

No. 646,331.

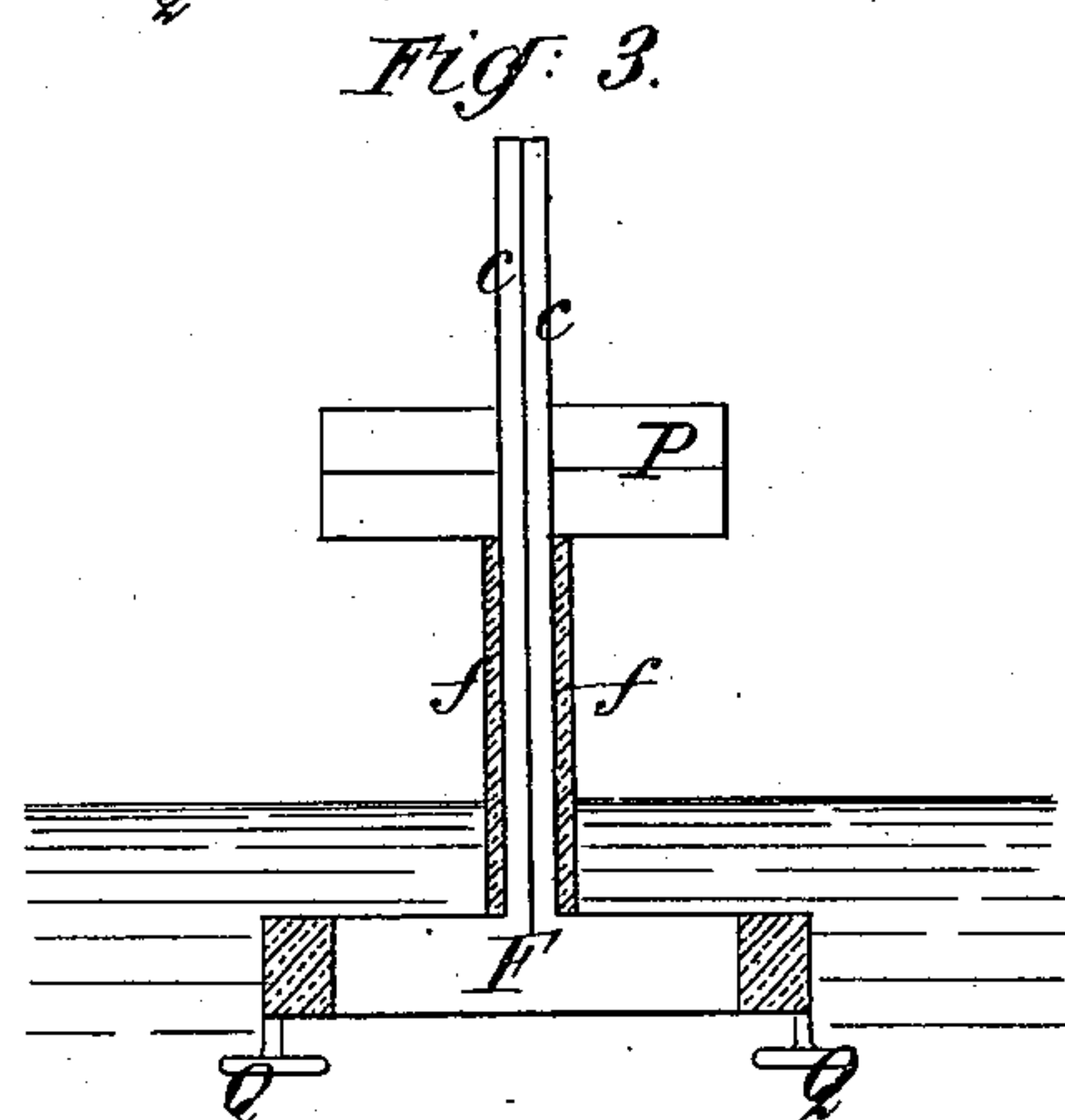
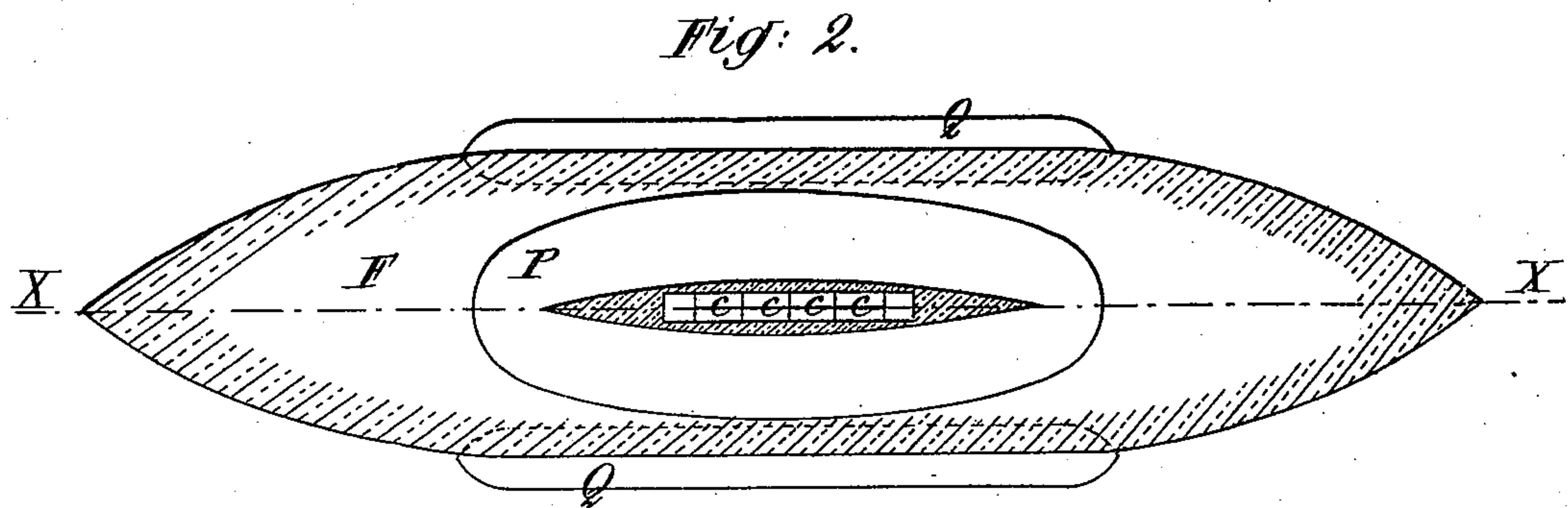
