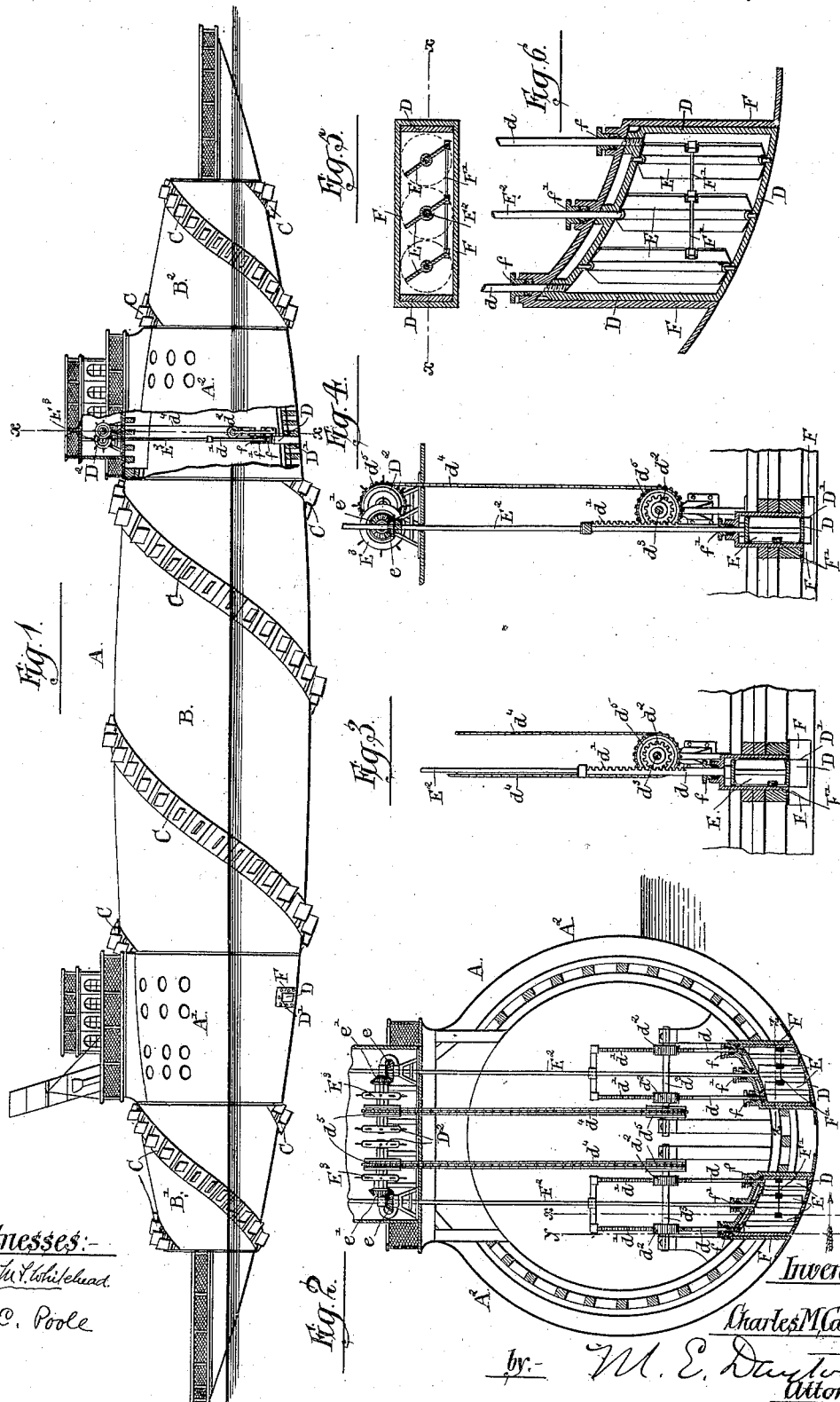


C. M. CATLIN.

No. 344,623.

Patented June 29, 1886.



Witnesses:-
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UNITED STATES PATENT OFFICE.

CHARLES M. CATLIN, OF CHICAGO, ILLINOIS.

STEERING-GEAR FOR VESSELS.

SPECIFICATION forming part of Letters Patent No. 344,623, dated June 29, 1886.

Application filed December 14, 1885. Serial No. 185,544. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. CATLIN, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Steering-Gear for Vessels; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to steering-gear for vessels; and it consists in the matters hereinafter described, and pointed out in the appended claims.

My invention is herein illustrated in connection with a vessel having a hull which is circular in cross-sectional form—such, for instance, as is described and shown in a prior application, Serial No. 173,818, for Letters Patent of the United States filed by me upon the 7th day of August, 1885. Steering devices embodying the main features of my invention may, however, be employed in connection with other kinds of vessels, as will hereinafter appear.

In the accompanying drawings, illustrating my invention, Figure 1 is a side elevation, partially in section, of a vessel provided with a steering-gear constructed in accordance with my invention. Fig. 2 is an enlarged cross-section of the same, taken upon line *xx* of Fig. 1. Fig. 3 is a sectional view of the steering-gear, taken upon line *xx* of Fig. 2. Fig. 4 is a similar view, taken upon line *yy* of Fig. 2. Fig. 5 is a horizontal section taken upon line *zz* of Fig. 2. Fig. 6 is an enlarged sectional view of the parts shown in Fig. 5, taken upon line *xx* of said figure.

The vessel A, herein shown, is circular in cross-sectional form, and tapered from its middle part toward its ends, and is provided with tubular revolving shells B B' B², having upon their outer surfaces propeller-blades C, the shell B being located at the middle part of the vessel and the shells B' B² at the bow and stern, so as to leave two spaces or zones, A' A², at which the hull of the vessel is exposed, as fully set forth in the said prior application.

