

No. 636,467.

Patented Nov. 7, 1899.

C. STERNER.
STEAMSHIP AND PROPELLING APPARATUS.

(Application filed May 17, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

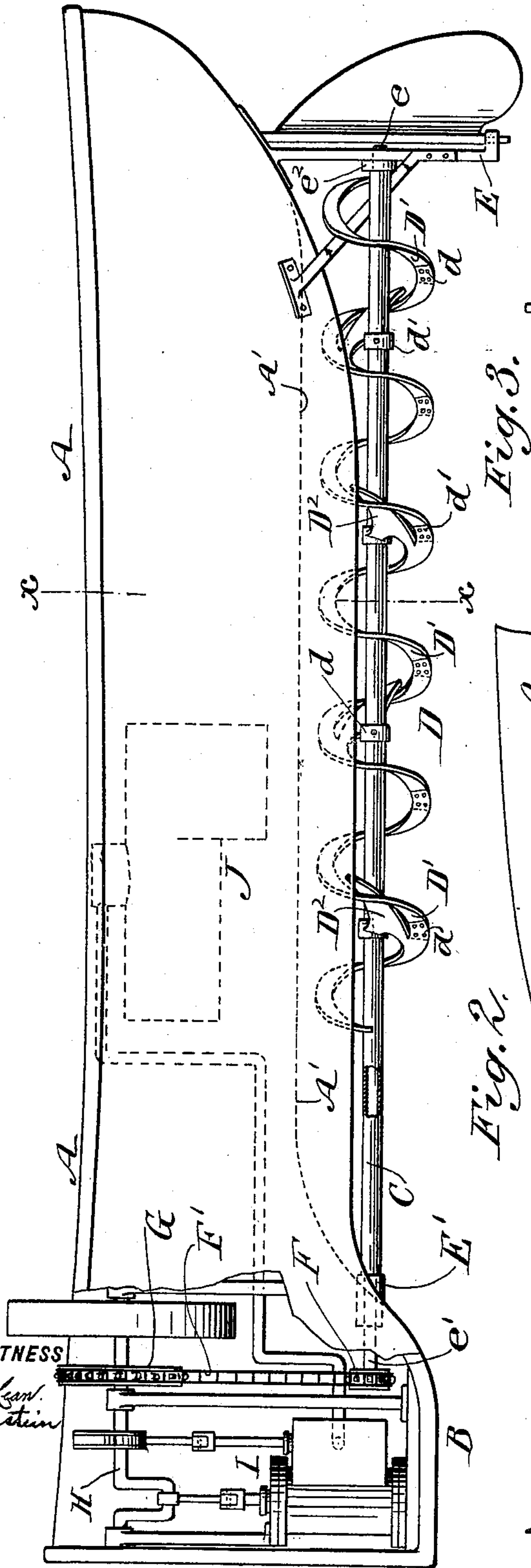


Fig. 3.

