

T. G. WALKER & H. H. HOLBROOK.

Paddle-Wheels.

No. 134,620.

Patented Jan. 7, 1873.

Fig. 2.

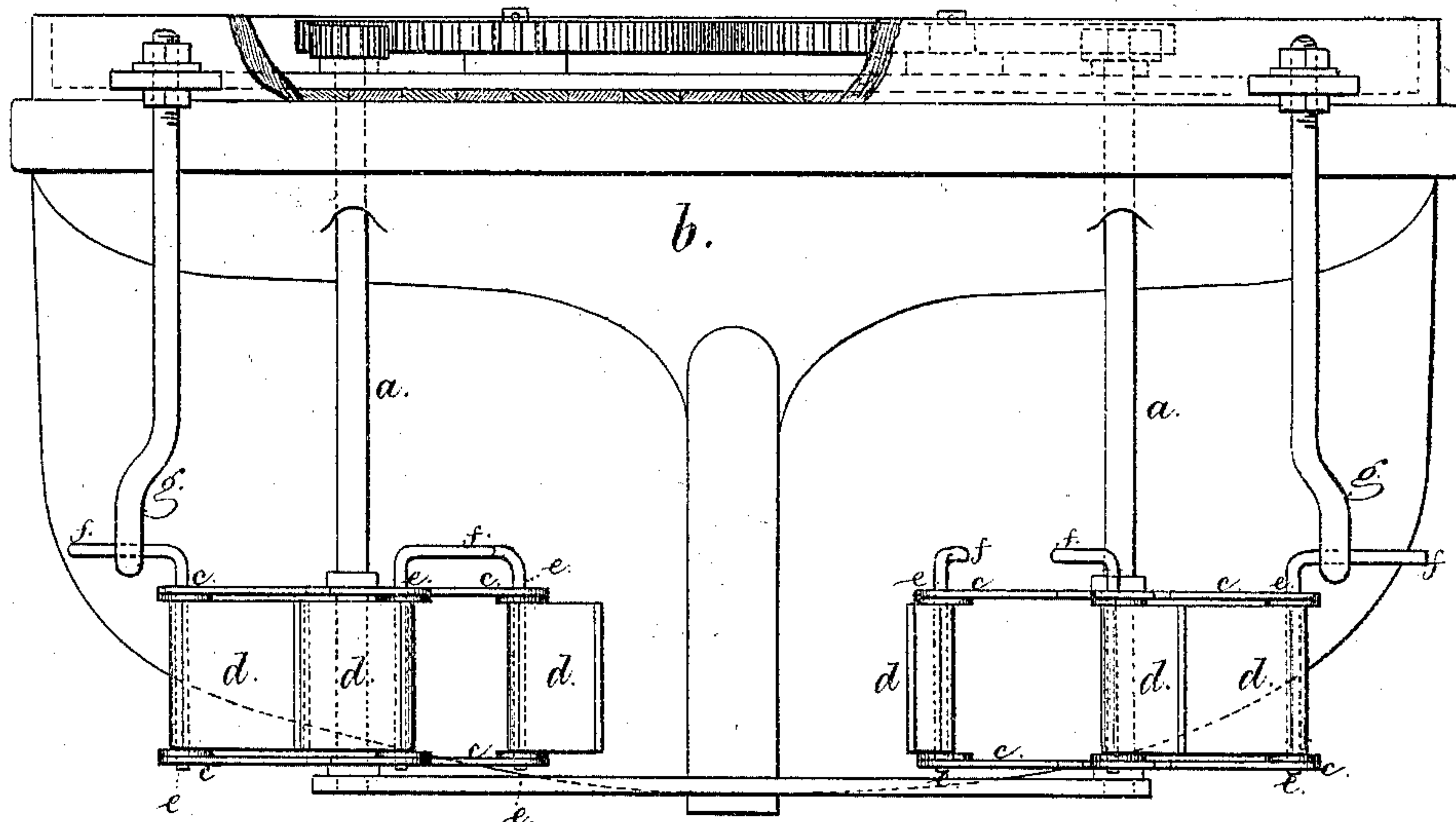
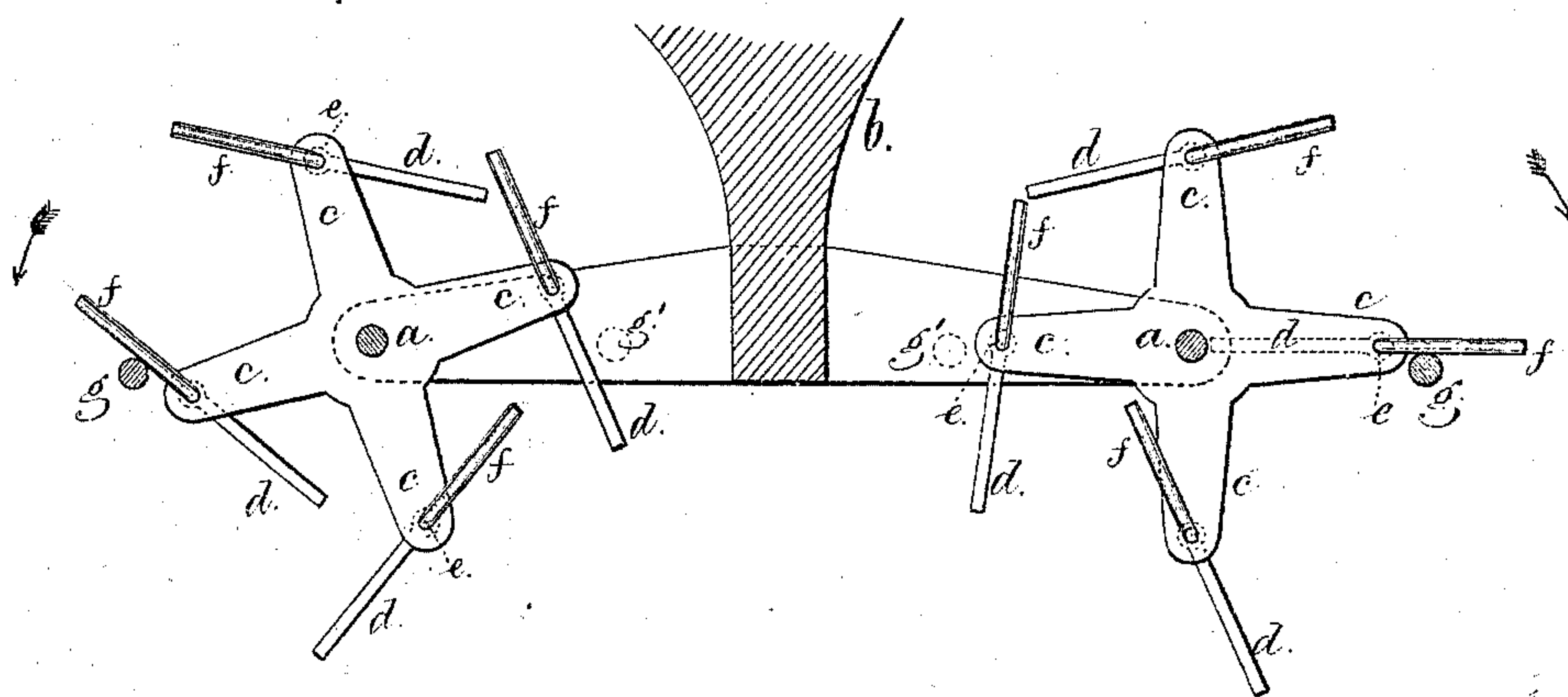


