No. 807,732. PATENTED DEC. 19, 1905.

E. P. DOUGHERTY.

SALVAGE MEANS FOR SUBMARINE BOATS.

APPLICATION FILED MAR. 21, 1904.

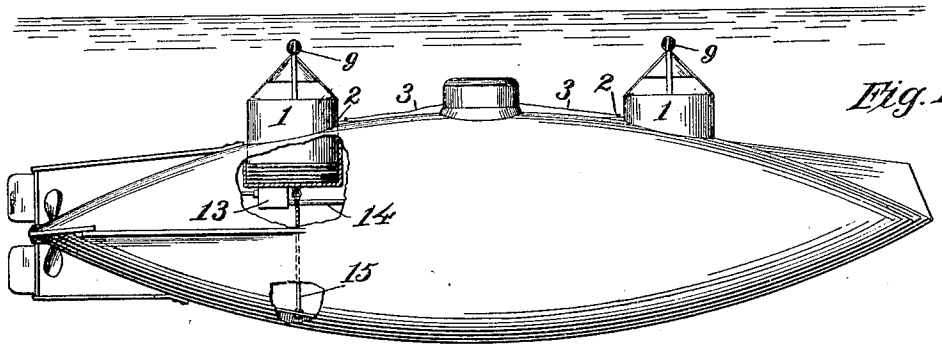

Fig. 1.

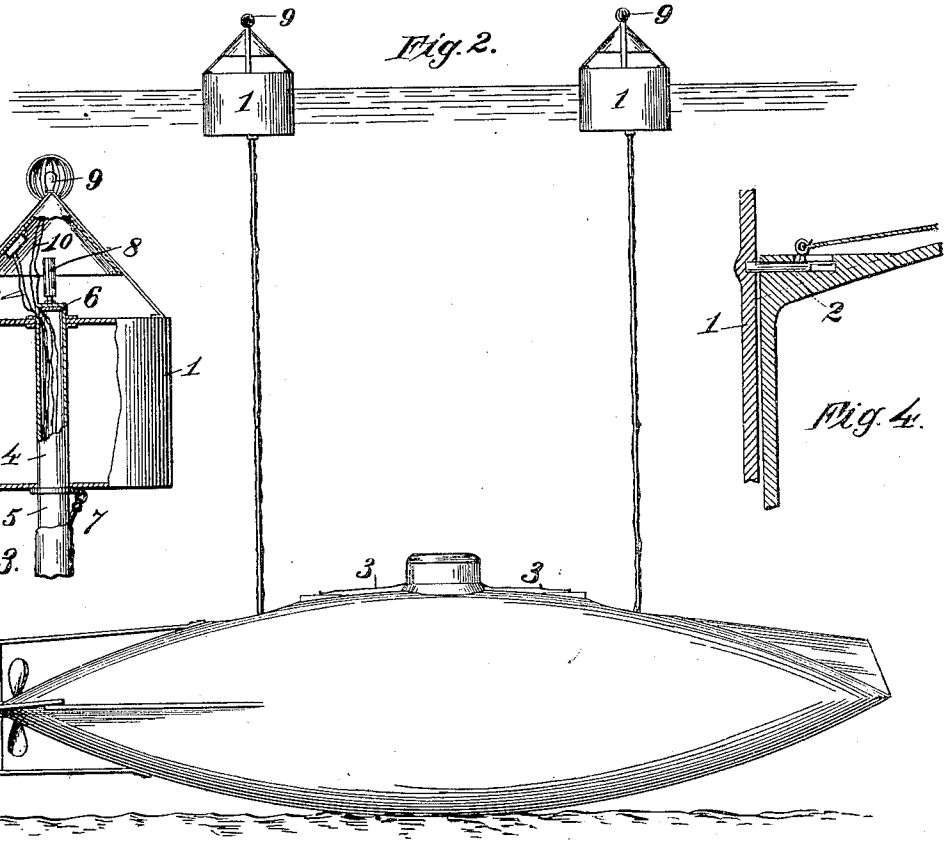

Fig. 2.

