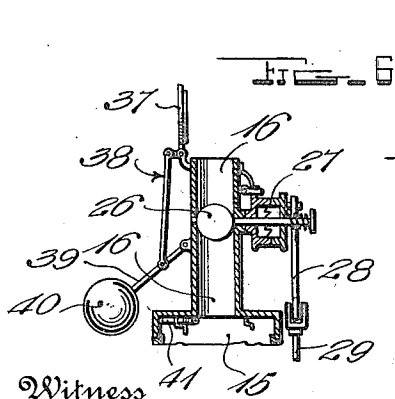
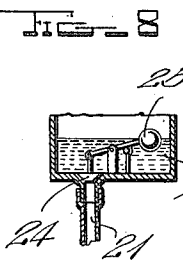
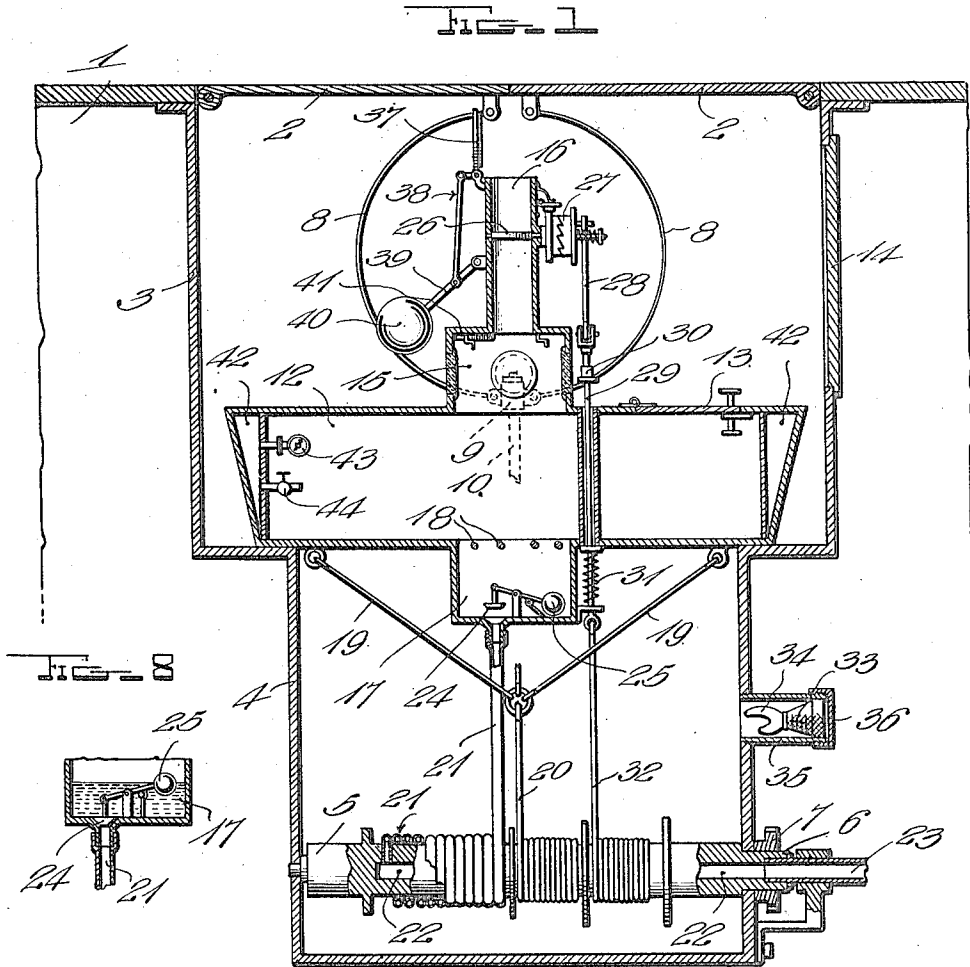


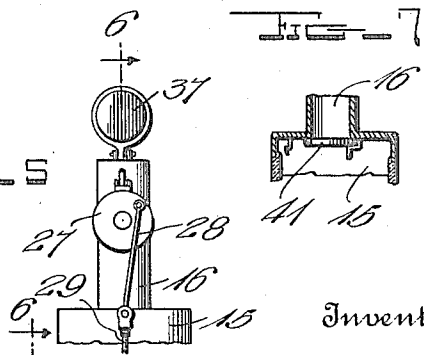
A. FERNANDEZ.
OBSERVATION BUOY FOR SUBMARINES.
APPLICATION FILED SEPT. 20, 1916.

