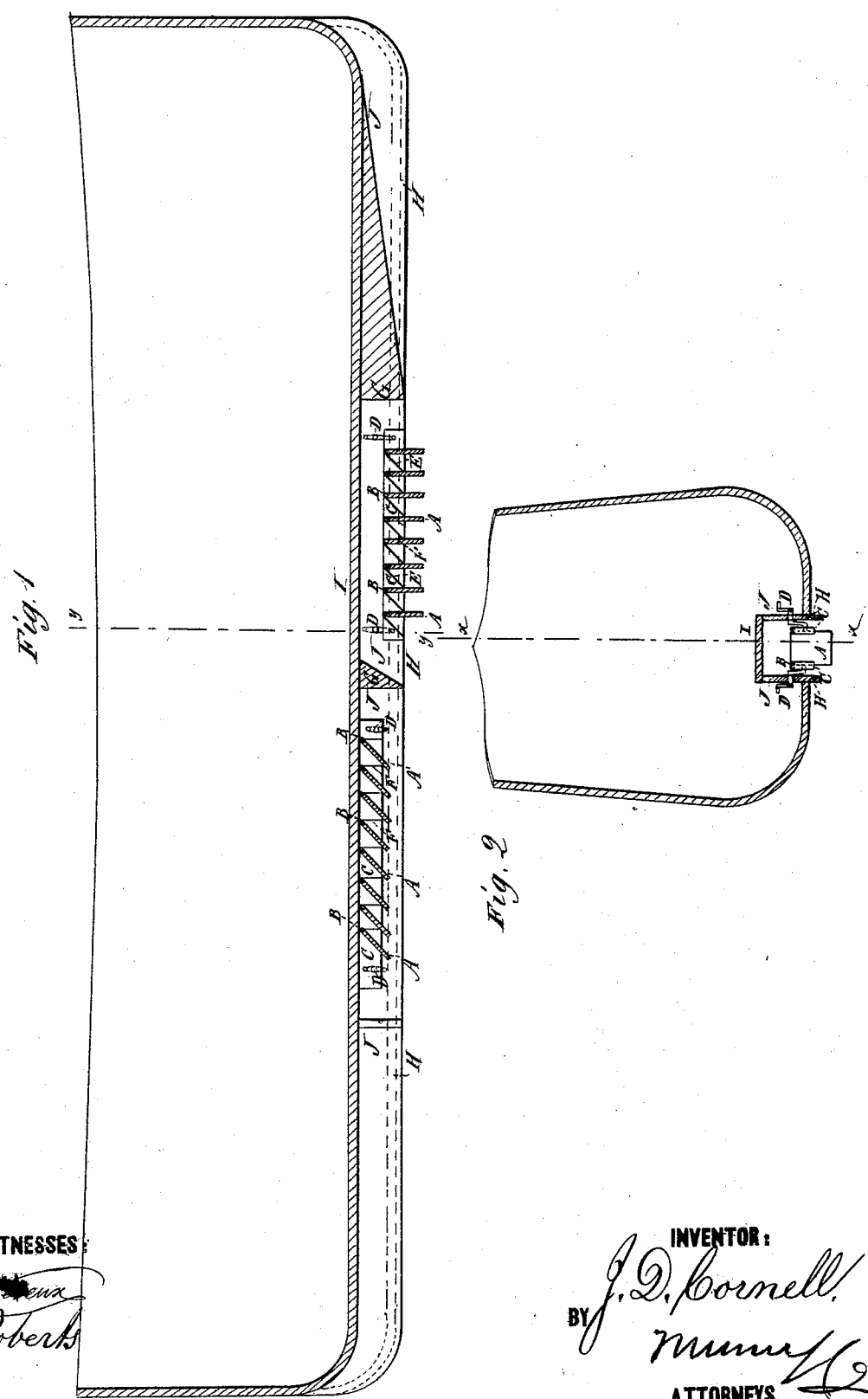


J. D. CORNELL.
VIBRATING PROPELLER.

No. 170,993.

Patented Dec. 14, 1875.



WITNESSES:

C. A. ...
A. F. Roberts

INVENTOR:

J. D. Cornell
BY *Munn*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN D. CORNELL, OF JERSEY CITY, NEW JERSEY.

IMPROVEMENT IN VIBRATING PROPELLERS.

Specification forming part of Letters Patent No. **170,993**, dated December 14, 1875; application filed November 13, 1875.

To all whom it may concern:

Be it known that I, JOHN D. CORNELL, of Jersey City, Hudson county, New Jersey, have invented a new and Improved Propeller for Vessels, of which the following is a specification:

My invention consists of two sets of paddles, carried on pivots at their upper ends, in horizontal frames, located under and partly in the bottom of the vessel between two keels, and carried backward and forward by cranks, the paddles being so as to swing up nearly horizontal, and move partly edgewise against the water when going forward, and to swing down vertically and move sidewise against it when going back, in such manner as to afford the necessary area of propelling-surface, with much simpler, lighter, and less expensive apparatus than the common paddle-wheels and screws.

By the location along the ship's bottom the paddles are protected from injury by floating objects, and the engines are not exposed to "racing," no matter how much the vessel may roll and pitch.

Figure 1 is a longitudinal sectional elevation of a vessel having my improved propeller on line *x x*, Fig. 2; and Fig. 2 is a transverse section on line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts.

A represents the paddles, which are pivoted at B between two frame-pieces, C, which are carried upon cranks D, suspended horizontally, and transversely extending through the keelsons J in any approved way, and geared with the engines, say by cranks D. The frame-

pieces carry inclined shoulders E, against which the buckets swing, when being carried forward to allow them to pass through the water freely; also vertical shoulders F, against which the buckets bear when going back against the water to propel the vessel.

In front of each set of paddles is a break-water, G, to make dead-water for the paddles to advance into, instead of being forced against the currents, to which they would be exposed without the break-water. The two sets of paddles are so geared that one goes forward, while the other goes back, thus equalizing the action.

My device may extend the whole length of the ship, or to any length necessary to get the necessary area.

H represents two keels, which are located outside of the center to make room for the propellers, and to form guards for the protection of the propellers, and to inclose the propellers by the keelsons J and the covering-board I to the keelsons.

It is believed that this form of propeller will drive the vessel faster, with equal power, than any other.

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

The combination of paddles A, carrying-frames C, and cranks D, substantially in the manner described.

JOHN DENNIS CORNELL.

Witnesses:

CALEB C. JUNE,
JOHN STRATFORD.