

No. 860,126.

PATENTED JULY 16, 1907.

J. M. CAGE.
SUBMARINE BOAT.

APPLICATION FILED FEB. 21, 1906.

2 SHEETS—SHEET 1.

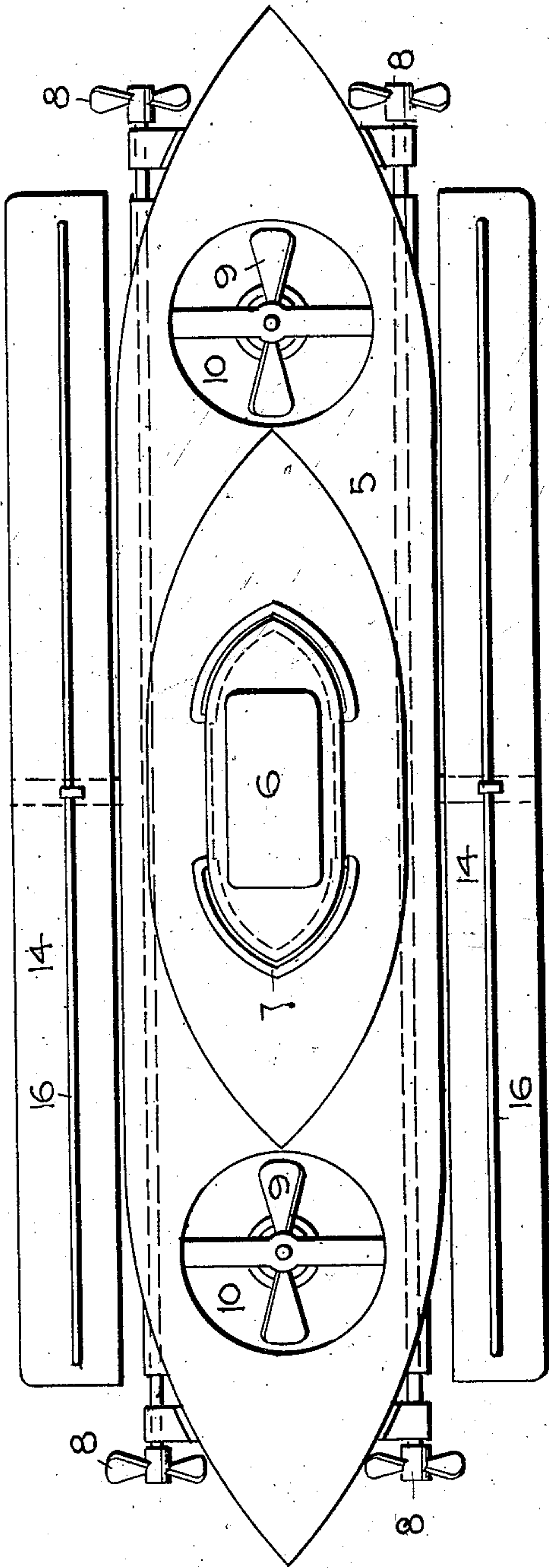


