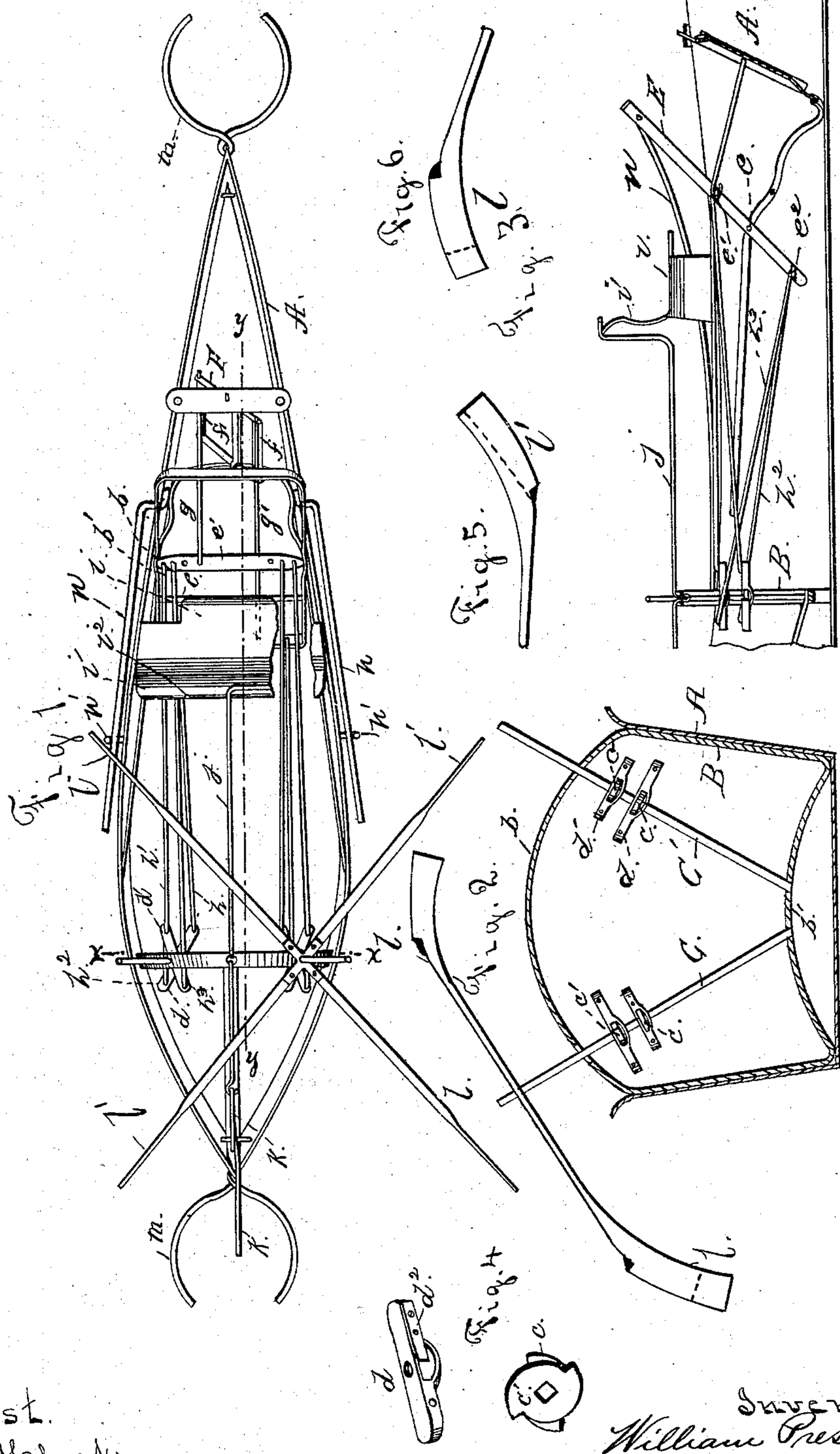
(No Model.)

# W. PRESLEY.

## PROPELLING BOATS, &c.

No. 284,325. Patented Sept. 4, 1883.



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# UNITED STATES PATENT OFFICE.

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## PROPELLING BOATS, &c.

SPECIFICATION forming part of Letters Patent No. 284,325, dated September 4, 1883.

