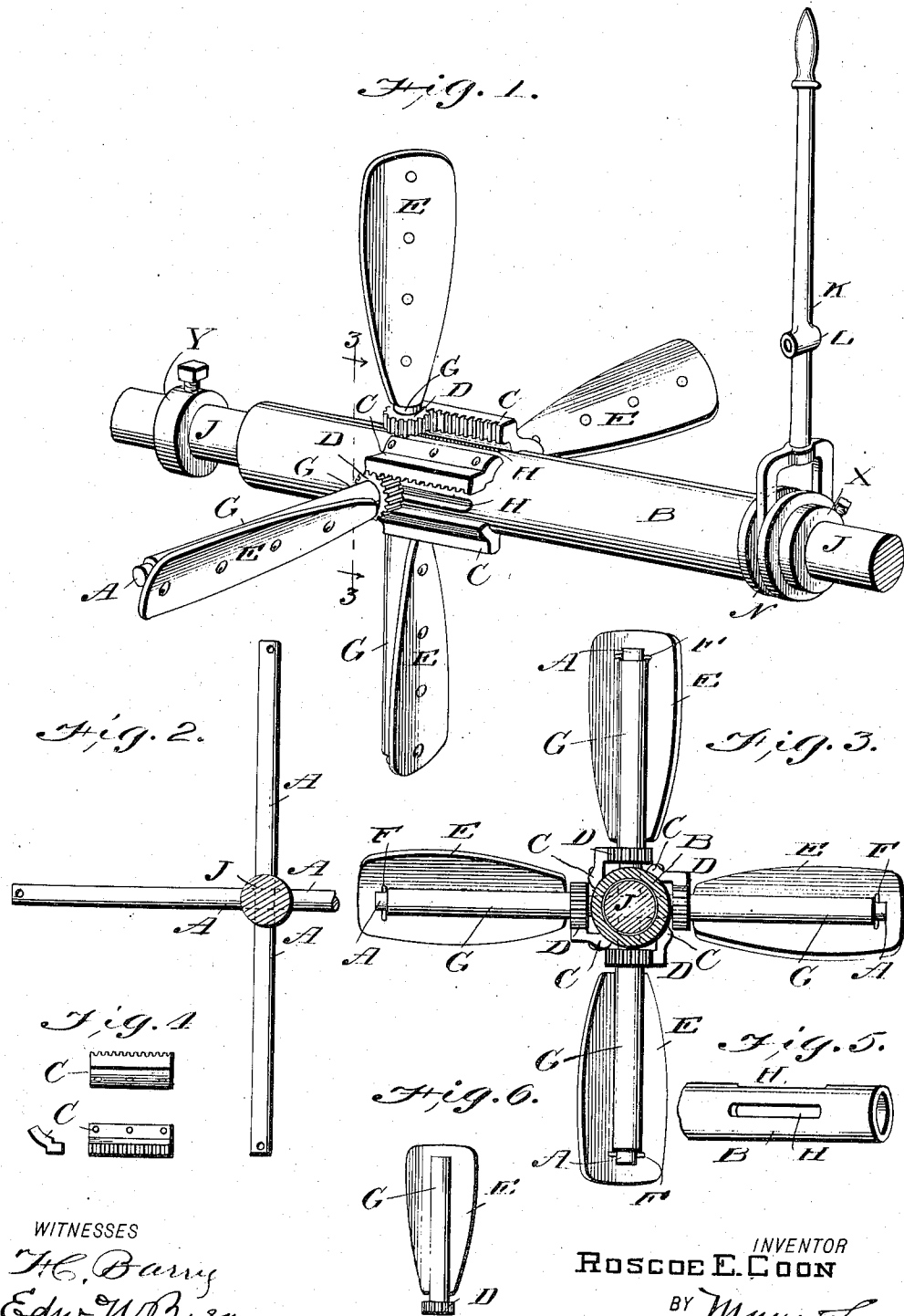


No. 881,775.

PATENTED MAR. 10, 1908.

R. E. COON.
SCREW PROPELLER.

APPLICATION FILED JULY 3, 1907.



WITNESSES
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ROSCOE EMERALD COON, OF PORTLAND, OREGON.

SCREW-PROPELLER.

No. 881,775.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed July 3, 1907. Serial No. 382,040.

To all whom it may concern:

Be it known that I, ROSCOE EMERALD COON, of Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Improvement in Screw-Propellers, of which the following is a specification.

