No. 722,572. PATENTED MAR. 10, 1903.

J. A. FEHLMAN.

SCREW PROPELLER.

APPLICATION FILED APR. 5, 1901.

NO MODEL.

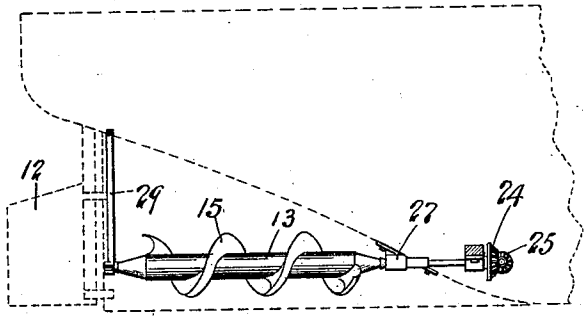


Fig. 2.

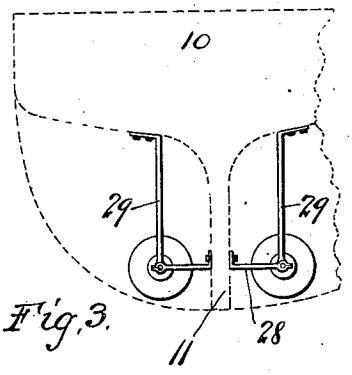


Fig. 3.

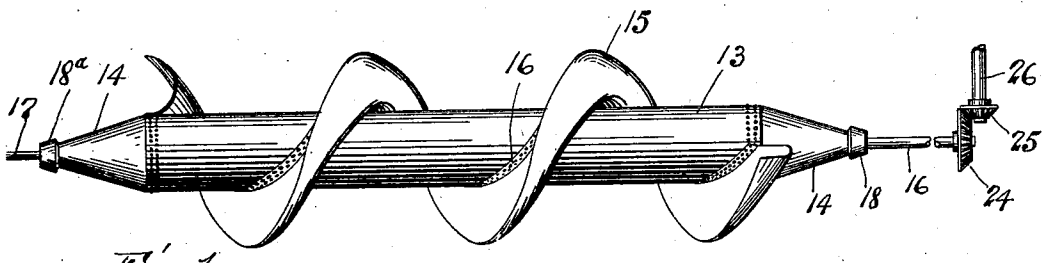


Fig. 1.

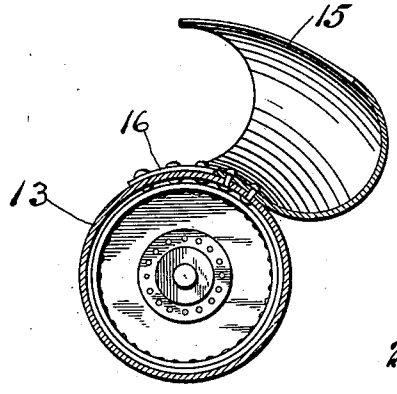


Fig. 4.

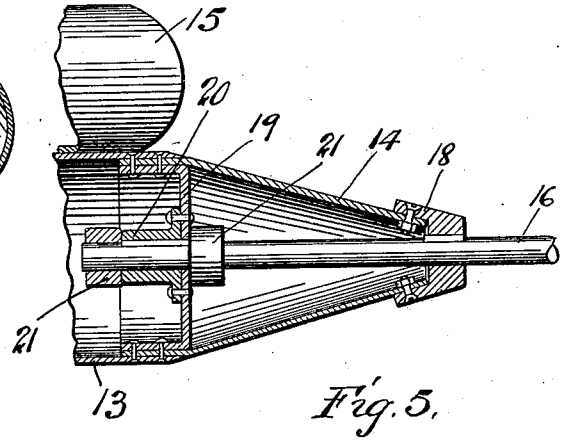


Fig. 5.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN A. FEHLMAN, OF CROWNPOINT, INDIANA.

SCREW-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 722,572, dated March 10, 1903.

Application filed April 5, 1901. Serial No. 54,488. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. FEHLMAN, a citizen of the United States, and a resident of Crownpoint, county of Lake, and State of Indiana, have invented certain new and useful Improvements in Screw-Propellers, of which the following is a specification and which are illustrated in the accompanying drawings, forming a part thereof.

