

(No Model.)

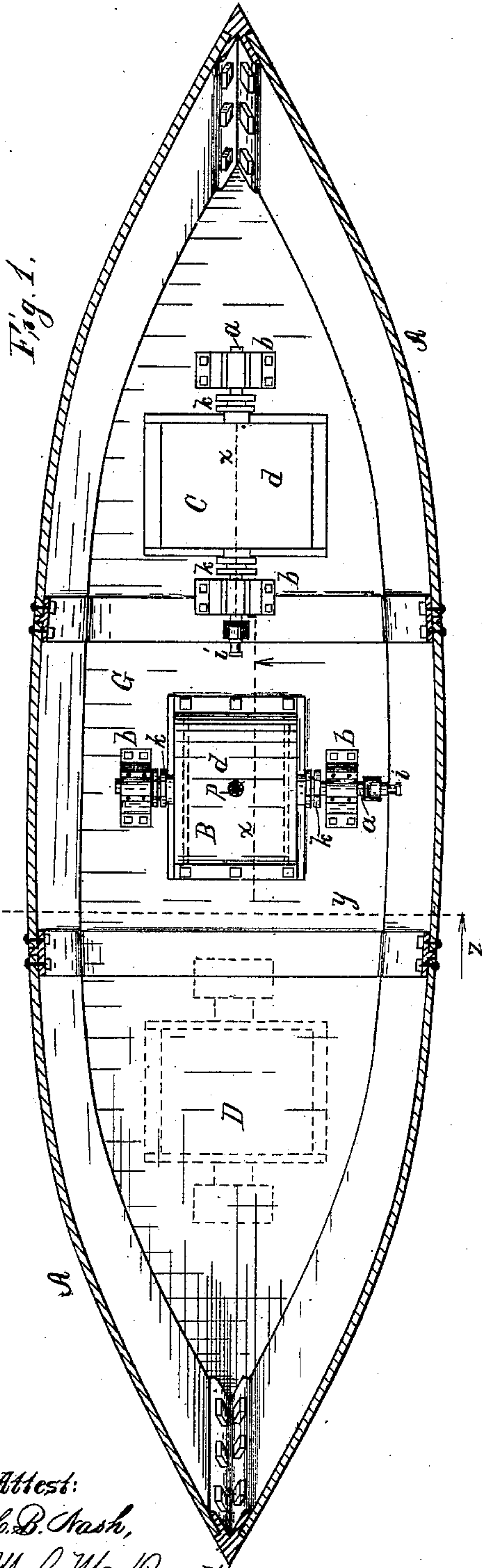
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M. GREGG.