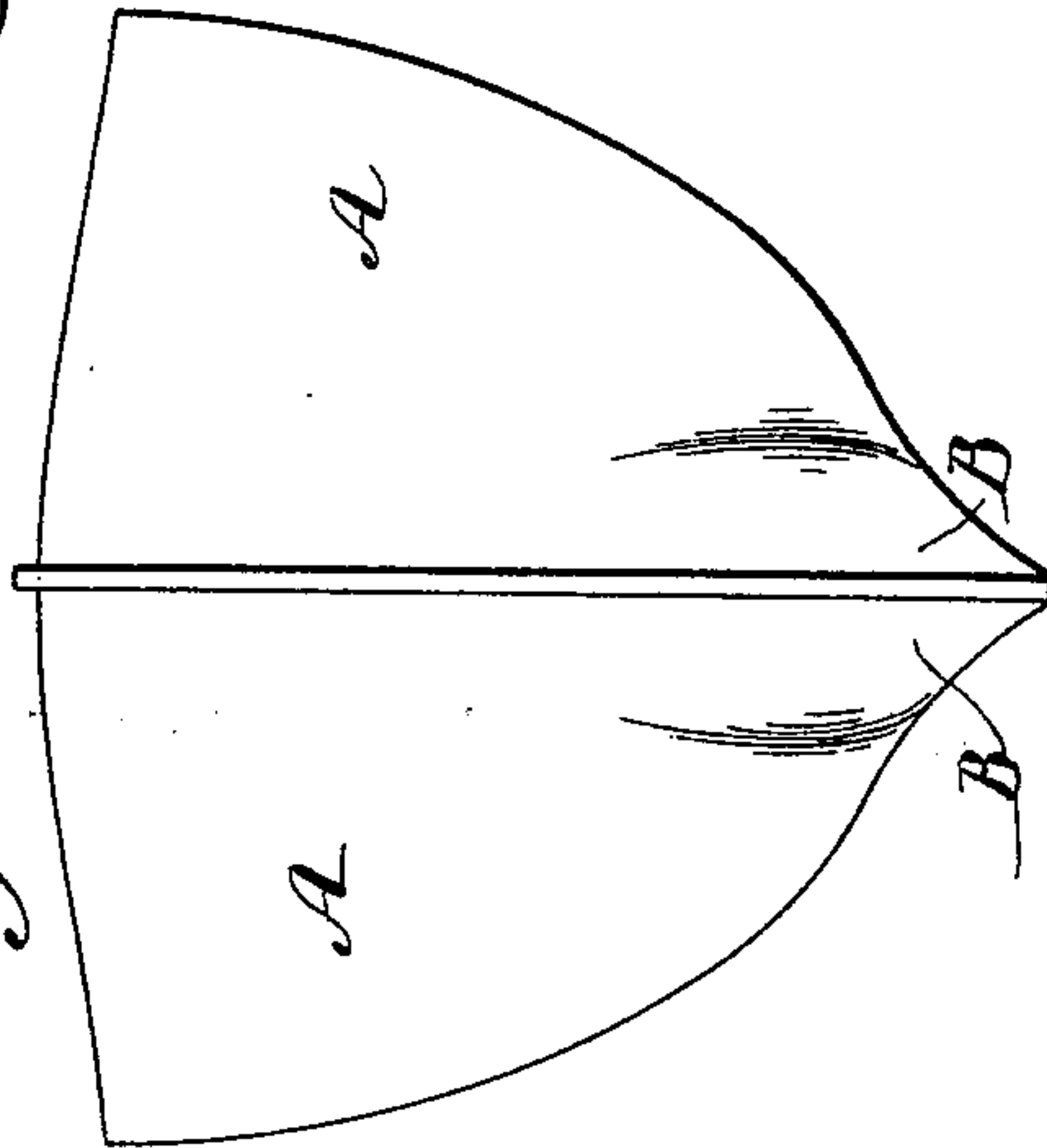
