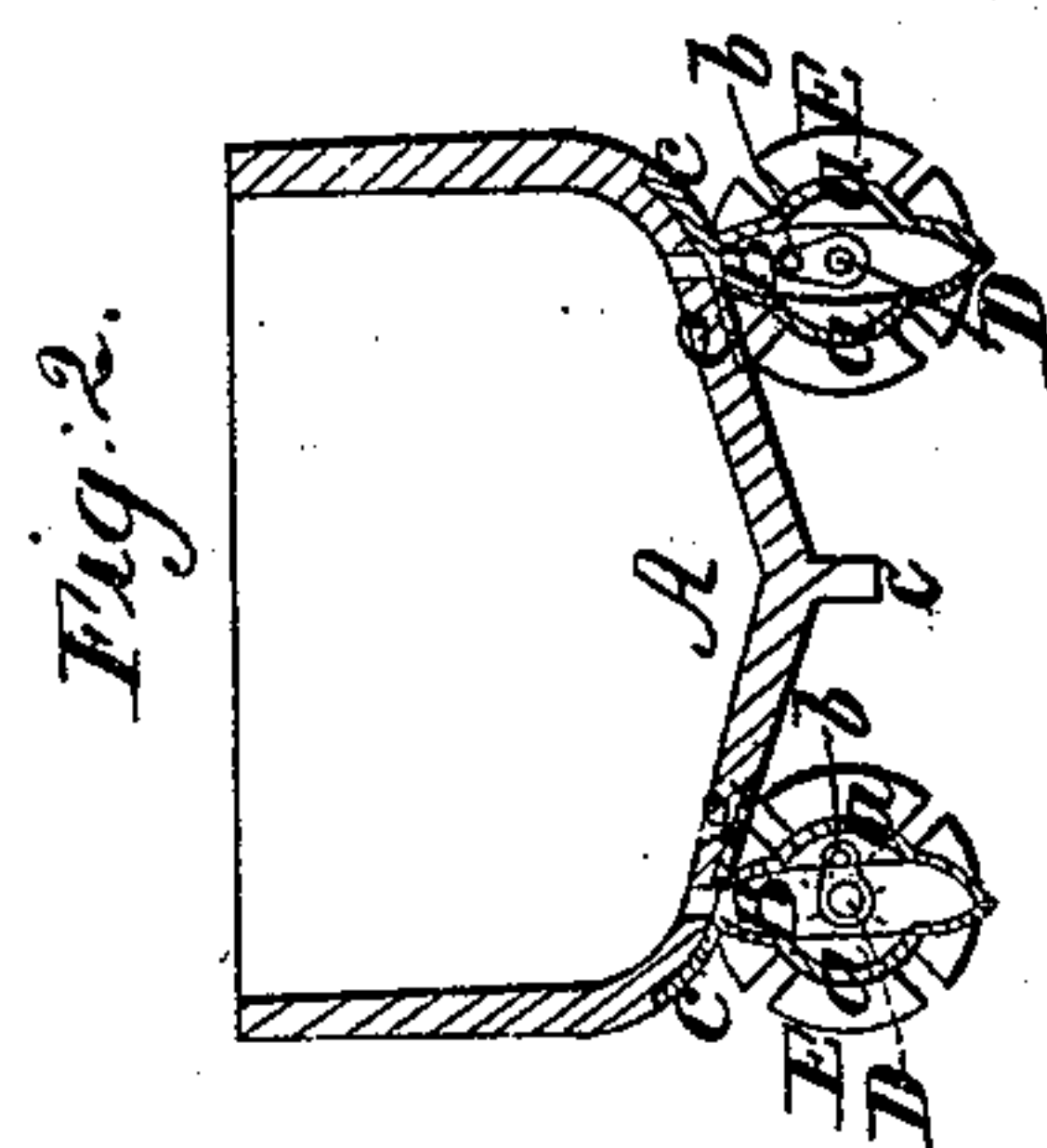
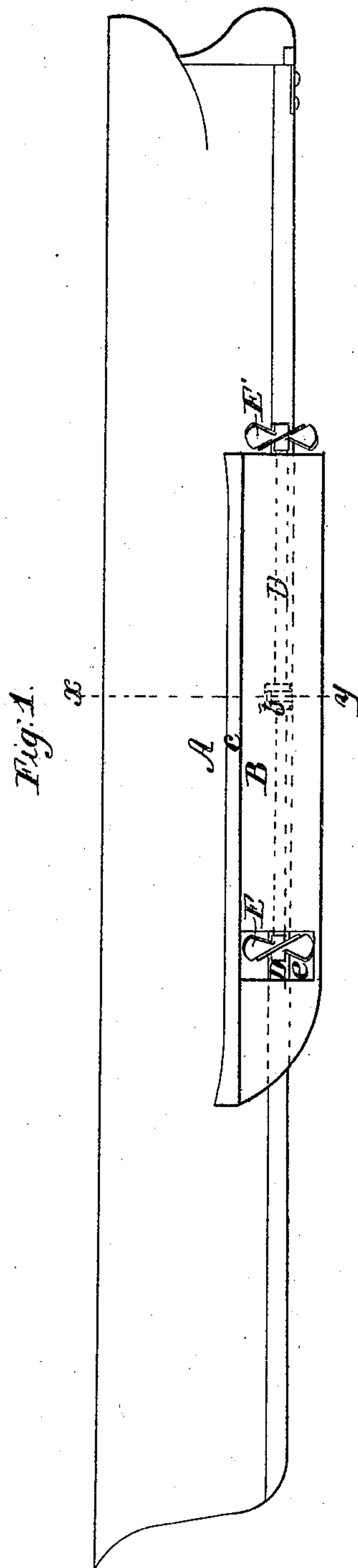


