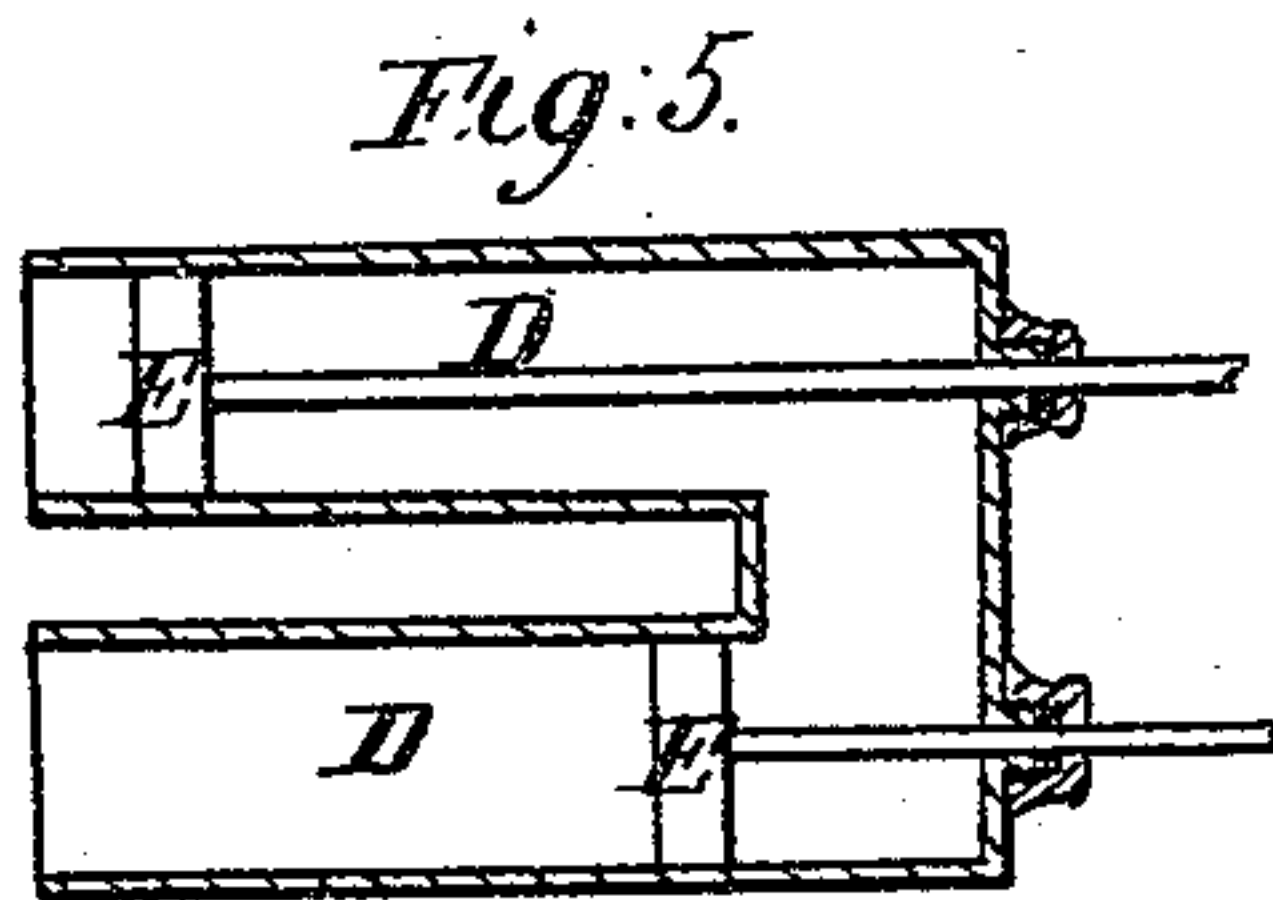
