

H. C. BERRY.
SCREW CYLINDER BOAT.
APPLICATION FILED AUG. 8, 1911.

1,041,232.

Patented Oct. 15, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

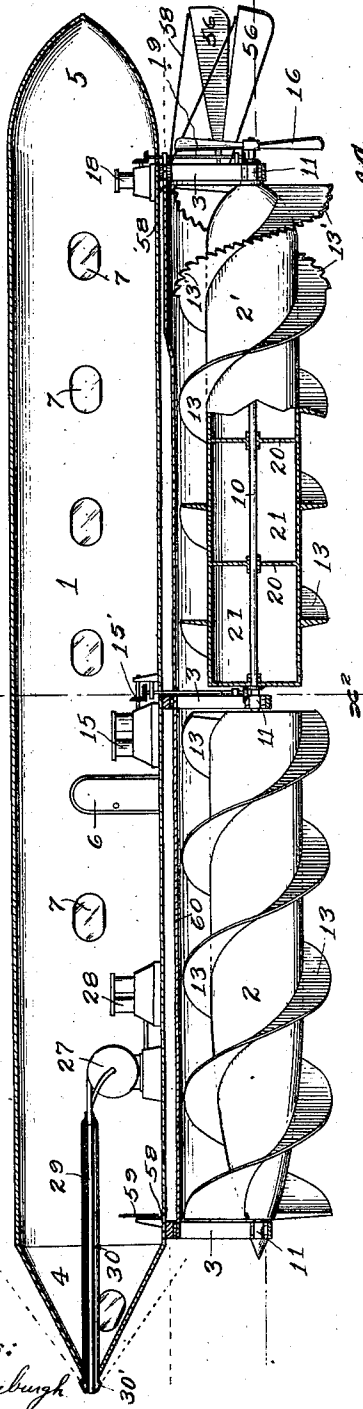


Fig. 4.

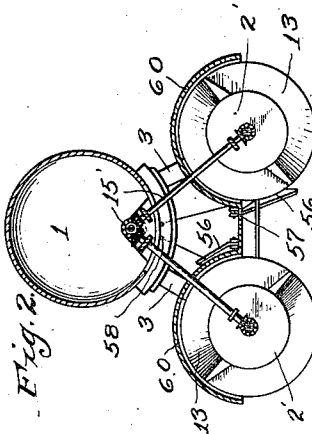
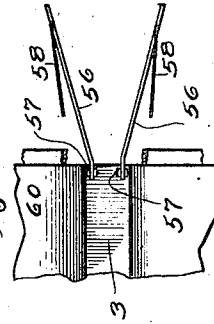


Fig. 4.

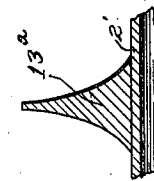
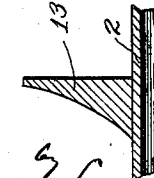


Fig. 3.



Witnesses:

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Sully Russo

Inventor:

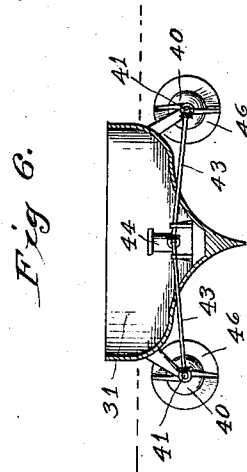
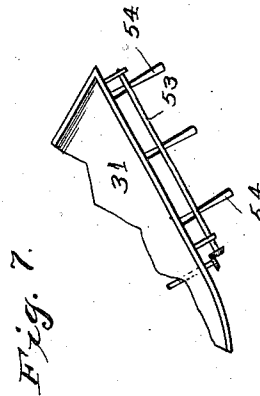
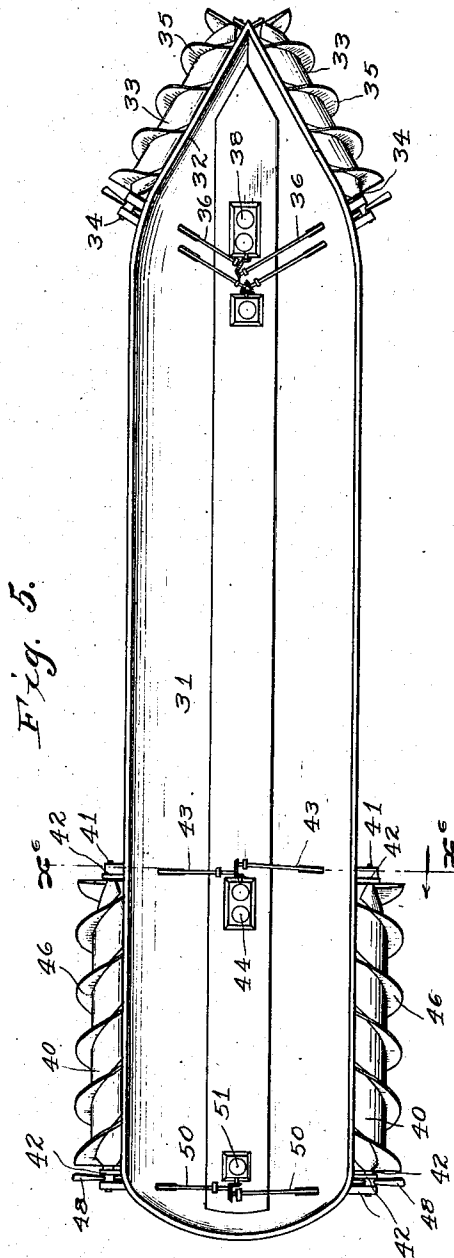
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

