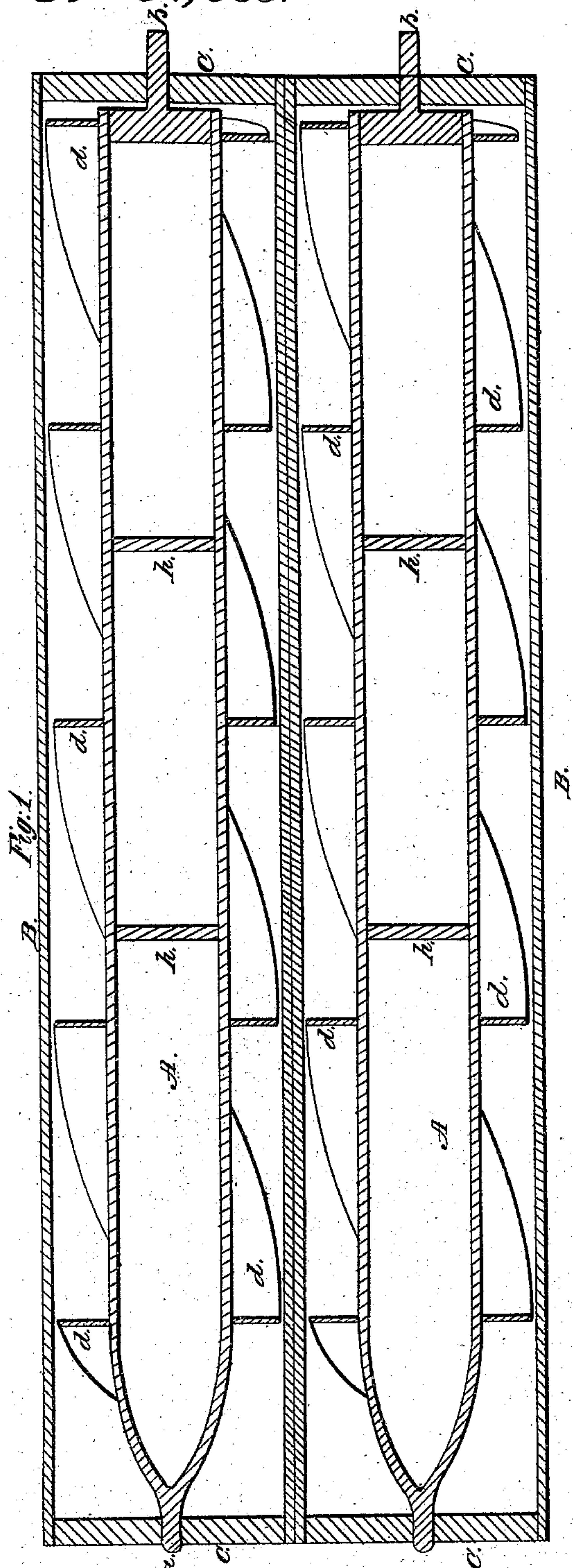


D. Miner, Screw Propeller

N^o 57,033.

Patented Aug. 7, 1866.