My invention relates to boat-propellers, and has for its object to improve the construction of continuous screw-propellers and to provide one which shall be capable of securing the best results with the minimum expenditure of power.

The invention comprises, in general terms, a buoyant propeller-shaft or air-tight cylindrical body having a spiral blade which is concave or semicircular in cross-section, substantially as will be hereinafter described, and particularly pointed out in the claim.

The embodiment of the invention is shown in the accompanying drawings, in which—

Figure 1 is a side elevation of a continuous screw-propeller constructed in accordance with my invention. Fig. 2 is a side elevation, and Fig. 3 a rear elevation, of the stern of a vessel, illustrating the manner of mounting the propeller. Figs. 4 and 5 are details, on an enlarged scale, of the propeller.

The propeller-shaft 13 is in the form of a cylinder and has its ends closed by tapering or conical heads 14. This construction of the shaft provides an air-tight or buoyant body capable of supporting its own weight, thereby relieving the propeller-bearings of undue friction and the vessel of the load of the propeller, and the conical heads 14 enable the hollow shaft to travel through the water in either direction without undue resistance.

The propeller-blade 15 is wound spirally around the buoyant shaft 13 between the bases of the conical heads 14 and is secured in place by riveting or other means. In the present instance the blade is provided with a flange 16 at its inner edge, through which it is secured to the body of the propeller-shaft by rivets. The blade 15 is continuously concave in the direction of its length, which construction avoids the churning or throwing outwardly of the water by the blade, as is the case with propellers of the ordinary construction or those having straight blades, and enables the blade to act against an unbroken mass of water whereby to utilize to the greatest extent the power for driving the vessel.

Preferably the blade makes approximately three convolutions around the shaft between its ends, although I do not confine myself to any particular measurements, as it may be found that better results can be obtained by decreasing or increasing the length of the blade.

The buoyant propeller-shaft 13 is centered on the two short solid shafts 16 and 17, entering the hollow shaft at opposite ends through the flanged journal-caps 18 and 18^a, bolted through their flanges to the conical heads 14, as illustrated in Fig. 5, the inner end of each of the shafts being passed through an internal strengthening-brace 19, located near each end of the buoyant shaft 13 and bolted to the wall thereof.

Each of the braces 19 has a hub 20, in which the inner ends of the shafts 16 and 17 are carried, which shafts are held against longitudinal movement in the cylindrical shaft by the collars 21, secured to the solid shafts at the opposite sides of the hubs 20 and against axial movement by keys in the hubs 20 and the caps 18, respectively.

Figs. 2 and 3 illustrate the manner of mounting the propellers, 10 indicating the stern of a vessel, 11 the dead-wood, and 12 the rudder.

Preferably I employ the propellers in pairs, as illustrated in Fig. 3, locating one at the stern of the vessel under the overhang at each side of the dead-wood, the shaft 16 of each of the propellers having a beveled gear 24 keyed thereto, which meshes with and is driven by a beveled gear 25, carried by a common driving-shaft 26. Increased leverage may be secured by making the gear 24 larger than the driving-gear 25, as will be readily understood.

The tapering journal-caps 18 of the cylindrical shafts 13 are mounted in journal-bearings 27, secured to the bottom of the vessel, and the pair of shafts employed with each vessel are connected and stayed at their outer ends by a cross-bar 28 and supported from the hull by the rods 29, the tapering journal-caps 18^a at the outer end of the shafts 13 being entered in journals in the supporting-rods.

I do not wish to confine myself to exact dimensions; but it is believed that the best results may be secured by making the propellers about one-sixth that of the length of the vessel to be driven thereby—that is to say, for a vessel three hundred feet long the propellers should be about fifty feet in length and the diameter of the cylindrical shafts and width of the blade proportioned accordingly. If desired, two or more blades may be employed instead of one, as illustrated.

I claim as my invention—

In a screw-propeller, in combination, a buoyant cylindrical body or shaft having conical heads, a longitudinally-concaved blade extending spirally around the shaft and making a plurality of turns between its ends, a tapered journal-cap secured to each of the heads, a brace located in the cylindrical shaft near each end, a shaft entering into and secured in the journal-cap and the brace, and journal-bearings adapted to be secured to the hull of a vessel to receive the journal-caps.

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