

T A. HICKMAN.
PROPELLER.
APPLICATION FILED JUNE 1, 1909.

965,457.

Patented July 26, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

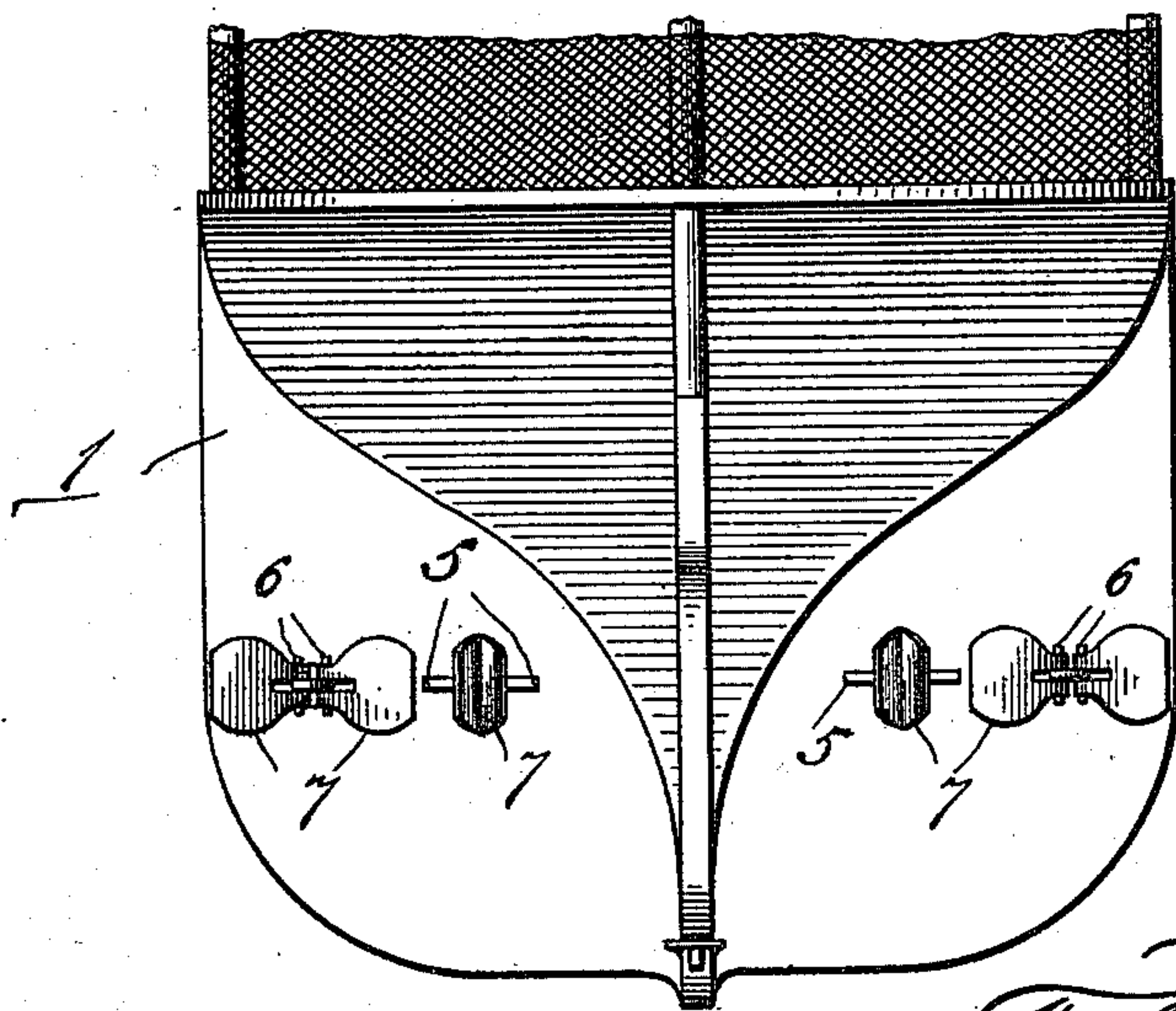
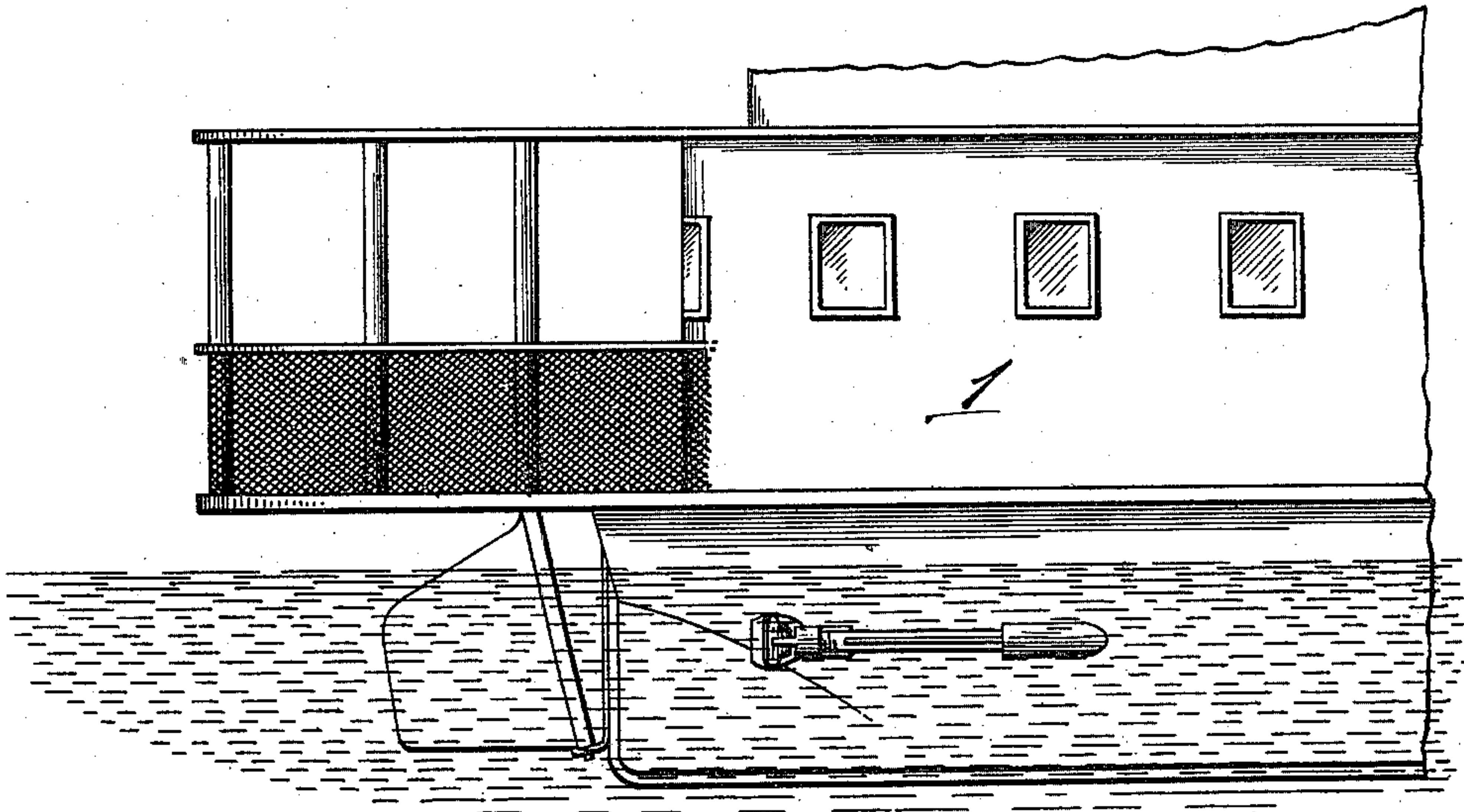


