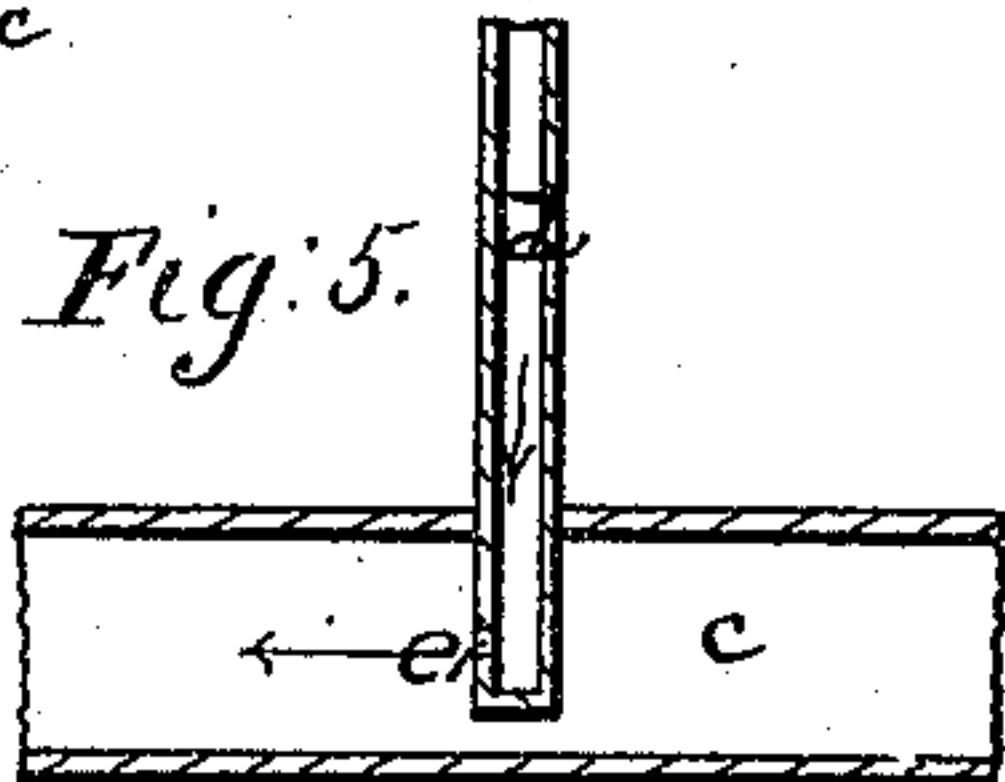
