No. 671,089. Patented Apr. 2, 1901.

J. S. MORTON.

HYDRAULIC PROPELLER.

(Application filed Dec. 27, 1898. Renewed Oct. 18, 1900.)

(No Model.) 2 Sheets—Sheet 1.

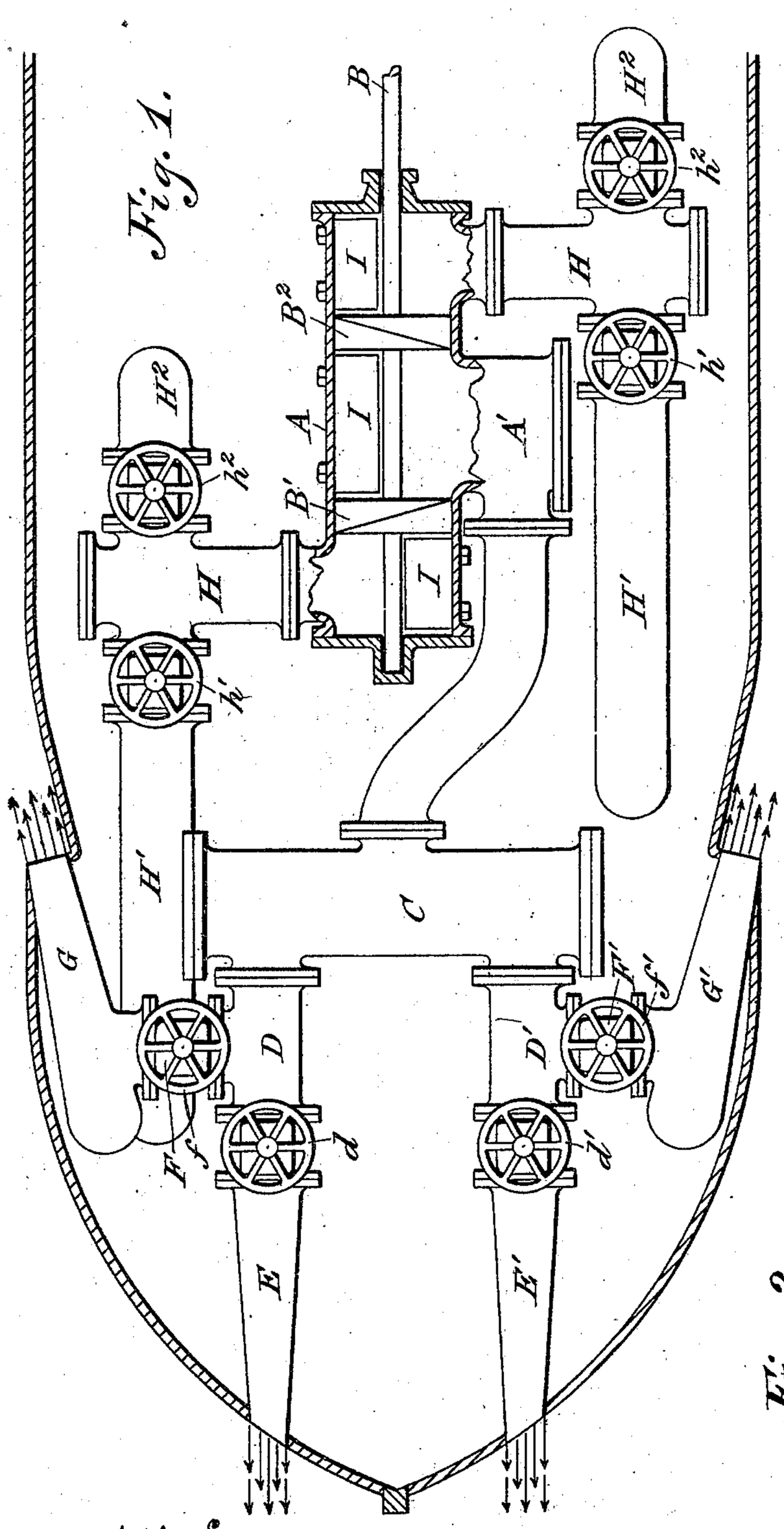

Fig. 1.

