P. N. HICKS.

SHIP PROPELLING APPARATUS.

APPLICATION FILED JULY 21, 1916.

Patented Sept. 4, 1917.

1,239,009.

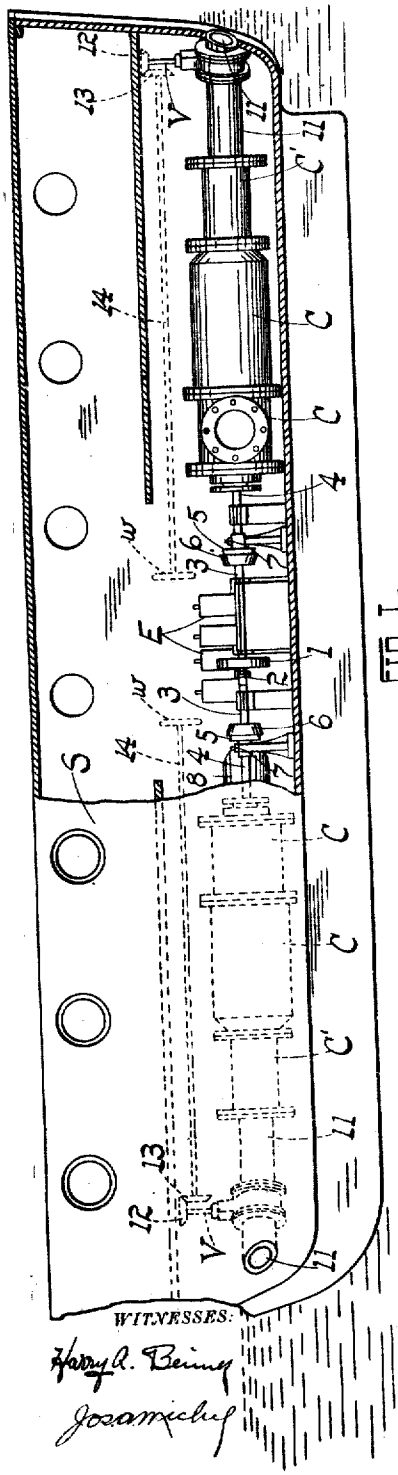


FIG. 1.

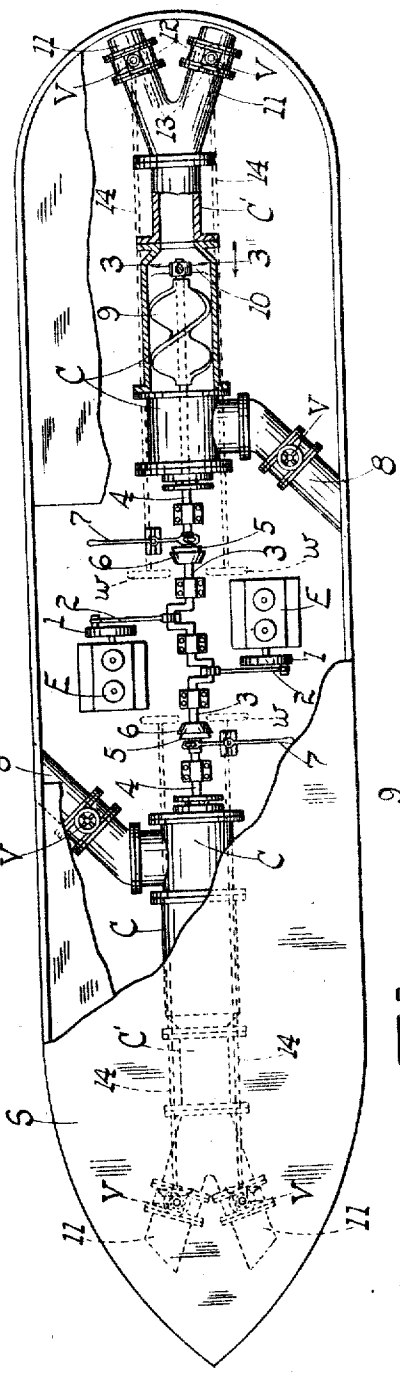


FIG. 2.

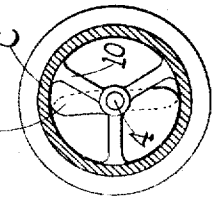


FIG. 3.

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SHIP-PROPELLING APPARATUS.

1,239,009. Specification of Letters Patent. Patented Sept. 4, 1917.

Application filed July 21, 1916. Serial No. 110,55

To all whom it may concern:

Be it known that I, PRESLEY N. HICKS, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Ship-Propelling Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in ship-propelling apparatus; and it consists in the novel features of construction more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of a ship with the near side partly broken away, showing my propelling apparatus in side elevation; Fig. 2 is a top plan with flooring partly removed; and Fig. 3 is an enlarged vertical cross-sectional detail on the line 3—3 of Fig. 2.

