(No Model.)

G. O. HOUCK & J. G. DICE.

FEATHERING OAR OR PADDLE.

No. 451,431. Patented Apr. 28, 1891.

Fig. 1.

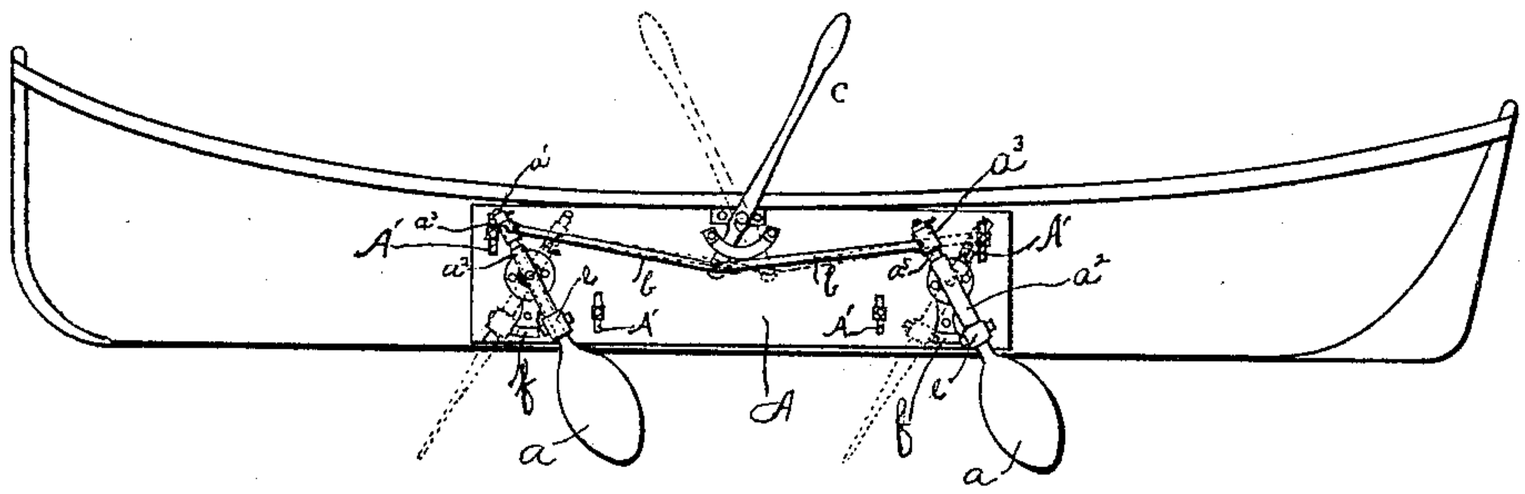


Fig. 2.

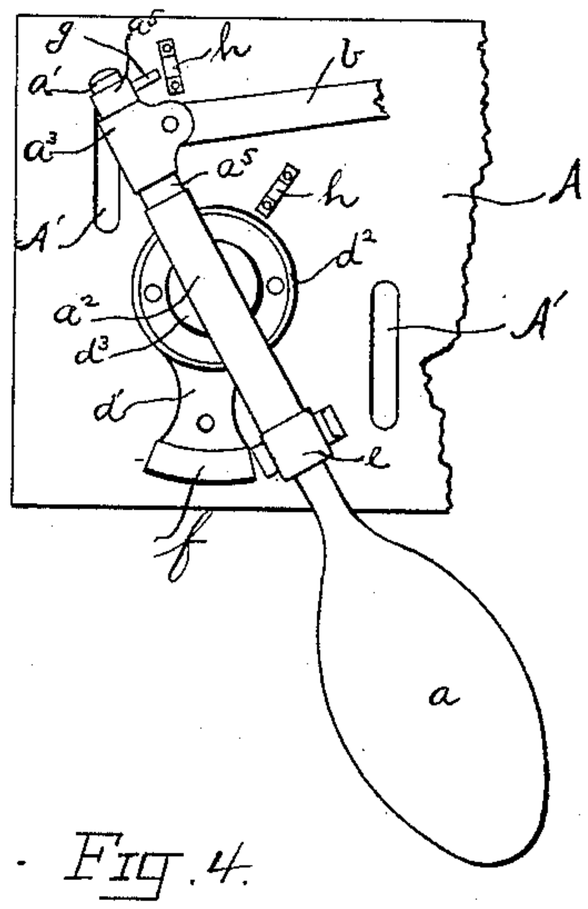


Fig. 3.

