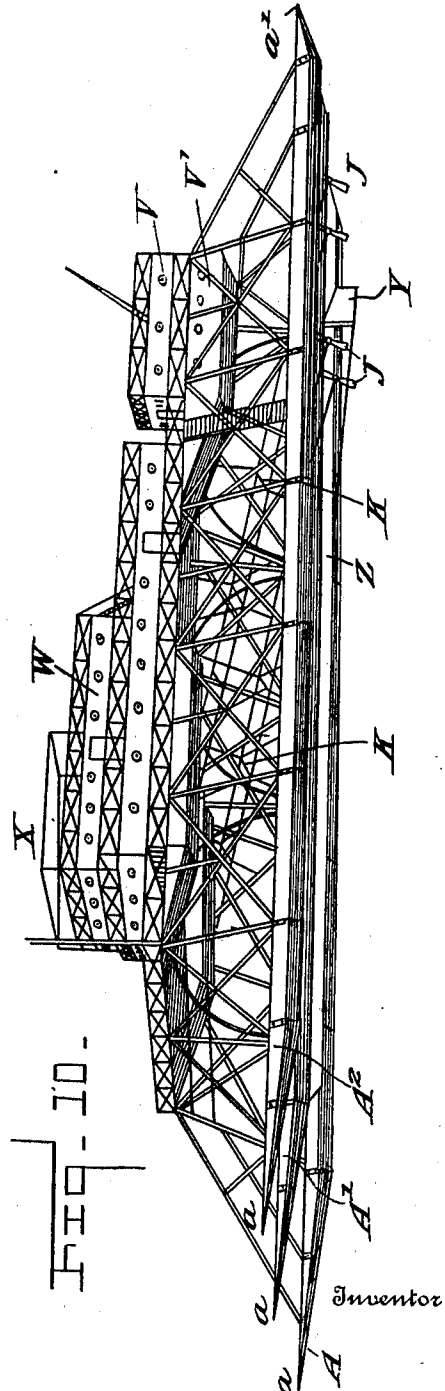
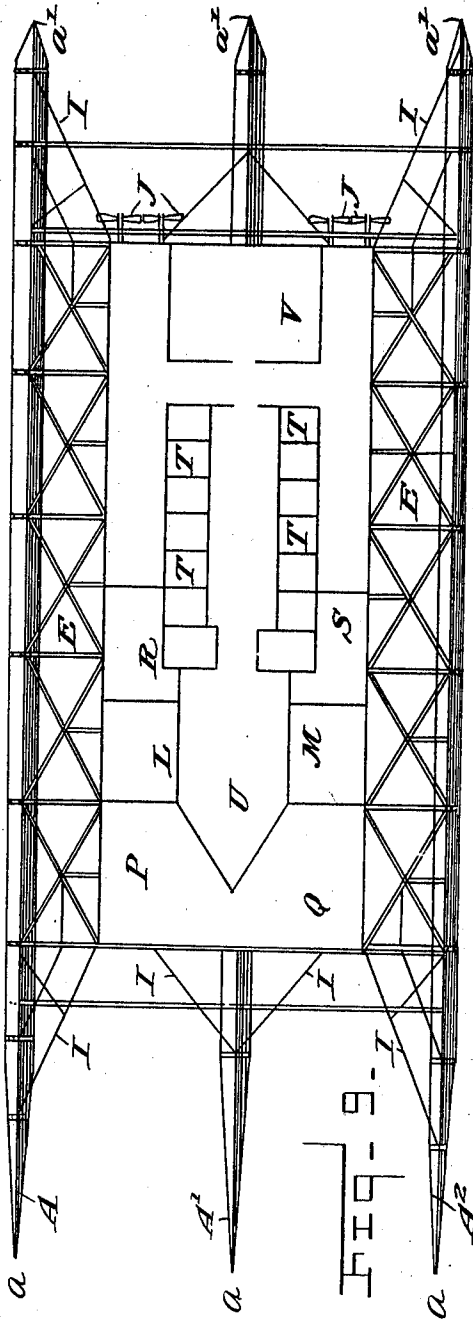


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HULL AND SUPERSTRUCTURE OF SHIPS AND BOATS.
APPLICATION FILED AUG. 15, 1911.

1,021,294.

Patented Mar. 26, 1912.

2 SHEETS—SHEET 2.



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EMMANUEL ANTONIADES, OF SMYRNA, TURKEY.