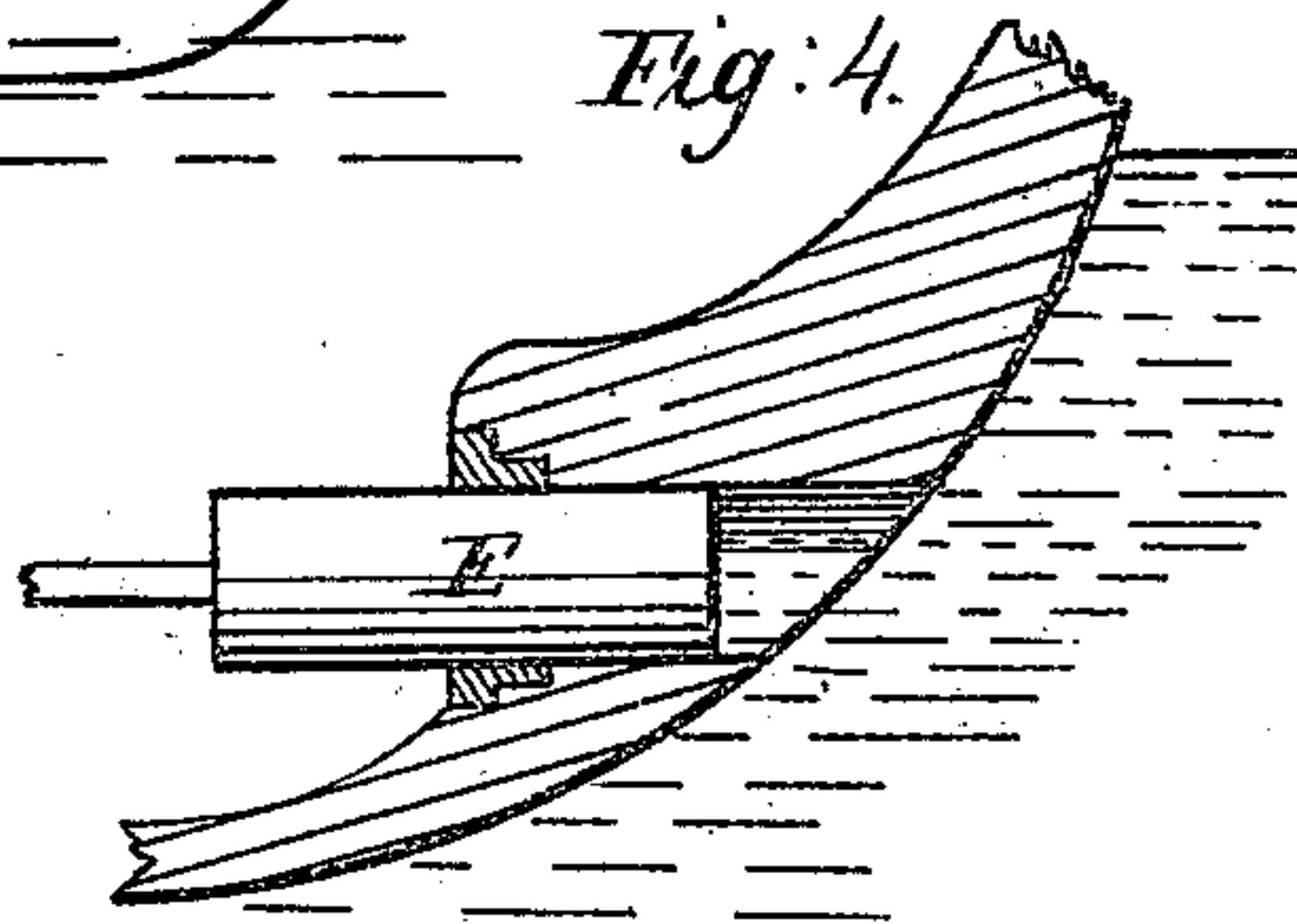
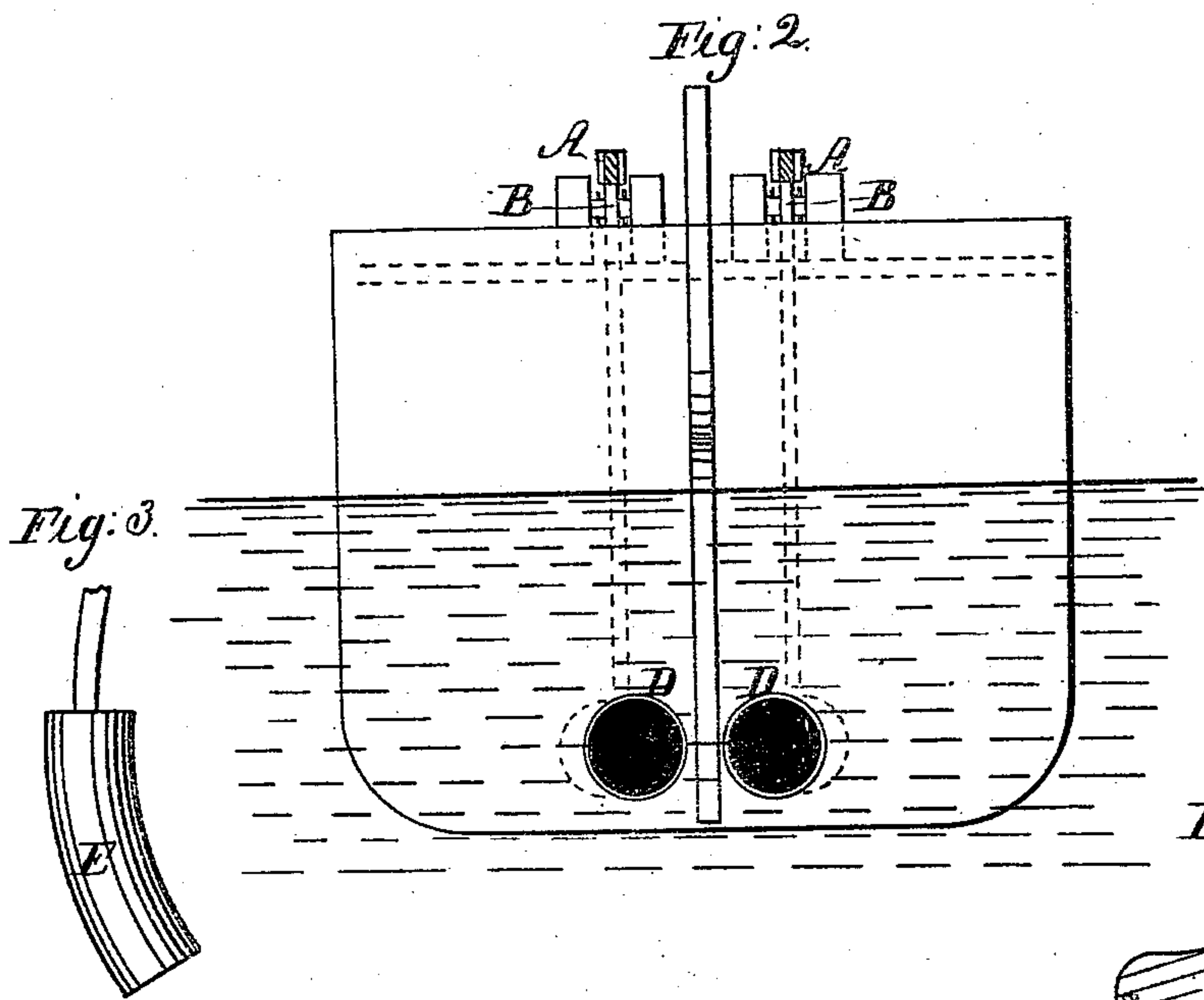