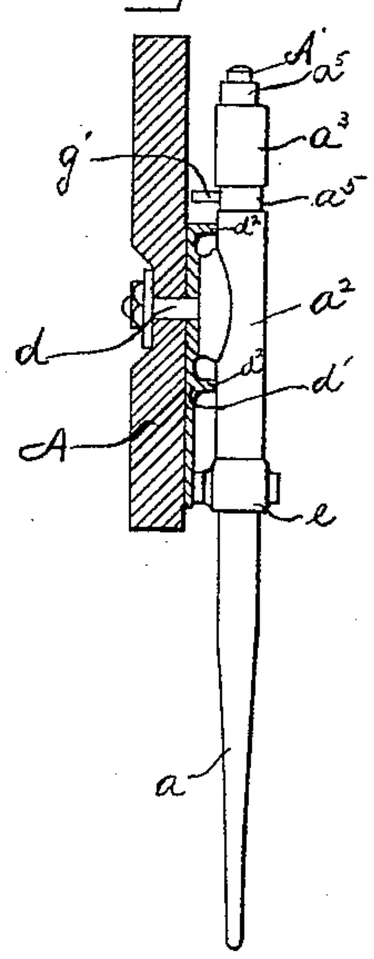


Fig. 5.

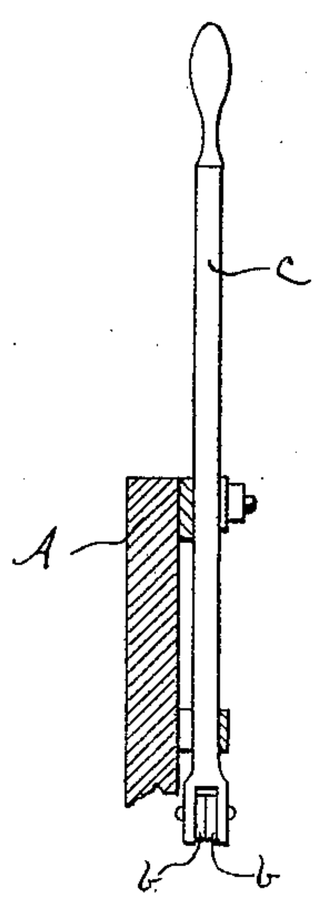
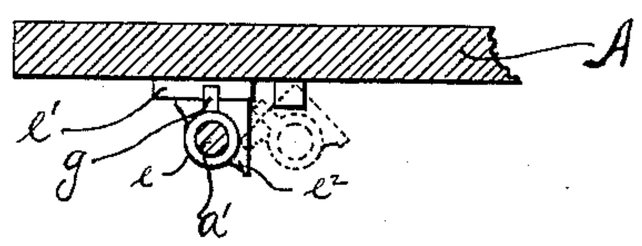


Fig. 4.



WITNESSES:

D. F. Graham

E. O. Seaver

INVENTOR

Geo O. Houck

Jacob G. Dice

BY

Staley and Shepherd

their ATTORNEYS

UNITED STATES PATENT OFFICE.

GEORGE O. HOUCK AND JACOB G. DICE, OF SPRINGFIELD, OHIO; SAID DICE ASSIGNOR TO SAID HOUCK.

FEATHERING OAR OR PADDLE.

SPECIFICATION forming part of Letters Patent No. 451,431, dated April 28, 1891.

Application filed July 14, 1890. Serial No. 358,696. (No model.)

To all whom it may concern:

Be it known that we, GEORGE O. HOUCK and JACOB G. DICE, citizens of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Feathering Oars or Paddles, of which the following is a specification.

Our invention relates to folding or feathering oars or paddles for boats.

The object of our invention is to provide a propelling device having oars or paddles adapted to be automatically feathered in their operation, the device being especially adapted for hand-power with small boats, it being capable, however, of being modified to suit any kind of water craft and be propelled by any motive power other than hand.

Our invention consists in the various constructions and combination of parts hereinafter described, and set forth in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a boat to which our improved device has been attached. Fig. 2 is a detailed view of one of the paddles at the limit of its backward stroke. Fig. 3 is a side view, partly in section, of the same. Fig. 4 is a transverse sectional view showing the means for holding the paddle in the proper position while being moved backward or forward. Fig. 5 is a detailed view of the operating-lever.

Like parts are indicated by similar letters of reference throughout the several views.