HARRY C. BERRY, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO THE RAPID TRANSIT NAVIGATION COMPANY, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

SCREW-CYLINDER BOAT.

1,041,232.

Specification of Letters Patent.

Patented Oct. 15, 1912.

Application filed August 8, 1911. Serial No. 643,044.

To all whom it may concern:

Be it known that I, HARRY C. BERRY, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Screw-Cylinder Boat, of which the following is a specification.

This invention relates to power operated boats, and the main object of the invention is to provide means for sustaining and operating the boat in such manner that the resistance to its forward movement will be reduced to a minimum, and maximum speed will be obtained.

A further object of the invention is to provide for eliminating the head-on resistance of the air as well as the water in order to enable maximum speed to be attained.

Other objects will appear hereinafter.

The accompanying drawings illustrate the embodiments of the invention, and referring thereto: Figure 1 is a vertical section of the boat. Fig. 2 is a section thereof on line x^2-x^2 in Fig. 1. Figs. 3 and 4 are sectional views showing different forms of the spiral propeller blades for the screw cylinders. Fig. 4^a is a plan view of the rudder devices and their supporting means. Fig. 5 is a plan of another form of the invention. Fig. 6 is a vertical section on line x^6-x^6 in Fig. 5. Fig. 7 is a partial plan of another form of the invention.

Referring to Figs. 1 and 2, the boat comprises a body or hull 1, and screw cylinders below and at either side of the center of said hull and connected thereto by frames 3, said screw cylinders being hollow and acting as buoys or floats as well as propeller means.

The body or hull 1 may be tubular or cylindrical in form with a conical forward end portion 4, and a convergent stern portion 5 and may be provided with one or more doors 6 for entrance or exit, and with windows or port holes 7. It is preferred that the flotation power of the screw cylinders 2 should be sufficient to maintain the body or hull 1 out of the water at all times so that the only resistance to propulsion of the body or hull is that offered by the air.

The screw cylinders may be formed in sections comprising, for example, a forward section 2 and a rear section 2' at each side, the forward and rear sections 2 and 2' being in axial alinement and mounted on the same shaft 10, there being a shaft 10 at each side

of the boat mounted in bearings 11 on the frame 3. I prefer to provide a forward bearing at the front of the forward section an intermediate bearing between the two sections and a rear bearing aft of the rear section. Screw propeller ribs or fins 13 are provided on the cylinders 2 and 2' extending in a continuous helix from the forward to the rear end of each cylinder section. These ribs may be curved on one or both faces as shown in Figs. 3 and 4, Fig. 3 showing the rib 13 with only one face curved and Fig. 4 showing the rib 13^a with both faces curved. The forward cylinder section is convergent or tapered in conical form at its front end, and the rear portion of the rear cylinder section 2' is also convergent or tapered at its rear end so as to diminish the resistance of the water where it contacts with and leaves the cylinder sections. The two screw cylinder members at the respective sides of the boat are driven by any suitable power plant consisting, for example, of a motor 15 connected by transmission means 15' to the respective shafts 10 so as to drive the screw cylinders in such manner that the reaction of the screw ribs 13 on the water forces the boat forward. Additional driving effect may be secured by propellers 16 rotatably mounted on the shafts 10 at the rear end thereof and driven from an auxiliary motor 18 through transmission means 19.

The screw cylinders 2 and 2' are preferably provided with internal partitions 20 dividing the same into water tight compartments 21 so as to reduce the danger of sinking in case of injury thereto.

