

No. 815,740.

PATENTED MAR. 20, 1906.

E. K. PURVIS.  
SCREW PROPELLER.  
APPLICATION FILED DEC. 8, 1904.

FIG. 2.

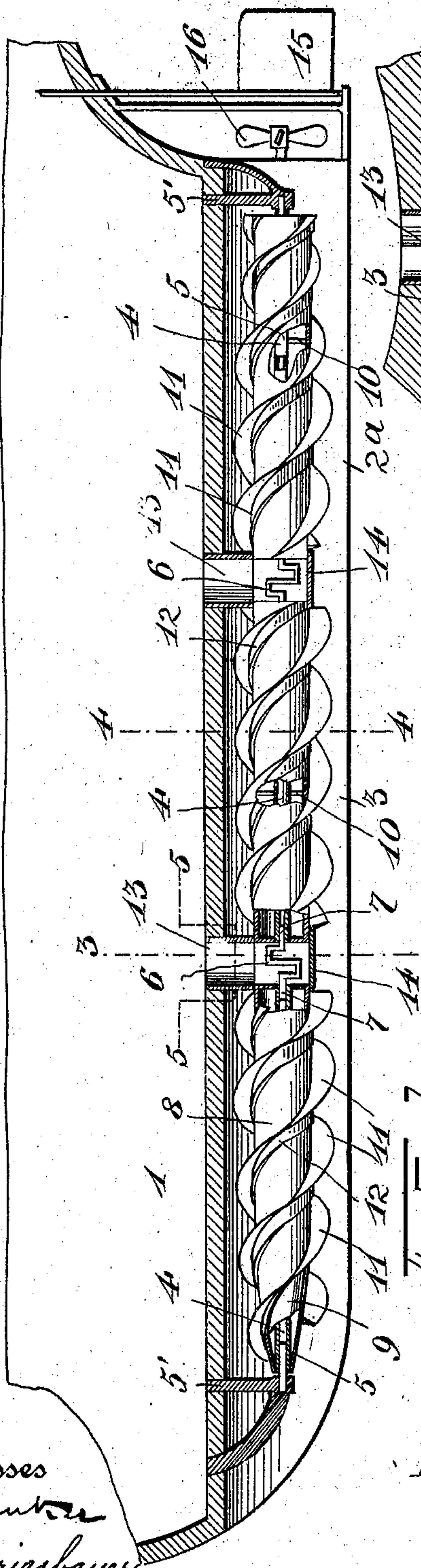


FIG. 3.