Fig. 1.



Witnesses

Chas. Smith

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UNITED STATES PATENT OFFICE.

THOMAS G. WALKER AND HENRY H. HOLBROOK, OF NEW YORK, N. Y.

IMPROVEMENT IN PADDLE-WHEELS.

Specification forming part of Letters Patent No. 134,620, dated January 7, 1873.

To all whom it may concern:

Be it known that we, THOMAS GEO. WALKER and HENRY H. HOLBROOK, of the city and State of New York, have invented an Improvement in Propellers for Vessels, of which the following is a specification:

In this propeller the bucket is made, like a door, to swing upon hinges at the top and bottom of one edge. The hinges are made by circular pivots that turn in arms that are upon and revolved by a vertical shaft, and there is a crank-arm extending in the opposite direction to the bucket that comes into contact with a stationary stop; hence the bucket is dragged around tangentially, or nearly so, edgewise through the water, and with little resistance, until the crank-arm comes into contact with the stop, and the bucket is swung between its pivots and the vertical shaft, and acts bodily against the resisting water as carried to the rear by the compound movement that it receives. Two of these wheels are placed at the stern and revolved by suitable power, and there may also be two at the sides of the bows to aid the propulsion and to force the water aside from the front of the vessel.

In the drawing, Figure 1 is a plan of the wheels and stops, and Fig. 2 is a rear elevation.

The vertical shafts *a a* are supported at the bottom by suitable steps, and at the upper end they go through the overhanging portion of the stern *b*, and the power is applied by gearing or other suitable devices so as to rotate the shafts and their wheels in the direction indicated by the arrows for giving headway, or the reverse in backing. The wheels are made of top and bottom ranges of arms *c c*, with or without connecting rims or rings. Each bucket *d* has its pivots or hinges *e e* at the top and bottom of one of the vertical edges, so as to swing like a door, and said bucket has an arm, *f*, at the opposite side of the pivots, either in the form of a crank-extension from one of the pivots, as shown, or as an arm extending from the bucket itself. There is a stop, *g*, adjacent to each wheel, made as a fix-

ture, but it may be adjustable. With wheels placed at the stern of the boat these stops are to be near a transverse plane passing through the vertical shafts and outside the wheels.

As the wheels revolve the buckets are drawn edgewise through the water and occupy a position tangential or nearly so to the wheel, and, hanging loosely, there is but little resistance. When the arms of the buckets come around successively into contact with the fixed stops the buckets are swung upon their pivots between said pivots and the shaft; and the pivots being in motion in the arc of a circle, the bucket itself receives a compound motion bodily against the water, and terminating with a feathering action, that facilitates the swinging of the bucket into the tangential position assumed when being drawn edgewise through the water.

In Fig. 1 the positions of the buckets are represented.

I remark that if the stops *g* were applied upon the opposite sides of the wheel the movements of the buckets would be reversed; hence stern-way may be given by raising up the stops *g* and forcing down stops at the places denoted by the dotted lines *g'*.

When wheels of this kind are placed at each side of the bow of the boat the stops should not be in the cross-line or plane between the shafts, but should be sufficiently to the rear of that line to make the buckets operate diagonally to the motion of the boat and throw the water away from the bows.

We claim as our invention—

The propeller-wheels upon vertical shafts, and made with buckets that swing upon a line, or nearly so, of one of the vertical edges, in combination with the arms *f* and stationary stops *g*, substantially as and for the purposes set forth.

Signed this 17th day of December, 1872.

THOS. GEO. WALKER.

HENRY H. HOLBROOK.

Witnesses:

GEO. T. PINCKNEY,

CHAS. H. SMITH.