FIG. 1

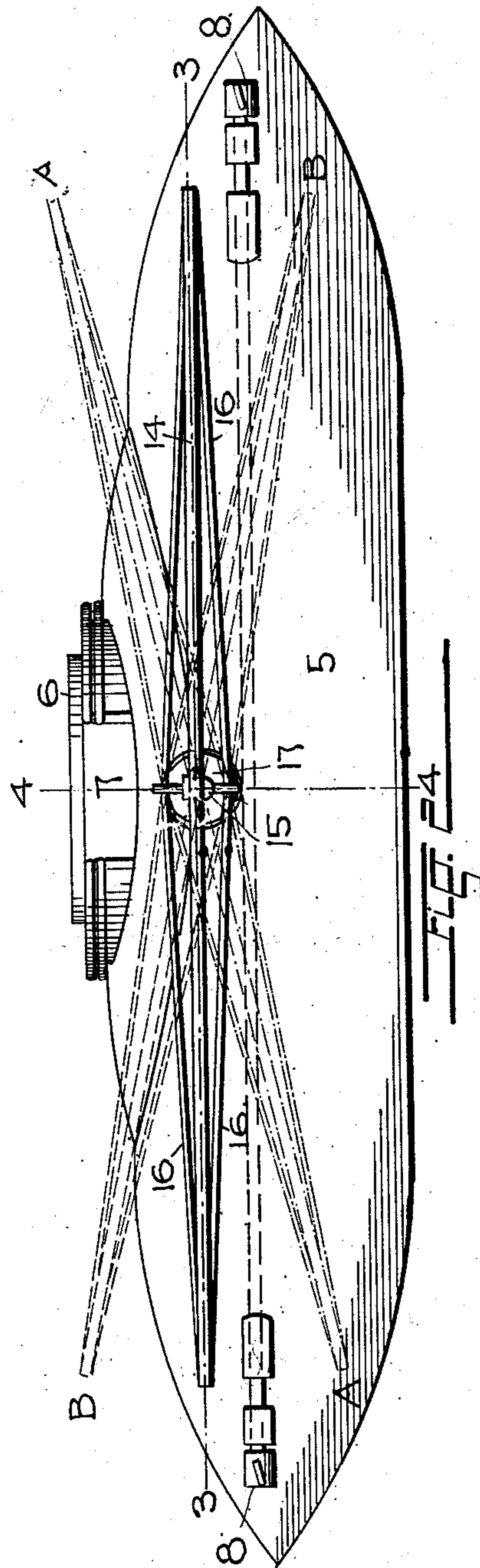


FIG. 2

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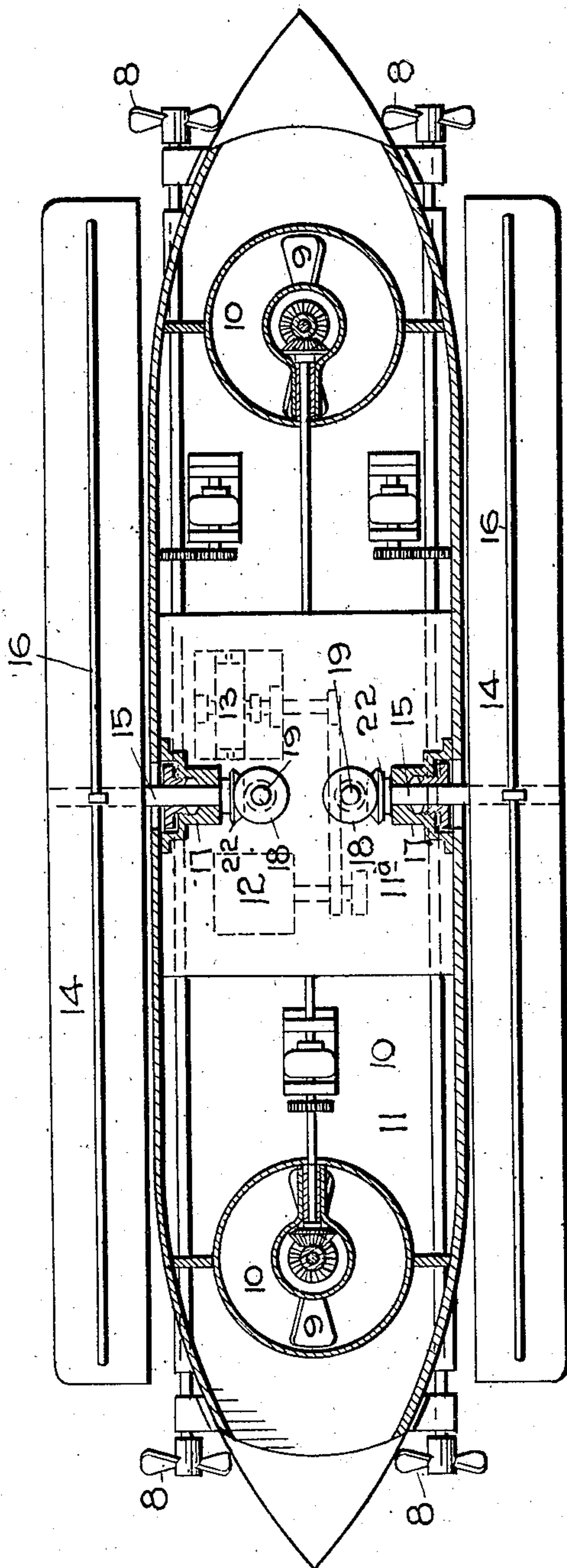


Fig. 3.