1,232,668.

Patented July 10, 1917.
2 SHEETS—SHEET 1.



Witness
C. Munku



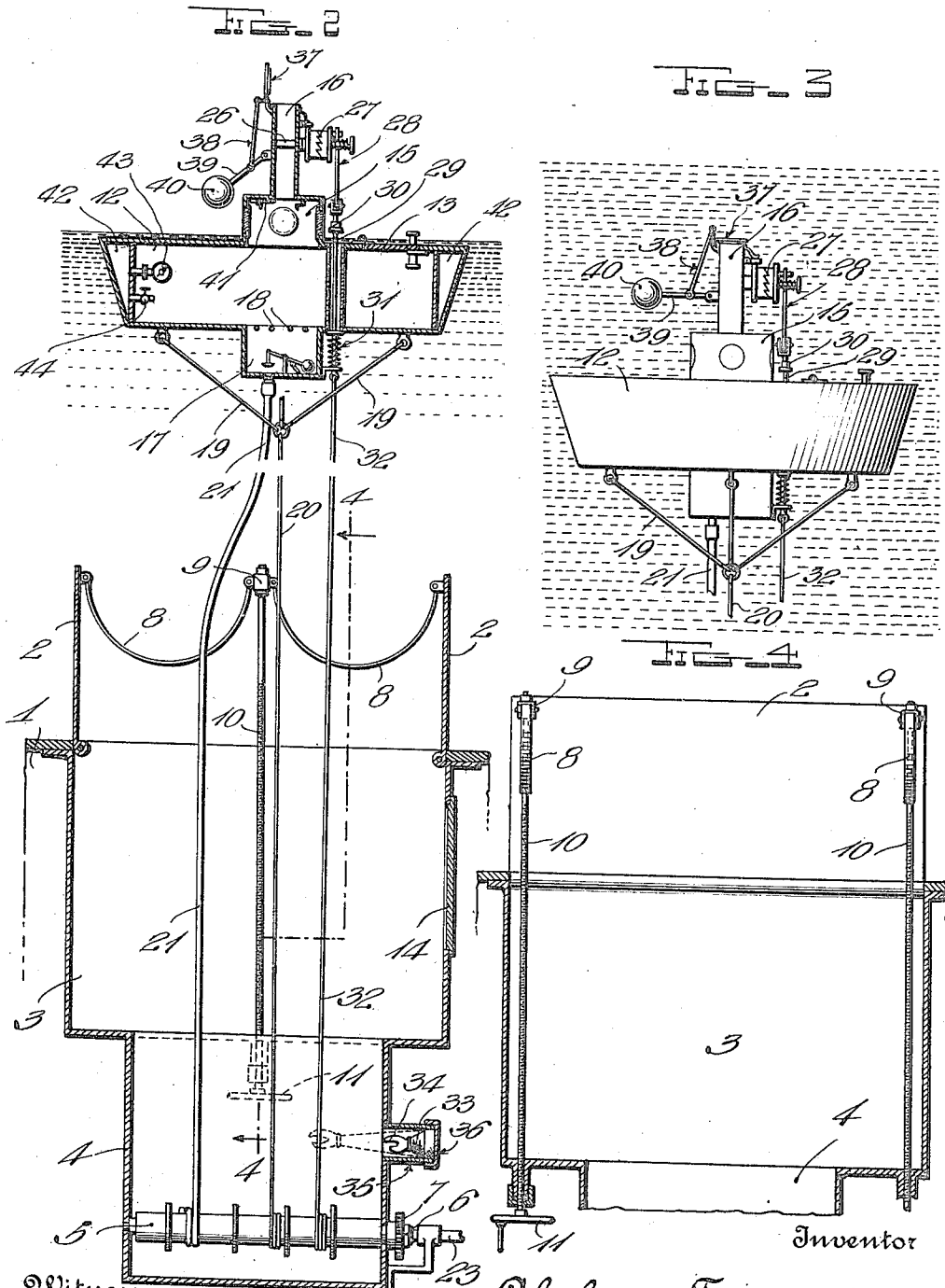
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UNITED STATES PATENT OFFICE.

ALPHONSE FERNANDEZ, OF WASHINGTON, DISTRICT OF COLUMBIA.

OBSERVATION-BUOY FOR SUBMARINES.

1,232,668.

Specification of Letters Patent.

Patented July 10, 1917.

Application filed September 20, 1916. Serial No. 121,248.