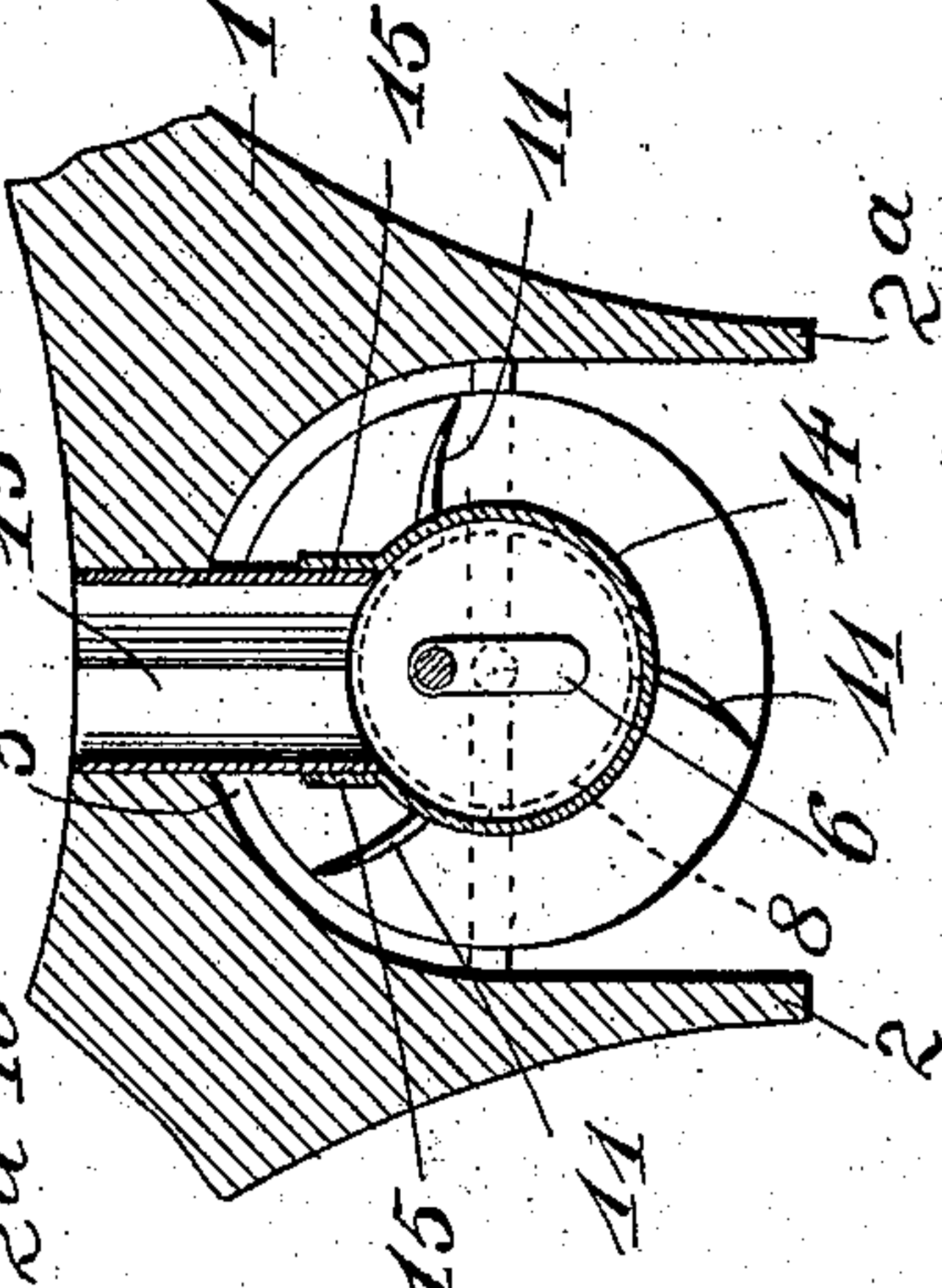


FIG. 4.