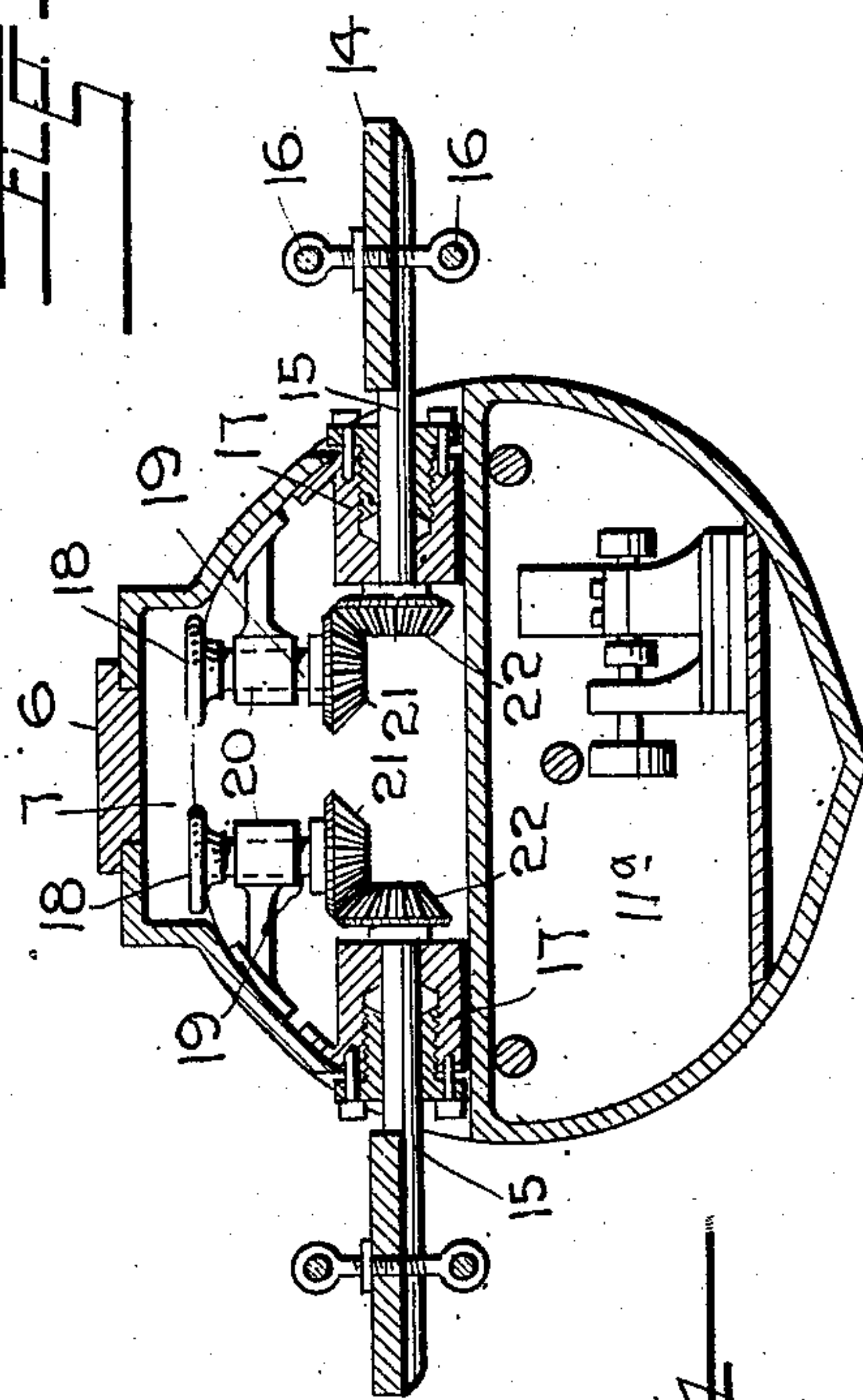


Fig. 4.