Witnesses:
J. H. Kuyatt.
J. H. Boynton

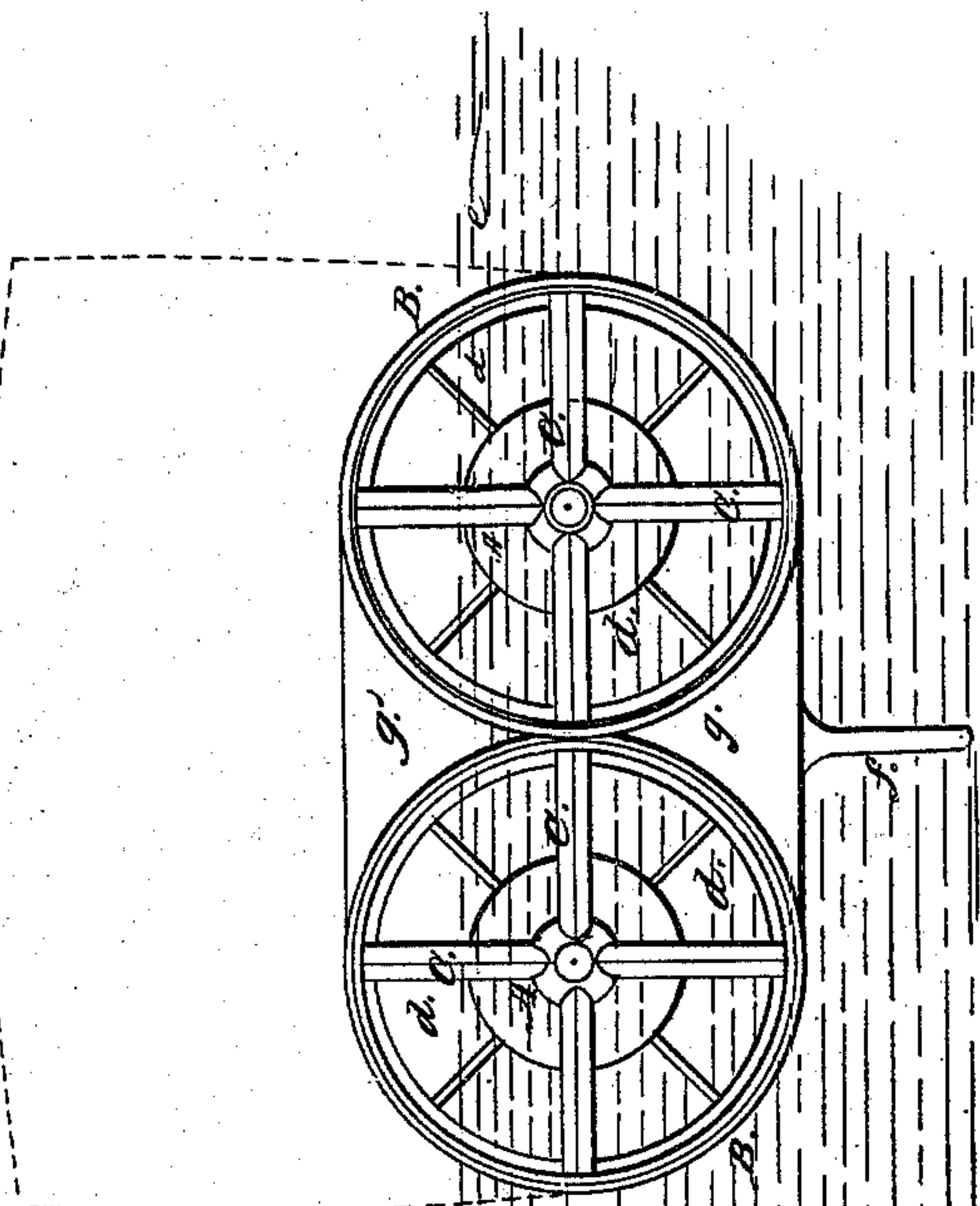


Fig. 2.