To all whom it may concern:

Be it known that I, ALPHONSE FERNANDEZ, a subject of the King of Spain, residing at the city of Washington, in the District of Columbia, have invented certain new and useful Improvements in Observation-Buoys for Submarines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention aims to provide an efficient yet comparatively simple buoy to be sent to the surface from a submerged submarine to serve as a lookout and also as means for supplying the submerged vessel with a fresh supply of air, with drinking water, or other liquid.

With the foregoing general object in view, the invention resides in certain novel features of construction and in unique combinations of parts to be hereinafter fully described and claimed, the descriptive matter being supplemented by the accompanying drawings which constitute a part of this application and in which:

Figure 1 is a vertical section of the improved buoy housed in a compartment in the upper side of the submarine;

Fig. 2 is a view similar to Fig. 1 but showing the buoy floating on the surface of the water;

Fig. 3 is a side elevation of the buoy showing the manner in which the air inlet thereof is automatically closed when the buoy is traveling upwardly or downwardly through the water or when large waves wash over the same;

Fig. 4 is a vertical section on the plane of the line 4-4 of Fig. 2;

Fig. 5 is a detail side elevation of the air inlet of the buoy and the parts used in conjunction therewith;

Fig. 6 is a vertical section on the plane indicated by the line 6-6 of Fig. 5;

Fig. 7 is a detail vertical section through the lower end of said air inlet showing the valve employed at this point; and

Fig. 8 is a detail vertical section showing the connection of the air line with the buoy and showing the safety valve at this point closed.

In the drawings above briefly described, the numeral 1 designates the upper side of a submarine, said side having hinged doors 2 which open into a compartment 3, the

lower end of said compartment being contracted as indicated at 4 and having therein a windlass 5 whose operating shaft 6 extends to the interior of the submarine and is shown as provided with a gear 7 by means of which power may be applied to rotate the windlass. Any suitable means may be employed for opening the doors 2 from the interior of the vessel but said doors are preferably connected by links 8 with heads 9 swiveled on the upper ends of screws 10 having hand wheels or the like 11 at their inner ends.

A buoy 12 is normally housed in the compartment 3, said buoy having preferably in its upper side a door 13 by means of which a person may enter from the compartment 3, one side of the latter having a door 14 which leads to the interior of the submarine so that when the doors 2 are closed and said compartment is empty of water, sailors may go to and fro between the interior of the vessel and said compartment whenever necessary. The top of the buoy 12 is provided with an observation tower 15 from which an air inlet pipe 16 rises while the bottom of said buoy is equipped with a well 17 over which a grating 18 is preferably disposed.

By means of a suitable shackle 19 the buoy 12 is connected to one end of a cable 20, the other end of said cable being wound on part of the drum 5. One end of a flexible air supply pipe 21 is also connected with the buoy, said pipe communicating with the well 17 at the bottom thereof as shown clearly in Figs. 1 and 2, the other end of said pipe being also wound on the windlass 5 and being in communication with a port 22 which extends longitudinally through said windlass and is in registration with a pipe 23 within the submarine so that air entering the buoy 12 through the inlet pipe 16 thereof may be drawn into the submerged vessel. The tube 20 may also be used for carrying drinking water or other liquids to the occupants of the submerged ship but in order to prevent water from flowing through the pipe 21 in case the buoy 12 should be flooded, due to damage from an enemy's shell, a safety valve 24 is provided, said valve being disposed in the well 17 and having a float for closing it immediately after water enters said well.

The pipe 16 is provided between its ends with a valve 26 by means of which the entrance of water and air into said pipe may be prevented, and a ratchet 27 is provided

for opening and closing said valve alternately as said ratchet is successively operated. For so actuating the ratchet 27 a link 28 preferably connects it with a vertical rod 29 which slides through the buoy 12, said rod having a stop 30 for limiting its downward movement and a spring 31 for returning it to initial position to reset the ratchet 27. The rod 29 is connected to one end of an operating cable 32 which is wound on the drum 5, this cable serving as means for closing and opening the valve 26 from the submerged vessel when the buoy is floating on the surface of the water, it being intended that if the valve 26 is open a downward pull on cable 32 shall close the same and vice versa.

To permit a person on the interior of the submerged vessel to operate the cable 32, a flexible sleeve 33 of rubber, canvas or the like is provided, said sleeve having a glove 34 as shown clearly in Figs. 1 and 2. The sleeve and glove are normally housed in a tubular casing 35 whose inner end is closed by a screw cap or the like 36 but when this cap is removed, a person within the submarine may insert his hand and arm into the sleeve and glove and by forcing these parts outwardly to the dotted line position shown in Fig. 2, the cable 32 may be grasped.

