

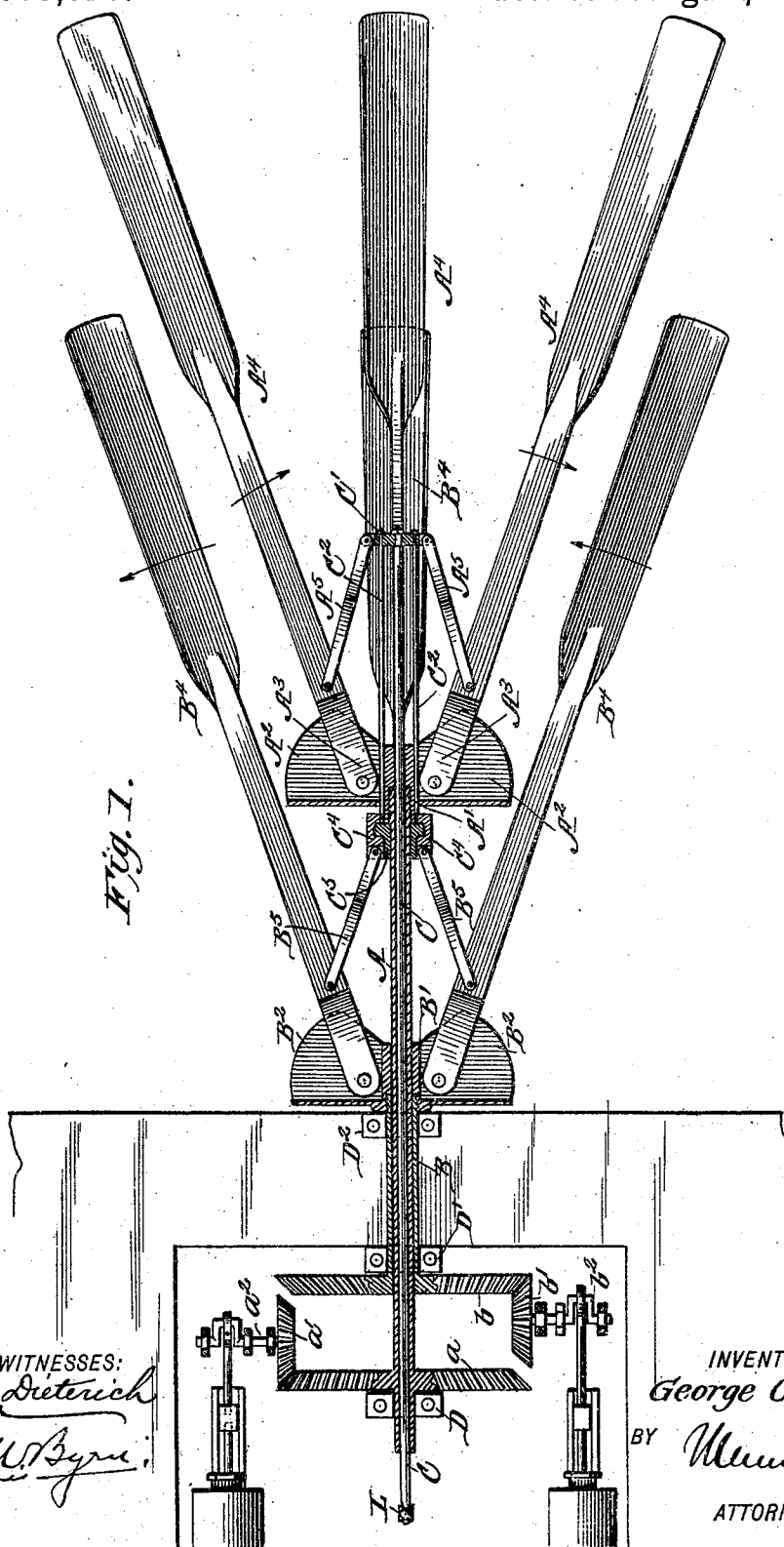
(No Model.)

2 Sheets—Sheet 1.

G. O. ADAMS.
SCULL PROPELLER.

No. 503,026.

Patented Aug. 8, 1893.



WITNESSES:
Fred G. Dieterich
Edw. W. Byrne

INVENTOR
George O. Adams
BY *Wm. T. G.*
ATTORNEYS.