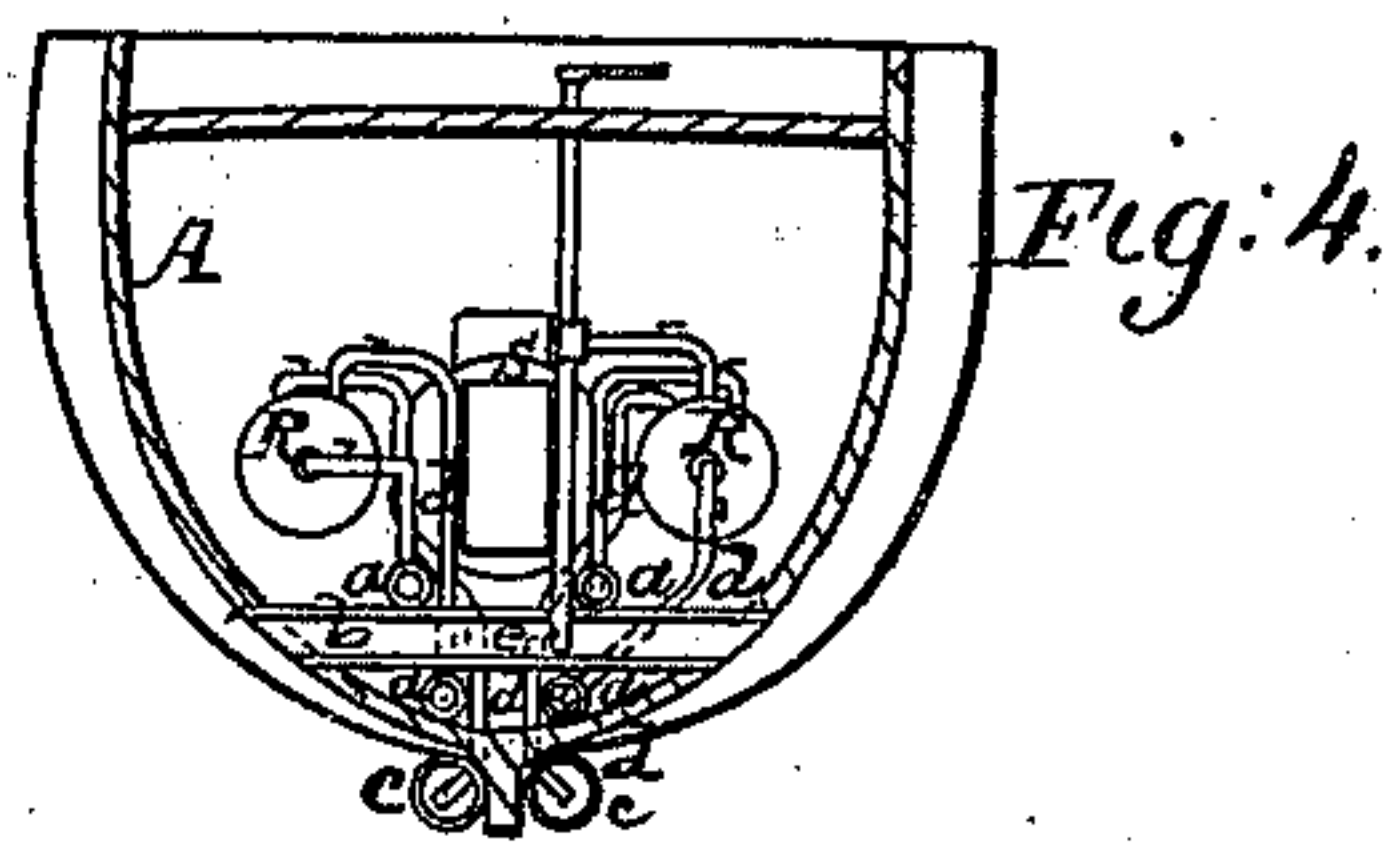
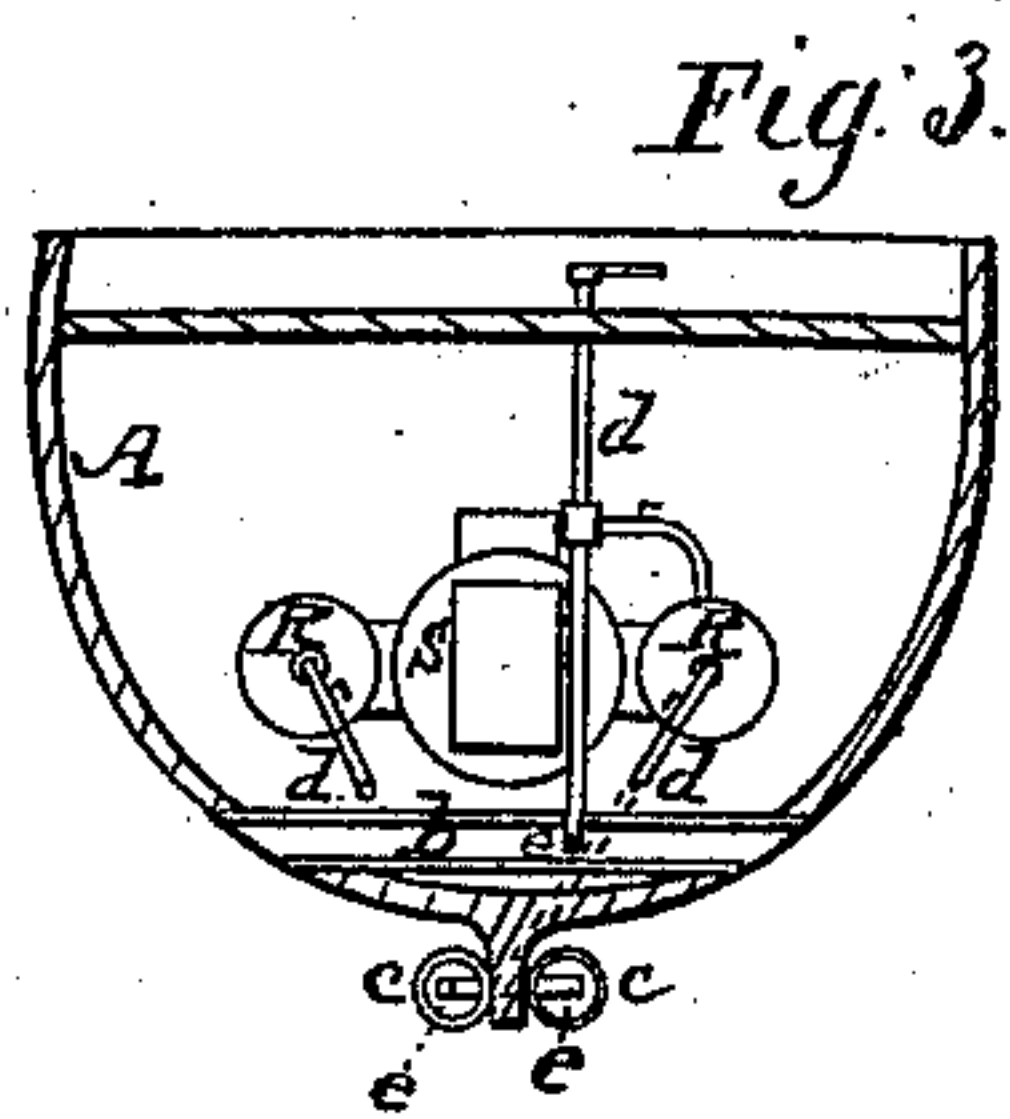
