

No. 699,043.

Patented Apr. 29, 1902.

L. VIDAL.

APPARATUS FOR THE HYDRAULIC PROPULSION OF SHIPS.

(Application filed Dec. 26, 1901.)

(No Model.)

Fig. 1.

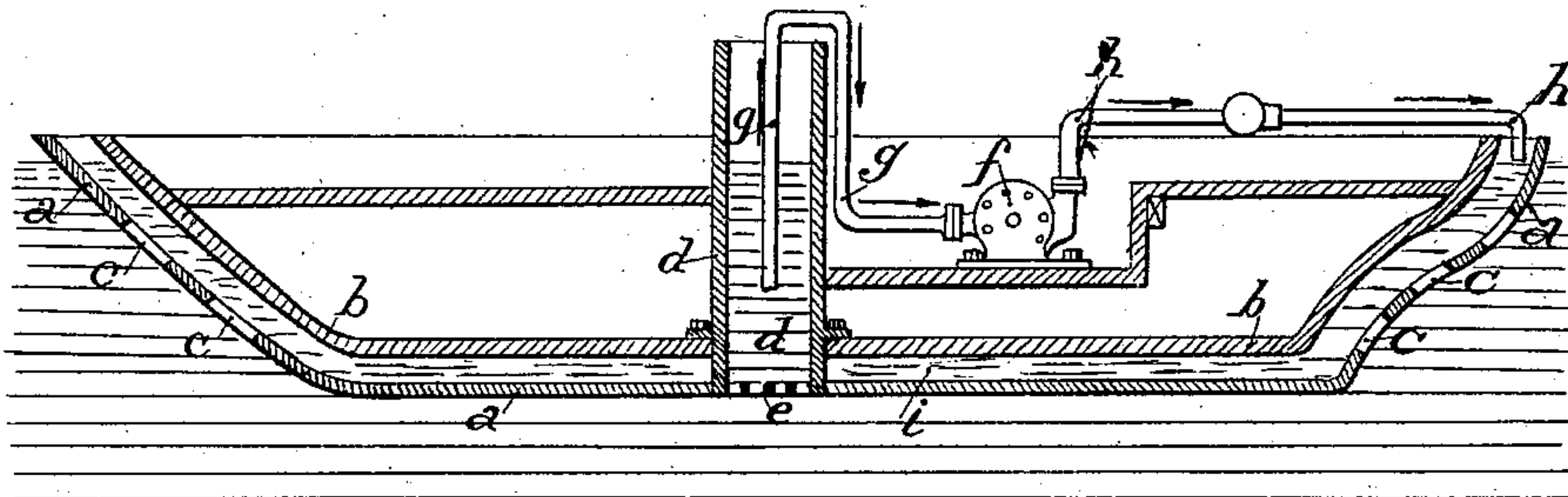
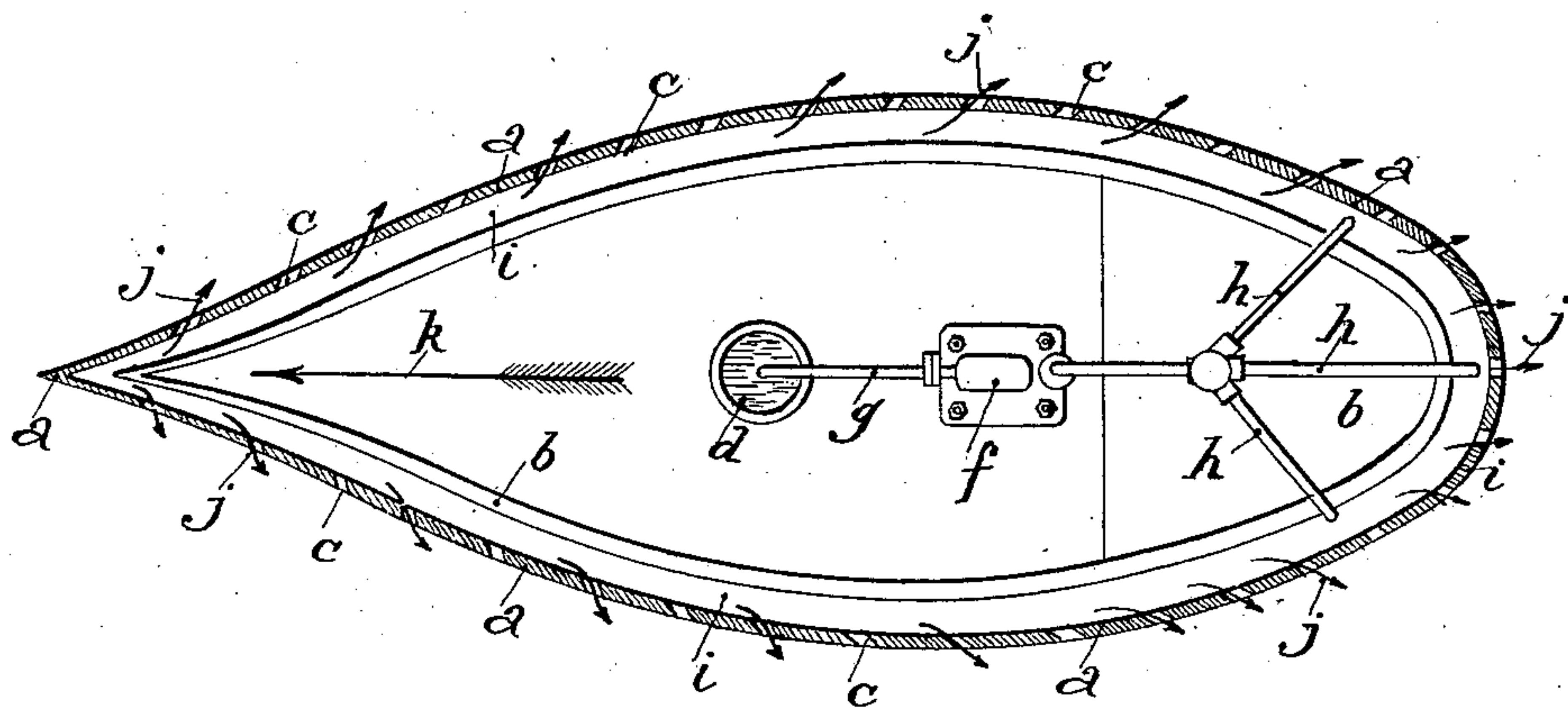