My invention is in the nature of an improved form of screw propeller designed to permit the pitch of the propeller blades to be altered or entirely reversed so as to permit the boat to be backed without reversing the engine, or permit the blades to cut through the water edgewise without any propelling effect in either direction. Although shown and described as a screw propeller for driving a boat, my invention is of such general principles as to permit it to be applied equally as well as a hydraulic motor by being anchored in a flowing stream of water, or as a wind wheel by being suitably mounted to receive on its blades the impact of the wind currents.

It consists in the peculiar construction and arrangement of the various parts of the same, which I will now proceed to describe, reference being had to the accompanying drawing in which—

Figure 1 is a perspective view of the propeller showing all of its parts assembled. Fig. 2 is a cross section of the propeller shaft showing its rigidly attached arms. Fig. 3 is a transverse section on line 3—3 of Fig. 1. Fig. 4 are details of the adjusting racks for the propeller blades. Fig. 5 is a portion of the inclosing sleeve for the propeller shaft showing two of its longitudinal slots, and Fig. 6 is a detail of one of the propeller blades.

In the drawing, J is the propeller shaft to which is rigidly attached a series of transverse arms A extending an equal distance from the shaft and forming axes upon which the propeller blades are mounted with a rocking adjustment.

E are the propeller blades, each one of which has along its middle a rigid longitudinal sleeve socket G that slips on to the axial arms A and is retained thereon by a pin F, Fig. 3, passing through a hole in the outer end of the arm after the blade E is on the same. At the inner end of each propeller blade socket is formed a rigid pinion or gear wheel D.

Inclosing the propeller shaft J and sliding over the same is a long sleeve or tube B

which has through it at equal distances apart, longitudinal slots H which permit the passage of the arms A A therethrough. To the side of this sleeve at points immediately opposite the slots H there are bolted or rigidly attached the short rack bar sections C which mesh with the gear wheels D on the inner ends of the propeller blades, so that when the other sleeve B is slid longitudinally on the propeller shaft the engagement of the several rack bars C with the pinions D of the blades causes the latter to turn on the arms A, so as to change the pitch of the blades, or to entirely reverse their pitch, or to leave them with no pitch at all, as may be desired. In order to give the sleeve B its sliding motion, a grooved collar N is fixed to one end of the same and in the groove of this collar the forked end of a lever K swivels. This lever is fulcrumed upon a stationary bolt at L, and when turned about this center it gives the necessary sliding motion to the sleeve B to adjust the propeller blades to any desired plane. When these blades are arranged at the proper inclination for driving a boat through the water, it will be seen that said blades through the lever K may be reversed so as to pull backward on the boat to back the same, without reversing the engines. The angle at which the propeller blades are to be held for effective work is preferably $22\frac{1}{2}$ degrees to the plane of revolution of the wheel. To limit or vary this angle two set collars X and Y are secured by set screws to shaft J and determine the throw of the sleeve B.

I am aware of the fact that it is not broadly new to provide means for reversing the inclination or pitch of propeller blades by turning them about axes at right angles to the propeller shaft, and do not claim this broadly.

In my construction the arms A are rigid with the shaft and furnish a long bearing for the blades so that there is no cramping or binding in the adjustment, and the rack bars C bolted directly to the outer side of the sleeve B furnish a simple and practical means of turning the blades and also help to brace the arms A against the rotary strain.

I claim—

1. The combination of a propeller shaft having rigid right angular arms, propeller blades with sockets and gear wheels on the inner ends of the same mounted to turn on said arms, an outer sleeve inclosing the propeller shaft and having longitudinal slots to

give passage to the said arms and rack bars arranged beside the slots and fixed to said sleeve, and means for sliding said sleeve longitudinally over the propeller shaft to adjust or reverse the pitch of the propeller blades.

2. The combination of a propeller shaft having rigid right angular arms, propeller blades with sockets and gear wheels on the inner ends of the same mounted to turn on said arms, an outer sleeve inclosing the propeller shaft and having longitudinal slots to give passage to the said arms, rack bars arranged beside the slots and fixed to said sleeve, means for sliding said sleeve longitudinally over the propeller shaft to adjust or reverse the pitch of the propeller blades, and stops for limiting the throw of the blades.

3. The combination of a propeller shaft having rigid right angular arms, propeller 20 blades with sockets and gear wheels on the inner ends of the same mounted to turn on said arms, an outer sleeve inclosing the propeller shaft and having longitudinal slots to 25 give passage to the said arms, rack bars arranged beside the slots and fixed to said sleeve, means for sliding said sleeve longitudinally over the propeller shaft to adjust or reverse the pitch of the propeller blades, and adjustable stop collars fixed to the shaft and 30 arranged to limit the throw of the sleeve.

ROSCOE EMERALD COON.

Witnesses:

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