Application filed April 5, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM PRESLEY, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Row-Boats and other Water-Craft; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in boats; and it consists, essentially, in the means whereby the boat is propelled and guided; and it has for its object to provide a boat which may be rapidly propelled without any extraordinary fatigue to the operator, and may be guided with ease, and the helm held at any desired point, all of which will be hereinafter more fully described and claimed.

In the drawings, Figure 1 is a plan view of my improved boat. Fig. 2 is a cross-section of same on line *x x*, Fig. 1. Fig. 3 is a detached vertical longitudinal section on line *y y*, Fig. 1; and Figs. 4, 5, and 6 show detail views of several of the parts, all of which will be described.

The hull A is preferably made in the shape shown, with the long prow and the bulge arranged near the stern; but my invention is applicable to boats of any ordinary shape of hull. I also prefer to make the hull of thin or sheet steel, and constructed in any manner well known to the trade. Near the rear end of the hull I fix the bearings for the propelling-wheel shafts, which, as shown, consists of a suitable frame, B, having its sides secured to the sides of the hull and its lower and upper portions arched to form the arches *b b'*. The arch *b'* curves up above and between the sides of the boat, and, in connection with the rest of frame B, strengthens and braces the hull at the point where greatest strength is desired, as will be understood on reference to the drawings.

The propeller-wheel shafts C C' are journaled, preferably, in the arches *b b'*, as shown, and arranged at an angle of about sixty degrees, and inclined in opposite directions, so that their upper portions, on which the wheels are journaled, will extend over or nearly over the side of the hull. On the shafts C C', midway or between the arches *b b'*, I fix the ratchet plates or disks *c c'*, journaled on the shafts C C', and over the ratchet-disks *c c'* are levers or arms *d d'*, which are provided with suitable pawls, $d^2$, to engage the teeth of the said ratchet-disks, and thereby revolve the shafts C C' in the operation of the device.

For convenience of reference, I will denominate the ends of the bars *d d'* next the side of the boat their "outer" ends, and their opposite ends their "inner" ends.

In the forward part of the hull, in advance of the operator's seat, I pivot the hand-lever frame E. The upper arm of this lever is made longer than the lower, so it may extend within easy reach of the operator, and also to give the necessary power to operate the lever. The pivot-bar *e* extends entirely across the frame, which is also provided with a cross-bar, *e'*, arranged above the bar *e* and equidistant therefrom with the lower cross-bar, $e^2$. To these cross-bars *e' e²* the connecting-rods, hereinafter described, are fastened.

The foot lever or treadle F is pivoted slightly in advance of the lever E, and is constructed with the bars *f f'*, arranged on opposite sides of the central pivot and at a suitable angle to receive the feet of the operator. Rods *g g'* connect, respectively, the bars *f e'* and the bars *f' e²*, and transmit the force applied to the foot-lever to the hand-lever, whence it is conveyed to the shafts C C', as will be now described. Rods *h h'* have their forward ends made fast to the upper cross-bar, *e'*, of the lever E, and their rear ends made fast, respectively, to the inner end of the bar *d* and to the outer end of the bar *d'*. Rods $h^2$ $h^3$ have their forward ends made fast to the lower cross-bar, $e^2$, and their rear ends are made fast, respectively, to the outer end of the bar *d* and to the inner end of the bar *d'*.

The seat *i* is arranged a suitable distance in rear of the hand-lever E, and its back *i'* is provided on its upper edge with a series of notches, $i^2$, and thus serves as a rack-bar for the helm-lever. This helm-lever *j* is pivoted on the arch *b*, and its rear end is coupled to the stem *k'* of the rudder *k*, and its forward end is bent up over the rack-bar *i'*, in convenient reach of the operator and in position to be engaged and held by the notches $i^2$ in the rack-bar when it is desired to hold the rudder in one position.

The wheels are journaled on upper ends of

shafts C C′, and made, preferably, of four paddles, the alternate ones, *l*, being made of a narrower impinging-face than the paddles *l′*, as I will now describe.

