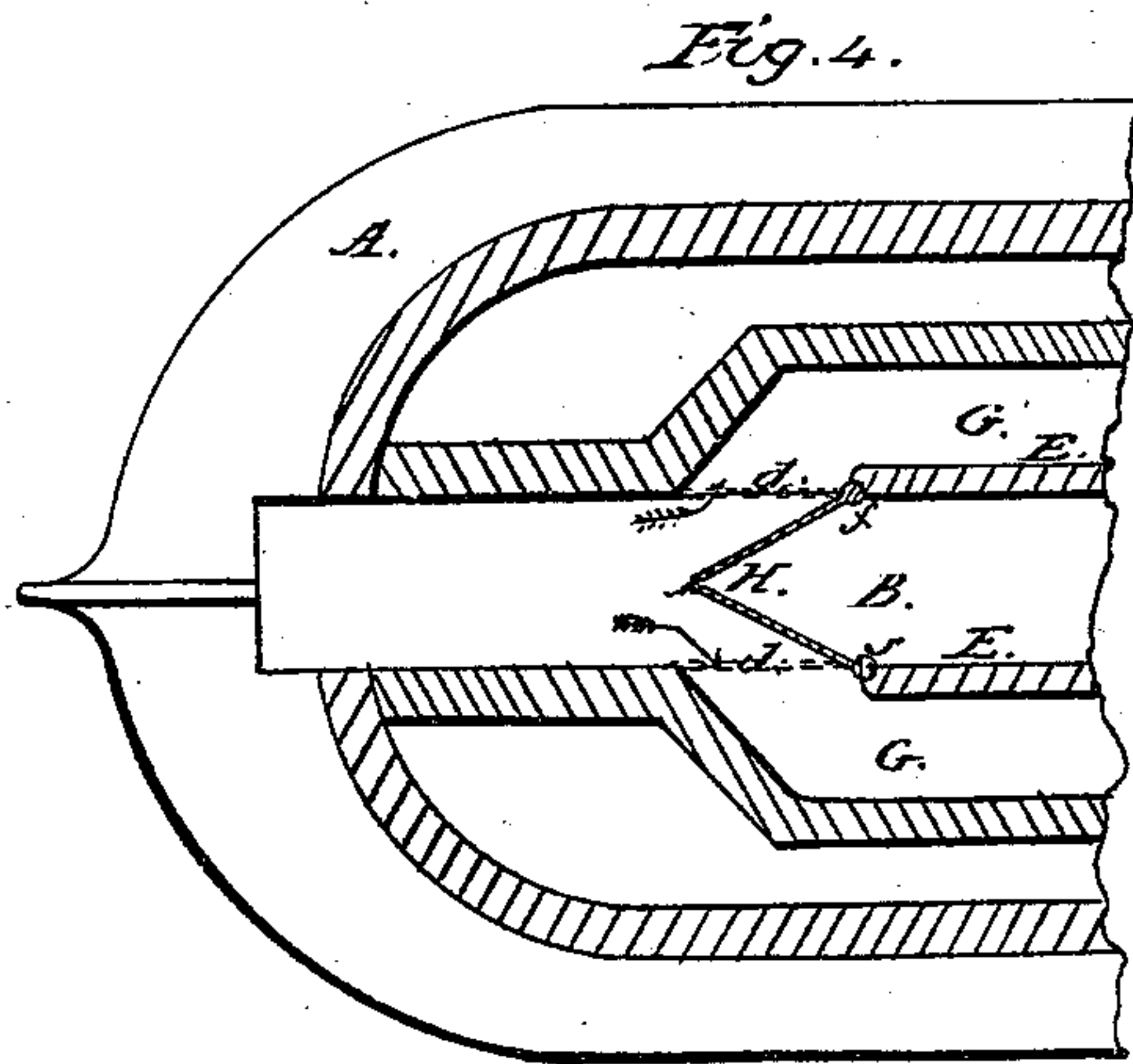
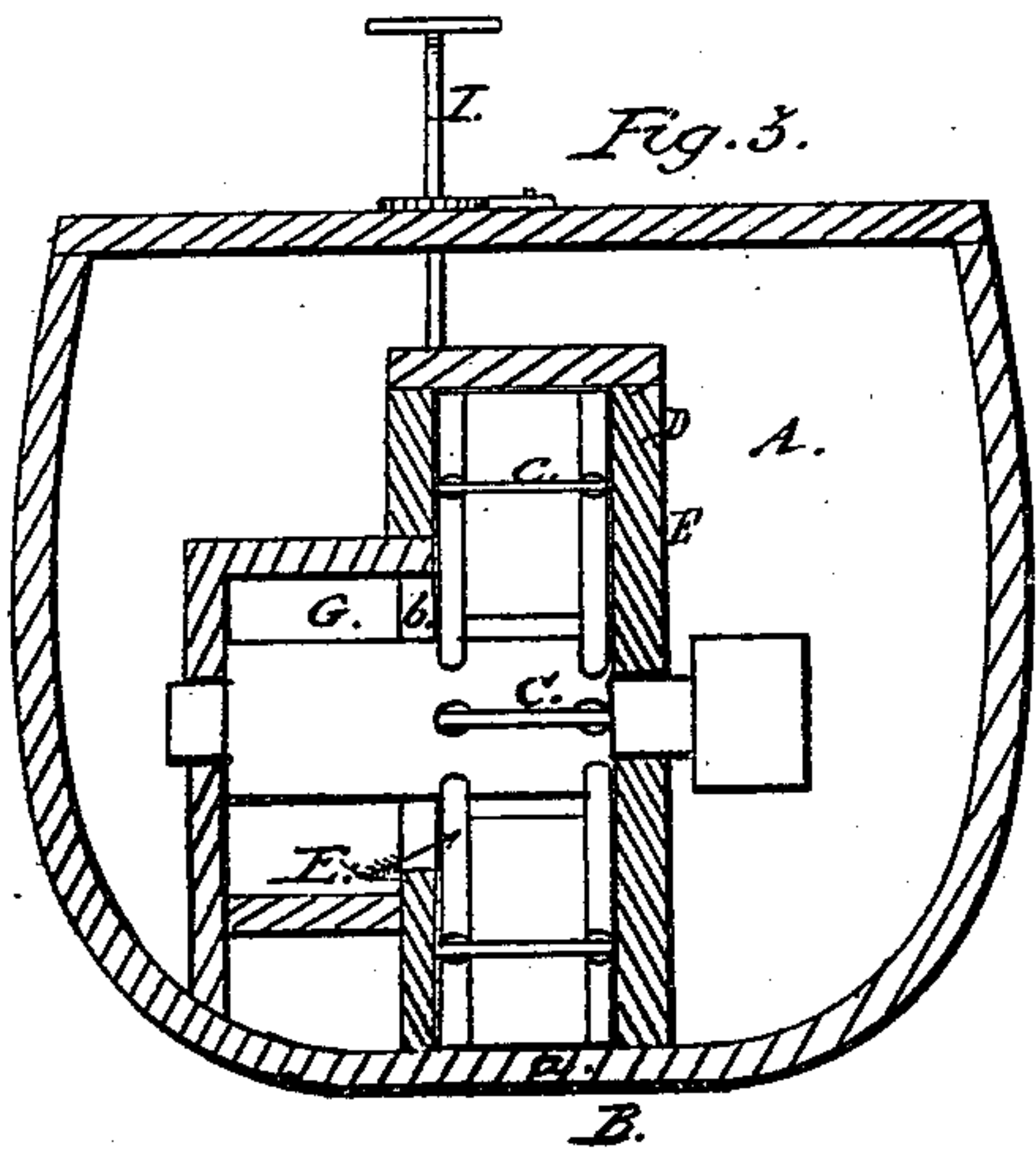
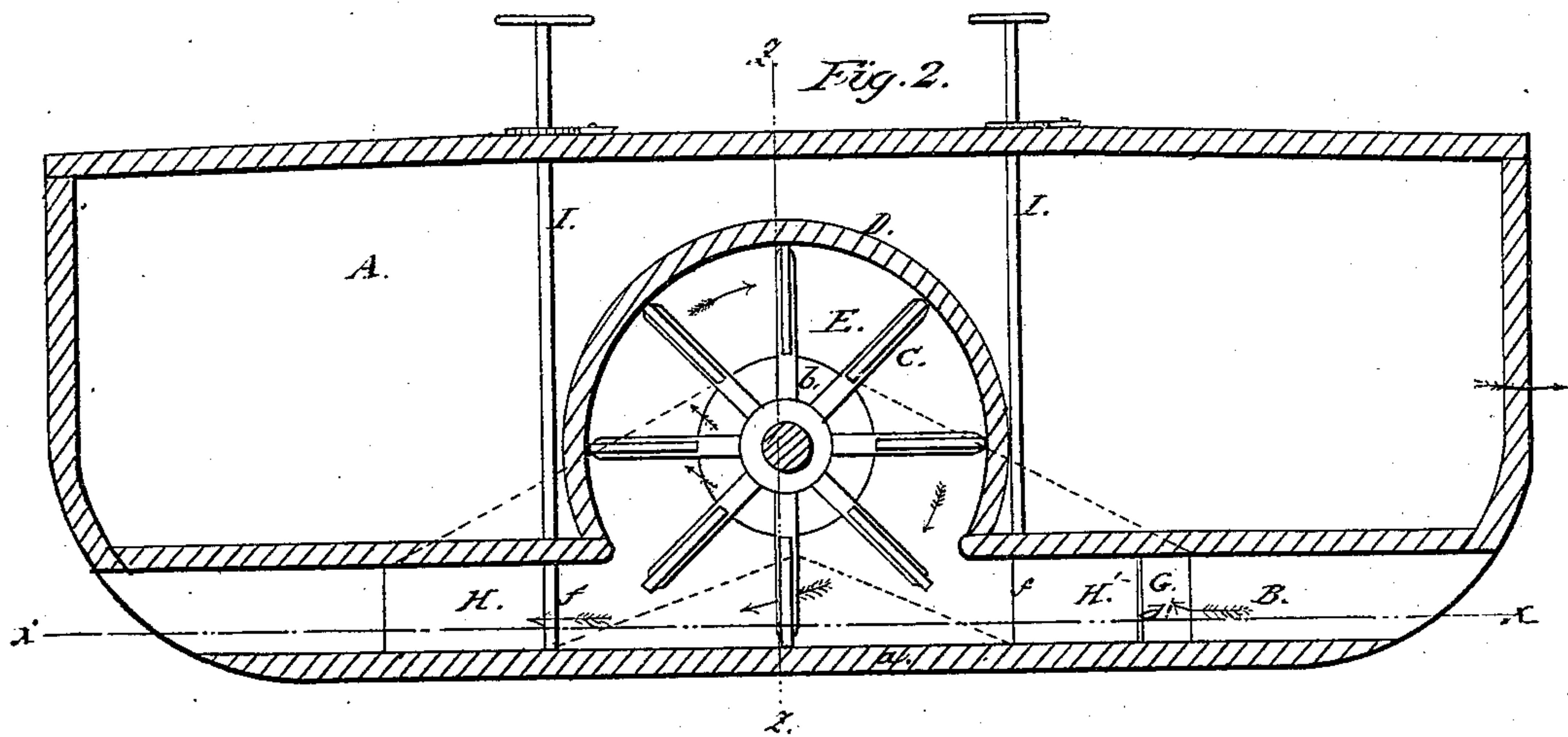