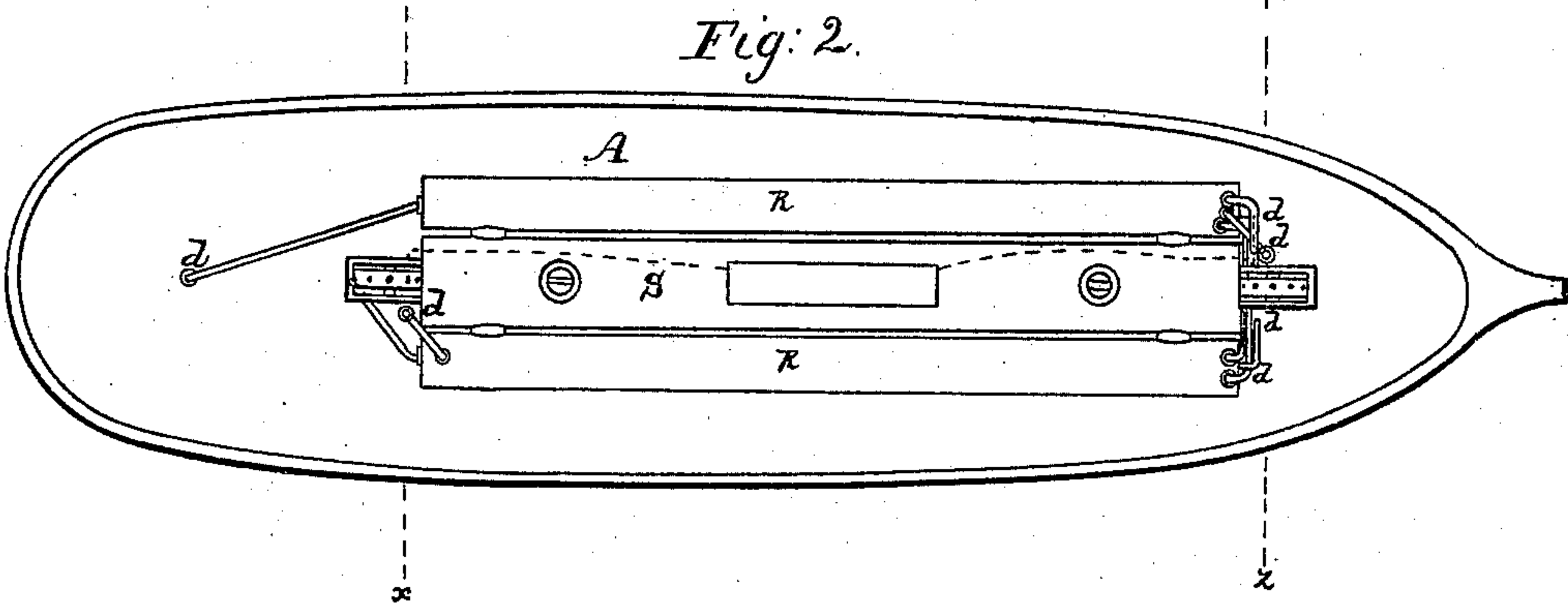
