

J. ECKHARDT.  
PROPULSION OF VESSELS.

No. 179,407.

Patented July 4, 1876.

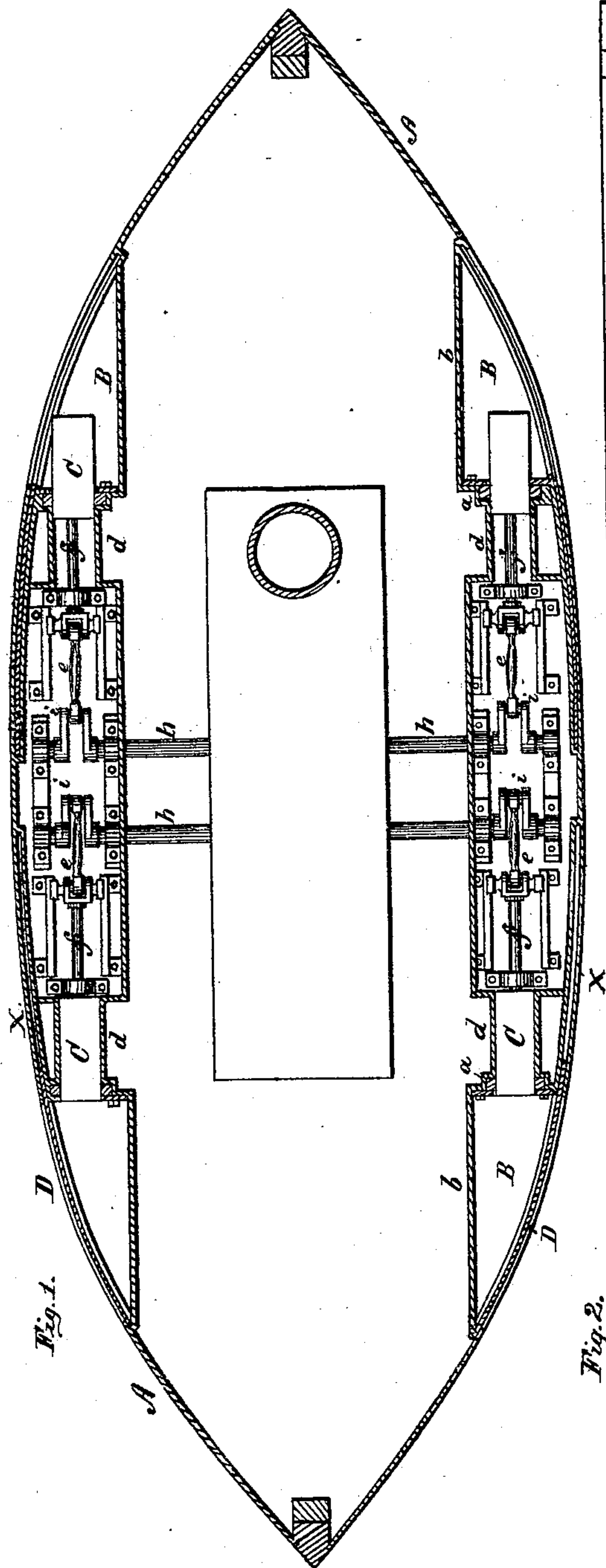


Fig. 1.