A. Arnold,
Screw Propeller

N^o 14,589.

Patented Apl. 8, 1856.



UNITED STATES PATENT OFFICE.

AARON ARNOLD, OF TROY, NEW YORK.

INCLOSING PROPELLER-SHAFTS IN KEELS.

Specification of Letters Patent No. 14,589, dated April 8, 1856.

To all whom it may concern:

Be it known that I, AARON ARNOLD, of Troy, in the county of Rensselaer and State of New York, have invented a new and useful Improvement in the Application of Screw-Propellers to Vessels; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a side view of a vessel having four propellers applied according to my invention. Fig. 2, is a transverse section of the same in the plane indicated by the line *x, y*, of Fig. 1.

Similar letters of reference indicate corresponding parts in both figures.

This invention consists in applying the propellers in what may be termed "side keels" constructed as hereinafter described and represented in the drawings under the bottom of the vessel at the sides of the proper central keel whereby I am enabled to apply one or more propellers at pleasure on the same shaft to operate in a body of water which is solid and unbroken by the passage of the vessel through it, thus obtaining a better propulsive effect than when the propeller is arranged in the run or in the dead wood of the stern.

A, is the hull of the vessel, and B, B, are the side keels arranged parallel with the proper keel, C, and at such distances therefrom as to allow the propellers room to work clear of the said keel, C. These side keels I propose to make either of wood or of sheet iron but preferably of the latter when they will be hollow as shown in Fig. 2, and bolted through flanges *e, e*, to the vessel's bottom. They will be made of a depth greater than the diameter of the propellers and for the most part only of a width sufficient for proper stiffness and to contain the

propeller shafts D, D, with a gradual enlargement as shown at *a, a*, to allow the revolution of the cranks *b, b*, or other devices by which the propeller shafts are connected with the engine or engines to receive rotary motion, and will terminate as nearly as possible in a sharp edge in front and rear. The propeller shafts are received in suitable bearings and the propellers E, E' either in suitable openings *e*, in the keels B, B, or in rear thereof; the shafts being fitted with stuffing boxes where necessary. When only one propeller is to be employed on each shaft I should place it preferably entirely in rear of the keel B, as shown at E' in Fig. 1, but when others are used I should apply them in openings *e*, like E, in Fig. 1, in order that they may be protected by the front parts of the keels. The keels B, B may extend under any portion of the vessel's length. The connections from the engine or engines to the propeller shafts will pass through openings *d, d*, in the vessel's bottom as shown in Fig. 2.

It will be readily understood that by the narrowness of the keels nearly the full area of the propellers will be exposed in a solid and unbroken body of water. Being under the vessel's bottom the propellers will under all variations in the load line be submerged to a depth where the density of the water is greater than near the surface and consequently there will be less liability to "slip."

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

The manner of inclosing the propeller shafts in keels B, B, made of sheet iron or other material, fastened to the vessel's bottom, for the purposes and in the manner, substantially, as herein described.

AARON ARNOLD.

Witnesses:

MOSES WARREN,
T. S. BANKER.