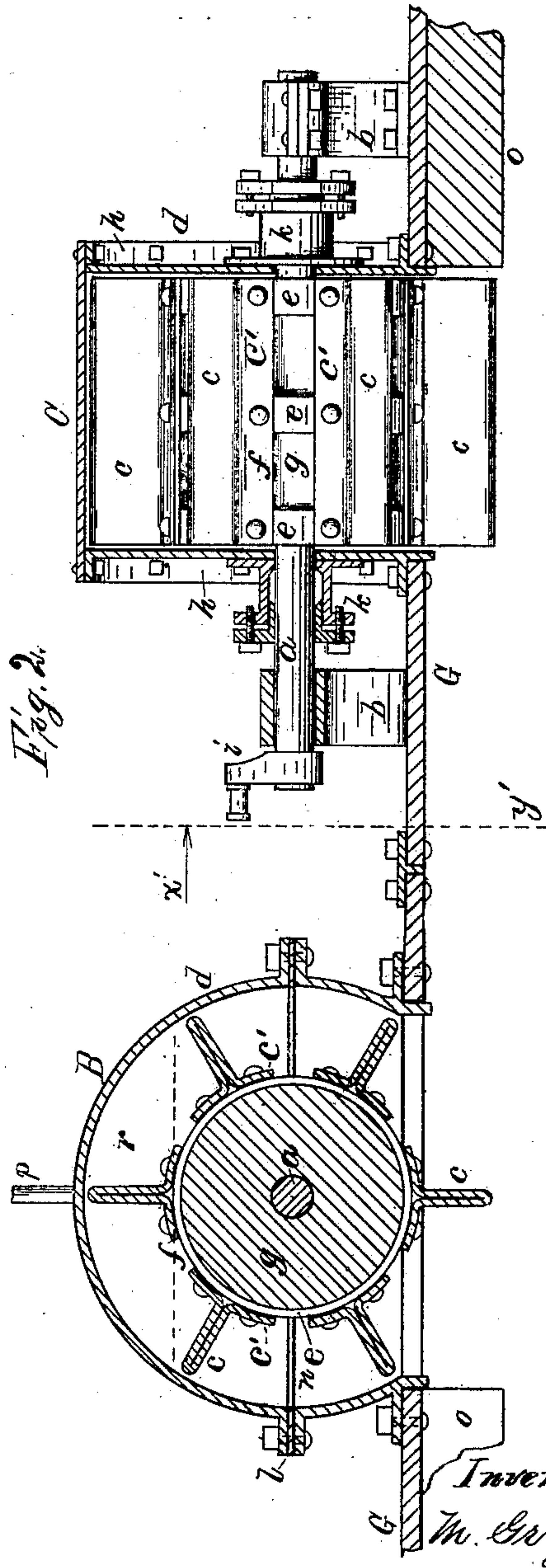
PROPELLING WHEEL FOR STEAMBOATS.

No. 360,521.

Patented Apr. 5, 1887.



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M. L. M. Bennett,



Inventor:
M. Gregg.
By C. D. Whitmore, Atty.

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Fig. 3.

