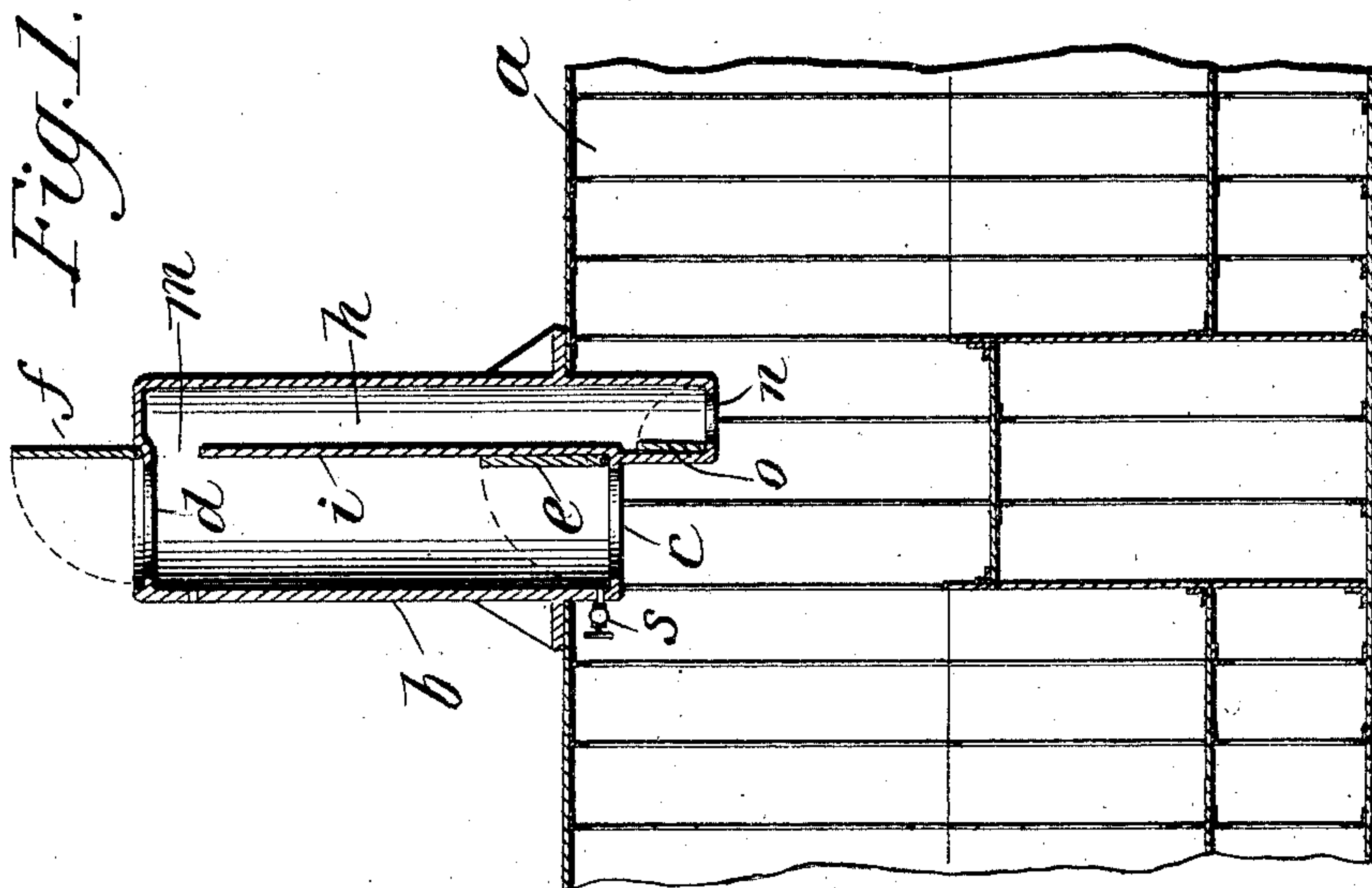
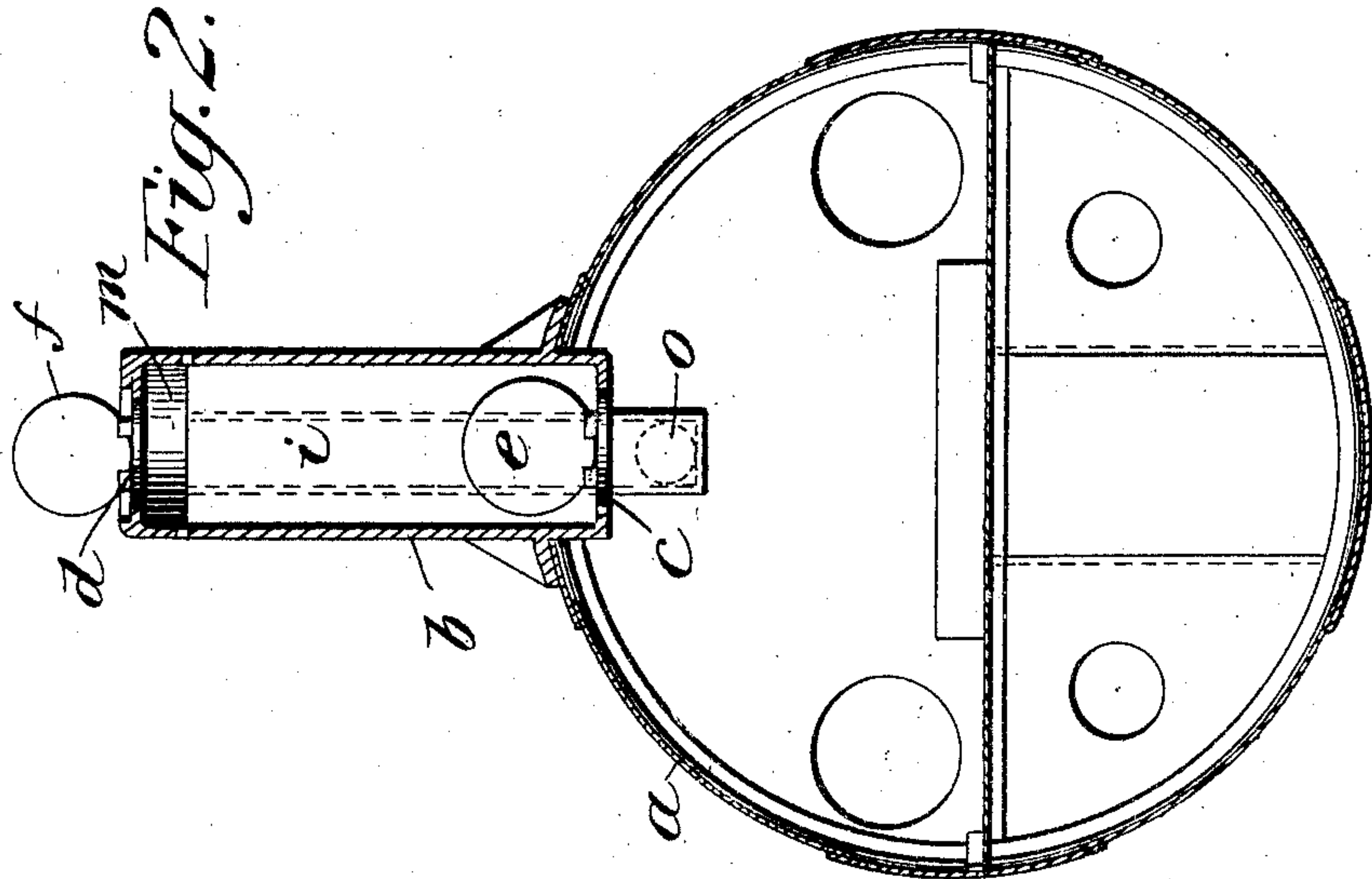