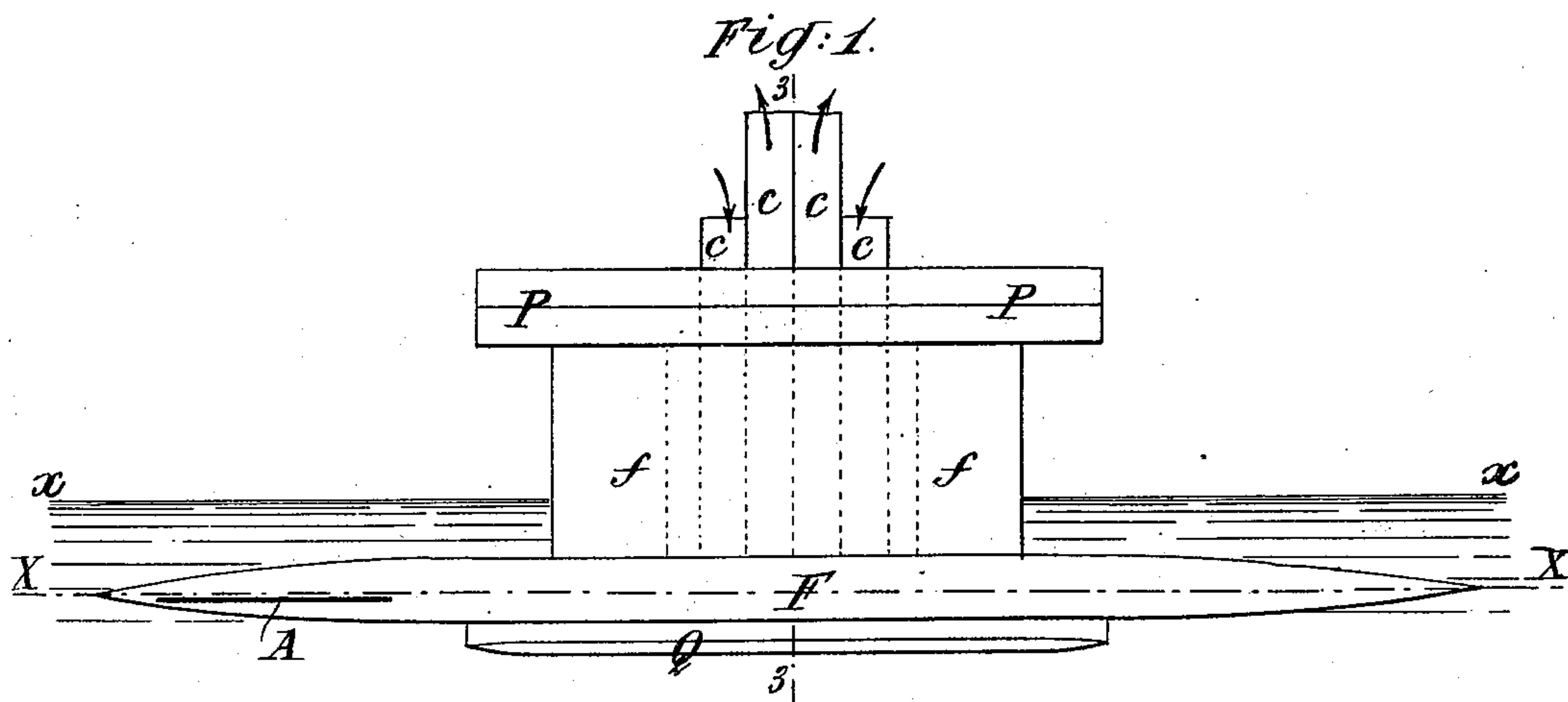
Patented Mar. 27, 1900.

