(No Model.)

T. J. COULTER.

Vibrating Propeller for Boats.

No. 233,209. Patented Oct. 12, 1880.

Fig. 1

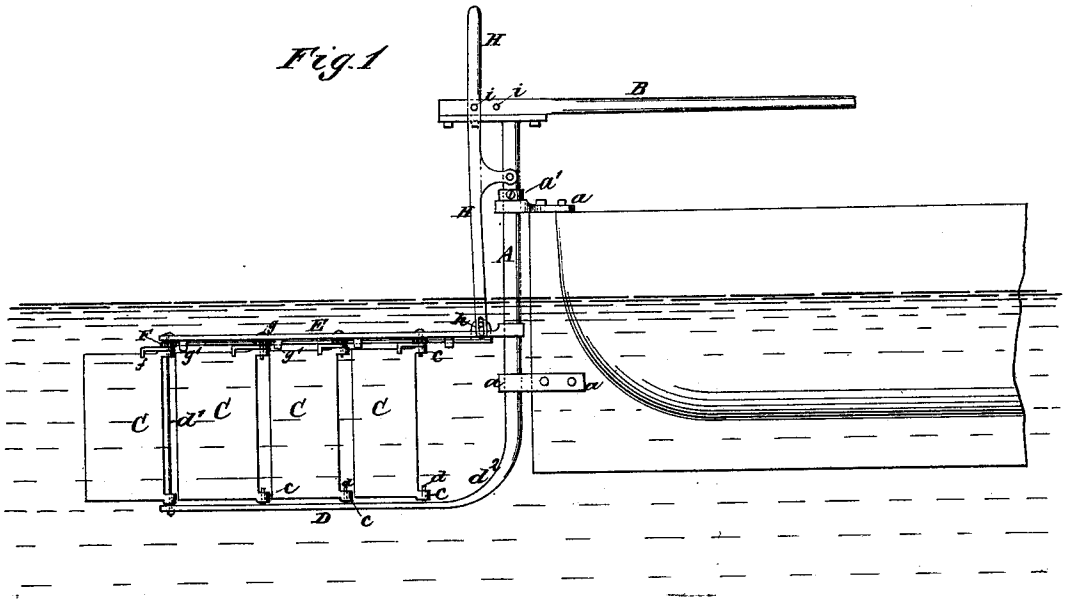


Fig. 2

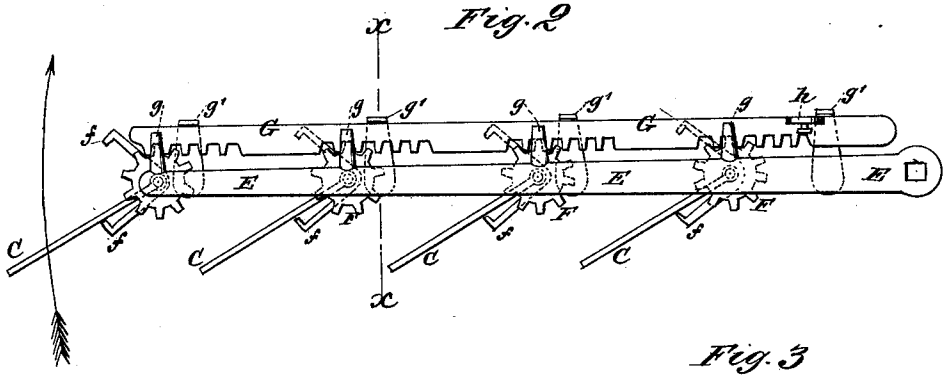


Fig. 3

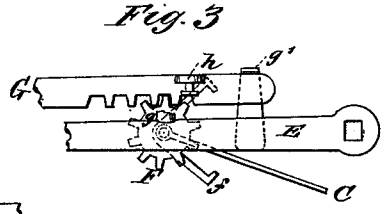


Fig. 4

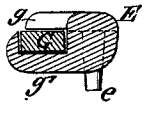
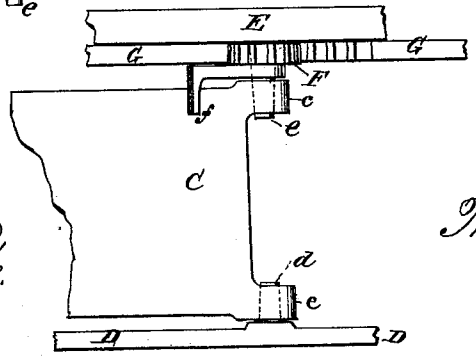


Fig. 5



Witnesses.
Jno. M. Stettes,
Alex. F. Roberts.

Inventor.
Thomas J. Coulter,
by A. M. Almquist,
Attorney.

UNITED STATES PATENT OFFICE.

