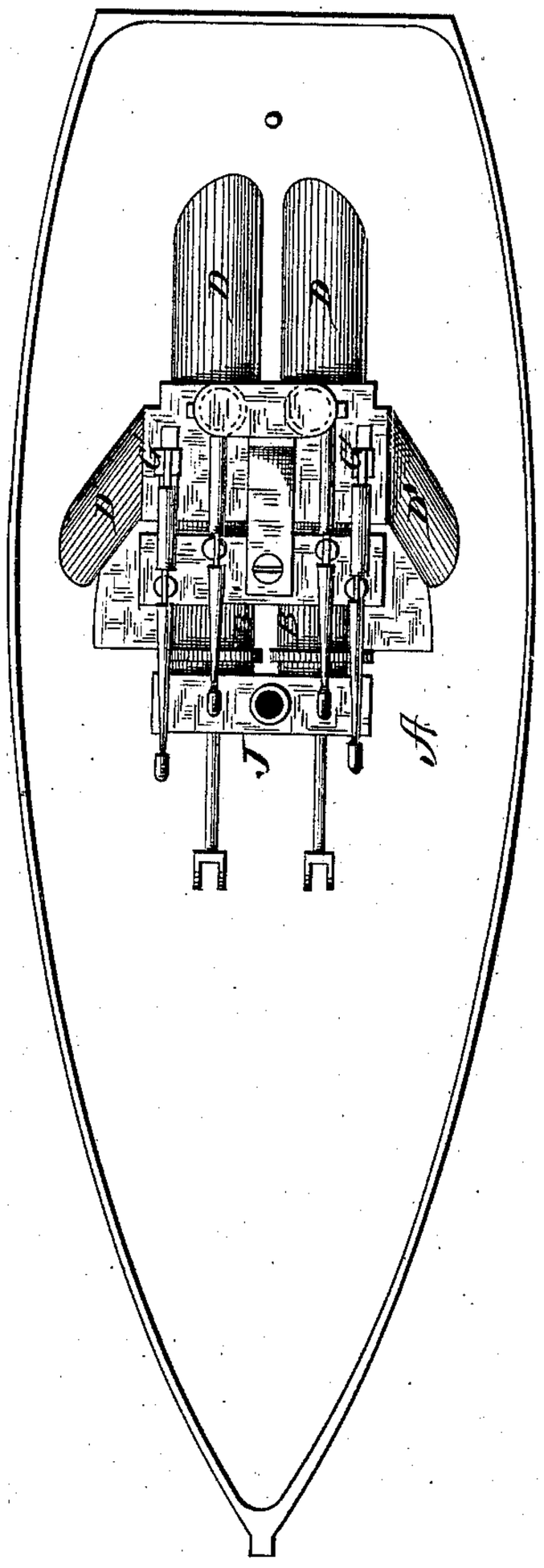
2 Sheets—Sheet 1.

S. H. COWLES.
Propelling Vessel.

No. 198,082. Patented Dec. 11, 1877.

Fig. 1.



WITNESSES

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2 Sheets—Sheet 2.

S. H. COWLES.
Propelling Vessel.

No. 198,082. Patented Dec. 11, 1877.

