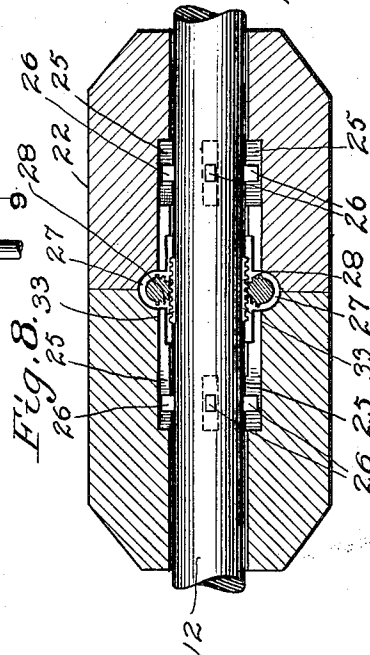
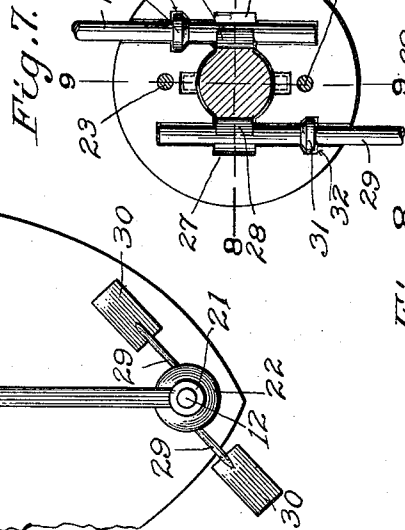
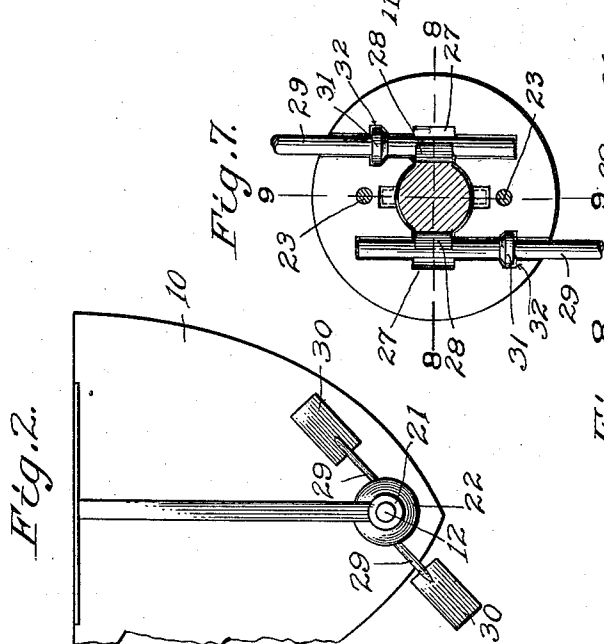
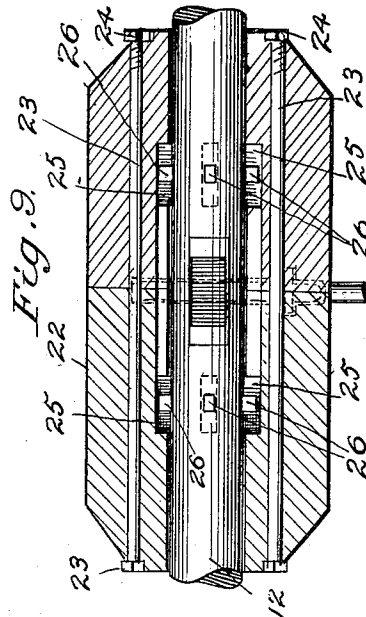
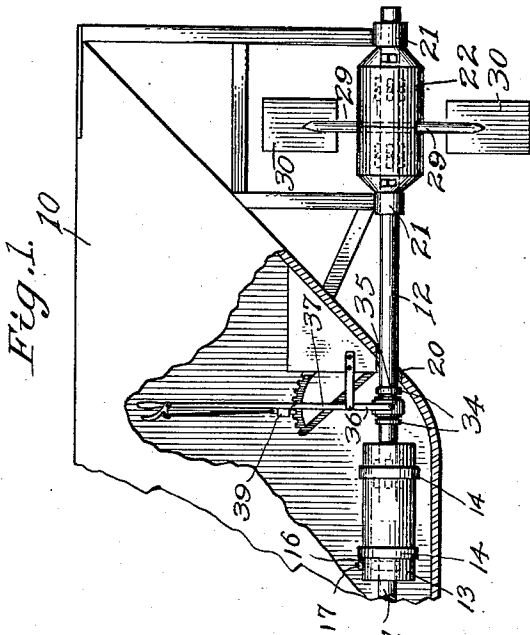


C. H. JOHNSON.
PROPELLER.
APPLICATION FILED MAY 16, 1911.

1,024,339.

Patented Apr. 23, 1912.

