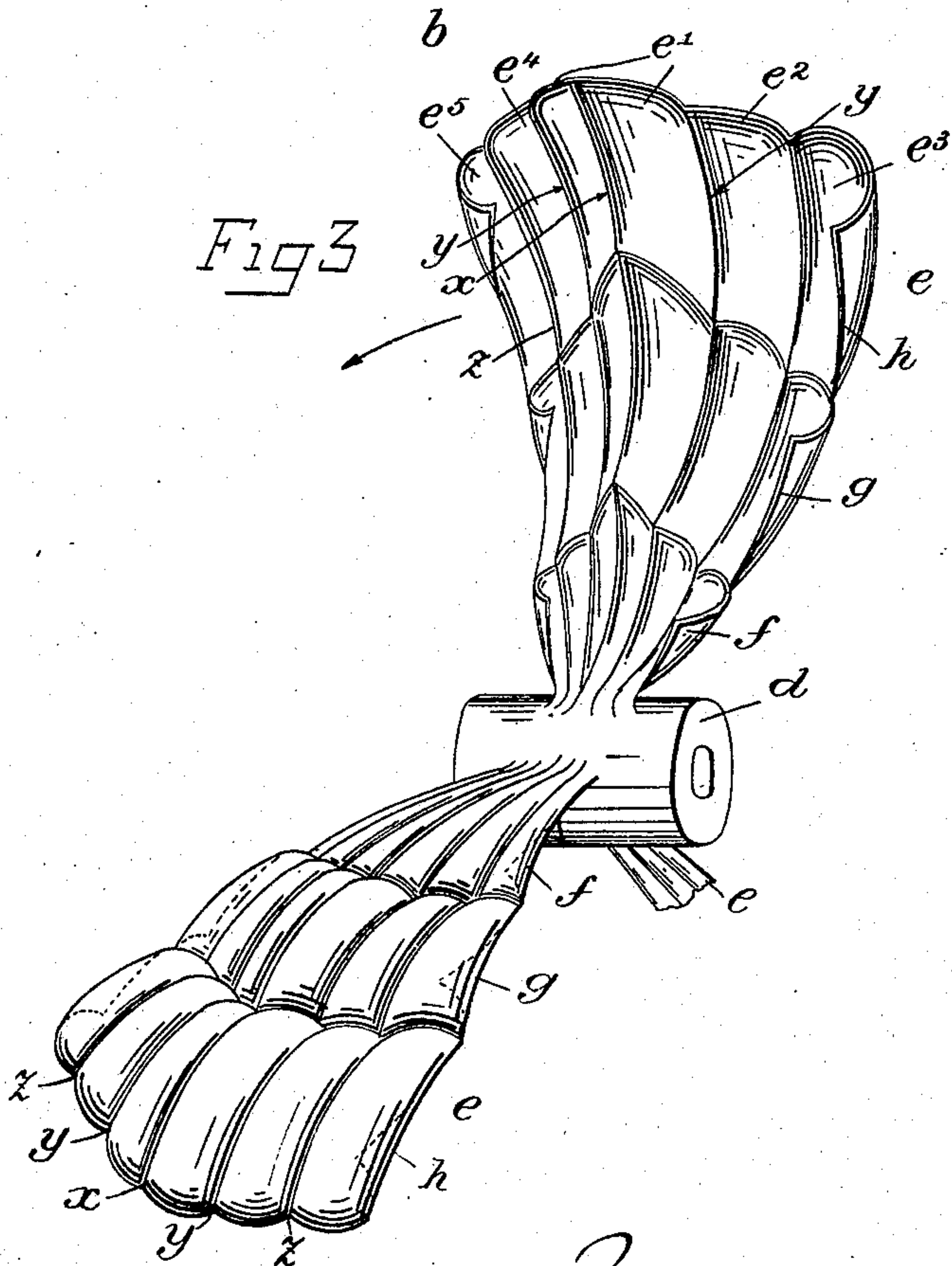
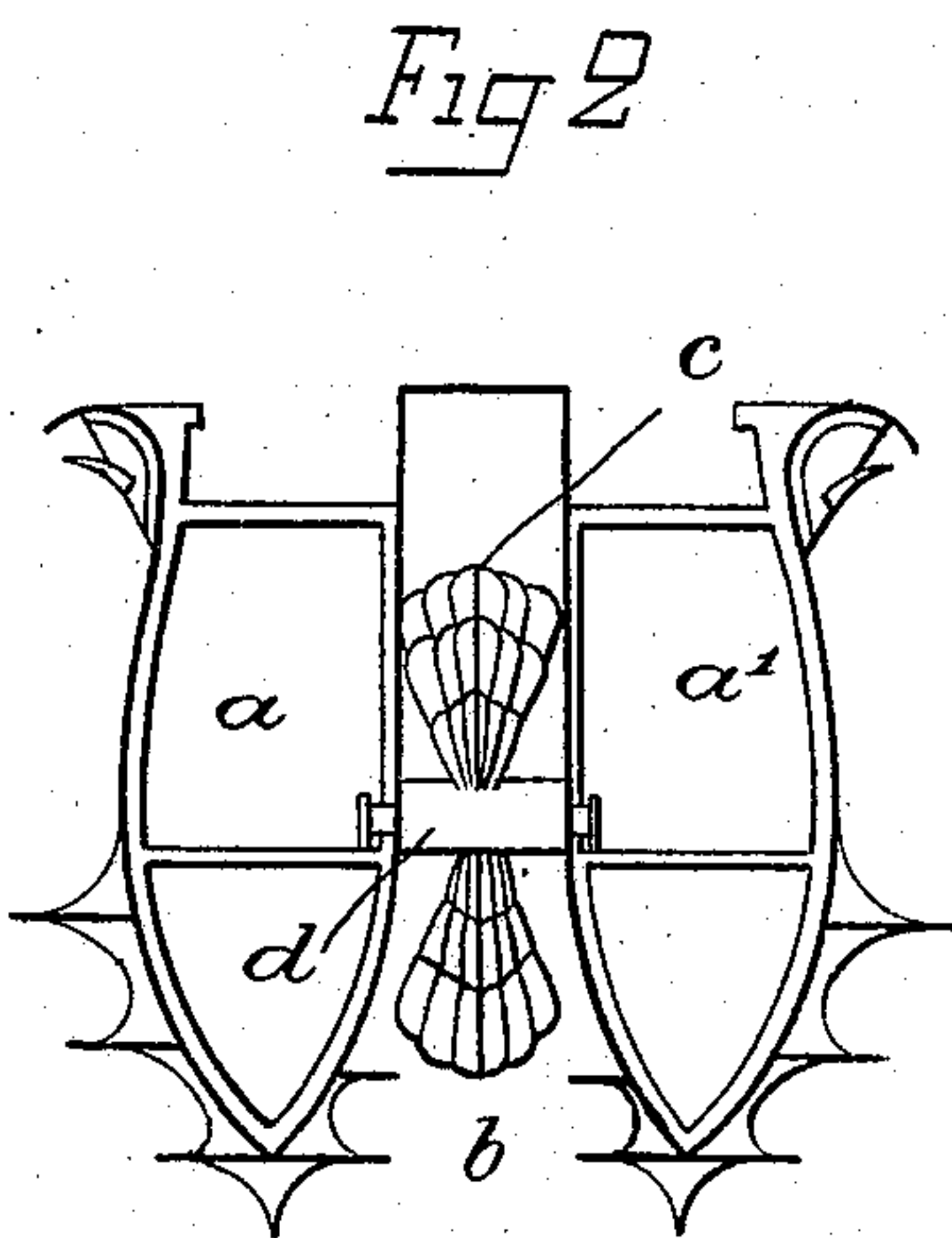