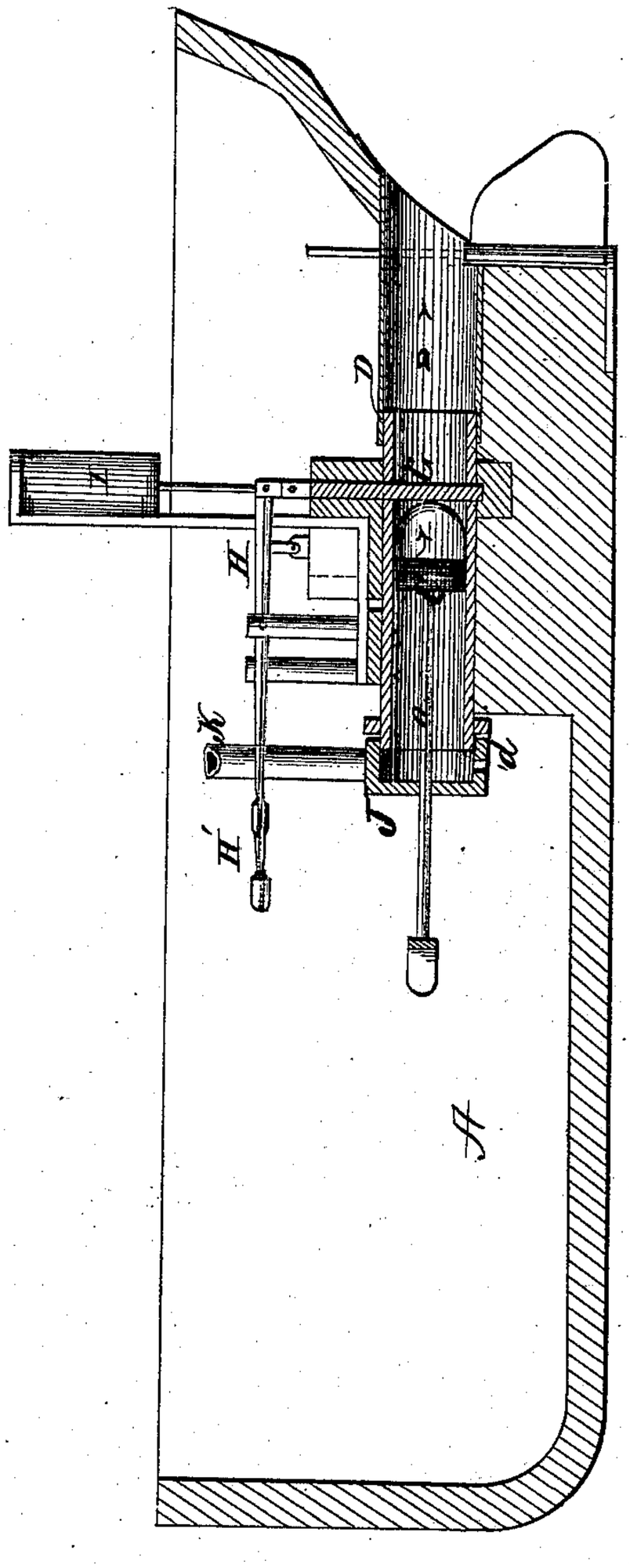

Fig. 2.

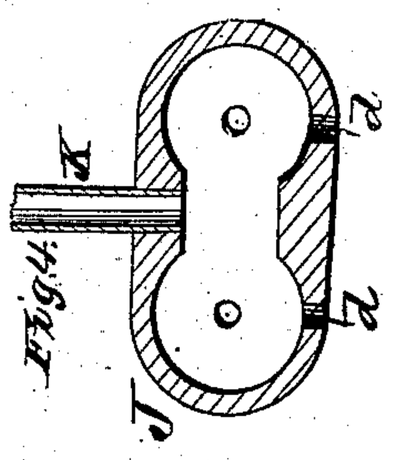

Fig. 4.

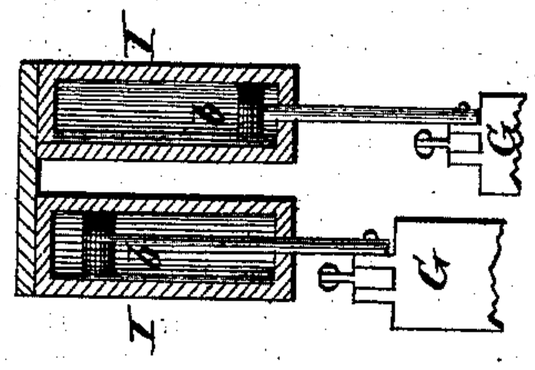

Fig. 3.

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UNITED STATES PATENT OFFICE.

SAMUEL H. COWLES, OF OAKVILLE, CONNECTICUT, ASSIGNOR OF ONE-HALF HIS RIGHT TO B. B. BREWER, OF SACRAMENTO, CALIFORNIA.

IMPROVEMENT IN PROPELLING VESSELS.

