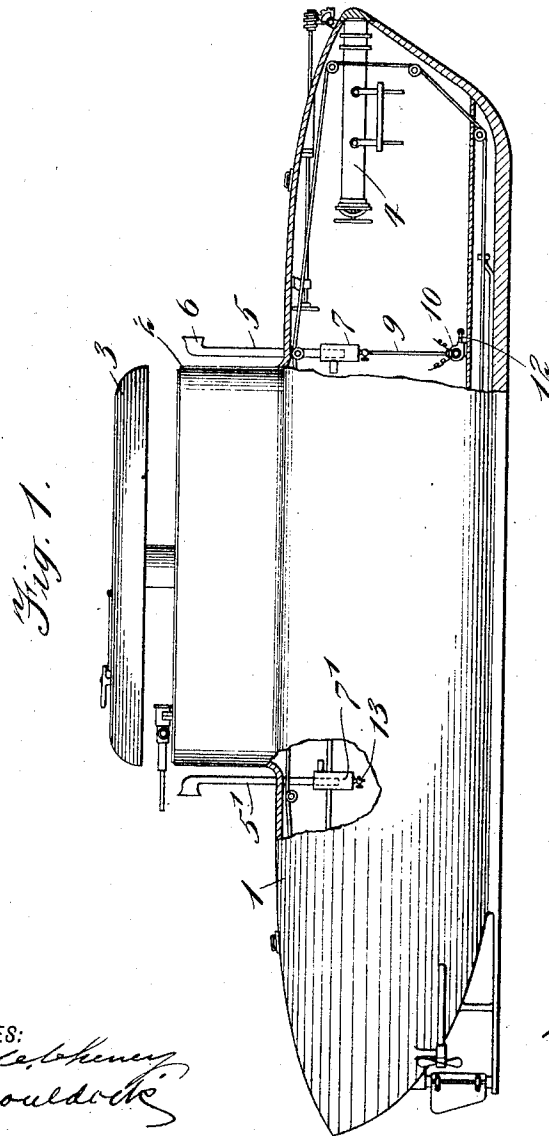
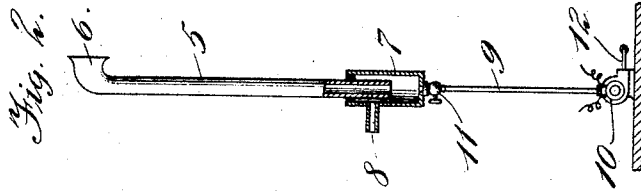


H. HERTZBERG, A. A. LOW & M. J. WOHL.
VENTILATING APPARATUS FOR SUBMARINE VESSELS.

APPLICATION FILED DEC. 24, 1909.

1,006,380.

Patented Oct. 17, 1911.



WITNESSES:
W. L. Cheney
B. M. Coulter

Harry Hertzberg,
Abbot A. Low,
Maurice J. Wohl,
INVENTORS

BY
Lewis J. Doolittle
ATTORNEY

UNITED STATES PATENT OFFICE.

HARRY HERTZBERG, OF NEW YORK, ABBOT A. LOW, OF HORSESHOE, AND MAURICE J. WOHL, OF NEW YORK, N. Y.; SAID HERTZBERG, LOW, AND WOHL ASSIGNORS TO THEMSELVES, TRUSTEES.

VENTILATING APPARATUS FOR SUBMARINE VESSELS.

1,006,380.

Specification of Letters Patent.

Patented Oct. 17, 1911.

Original application filed May 25, 1909, Serial No. 498,320. Divided and this application filed December 24, 1909. Serial No. 534,855.

To all whom it may concern:

Be it known that we, HARRY HERTZBERG, ABBOT A. LOW, and MAURICE J. WOHL, citizens of the United States, and residents, respectively, of the city of New York, county of Kings, and State of New York, of Horse-shoe, St. Lawrence county, and State of New York, and of the city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Ventilating Apparatus for Submarine Vessels, of which the following is a specification.

This invention relates to submarine vessels and is a divisional case from an application filed by us May 25, 1909, under Ser. No. 498,320.