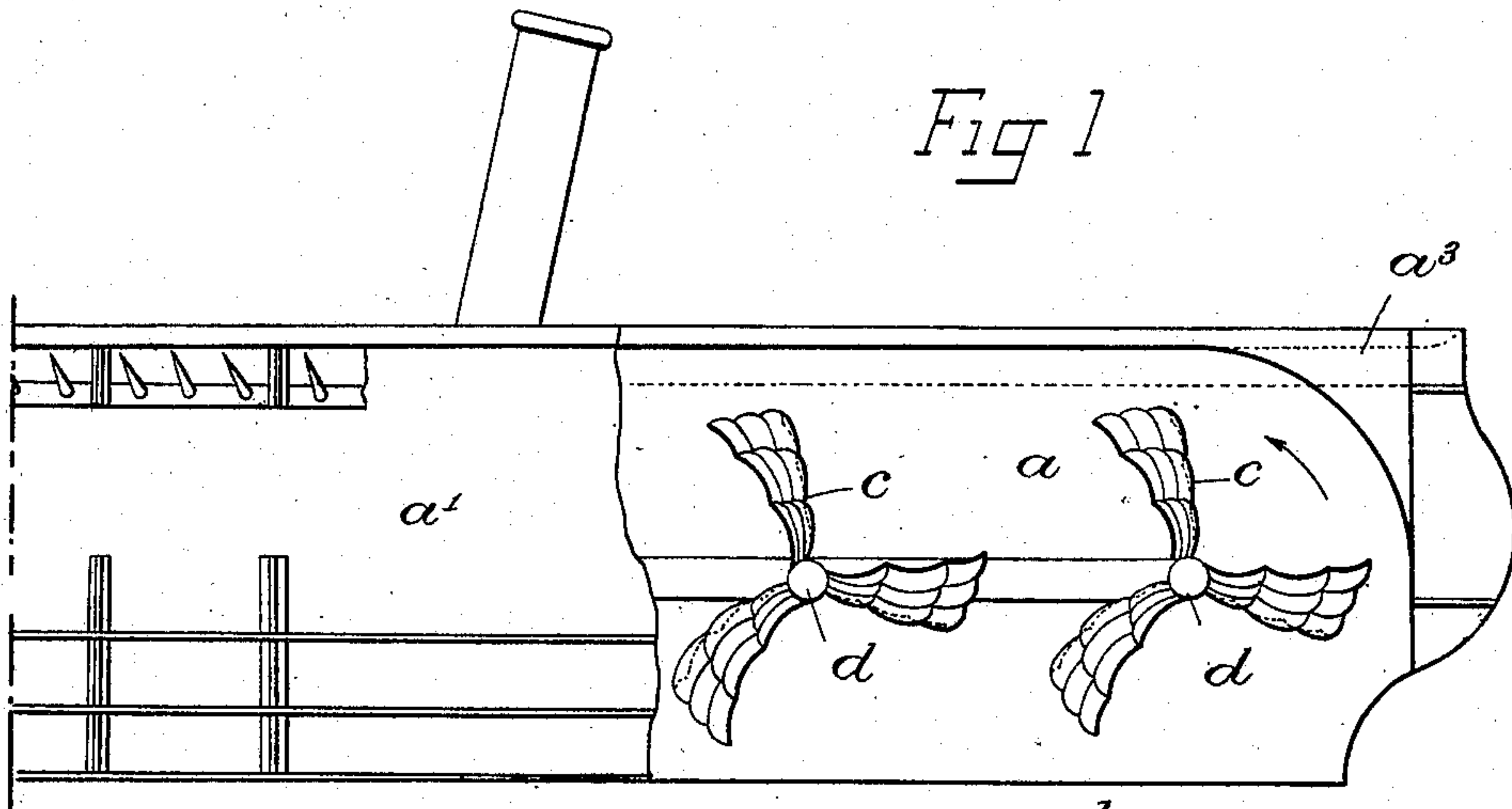


