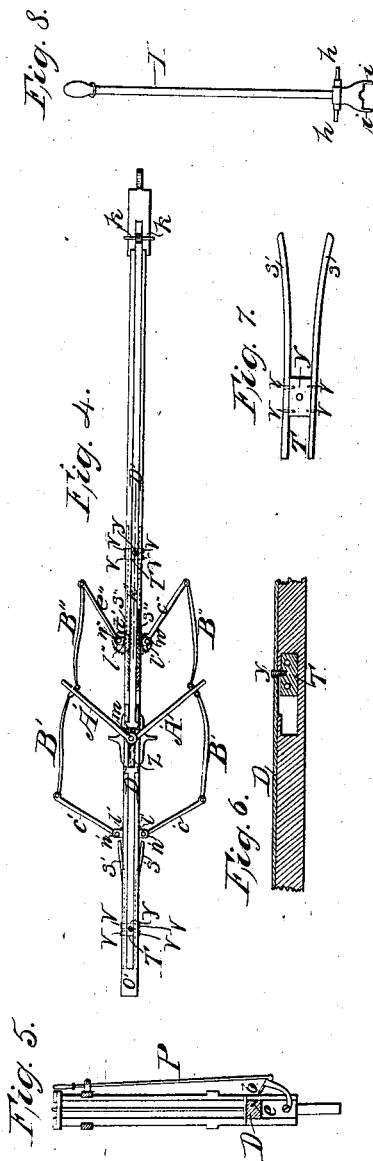
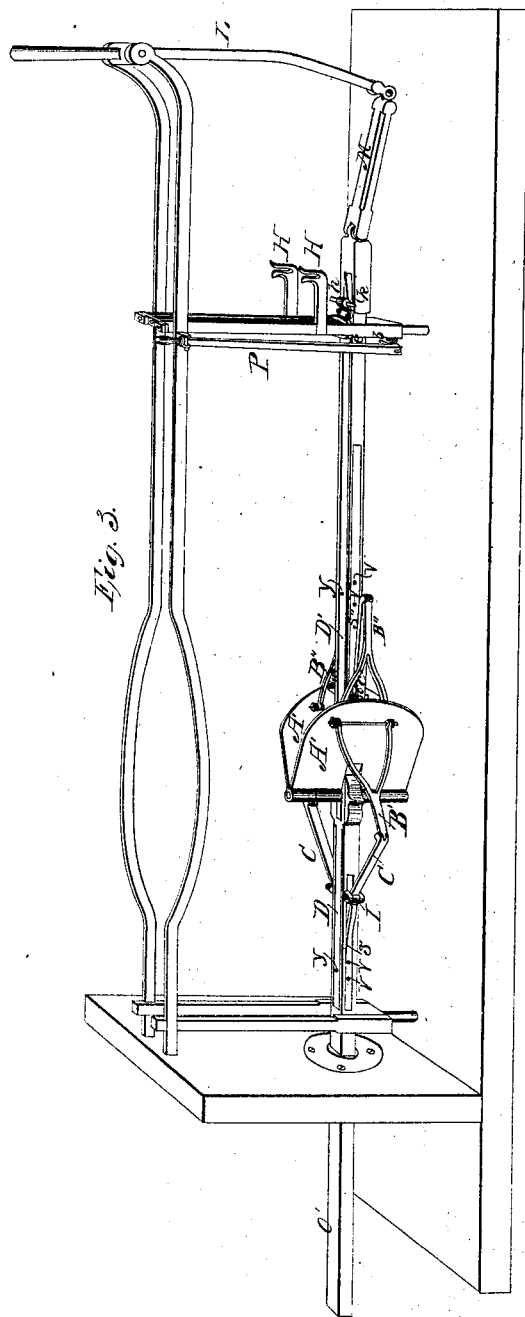


G. SEIBERT.
PROPELLER.

No. 5,911.

Patented Nov. 7, 1848.



UNITED STATES PATENT OFFICE.

GEO. SEIBERT, OF HAGERSTOWN, MARYLAND.

DUCK'S-FOOT PROPELLER.

Specification of Letters Patent No. 5,911, dated November 7, 1848.

To all whom it may concern:

Be it known that I, GEORGE SEIBERT, of Hagerstown, Washington county, and State of Maryland, have invented a new and useful Improvement in Submerged Propellers; and I do hereby declare that the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make a part of this specification.

In the construction of alternating propellers three principal difficulties have been encountered. First the want of power to open and close the wings promptly and without employing the resistance of the water for that purpose; second, the violent shock of the wings when opened to their full width and suddenly made to commence the propelling stroke, and thirdly the want of an easy and expeditious means of reversing the motion of the propellers when a change of direction of the vessel is required. In addition to these hindrances to success in the alternating, winged or "duck-foot" propeller, the area of cross section of the propellers, when closed, has been so great as to present serious impediments to the return stroke of the propeller and thereby to retard proportionally the speed of the vessel.

My invention has had for its purpose to obviate these difficulties.

My propellers may have the form A, Figures 1 and 2, or of A' Figs. 3 and 4, where the two wings are in either case seen jointed together in the manner of a butt hinge, by a bolt *m*, or *m'*.