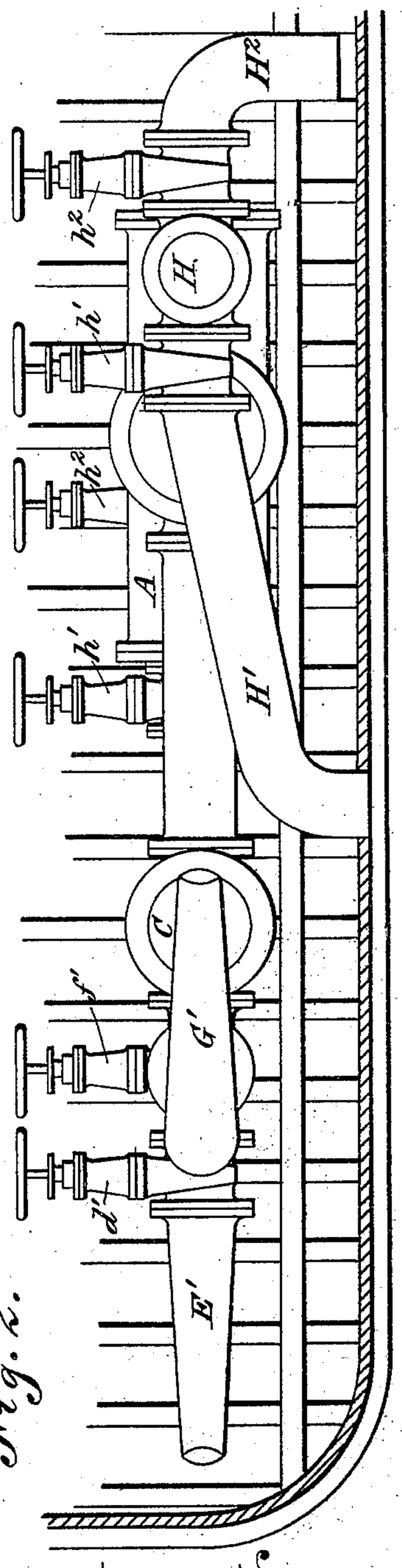

Fig. 2.

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Fig. 3.