In addition to the above described means for eliminating the head-on resistance of the water, I may provide means for eliminating the head-on resistance of the air on the upper portion or body of the boat, said means consisting of a blower 27 operated by a motor or driving means 28 and having its intake connected to a suction pipe 29 leading forwardly to the apex of the bow of the body 1, and the outlet of said blower or fan being connected to a pipe 30 leading forwardly and terminating at the apex of the bow in the nozzle 30' surrounding the inlet opening of the intake pipe 29 and opening rearwardly in cone shape, so that by operation of the blower air is continuously drawn in through said inlet and is forced

out through said outlet in a stream extending in the form of a rearwardly divergent sheet or cone around the conical forward end of the body 1, and removing the air 5 from in front of the body so as to eliminate resistance of the air to the passage of the body therethrough.

The form of invention shown in Figs. 5 and 6 comprises a boat body 31 having a 10 tapered bow portion 32, with hollow screw cylinders 33 mounted on shafts 34, journaled alongside of the converging sides of the bow of the boat, said screw cylinders 33 being provided with helical propeller ribs 35 and 15 being driven by transmission connections 36 from an engine 38 in the boat body 31, so as to force the water rearwardly at each side of the bow and suck it from in front of the vessel. In this form of the invention the 20 body 31 may be more or less submerged and the function of the screw cylinders 33 in addition to sustaining a part or all of the load and propelling the boat forward, is to force the water from in front of the vessel 25 so as to reduce to a minimum the head-on resistance. Screw cylinders 40 are also provided at the rear of the stern of the boat body 31, being mounted on shafts 41 journaled at each side of such portion of the 30 boat body, on bearings 42 and connected by transmission means 43 to an engine 44. These rear screw cylinders 40 are provided with helical ribs 46 so that in their rotation, a propulsive effect will be produced on the 35 boat. Auxiliary propelling devices may be employed, consisting of screw propellers 48 rotatably mounted on the shafts 49 aforesaid, and connected by transmission means 50 to engines 51 for rotation thereof.

The screw cylinders are preferably of sufficient size and flotative capacity to sustain the boat body with its load, in case of injury to the body. If desired, however, these cylinders may be made of small diameter, 45 and as shown in Fig. 7, they may be formed as shafts 53 carrying propeller blades 54, for forcing the water away from in front of the vessel and propeling the vessel.

The operation is as follows: The several 50 motive devices being set in operation, the screw cylinders 2 and 2' are rotated preferably in such manner as to turn inwardly at their lower or submerged portions, the helical ribs being so arranged that in this rotation reaction is produced on the water, tend- 55 ing to drive the vessel forward. As this driving action is exerted continuously throughout the length of the screw cylinders, the resistance to the forward movement is 60 eliminated along such cylinders, and the full

effect of the power is obtained in propelling the vessel. The vessel may be operated with partial submersion of the screw cylinders, as indicated by the full line water level in Fig. 1, but if desired the cylinders may be fully 65 submerged, as indicated by the dotted lines of water level in said figure, and in that case the auxiliary propellers 16 may be employed, said propellers being driven at higher speed than the screw cylinders. When operating 70 in this manner, the function of the screw cylinders is to eliminate the resistance of the water to the passage of the boat there-through.

The screw cylinder ribs may have projec- 75 tions or extensions 13' forming propeller blades, see Fig. 1, for giving additional propelling effect. These projections may extend over only the rear end portion of the ribs, as shown, or they may extend through- 80 out any desired portion of the length of the ribs.

For steering the boat, rudders 56 may be pivoted at 57 on a part of frames 3, to swing 85 in vertical planes, said rudders extending at an angle to the longitudinal axis of the boat, in such manner that they are rearwardly divergent. Said rudders are connected by 90 cables 58 to a steering wheel 59, so that the rudders are operated reversely, either rudder being drawn up as the other is lowered into the water. Normally both rudders are out of the water so that they oppose no resistance to the forward motion of the boat, 95 and when the boat is to be deflected to either side, the steering wheel is operated to lower the rudder on that side into the water. A wheel box or cover 60 may be provided on frame 3, extending over the screw cylinders, to reduce the splash. 100

What I claim is:—

The combination of a boat body, a plurality of cylinders extending at each side of the center line of said body and below said body, said cylinders being hollow to adapt 105 them to serve as floats for the body, helical propeller ribs on the outside of said cylinders, means for rotating said cylinders to propel the boat, said cylinders having tapered forward ends, a propeller at the rear 110 end of each cylinder, mounted to rotate independently of said cylinder, and means for driving said propeller.

In testimony whereof I have hereunto set my hand at Los Angeles, California, this 115 2nd day of August, 1911.

HARRY C. BERRY.

In presence of—

ARTHUR P. KNIGHT,
GLADYS RUSSELL.