

(No Model.)

A. W. CASE.  
PROPELLER.

No. 496,857.

Patented May 9, 1893.

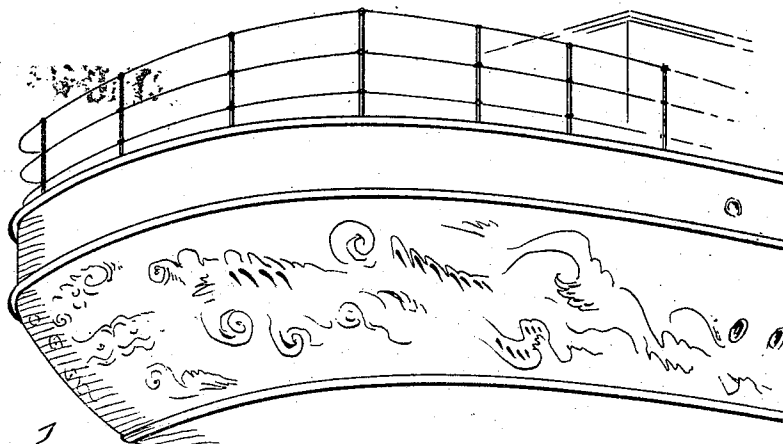


Fig. 1

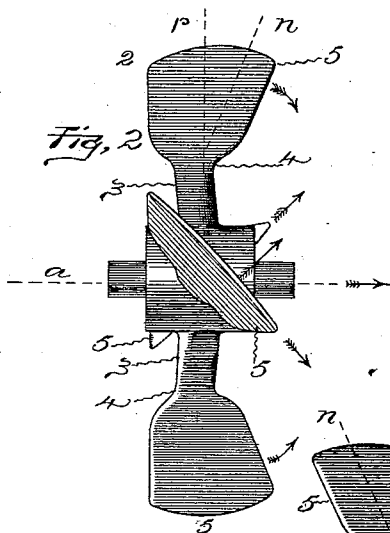


Fig. 2

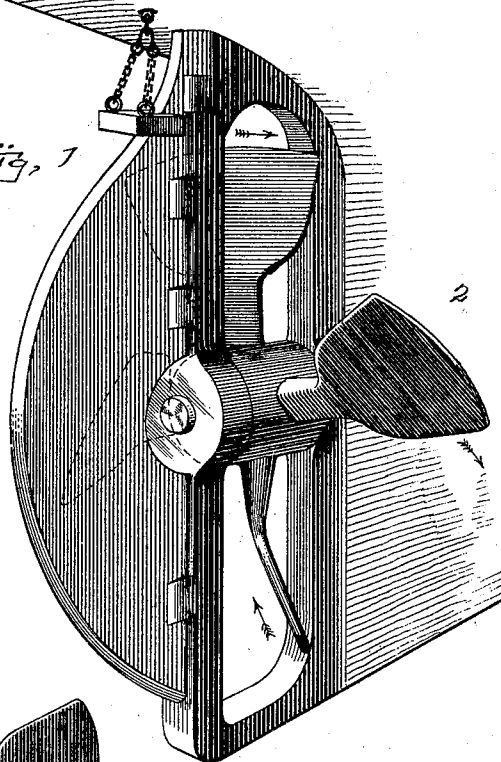


Fig. 3

Witnesses:  
C. E. Buckland,  
P. A. Phelps.

Inventor:  
Alfred Wells Case,  
by  
Harry P. Williams,  
att'y.

# UNITED STATES PATENT OFFICE.

ALFRED WELLS CASE, OF HIGHLAND PARK, CONNECTICUT.

## PROPELLER.

SPECIFICATION forming part of Letters Patent No. 496,857, dated May 9, 1893.

Application filed November 11, 1892. Serial No. 451,630. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED WELLS CASE, a citizen of the United States, residing at Highland Park, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Propellers, of which the following is a full, clear, and exact specification.

The invention relates to the class of screw propellers that are adapted to be attached to the stern of a boat for driving the same, the object of the invention being to provide a simple propeller of this class so shaped that when in motion the blades will act upon and throw the water in such manner that the utmost resistance possible to the thrust of the blades is utilized to obtain the greatest power of the screw.

To this end the invention resides in a propeller having blades that when in motion thrust outwardly at the same time they thrust backwardly, so as to force the water from the blades centrifugally as well as rearwardly, as more particularly hereinafter described and pointed out in the claim.

Referring to the accompanying drawings: Figure 1 is a view of the stern of a steamer, showing the improved propeller in perspective. Fig. 2 is a view of the propeller looking directly from the side; and Fig. 3 is a view looking directly from the stern.

In the views 1 indicates the stern of a boat the post of which supports the end of the shaft to which the propeller 2 having any desired number of blades is secured. In the form shown there are four blades, each having a shank 3 that projects from the hub, a throat 4 at the end of the shank, and driving wings or lobes 5 at the outer ends. The blades are formed with their lobes on a straight screw pitch, but may be formed, if desired, on a spiral pitch of the correct degree to drive with the least amount of resistance for the speed required; and while the shanks project from the hub on the desired pitch radially, each lobe is bent slightly forward at right angles to the spirally forward line of motion of the blades so that the plane of each lobe is not only set on the angle of pitch across the axis of the propeller but also on an angle with the radii of the axis.

In the views the dotted line *a* indicates the axis, *r* radii, and *n* the inclination of the blades with relation to the radii; while the arrows indicate the direction of movement.

It is well known that the water at the stern of a fast running boat is in a disturbed state, churning, boiling, and setting back toward the vessel, particularly on the line of the axis of the propeller; and it has been the aim of most prior inventors to so construct their screws that the blades will collect the disturbed water and compact the same at the center in line with the axis, thinking that thereby the compacted water will offer a greater resistance to the thrusts of the screw blades and increase the power of the propeller. Others have endeavored to not only collect the water at the center, but utilize the force of the water thrown centrifugally by the screw during rotation. The present invention proceeds on a principle directly contrary to these, and the propeller herein described, with the blades placed at the proper angle of pitch, and also inclined at an angle to the plane of their own motion, which is spirally forward or in a plane toward the motion of the diametrically opposite blade, throws the water outward away from the axis at the same time that it worms ahead and thrust the water backward. By this construction the volume of water churned by the screw is thrown away from the center of disturbance outward against a more solid body of water beyond the periphery of the blades, where the surrounding water is not as disturbed, and the water thrown out from the center reacts, when coming in contact with the more solid body of water beyond the center of disturbance, against the blades of the screw with an energy that exerts itself forward so as to offer greater resistance to the thrust of the screw than if the water was thrown directly astern, or gathered toward the center and thrown astern.

I claim as my invention—

A propeller consisting of a hub with projecting blades having uninterrupted working surfaces set upon the pitch of a screw, with the working surface of each blade forwardly inclined at an angle to the pitch of the screw, so as to thrust outwardly as well as rearwardly when in motion, substantially as specified.

ALFRED WELLS CASE.

Witnesses:

H. R. WILLIAMS,  
C. E. BUCKLAND.