H. L. J. C. TURC.  
NAVIGABLE VESSEL.

(Application filed Mar. 14, 1899.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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Fig. 4.

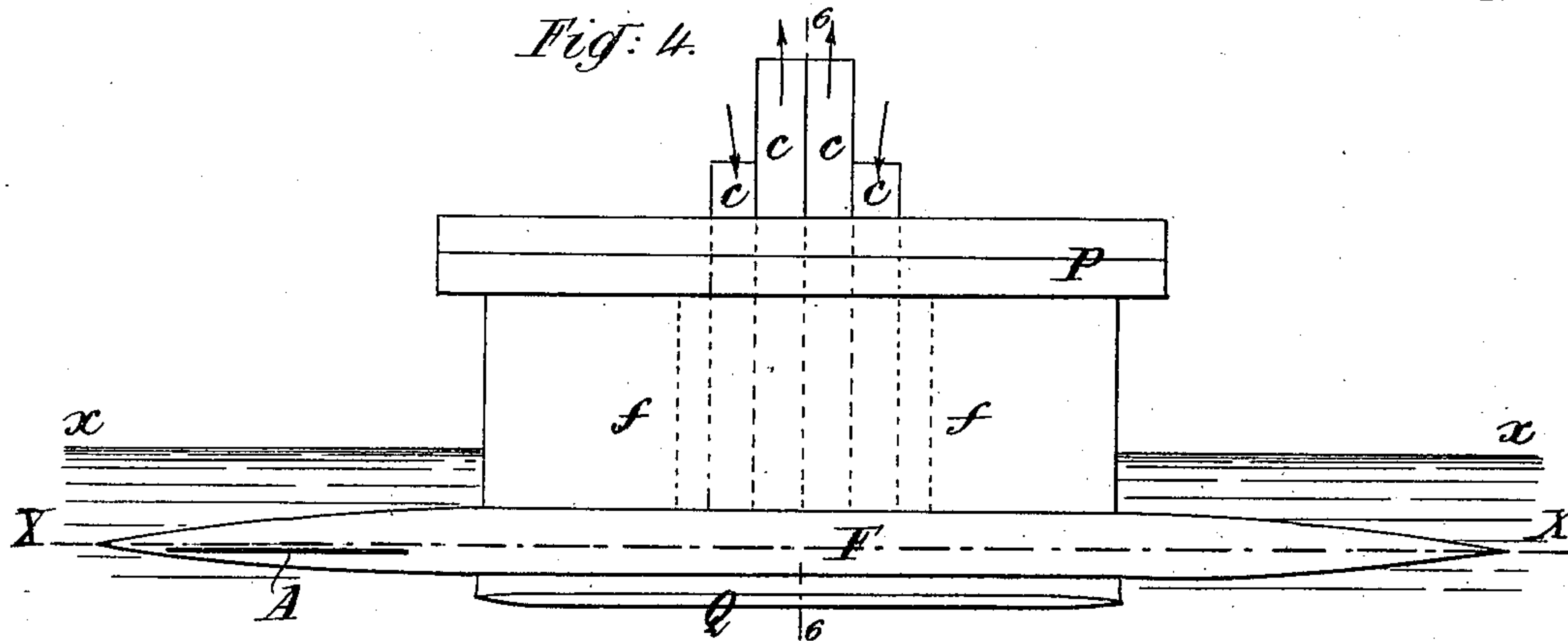


Fig. 5.