To prevent any high waves washing over the buoy from flooding the same through the pipe 16, I provide a valve 37 for the upper end of said pipe, said valve being automatically closed when a wave approaches. The valve 37 is preferably hinged to the pipe 16 and is connected by a link 38 to a lever 39 which is fulcrumed on the exterior of pipe 16, said lever having a float 40. It will thus be evident that any wave reaching as high as the float 40 will raise the same and will thus close the valve 37.

In case the pipe 16 should be destroyed or only injured by shell from an enemy's ship or by a bomb dropped from an airship, the occupant or occupants of the buoy 12 may close a valve 41 which will prevent the entrance of water into the observation tower 15 and even though the entire upper part of the buoy 12 be destroyed, the only persons drowned will be those in the buoy 12 since the moment the water enters the well 17 the safety valve 24 closes and thus prevents water from entering the submerged vessel through the pipe 21.

For furnishing the occupants of the buoy 12 with air while traveling upwardly or downwardly through the water, an air tank 42 preferably extends around the wall of the buoy, said tank being provided with a pressure gage 43 and an air outlet 44.

The buoy 12 will be in communication with the submerged vessel by means of a telephone or other appropriate instrument, the wires of which may well extend through

the pipe 21 but this arrangement need not be entered into at length in the present application. It is essential, however, that some means of communication be provided in order that the lookout in the buoy shall report to the commander the location of any enemy ships which may be in view. Means of communication is also necessary in order that the occupant or occupants of the buoy may signal those below at any time when it is urgent that they be pulled beneath the surface.

A device constructed and arranged as or substantially as above described will not only be of advantage as a lookout but it will furnish the submerged vessel with a fresh supply of air and drinking water, and other liquids may well be poured down the pipe 21 from a supply ship. Furthermore, when the buoy is floating on the surface of the water, the door therein may be opened and provisions may be loaded into said buoy from a supply ship. The buoy may then be drawn downwardly to the submarine and unloaded. It will also be obvious that the buoy can be used as a conveyer for carrying articles from the submerged vessel to a ship on the surface and that the occupants of the buoy, when the latter is on the surface, may board ships which may run alongside.

In the foregoing I have described a number of specific details of construction and in the drawings such details have been illustrated but it is to be understood that within the scope of the invention as claimed, numerous changes may be made without sacrificing the principal advantages.

I claim:

1. The combination with a submarine, of a buoy carried thereby and adapted to be released to carry an air supply pipe to the surface of the water, a valve on the buoy for allowing or preventing the entrance of air into said pipe, and a cable having a ratchet connection with said valve for permitting the occupants of the submerged submarine to operate said valve when the buoy is floating on the surface of the water.

2. The combination with a submarine, of a buoy carried thereby and adapted to be released to carry an air supply pipe to the surface of the water, a valve for allowing or preventing the entrance of air into said pipe, a cable connected with said valve and extending therefrom to the submarine when the buoy is floating on the surface, and a flexible sleeve communicating with the interior of the submarine adjacent the cable, said sleeve being impervious to water and being adapted to receive the arm and hand of a person on the interior of the vessel to permit him to pull upon the cable to close and open the aforesaid valve.

3. The combination with a submarine, of a buoy to be released therefrom to carry an

air supply pipe to the surface of the water, said pipe being in communication with the interior of the buoy, an air inlet for said buoy, and a safety valve for preventing the passage of water into the pipe from said buoy in case the latter should be flooded.

4. The combination with a submarine, of a hollow buoy to be released therefrom while submerged to carry an air pipe toward the surface, a pipe communicating with the interior of a buoy, a vertical air inlet pipe rising from said buoy, a valve for preventing the entrance of water into said pipe, a ratchet for operating said valve, a vertically moving rod mounted on the buoy for actuating said ratchet when pulled in one direction, a spring for returning said rod to its normal position, and an operating cable connected

with said rod and extending therefrom to the submarine.

5. The combination with a submarine; of a buoy to be released therefrom to carry an air pipe to the surface, the top of said buoy having an air inlet and the lower end thereof having a well with which the aforesaid pipe communicates, a valve for said pipe in said well, and a float for closing said valve in case water should gain access to said well.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALPHONSE FERNANDEZ.

Witnesses:

L. O. HILTON,
J. A. GRIESBAUER.

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