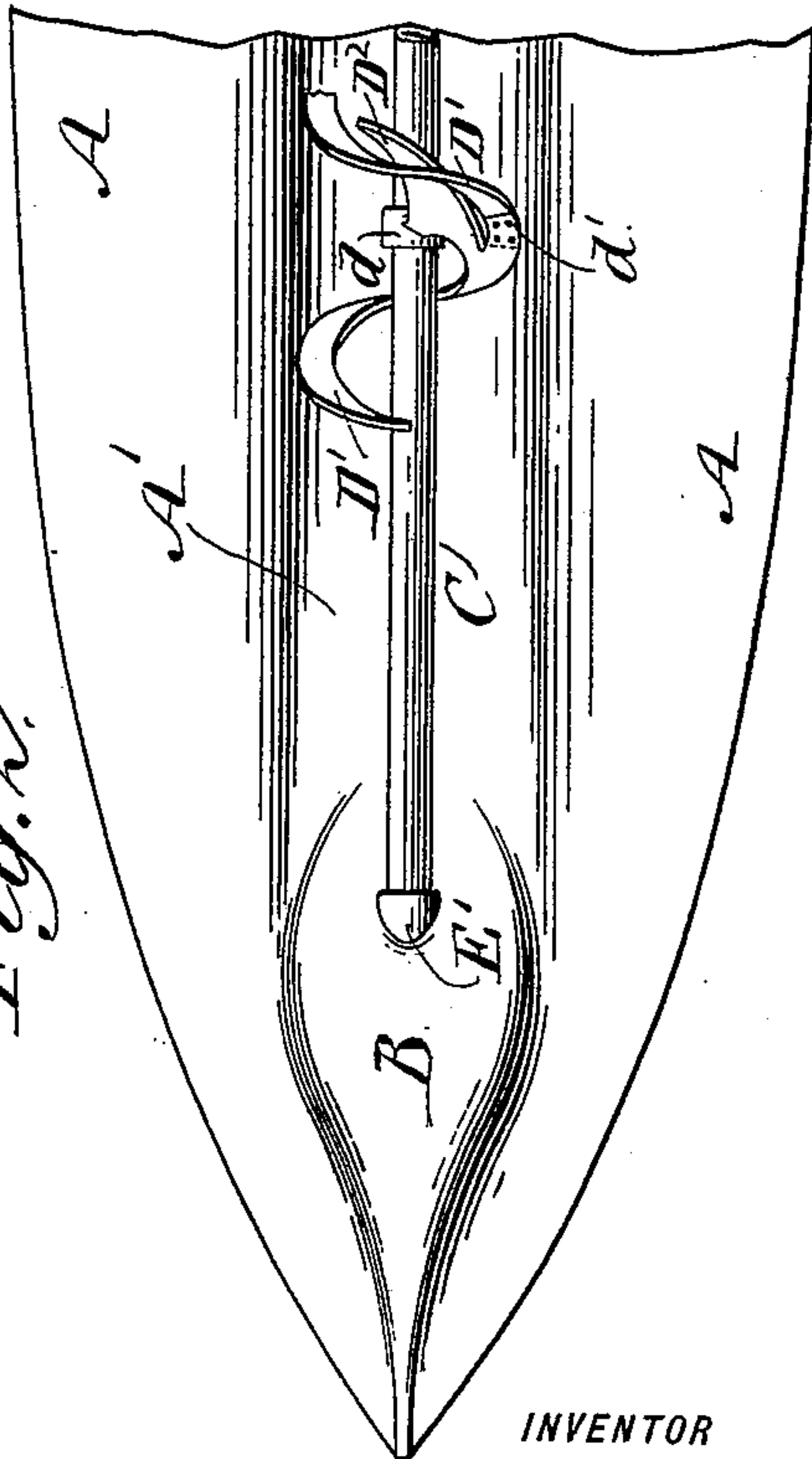


