J. HOUGH.

Improvement in Propelling Canal Boats.

No. 132,288. Patented Oct. 15, 1872.

Fig. 1.

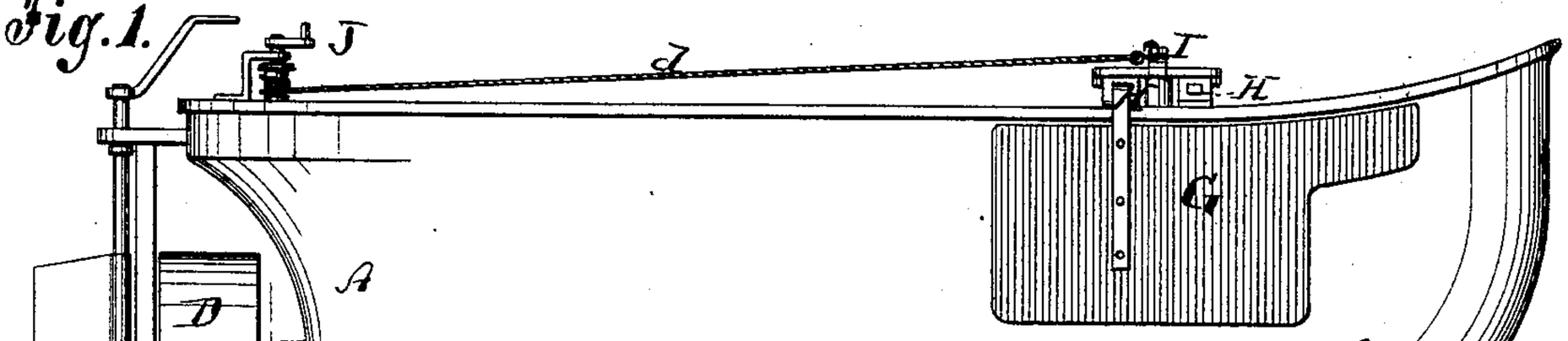


Fig. 2.

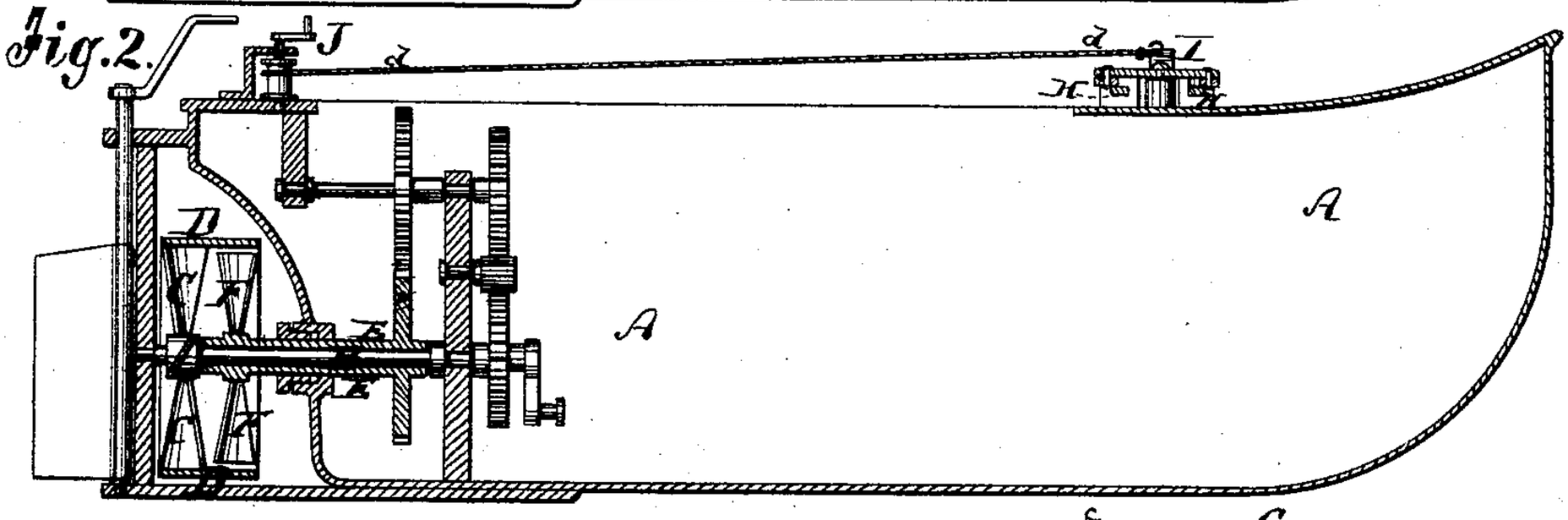


Fig. 3.

