(No Model.) 3 Sheets—Sheet 1.

C. H. SCHULTZ, Jr.

OUTBOARD PROPELLER SHAFT FOR VESSELS.

No. 526,751. Patented Oct. 2, 1894.

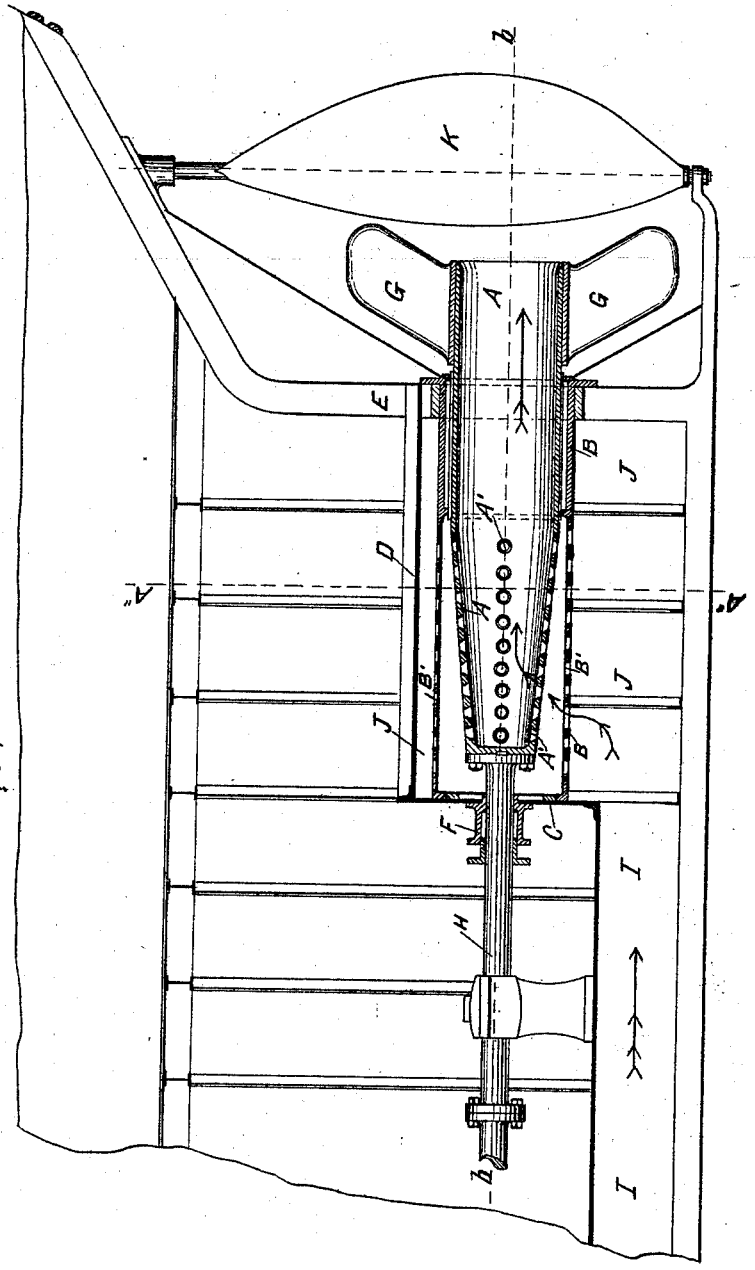

FIG. 1.

WITNESSES:

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(No Model.) 3 Sheets—Sheet 2.