Fig. 2.

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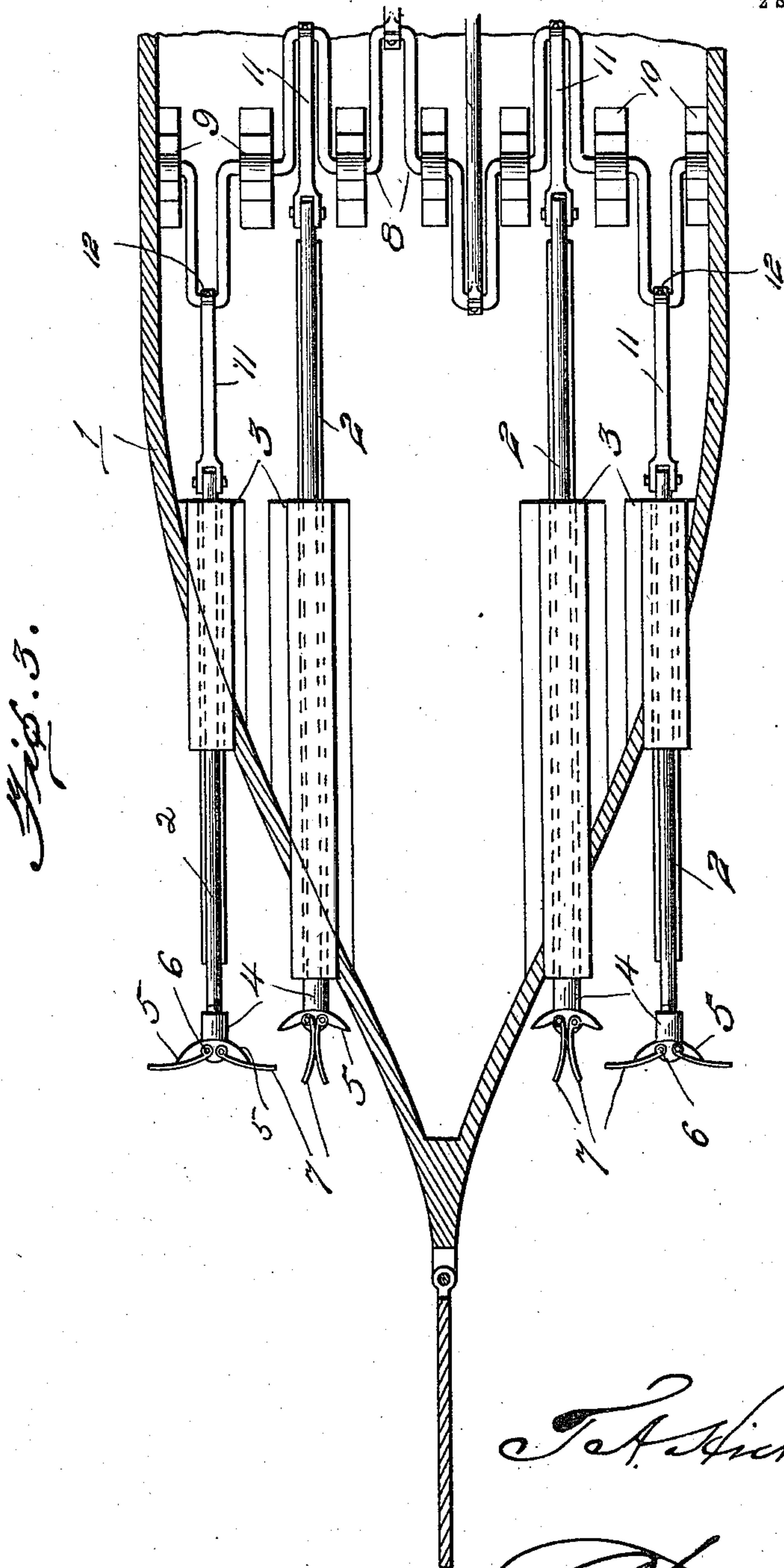
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UNITED STATES PATENT OFFICE.

T ALBERT HICKMAN, OF PLAINVILLE, KANSAS.

PROPELLER.

965,457.

Specification of Letters Patent.

Patented July 26, 1910.

