means controlling the entry of water through said channels.

4. A war vessel having a longitudinally extending water compartment slanting downwardly from the forward part of the vessel to the stern thereof, an opening from the rear of said compartment to the exterior water, and a propeller in proximity to said opening.

5. A war vessel having longitudinally extending parallel water compartments having openings to the exterior water at their front and rear ends, port openings on the sides of said compartments, and means for closing all of said openings.

6. A war vessel having water immersion compartments slanting rearward and downward from near the bow to the stern, openings from the rear of said compartments to the exterior, and means causing a rearward suction at or near said openings.

7. In a war-vessel, a hull having a plurality of immersion chambers adjacent to the side walls and upper deck of the hull for a greater portion of the length thereof, and conduits at the ends of said chambers extending on an incline below the water level.

8. In a war vessel, a hull having a plurality of longitudinally extending water compartments located adjacent to the outer walls of the upper deck of the hull, said compartments being provided with port holes which are above the sea level when the compartments are freed from water and below the sea level when the compartments are filled with water.

9. A war vessel having a plurality of longitudinally arranged water compartments extending substantially from one end of the vessel to the other, and located adjacent to the outer walls of the upper deck of the hull, a flotation structure extending above said water compartments and from stem to stern of the vessel, with gun turrets and a conning tower located between said water compartments, whereby said turrets and tower are protected on either side by said water compartments, and the vessel is prevented from being entirely submerged when said water compartments are filled.

10. In a war vessel, a hull provided with longitudinally extending water compartments on each side thereof, said compartments having their forward portions above the sea level and their rear portions below the sea level when said compartments are emptied of water, and passages extending from the forward end of said compartments down to the sea level when said compartments are emptied.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

HUDSON MAXIM.

Witnesses:
E. W. STEARNS,
DONALD LYONS.