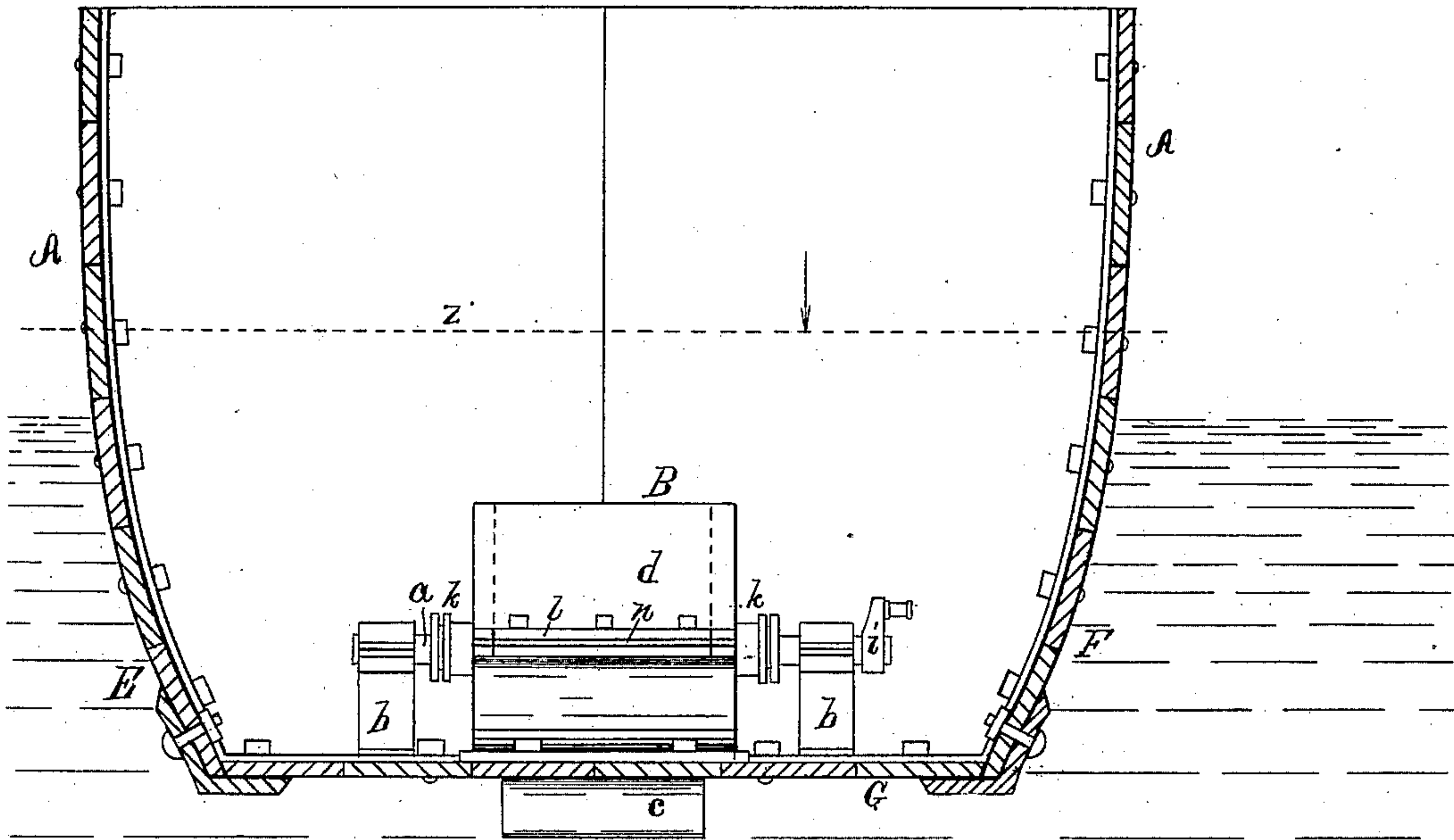
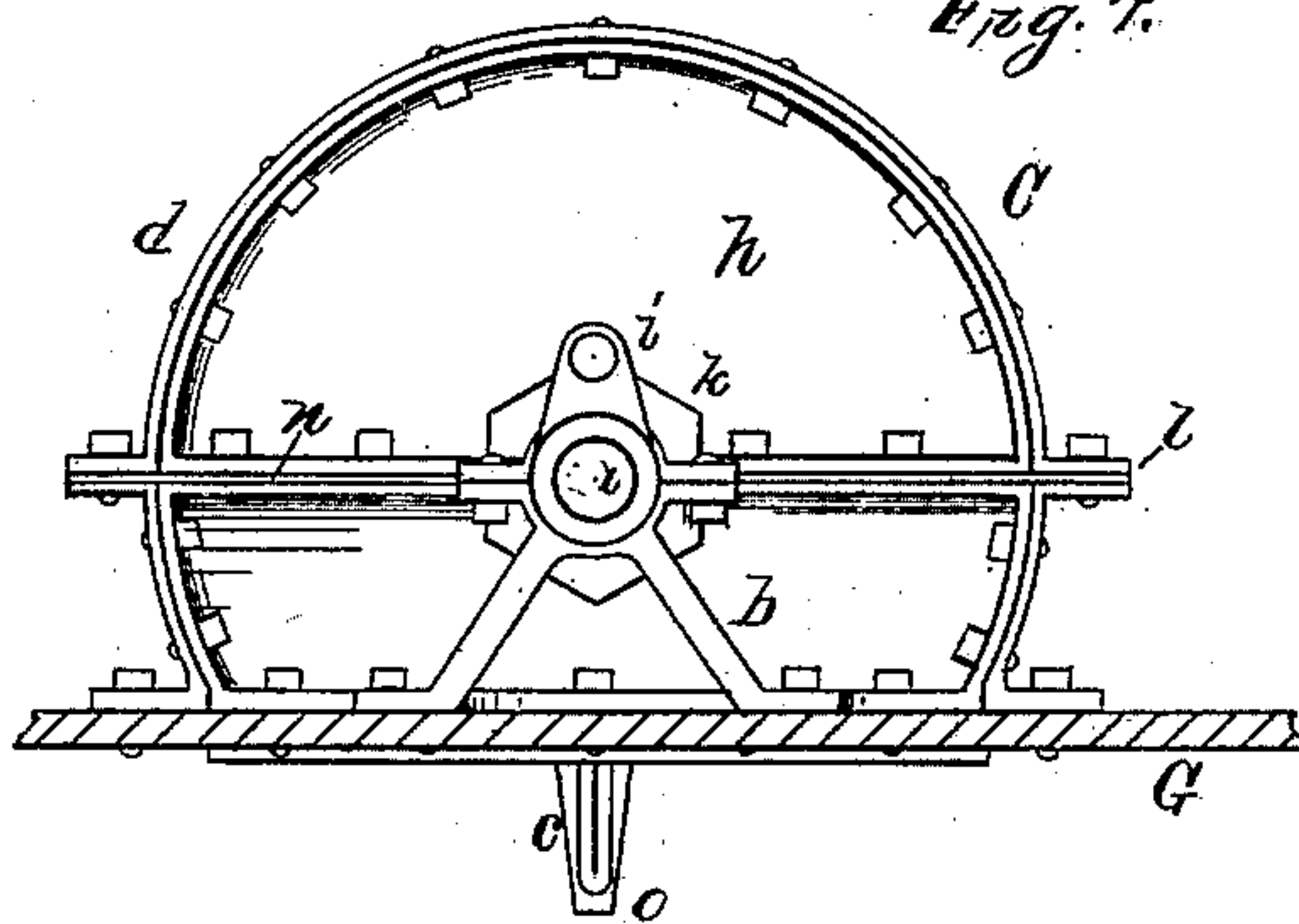