B, B and B', B'' are forked and jointed arms connecting the wings at or near their outer extremities with other jointed arms C, C, or C', C' which are at their opposite extremities connected with the alternating bar O or O' by means of the joints *n* or *n'*. In the propeller limited to one direction of motion the sliding bar D is connected by its extremity E with the propelling power which gives at each turn of the engine a sliding motion to D in a groove in the under side of O. This motion is limited in extent by the slot *o* and the stop wings *r*, *r*, near the end of the sliding rod. That part of the sliding rod which in traversing passes near the joints *n n* of the arms C, C, (Figs. 1 and 2) is furnished with rack teeth *x*, *x*, applying to quadrantal pinions placed at the extremities of those arms. At every

alternation in the motion of the driving power, these racks set in motion the arms C, C, and either open or close the wings A, A. When the bar O begins to be pushed forward, that is, in the direction in which the vessel advances, the effect of *x x* is to close the wings A, A; but when it begins to be drawn backward in the reverse direction of the vessel's motion, the arms C, C, and the wings A, A, will be thrown open.

Near the base of the wings A, A, Figs. 1 and 2, are short projecting tongues or wipers *l*, *l*, which, when the wings have opened to about one half of their full extent, come in contact with the springs *s*, *s*, which gradually arrest their progress and prevent the shock which would be produced by their sudden stoppage against an unyielding support.

By means of the forked form of the arm B, the joint *n* is prevented from interfering with the closing of A, A, and the breadth of cross section which the two closed wings present, is but little more than the breadth of the bar O. The distance through which the sliding bar D moves in its groove, at every stroke of the engine, or other driving power, will bear but a small proportion to the distance which the whole bar O moves in the same time.

In the application of my propeller to vessels which require a reversing of the motion, the arrangements exhibited in Figs. 3 and 4, are employed. Two pairs of springs *s'* and *s''* are placed in grooves on the sides of the reciprocating driving bar O', but are not fastened directly to it. They are connected with the reversing slide D, by means of the screw *y* passing through it and entering the block of metal T (Figs. 3, 4, 6, and 7,) to which block the springs *s'* are united by the screws *v*, *v*. In this case the stops *l'* are placed not on the backs of the wings, A', A', but on the joints of the arms C', C', so that one or the other pair of stops may rest upon the springs. In the position of the arms exhibited in Fig. 4, the springs *s''*, *s''*, are brought under the joints *n''*, *n''*, while *s'*, *s'*, are seen to be out of contact with *n'*, *n'*. In order to reverse the inclination of the wings A', A', the sliding bar D', must be drawn to the right while the bar O' in the groove of which it slides is held stationary. This latter bar is locked and held fast by means of a bolt *b*, entering a hole *e* in the side of the bar D' (Figs. 3 and 5,) which it

is made to do by pulling upward the lever P. When O' has been locked, the forked lever I Fig. 8, is inserted by the gudgeons *h h* on its cross head into the hooks H, H. The points of the fork *i, i*, are applied to the two ends of the bolt *k, k*, and D' is pried back, bringing the springs *s'', s''*, from under the joint *n''*, and drawing *s' s'*, into contact with, and under the projection *l'*. This reverses the position of the wings so that when the bolt *b* is withdrawn from *e* the machinery is at once in readiness to propel in the opposite direction from what it did before.

Fig. 6, is a section through the block T, and part of the reciprocating bar O' and sliding rod D' taken at the part marked with the red line in Fig. 4.

Fig. 7, represents the block T taken from its place within the bar O', showing the manner in which the springs *s', s'*, are connected with the block, and how the screw *y* connects it to the sliding rod D'.

At *z* Fig. 4, is represented a slot in the widened sliding bar D', embracing the bolt *m* which unites the two wings of the propeller to the bar O'.

In my reversing propellers it will be seen that two sets of arms are required as in Figs. 3 and 4, each serving analogous purposes to the one set in Figs. 1 and 2.

The lever L Fig. 3 represents the moving power by which the propeller is set in motion, which however may be changed for any convenient reciprocating mechanical mover.

The opening and closing apparatus for the reversing propeller is applied only to one pair of the arms, as shown at *t'* and *x'* Fig. 4. The pinion is made nearly complete and the rack is made longer than in the case of a propeller not intended to be reversed in order that the rack rod may slide a short distance when the position of the arms is reversed. The action on one pair of arms is evidently sufficient for both positions since both sets of arms form with the propeller but a single system.

What I claim as my invention and desire to secure by Letters Patent is—

1. The opening and closing of the wings of a propeller by means of the combination of a sliding rod D, furnished with racks *a, a*, or with the reciprocating bar O, and also with arms C, C, having pinion segments *t, t*, and being connected through the arms B, B, with the wings of a propeller when not required to be reversed, as the same is herein described.

2. I also claim in combination with the reciprocating bar O, to which are attached springs *s, s*, the projections *l, l*, on the wings of a propeller, when said springs are employed to deaden the shock which would otherwise be felt on opening said wings in the manner herein set forth, not claiming the general plan of using springs to arrest motion or prevent shock.

3. I also claim in combination, the reciprocating bar O, springs *s*, projections *l* wings A, arm B and C, toothed segments *t*, sliding rod D, projections *r, r*, and slot *o*, constructed and acting substantially as herein set forth.

4. I also claim the manner of reversing the propellers by means of a sliding rod D', two pairs of springs *s'* and *s''* and the wipers or short arms *l' l''*, when combined with and operated on by the lever I, cross head *h* hooks H and cross bolt *k*, the stop both *b* and lever P, acting in the manner and for other purposes therein set forth.

5. I also claim the double sets of arms C', C'', and B', B'', with their respective projections *l' l''* in combination with the wings of a propeller, intended to be reversed, and also in combination with the movable springs *s'* and *s''* attached to and actuated by the rod D' for the purpose of working such reversing propellers, not intending by these claims to limit myself to the precise form of the parts herein described and represented, but to vary these as I may think proper while I attain the same ends by means substantially the same.

GEORGE SEIBERT.

Witnesses:

WALTER R. JOHNSON,
AD. STEINWEHR.