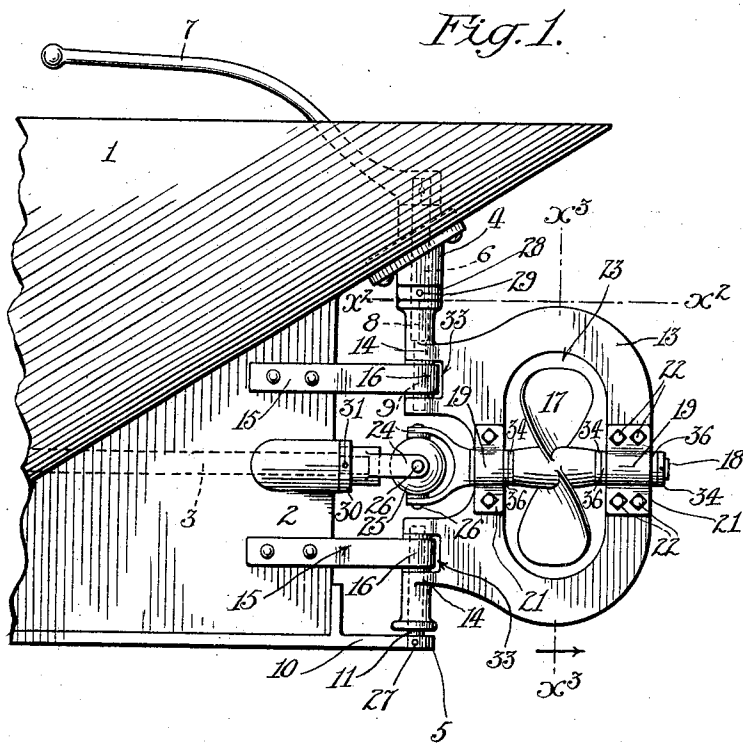
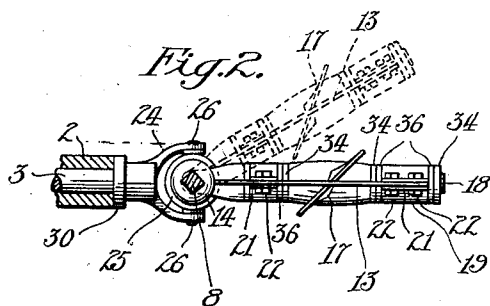
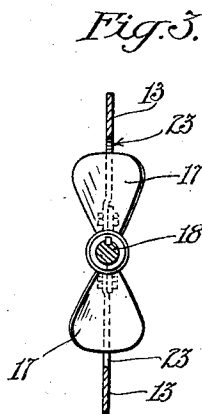


No. 887,986.

PATENTED MAY 19, 1908.

H. L. WARD.
STEERING PROPELLER.
APPLICATION FILED MAY 14, 1906.



Witnesses:
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UNITED STATES PATENT OFFICE.

HARRY L. WARD, OF LONGBEACH, CALIFORNIA.

STEERING-PROPELLER.

No. 887,986.

Specification of Letters Patent.

Patented May 19, 1908.

Application filed May 14, 1906. Serial No. 316,898.

To all whom it may concern:

Be it known that I, HARRY L. WARD, a citizen of the United States, residing at Longbeach, in the county of Los Angeles and State of California, have invented a new and useful Steering-Propeller, of which the following is a specification.

This invention relates to a steering propeller for boats, and its main object is to provide a combination rudder and propeller which will serve to steer the boat, when the propeller is in operation, by the combined action of the propeller and the rudder, and when the propeller is not in operation, by the action of the rudder alone.

A further object of the invention is to provide a combined propeller and rudder for boats wherein the full force of the propeller, both in propulsion and in steering, will be exerted in all positions of the rudder.

The accompanying drawings illustrate the invention.

Figure 1 is a side elevation of the rear end of a boat with the propeller applied thereto. Fig. 2 is a horizontal section on the line x^2-x^2 in Fig. 1. Fig. 3 is a vertical section on the line x^3-x^3 in Fig. 1.