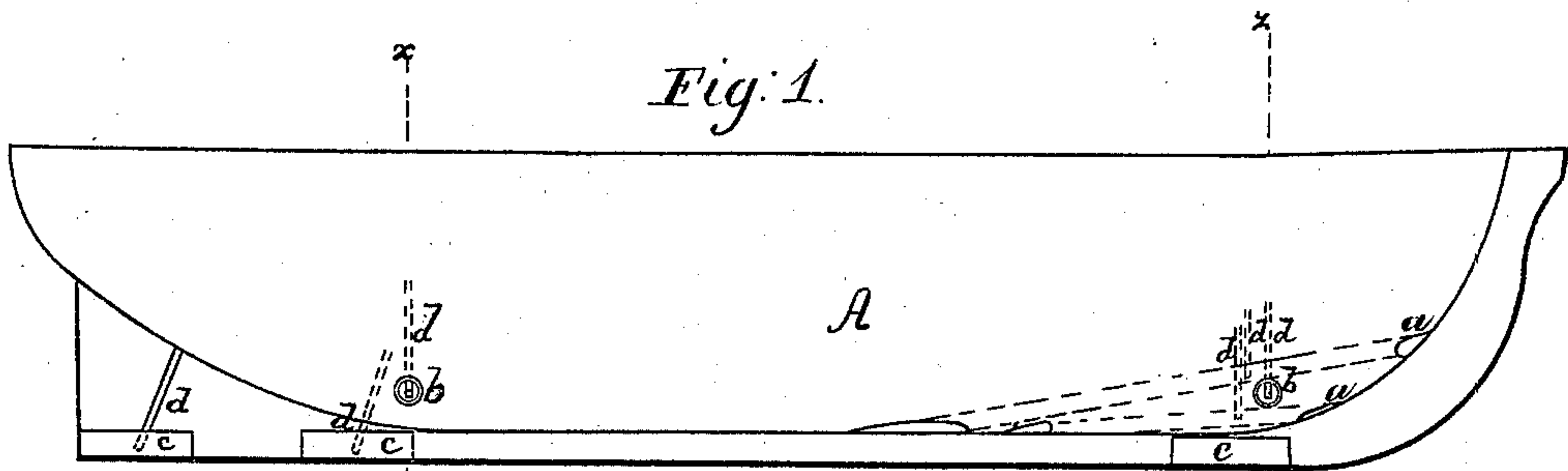


