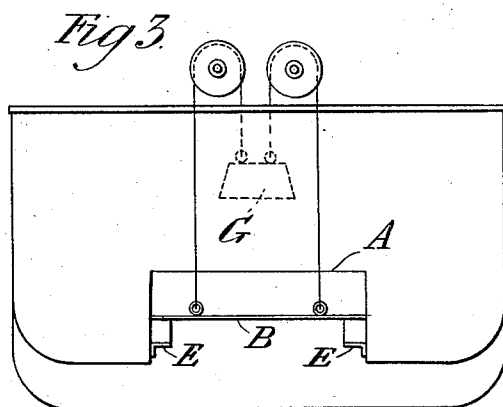
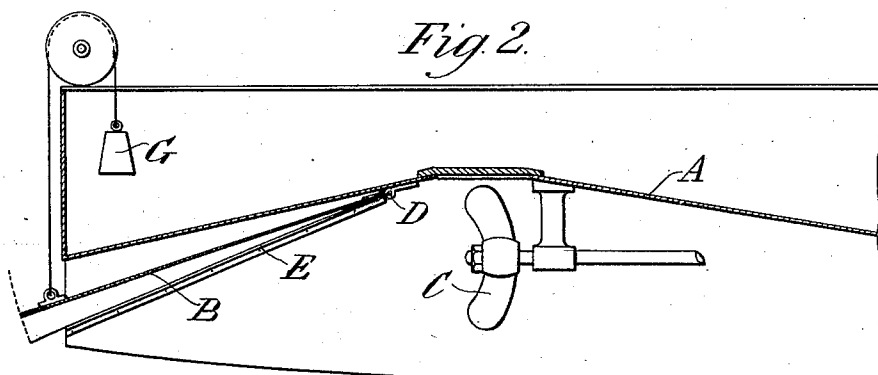
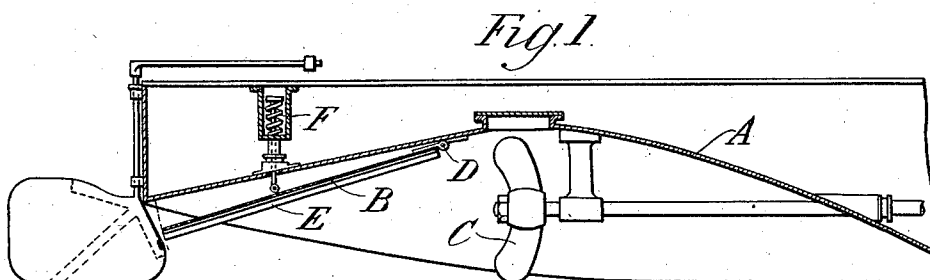


A. F. YARROW.
 PROPELLER CHAMBER OR TUNNEL FOR SHALLOW DRAFT VESSELS.
 APPLICATION FILED JAN. 20, 1912.

1,059,806.

Patented Apr. 22, 1913.



WITNESSES

R. A. Balderson
Jesse B. Heller

INVENTOR

Alfred Farnaday Yarrow
by Nathaniel Spruce Larnelle
his Attorneys

UNITED STATES PATENT OFFICE.

ALFRED F. YARROW, OF BLANEFIELD, SCOTLAND.

PROPELLER CHAMBER OR TUNNEL FOR SHALLOW-DRAFT VESSELS.

1,059,806.

Specification of Letters Patent.

Patented Apr. 22, 1913.

Application filed January 20, 1912. Serial No. 672,495.

To all whom it may concern:

Be it known that I, ALFRED FERNANDEZ YARROW, a subject of the King of Great Britain, residing in Blane-field, Scotland, and whose post-office address is Campsie Dene, Blane-field, in the county of Stirling, Scotland, engineer, have invented certain new and useful Improvements in Propeller Chambers or Tunnels for Shallow-Draft Vessels, of which the following is a specification.

This invention relates to shallow draft vessels having screw propellers which are accommodated within cavities or tunnels formed in the lower part of the hulls, the propellers being of such diameter that the blades extend above the level of the external water. As described in the specification to British Letters Patent No. 967 of 1897, such cavities have been made with their upper wall or roof sloping downward each way, forward and aft from the propeller, and in order to reduce as much as possible the resistance opposed to the issue of the water from the cavity toward the stern, the rearward slope has been made to terminate at or near the water line and means have been provided whereby this rearward slope can be altered so as to insure this condition at all drafts, by hinging the shell or roof constituting this slope and providing means for raising and lowering it as may be found necessary. This shell or flap is, according to the present invention, arranged to be completely or partly balanced so as to enable it to be raised automatically and maintained in a raised position by the sternward flow of water from the propeller with a minimum expenditure of power.

The invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a part longitudinal section of a shallow draft vessel showing the propeller cavity or tunnel and hinged shell or flap in which the latter is balanced or partly balanced by a spring; Fig. 2 is a similar view showing another arrangement for balancing the flap; and Fig. 3 is a transverse section showing a further modification of the balanced flap.

As shown in these drawings A is the roof of the tunnel or cavity in which the propeller C is accommodated, and B is a flap

hinged at D which substantially constitutes a second or false roof to the after part of the propeller cavity. This flap when in its lowest position is arranged to rest upon sills E so as to make an air-tight joint along each side and provision is also preferably made for making the hinged joint air-tight.

The flap B is balanced or partly balanced, as by means of a spring F which may be placed inside the vessel as shown in Fig. 1, or may be external to it. In the modified arrangement shown in Fig. 2 the flap B is more or less balanced by means of a weight G supported by a cord which passes over a guide pulley on the counter of the vessel and is attached to the tail end of the flap, or this arrangement may be duplicated, as shown in Fig. 3, the weight G in this case being supported by two cords passing over a pair of guide pulleys placed side by side as shown. These means for balancing or partially balancing the flap are shown merely as illustrations and it will be understood that many other effective ways of compensating the weight of the flap may be used without exceeding the scope of the present invention, as for example, by means of a piston working in a cylinder and operated by pressure or vacuum.

With the vessel at rest the unbalanced weight of the flap causes it to bear upon the sills so as to make an air-tight joint. If the vessel starts to go ahead under its propeller, as soon as the air is expelled from the tunnel the rush of water will lift the flap B (as shown in Fig. 2) and thereby automatically reduce the resistance opposed to the issue of the water from the propeller tunnel at the stern, the rush of water sternward effectually preventing any air passing the sides of the flap when the latter is lifted off the sill. Upon the vessel going astern, the flap B will remain on the sill or will drop down upon it, as the case may be, thereby sealing the tunnel against the admission of air and thus preventing the fall of water in the tunnel to the level of the outside water.

Having thus described the nature of the said invention and the best means I know of carrying the same into practical effect, I claim:—

In a shallow draft vessel having a cavity

or tunnel for the accommodation of the propeller, a flap or shell hinged at its forward end and forming the roof of the rearward part of the cavity, and means for balancing
5 the flap so as to enable it to be moved automatically by the sternward flow of water with a minimum expenditure of power.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

A. F. YARROW.

Witnesses:

THOMAS SHIELDS,
NELLIE KERR.

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