No. 867,148.

PATENTED SEPT. 24, 1907.

P. PIERI.  
SHIP'S PROPELLER.  
APPLICATION FILED OCT. 15, 1906.



Witnesses:  
Stephen Kinsten.  
Adelaide B. Stelle.

Inventor:-  
P. Pieri  
By William & John  
his Attorneys.



# UNITED STATES PATENT OFFICE.

POMPEO PIERI, OF PARIS, FRANCE.

## SHIP'S PROPELLER.

No. 867,148.

Specification of Letters Patent.

Patented Sept. 24, 1907.

Application filed October 15, 1906. Serial No. 339,058.

*To all whom it may concern:*

Be it known that I, POMPEO PIERI, a citizen of the Kingdom of Italy, residing at 70<sup>bis</sup> Avenue d'Iena, Paris, in the Republic of France, have invented new and useful Improvements in Ships' Propellers, of which the following is a specification.

The present invention relates to propellers for ships and particularly that kind in which they are arranged on the longitudinal axis of the ship and inside the hull, instead of being arranged on the sides or at the stem as in the case of ships with ordinary wheels or screws.

The invention is intended to procure greater speed for the expenditure of a given amount of motive power by using the action of the propeller devices on the water in a more efficient and complete manner.

The invention consists for this purpose of a special arrangement of the wheel or propeller device with composite paddle boards, which are combined in such a way as to utilize the action of the propellers on the water in as complete a manner as possible.

In the accompanying drawing: Figure 1 is an elevational view of the rear portion of a vessel provided with my improvement, parts of the vessel being broken away. Fig. 2 is a transverse section. Fig. 3 is a perspective view of one of the propellers one of the paddle boards being broken away.

The hull of the vessel is divided longitudinally from the stern up to a certain distance from the bow into two parts so that along the greater part of the length of the vessel the same has two parallel hulls *a*, *a'* which are connected together at a certain distance from the bow so as to form one body and are likewise connected together at the rear at a certain height above the water-line by a sort of bridge or tunnel at *a*<sup>3</sup>. These two hulls thus leave a kind of channel *b* between them within which the propellers *c* are lodged. The propellers may vary in number according to the dimensions of the ship and the power of its machinery.

