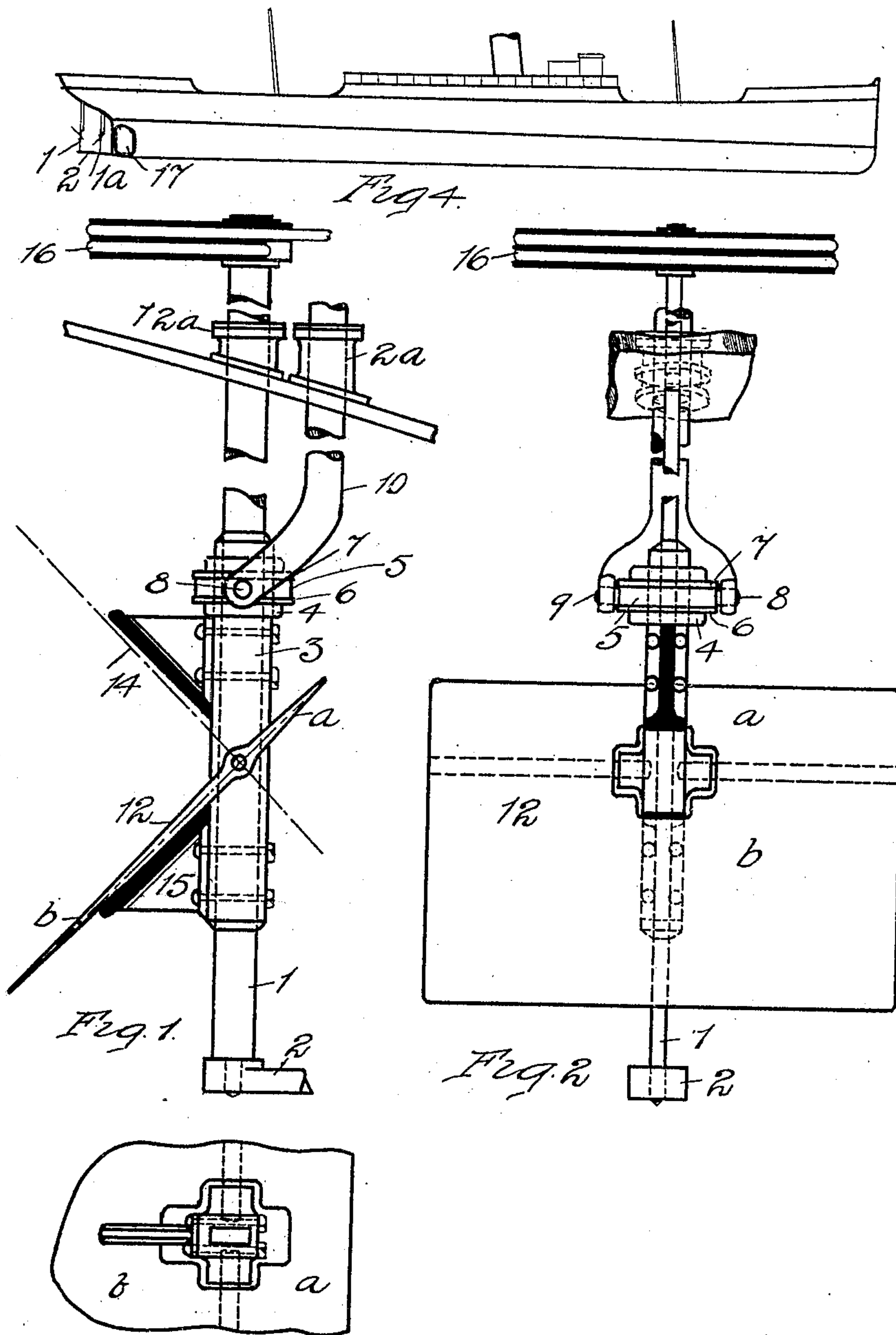


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PROPELLER FOR BOATS.  
APPLICATION FILED DEC. 4, 1907.

913,624.

Patented Feb. 23, 1909.



WITNESSES. *Fig. 3*  
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# UNITED STATES PATENT OFFICE.

EDMUND DANIEL, OF DEARBORN, MICHIGAN.

## PROPELLER FOR BOATS.

No. 913,624.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed December 4, 1907. Serial No. 404,995.

*To all whom it may concern:*

Be it known that I, EDMUND DANIEL, a citizen of the United States, residing at Dearborn, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Propellers for Boats, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to propellers for boats, and has for its object an improved propeller which is adapted to produce a direct forward movement, or a turning movement, in any direction, or a backward movement of the boat.

In the drawings:—Figure 1, is a side elevation. Fig. 2, is a rear elevation. Fig. 3, is a plan view of the connection between the propeller and the post on which it is mounted. Fig. 4, is an assembled view, showing the propeller in place on a boat.

At the stern of the boat is a vertical post 1 supported at its bottom end on the end of a shoe 2, which projects to the rear from the keel. The post 1 is supported at its upper end in a suitable bearing 12<sup>a</sup> that is secured to the hull of the boat. Upon this post 1 is a sleeve 3, which is adapted to reciprocate vertically on post 1, and is actuated in its reciprocation by a forked link 10. The forked link 10 is connected to the sleeve by pivots 8 and 9 that project as trunnions from a ring 5, which ring 5 bears between collars 6 and 7 on a hub 4 properly secured to the sleeve 3. The forked link 10 is actuated by any suitable motor. Intermediate the ends of the sleeve, and pivoted thereto, is a propeller blade 12, which has a possible swing on a horizontal axis of about ninety degrees between an inclined buffer 14 at the top of the sleeve, and an inclined buffer 15 at the bottom of the sleeve; both buffers are secured to the sleeve by suitable bolts. To the top of the post 1 are secured levers by which the post may be turned on its vertical axis. These levers are preferably in the form of semicircles, or half wheels, and are actuated by straps or cords that partially encompass

them, so that the post may be turned in either direction for at least half of a revolution, while the strap constantly maintains a tangential relation to the perimeter of the wheel-like lever. With the two levers the post may be turned somewhat more than a half circle in either direction from its original position in which the maximum of strap length is in engagement about its periphery.

Preferably the blade 12 extends entirely around the sleeve with a branch *a* extending in front, and a branch *b* extending to the rear, and with an opening through the post of size and shape proper to permit its oscillation on its horizontal axis.

The post 1 hangs with the propeller blade 12 submerged in the water, and the reciprocation of the sleeve causes the blade to push against the water, as it travels in either direction. The direction of propulsion may be varied from direct ahead to direct astern, or in any intermediate direction by turning the post 1 on its vertical axis. A rudder 17 is fitted to the boat in order that the boat may be steered while the propeller is driving it directly ahead or directly astern. The actuating link 10 reciprocates vertically through a bearing 2<sup>a</sup>, which is fixed to the hull of the boat.

What I claim is:—

1. A propeller for boats, having in combination a vertical post, a sleeve adapted to reciprocate vertically on said post, means for reciprocating said sleeve, a propeller blade pivoted to said sleeve and adapted to oscillate on its pivot, substantially as described.

2. A propeller for boats, having in combination a post carried in bearings and adapted to turn on a vertical axis, a sleeve on said post arranged to turn therewith, means for reciprocating the sleeve along said post, a propeller blade pivotally connected to said sleeve by a horizontal pivot, and means for limiting the oscillations of said blade on its horizontal axis, substantially as described.

In testimony whereof, I sign this specification in the presence of two witnesses.

EDMUND DANIEL.

Witnesses:

CHARLES F. BURTON,  
VIRGINIA C. SPRATT.