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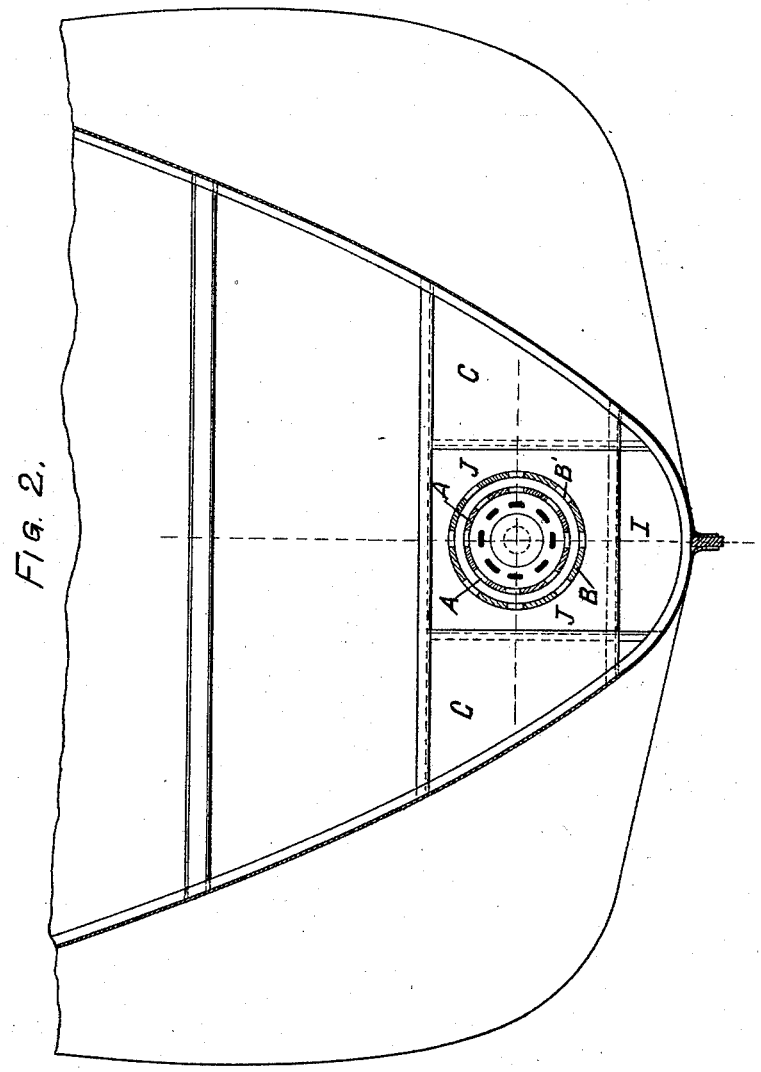

FIG. 2.

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(No Model.) 3 Sheets—Sheet 3.

C. H. SCHULTZ, Jr.

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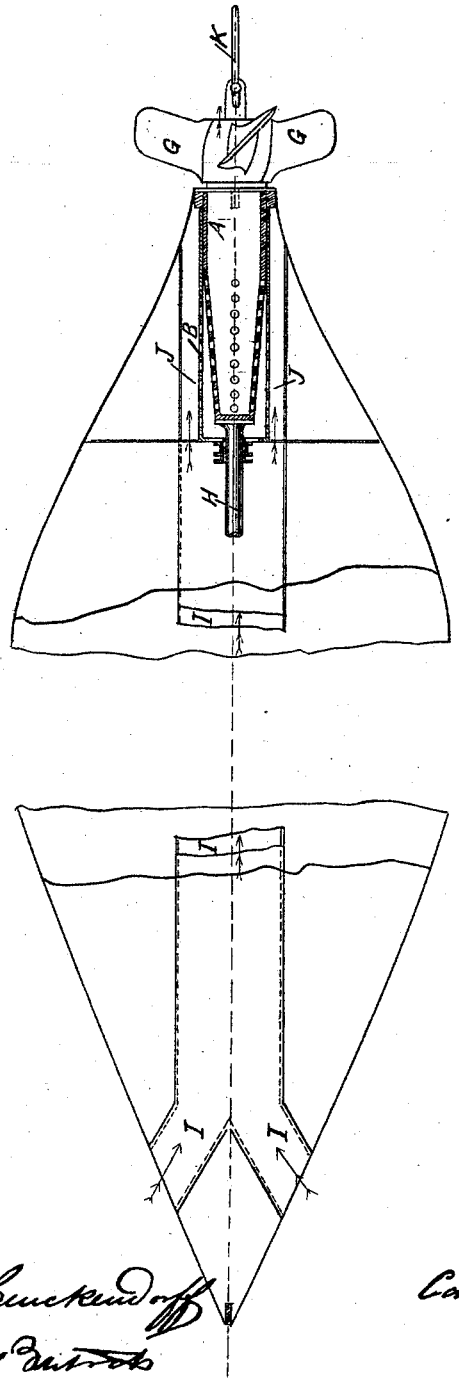

FIG. 3.

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Carl Henry Schultz Jr.

UNITED STATES PATENT OFFICE.

CARL HENRY SCHULTZ, JR., OF MURRAY HILL, NEW JERSEY; CARL H. SCHULTZ ADMINISTRATOR OF CARL HENRY SCHULTZ, JR., DECEASED.

OUTBOARD PROPELLER-SHAFT FOR VESSELS.

SPECIFICATION forming part of Letters Patent No. 526,751, dated October 2, 1894.

Application filed October 12, 1893. Serial No. 487,943. (No model.)

