

C. LAURENTI.
SUBMARINE OR SUBMERSIBLE BOAT.
APPLICATION FILED NOV. 11, 1910.

1,059.475

Patented Apr. 22, 1913.

Fig. 1.

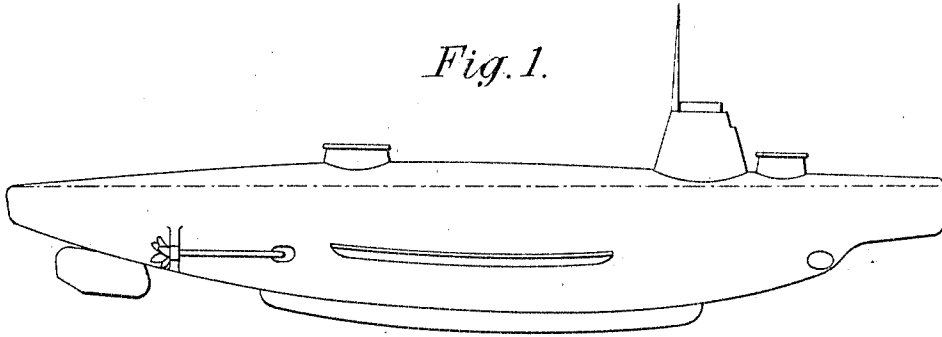
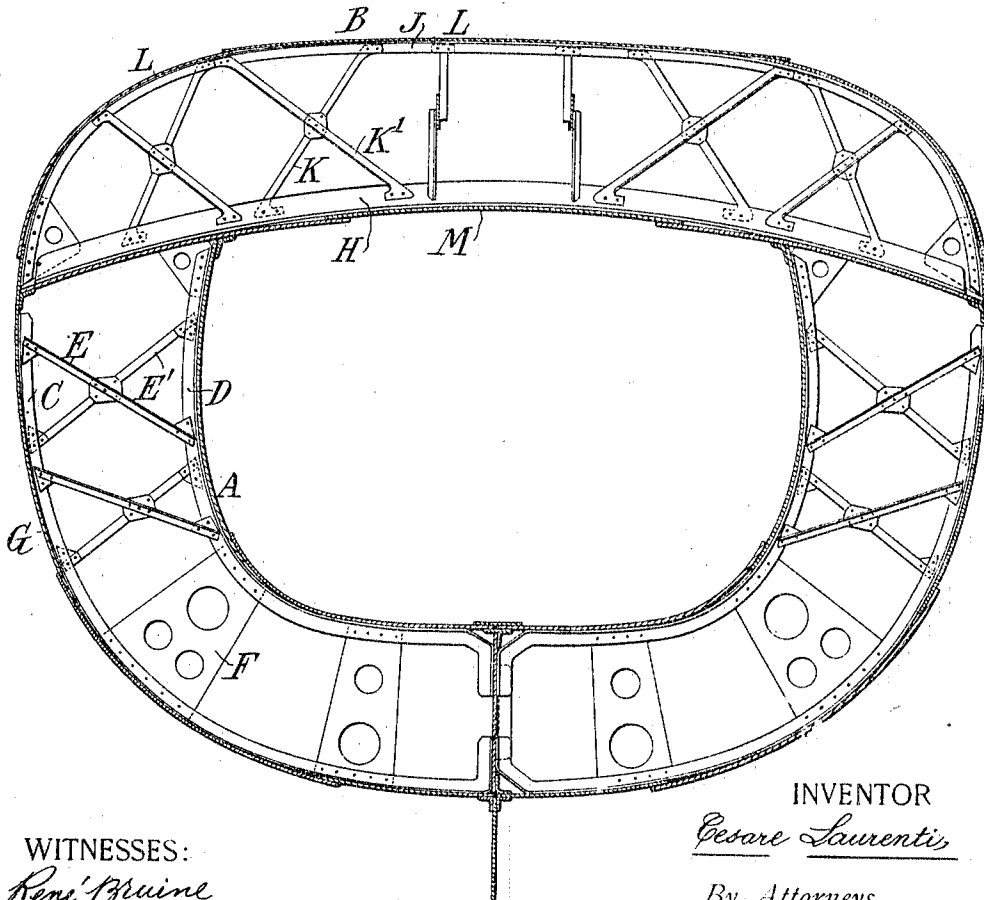


Fig. 2.



WITNESSES:

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CESARE LAURENTI, OF SPEZIA, ITALY, ASSIGNOR TO FIAT-SAN GIORGIO SOCIETA ANONIMA, OF SPEZIA, ITALY.

SUBMARINE OR SUBMERSIBLE BOAT.

1,059,475.

Specification of Letters Patent.

Patented Apr. 22, 1913.

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To all whom it may concern:

Be it known that I, CESARE LAURENTI, a subject of the King of Italy, residing in Spezia, Italy, have invented certain new and useful Improvements in Submarine or Submersible Boats, of which the following is a specification.

This invention relates to submarine or submersible boats, and aims to provide certain improvements therein.

In an application filed by me on the fourteenth day of August, 1907, Serial No. 388,445, I have described and claimed a submarine or submersible boat having on its upper side a hollow superstructure which is designed to be flooded automatically through portholes or inlets when the boat is submerged, and to automatically expel the water therefrom by gravity when the boat is emerged or brought to surface-running trim.