No. 854,004.

PATENTED MAY 21, 1907.

L. Y. SPEAR.  
SUBMARINE BOAT.  
APPLICATION FILED AUG. 1, 1906.



Witnesses

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# UNITED STATES PATENT OFFICE.

LAWRENCE YORK SPEAR, OF QUINCY, MASSACHUSETTS, ASSIGNOR TO  
ELECTRIC BOAT COMPANY, OF NEW YORK, N. Y., A CORPORATION OF  
NEW JERSEY.

## SUBMARINE BOAT.

No. 854,004.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed August 1, 1906. Serial No. 328,733.

*To all whom it may concern:*

Be it known that I, LAWRENCE YORK SPEAR, a citizen of the United States, residing at Quincy, in the county of Norfolk and the State of Massachusetts, have invented certain new and useful Improvements in Submarine Boats; and I do hereby 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.

The invention relates to submarine or submergible boats and has for its object to provide means for effectively ventilating the vessel, while on the surface, and preventing ingress of water, which is liable to pass into the ventilating opening, to the interior of the vessel.

It is common practice in submarine or submergible boats, when the same are operating upon the surface to effect ventilation of the interior by way of the conning tower, by raising the scuttle or hatch with which the tower is always provided to give entrance to or exit from the interior of the boat. In rough water some spray and water is almost inevitably carried down the hatch into the vessel, making it wet and uncomfortable for the crew inside of the boat. The present invention contemplates the provision of means to permit boats of this character to be ventilated through the conning tower, which means, while freely admitting air to the interior of the vessel, will effectively exclude any water which may gain access to the interior of the tower through the open hatch.

While the invention is particularly applicable to the ordinary form of conning tower, it will be understood that it is equally efficacious when applied to any other form of tower or protuberance on the hull of the vessel which may project above the water level, when the vessel is operating on the surface, and through which ventilation may be conveniently effected.

In the accompanying drawings, Figure 1 is a longitudinal section through the midship portion of a submarine or a submergible boat illustrating the invention as applied to a conning tower. Fig. 2 is a transverse cross section thereof.