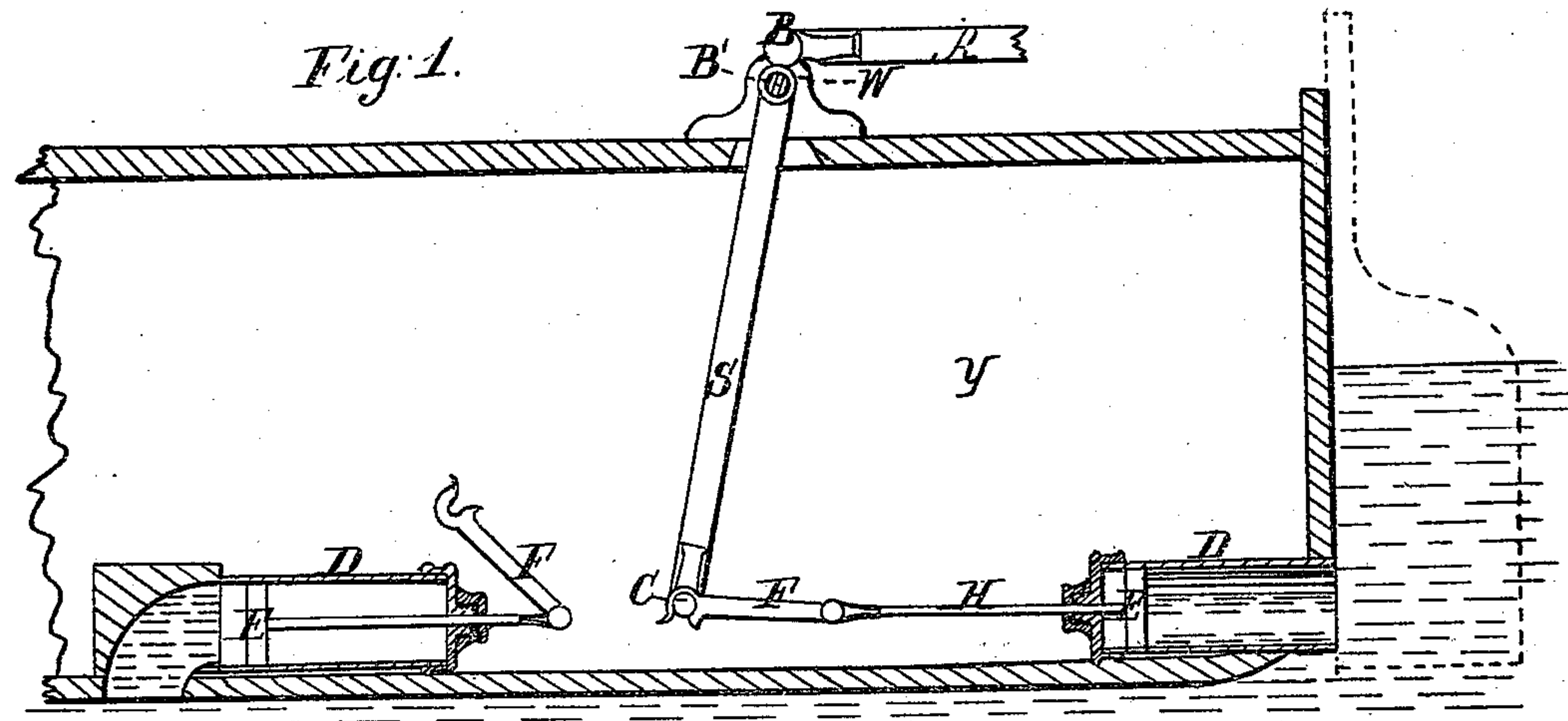