The present invention relates to a construction of hull useful in connection with boats of the general type set forth in said application, and is particularly directed to the construction of hull so far as it relates to a boat having a superstructure of the character therein set forth.

In boats of this type which are preferably elliptical in cross-section, problems in hull construction are met with which are not present in what may be called the cylindrical type of hull. As is well known, a boat having a cross-section which is truly circular, requires the minimum weight of material to resist a given external pressure. Such boats, however, do not for a given displacement provide the internal space which is desirable at various points in the length of the hull for the arrangement of the necessary internal equipment. The cylindrical type has hence been departed from in the vessel forming the subject matter of my aforesaid application, and it has hence become desirable to provide a construction of hull which is as strong as possible for a given weight of material when the cross-sections depart more or less from the true circle.

According to the present invention, I provide a hull of arched formation, comprising preferably two trussed arches, one of which may be said to constitute the body of the hull, and the other the top of deck portion thereof. The particular construction best

adapted for this purpose will be hereinafter described.

Referring to the drawings, which illustrate one form of the invention, Figure 1 is a side elevation of a submarine or submersible boat embodying the invention; Fig. 2 is a transverse section taken amidships.

Referring to the drawings it will be noted that the hull shown in Fig. 1 is not truly cylindrical. Its transverse sections are of varying shapes throughout, ranging from the approximately elliptical cross-section of Fig. 2 to more or less irregular or complicated shapes which are not illustrated, some of which are shown in my prior application.

By reference to Fig. 2 it will be seen that the boat illustrated is preferably composed substantially of a body portion A and a top or deck portion B. The body portion preferably comprises an arch composed of angle irons, I-beams or T-beams C and D which are connected together by intervening crossed struts E E', or plate struts or braces F. The pressure-resisting plating of the body portion A is shown at G, being connected to the angle irons C. The upper or deck portion B is also preferably composed of a trussed arch comprising angle irons, I-beams or T-beams H and J, which are connected by suitable struts or braces K K', or other struts or braces of any desired form. The pressure-resisting plating for the deck portion may be located at L, or at M. In the first case the exterior shell of the deck portion is adapted to withstand the pressure, while in the latter case the interior shell thereof performs this function. If the intervening space between the shells L and M is designed to be utilized as a self-bailing superstructure, with ports freely open to water pressure when the boat is submerged, the external and internal pressures of shell L will be equalized so that no great pressure-resisting qualities need be present in the external plating. In this case the external pressures will be transmitted to the plating M and it is hence necessary to give the latter the necessary strength of construction. In either case, however, the upper arch with its trussed formation resists crushing strains, irrespective of the location of the sheathing. It will be noted that the arch extends from the under side of the outer plating to the upper side of the inner plating. Not only the transverse angle irons, but also both platings

contribute essentially to the strength of the deck portion of the hull. By this construction the maximum pressure-resisting qualities are attained with the minimum weight of material. This is true whether the deck portion forms a part of a general elliptical cross-section or whether this elliptical cross-section is departed from even to a very material extent.

10 In some cases it is desirable in the length of the boat to arrange the pressure-resisting plating partly within the upper arch and partly on its exterior, in order to provide the necessary space for the engines, tanks, storage batteries and other internal equip- 15 ment. The construction herein described readily lends itself to such changes.

While I have shown in detail one form of the invention, I do not wish to be limited thereto, as variations can be made therein 20 without departing from the invention.

What I claim is:—

1. In a submarine or submergible boat, a hull having a body section, constituting the 25 main portion thereof, and a deck section, said deck section comprising exterior and interior sheathing plates and trussed arches, said exterior and interior sheathing plates being attached directly to the upper and 30 lower sides of said trussed arches, said deck section being above the water-line when the boat is running on the surface, and constituting between said exterior and interior sheathing plates a buoyancy compartment 35 adapted to be filled with water when the boat is submerged.

2. In a submarine or submergible boat, a hull having a body section, constituting the

main portion thereof, and a deck section, said deck section comprising exterior and interior sheathing plates and single trussed arches, said exterior and interior sheathing plates being attached directly to the upper and lower sides of said trussed arches, said deck section being above the water-line when the boat is running on the surface, and con- 45 stituting between said exterior and interior sheathing plates a buoyancy compartment adapted to be filled with water when the boat is submerged.

3. In a submarine or submergible boat, a hull having a body section, comprising inverted trussed arches, constituting the main portion of the hull, and a deck section, said deck section comprising exterior and interior sheathing plates and trussed arches, 55 said exterior and interior sheathing plates being attached directly to the upper and lower sides of said trussed arches, said trussed deck arches resting on the inverted ends of said body-section arches and said interior sheath- 60 ing plates extending over the inverted ends of said body-section arches to the exterior of the hull, said deck section being above the water-line when the boat is running on the surface, and constituting between said ex- 65 terior and interior sheathing plates a buoyancy compartment adapted to be filled with water when the boat is submerged.

In testimony whereof, I have hereunto 70 signed my name in the presence of two subscribing witnesses.

CESARE LAURENTI.

Witnesses.

GUIDO CONARD,
A. BORAGINA.