Fig. 2.



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Fig. 4.

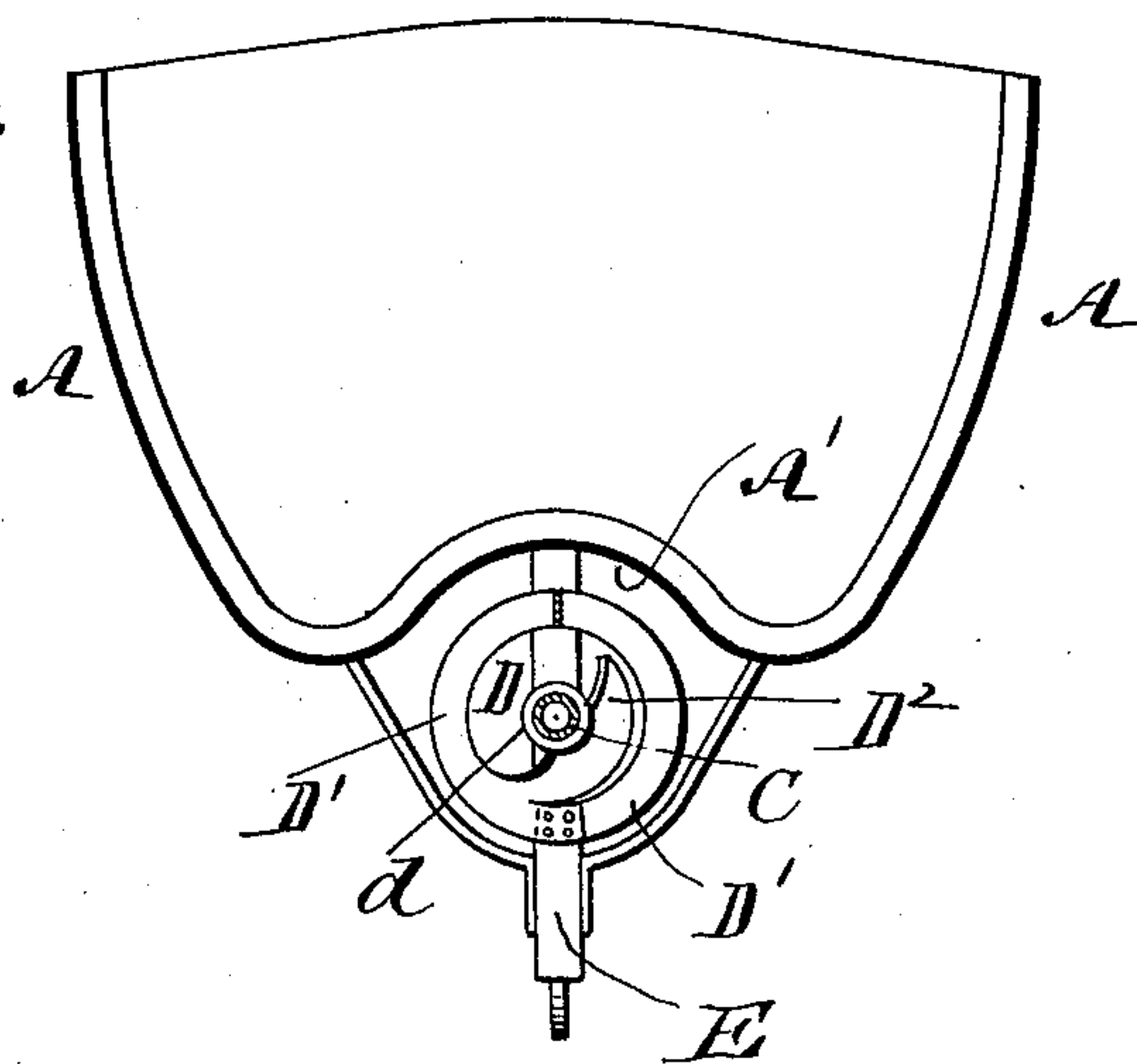
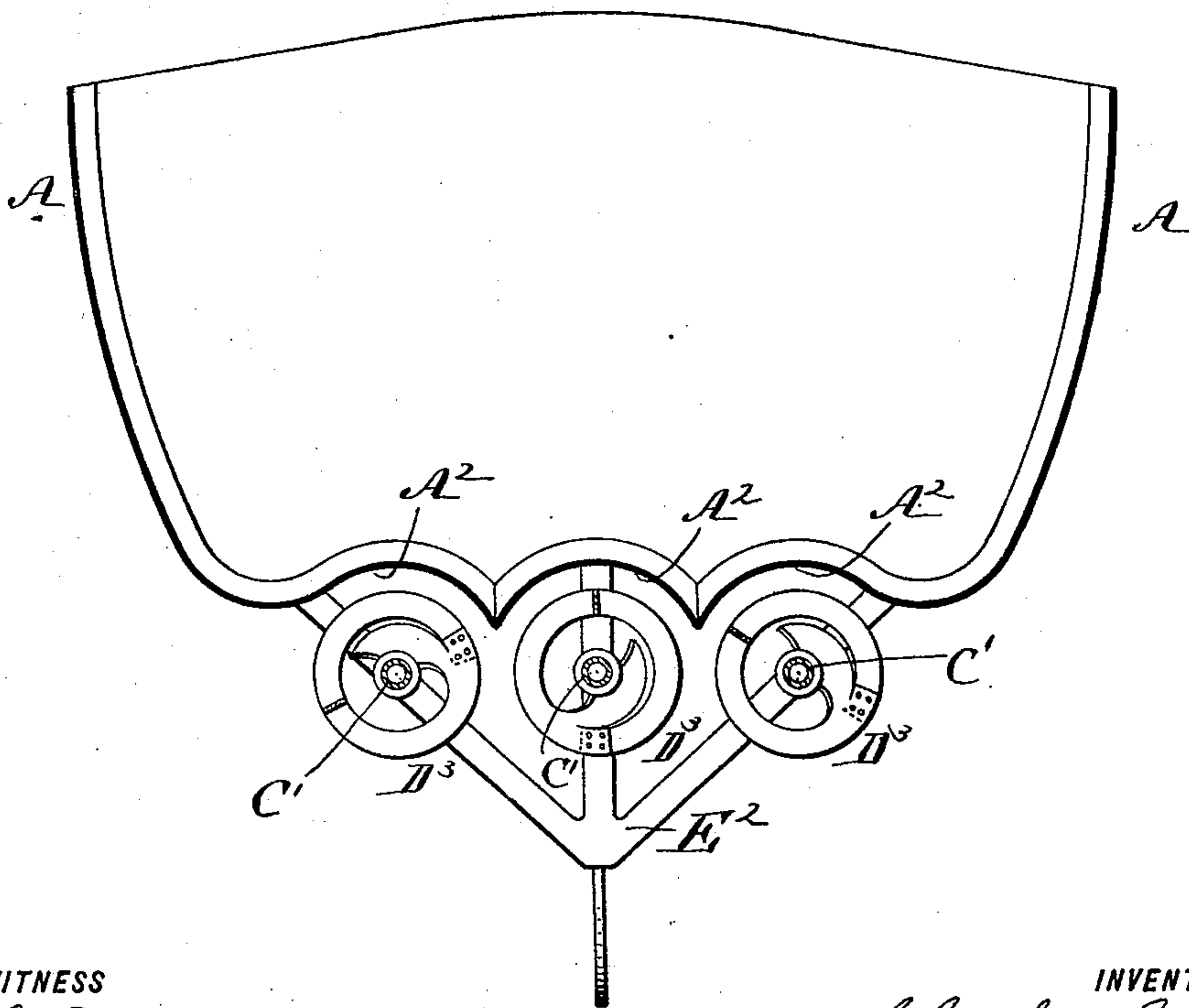