D D are metal steering-frames, which are located in recesses D' D', formed in the bot-

tom or lower surfaces of the parts A' A² of the hull A, there being two frames arranged side by side in each part A' A², or four in all. The said frames are vertically movable, so that they may be thrust downwardly below the outer surface of the hull, or drawn up so as to come flush with the latter. Said frames are provided with pivoted slats or gates E E, preferably arranged to rotate upon vertical axes, means being provided for independently raising and lowering the frames and for rotating the slats therein, as will hereinafter appear.

The general purpose of the frames D D is to enable the vessel to be retarded upon one side or the other of its central or keel line, the gates E E being employed to increase or decrease the resistance to forward motion afforded by the gates, and also to aid in directing or guiding the vessel in the manner of an ordinary rudder, this being accomplished by turning or inclining the said gates in a proper direction to carry the end of the vessel around in the same direction that it will tend to move by the retarding action of the frames and gates.

In the particular construction of the parts shown the recesses D' D' are formed by means of metal castings F F, secured at their lower margins to the exterior sheathing of the hull, and extending upwardly within the vessel, as shown. The frames D D are fitted to slide closely in the castings F F, and are attached to vertical rods *d d*, passing upwardly through stiffening boxes or glands *ff* in the castings F F, said rods being provided with gear-teeth *d'* at their upper ends, and engaged with pinions *d''* upon the shafts *d'''*, actuated by chain belts *d'* and sprocket-wheels *d''* from hand-wheels D², placed upon the upper deck or other convenient place, whereby the said frames may be readily raised and lowered, as desired.

The gates E are preferably connected, so as to move together, by a cross-bar, F', and are actuated by a rotating rod, E², attached to one of them, and extending upwardly through a gland, *f'*, to a point where it can be conveniently manipulated. In the particular form of the device herein illustrated three gates, E, are used, and the rod E² is attached to the middle one, and the upper end of said rod passes through the hub of a gear-wheel, *e*,

which intermeshes with a gear-wheel, e' , to which is attached a hand-wheel, E^3 , the rod being constructed to slide longitudinally but not to rotate by a spline and groove or other equivalent device, so that the rod may move vertically when the gate is raised and lowered, but may be turned at any time by rotating the hand-wheel E^3 .

From the construction above set forth it is obvious that the frames may be raised and lowered and the gates opened or closed to give greater or less resistance to the passage of the water through the frames, as desired. The vessel may of course be steered by the use of frames made solid or without movable slats or gates, the said frames being raised or lowered to a greater or less extent, according to the abruptness of the turn desired. By using the gates E , however, the frames may remain in one position and the steering accomplished by turning the gates, the latter being preferably so arranged that when turned their advance or forward edges will move toward the keel or center line of the boat, as clearly shown in Fig. 2, so that the inclination of the gates to the water and the resistance thereto will both tend to carry the vessel around in the same direction.

The employment of two pairs of steering-frames—one near the bow and the other near the stern of the vessel, as herein shown—is not essential to the operation of the frames constructed generally as described. The use of two pairs of frames is of advantage, however, especially in the case of a vessel provided with a revolving shell, as herein shown, it being entirely obvious that when one of the frames is lowered the vessel will tend to turn about the lowered frame as a pivot, so that by lowering one of the forward frames the stern of the vessel will have the greatest extent of lateral movement while turning, and by lowering one of the rear frames the bow of the boat will tend to swing around most freely. By this means either the bow or the stern may be swung around in turning, as is found convenient under the circumstances.

Inasmuch as the frames present their flat sides to the course of the vessel, they may obviously be employed with great advantage when it is desired to suddenly check the momentum of the vessel.

Inasmuch as important advantages are gained by the use of two pairs of movable steering-frames—such as are above described in connection with a propelling device of the kind herein shown—said steering-frames are herein claimed, in connection with the revol-

ving shell provided with propeller-blades, as part of my invention.

I claim as my invention—

1. A steering-gear for vessels, consisting of two or more vertically-movable frames located in recesses at either side of the center or keel line of the vessel, and provided with pivoted gates or slats, substantially as described.

2. The combination, with a vessel provided with recesses in its bottom upon either side of its keel-line, of vertically-movable frames located within the recesses, rods attached to the frames and extending upwardly within the vessel for moving the said frames, pivoted gates located within the frames, and rods connected with the gates for rotating the latter, substantially as described.

3. The combination, with a vessel provided with recesses in its bottom upon either side of the keel-line, of vertically-movable frames located within said recesses, vertical rods attached to the frames and provided with rack-bars upon their upper ends, gear-wheels engaged with the rack-bars, pivoted gates in the said frames, and vertically movable and rotatable rods for turning the said gates, substantially as described.

4. The combination, with the vertically-movable frames D , of gates E , pivoted in said frames, bars F' , pivotally connected with the said gates, and a vertical rod attached to one of said gates for moving the latter, substantially as described.

5. The combination, with a vessel, of castings forming recesses in the bottom of the vessel at either side of the keel-line, vertically-movable frames located within said recesses, gates pivoted in the frame, and vertically-movable rods passing upwardly through the castings and attached to the frames and gates for moving the latter, the said castings being provided with glands surrounding said rods, substantially as described.

6. The combination, with a vessel, of vertically-movable frames located in recesses at either side of the keel or center line of the vessel, and gates pivoted to rotate upon vertical axes in said frames, the said gates being constructed to turn in a direction to carry their forward edges toward the said keel or center line, substantially as described.

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

CHARLES M. CATLIN.

Witnesses:

C. CLARENCE POOLE,
M. E. DAYTON.