The subject matter of this application is a ventilating apparatus which is of novel construction and provides for supplying fresh air to the interior of the vessel and is also provided with means to prevent the entry of water.

The type of vessel for which this apparatus is especially adapted is known as the semi-submerged type. The body portion of the vessel is usually submerged below the surface of the water while the conning tower projects above the water. The ventilating device comprises a tube extending upwardly from the interior to the exterior of the vessel and is provided at its upper end with a flaring portion extending toward the front of the vessel. This tube may be positioned immediately in front of the conning tower, and, if desired, a similar tube may be placed at the rear of the conning tower with its upper end extending in the opposite direction. As some water is liable to enter this tube it becomes necessary to provide means for removing the same and this is provided for by a cup-shaped receptacle, which incloses the lower end of the ventilating tube. This receptacle is provided with suitable means, such as a pump, for removing the water which accumulates therein and delivering the same outside of the vessel.

Another feature of the invention is the means provided for delivering the air from the ventilating tube to the interior of the vessel. When the boat is running at high speed, the current of air will be driven downwardly into the tube with considerable

force and in order to utilize this to the best advantage, the cup-shaped receptacle referred to is arranged to receive the inflowing stream of air and to deliver the same to the interior of the vessel through an outlet therefrom positioned above the lower end of the ventilating tube.

Other objects will be obvious from the description of the embodiment of the invention shown in the accompanying drawings, in which like parts in the several views have been given the same reference numerals.

Figure 1 is a side elevation of a submarine vessel, partially in section, showing the ventilating apparatus. Fig. 2 is an enlarged elevation, partially in section, of the ventilating apparatus.

The body of the vessel is indicated at 1, having a conning tower at 2, provided with a raisable cover 3. The torpedo tube 4 and other parts of the vessel which do not relate directly to this invention are not described herein. A ventilating tube 5 extends from the interior of the vessel through the upper deck and is provided at its upper end with a flaring portion 6. At the lower end of the ventilating tube 5, a cup-shaped receptacle 7 is positioned so as to inclose the lower end of the ventilating tube. This receptacle 7 is provided with an air outlet 8, which is located above the lower end of the ventilating tube 5. Suitable packing is provided around the tube 5 at the top of the receptacle 7. An outlet pipe 9 leads from the bottom of the receptacle 7 to an electrically driven pump 10. A stop-cock 11 may be provided in the outlet pipe 9. From the pump 10 the water is expelled through the pipe 12 to the exterior of the vessel.

The object of placing the outlet pipe 9 at the bottom of the receptacle 7 is to provide for entirely removing the water therefrom and leaving the same free to operate in diverting the stream of air from the ventilating tube 5 and causing the same to be distributed in the interior of the vessel from the air outlet 8. A second ventilating tube 5', as shown at the rear of the conning tower 2, is provided with a similar receptacle 7', in the bottom of which is shown a simple pet-cock 13, for removing the water therefrom. It will be understood, of course, that a pumping device similar to that described

for the forward tube may be provided, if desired, but as the liability of the water entering is considerably less at this point, the arrangement provided will be found to be sufficient under ordinary conditions.

One of the purposes of the ventilating tube at the rear of the conning tower is to provide for the escape of the air from the interior of the vessel, thus providing a complete system of ventilation in which fresh air is taken in at the front and the foul air driven out at the rear.

What we claim is:

In a submarine vessel, in combination, a conning tower a ventilating device positioned in front of said conning tower, a ventilating device positioned in the rear of said conning tower, said ventilating devices each comprising a tube extending upwardly from the interior to the exterior of the vessel, the

tubes of each device having the upper end flaring and extending in opposite directions toward the ends of the vessel, and cup-shaped receptacles inclosing the lower ends of said tubes into which the air is received and also any water which may enter the tubes, said cup-shaped receptacles being provided with air outlets above the lower ends of said tubes and also with means for removing the water therefrom.

Signed at Brooklyn, N. Y. city, in the county of Kings and State of New York, this 14 day of December, 1909.

HARRY HERTZBERG.
ABBOT A. LOW.
MAURICE J. WOHL.

Witnesses:

JNO. A. SLAGLE,
GEO. WELLING GIDDINGS.