Referring to the drawings, *a* indicates the hull, proper, of a submarine or submergible boat which may be of any of the well known

forms or types. Vessels of this character are usually provided with a conning tower which serves as a station for the officer or other person operating the vessel and also affords a ready means for entrance to and exit from the interior of the vessel, said tower being ordinarily provided with a hinged hatch on its top which serves as a water-tight scuttle which may be closed when it is desired to navigate below the surface, or to submerge the boat. Such a conning tower is shown at *b* in the drawings and consists of the usual vertical housing, generally circular in cross section, mounted on the upper surface of the boat, approximately amid ship. Through the top of the tower there is the usual hatch-way *d* controlled by a swinging hatch *f*, which is adapted to be operated from within the boat either to close the hatch-way as a water-tight scuttle, or to be swung back as shown in Fig. 1 to open the hatch-way *d* to permit the crew to pass in and out of the vessel and also to admit air to the interior of the vessel when the boat is operating on the surface.

When the scuttle or hatch *f* is open to afford ventilation and the water is at all rough it has been found that spray finds its way through the opened hatch-way through the conning tower and into the interior of the vessel below, rendering the boat wet and uncomfortable for the crew. This difficulty has been so marked when the boat has been navigating in rough water in a practically awash condition that it has been necessary to close the hatch *f* in order to exclude the water which was liable to enter in such quantities as to prove dangerous as well as disagreeable.

The present invention contemplates the provision of special means in connection with a conning tower, of the type described, to permit ventilation being effected through the tower even in the roughest water without danger of wetting the interior of the vessel so long as the latter is operating on the surface. To this end the bottom of the conning tower, which is provided with the usual opening *c*, is provided with a scuttle or hatch *e* adapted to close the opening *c* with a water-tight joint, so that, when the upper hatch *f* is open and the lower hatch *e* is closed, the conning tower constitutes what is, in fact, a trap for any water that may enter, the



water being caught and held in the lower part of the tower, from which it may be expelled through a suitable drain-cock *s* whence the water may be pumped overboard by any of the usual appliances inside the vessel for such purposes.

In order to admit the air which enters the open hatch *f* to the interior of the vessel I provide an air duct *h* which communicates with the interior of the conning tower *b*, above the bottom thereof, and connects with the interior of the vessel through an opening *n* in its lower portion which is adapted to be closed by a shutter or valve *o*. The air duct *h* may be conveniently formed as a lateral protuberance of the conning tower, proper, separated from the same by a cross partition *i* which terminates at a point below the top of the tower thereby leaving a passage-way *m*. The partition *i* forms what is in fact a dam or baffle which may be made of suitable height to prevent any water which enters the conning tower, proper, passing into the air duct and thence into the interior of the boat.

Although the air duct is shown as constituting a part of the tower, proper, it will be understood that it may be formed as a separate pipe or conduit which opens into the tower at some point above the bottom thereof and communicates at its other end with the interior of the vessel to permit the air entering the tower to pass to the interior of the vessel and to effectively exclude any water which may gain access to the tower.

In operation when the vessel is navigating on the surface, the scuttle or hatch *e* at the bottom of the conning tower is closed and the upper scuttle or hatch *f* is opened. The valve or stopper in the air duct *h* is also opened. The air passing from the hatch-way *d* enters the duct *h* through the passage *m* above the partition *i* and then passes through the lower opening *n* directly into the boat. Any water that may enter through the hatch-way *d* passes directly to the bottom of the conning tower where it is held by the closed hatch or scuttle *e*, and when excess of water has accumulated at this point it may be drawn off by opening the drain-cock *s* and delivering the water to the usual discharge pumps. Should the conning tower become flooded through accident and the

water tend to pass over into the air duct and thence to the vessel, the valve or stopper *o* at the bottom of the air duct may be immediately closed. When it is desired to operate below the surface, or to suspend ventilation through the conning tower, the upper hatch or scuttle *f* is closed and the lower hatch *e* is opened. It will be understood, of course, that any suitable or well known means for operating the scuttles or hatches may be provided.

What I claim is:

1. In a submarine or submergible boat having a tower through which ventilation may be effected, scuttles or hatches in the upper and lower portions of said tower for controlling admission thereto, and an air duct communicating with said tower above the bottom thereof and with the interior of the boat.

2. In a submarine or submergible boat having a tower through which ventilation may be effected, scuttles or hatches on the upper and lower portions of said tower for controlling admission thereto, an air duct communicating with said tower above the bottom thereof and with the interior of the boat, and a stopper or valve controlling said air duct.

3. In a submarine or submergible boat having a conning tower, a lateral extension of said tower forming an air duct communicating with the interior of the boat, and divided from the tower by a partition terminating below the top of the tower, and scuttles or hatches controlling openings in the upper and lower portions of said tower.

4. In a submarine or submergible boat having a conning tower, a lateral extension of said tower forming an air duct communicating with the interior of the boat, and divided from the tower by a partition terminating below the top of the tower, scuttles or hatches controlling openings in the upper and lower portions of said tower, and a stopper or valve controlling the air duct.

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

LAWRENCE YORK SPEAR.

Witnesses:

F. L. BRAKE,  
W. D. FESLER.