Fig. 3.

Fig. 4.

WITNESSES:

H. S. Austin

Louis T. Scudder

INVENTOR

Edmund Plowden Dougherty

BY

Adrian C. Wenner & Co.

HIS ATTORNEYS.

UNITED STATES PATENT OFFICE.

EDMUND PLOWDEN DOUGHERTY, OF WASHINGTON, DISTRICT OF COLUMBIA.

SALVAGE MEANS FOR SUBMARINE BOATS.

No. 807,732. Specification of Letters Patent. Patented Dec. 19, 1905.

Application filed March 21, 1904. Serial No. 199,264.

To all whom it may concern:

Be it known that I, EDMUND PLOWDEN DOUGHERTY, a citizen of the United States, residing at Washington, in the District of Columbia, have invented a certain novel and useful Salvage Means for Submarine Boats, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

The principal object of my invention is to prevent loss of life by suffocation in submarine boats. Vessels of this class are liable to become injured or disabled under water and unable to rise to the surface, with the result sometimes of either partial or complete loss of the air-supply carried by the craft or consumption of the air by the crew where the vessel has to remain submerged indefinitely, resulting frequently in suffocation of the entire crew.

My invention, which is applicable to submarine craft of any design, provides simple and efficient means, for use principally in cases of accident or emergency, for supplying fresh air to the submerged vessel or for charging the several air-compartments either by aid of the machinery or by hand-power when the machinery is broken or disabled and repairing is impossible.

Other objects of the invention are to afford facilities for signaling passing vessels when the submarine boat is so disabled and submerged or on the bottom of the ocean, to provide for telephonic communication between the crew of the submerged craft and a rescuing party on the surface of the water, and to provide convenient hoisting apparatus for use by the rescuing party when the submarine vessel cannot be floated on her own resources.

The invention will be first fully described with reference to the accompanying drawings, which are to be taken as a part of this specification, and then more particularly pointed out in the claims following this description.

Figure 1 is a side elevation of a submarine boat equipped with my improved apparatus, a portion of the side of the boat being broken away. Fig. 2 is a similar view of the boat, represented sunken on the bottom of the ocean or river, with the emergency floats floating on the surface of the water above. Fig. 3 is a detail view, partly in section, of one of the floats. Fig. 4 is a fragmentary sectional view of one of the devices for holding a float in its pocket or recess.

The submarine boat carries a float or floats, suitably held in place on the vessel and connected thereto by an air-tube, hoisting-cable, and telephone or other electric wire, which normally lie coiled in an appropriate receptacle or receptacles. When the vessel is injured or disabled under water or when otherwise the air-supply contained in the vessel is insufficient, the said floats are detached or released from the boat and allowed to rise to the surface of the water, whereupon communication is made through the air-tube between the upper atmosphere and the interior of the vessel or its air-chambers or pumping apparatus. Distress signals carried by the floats may be operated from the vessel by suitable electrical connections, and if the vessel is unable to rise on her own resources it may be raised by a rescuing party by means of the hoisting-cables. It is essential that the float or floats should have a buoyancy capacity capable of supporting the air-tube, hoisting-cable, and electric wire or wires of sufficient length to reach to the surface of the water from any depth in which the boat may operate, and for this reason I preferably employ large hollow air-tight tanks the buoyancy of which is of course very great in comparison to the weight. In the present case two of such air-tight tanks or floats are shown, (indicated by the numeral 1,) situated fore and aft to balance each other. These tanks are set in pockets therefor in the deck of the vessel, in which they are retained by suitable catches 2, which can be operated from the conning-tower by means of suitable connections 3 to release the said tanks or floats when desired. Each tank or float has an air-pipe 4 extending centrally therethrough connected with the air-tube 5 for supplying air to the boat. The air-pipe may have a suitable valve 6 therein for admitting air when the float rises to the surface of the water. The said air-tube is assembled with the hoisting-cable 7 and telephone or electric wires, which latter may be inclosed in the tube. The air-tube with the hoisting-cables bound thereto normally lies coiled under the tank or float in its pocket; but when the tank or float is released it is uncoiled and lengthened out, as shown in Fig. 2.