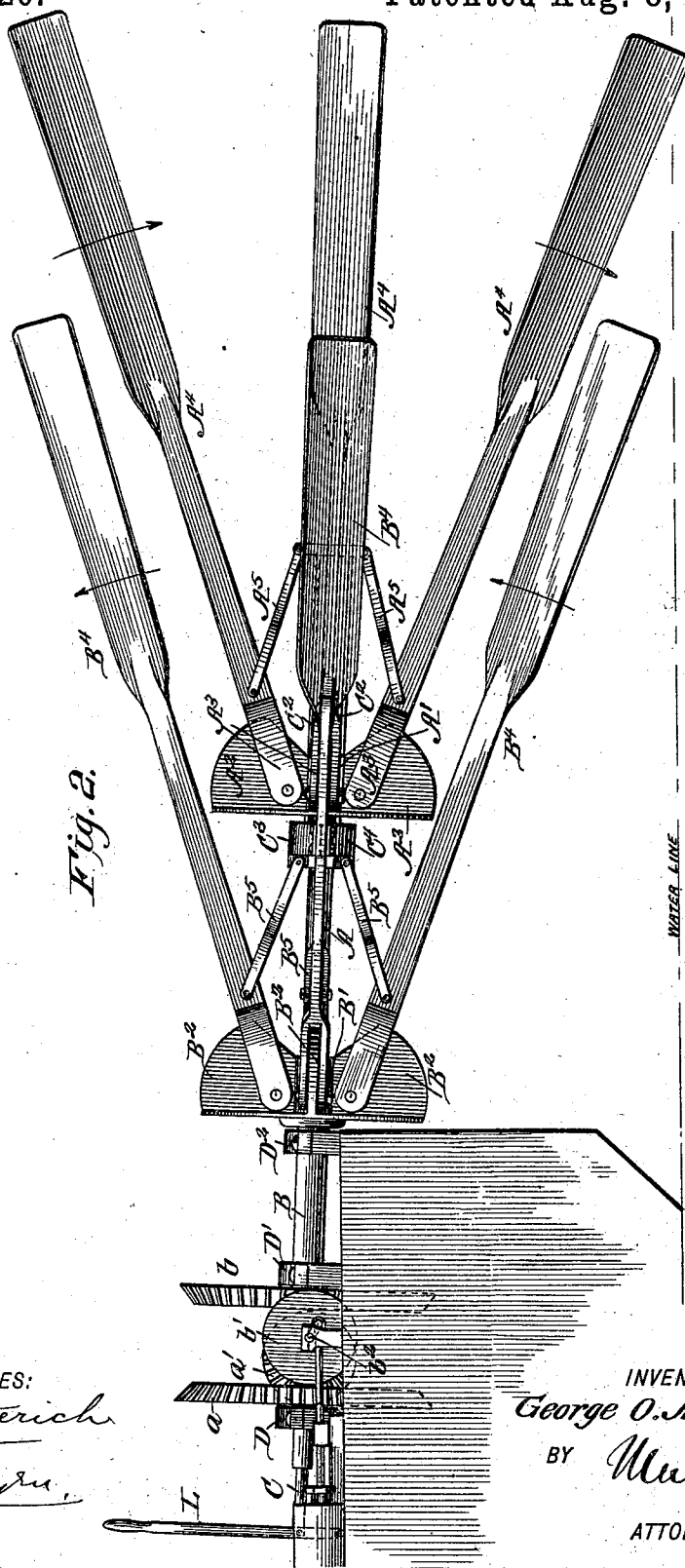
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UNITED STATES PATENT OFFICE.

GEORGE O. ADAMS, OF FIRTH, NEBRASKA.

SCULL-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 503,026, dated August 8, 1893.

Application filed October 25, 1892. Serial No. 449,993. (No model.)

To all whom it may concern:

Be it known that I, GEORGE O. ADAMS, of Firth, in the county of Lancaster and State of Nebraska, have invented a new and useful Improvement in Scull-Propellers, of which the following is a specification.

My invention is in the nature of a new propeller designed to utilize a light power with great effectiveness. It is a propeller which is not wholly submerged in the water, but only enters the water at its lower side, and may be entirely removed from the water by closing up its blades or oars like an umbrella, and which operates on the sculling principle; and it comprehends two sets of blades arranged to revolve in opposite directions about concentric axes, whereby great effectiveness in propelling effect is obtained when both are oppositely rotated at the same time, or whereby the boat may be steered or turned around by causing one to operate and the other to be stationary.

The invention also comprehends means for adjusting and operating the parts of the propeller as will be hereinafter fully described.

Figure 1 is a central longitudinal section of the device and Fig. 2 is a side view of the same applied to a boat.

In the drawings A and B represent two concentric tubes of which A is the longer and is contained within B. These two tubes connect respectively with the oppositely rotating propellers, and they are journaled in stationary bearings D D' D² fixed to the boat. One of these tubular shafts A is rigidly connected to a large bevel gear wheel *a* which derives motion from a small bevel gear *a'* on a crank shaft *a²* driven by a small engine. The other tubular shaft B is fixed to a large bevel gear wheel *b* which derives its motion from a small bevel gear *b'*, on a crank shaft *b²* driven by a separate small engine on the opposite side from the first. These two engines through bevel gears *a'* and *b'* rotate respectively the two tubular shafts A and B in opposite directions, or one may operate while the other is at rest.