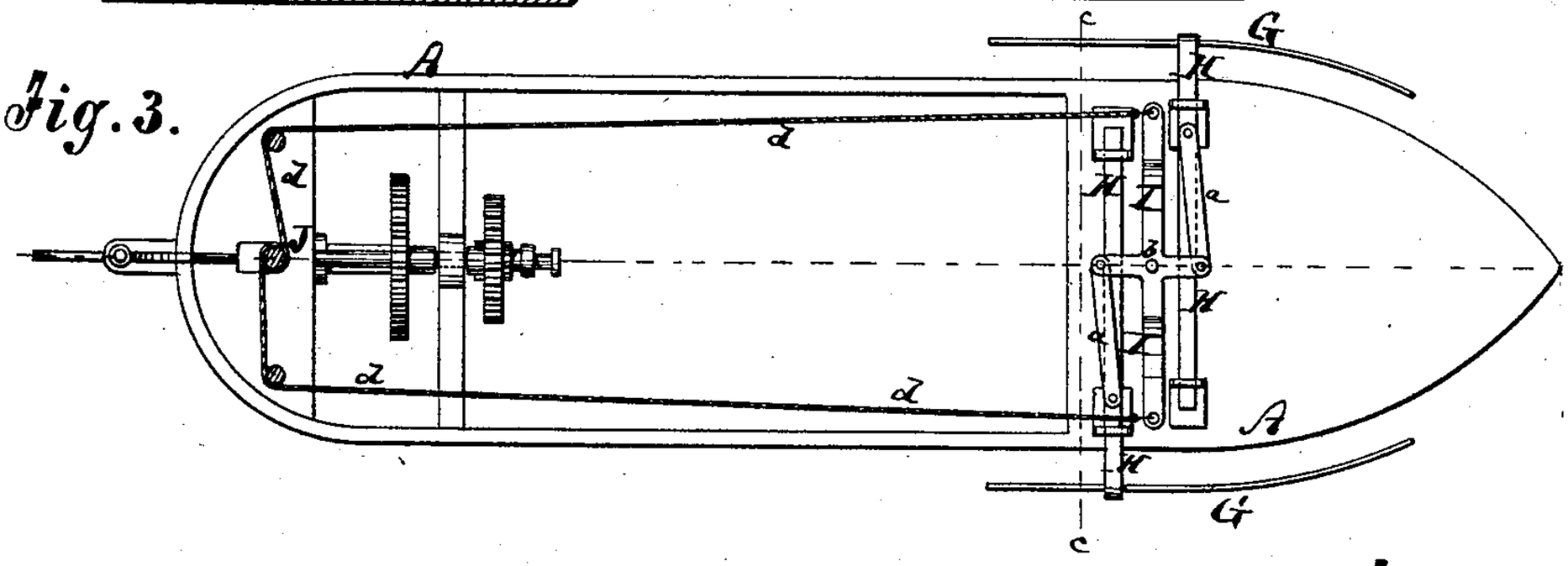


Fig. 4.

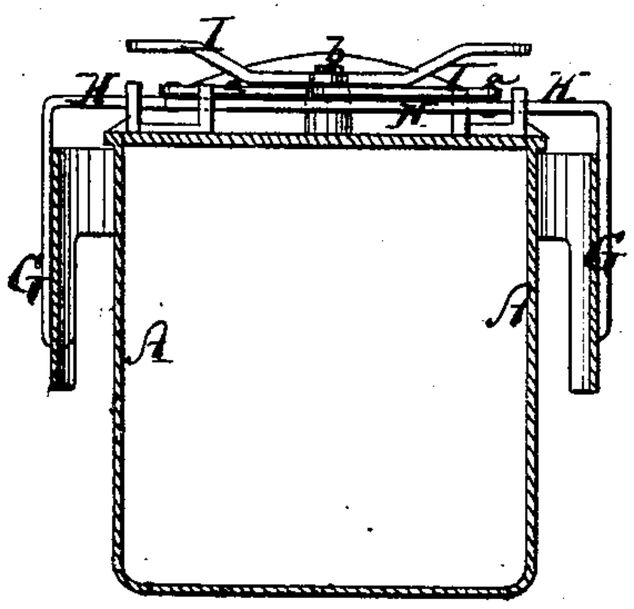
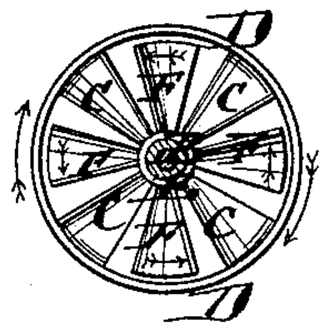