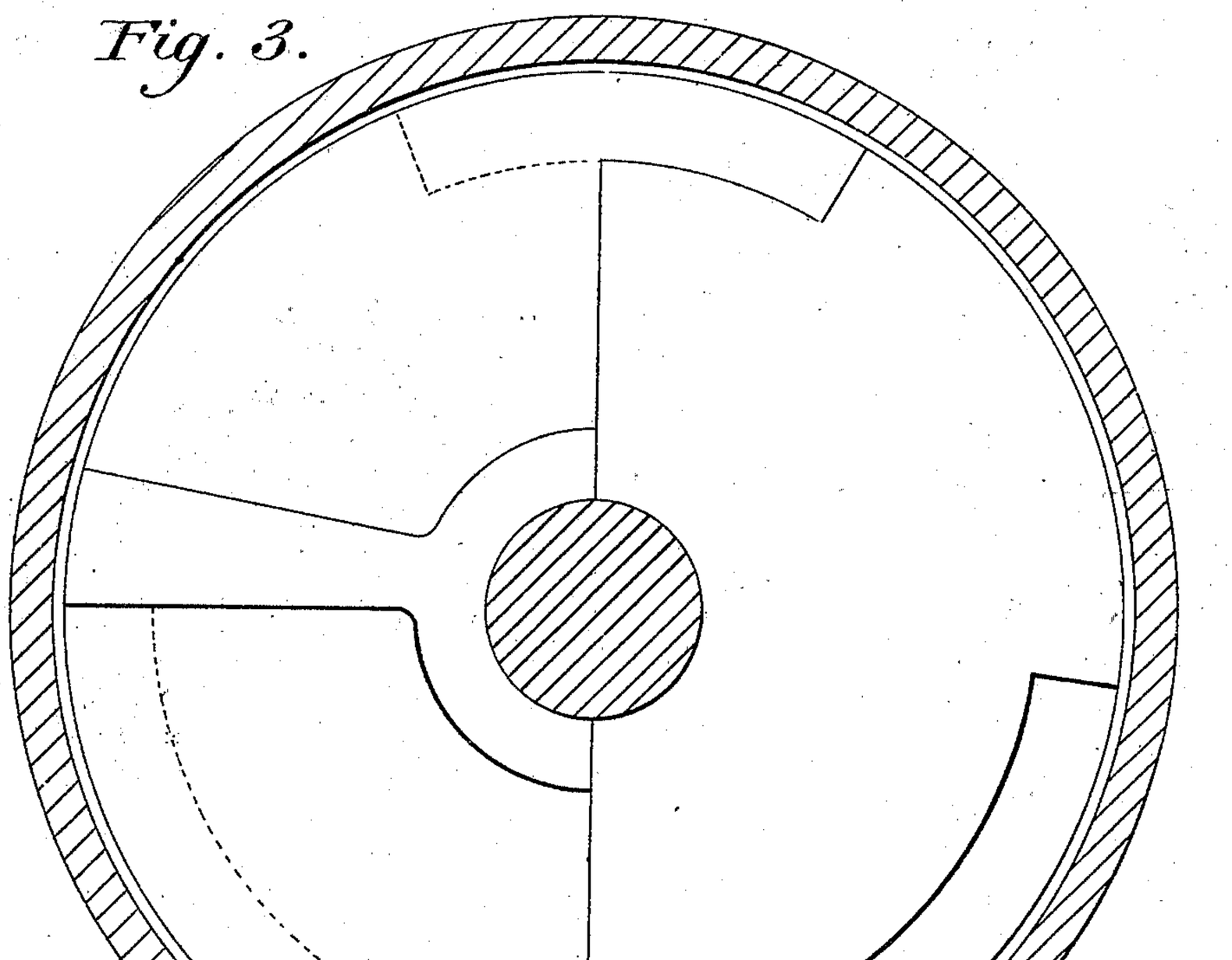
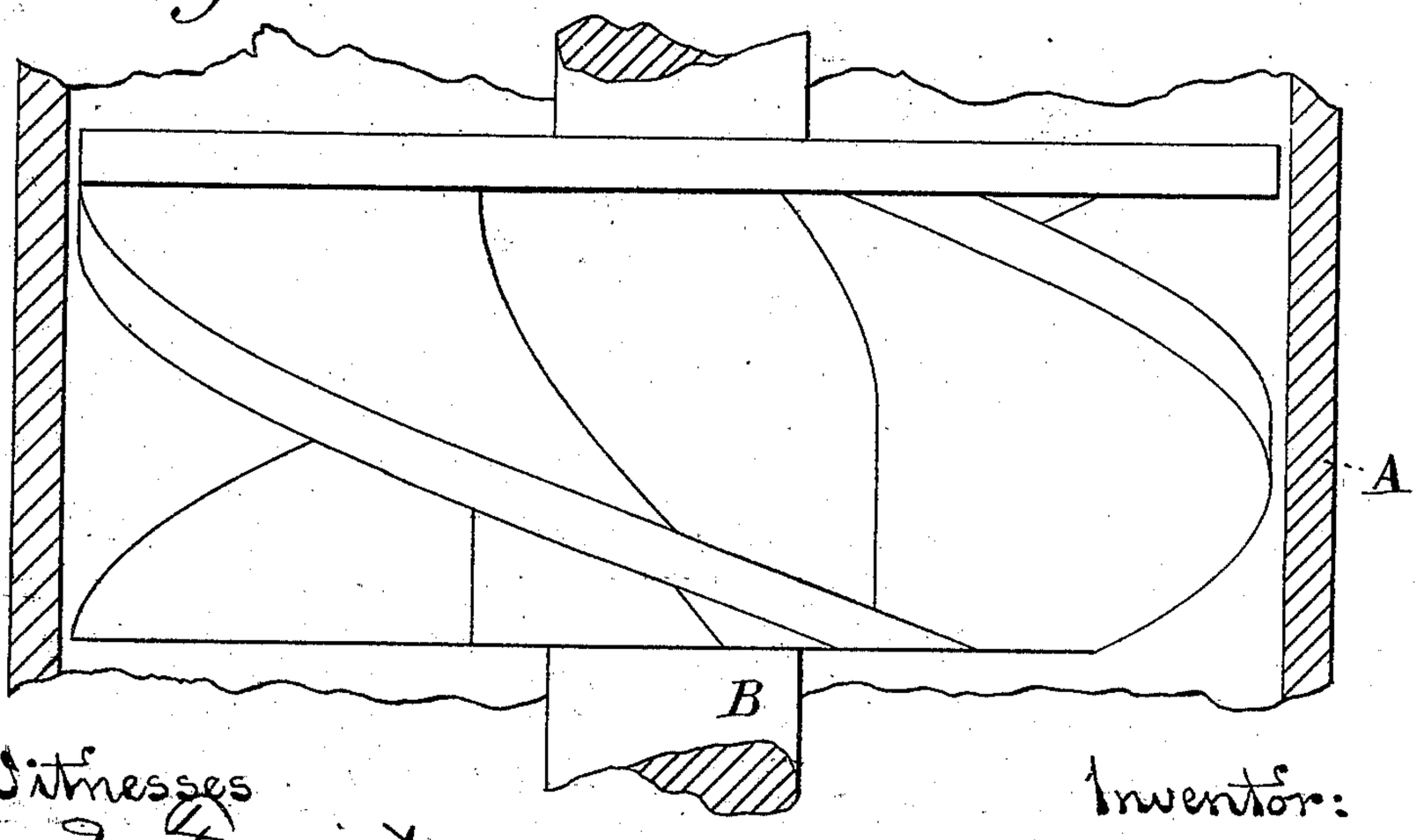


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN SKETCHLEY MORTON, OF OAKLAND, CALIFORNIA.

HYDRAULIC PROPELLER.

SPECIFICATION forming part of Letters Patent No. 671,089, dated April 2, 1901.

Application filed December 27, 1898. Renewed October 18, 1900. Serial No. 33,515. (No model.)

To all whom it may concern:

Be it known that I, JOHN SKETCHLEY MORTON, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Hydraulic Propellers; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in hydraulic propellers.