Each of the propellers constructed according to the present invention (Fig. 3) consists of a hub *d* on which branches *e* are radially arranged which may be three in number as shown in the example given but may if necessary be more numerous. They are arranged on the hub *d* symmetrically and with regular spaces. Each of these branches or paddles instead of being simple is itself formed of several composite blades, viz: of a central blade *e'* having a V-shaped transverse section and secured on both sides to several lateral composite paddles (*e*<sup>2</sup>, *e*<sup>3</sup>, *e*<sup>4</sup>, *e*<sup>5</sup>, Fig. 3) which are formed and arranged in such a manner as to act on the water displaced by the central blade *e'* so as to increase the efficiency of the action of the propeller paddle or propeller arm on the water. The cutting edge or point *x* of the paddle or central V-shaped arm *e'*, i. e. the edge with which this paddle attacks the water, when the wheel or propeller is rotating in the direction of the arrows,

is arranged to be practically radial with regard to the hub *d*, whereas behind this cutting edge, the blades of the arm *e'* are bent round so as to form concave surfaces which meet the lateral bent blades *e*<sup>2</sup>, *e*<sup>4</sup> forming likewise with said blades of arm *e'* paddles having a transverse V-shaped section. The cutting edges *y* of these latter blades likewise attack the water behind the cutting edge *x* of the central blade *e'*. Moreover, the bent lateral blades *e*<sup>3</sup>, *e*<sup>5</sup> are joined to the bent blades *e*<sup>2</sup>, *e*<sup>4</sup>, with which they also form blades having a V-shaped transverse section. The cutting edges *z* of the latter blades attack the water behind the cutting edge *y* and so forth. In this manner the water thrown off to the sides by the central blade *e'* is received by the lateral blades *e*<sup>2</sup>, *e*<sup>4</sup> which take up this water and act upon the same, whereupon the water thrown off by these lateral wings or blades is again taken up by the lateral blades *e*<sup>3</sup>, *e*<sup>5</sup> which act in turn on the water, so that the useful effect is increased to a very considerable extent.

In order to further increase the useful effect of the propeller on the water, each of the wings or blades of the central arm *e'* as well of the lateral blades *e*<sup>2</sup>, *e*<sup>3</sup>, *e*<sup>4</sup>, *e*<sup>5</sup> is itself composed of a certain number of elementary blades *f*, *g*, *h* (Fig. 3) which have a bent section in a radial direction of the arm of the propeller. Each elementary blade resembles the shape of a spoon the concave side of which is turned in the direction of the movement of the propeller-arm when the latter revolves. In consequence of this arrangement the water which escapes radially from beneath the first of the spoons or elementary blades *f* of each of the wings or composite blades *e'*, *e*<sup>2</sup>, *e*<sup>3</sup>, *e*<sup>4</sup>, *e*<sup>5</sup> is taken up by the second spoon *g* of the same composite blade and so forth, so that the useful effect obtained is increased further.

What I do claim as my invention, and desire to secure by Letters Patent, is:

1. In ships having their propellers arranged on their longitudinal axis and inside the hull, a propeller having a hub provided with branches or arms arranged radially and symmetrically, each arm consisting of a central blade formed of two wings bent in a transverse direction and coming together along a ridge which is practically radial with regard to the hub so as to present a V-shaped transverse section the point or edge of which attacks the water, said central blade being provided on each side with one or several simple lateral blades which are bent in a transverse sense and form each with the corresponding wing of the central blade, or with the simple adjacent blade, likewise a double blade with a V-shaped transverse section, whereby the edge of said double blade is thus made to attack the water behind the edge of the central blade, each of the wings of the central blade as well as of the lateral blades being itself formed, in a longitudinal or radial direction of the branch of the propeller, of several pallets or elements joined together and resembling the shape of spoons, the concave side of which is turned downward in the direction of the movement of the propeller, each of the pallets or elements forming likewise with the adjacent pallet or element an active surface having a V-shaped section in a radial direction, substantially as described.

2. In a propeller, the combination of a hub, a series of radial arms or blades, each consisting of a central portion formed of two wings extending in a direction transverse to the shaft and meeting at an angle to form a ridge and  
5 thereby present a V-shaped transverse section, the edge of which attacks the water, said central portion being provided on each side with lateral blades which likewise meet at an angle to form ridges V-shaped in cross section, which latter ridges attack the water behind the first-mentioned

ridge, and said central portion as well as said lateral 10 blades being each formed of a plurality of elements joined together, spoon shaped, and extending radially out from the hub, substantially as described.

POMPEO PIERI.

Witnesses:

LOUIS RINUY,  
H. DE SOTO.