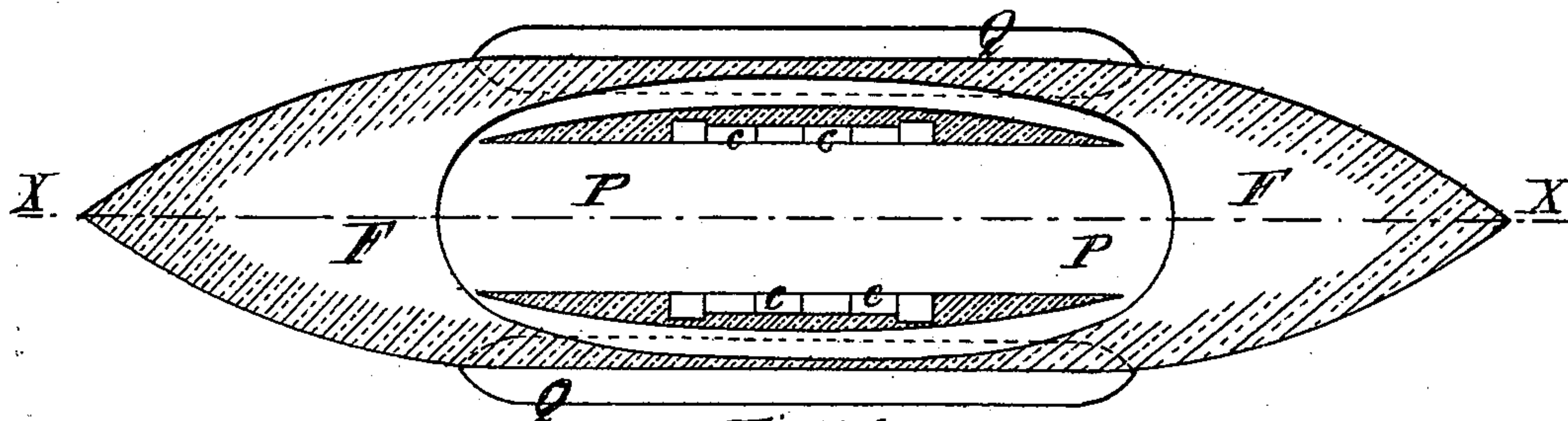
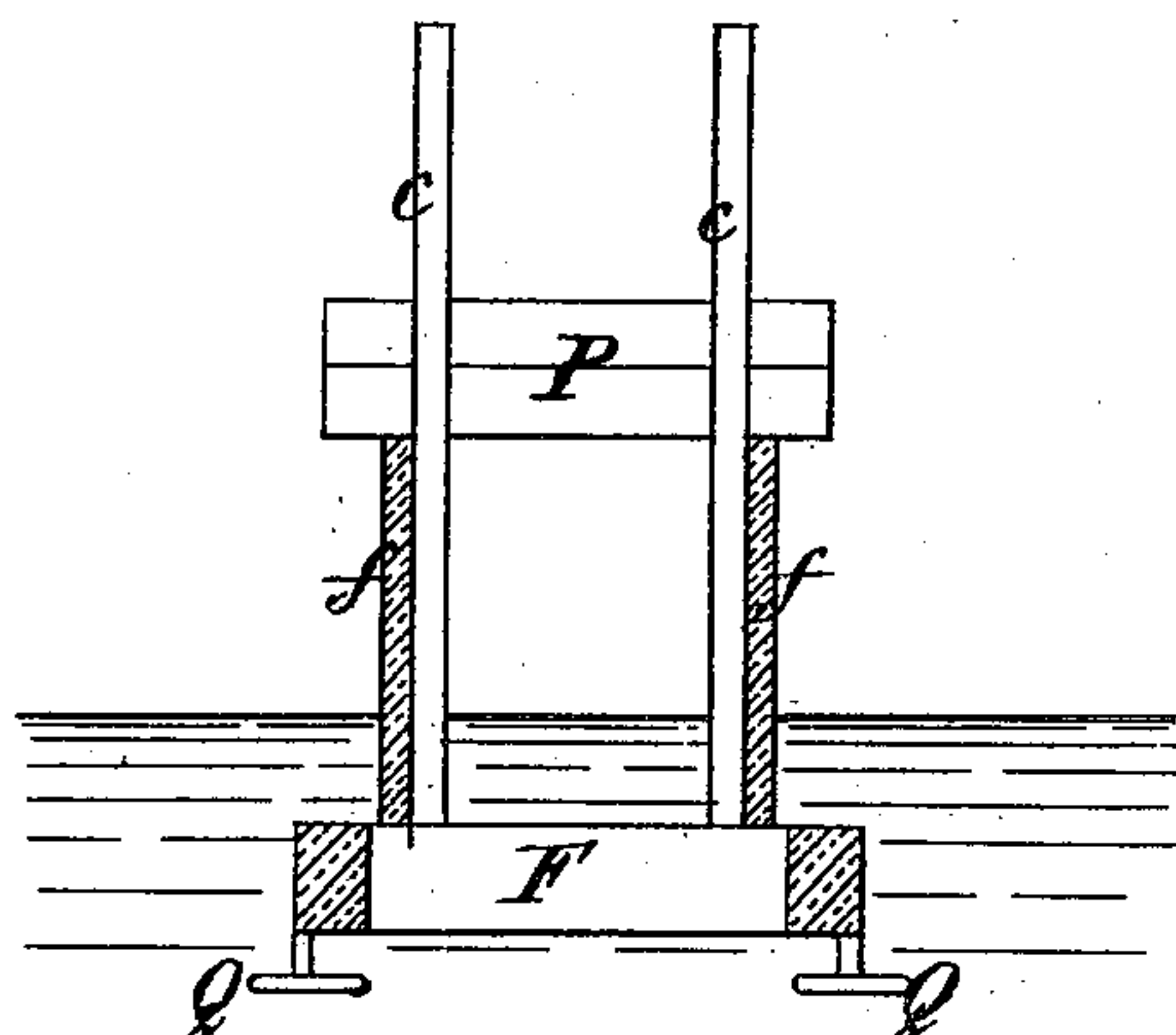


Fig. 6.



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# UNITED STATES PATENT OFFICE.

HENRI LOUIS JOSEPH CLÉMENT TURC, OF CASTANS, FRANCE.

## NAVIGABLE VESSEL.

SPECIFICATION forming part of Letters Patent No. 646,331, dated March 27, 1900.

Application filed March 14, 1899. Serial No. 709,044. (No model.)

*To all whom it may concern:*

Be it known that I, HENRI LOUIS JOSEPH CLÉMENT TURC, a citizen of the Republic of France, residing at Castans, par Cannes, Aude, France, have invented Improvements in Navigable Vessels, of which the following is a specification.