Fig. 4.



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UNITED STATES PATENT OFFICE.

MAHLON GREGG, OF ROCHESTER, NEW YORK.

PROPELLING-WHEEL FOR STEAMBOATS.

SPECIFICATION forming part of Letters Patent No. 360,521, dated April 5, 1887.

Application filed October 18, 1886. Serial No. 216,495. (No model.)

To all whom it may concern:

Be it known that I, MAHLON GREGG, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Method of Turning and Propelling Steamboats, which improvement is fully set forth in the following specification, and shown in the accompanying drawings.

My invention relates to the propelling-wheels of steamboats and the manner of applying them, the same being hereinafter fully described, and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a plan of a small boat, showing the propeller therefor and a device for steering and quickly turning the boat in place therein, the hull being horizontally sectioned below the deck, as upon the dotted line *z'* in Fig. 3; Fig. 2, a side sectional elevation of a part of the boat, the wheel for direct propulsion and the wheel for turning, the boat being sectioned as upon the dotted line *x x* in Fig. 1, and viewed as indicated by the arrow pointed thereon, drawn to a larger scale to better show the parts; Fig. 3, a transverse section of the hull, upon an enlarged scale, taken upon the dotted line *y* in Fig. 1, and viewed as indicated by arrow *z*, showing the propelling device in elevation at the middle and bottom of the hull; and Fig. 4, an end elevation of the turning-wheel, seen as indicated by arrow *x'* in Fig. 2, the bottom of the boat being vertically sectioned as upon the dotted line *y'*.

Referring to the parts, A represents the hull of a boat, of any suitable form or kind, having a flat bottom; B, the propelling device, consisting of an incased wheel and associated parts, and C a similar wheel, with combined parts, placed toward the forward end of the boat for turning and assisting to steer the same. The propelling-wheel at B, or wheel for driving the boat forward or backward, is placed preferably at the middle of the boat, at the bottom thereof, the axis of which is transverse to an imaginary line drawn from stem to stern of the boat, while the wheel at C, for turning the boat, has its axis longitudinal or parallel with said line. *a* are the shafts for the wheels, each resting in a pair of standards, *b*, reaching upward from the bottom of the boat.

d are circular cases for inclosing the respective paddle-wheels *f*, made, preferably, of boiler-

plate, air and water tight. The wheels are made with cylindrical bodies *g*, preferably hollow and of such length as to fill longitudinally the interior of the cases, the latter being cylindrical in form, with a part of each cut away at the lower side, where it meets the bottom of the boat, with straight ends or heads *h* at right angles to their axes.

c are the paddles or buckets, extending outward from the bodies and of such length as to just clear the inner circular surfaces of the cases. The interior of the cases open outward through the bottom of the boat into the external water, and the wheels are set so that the paddles project out therefrom and present the full extent of their faces to the water below the bottom of the boat.