Application filed June 1, 1909. Serial No. 499,341.

To all whom it may concern:

Be it known that I, T ALBERT HICKMAN, a citizen of the United States, residing at Plainville, in the county of Rooks and State of Kansas, have invented certain new and useful Improvements in Propellers, of which the following is a specification.

My invention relates to improvements in propellers, and the leading object of my invention is the provision of a propeller of the reciprocating type which will drive the boat at a high rate of speed and will almost entirely eliminate the retarding drag usually caused by the return of the propeller after it has expended its force.

With this and other objects as hereinafter disclosed in view, my invention consists in the novel features of construction and combination and arrangement of parts substantially as disclosed herein and as shown in the accompanying drawings which illustrate a boat equipped with propellers constructed in accordance with and embodying the principles of my invention.

Figure 1, represents a side elevation of the aft part of a boat with my propellers in position thereon. Fig. 2, represents a view of the stern of the boat shown in Fig. 1, and Fig. 3, represents a plan view of my complete device applied in position to a boat.

In the drawings: The numeral 1, designates a boat, to which is applied my improved propelling mechanism, comprising the propeller shafts 2, journaled in the longitudinal bearings 3 and provided with the ribs on their sides to engage grooves formed in said bearings to prevent the shafts from turning therein. On the outer end of the shafts are secured the propeller heads 4, bearing on their outer ends a pair of laterally projecting lugs 5 and being provided with openings through which the pintles 6 are passed.

Secured to the propeller heads by means of the pintles 6 and pivotally moving thereon are the propeller blades or wings 7, said blades being slightly curved in shape and being secured one pair on each propeller head with their convexed faces toward each other. The inner ends of the blades are reduced in size and are bifurcated or provided with a recess in which the outer end of the propeller head fits, the portion of the wing on each side thereof being formed to receive

the pintle 6 on which the blade hinges or swings, the rearward movement thereof being limited by the projecting lug 5 adjacent thereto on the head.

To drive the shafts and provide reciprocating motion therefor I employ the crank shaft 8, journaled in the bearings 9 formed on the top of the supports or standards 10, there being a crank on the crank shaft for each shaft, said cranks being arranged to cause the outer pair of shafts to operate in unison and the inner pair to operate similarly, said cranks being connected to the propeller shafts by means of the pitmen 11, suitably secured to the cranks and shafts, and I also provide additional cranks on the shaft 8 to which are secured means connected with the engine shaft for operating the device. It will be understood that any means for driving the shafts of the propellers may be employed, that herein shown however being the preferable one.

In operation, the engine having been started and the propellers moved, the blades on the outwardly operating shafts press against the water, and the water forcing against the convex faces of the blades, has a wedging action there against and forces them apart until they come into contact with the lugs 5, when their forward motion being prevented, they press against the water and drive the boat forward. When they have reached the limit of their stroke and start to return, the water pressing against their concaved faces presses them together and in this closed form they offer practically no resistance to the water and consequently none of the impulse is wasted and the boat suffers no delay thereby.

To prevent the disarrangement of the device or its faulty operation due to looseness of parts at point of connection of the pitmen with the elbows of the cranked shafts where the wear is greatest, I provide said pitmen with adjusting means 12 which at all times make a reliable connecting means for the pitmen with the cranked shaft.

I claim:

In a device of the character described, the combination with a boat, of longitudinal bearings carried thereby provided with grooves, shafts slidably mounted in the bearings and provided with ribs fitting in said grooves, a crank shaft, pitmen adjust-

ably secured to the crank shaft and oper-
atively connecting said shaft with the slid-
ing shafts, and curved blades carried by the
outer ends of the shafts and so disposed
5 that when the blades are closed and their
inner portions in contact with each other the
outer portions will flare apart, leaving a
wedge-shaped space therebetween into which
the water presses on the rearward movement

of the shafts and opens the blades into oper- 10
ative position.

In testimony whereof I affix my signa-
ture, in presence of two witnesses.

T ALBERT HICKMAN.

Witnesses:

L. E. WOOD,
S. A. DOUGLAS.