Fig. 5.



WITNESS

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UNITED STATES PATENT OFFICE.

CHARLES STERNER, OF ORANGE VALLEY, NEW JERSEY.

STEAMSHIP AND PROPELLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 636,467, dated November 7, 1899.

Application filed May 17, 1898. Serial No. 680,914. (No model.)

To all whom it may concern:

Be it known that I, CHARLES STERNER, a citizen of the United States, and a resident of Orange Valley, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Steamships and Propelling Apparatus, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar letters of reference indicate corresponding parts.

This invention relates to improvements in steamships and propelling apparatus, the object thereof being to utilize the maximum force of the keel and backwater while it is beneath the boat, whereby the speed of the vessel is increased and maintained without the necessity of increasing the power of the engines, thus producing an economical and practicable structure adapted for the requirements of vessels of all sizes and descriptions.

The invention will be hereinafter fully described, and specifically set forth in the annexed claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a longitudinal elevation of my improved vessel having the front or bow portion thereof broken away. Fig. 2 is an inverted plan view of the bow of the boat. Fig. 3 is a front view thereof. Fig. 4 is a cross-sectional elevation taken on a line $x-x$ of Fig. 1, and Fig. 5 is a similar view illustrating a modification.

In the practice of my invention the hull A is provided with a longitudinal groove A', extending from the stern to a point near the bow of the boat, where it communicates with the rear end of the plow or cut-water B, which is extended from the bow of the boat below the bottom line thereof. Located beneath the arched groove A' is a preferably hollow longitudinal shaft C, which has a propeller D mounted thereon. This said propeller comprises a continuous worm D' and a series of blades D², the said blades being set at a greater pitch than the angle of the worm D'. These blades form an integral part of the worm, and they are welded to collars d , which are secured rigidly to the shaft C by any suitable means. In the drawings the worm is illustrated as being composed of a plurality of sections joined together by means of rivets d' ;

but I do not confine myself to any specific method of construction. The shaft C is suspended by means of a hanger E, located beneath the stern of the boat, and a box E', located back of the bow, the hollow shaft being connected to solid sections e and e' , the section e being journaled through a box e^2 of the hanger E and the section e' being journaled through the box E'. The shaft-section e' has a sprocket-wheel F secured to its forward end. This said sprocket-wheel communicates with a driving-sprocket G by means of a chain F', whereby rotary motion is communicated to the shaft C and its connected propeller by means of the crank-shaft H of the motor I. This said motor may be of any suitable or adapted form; but in the drawings a simple steam-engine is illustrated, and a furnace and boiler J, located amidships, supplies the primary force.

In the operation and use of the device rotary motion being given to the propeller causes the vessel to move in a forward direction, whereby the plow B cuts the water and throws it back beneath the vessel within the arched groove A', where the propeller takes it up and utilizes its force until it finally leaves the groove at the stern of the boat. In this operation the blades D² perform the initial work and the worm D' takes up the water after it leaves the blades and greatly assists in propelling the boat, whereby the same can be made to travel at a high rate of speed.

I do not confine myself to the specific construction nor proportions of the propeller as illustrated in the drawings, for it is obvious that under the scope of my invention I am entitled to structural variations. For instance, I may use either more or less blades than are illustrated in the drawings, and the pitch of the worm may be changed, if desired. Also a plurality of propellers D³ and grooves A² may be employed for large vessels, as illustrated by Fig. 5 of the drawings, the propellers being mounted on parallel shafts C, hung at their rear ends by means of a hanger E².

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

1. The ship or vessel having the plow B, ex-

tended downwardly from the bow or cut-water and projecting below the bottom line of the vessel, said downwardly-extending plow having its sides and bottom surfaces bowed
5 or directed in a rearwardly-convergent curve, and a longitudinal bottom groove having its front end terminating directly at the convergent rear end of said downwardly-extended bow-plow, in combination with propelling ap-
10 paratus operating in said groove in rear of said bow-plow, by which construction and arrangement the water is directed and guided by the surface of the bow-plow directly to the front end of the groove, substantially as shown
15 and described.

2. In a ship the combination of a hull having a longitudinally-grooved bottom, and a plow extended downwardly from and forming part of its bow, and operating to throw the
20 water back beneath the vessel and within the groove, with propelling apparatus comprising continuous worms and blades intermediately arranged with respect to said worm and within the same and at a greater pitch than the an-

gle of the worm, said propelling apparatus 25 being located beneath said grooved bottom, and a motor for rotating the propelling apparatus, substantially as shown and described.

3. The combination with a ship having a groove in the bottom thereof and a plow pro- 30 jected from the bow thereof below the bottom line of the ship, and having its surface directed to and terminating at the front end of said groove, of a propeller comprising a hollow shaft, a continuous worm and a series of 35 blades arranged within the worm and at a greater pitch than the angle of the worm, and a motor for rotating the said propeller, substantially as shown and described.

In testimony that I claim the foregoing as 40 my invention I have signed my name, in presence of two witnesses, this 14th day of May, 1898.

CHARLES STERNER.

Witnesses:

M. G. MACLEAN,
S. RUBENSTEIN.