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UNITED STATES PATENT OFFICE.

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SUBMARINE BOAT.

No. 860,126.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed February 21, 1906. Serial No. 302,243.

To all whom it may concern:

Be it known that I, JOHN M. CAGE, a citizen of the United States of America, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Submarine Boats, of which the following is a specification.

This invention relates to submarine boats, its principal object being to produce simple and effective means under control of the operator by which the course of the boat in various directions may readily be governed. I attain this object by the mechanism illustrated in the accompanying drawings in the various views of which like parts are similarly designated and in which,

Figure 1—represents a plan view of a submarine boat equipped with my improved steering means, Fig. 2—a side elevation thereof, the rudders having been shown in three positions, Fig. 3—a horizontal, longitudinal section taken along a line 3—3, Fig. 2 and Fig. 4—an enlarged vertical cross section taken along a line 4—4, Fig. 2.

Referring to the drawings, 5 represents the cigar-shaped shell or hull of a submarine boat, access to the interior of which may be had by means of a normally hermetically closed hatch 6 opening in the upper surface of the conning-tower 7.

The boat may be propelled while upon or under the surface of the water by means of four screw-propellers 8, while its vertical movements are controlled by the horizontal submerging-screws 9, which are revolvably mounted inside vertical, transversely arranged funnels 10.

Both modes of propulsion have been made subjects of separate applications for patent.

The interior of the boat is divided into two compartments 11 and 11^a, which are used respectively as operating and engine rooms. The latter which is preferably located in the middle of the boat, contains the gasoline engine 12 which operates a dynamo electric machine or generator 13 by means of which the various motors employed to actuate the propelling and submerging appliances are energized.

The steering apparatus consists of two horizontal planes or rudders 14, which extend longitudinally along the sides of the boat, and are pivotally mounted thereon by means of central laterally extending shafts 15. Rudders 14 are preferably located above the longitudinal center line of the boat and are strengthened by judiciously applied truss rods 16, to enable them to withstand the pressure caused by the resistance of the water through which the boat is moved.

At the points where shafts 15 project through the sides of the vessel, stuffing boxes 17 have been applied to insure water-tight joints, the said boxes having been made sufficiently large and heavy to act as journal bearings for the shafts extending through them.

To incline the rudders in either direction, shafts 15 may be rotated by means of hand wheels 18 secured to the upper extremities of vertical shafts 19 which are revolvably mounted in suitable bearings 20 and are preferably located in the conning-tower of the boat.

The lower extremities of shafts 19 are provided with bevel gear wheels 21 which, meshing into corresponding wheels 22 secured to the inner extremities of the horizontal shafts 15, cause the latter to rotate when the hand wheels are being turned.

The operation of the rudders is simple and will be readily understood.

To submerge the vessel the rudders are inclined towards the prow of the boat (position A A, Fig. 2, so as to depress its nose and to cause it to descend, while the upward movement of the shell may be attained by reversing the position of the rudders, as shown at B B, Fig. 2.

When it is desired to turn the boat the rudder on the side towards which the vessel is to be directed, is placed in the forward inclined position and the other rudder is simultaneously tilted in opposite direction.

The planes may furthermore be employed to act as brakes when the vessel is propelled upon the surface of the water and, during submergence of the boat, they aid in supporting and retaining it at the required depth.

The switches and rheostats, as well as the various electrical connections between the motors and dynamos have been omitted from the drawings to avoid confusion.

Having thus described my invention what I claim is:—

1. In a submarine boat, the combination with the normally water tight shell, of centrally pivoted, independently movable, horizontal planes extending longitudinally along its sides pivoted at the longitudinal center of the boat.

2. In a submarine boat, the combination with a water tight shell, of horizontal planes extending longitudinally along its sides and arranged to be revolved in opposite directions irrespective of the direction of movement of the boat and the propeller shafts.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN M. CAGE.

Witnesses:

G. J. ROLLANDET,
K. M. STUMP.