The bodies of the wheels are each formed with external bands, *e*, placed, preferably, one at each end and one at the middle thereof. The buckets *c* are made of sheet metal, doubled, as shown, and having longitudinal flanges *c'*, secured to said bands by common means.

The shafts of the wheels, at each end, pass through stuffing-boxes *k*, of ordinary kind, which are secured to the outer faces of the heads of the cases. The paddle-wheels are designed to be turned by steam-engines, of common or suitable kind, connected with cranks *i* upon the shafts.

The cases or walls *d* of the compartments in which the wheels are placed are divided longitudinally along the axes of the wheels upon the lines *l*, the flanged halves being bolted together, as shown, the lower part of each case being secured to the bottom of the boat. Disks of packing, *n*, are placed between the parts of the cases, to insure tight joints between them.

Now, it will be understood that by rotating the propelling-wheel at B in one direction or the other the boat will be propelled forward or backward, as the case may be, and by rotating the turning-wheel at C the boat may be rapidly swung around in either direction—for instance, to deliver in quick succession two broadside discharges at a given object, or to bring bow and stern guns quickly in succession to bear upon a single object, or to bring the boat quickly into position for the purpose of ramming, should that be the character of the boat. If found convenient, another turning-wheel may be added in rear of the propelling-

wheel B, indicated by dotted lines at D, and by rotating the two turning-wheels in opposite directions the boat may be swung around as upon a pivot.

5 The propelling device shown at B and the turning device shown at C are intended to be alike, excepting as to size, the propelling-wheel being larger and more powerful. While the boat is being moved forward or backward, the
10 still paddles of the turning-wheel move endwise in the water, causing but little resistance, while in a direction at right angles to the course of the boat they present broad sides to the water and act as a keel to prevent drifting. Narrow
15 keel-pieces *o* are added forward of the turning-wheel and in rear of the propelling-wheel, to act also as guards or protectors for said wheels when manoeuvring in shallow water.

The compartments or cases *d*, as stated, are
20 air and water tight, on account of which a body of air will always be held therein at *r*, so that while the paddles are moving through dense unbroken water below the bottom of the boat they will be moving through air at the tops of
25 the compartments; and provision is made by which a quantity of air may be at times forced into said compartments through pipes *q* by a simple air-pump, should said compartments at any time become exhausted of air and filled
30 with water.

The wheels, being beneath the bottom of the boat, work against solid unbroken water with but little slip, which is favorable to rapid propulsion. The operation of the wheel against
35 the water is almost positive, and much like that of a cog-wheel and rack, the inertia of

water or the resistance offered being about as the square of the depth.

In case the rudder-chains or rudder of the boat are destroyed or rendered useless by a
40 hostile shot, the boat can be steered wholly by means of the turning-wheel.

Propelling-wheels similar to that shown at B may of course be placed to work at the sides of the boat beneath the water-line, as at
45 E and F.

Propelling-wheels for steamboats placed in air-tight compartments at the bottoms of the boats, having buckets reaching out therefrom into the water, have been used before my inven-
50 tion herein set forth; also, wheels for steering boats having their axes parallel with the longitudinal axes of the boats are not new, and I do not claim, broadly, either construction.

What I claim as my invention is—

1. A steamboat-wheel formed of a body hav-
55 ing external bands, in combination with doubled or folded buckets having flanges secured to said bands, substantially as shown.

2. In combination with the body of a steam-
60 boat, a wheel formed with buckets held in a compartment at the bottom of the boat with its axis coinciding with the vertical plane passing through the longitudinal axis of the boat, one or another of said buckets reaching into
65 the water to act as a keel, substantially as shown and described.

MAHLON GREGG.

Witnesses:

E. B. WHITMORE,
M. L. McDERMOTT.