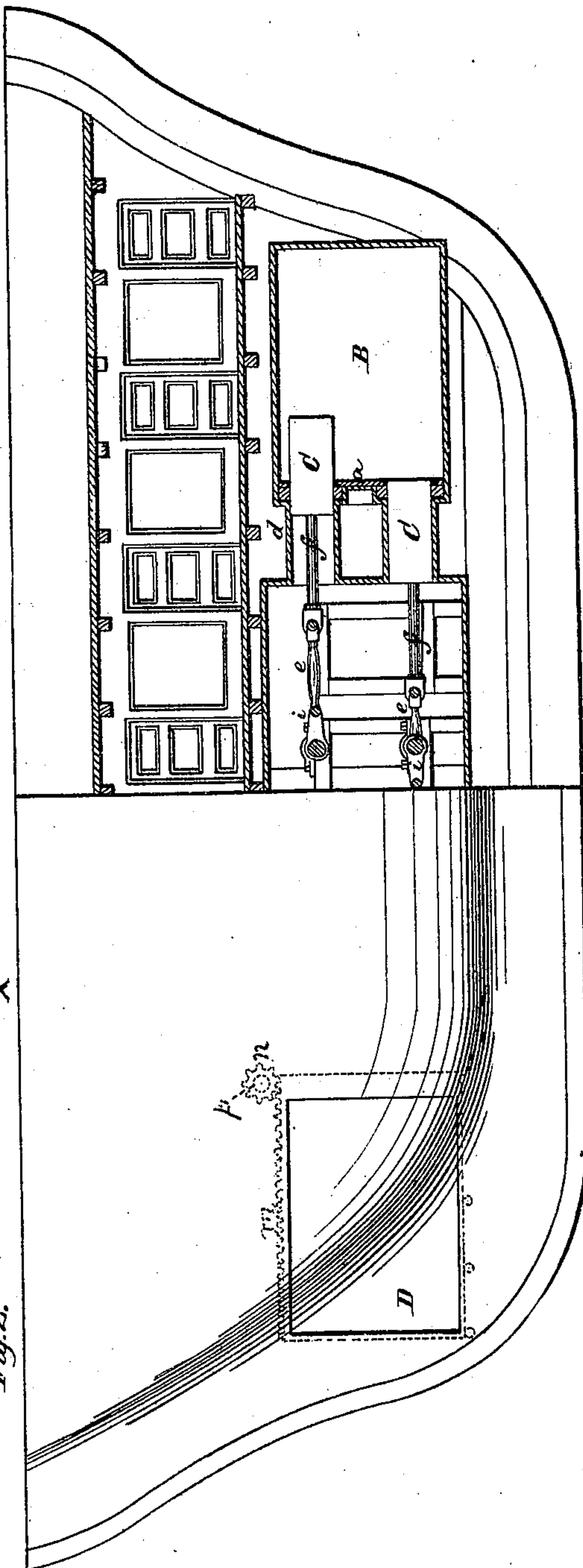


Fig. 2.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN PROPULSION OF VESSELS.

Specification forming part of Letters Patent No. **179,407**, dated July 4, 1876; application filed June 20, 1876.

*To all whom it may concern:*

Be it known that I, JACOB ECKHARDT, of St. Louis, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Propelling Boats; and do hereby declare that the following is a full, clear, and exact description thereof, which 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 letters of reference marked thereon, which form a part of this specification.

My invention relates to means for propelling steamships and other vessels; and it consists in the construction and arrangement of paddles or plungers operating horizontally in boxes or casings formed within the hull of the vessel, and also in the arrangement of sliding doors for closing said boxes or casings, as will be hereinafter more fully set forth.

In the annexed drawing, Figure 1 is a plan view of the hull of a vessel embodying my invention. Fig. 2 is a side elevation of the same, with one-half of the hull broken open to show the interior thereof.

A represents the hull of a vessel, made pointed at both ends, so as to be able to run in either direction without turning around. In each side of the hull A, at a suitable distance from each end, is formed a box or casing, B, opening through the side of the hull, and made perfectly water-tight on the inside, so that no water can escape into the vessel. Each box is made somewhat in the form of a right-angle triangle, having one small side, *a*, toward the center of the vessel, one long side, *b*, extending at right angles thereto, forward, till it joins the hull, and the third side of the triangle is that part of the hull. Through the side *a* of the box B are passed two stuffing-boxes, *d d*, through each of which is passed a plunger, C, having a plunger-rod, *f*, connected, by a link, *e*, with a crank, *i*, on a shaft, *h*, which runs across the vessel, and connects in the same manner with the corresponding plunger on the other side. The four plungers at each end of the vessel are thus connected to two shafts, and the cranks

on them are set in opposite directions, so that one plunger will move forward, and the other backward, and vice versa.

The shafts *h* of each set are geared together in any suitable or convenient manner, and the two sets should be so connected to the operating-engine that either set may be thrown in gear, and the boat thus made to move in either direction.

The boxes or casings B, where the plungers do not work, should be closed, and to this end each box is provided with a sliding door, D, working, when open, in a double shell, as seen at *x* in Fig. 1. On top of each door is a rack-bar, *m*, operated by a pinion, *n*, on a shaft, *p*, passing through the vessel, and by a pinion on its other end operating the corresponding door on that side.

These shafts may be operated by hand or by suitable connection with the engine.

This invention is applicable to almost every kind of boats or vessels, whether canal-boats, river-boats, or ocean-steamers, and is simple, cheap, and durable. There is nothing beyond the hull that can become entangled in lines or cables, or that can be injured by sudden contact with other objects, and by a proper construction of the plungers any desired speed may be obtained.

I am aware that it has not been uncommon to construct vessels with boxes or compartments closed by sliding covers or doors, in which propellers and plungers of different characters have been operated; but by my construction of boxes, when the sliding doors are closed, a smooth outside surface is maintained, and the general run of the vessel preserved in its passage through the water, thus lessening the obstructions by doing away with sudden angles in the hull. When the doors are open and the plungers are operating against the outside water, the action of said plungers is direct, and in a line axial with the keel of the vessel, and the location of the boxes in the sides, instead of the bows, stern, or center of the boat, obviates the necessity of cutting away the "dead-wood," which last is always a cause of weakness of a ship. In addition to these advantages, there is but

comparatively little loss of space, which is a great desideratum in vessels of flat floors and light draft.

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

1. In a vessel constructed substantially as described, the combination of the triangular boxes or casings B B, formed within the hull A, and the plungers C C, working horizontally therein, substantially as and for the purpose set forth.

2. The combination of the hull A, boxes B, plungers C, and the sliding doors D, arranged and operated substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing as my own invention I affix my signature in presence of two witnesses.

JACOB ECKHARDT.

Witnesses:

JOHN W. FRAZEE,  
HERM. LAUTEN.