The numeral 8 indicates a distress-whistle,

and 9 denotes a signal-light surrounded by a brass or copper guard. The whistle may be operated by the air-pump on the boat drawing air through the air-tube. The signal-light may get its power from the independent storage batteries in the boat hereinafter referred to.

Numeral 10 denotes the electric wires for the light, and 11 denotes telephone-wires.

12 denotes a water-shield above the inlet to the air-tube.

13 represents the air-pumping apparatus, which should have a separate set of batteries from the batteries of the boat-propeller and should have also a hand-power attachment in case the batteries fail.

14 is the outlet of the air-supply pump.

15 is a tension-rod connecting with the hoisting-cable and with the keel of the boat.

When the boat is disabled under water, this apparatus will afford ample air-supply to prevent suffocation of the crew and will allow recharging the air-compartments when the machinery is repaired, thus bringing the boat to the surface of the water on her own resources and in perfect safety. Should the air-pumping machinery fail, the crew may take turns at the pumps. If the commander gives up hope of raising the boat on her own resources, he may turn to the distress-whistle or signal-lights or even use rockets from the floating tanks. When the rescuing party arrive, they can communicate with the disabled boat by means of the telephone connections. If the submarine boat is entirely incapable of raising herself, she may remain where she is until the cruiser or tug arrives, and she can then be floated by means of her hoisting-cables attached to the two floating cylinders. The hoisting-cables are attached fore and aft, which gives an easy hoist. If the boat is hoisted by the enemy, the commander can surrender, if desired.

There must of course be extra water-ballast tanks to compensate for the buoyancy of the air-tight tanks. These water-ballast tanks must be of sufficient size to allow expulsion of the water and charging with air to balance the loss of the two air-tight tanks when the latter in cases of emergency are allowed to float to the surface.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. A submarine boat having, in combination, an open pocket or recess in its deck, a float loosely fitted therein and projecting above the deck and subjected to the force of buoyancy when the boat is submerged, means retaining said float in said open pocket and operated from within the boat for releasing said float, and a flexible air-tube connected to said float and the air-receiver of the boat adapted to supply air to the vessel when the float rises to the surface of the water.

2. A submarine boat having, in combination, an open pocket or recess in its deck, a float loosely fitted therein adapted when released to rise by buoyancy, a catch for retaining said float in said pocket, and means operated from within the boat for actuating said catch to release said float, and a lengthy flexible connection between said float and the boat.

3. A submarine boat having, in combination an open-topped cylindrical pocket or recess in its deck, a float loosely fitting therein and projecting above the deck and subjected to the force of buoyancy when the boat is submerged, means retaining said float in said open pocket and operated from within the boat for releasing said float, and a flexible air-tube connected to said float and the air-receiver of the vessel and coiled compactly in the bottom of said pocket under the float, said tube being adapted to uncoil and supply air to the vessel when the float rises to the surface of the water.

4. A submarine boat having, in combination, an open pocket in its deck, a float mounted therein subjected to the force of buoyancy when the boat is submerged, an air-tube connected thereto and to the air-receiver of the vessel, a hoisting-cable associated with said air-tube connecting the float with the keel of the boat, a catch for retaining said float in said open pocket, and means operated from within the vessel for releasing said catch to allow the float to rise to the surface of the water, said float adapted to hold the inlet of the air-tube above the surface of the water.