*F. R. Pike.*

*Hydraulic Propeller*

*No 93,902*

*Patented Aug. 17, 1869.*



*Witnesses;*  
*W. H. Ward*  
*A. P. Lane*

*Inventor;*  
*F. R. Pike*

# United States Patent Office.

FREDERICK R. PIKE, OF NEW YORK, N. Y.

*Letters Patent No. 93,902, dated August 17, 1869.*

## IMPROVEMENT IN PROPELLING-APPARATUS.

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, FREDERICK R. PIKE, of New York city, United States of America, have invented a new and improved Propelling-Apparatus; and I do hereby declare that the following is a full and exact description thereof, as far as perfected, reference being had to the accompanying drawings, and letters of reference marked thereon.

My invention relates to machinery for propelling vessels through water by steam or horse-power; and

It consists mainly in a novel arrangement of devices intended for operation either in propelling such vessels forward or backward, at the operator's will.

The letter Y, of the drawings, represents the hull of a vessel, and

Letter A, a connecting-rod; operated by steam or other power.

The letter B represents a hinge or joint, by which connecting-rod A is united to lever W, next mentioned.

The letter W represents a short arm of lever S, extending from the joint B to the joint B'.

This last-mentioned lever extends from the joint B downward to a point near the bottom of the hull, and has, upon its lower end, gudgeons, marked C, for the purpose mentioned hereafter.

The letters D represent cylinders, placed respectively in the bow and stern of the vessel, in which are plungers E, arranged to move back and forth inside said cylinders.

I sometimes make an opening in the bottom of the hull, at a point a short distance in front of the forward

cylinder D, in the manner shown on the drawings; but it is preferable to place said cylinders one in the bow and the other in the stern of the vessel.

These cylinders are made water-tight, except at their rear ends, and pistons H work therein in conjunction with the plungers, in the manner shown on the drawings.

The letters F represent hinged rods, attached to the pistons H, and arranged for hooking on to the gudgeons at the bottom of lever S, when desirable so to do.

To operate my device, I apply the power to connecting-rod A, and thereby cause the plungers to move back and forth in the cylinders.

When I desire to move the vessel forward, the hinged rod attached to the piston of the front cylinder is removed from gudgeon C; and when I desire to move backward, the front rod F is attached to said gudgeon and the rear one removed.

By properly operating these devices, the boat may be propelled either forward or backward, at will.

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

The vessel-propelling apparatus herein described, having connecting-rod A, lever W, cylinders D, plungers E, pistons H, rods F, and gudgeons C, when constructed and arranged to operate substantially as specified.

FREDERICK R. PIKE.

Witnesses:

W. W. WARD,  
N. P. LANE.