In the said drawings, *a a* represent paddles or oars, each provided with an upwardly-projecting shaft or trunnion *a'*, journaled in a pivoted sleeve a^2, in which it is adapted to turn. At or near the upper end of the shaft or spindle *a'* is a connecting-sleeve a^3, journaled between collars a^5 a^5, secured to said trunnions. The sleeves a^3 are each connected by links *b* to the lower end of a pivoted lever *c*. The sleeve a^2 is provided with a trunnion *d*, which passes through a bearing-plate *d'*, having a circular flange d^2, on which the sleeve is adapted to turn. A boss or lug d^3 on said sleeve is also provided with a seat on the bearing-plate *d'*. The lever *c* and oars *a*, together with their operating parts, are all preferably attached to a side plate A, which is preferably secured to the boat through slotted openings A' by bolts, screws, or any other suitable means, which permit the propelling device to be adjusted with reference to the boat.

Secured to each of the paddles *a*, just below the pivoted sleeve a^2, is a bearing-block *e*, having stop-surfaces *e'* e^2 at right angles to each other and adapted to travel, respectively, on a bearing-surface *f*, attached to the bearing-plate *d'*.

We preferably use two oars or paddles *a* on each side of the boat or vessel, said oars or paddles being connected at a common point to the lever *c*, one oar being arranged on each side of said lever, as shown in Fig. 1. An oscillating movement of said lever is thus transmitted uniformly to said oars.

The collars a^5 are provided with projecting lugs or pins *g* and *g'*, arranged at right angles to each other, each of said lugs or pins being at right angles to one of the bearing-surfaces *e'* e^2 on the bearing-block *e*. As the oars are oscillated in either direction, the pins or lugs *g* are adapted to come in contact with stop projections *h* or otherwise, and thus revolve the said blades a quarter of a revolution, the stop projections *h* being so arranged that the lugs or pins *g* come in contact therewith just as the bearing-surfaces *e'* e^2 leave the bearing *f* on the plate *d'*. When the motion of the oar or paddle is reversed, the opposite bearing-surface comes in contact with said plate, and thus holds said oar in this position during the entire stroke.

In operation the lever *c* is moved backward and forward about its pivotal center, causing a similar movement of the oars *a*. When moved in the forward direction, the oars have their flat surfaces turned to the water until they reach the limit of their stroke, when the projecting lugs, coming in contact with the stop projections, feather said oars to a position with the edge of the oar presented to the water in the forward motion of the boat. It will be seen that by this construction an automatic feathering paddle or oar is secured, which is held firmly in either position until it reaches the limit of its stroke.

In operating the boat in the forward position the lever *c* is moved in each direction until the lugs or pins come against the stop projections. If it is desired to move the boat

backward, the lever *c* is moved only a portion of a stroke, a slow movement being given to the lever on the forward stroke and a quick movement imparted thereto on the backward stroke.

We have shown two paddles or oars adapted to be arranged at each side of the boat. It is obvious, however, that one may be dispensed with, if desired, by simply disconnecting the link *b* and removing the paddle from the supporting-plate A.

It is obvious that the device as thus described admits of modifications in its construction, and we do not limit ourselves to the exact construction set forth, but claim as our invention—

1. The combination of a feathering oar or paddle journaled in a pivoted sleeve and having engaging projections at different angles thereon, bearing-faces at right angles to each other and each arranged at right angles to one of the engaging projections, a bearing-plate adapted to engage with said bearing-faces, except when the paddle is at the limit of its stroke in either direction, and stops adapted to contact with said engaging projections, substantially as specified.

2. The combination, with a paddle journaled in a pivoted sleeve and provided with bearing-faces at right angles to each other, of a bearing-plate having an annular flange adapted to engage said sleeve, engaging projections on said oar, stop projections adapted to come in contact with said engaging projections at the limit of the stroke of the oar in either direction, and means for oscillating said oar, substantially as specified.

3. The combination of a movable oar *a*, journaled in movable sleeves a^2, a bearing-block *e*, having bearing-faces e' e^2 on said oar and adapted to turn therewith, stationary stop projections *h*, and engaging projections *g* on said oar, a sleeve a^3 on said oar, pivoted lever *c*, and a connecting-link *b*, connecting said sleeve a^3 and said lever, substantially as specified.

In testimony whereof we have hereunto set our hands this 12th day of July, A. D. 1890.

GEORGE O. HOUCK.
JACOB G. DICE.

Witnesses:
JOSHUA SCOTT,
CHAS. I. WELCH.