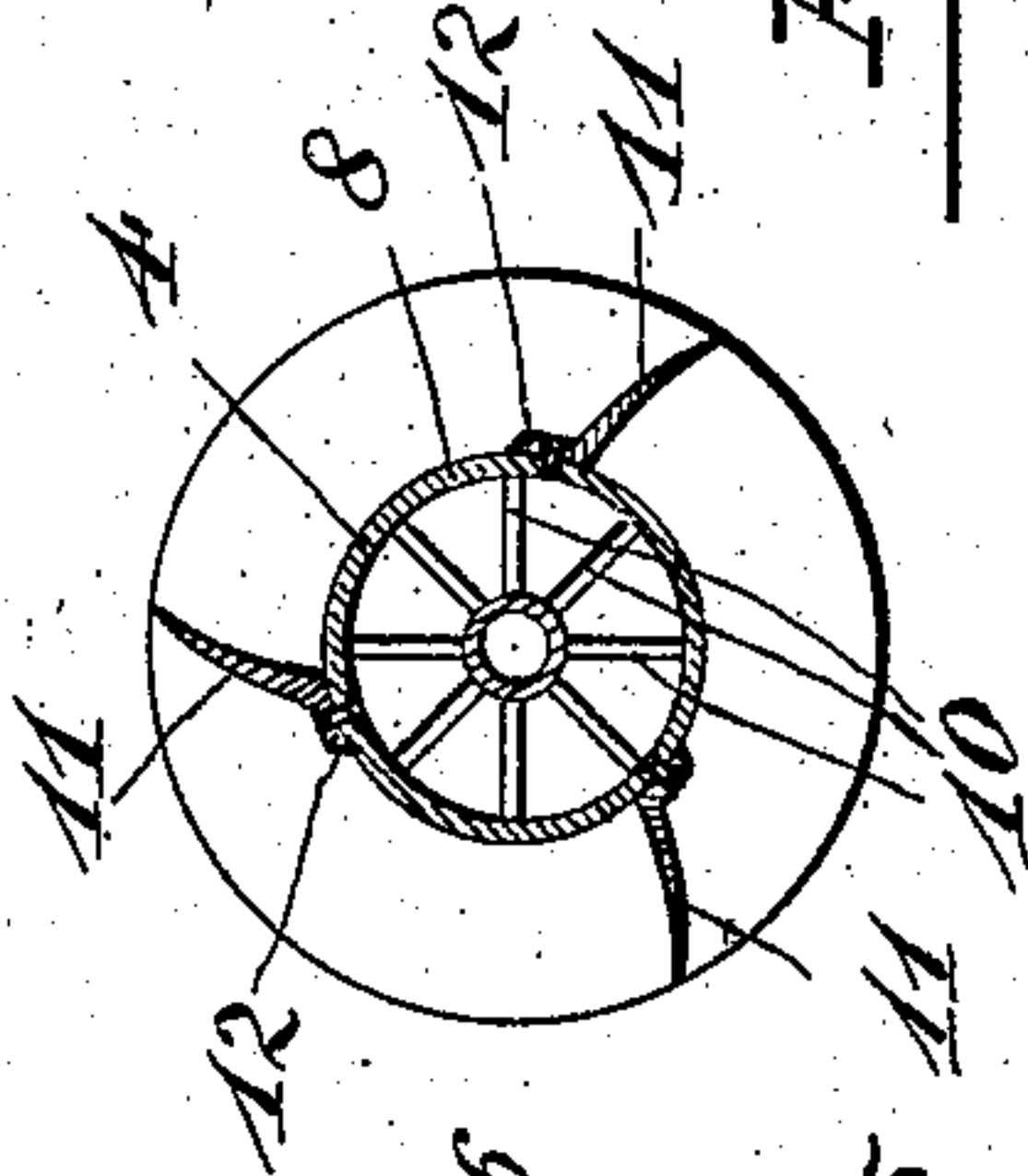


FIG. 1.