The present improvement is an improvement on the ship-propelling apparatus forming the subject-matter of U. S. Letters Patent numbered 665,785 issued to me under date of January 8, 1901; and while contemplating the several objects and possessing the various advantages of the patented construction, the improvement herein dispenses with the reciprocating types of engines and plunger cylinders indentified with the former construction, there being employed in lieu thereof suitable internal screw propellers under constant rotation in their cylinders whereby a uniform speed may be imparted to the ship. Among the objects sought may be mentioned (1) the locating of the screws where they will be free from all obstructions, thereby protecting the same from ice, drifts, floating objects and the like; (2) the economizing of room; (3) the reduction in weight of machinery; (4) gain in efficiency over the patented propelling apparatus; (5) ready control over the actuating parts, and (6) to provide further and other features of construction, the advantages of which will be readily apparent from a detailed description of the invention which is as follows:

Referring to the drawings, S represents a ship of any type whatsoever. Located centrally thereof are suitable gas or equivalent engines E, E, which through suitable crank-disks 1, and connecting rods 2, impart rotation to the drive or crank-shaft 3 disposed longitudinally and preferably on the center line of the keel of the ship. Disposed at each end of the crank-shaft 3 and in alinement therewith, are propeller shafts 4, 4, the inner ends whereof are provided with sliding clutch members 5, 5, coöperating with the complementary clutch members 6, 6, on the shaft 3, the said sliding members being controlled by clutch-levers 7 as well understood in the art. Each shaft 4 traverses a cylinder C preferably composed of two sections, the inner section having leading therefrom a feed branch or pipe 8 opening through the side of the ship below the water line, said branch being provided with a sea valve V preferably of the gate variety. The branches 8, 8, are disposed in parallelism and at an incline to the longitudinal axis of the ship, and on opposite sides of the ship (Fig. 2), the direction of inclination of the branches being toward the transverse axis of the ship.

Passed over and secured to each shaft 4 in the outer section of each cylinder C, is a screw 9 of the double-twist auger type, the outer end of the shaft beyond the screw being supported in a central bearing of a spider 10 secured to or cast with the cylinder. Bolted or otherwise secured to the outer end of each cylinder C is an extension C′ (of which there may be one or more) to which is in turn bolted the Y-shaped pipe 11, the branches or legs of which are disposed on opposite sides of the longitudinal central vertical plane of the ship, and which discharge below the water line through the sides of the ship. Each leg is provided with a sea-valve V the stem of which may be provided with a bevel pinion 12 meshing with a similar pinion 13 at the outer end of a controlling rod 14 actuated by a hand-wheel *w* within easy reach of the operator.

The operation will be readily apparent from the foregoing description and is substantially as follows: The engines or motors E being started, rotation is imparted to the crank shaft 3, after which by the proper manipulation of the clutch levers 7, either shaft 4 may be coupled to said crank-shaft. This in turn imparts rotation to the screw 9, the latter drawing in the water through the side branch or leg 8 (the valve V whereof is open) and forcing it out through one or both of the branches of the Y pipe 11. By way of example we may assume (Fig. 2)

that the rear (or right-hand) shaft 4 and its screw 9 are rotating, the current being driven out of the legs of the rear Y pipe 11. If the valves V of both legs of the Y pipe are open to the same degree so that the streams discharged from the legs are equal in volume and intensity, the ship will be propelled in a straight or direct line; but should one of the valves be wholly or partially closed, the ship in its forward movement will likewise be swung to one side in response to the more powerful jet or stream issuing from one of the legs of the Y pipe. It follows therefore that the steering of the ship may be brought about by a proper manipulation of the valves of the terminal Y pipes. To drive the ship backward, the rear screw-shaft 4 is disengaged from the crank-shaft and the front shaft 4 is coupled thereto, as must be obvious from the drawings, the direction of rotation of the crank-shaft being in no wise disturbed, and a reversal of the engines being unnecessary.

The screw 9 being confined in a cylinder does not dissipate its power as is the case of an exposed screw; and being protected from floating objects, drift-wood and the like, cannot have its motion interfered with in any way, and thus tends toward maximum efficiency. In particulars not herein alluded to, the present improvement is not unlike the patented propeller aforesaid, the propulsion of the ship being brought about by a column or stream of water impinging against the mass of the water on which the ship floats.

The several mechanical parts are herein shown more or less conventionally, as so far as my invention is concerned I am not restricted to the use of any particular make of motor, screw, valves, or other details herein shown, it being within the purview of the skilled mechanic to employ any type of mechanical devices known to the art.

Having described my invention, what I claim is:

1. A ship-propelling apparatus comprising, in combination with a ship, a drive-shaft disposed longitudinally of the ship, screw-shafts beyond each end thereof adapted to be individually coupled thereto, cylinders traversed by said screw-shafts, valve-controlled feed branches leading from the cylinders through the sides of the ship and disposed on opposite sides of the ship, Y-shaped terminals leading from the cylinders and discharging through the walls of the ship on each side of the longitudinal central line of the ship, valves for the branches of said Y-shaped terminals, and means for controlling said valves.

2. In combination with a ship, a centrally and longitudinally disposed drive-shaft, screw-shafts alined therewith at opposite ends thereof, means for coupling the respective screw-shafts to the drive-shaft, cylinders traversed by the screw-shafts, screws on the screw-shafts operating in the cylinders, valve-controlled, parallel feed-branches leading from the cylinders through the sides of the ship, said branches being inclined to the longitudinal axis of the ship and pointing toward the drive-shaft, and disposed on opposite sides of the ship, Y-shaped terminal discharge pipes leading from the cylinders at points beyond the screws, the branches of said terminals discharging a column of water on either side of the longitudinal axis of the ship, valves for said branches, and means for controlling the valves from points adjacent the drive-shaft.

In testimony whereof I affix my signature, in presence of two witnesses.

PRESLEY N. HICKS.

Witnesses:
EMIL STAREK,
JOS. A. MICHEL.