This invention relates to special arrangements and constructional conditions of the floats of vessels whose hulls proper are submerged, these arrangements and conditions being for the purpose of imparting to such vessels the property of being non-pitching and non-rolling. This characteristic construction and arrangement consists in surmounting the spindle-shaped hull with a single float or with a group of floats such that the moment of inertia as to pitching of the water-line area will have a very small value—very much smaller than for ships of ordinary shape of the same tonnage. This special arrangement of float or of a group of floats has for its object to utilize the known fact that if a vessel has a period of rolling which is appreciably greater than the period of the seaway it does not roll or only rolls very little on this seaway, and, more generally, if a vessel has for a certain oscillatory movement a period appreciably greater than the period of the seaway it has very slight oscillations corresponding to this movement. The rolling and pitching of a vessel can therefore be prevented if there be imparted to the vessel periods of rolling and pitching which are appreciably greater than the period of the seaway in the seas which the vessel is intended to navigate. Now the form of hull which I propose to employ has for its object to suppress pitching by giving to the vessel long periods of pitching. To this end the water-line area is reduced and is collected toward the center of the ship in such a manner that its moment of inertia as to pitching will be very small—very much smaller than for ships of ordinary shape of the same tonnage.

In order to enable the invention to be properly understood, there are illustrated diagrammatically in the accompanying drawings, but by way of example only, two vessels constructed according thereto.

Figures 1, 2, and 3 relate to a non-rolling

and non-pitching submerged vessel having one float only, Fig. 1 being a longitudinal elevation, Fig. 2 a plan showing the float in section, and Fig. 3 a section corresponding to the line 3 3 of Fig. 1. Figs. 4, 5, and 6 show a non-rolling and non-pitching submerged vessel provided with two floats, Fig. 4 being a longitudinal elevation thereof, Fig. 5 a plan showing the floats in section, and Fig. 6 a section corresponding to the line 6 6 of Fig. 4.

In the vessels shown in the drawings, F is a submerged spindle-shaped body constituting the hull proper and containing the motive and propelling apparatus. *f* is a float or one of the floats surmounting the said hull.

P is a platform containing the cabins for the passengers.

Q is a double keel serving as ballast.

*c* are chimneys and ventilators.

A is a horizontal fixed float-board of large surface situated at the rear of the vessel for the purpose of insuring the stability of the longitudinal trim in motion.

*q* is a horizontal fixed rudder capable of being varied and regulated as to position.

*q'* is an ordinary horizontal rudder either automatic or non-automatic.

X X represent the axis of the spindle-shaped hull. The water-line for normal immersion is indicated by *xx*. The parts filled with an obturating and bulky material for stopping the water-passages and filling up the compartments that are most exposed to collision are indicated by hatching.

The lower floor of the platform being about ten meters in most cases above the normal water-line, Figs. 1, 3, 4, and 6, and a float or group of floats presenting but a slight hold to the sea even in heavy weather, the water will flow freely under the platform, which will be very comfortable to live on. These vessels will consequently be extremely comfortable and will be particularly suitable for the purposes of yachts and mail-steamers.

The vessel is provided with a fixed horizontal float-board of large surface (indicated by A in Figs. 1, 2, 4, and 5) provided at the rear of the vessel and aiding in causing the vessel to resume its longitudinal trim in proportion to its inclination. This float-board



by preventing the hull from emerging from the water will insure for the vessel a small and compact water-line area, and consequently will insure for the vessel long periods of pitching and will prevent it from pitching. Furthermore, the great resistance which will be offered by the float-board in the oscillatory movements of the longitudinal trim of the vessel will deaden such oscillations and will aid in rendering the pitching inappreciable.

What I claim is—

1. A navigable vessel comprising a submerged spindle-shaped body forming the hull proper, and a float or group of floats which surmounts the hull proper and is arranged at the center of the hull and whose length is at most equal to about one-third of the length of the hull, while the width of the float or group of floats is from about one-half to about

two-thirds of the width of the spindle-shaped hull, as and for the purpose described.

2. A navigable vessel comprising a submerged spindle-shaped body forming the hull proper, and a float or group of floats which surmounts the hull proper and is arranged at the center of the hull and whose length is at most equal to about one-third of the length of the hull, while the width of the float or group of floats is from about one-half to about two-thirds of the width of the spindle-shaped hull; in combination with a horizontal platform as at P over the said float or floats, substantially as described.

Signed at Gnest, France, this 27th day of February, 1899.

HENRI LOUIS JOSEPH CLÉMENT TURC.

Witnesses:

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A. BAZIN.