To all whom it may concern:

Be it known that I, CARL HENRY SCHULTZ, Jr., a citizen of the United States, and a resident of Murray Hill, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Outboard Propeller-Shafts for Propellers for Vessels, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a longitudinal, vertical section of the after part of a vessel, containing said invention. Fig. 2 is a vertical cross-section on the line A''—A'' Fig. 1. Fig. 3 is a plan view, partly in section, of said vessel, the line *b*—*b* Fig. 1 indicating the plane of section.

This invention relates to improvements in outboard propeller shafts and propellers for vessels, its principal object being so to construct a screw propeller that when it is in motion and the vessel advancing, the drag or suction of that central part of the wheel which is non effective in propelling, may be neutralized.

The invention consists of the new construction of propeller-shaft and of the novel combinations of parts hereinafter more fully pointed out.

In Figs. 1 and 2, A represents a hollow propeller shaft having propeller blades G, G, secured thereto.

A' A' are perforations in the hollow propeller shaft equal about in area to the cross-sectional area of the hollow shaft.

B is an outboard bearing pipe secured to the stern-post E and athwartship-bulkhead C.

B' B' are perforations in this outboard bearing pipe (equal about in area to cross-sectional area of hollow shaft) to allow water to pass through it from the receiving chamber J to the hollow shaft A.

F is a stuffing box on athwartship bulkhead C, receiving chamber J, and driving crank shaft H.

I is a hollow box kelson to convey water from the forward part of the vessel to the receiving chamber J (one or more pipes may be used to convey the water from the sea to the receiving chamber aft instead of a box kelson), and the openings for admitting the water may be made anywhere forward of the receiver most suitable to the form of the vessel.

The outboard shaft A is formed as a tube or pipe having a torsional strength equal to the solid driving crank shaft. The outer end of this shaft carries the propeller blades G, of a diameter and pitch suitable to efficiently propel the vessel.

The perforations A' are formed in the inboard part of the tubular propeller shaft A, and have an aggregate area equal about to the cross sectional area of the internal diameter of the tubular shaft. The perforated inboard part of the shaft A is made tapering, and is formed with a solid end, and is coupled to a coupling on the solid crank-driving-shaft H in the usual manner. At a sufficient distance forward of this coupling is placed athwart ship the bulkhead C carrying the shaft stuffing box F.

The bearing pipe B on its after end is secured to the stern post E and is carried internally forward to the shaft-stuffing-box bulkhead C to which it is secured. Between the stern bearing and the bulkhead this pipe is perforated with openings B' equal about to the cross sectional area of the opening in the outboard propeller shaft. Above the stern bearing pipe is a horizontal plate D attached to the shaft stuffing box bulkhead C, also to the skin of the vessel so as to form a chamber J around the stern bearing pipe B or the outboard tubular shaft A, which chamber is water-tight in the sense that it prevents the water from obtaining access to the interior of the hull. To this chamber J are connected pipes or a box kelson I made so as to form an open connection forward through the hull of the vessel to the receiving chamber J aft. Thus when the vessel moves forward by the motion of the propeller wheel, a continuous current of water can flow from the forward part of the vessel (under the water line) aft to the chamber J, thence through the stern bearing tube B and out through the end of the tubular outboard pro-

peller shaft A, preventing any suction or drag as the vessel is propelled through the water.

I claim—

1. A screw propeller having a tubular or hollow outboard shaft, provided with perforations through the shell or walls thereof, to permit a current of water to flow through it outboard aft, so as to prevent a suction or drag when the vessel is in motion, substantially as shown and described and as herein set forth.

2. A screw propeller having a tubular or hollow outboard shaft provided with perforations through the shell or walls thereof, in combination with a perforated outboard bearing pipe, substantially as shown and described and as herein set forth.

3. A screw propeller having a tubular or hollow outboard shaft, provided with perforations through the shell or walls thereof, in connection with a perforated outboard bearing pipe, in combination with a surrounding chamber or jacket having a pipe or channel connected forward from the chamber through the hull of the vessel to supply the chamber with water from the sea, substantially as shown and described and for the purpose as herein set forth.

4. A screw propeller having a tubular or hollow outboard shaft provided with perforations through the shell or walls thereof, in combination with a chamber or jacket surrounding the same and having a pipe or channel connected forward of the chamber with the sea, substantially as shown and described and for the purpose as herein set forth.

Signed at city of New York, in the county of New York and State of New York, this 11th day of October, A. D. 1893.

CARL HENRY SCHULTZ, JR.

Witnesses:
CHAS. HEUCKENDORFF,
WILLIAM BRITSCH.