Referring to Fig. 1, the boat indicated at 1 is provided with a stern-post 2 and with a longitudinal driving shaft 3 extending through the stern of the boat and through the stern-post. Above the propeller shaft a bearing 4 is attached to the stern of the boat and below the propeller shaft is a journal 5. A steering-post or pin 6 extends vertically through said bearing and is supported thereby, said steering-post carrying a tiller 7 at its upper end and being provided at its lower portion with a squared or non-circular portion 8 and a journal portion 9 below said squared portion. Below the propeller shaft a bracket 10 extends from the stern-post, being, for example, a continuation of the keel, said bracket carrying a journal post or pin 11 which extends upwardly therefrom in line with the steering-post.

A rudder 13 which also serves as a supporting frame for the propeller is rotatably mounted to turn on the journals 9, 11 aforesaid, the said rudder being provided at its forward edge with sockets or bearings 14 fitting said journals. The said rudder is also provided at the upper end of its forward edge with a squared or non-circular socket to receive and engage the squared or non-circular portion 8 of the steering-post. Braces 15

are fastened to the stern post or keel of the boat as by means of bolts, said braces extending rearwardly, and being provided with bearings 16 through which the journals 9, 11 aforesaid pass, so as to support the said journals against the longitudinal thrust of the propeller. Rudder 13 has notches 33 to receive said bearings 16.

The propeller 17 is mounted on a shaft 18, journaled in bearings 19 on the rudder 13, the said bearings being formed, for example, by forming semi-circular seats in the rudder and in plates 21 fastened to the rudder by bolts 22, the journals of the propeller shaft fitting in said seats. The bearings are formed at the front and back of an opening 23 in the rudder, the propeller working in said opening. The forward end of the propeller shaft 18 is connected to the propelling or driving shaft 3 by a universal joint or coupling consisting, for example, of forks 24 on the respective shafts and a ball 25, having trunnions 26 connecting with the respective forks, said forks being arranged at right angles to one another.

The vertical pivotal support of the rudder and propeller is mounted aft of the stern post a distance substantially equal to half the diameter of the propeller whereby when the rudder is turned and the propeller is operating at an angle to the boat the blades of the propeller are not shielded by the stern of the boat. In other words, the stern of the boat does not act as a barrier to shut off water for the nearest side of the propeller and both sides of the propeller have a full amount of water to work in.

In order to enable detachment of the rudder and propeller the journal pin 11 is secured in the supporting bracket 10 by a removable pin 27, and the steering-post is secured by a removable pin 28 passing through a collar 29 below the bearing 4. On removing said fastening pins the journal pin 11 and the steering-post may be slipped out the journal post being removed downwardly and the steering post being removed upwardly and the rudder then removed, the driving shaft being drawn with it or detached at the universal coupling which may have a detachable coupling consisting of collars 30, into which the shaft 3 screws and a pin 31 through said collar. Thrust bearings are provided for the propeller shaft consisting of collars 34 on said shaft and washers 36 between said collars and the bearings 21 on the

rudder. It will be understood that the invention is applicable to boats of any size, to large steamships as well as to small boats.

5 In operation, the propeller 17 is driven by the shaft 3 through the coupling 24, 25, said coupling permitting the propeller to be turned to different angular positions, as indicated in full and dotted lines in Fig. 2, so as
10 to drive the boat straight ahead or to turn it to one side. The steering is effected not only by the propeller, but also by the rudder, said rudder supplementing the action of the propeller when the latter is in operation and acting to steer the vessel when the propeller
15 has been stopped and the boat is moving under its own headway. The propeller also serves to hold the rudder and prevent the rudder being broken when it is turned while the vessel is under sternway or under head-
20 way.

What I claim is:—

In combination with a boat provided with a stern post and a bracket secured thereto, of a removable pin in the bracket, a removable

steering post in alinement with said pin and 25 having a squared portion and a journal at its lower end, and a tiller at its upper end, a rudder, provided with a socket for engaging with said squared portion and journal, the central portion and edge of the rudder being 30 recessed, curved plates on the rudder to form bearings, two straps on the stern post, each provided with a socket for engaging with said pin and journal respectively in the recesses of the rudder edge, a propeller shaft 35 journaled in the bearings of the rudder having a universal joint on its forward end, a propeller on the shaft in the central recess of the rudder, and a shaft in the vessel connected with said universal joint. 40

In testimony whereof, I have hereunto set my hand at Los Angeles Cal. this 7th day of May 1906.

HARRY L. WARD.

In presence of—

ARTHUR P. KNIGHT,

GEORGE T. HACKLEY.