B. T. Babbitt
Pneumatic Propeller
No 79,937 *Patented Jul 14, 1869.*



Witnesses.

J. M. Connely
A. DeClers

Inventor

B. T. Babbitt

United States Patent Office.

B. T. BABBITT, OF NEW YORK, N. Y.

Letters Patent No. 79,937, dated July 14, 1868.

IMPROVEMENT IN PROPELLING VESSELS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, B. T. BABBITT, of the city, county, and State of New York, have invented a new and useful Improvement in Propelling Ships and other vessels, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a side view of a boat or vessel constructed in accordance with or by way of illustrating my invention.

Figure 2, a plan of the same.

Figure 3, a transverse section through the line xx in figs. 1 and 2, and

Figure 4 a transverse section through the line zz .

Figure 5 is a view, on an enlarged scale, of one of the tubular devices or arrangements whereby the propelling, or, it may be, steering-power is exerted.

Similar letters of reference indicate corresponding parts.

This, my invention, consists in constructing ships or other vessels with tubes variously-disposed in, about, or through the hull, below the water-line, and open at opposite ends, as, for instance, through the front or bow-portion of the ship, alongside the keel, and, where the application of the power to steering is required, athwart the hull, and combining with said tubes smaller jet-pipes or tubes connected with any suitable power-generator or reservoir, such as a compressed-air chamber or chambers, or, it may be, reservoirs of carbonic-acid gas condensed solid, and which smaller tubes are bent or arranged, or have their jet-orifices made in them on their one side, so that they face either one end of the larger tubes, intermediately of the length of the latter; in order that, on opening valves, or otherwise establishing an escape or vent to the compressed air or condensed gas, through the smaller tubes, the same, by its force or expansion in rushing out of the bent ends or jet-orifices of said smaller tubes, will serve to act against or drive out the body of water in or towards the one open end of the larger tubes, and at the same time to establish a suction or draught from the opposite open end thereof, and thereby to propel or move the vessel in a direction which is opposed to that of the issuing stream of gas or air within the large tubes. This essentially differs from mere jet-pipes arranged so that the issuing air or gas acts upon the outside body of water independently of tubes for confining it laterally, and for restraining the escaping gas or air within limits which prevent its being scattered or wasted in ineffective directions, and which establish a draught or suction that favors the movement of the vessel in the direction required.

Referring to the accompanying drawing, A represents the hull of a boat or vessel having any number of tubes, open at their opposite ends, and fitted in or about and through it, below the water-line, say tubes a , running from the bow backwardly, and open at their rear ends to or through the sides or bottom of the boat, and other tubes, b , running clear athwart the vessel, near both bow and stern, or either, also, it may be tubes c , arranged outside the hull, as, for instance, along either side of the keel.

These several tubes, a , b , and c , have, severally, projecting into them, transversely or otherwise, and intermediately of their length, smaller pipes or tubes, d , closed at their outer ends, and each provided with a lateral orifice, e , as more clearly seen in fig. 5, facing in direction of the length of the larger tube within which it lies, or these smaller tubes d may have their ends left open, and be so bent, or said pipes so arranged, as to present similarly-disposed jet-orifices, e , within and relatively to the outer or larger tubes. These smaller tubes or jet-pipes are connected with or to any suitable supply-pipes or reservoirs, containing compressed air, carbonic-acid gas condensed solid, or other aeriform or gaseous fluid under heavy pressure, so that on opening suitable valves or stops, the expanding gas or aeriform fluid will, in issuing out of the orifices e of the pipes d , spread or expand itself, and operate to displace or drive out the water in the tubes a , b , or c , lying in front of the issuing stream of air or gas, and at the same time to create a suction or draught through said tubes from their opposite end, thus giving an effective or propelling power to the boat, in an equivalent manner to direct traction, equal to the area of the larger tube or tubes, subject to the expansive or expanded force of the air or gas within the limit of said tube or tubes, and throughout a considerable portion of its or their length, the suction produced in the remaining portion of the length in rear, as it were, of the orifice in the smaller pipe or pipes d , favoring

the general efficiency, while, as the air or gas is restrained from scattering or expending itself otherwise than within the tube or tubes, its full effective force is made available in the direction required, and against a tolerably compact body of water. The tubes *a* and *c* having the jet-pipes *d* in them, with their orifices arranged as described, are located, it will be observed, to effect propulsion of the vessel, while the cross-tubes *b*, with their jet-pipes, serve to effect the steering or turning of the same. For propulsion or movement of the vessel in a forward direction, the orifices *e* in the jet-pipes *d* to the tubes *a* and *c*, should face in a backward direction. To steer or turn the vessel in opposite directions, the pipes *d* in the tubes *b* may be made capable of turning so as to reverse the position of the orifices *e*, from facing right to facing left, or *vice versa*. The arrangement of the tubes *a* in or through the front portion of the boat or vessel, contributes to diminish bow or forward resistance in sailing.

Though not restricting the invention to the employment of any particular gas or air, or mode of generating or producing the same, it will here suffice to say that the pipes *d* are shown in the drawing as deriving their supply of compressed air from reservoirs *R*, which may have the fluid forced into them by a motor or power-generator, consisting of a free piston working in a cylinder, *S*, by gaseous explosion, to give it starting-impetus, but which power-generator it is unnecessary here to more minutely describe, as the same forms the subject of a separate pending application for patent, and the necessary power may be otherwise produced.

What is here claimed, and desired to be secured by Letters Patent, is—

The combination of the tubes *c b*, open at both ends with the jet-tubes *d*, arranged to project within the former intermediately of their length, and with their jet-orifices facing either open end of said larger tubes, substantially as shown and described.

B. T. BABBITT.

Witnesses:

J. W. COOMBS,
A. LE CLERC.