

(No Model.)

A. D. HALL & G. B. SLOAN.
SCREW PROPELLER.

No. 505,402.

Patented Sept. 19, 1893.

Fig. 1.

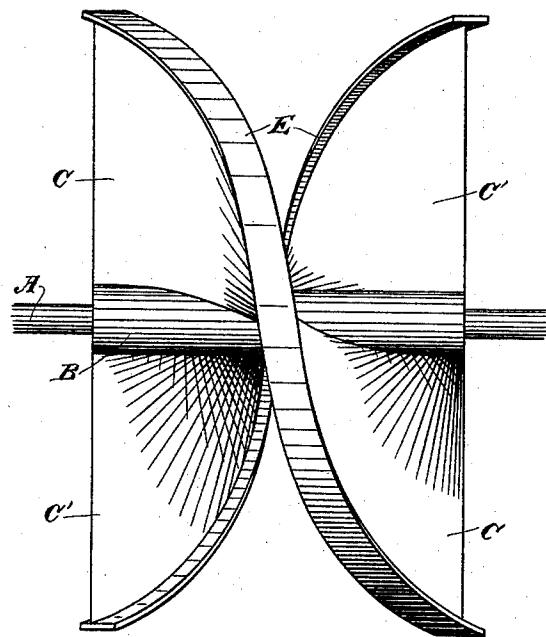
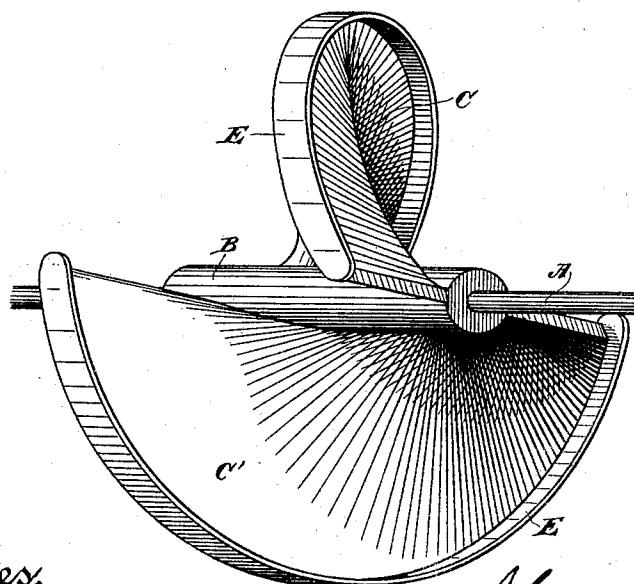


Fig. 2.



Witnesses,
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UNITED STATES PATENT OFFICE.

ALEXANDER D. HALL AND GEORGE B. SLOAN, OF SAN FRANCISCO,
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SCREW-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 505,402, dated September 19, 1893.

Application filed April 4, 1893. Serial No. 469,037. (No model.)

To all whom it may concern:

Be it known that we, ALEXANDER D. HALL and GEORGE B. SLOAN, citizens of the United States, residing in the city and county of San Francisco, State of California, have invented 5 an Improvement in Screw-Propellers; and we hereby declare the following to be a full, clear, and exact description of the same.

Our invention relates to an improvement in 10 screw propellers for vessels, and it consists in the peculiar construction and combination of devices as will be more fully set forth herein-after and pointed out in the claims.

Referring to the accompanying drawings 15 for a more complete explanation of our invention,—Figure 1 is a side view of our screw propeller. Fig. 2 is a perspective view of the same.

A is a propeller shaft which projects rear- 20 wardly from the deadwood of the stern of the vessel for a suitable distance, and has its bearings in the stern post, and also in the rudder post. Upon the shaft is fixed the propeller hub B which may be made in sections keyed 25 to the shaft or formed in a single continuous piece.

In a former patent issued to us August 7, 1888, No. 387,229, we have shown a single spiral blade making a complete revolution 30 around the propeller shaft and having a length in excess of the diameter of the propeller. We have found that in practice so long a spiral leaves an open space upon the opposite side from the blade of considerable length, 35 and our present invention is an improvement upon that construction.

In our present invention we have shown our propeller blades C and C' made in the form of continuous spirals of equal diameter from end 40 to end, making one half or more revolutions each on the propeller shaft, and placed opposite each other upon the hub so as to form two spiral channels between the blades upon opposite sides of the hub. The pitch of the 45 screw blades may be varied to suit the requirements of the case, either regular or graduated. By forming our opposed blades with a half revolution around the shaft, we shorten the extreme length of the propeller one half, 50 and make it practicable to employ it in the space which is available for that purpose be-

tween the stern post and rudder post of a vessel. Upon the outer periphery of each blade is fixed a spiral flange E at right angles thereto, the flange being disposed in a plane 55 parallel with the axis of the propeller, and extending forward and rearward beyond the sides of the propeller blade. By reason of the two interlocked spirals upon opposite sides of the same hub, this flange projecting over 60 the channels which are formed between the interlocked blades of the propeller, produces a partially inclosed channel upon each side of the hub, each channel being equal in diameter to the distance between the hub and 65 these flanges from one end to the other. When the propeller is rotated it acts upon a column of water, the full diameter of which is equal to the diameter of the propeller. This column is divided into two bodies, each of which 70 is essentially inclosed in the channel between the blades upon opposite sides of the shaft, and the propeller by reason of its double interlocked construction of the blades is more perfectly balanced than when a single blade 75 is employed making a full revolution around the shaft. By reason of the blades being made so long as to make a half or more revolution around the shaft, each channel is practically inclosed between the two blades from 80 the commencement to the end, and no open unbalanced space is left upon one side, as in the case of a single blade forming a complete revolution. No pounding or jar is noticeable at the highest speed, by reason of the balancing 85 and steadyng action of the double column of water. The front edges of the blades and of the ends of the spiral exterior flanges are beveled or tapered so that they enter the water with the least possible resistance. This 90 construction is especially applicable for propellers to run in either direction, as in double ended boats for ferry and other purposes, as a propeller of this form will have equal power in either direction, and one of these may be 95 mounted at each end of the boat, either upon separate shafts, or upon a single shaft continuing from one end of the boat to the other.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A screw propeller having the spiral con-

tinuous blades of equal diameter from end to end projecting from opposite sides of the same hub, making each a full half revolution around the propeller shaft, the rear edge of 5 each blade and the front edge of the opposite blade terminating in a radial plane taken through the axis of the shaft and upon opposite sides thereof, substantially as herein described.

10 2. A screw propeller having spiral continuous blades of equal diameter from end to end projecting from opposite sides of the same hub and interlocking with each other to form continuous channels upon opposite sides of 15 the hub, said blades making a half revolution around the propeller shaft and having flanges fixed upon the outer edges of the blade projecting in each direction in a plane parallel with the axis of the propeller, substantially 20 as herein described.

3. A screw propeller having spiral continuous blades of equal diameter from end to end projecting from opposite sides of the same hub, each forming a half turn about the propeller shaft with the front edges of the blades 25 commencing upon opposite sides of the shaft and the rear edges lying in radial planes taken through the axis, and intersecting the front edges of the opposing blades, and flanges fixed to the peripheries of the blades, 30 projecting upon each side thereof parallel with the axis of the propeller, substantially as herein described.

In witness whereof we have hereunto set our hands.

ALEXANDER D. HALL.
GEORGE B. SLOAN.

Witnesses:

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