2 SHEETS-SHEET 1.



WITNESSES

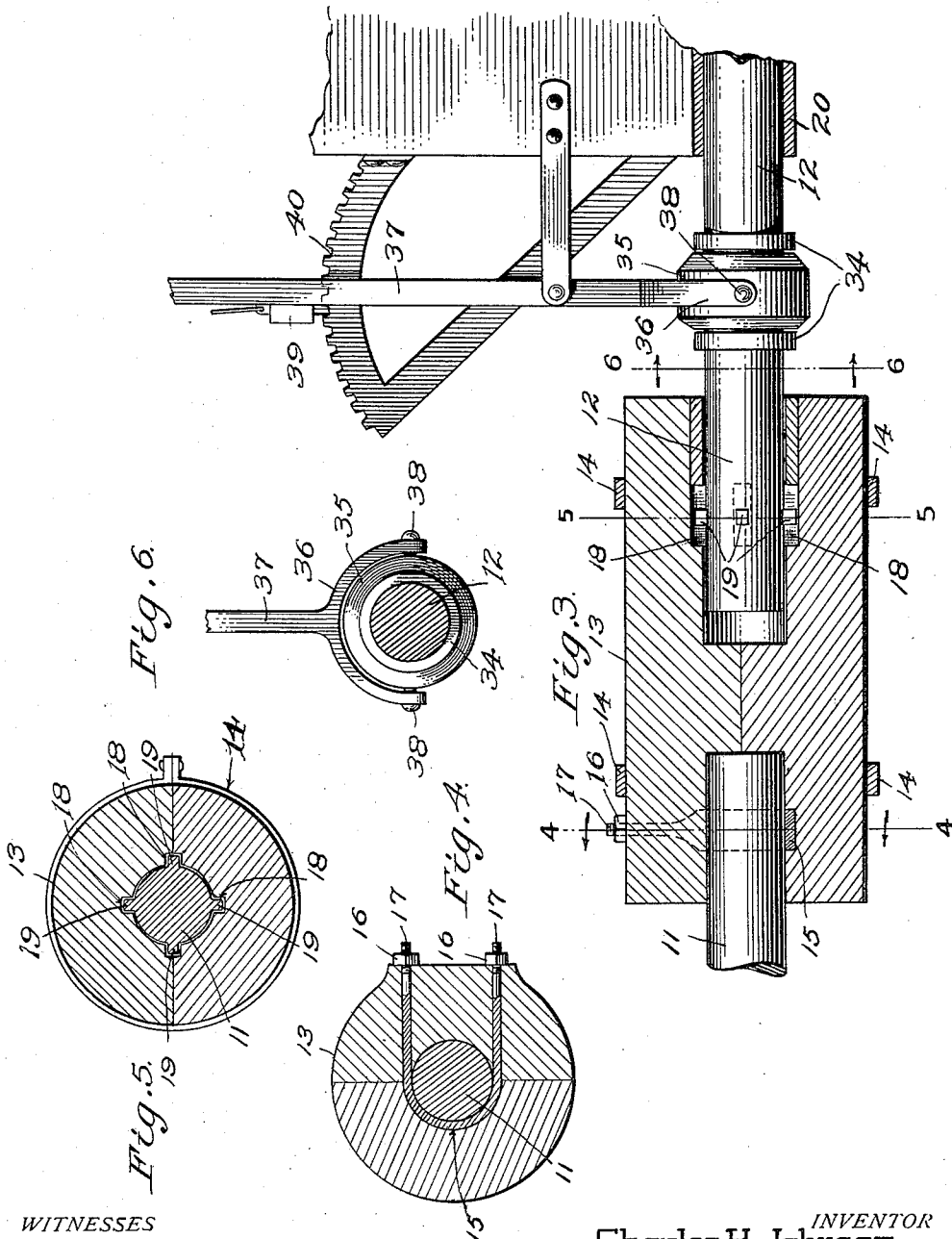
Wm. L. McEathran.
H. Joseph Doyle

INVENTOR
Charles H. Johnson
E. C. Woomers Attorney

1,024,339.

Patented Apr. 23, 1912.

2 SHEETS—SHEET 2.



WITNESSES

Wm. L. McCallister
H. J. Woodruff

INVENTOR
Charles H. Johnson

By *E. C. Freeman*
his Attorney

UNITED STATES PATENT OFFICE.

CHARLES H. JOHNSON, OF EUREKA, UTAH.

PROPELLER.

1,024,339.

Specification of Letters Patent.

Patented Apr. 23, 1912.

Application filed May 16, 1911. Serial No. 627,386.

To all whom it may concern:

Be it known that I, CHARLES H. JOHNSON, a citizen of the United States, residing at Eureka, in the county of Juab and State of Utah, have invented certain new and useful Improvements in Propellers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to the subject of propellers for use in connection with marine, aerial, or land vehicles, and the principal object of the same is to provide novel means for shifting the blades of the propellers so that the direction of travel of the vehicle can be controlled without changing the direction of rotation of the driving shaft.