Specification forming part of Letters Patent No. **198,082**, dated December 11, 1877; application filed October 11, 1877.

To all whom it may concern:

Be it known that I, SAMUEL H. COWLES, of Oakville, in the county of New Haven, and in the State of Connecticut, have invented certain new and useful Improvements in Devices for Propelling Vessels; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a propeller, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a plan view of my invention. Fig. 2 is a longitudinal section of the same. Fig. 3 is a section through the steam-cylinders for operating the gates. Fig. 4 is a section of the head of the cylinders in which the pistons work.

A represents the hull of a propeller of any suitable size and shape. B B are two water-cylinders, placed in the bottom of the vessel A, as low down as possible, so as to get great pressure of water from the outside onto the pistons C C within said cylinders. The rear ends of the cylinders B are provided with extensions D D, forming chutes or passages out through the stern of the vessel. Each cylinder B is also, near its rear end, provided with a chute or passage, D′, extending at an angle slightly forward and through the side of the vessel.

The chutes or passages D D′ are provided, respectively, with vertically-operating gates G and G′, connected to levers H and H′, for raising the same as required. The pistons C C are provided with rods *a a*, which pass through the front ends of the cylinders B B, and connect with the engine or engines for driving the same.

When it is desired to give the boat a forward motion the gates G G are raised, when, by applying the power, whether it be of steam or other power, as may be deemed advisable, to the pistons, a forward motion is at once obtained. If found necessary at any time to give the boat a backward motion, it is only necessary to stop the engine, as with any boat, close the gates D, open the gates D′ and start the engine again, when the water will be caused to flow obliquely from the sides of the vessel and move the same backward.

If it is desirable to turn the vessel around on its center the gates are opened in one chute, D′, and in the chute D on the opposite side, and applying the power, when the vessel may be turned as desired. The handles H H′ are for the purpose of raising the gates; but when on a large scale it will be found almost impossible to open the gates by hand on account of the immense pressure of water against them; hence I intend to provide each gate with a steam-cylinder, I, as shown, over the two gates G, and connecting a piston, *b*, within such cylinder with the gate, for the purpose of raising the gate by steam in substantially the same manner as raising an ordinary steam trip-hammer.

The inner ends of the cylinders B B are provided with a single head, J, which is made double, as shown, with a view to allow any water that may leak through the packing of one piston to follow around in the rear of the opposite piston C, to have a certain amount of pressure brought to bear upon the opposite piston. If there were a head for each cylinder, the leakage-water would cushion onto the heads and cause leakage. In the under side of the head J are holes *d* to draw off said leakage. The head J is also provided with an upwardly-projecting pipe, K, to admit air in rear of the pistons, and thus destroy any vacuum that might be formed when the pistons are in motion. In case of breakage of the rudder or steering-gear, the engineer or other suitable person can easily steer the vessel by a proper manipulation of the gates G and G′. The machinery being so low down in the vessel, it is almost impossible for ice or any other obstruction to interfere with its proper workings, and when applied to war-vessels the machinery is away below the possible effects of shot or

shells. It leaves no wake or wave when the vessel is in motion, which makes it particularly desirable for canal-boats, preventing all swash on the banks of the canal. It is also thoroughly adapted for navigation in the Arctic seas, where great bodies of ice are encountered. In case of accident to either of the pistons, it is comparatively a small job to shut the water-gates, unbolt the cylinder-head, withdraw said piston, and subject it to the necessary repairs, and replace the same, and continue on the vessel's course. If one cylinder is disabled at any time, the opposite cylinder can be in operation by keeping the rudder hard-aport, and thus continue on to the end of the voyage, if found necessary.

The pistons used may be packed with any suitable packing. The gates may be made of any suitable material; but I prefer to make them of metal.

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

The combination of the cylinders B B, chutes or passages D D, extending through the stern of the boat, the passages D′ D′, one on each side of the cylinders, and extending forwardly through the sides of the boat, the pistons C C, and gates G G and G′ G′, constructed and arranged to operate substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 21st day of September, 1877.

SAML. H. COWLES. [L. S.]

Witnesses:
EDWARD F. COLE,
E. T. WELLS.