THOMAS J. COULTER, OF WILTON, ASSIGNOR TO HIMSELF AND EDWARD A. HOUSMAN, OF DANBURY, CONNECTICUT.

VIBRATING PROPELLER FOR BOATS.

SPECIFICATION forming part of Letters Patent No. 233,209, dated October 12, 1880.

Application filed June 30, 1880. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. COULTER, of Wilton, in the county of Fairfield and State of Connecticut, have invented a new and useful Improvement in Vibrating Propellers for Boats, of which the following is a specification.

My invention relates to sculling attachments of that class in which a series of paddles hinged or pivoted to an oscillating frame are vibrated by the resistance of the water on oscillating the said frame until prevented by suitable stops from deflecting beyond a certain angle to the frame, the propulsion being due to the reaction of the water striking against the paddles when the latter, held by the stops in the deflected position, are forced laterally through the water with the oscillating motion of the frame. An invention of this class is shown in United States Patent No. 9,366, dated November 2, 1852.

The object of my present invention is to provide a conveniently-manipulated device for reversing the position of the paddles and their stops from forward to back, in order that the boat may be propelled straight rearward as well as forward by the oscillatory movement of the paddle-frame and the use of oars thus be dispensed with.

In the accompanying drawings, Figure 1 represents a side elevation of my improved sculling device attached at the stern of a boat. Fig. 2 is a top or plan view of the same detached from the boat. Fig. 3 is a detail plan view of a portion of the same, showing a paddle reversed or in position for backing. Fig. 4 is a detail cross-section, on the line *x x* of Fig. 2, of the reversing-rack and upper bar of the paddle-frame. Fig. 5 is a detail side view, drawn to a larger scale than Fig. 1 to better show the construction.

Similar letters of reference indicate corresponding parts.

The paddle-frame is pivoted by its vertical vibrating shaft A in lugs or other suitable bearings, *a*, attached to the stern of the boat, and is adjusted to any desired depth by a movable collar, *a'*, which, when fastened by its set-screw upon the shaft A, supports the latter by resting on the upper lug, *a*, as shown in Fig. 1. The oscillating motion is imparted to the frame by a simple hand-lever, B, or other suitable device connected to the upper end of shaft A.

The paddles C are provided at the upper and lower ends of their vertical edges with lugs *c*, by which they are pivoted between the two horizontal bars D and E of the paddle-frame upon pins *d e*, formed on or attached to the said bars. The outer ends of the bars D E are connected, at the desired distance apart, by a wire rod, *d'*, going through the hinge-pins of the outer paddle. The inner end of the upper bar, E, is enlarged, and has a square hole through it, by which it is made to fit, without turning, upon a square portion of the shaft A. The lower bar, D, is made in one piece, or continuous with the lower end of the shaft A, their junction at the inner end of the bar D being formed simply by a bend or curve, d^2, which is thus made with the object of preventing damage from concussion by gliding over obstructions and simply raising the frame a little while passing over them.

The stops *f*, regulating the throw or lateral deflection of the paddle, relative to the bar E, are formed on or attached to a pinion, F, which latter is fitted to turn upon the hinge-pin *e* between the under side of the bar E and the upper surface of the upper lug, *c*, of the paddle C, so that when the pinion is turned one-half of one revolution, or from the position in Fig. 2 to that in Fig. 3, the paddle will be reversed and the oscillation of the hand-lever B will cause the boat to move backward instead of forward. The turning of all the pinions F simultaneously for this purpose is effected by means of a toothed rack, G, gearing with the teeth of the pinions, and which rack is slid along in and between suitable guide-projections *g g'*, formed at intervals alternately upon the upper and under side of the bar E by a hand-lever, H, conveniently accessible from the boat. This lever H is fulcrumed to the shaft A above or below the upper bar, E, and is connected by a pin, through a slot, to a lug, *h*, upon the rack G, so that by moving the upper end of the lever H from one to the

other of two fastening spring stops or pins *i* the paddles may be reversed at will and retained in position of back or forward, as the case may be. The angle of deflection of the paddles relative to the bar E should be about forty-five or fifty degrees—not exceeding sixty degrees.

I am aware that arrangements have heretofore been made for reversing the position of vibrating paddles for propelling either forward or backward, such having been shown, for instance, in Patents No. 135,994, No. 174,419, and No. 122,823, and I disclaim, also, the construction and arrangement of the operating parts as shown and claimed in such patents.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

In combination with the frame E D, sliding rack G, operating hand-lever H, and vibrating vertical paddles C, the pinions F, carrying rigid projecting arms, provided with stops *f* on their ends to engage with the opposite sides of the paddles, the said paddles being pivoted one to each pinion F in the axis of the said pinion, and the whole being constructed and arranged to operate as shown and described.

THOMAS J. COULTER.

Witnesses:
A. W. ALMQVIST,
C. SEDGWICK.