A preferred and practical embodiment of the invention is shown in the accompanying drawings, wherein:—

Figure 1 is a fragmentary view in side elevation of the stern of a boat broken away to show the application of this invention. Fig. 2 is a view in rear elevation thereof. Fig. 3 is a view in elevation showing the shifting mechanism and shaft in side elevation and the shaft coupling in section. Fig. 4 is a transverse sectional view taken on the line 4—4, Fig. 3. Fig. 5 is a transverse sectional view taken on the line 5—5 in Fig. 3. Fig. 6 is a transverse sectional view taken on the line 6—6, Fig. 3. Fig. 7 is a transverse vertical sectional view taken through the hub of the propeller. Fig. 8 is a horizontal longitudinal sectional view taken on the line 8—8, Fig. 7. Fig. 9 is a vertical longitudinal sectional view taken on the line 9—9, Fig. 7.

Referring to the accompanying drawings by numerals it will be seen that the improved propeller has been shown in connection with a boat 10 and comprises a drive shaft 11 and a propeller shaft 12. Shaft 11 is inboard and is driven by a motor (not shown) in the usual, or any preferred manner. The rear end of the shaft 11 extends into the forward end of a shaft coupling 13 that is formed of two complementary sections which are fastened together in rigid relation by the embracing band or bands 14. A U-shaped clip extends transversely through one of the sections of the coupling 13 and has a flattened body 15 that surrounds shaft 11. Nuts 16 engage the threaded legs 17 of said clip to lock the shaft 11 rigidly to the coupling section through which said clip extends. The rear end of coupling 13 has the

propeller shaft 12 extending therein, said coupling being provided with keyways 18 that are engaged by the keys 19 of said shaft 12. The keyways 18 and keys 19 obviously permit shaft 12 to have longitudinal movement in coupling 13, but prevent said shaft rotating relative to said coupling.

Shaft 12 projects through the usual or any preferred type of sleeve bearing 20 in the stern of the boat and is journaled in hanger bearings 21 depending from said stern. The propeller has its hub 22 mounted on the rear end of shaft 12 between the hanger bearings 21, said hub being in two transverse sections which are held together by the longitudinally extending bolts 23 and the nuts 24 carried by said bolts. Internally, the hub 22 is provided with longitudinal keyways 25 that are engaged by the keys 26 of shaft section 12, so that said shaft can have longitudinal movement therein, but is prevented from rotating therein.

Hub 22 is provided with central recesses 27 in which the gears 28 at the inner ends of the shanks 29 of the propeller blades 30 are located. Shanks 29 carry collars 31 that are disposed in recesses 32 which prevent longitudinal movement of said shanks. Propeller shaft 12 within hub 22 is provided with racks 33 which are in mesh with the gears 28.

Adjacent the rear end of coupling 13, propeller shaft 12 carries a pair of spaced flanges 34 and a collar 35 loosely surrounds said shaft between said flanges. Collar 35 is straddled by the forked end 36 of a shifting lever 37, said forked end being equipped with lugs 38 that pivotally engage opposite portions of said collar. Lever 37 is equipped with a hand operated pawl 39 for engaging a rack 40 to lock the said lever in the desired position.

From the foregoing description it will be clear that the coupling 13 prevents relative rotation of shafts 11 and 12, but said shaft 12 can be longitudinally moved relative to said coupling and shaft 11. Shaft 12 is longitudinally moved by shifting lever 37, and such movement of said shaft causes racks 33 to rotate gears 28 and thereby change the pitch of the blades 30. By this construction it will be seen that the propeller can be operated to propel the boat forward or backward without affecting the operation of the shafts 11 and 12.

Coupling 13 is formed of two separable

sections and hub 22 is similarly formed. Therefore, it will be seen that said coupling and hub can be readily separated when necessary or desirable to permit repairs or inspections.

The invention has been shown and described in connection with a marine vessel, but it will be understood that such is but one of the uses to which the same may be applied. For instance, the invention could be used in connection with air-ships or with the type of land vehicles known as wind wagons.

What I claim as my invention is:—

15 A device of the character described comprising a drive shaft, a driven shaft, a coupling connecting said shafts, said coupling comprising a plurality of sections, each of said sections provided with registering longitudinally extending grooves, lat-

erally extending lugs formed upon said driven shaft and working in said grooves, a rack formed upon each side of said driven shaft propeller hub sections, propeller blade shafts carried between the abutting ends of said propeller hub sections, each of said propeller blade shafts provided with an enlarged collar formed thereon, a segmental gear carried near the inner end of said propeller blade shaft and meshing with said rack gears upon said driven shaft for adjusting the angle of said propeller blades when said driven shaft is reciprocated within said coupling.

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

CHARLES H. JOHNSON.

Witnesses:

J. H. HALES,

HENRY FALKNER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."