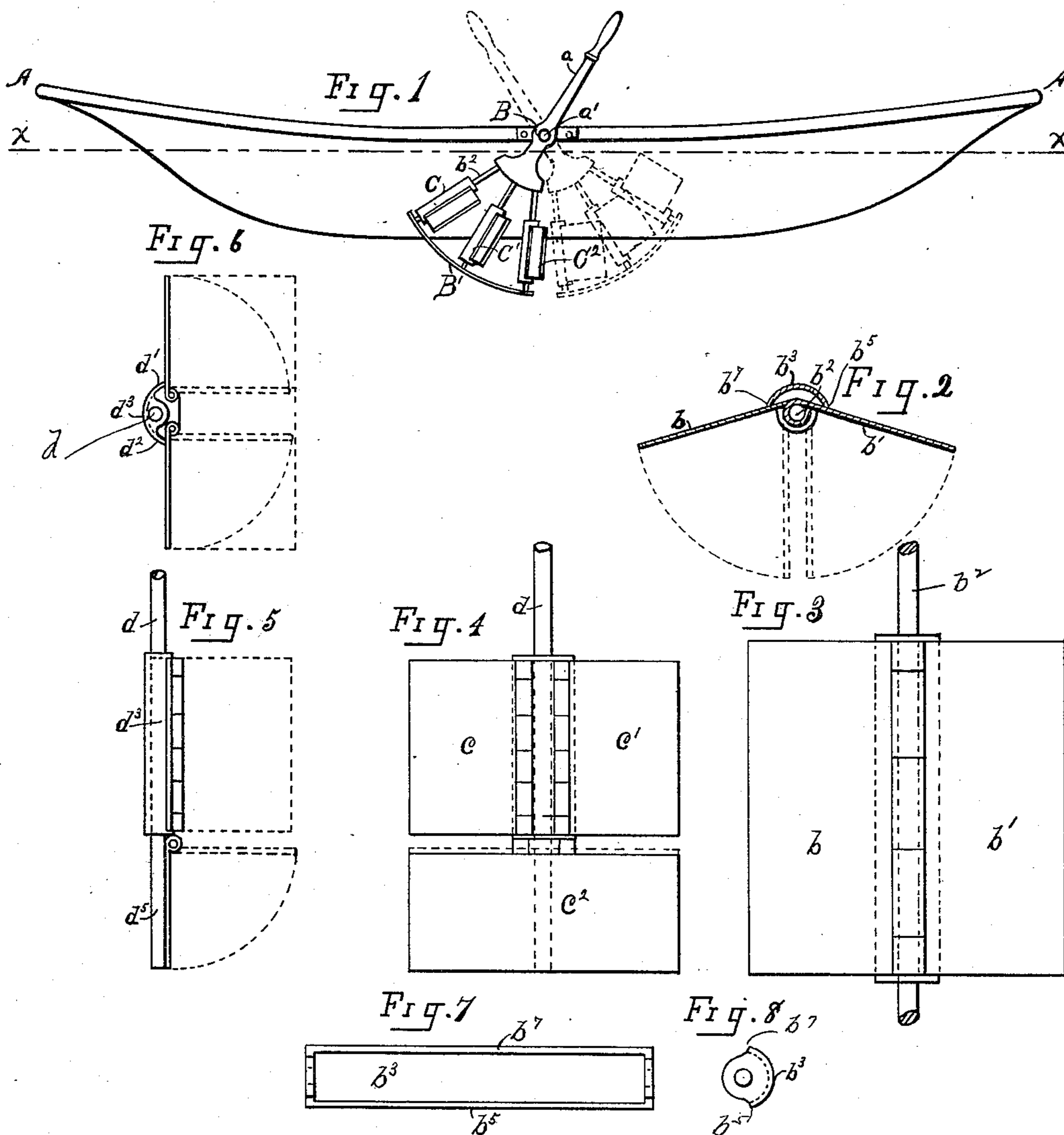


(No Model.)

J. G. DICE & G. O. HOUCK.
SUBMERGED FOLDING OAR OR PADDLE.

No: 427,842.

Patented May 13, 1890.



WITNESSES

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UNITED STATES PATENT OFFICE.

JACOB G. DICE AND GEORGE O. HOUCK, OF SPRINGFIELD, OHIO.

SUBMERGED FOLDING OAR OR PADDLE.

SPECIFICATION forming part of Letters Patent No. 427,842, dated May 13, 1890.

Application filed March 1, 1890. Serial No. 342,223. (No model.)