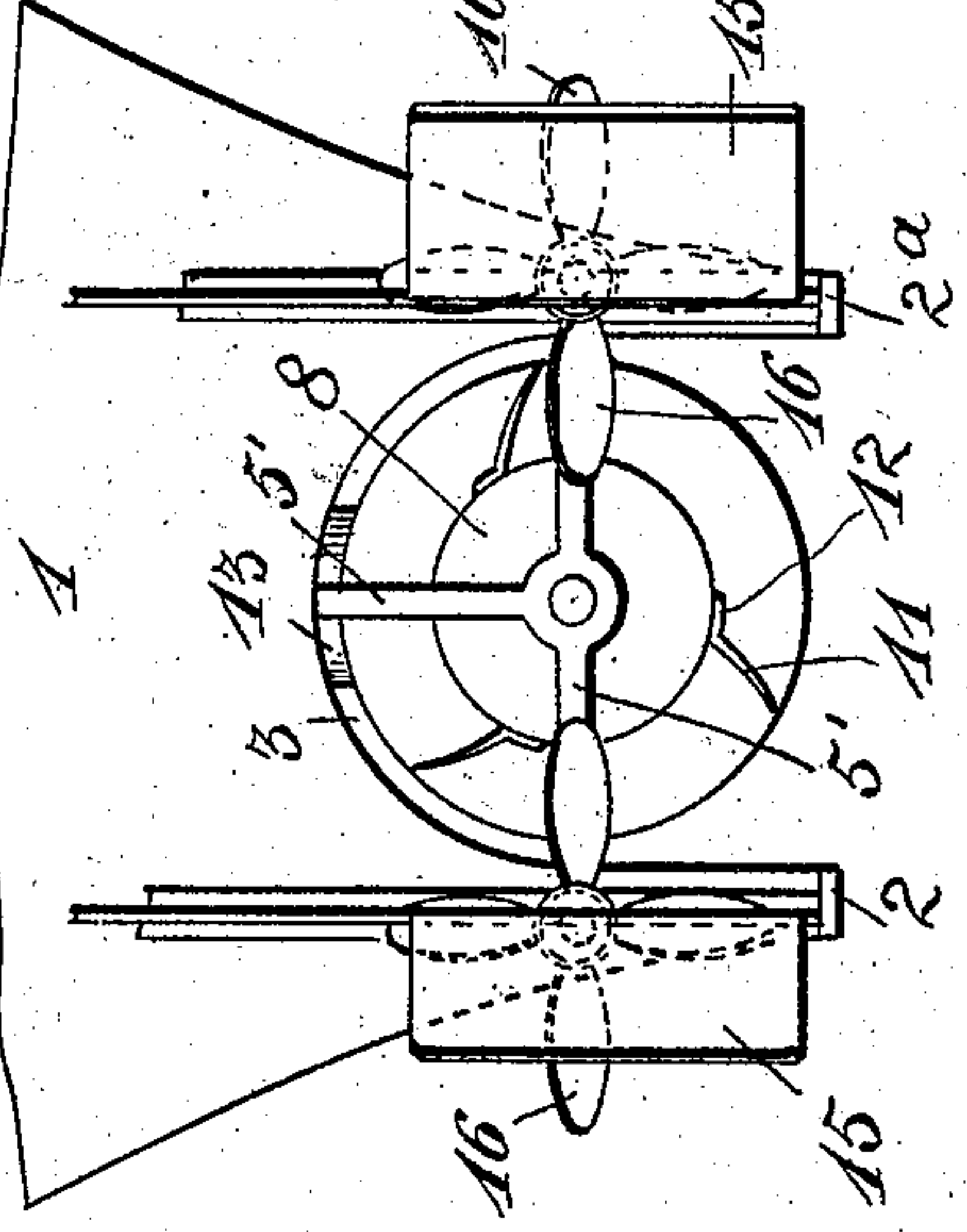
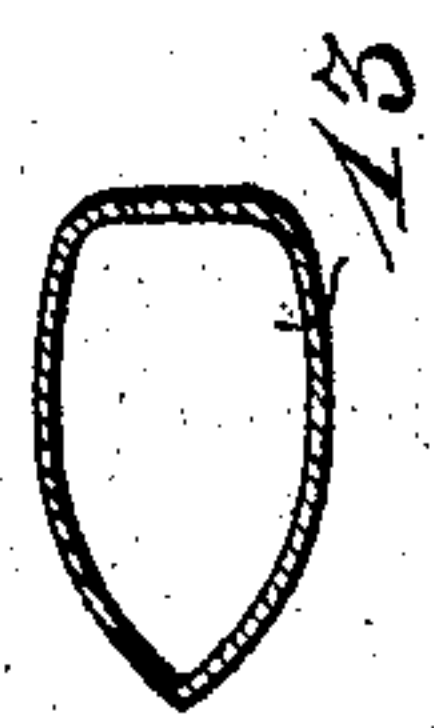


FIG. 5.



Witnesses  
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# UNITED STATES PATENT OFFICE.

ELMER K. PURVIS, OF MANCHESTER, IOWA.

## SCREW-PROPELLER.

No. 815,740.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed December 8, 1904. Serial No. 236,039.

*To all whom it may concern:*

Be it known that I, ELMER K. PURVIS, a citizen of the United States, residing at Manchester, in the county of Delaware and State of Iowa, have invented certain new and useful Improvements in Screw-Propellers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in screw-propellers for ships and in means for mounting the same.