The shaft A at its rear end is screwed into and rigidly rotates with a hub A' having four (more or less) wings A². To these wings are jointed at A³ by pivot bolts a corresponding

number of blades A⁴ which are lightly constructed of wood or metal in the form of an ore or paddle with the cross section of its blade adjusted to strike the water at an angle of about forty-five degrees. The rear ends of these blades are free to dip into the water at any angle to its surface or be folded to emerge therefrom entirely, the axis of the propeller itself being above the level of the water and nearly parallel to its surface. The pivoted ends of the blades which connect with the hub A' are made forked and the fork embraces the wings A², lying on both sides of the same to impart stiffness and strength to the blade at its connection with the hub.

To the tubular shaft B is rigidly attached another hub B' in front of the hub A'. This hub is similarly provided with wings B² to which are jointed the forward ends of the blade B⁴ of the propeller. Like the blades A⁴ the shanks of B⁴ are forked and made to embrace the wings B² for the same purpose of strength and stiffness, and these blades are also set with their planes at an inclination of forty-five degrees, but reversed to those of the other propeller since they rotate in an opposite direction.

C is a longitudinally sliding rod which passes centrally through the two tubular shafts and slides freely therein. The rear end of this rod is, at a point beyond the tubular shafts, connected to a cross head C', and the latter is connected by links or toggle arms A⁵ to the shanks of the blades A⁴. This connection serves, when the rod C is drawn forward, to expand the blades like the ribs of an umbrella, throwing them radially to such angle of expansion as to make them dip more or less in the water, or closing them up close to the axial shaft so as to leave the water entirely as shown by full lines Fig. 2.

To adjust both pairs of oppositely rotating propellers at once, I attach to the cross head C' four rods C² which pass forwardly through the hub A' and operate upon the shanks of the front propeller blades B⁴ through the links or toggle arms B⁵ in a manner similar to that described for the rear propeller. As, however, the front propeller revolves in an opposite direction from the rear one, it is necessary to interpose a swivel connection between

the rods C^2 and the toggle arms B^5 at a point between the two propellers to avoid antagonism between the propellers. For this purpose the forward ends of the rods C^2 are firmly
 5 connected to a two part box $C^3 C^4$ which retains a swiveling head C^5 that is jointed to the toggle arms B^5 , so that the endwise thrust of the rods C^2 may be imparted to the toggle arms B^5 , and the latter with swiveling head
 10 C^5 may rotate freely in the opposite direction from the box $C^3 C^4$ and attached rods C^2 and hub A' .

To open or shut the propeller blades the necessary endwise motion is given to the central slide rod C by a suitable hand lever L connected to the forward end of the same.

With this device, it will be seen that the blades or oars dipping into the water and moving laterally at an angle against the same
 20 produces a sculling effect that propels the boat in a forward direction, and as one set of blades moves in one direction, and the other set in the opposite direction, the counter currents in the water are made to operate very
 25 effectively, preventing the carrying of dead water, and greatly increasing the effectiveness of the propellers. The two propellers may be worked simultaneously to secure the above result, or either propeller may be worked
 30 singly to steer or turn the boat around, since the propeller blades operate in the water on one side of their axes only.

This form of propeller may be applied to any size of boat or character of power, but it
 35 is especially desirable for light craft where a light power only is available. It may also be operated by hand power, or by a single engine geared reversely for the two shafts. It is equally effective at low speed, and thus

permits small engines to be used, which may be advantageously geared to impart their power from a small gear wheel to a larger one on the shafts.

I am aware that it is not new to provide two reversely rotating propellers operating concentrically about the same axis, and I make no broad claim to this.

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

1. A propeller having two sets of sculling blades arranged to revolve in opposite directions with their axes located above the level of the water the said blades being arranged to open or expand and descend partly into the water or to close up out of contact with the water substantially as shown and described.

2. A propeller having two sets of blades jointed to independent hubs and arranged to revolve in opposite directions, the said blades being hinged or pivoted to open and shut, means for opening and closing the same, and a swivel joint interposed in the length of said adjusting devices substantially as shown and described.

3. The scull propeller herein described consisting of the concentric tubular shafts A and B having respectively propellers consisting of hubs $A' B'$, wings $A^2 B^2$ and forked blades $A^4 B^4$ jointed to the wings, the toggle arms $A^5 B^5$, and the central adjusting rod C with head C' , rods C^2 and swivel joint $C^3 C^4$, substantially as shown and described.

GEORGE O. ADAMS.

Witnesses:

C. M. WITTSTRUCK,
 JAS. W. DEAN,
 ALBERT R. TOU VELLE.