To all whom it may concern:

Be it known that we, JACOB G. DICE and GEORGE O. HOUCK, 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 Sub-

merged Folding Oars or Paddles, of which the following is a specification.

Our invention relates to improvements in devices for propelling boats, the object of the invention being to provide a reciprocating oar or paddle adapted to reciprocate beneath the water, being at all times completely submerged.

Our invention consists in the various constructions and combinations 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 applied. Fig. 2 is a detailed view in section of one of the blades or paddles. Fig. 3 is a front elevation of the same. Figs. 4, 5, and 6 are detailed views, respectively, showing a modified form of the device. Figs. 7 and 8 are detailed views of a portion of the frame-work adapted to act in the nature of stops for the hinged wings or blades and as a protection for the hinges or joints of the same.

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

In the said drawings, A A represent a boat of any desired size, $x x$ being the water-line.

B is our improved paddle or oar, any suitable number of which may be used and applied in any desired manner.

As shown in Fig. 1, the device is pivoted at a' to the side of the boat, and is adapted to be oscillated or reciprocated by means of a handle a , which projects upwardly above the top of the boat.

The paddle or oar B, as shown in Fig. 1, consists of the lower skeleton frame B' , having hinged therein folding blades or paddles $C C' C^2$. Each of these paddles consists, preferably, of two blades $b b'$, hinged together by means of a rod b^2 , which forms a portion of the frame B' . Connected at the bottom of each pair of blades $b b'$ is a protecting-casing b^3 , which serves as a protection for the joints or hinges of the blades or wings b and b' , and

is extended so as to form stops $b^5 b^7$ for said wings.

As thus described it will be seen that by oscillating the handle a to the position shown in dotted lines the wings $b b'$ will be spread and the full surface thereof exposed to full contact with the water to drive the boat forward. When the motion is reversed, the blades will be folded to the position indicated by dotted lines in Figs. 1 and 2 and pass loosely through the water. The blades are at all times submerged, and open and close automatically by the action of the water as the motion thereof is reversed.

In Figs. 4 to 6, inclusive, we have shown the device modified. In this construction we employ three blades $c c' c^2$. The blades c and c' are pivoted to a vertical standard d and provided with stops $d' d^2$, and a case or protecting device d^3 , similar to the one b^3 before described, the lower paddle c^2 being hinged at right angles to the upper pair c and c' , and adapted, when extended, to come against the extended end d^5 of the standard d .

When moved against the water in propelling the boat forward, the blades assume the position shown in Fig. 4, by which a very broad surface is presented to the action of the water. When moved in the opposite direction, the blades are folded to the position shown in dotted lines in Figs. 5 and 6, the edges of the blades only being exposed to the action of the water, through which they readily pass.

It is obvious that a device of this character admits of various modifications in its construction and its operation. It may be attached in any desired manner and operated by hand or any suitable mechanism with any desired motive force, such as steam, gas, electricity, or any other well-known agents.

Having thus described our invention, we claim—

1. In a submerged oar or paddle, the combination, with a suitable supporting frame or standard, of two or more blades hinged to said standard and adapted to fold together, as described, and a third blade hinged at right angles to said blades and adapted to fold in the same direction with said blades, but in a plane at right angles thereto, so that the edges

of all the said blades will be presented in one direction, substantially as specified.

2. The combination, with a suitable frame or standard, of a pair of hinged blades connected to said frame or standard and adapted to be turned in opposite directions so as to be extended in substantially the same plane or folded together in a plane at right angles thereto, and a third blade hinged to said frame or standard at right angles to the axis of said pair of blades, and means for limiting the movement of said blades when in their extended positions, substantially as specified.

3. The combination, with a suitable frame or standard, of the blades c and c' , hinged thereto, a stop casing d^3 , also secured to said standard and adapted to limit the movement of said blades and form a cover for said hinges, and a third blade c^2 , also hinged to said standard with its hinge or axis at right angles to the hinge or axis of the other blades, and a

stop projection or extension d^5 , substantially as specified.

4. The combination, with a suitable supporting standard or frame, of two pivoted blades hinged thereto and adapted to fold toward each other, suitable stops for limiting the movement of said blades when turned away from each other, and a third blade also hinged to said standard at right angles to said pair of blades, and a projection on said frame or standard to limit the movement of said blade, substantially as specified.

In testimony whereof we have hereunto set our hands this 26th day of February, A. D. 1890.

JACOB G. DICE.
GEORGE O. HOUCK.

Witnesses:

JOSHUA SCOTT,
PAUL A. STALEY.