The object of my invention is to improve and simplify the construction and operation of devices of this character, and thereby render the same more durable and efficient.

With the above and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter described and claimed.

In the accompanying drawings, Figure 1 is an elevation of the stern of a ship provided with a propelling mechanism which is constructed and mounted in accordance with my invention. Fig. 2 is a vertical longitudinal sectional view through the same. Fig. 3 is a vertical transverse sectional view taken on the line 3 3 in Fig. 2. Fig. 4 is a detail transverse sectional view through the screw-propeller on line 4 4 of Fig. 2, and Fig. 5 is a detail horizontal sectional view taken on the line 5 5 in Fig. 2.

Referring to the drawings by numeral, 1 denotes the lower portion of the body or hull of a ship or other vessel which has its keel divided into two parts 2 and 2<sup>a</sup> by a longitudinally-extending channel formed in the bottom of the hull. This channel 3, which is open at its bottom and ends, extends throughout the entire length of the ship, so that the water may pass freely through the same. Mounted centrally in said channel is a longitudinally-disposed shaft 4, which is journaled in suitable bearings provided in bracket-arms 5', which project from the top and sides of said channel. This shaft is preferably composed of a series of steel tubes 5, which are connected by solid crank portions 6 and which have solid portions 7 in their outer ends for the purpose of mounting them in the bearings upon the arms or brackets 5'. Upon said tubular sections 5 are secured cylindrical protective casings 8, the foremost one of which has its forward end ta-

pered, as at 9. These casings are watertight and are preferably secured by means of radially-extending arms or brackets 10, as seen in Fig. 4 of the drawings. Upon the cylindrical casings 8 are secured spiral screw-blades 11, which form a propeller which revolves in the channel 3. The spiral blades 11 are preferably formed with bent or molded flanges 12, which are secured to the casings 8 by rivets or the like, as seen in Fig. 4 of the drawings. Each of the crank-sections 6 of the crank-shaft 4 is disposed between two of the section-casings 8 and, as shown, consists of two cranks. These crank-sections 6 are disposed directly beneath or in line with vertically-extending wells 13, which are substantially elliptical in cross-section, as seen in Fig. 5, with their forward edge tapered or pointed to cause the same to cut the water passing through the channel 3. The driving connections for operating the shaft extend through these wells or man-holes 13, and in order to protect the cranks 6 I provide a casing 14, which has a watertight connection, as shown at 15, with the ends of the adjacent cylindrical casings 8. By reason of these casings 14 water is excluded from the wells 13, as will be seen upon reference to Fig. 2 of the drawings.

In order to steer the ship, I mount in the usual manner at the rear end of each of the keel-sections 2 and 2<sup>a</sup> rudders 15, which may be operated in any desired manner. Between these rudders and the ends of the keel-sections 2 and 2<sup>a</sup> are mounted the usual form of screw-propellers 16, which may be used in conjunction with the propeller in the channel 3 or which may be used only when the latter is rendered inoperative from any cause whatever.

The operation and advantages of my invention will be readily understood from the foregoing description, taken in connection with the accompanying drawings. A ship equipped with this propelling mechanism may be driven at a higher rate of speed than when only the stern propellers are employed, and owing to the mounting of the spiral screw-propeller in the channel 3 of the hull of the ship said propeller will be well protected and guarded.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.



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

5 A vessel having a longitudinal channel in the bottom, bearings in said channel, a shaft in said channel journaled in said bearings and having cranks at points intermediate its ends, tubular casings on said shaft, separated and spaced at the cranks and having their  
10 ends on opposite sides of the cranks closed, spiral propeller - blades on said casings, wells extending through and projecting from the

bottom of the vessel, and casings at the bottoms of the wells, communicating therewith, receiving the opposing ends of the tubular shaft-casings and incasing the cranks. 15

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ELMER K. PURVIS.

Witnesses:

E. B. STILES,  
D. C. SQUIRES.