HULL AND SUPERSTRUCTURE OF SHIPS AND BOATS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EMMANUEL ANTONIADES, a subject of the Sultan of Turkey, residing at Smyrna, in the Turkish Empire, have invented certain new and useful Improvements in the Hulls and Superstructures of Ships and Boats, of which the following is a specification.

This invention relates to the construction of ships, boats and the like in which the hull is composed of hermetically sealed tubular structures which support a superstructure, comprising an open-work frame within or upon which are arranged the engine rooms and other accommodations for the crew, passengers, cargo and machinery.

The object of my invention is to improve vessels of this kind so as to render them unsinkable, increase their speed, make them of smaller draft, more stable and less movable in a sea way than vessels of the usual kind.

The vessel constructed according to my invention, comprises two or more unsinkable tubular structures of novel construction which support a superstructure of light weight composed of ties, struts, girders, arches, etc., arranged in a new way, and in or upon which accommodations for the crew, passengers, machinery, cargo, etc., are built. The propellers, when such are used, are arranged between the outside tubular structures and the middle of the vessel, considerably in advance of the rear ends of such tubular structures and the propeller shafts extend diagonally forward and upward to the engines which are located in the superstructure above the hull in the forward part of the vessel. The keel is arranged in the middle part of the vessel and the rudder is connected to the rear end of the keel.

Other features of the invention will be hereinafter described.

In the drawings I have illustrated a vessel in which the hull is composed of three tubular structures but a larger number may be used or two such structures may be employed. I have also shown a vessel equipped with screw propellers, but other means of propulsion may be used.

Figure 1 is a side elevation of the middle tubular structure and that portion of the superstructure or frame connected therewith. Fig. 2 is a similar view of one of the outside tubular structures and that part of the frame with which it is directly connected.

Fig. 3 is a detail view of a part of the frame. Fig. 4 is a detail view, showing the manner of connecting the supporting frame with the middle tubular structure. Fig. 5 shows a cross section of one of the struts. Fig. 6 is a detail view, showing how the frame is connected with one of the outer tubular structures. Fig. 7 shows a rear elevation of the vessel. Fig. 8 shows a transverse section of the vessel from the deck downward. Fig. 9 is a plan view of the vessel, and Fig. 10 is a perspective view thereof.

The vessel may be made of various dimensions, but it may be assumed that the one shown is 200 feet in length. As before stated, the hull may be composed of two or more tubular structures, but I have shown three such structures, A, A', A². These may be made of some light material, such as aluminum, and for the greater part of its length each such structure is square or rectangular in cross section, being, however, tapered at front and rear as indicated at *a*, *a'*, and the lower front walls of the structure are preferably curved as indicated. Each tubular structure is divided by longitudinal partitions *b* and transverse partitions *b'* into a number of water-tight compartments whereby the hull is rendered unsinkable, of good floating qualities and is given such strength and rigidity as to properly support the superstructure. Each part A, A', A² is so made and arranged as to present an edge *c* at the top and an edge *c'* at the bottom with the side edges *c²*, *c³* normally on the water line, thus leaving sufficient freeboard above them.

The structures A, A', A² are of sufficient dimensions and are so spaced as to give the required floating capacity to the vessel, and in a vessel 200 feet in length and when three tubular structures are employed the latter are preferably placed about 33 feet apart, being so arranged as to best support the superstructure which, as shown, is considerably shorter and narrower than the hull being in a vessel of the dimensions above named, about 46 feet in width at the deck while the combined width of the tubular structures, *i. e.*, the distance from the outside of one outside tubular structure to the outside of the other outside tubular structure is about 66 feet so that the vessel as a whole is of truncated pyramidal form making it very stable in any weather.

Each side frame D is composed of struts

d and ties d' which connect the tubular structure with which it is associated with the deck E. As shown in Figs. 6, 7 and 8 each side frame is made double, the outer members connecting with the top of the tubular structure at the edge c and the inner members being connected with the structure at the inner edge c^3 . The outer members d , d' extend diagonally upward and inward to the edge of the deck E while the inner members d , d' extend diagonally upward and inward to the middle of the deck (Fig. 8). Girders F extend transversely across the hull and connect the edges c of the outer tubular structures, the ends of the girders being preferably shaped as shown in Fig. 3. Other horizontally arranged girders F' may be employed to connect the outer struts d together and vertically arranged ties F² may be used to further strengthen the structure.