In the operation of my device the paddles *l′* are forced into the water by the drawing of the lever E toward the operator, and the paddles *l* are forced in by the pushing of the lever away, as will be described. As the drawing motion is much the stronger, I have made the impinging-face of the paddles operated thereby broader, as shown in Fig. 5, by turning the outer end of the paddles *l′* up and that of the paddles *l* down, as shown, and the wheels are so supported that the impinging-face of the paddle *l* is only that portion of the end or point below the dotted lines, as shown in Figs. 2 and 6, while the impinging-face of the paddles *l′* is that portion below the dotted line shown in Fig. 5, which, it will be seen, is of larger area than that of the paddle *l*. Thus in the operation of my invention I have two power or heavy strokes and two light strokes with each revolution of the wheel.

I prefer to have the paddle-wheels arranged on both sides of the boat, and in that case use the connecting-rods, &c., on both sides of the boat, the paddles of the two wheels being arranged to interlap. Where so desired, however, a paddle-wheel could be used on one side only, the helm being properly set to compensate, as is well understood.

The ratchet-disks are provided with two teeth, and those on the same shaft are arranged at right angles to each other, substantially as shown in Fig. 4.

My intention is to have my boat light, so it may be carried readily by two persons over shallow or rapid places, or locks or canals, or across country from stream; and in order to facilitate such transportation, I provide the handles *m m* on its opposite sides, whereby it may be carried by a couple of men.

Where the boat is designed to carry two or more, it may be made broader of beam than as shown; or the prow may be extended and seats arranged therein.

It will be seen that by means of the two lever-arms *d d′*, operated alternately, the shaft and the paddle-wheel thereon are given a continuous motion as the propelling mechanism is operated.

In order to facilitate the propulsion of the boat in shallow streams, I provide the rods *n*, having their forward ends pivoted to the upper arm of the hand-lever and their opposite ends arranged to engage on the bottom of the stream and aid in forcing the boat along as the lever is operated. When not in use, the rear ends of these rods are supported on rests *n′*, projected from the side of the boat.

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

1. A paddle-wheel for boats, journaled and revolved at an angle to the surface of the water, and having its alternate paddles constructed and arranged the one to present a narrow and the other a broad impinging-face, and means for operating the same, whereby a light and heavy stroke are alternately given, substantially as described.

2. In a boat, the combination, with the paddle-wheel shaft set at an angle to the bottom of the boat, and having its upper end projected above the sides thereof, and the paddle-wheel fixed upon the upper end of the wheel-shaft, and revolving at an acute angle to the surface of the water, of the ratchet-disks *c c′*, fixed upon the wheel-shaft, and having the teeth on the one disk arranged in alternate positions with the teeth on the other, the transverse rocking levers *d d′*, pivoted on the wheel-shaft and in contact with the disks *c c′*, and provided with pawls to engage with the teeth thereon, and means whereby the levers *d d′* are alternately rocked back and forth, and a continuous rotary motion thereby imparted to the wheel-shaft and wheel, substantially as forth.

3. The combination, with the wheel-shaft set at an angle to the plane of the bottom of the boat, and having its upper end projected above the top thereof and adapted to carry the paddle-wheel and the ratchet-disks *c c′*, fixed upon the shaft of the transverse rocking levers *d d′*, pivoted loosely on the wheel-shaft and close to the ratchet-disks, and having their ends arranged in alternate positions, pawls fixed upon the rocking levers and engaging with the ratchet-disks, a rocking operating-frame pivoted within reach of the operator, and a system of connecting-rods having their rear ends fastened to the ends of the rocking levers and their forward ends disposed and fastened to the operating-frame, substantially as and for the purposes set forth.

4. The combination, with the rocking lever or frame E, the connecting-rods and the wheel-shaft, of a rocking foot-lever, F, arranged in advance of the lever E, connecting-rods *g g′*, having their forward ends made fast to the foot-lever on opposite sides of the pivotal center thereof, and their rear ends disposed the one above and the other below the pivotal center of the frame E, and made fast to the latter, substantially as and for the purposes set forth.

5. In a boat, the combination, with the seat having rack-bar mounted thereon, and the rudder *k*, having stem *k′*, of the helm-lever pivoted on a suitable support, and having its rear end coupled to the rudder-stem and its forward end arranged in convenient reach of the operator and in position to be engaged with the rack-bar, substantially as and for the purposes set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM PRESLEY.

Witnesses:
P. B. TURPIN,
S. M. GORDON.