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOSEPH HOUGH, OF BUCKINGHAM, PENNSYLVANIA.

IMPROVEMENT IN PROPELLING CANAL-BOATS.

Specification forming part of Letters Patent No. **132,288**, dated October 15, 1872.

To all whom it may concern:

Be it known that I, JOSEPH HOUGH, of Buckingham, in the county of Bucks and State of Pennsylvania, have invented a new and Improved Propeller for Vessels, of which the following is a specification:

Figure 1 is a side view of a vessel provided with my improved propeller; Fig. 2 is a longitudinal vertical section of the same; Fig. 3 is a top view, and Fig. 4 a vertical transverse section on the line *c c*, Fig. 3; Fig. 5 is an end view of the propeller.

Similar letters of reference indicate corresponding parts.

This invention relates to a new apparatus for propelling ships and boats in water and for preventing, to the greatest practicable extent, the lateral disturbance of the water. The invention consists, first, in the use of a double propeller, composed of two wheels that revolve in opposite directions but effect the same results by having their wings inclined in opposite directions. The invention consists, also, in the use, at the sides of the vessel, of laterally-adjustable plates, which serve to absorb the lateral disturbance of water and thereby prevent all injury to the banks or shores of any water-course in which the vessel may be used.

A in the drawing represents the hull of the boat or ship. B is the propeller-shaft hung therein, and connected with suitable machinery, which imparts to it the requisite rotary motion. The shaft B carries at the stern of the boat A a propeller-wheel, C, with four, more or less, wings like an ordinary propeller, but surrounded by a cylindrical hoop, D, which is fastened to the ends of the propeller-blades. The shaft B is, forward of the wheels C, surrounded by a tube, E, which carries another propeller-wheel, F, directly in front of C. The wings of the wheel F are inclined in an opposite direction to those of C, so that both wheels will move the vessel in the same direction when revolved in opposite directions. The blades of the wheel F are still embraced by the hoop D, though not connected therewith. The water, acted upon by the two propelling-wheels C will, by the hoop D, be confined in a narrow compass and forced in a straight line astern of the boat, with scarcely any agitation on the surface of the water, especially if the wheels and hoop are entirely submerged, as they should be. The tube E is connected with the driving mechanism to obtain its independent motion simultaneous with the shaft B. One important advantage of the double propelling-wheel is that if one of the wheels should break or be otherwise injured or lost, the other will still be in condition for reliable action. G G are two blades or plates arranged on the sides of the ship, near the bow. They are attached to the ends of cross-bars H H, which slide on or under deck. The bars H H are, by links *a a*, connected with a cross-shaped lever, I, which is pivoted, at *b*, to the deck of the vessel. Ropes or chains *d d* connect with the long arms of the lever I and extend back to a windlass, J. By turning the latter the lever I can be swung to slide the bars H out or draw them in simultaneously, and thereby to move the plates G away from the boat, as in Fig. 3, or draw them close against the sides of the hull. When the plates G project from the sides of the ship they will serve to arrest the bow-waves or lateral swell which is produced by the motion of the ship in water.

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

1. The propeller C, attached rigidly to hoop D and shaft B, in combination with the propeller F, having oppositely-inclined wings and revolving in an opposite direction within the hoop D and on the sleeve E, as and for the purpose described.

2. The plates G G, one on each side of bow, and each attached to a sliding bar, H, and lever I, as and for the purpose described.

JOSEPH HOUGH.

Witnesses:
JNO. W. GILBERT,
J. WATSON CASE.