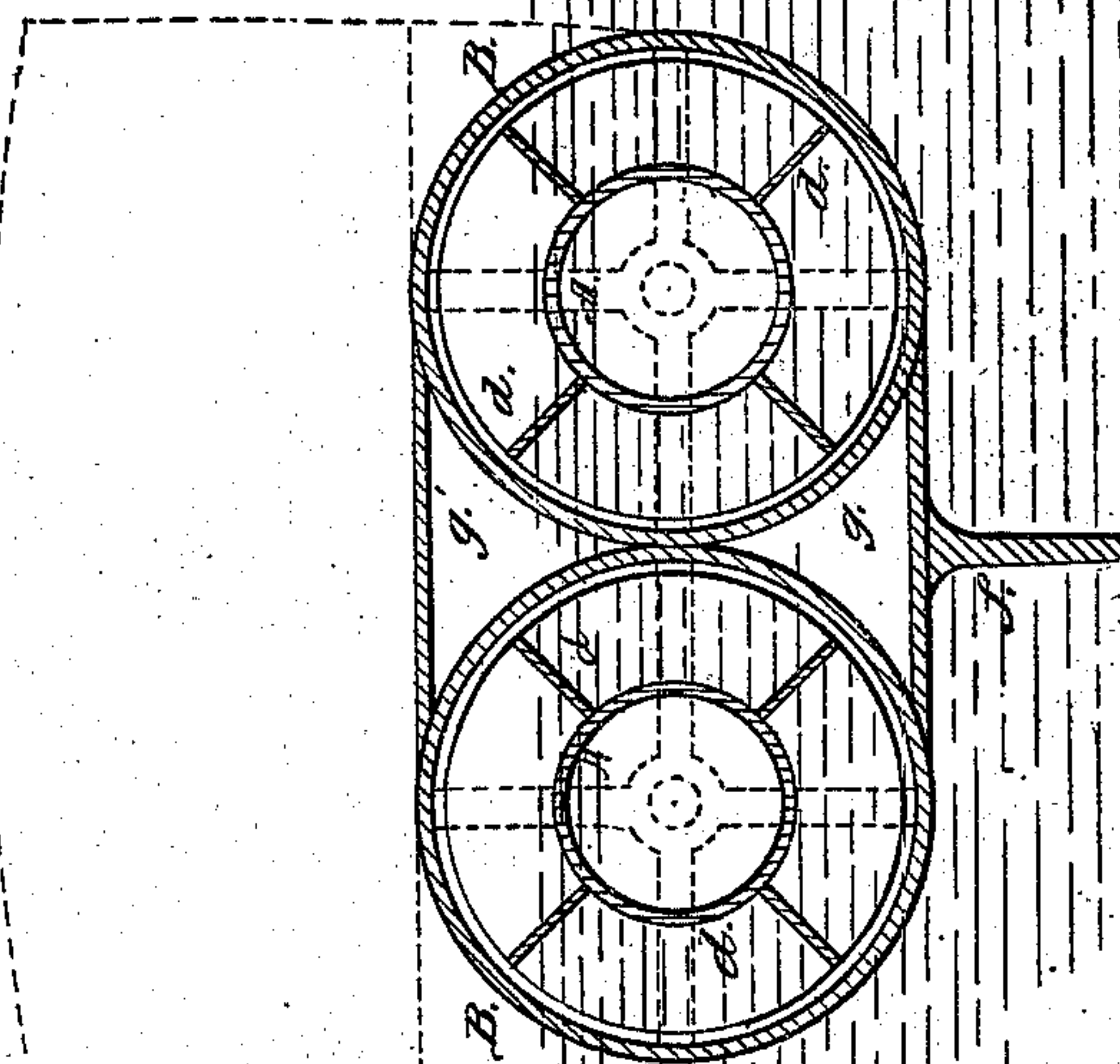


Fig. 3.

Inventor:
Daniel Miner
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Atty.

UNITED STATES PATENT OFFICE.

DANIEL WINER, OF LOCKPORT, NEW YORK.

IMPROVED PROPELLING APPARATUS FOR VESSELS.

Specification forming part of Letters Patent No. 57,033, dated August 7, 1866.

To all whom it may concern:

Be it known that I, DANIEL WINER, of Lockport, in the county of Niagara and State of New York, have invented a new and useful Improvement in the Mode of Constructing Steam-Vessels; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a horizontal section, Fig. 2 a transverse vertical section, and Fig. 3 a front elevation, of my improvement.

Like letters designate corresponding parts in all of the figures.

The nature of my invention consists in the employment of an air-tight cylinder or cylinders provided with radial helical blades or wings and revolving on suitable bearings within cylindrical cases open at both ends to receive water, said air-cylinders, blades, and their inclosing-cylinders (being of suitable length and diameter) constituting the chief part of the hull of the vessel, the main deck and cabins thereof being built above them.

As represented in the drawings, A A are a pair of cylinders, preferably conical or pointed at their forward ends, and made of metal plates with joints tightly riveted to exclude water. These cylinders are nearly the length which the deck of the vessel is designed to be, and are provided with journals *a b* at either end, which rest in bearings in the cross-arms C C of the inclosing-cylinders B B. These cross-arms are shown most clearly in Fig. 3, which is a forward-end view. The cylinders A A have securely attached to their outer surfaces helical rings or blades *d d*, preferably four in number, which start from the forward end and continue the whole length. These spiral blades project sufficiently to extend nearly to but do not touch the outer or inclosing cylinders, B B, leaving them free to revolve therein. The outer cylinders are also constructed of metal plates of sufficient thickness to retain their form, and are connected together at their sides, and strongly braced and trussed, if required; and from the two outer sides of the pair the sides of the vessel are carried up, as represented in dotted lines, to sufficient height for decks and cabins, the lower being built closely to or upon the tops of the cylinders.

The lower sides are preferably connected together by building across with iron or timber and planking, forming an air-chamber, *g*, which adds to the buoyancy of the vessel. A keel, *f*, is also provided. A similar air-chamber, *g'*, is formed by tightly inclosing the space between the lower deck and upper sides of the cylinders. These parts so constructed constitute the hull of the vessel, which, when loaded, sinks so as to, submerge the greater part of the cylinders, *e e* being the water-line.

Rotary motion is imparted to the winged air-cylinders A A by means of their being connected with a steam-engine by cranks and pitman applied to the rear journals, *b b*, or by gearing on other mechanism, when the action of the spiral blades on the water within the inclosing-cylinder propels the vessel forward or back, according to the direction in which they revolve.

Cylinders A A and chambers *g g* being filled with air give buoyancy to the vessel, and the inclosing-trunks B B, open at their ends and presenting only their edges to the water, meet with very little resistance. The water being confined within cylinders B B is acted on by the rotating blades during its passage through their whole length, as it cannot be forced laterally away by their motion or displaced, except in one direction, that counter to the direction in which the boat moves. The displaced water is discharged with great force and velocity from these trunks or cylinders directly back, so that all the face of its current is exerted on the resisting medium of the water to propel the vessel forward.

Very little friction occurs on the journals of the air-cylinders A A, as they are self-supporting. They are constructed with transverse partitions *h h*, dividing them into water-tight compartments, so that in case of an accident happening by which a leak occurred it would affect but one compartment probably.

The arms *c c*, which sustain the bearings *a b*, are made to present sharp or angular edges to the water, so that there shall be less resistance to overcome. A rudder is employed in the usual manner for steering.

The design of this vessel is to attain high speed in smooth water, and the construction combines great buoyancy and lightness with

ample deck-room and very small displacement and resistance of the water.

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

1. The inflated cylinder A, provided with helical blades the whole length, in combination with the inclosing-trunk B with open ends, arranged and operating substantially as set forth.

2. In combination with the above-described device, uniting two or more trunks, B B, together, and inclosing the angular spaces *g g'*

above their points of junction, and a horizontal line touching their peripheries to form a series of air-chambers, substantially as shown and described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

DANIEL WINER.

Witnesses:

E. B. HARWOOD,
J. H. MURPHY.