Fig. 2.



Witnesses:

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APPARATUS FOR THE HYDRAULIC PROPULSION OF SHIPS.

SPECIFICATION forming part of Letters Patent No. 699,043, dated April 29, 1902.

Application filed December 26, 1901. Serial No. 87,216. (No model.)

To all whom it may concern:

Be it known that I, LÉON VIDAL, a citizen of the Republic of France, and a resident of St. Rome du Tarn, France, have invented certain new and useful Improvements in Apparatus for the Hydraulic Propulsion of Ships, of which the following is a specification.

My invention consists of an apparatus applicable to ships of all types, and is designed to annul or to utilize the resistance of the water in the propulsion of these latter both when navigating at or below the surface of the water.

Figures 1 and 2 of the accompanying drawings show by way of an example a longitudinal axial section and a plan, respectively, of a ship provided with an apparatus of my system embodying this invention.

This apparatus comprises an outer metal casing or jacket *a*, which surrounds all parts of the hull *b* of the ship as far as the water-line, and thus has the same form without touching the ship otherwise than by the means for connecting it to the latter. The casing or jacket *a*, which may be constructed either of a single piece or of several pieces, according to the size of the ship, is perforated with a number of slots *c c c*, arranged obliquely, Fig. 2, in its thickness.

In the center and in the axis of the ship is provided a hollow shaft *d*, with a tight joint, open at top and communicating freely with the water at its lower end and which is closed by a grating *e* for preventing floating matters entering the said shaft. The grating *e* may be retained in position by one or more suspension-rods or the like, whereby it can be raised on board ship when required for cleansing it when choked with foreign matter. With this arrangement the water will always by itself rise in the shaft *d* to the same level as at the exterior of the boat—*i. e.*, the water-line.

In a convenient position in the interior of the hull *b* is installed a centrifugal pump *f*, for example, rotated by an appropriate motor. This pump draws the water through the tube *g* from the interior of the chimney *d* and ejects it through the branches of the tube *h* into the space *i*, formed between the outer surface of the hull *b* and the inner sur-

face of the casing or jacket *a*, and thus raises the level of water within the said space above that in which the ship floats. The difference in hydrostatic pressure thereby produced causes the water contained in the said space to form a constant flow by its own weight toward the exterior through the inclined slots, as indicated by the arrows *j j j*, Fig. 2. Under these conditions the friction from the water against the casing *a* is counteracted, while at the same time the ship is caused to advance in the direction of the arrow *k*, Fig. 2, with a speed which is all the greater as the discharge from the pump *f* is more considerable.

The casing *a* may be secured in a permanent manner by riveting to the ship's hull *b*, or it may be removably secured in such a manner as to enable it to be removed either as a whole or in segmental parts, in which latter case it would be secured to the hull by readily-detachable means—such as screws, bolts, hooks, or the like.

My invention is equally applicable to submarine boats. In this case the apparatus is divided into a certain number of compartments and the water is then only pumped into the submerged compartments, access of the water to the remaining compartments being prevented by means of stop-valves or taps operated from the interior of the vessel. In this latter case, as well as with surface navigating ships, the suction-nozzle for the water may be disposed in any convenient opening or project through any part of the ship into the outer water without the use of a central chimney *d*.

Obviously the apparatus is capable of adaptation to any description of floating vessel which ordinarily may be propelled by the aid of sails, screw-propellers, paddle-wheels, oars, or similar means. Whatever the ordinary propelling means may be, it is certain that the ejection or flow of water through the many orifices distributed over the entire submerged surface of the ship forms a very efficacious aid in the propulsion thereof and may even be alone utilized as the real propeller.

I reserve to myself the right to divide the apparatus into a certain number of partial compartments designed to aid and even to replace the action of the rudder, the ship re-

ceding before any compartment that may have been brought into operation.

Without limiting myself strictly to the precise details of construction hereinbefore specified, which naturally must vary according to the form and size of ship, without, however, deviating from the essential principle of my invention, I claim—

1. An apparatus designed to counteract or
10 to utilize the resistance of the water in the propulsion of ships whether navigating on the surface or beneath the surface of the water, and which apparatus consists essentially of a permanent or a removable casing or
15 jacket surrounding the hull of the ship and perforated with a number of slots arranged at a slant and symmetrically to the longitudinal medium plane of the ship, and fitted with a pump or like means for supplying wa-
20 ter continuously into the space between the hull and the outer casing; the water being drawn by the pump from a vertical hollow shaft placed in the center of the ship or through any other convenient opening in the
25 ship or through a suction-nozzle projecting

from the ship in the manner hereinbefore described and for the purpose specified.

2. In combination with the hull of a vessel, a perforated casing surrounding the hull and spaced therefrom, and means for forcing wa- 30
ter into the space.

3. In combination with the hull of a vessel, a casing in which the hull is arranged, the said casing having rearwardly-inclined open-
ings, and a pump for supplying water to the 35
casing.

4. In combination with the hull of a vessel, of a perforated casing in which the hull is arranged, a vertical pipe supported in the hull and having water-inlets at its lower end, and 40
a pump for discharging water from the pipe into the casing.

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

LÉON VIDAL. [L. S.]

Witnesses:

LOUIS MARTIN,
LOUIS MERCADIES.