The middle tubular structure is connected by a vertical frame G with the deck E. This frame may be composed of arches e and struts and ties e' , e^2 of the kind shown in Fig. 2. The middle structure is also connected with the side edges of the deck by diagonally arranged ties H which are connected to the upper edge of the structure in the manner shown in Fig. 4. The superstructure may also be strengthened by supporting ties and braces I, as shown in Figs. 1, 2, 9 and 10.

The vessel may be driven by sail or in other suitable ways. As shown, screw propellers J are provided, four being preferably used, two of which are placed between each of the outer tubular structures and the middle one, and they are disposed considerably in advance of the rear ends of the hull sections. The propeller shafts K extend diagonally forward and upward to the front upper part of the superstructure where suitable engines may be placed in compartments L, M which may be located partly above and partly below the deck so as to allow freedom of observation from the front windows of the saloon U. From the compartments L, M the propeller shafts K extend downward and rearward to the propellers at an angle of about 10°, being supported at suitable intervals by frame bars O. Reservoirs or compartments P, Q for oil, gasoline or other fuel may be located as indicated, the front walls thereof being made angular to reduce wind resistance, as shown in Figs. 9 and 10.

In rear of the motor compartments store rooms R and S may be placed for tools, ropes, etc. The passenger accommodations may be arranged on the deck, a series of cabins T being located immediately in rear of the front saloon U, the front walls of which are angular, as shown. A galley V may be located at the rear of the main deck, while quarters V' for the crew may be located below the galley. The captain and

officers may have an elevated suite of quarters W, with a navigation bridge X at the front above them. The rudder Y is attached to the keel Z, which latter is fixed below the middle tubular structure of the hull, while the operating connections of the rudder are extended to the bridge. Where two tubular structures are employed for the hull, each may be provided with a keel and if four tubular structures are used, the two middle ones may be provided with keels.

A vessel thus constructed has very small draft, allowing it to float over bars or up rivers and to closely approach a shore with a shallow depth of water. Owing to the fact that the tubular structures are widely separated and a small part of the hull is above the water line and also to the fact that the frame between the hull and the deck is open, the sea, and in case of rough weather, the waves, will pass freely along the vessel between the tubular structures and over them, through the open frame below the deck, so that the vessel is but little rocked or disturbed in any weather.

I claim as my invention:

1. A vessel, comprising a plurality of hermetically sealed floating tubular structures of rectangular cross section widely separated and connected together constituting the hull, and a superstructure above the hull of less width than the hull, comprising a deck and two sets of struts connecting each tubular structure to the deck one set being connected to the top of the tubular structure and extending diagonally upward and inward to the sides of the deck and the other set being connected to the inner side of the tubular structure and extending to the middle of the deck.

2. A vessel, comprising outside and middle hermetically sealed floating tubular structures widely separated and connected together constituting the hull, and a superstructure above the hull, comprising a deck and struts connected to the outside tubular structures and extending diagonally inward and upward to the deck and other struts connected to the middle tubular structure and extending upward and outward to the deck.

3. A vessel, comprising outside and middle hermetically sealed floating tubular structures widely separated and connected together constituting the hull, and a superstructure above the hull of less width than the hull, comprising a deck, struts and ties connecting the deck with the outside tubular structures and struts and arches connecting the middle tubular structure with the deck.

4. A vessel, comprising a plurality of hermetically sealed floating tubular structures widely separated and connected together constituting the hull, a superstructure of

less width than the hull, comprising a deck, and struts connected to the tubular structures and extending diagonally inward and upward to the deck, propellers arranged between the tubular structures and in advance of the rear ends thereof, and propeller shafts extending diagonally forward and upward from the propellers to the upper portion of the superstructure.

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5. A vessel, comprising a plurality of hermetically sealed floating tubular structures widely separated and connected together constituting the hull, a superstructure above the hull of less width than the hull, comprising a deck, and struts connected to the tubular structures and extending diagonally inward and upward to the deck, a keel arranged in the middle portion of the hull, a rudder attached to the keel and operating connections for the rudder extending diag-

onally upward and forward to the upper front portion of the superstructure.

6. A vessel, of truncated pyramidal form, comprising a plurality of hermetically sealed floating tubular structures widely separated and connected together constituting the hull, a superstructure of less width than the hull, comprising a deck, and struts connected to the tubular structure and extending diagonally inward and upward to the deck, and accommodations for the crew, passengers, machinery and cargo arranged wholly above the hull in the upper portion of the superstructure.

In testimony whereof, I have hereunto subscribed my name.

EMMANUEL ANTONIADES.

Witnesses:

ARDJEZ HARBZEC,
JOSEPH TARICO.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."