It consists in a novel rotary device for producing powerful hydraulic jets, with pipes, valves, and connections arranged to direct and control the jets.

It also consists in the novel construction and arrangement of the various parts, which will be fully described hereinafter and pointed out in the claims.

The object of my invention is to provide an efficient propulsion device for vessels adapted to utilize the internal unbalanced pressure of an outflowing stream, and, further, that the construction shall in the emergency of a leak provide for taking the supply in whole or in part from the interior of the vessel. I accomplish this object by means of the devices illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of one end of a vessel, showing the general arrangement of my device. Fig. 2 is an elevation of the same. Fig. 3 is an end elevation of the rotary pump-runner, portions of which are shown broken away to more clearly illustrate it. Fig. 4 is a longitudinal section of a portion of the pump-casing, showing a side elevation of one of the pump-runners.

Referring to the drawings, A is a pump chamber or casing of cylindrical form, through which passes longitudinally a driving-shaft B. Upon this shaft is secured a right and a left hand helical runner B′ and B², the blades of which extend the full length of the hub, both at the hub and at the periphery, constituting a short length of a multiple-threaded screw.

Adjoining each runner on their adjacent sides is a concentric plate the periphery of which is preferably notched, as shown in the upper half of Fig. 3, forming a series of annular arc apertures with the inclosing casing A. From the side of the casing A, which is preferably placed longitudinal with the boat intermediate of the pump-runners, is another pipe A′, which connects by a suitable pipe with a transverse chamber C, from which extends at right angles rearwardly two parallel discharge-pipes D and D′, which are controlled by suitable valves *d* and *d′*, respectively. Beyond the valves these pipes are provided with nozzles E and E′, which terminate outside the vessel. Each of the discharge-pipes D and D′, intermediate of its valve and the chamber C, has lateral branch outlet-pipes F and F′, respectively, provided with valves *f* and *f′*. Each of the branch pipes lead to and are connected with nozzles G and G′, pointing in substantially the opposite direction to that of the nozzles heretofore referred to, terminating, as do the others, outside the vessel, but not projecting beyond the outer surface of the vessel.

A supply-pipe H is provided for each end of the casing A, preferably at right angles to its length. The end of this pipe H is provided with two supply-pipes H′ and H², the former leading to and opening into the water of flotation and the latter leading to and opening into the bilge of the vessel. Each of these supply-pipes is provided with a valve *h′* and *h²*, as shown in Figs. 1 and 2.

The casing A, between each end and the pump-runners and between the pump-runners, is furnished with radial deflecting-plates I I, preferably placed horizontally. Suitable power connections are provided to rotate the shaft B.

The operation of my device is as follows: The shaft B, with its runners, being rotated induces a powerful flow of water from the supply-pipe through the pump-casing chamber C and thence through the nozzles E and E′, forming thus twin hydraulic jets. Should it be desired to propel the vessel in the opposite direction, the valves *f* and *f′* are opened and the valves *d* and *d′* are closed. The steering and turning of the vessel may also be effected by opening one each of the oppositely-disposed nozzles.

Normally the supply for the jets is brought from the exterior of the vessel through the pipes provided for this purpose; but in the emergency of a leak this supply is closed by

its valves and the valves of the bilge-pipe are opened, thus relieving the vessel of the inflowing water. The deflecting-plates I I stop the internal rotation of the water in the casing A, and the opposite pitch of the blades in the runners neutralizes the end thrust of each, and so relieves the shaft-bearings of this source of loss of energy.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a hydraulic propulsion device, a helical runner within a suitable casing, provided with a plate concentric therewith, the periphery of which is notched forming annular arc discharge-openings with the surrounding casing.

2. In a hydraulic propulsion device, a right and a left hand helical runner secured upon a common shaft within a casing, each of which is provided with a concentric plate, the periphery of which is notched forming annular arc discharge-openings with the surrounding casing.

3. In a hydraulic propulsion device, a helical runner within a suitable casing, a plate concentric therewith occupying less than the full area of the casing and a plate longitudinally disposed within the casing and radial thereto, adapted to stop the rotary motion of the water within the casing.

4. A hydraulic propulsion device comprising a cylindrical casing having a concentric plate, forming an annular discharge-opening therewith and with a right and a left hand runner therein secured upon a common shaft, duplex supply-pipes to said casing having inlet-pipes communicating to the water of flotation and also with the bilge of the vessel, said supply-pipes being furnished with controlling-valves whereby any or all of the supply-pipes may be used individually or collectively.

5. A hydraulic propulsion device comprising helical runners within a casing having a concentric plate forming an annular discharge-opening therewith and provided with supply-pipes leading to the interior and exterior of the vessel, the transverse chamber C with its jet-nozzles E E′ and F F′ with their controlling-valves.

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