5. A submarine boat having, in combination, an open-topped pocket or recess in its upper part, a float held therein adapted when released to rise by buoyancy, an air-tube connected thereto and to the air-receiver of the vessel, a hoisting-cable associated with said air-tube connecting the float with the keel of the boat, said tube and cable being normally coiled in the bottom of said pocket under said float, means operated from within the vessel for releasing said float to allow it to rise to the surface of the water, said float when risen adapted to hold the inlet of the air-tube above the surface of the water, an electric signal or signals carried by the float, and electric wires therefor inclosed within said air-tube.

6. A submarine boat having, in combination, a medial conning-tower, open-topped recesses or pockets in the deck at substantially equal distances therefrom, buoyant floats mounted in said open pockets and subject to the force of buoyancy when the boat is submerged, catches for retaining the said floats in said open pockets, means operated from the conning-tower for withdrawing said catches to release the floats, and flexible connections between said floats and the boat normally coiled in the pockets under the floats and of sufficient length to allow the floats to rise to the surface when the vessel is sunken.

7. A submarine boat having, in combination, a medial conning-tower, open-topped recesses

or pockets in the deck at opposite sides thereof, buoyant floats held in said open pockets, retaining devices therefor, means for operating said devices from the conning-tower to release the floats, and flexible connections between said floats and the boat normally coiled in the pockets under the floats and of sufficient length to allow the floats to rise to the surface when the vessel is sunken, said connections each comprising a combined air-tube and hoisting-cable, the air-tube being adapted to supply air to the boat when its float rises to the surface.

8. A submarine boat having, in combination, open-topped recesses fore and aft in its deck, buoyant floats therein, air-tubes connected with said floats and with the air-receiver of the vessel, catches retaining said floats in their pockets, and means for operating said catches from within the boat to release the floats.

9. A submarine boat having, in combination, a recess or pocket in its deck, a buoyant float held therein, said float consisting of an air-tight hollow tank with a central tube therethrough and with a shield or covering over the upper end thereof, a flexible connection between the float and boat normally coiled under the float on the bottom of said pocket, said connection comprising an air-tube and hoisting-cable, the former being joined to the central tube of said float, electrical signals carried by the float, wires therefor contained in the air-tube, means for releasing said float from its pocket to allow it to rise to the surface and lengthen out said connections, and a distress-whistle carried by the float.

10. A submarine boat having, in combination, an open pocket or recess in its deck, a float held therein adapted when released to rise by buoyancy, means for releasing the float, a signal carried by said float, and a lengthy flexible air-tube connecting the float and boat, said tube having wires therein adapted to operate said signal, and a hoisting-cable associated therewith.

11. A submarine boat having, in combination, two pockets or recesses in its upper part equal distances fore and aft from the center, floats held therein adapted when released to rise by buoyancy, retaining devices therefor, releasing means operated from within the boat, said floats connected to said boat by substantial hoisting-cables having air-tubes associated therewith connecting said floats with the air-receiver of the vessel.

12. In a submarine boat, a float carried by the boat consisting of an air-tight hollow tank having an air-tube extending vertically therethrough and connected to the air-receiver of the boat, the inlet to said air-tube being protected by a conical cap placed over the same, an electric signal carried by the float, and said air-tube having wires associated therewith adapted to operate electric signal.

13. A submarine boat having, in combination, a normally open pocket or recess in its deck, a float loosely fitted therein subjected to the force of buoyancy when the boat is submerged, and a catch for retaining said float in said pocket comprising a bolt engaging a socket in the side of the float, and means operated from within the boat for withdrawing said bolt to release the float and allow it to rise, and a lengthy flexible connection between said float and the boat.

14. A submarine boat having, in combination, a medial conning-tower, normally open pockets or recesses in its deck fore and aft, floats loosely fitted in said pockets and subjected to the force of buoyancy when the boat is submerged, latches retaining said floats in said pockets, and pull-cords connected to said latches and leading to the conning-tower for operating the same to release the floats.

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

EDMUND PLOWDEN DOUGHERTY.

Witnesses:

MARY A. WILSON,

OSGOOD H. DOWELL.