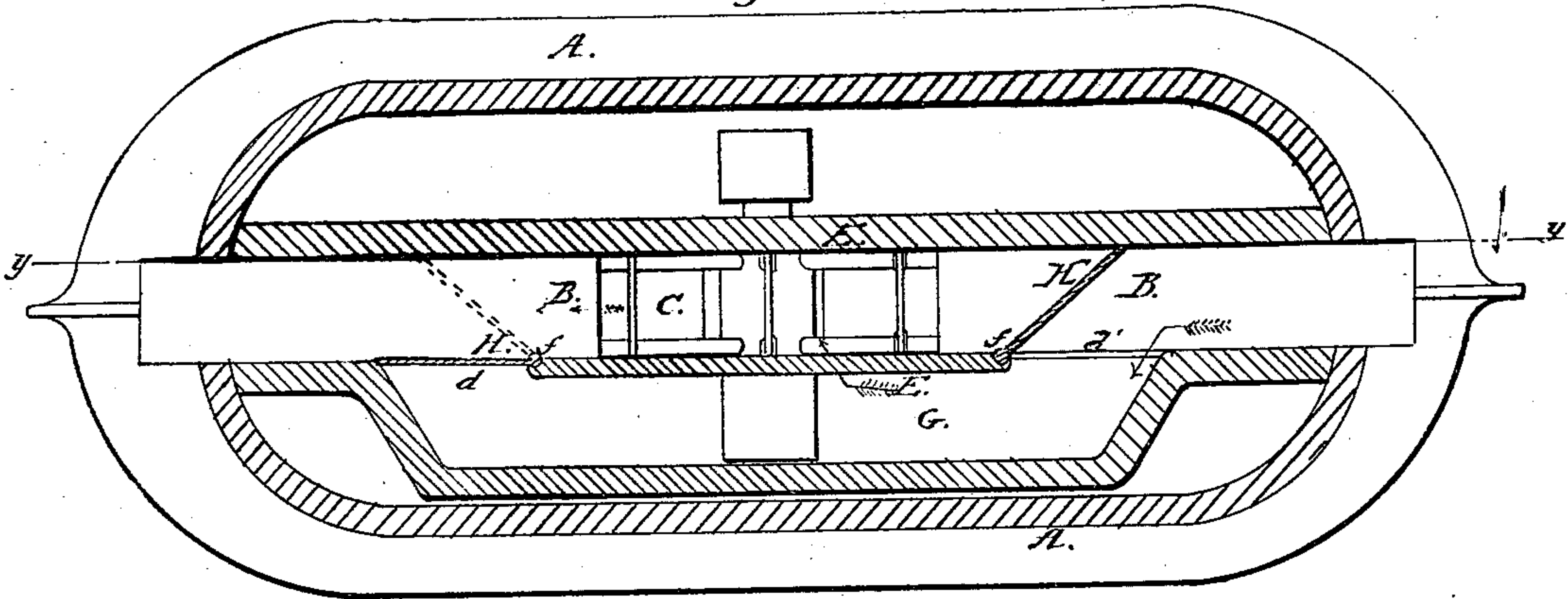


O Plumb.
Wheels in Channels.

N^o 30,526.

Patented Sept 23, 1862.
Fig. 1.



Witnesses
H. O. Cogood
D. C. Johnson

Inventor;
Ovid Plumb
by J. Fraser & Co. Attys.

UNITED STATES PATENT OFFICE.

OVID PLUMB, OF MILLPORT, NEW YORK.

IMPROVED CANAL-BOAT PROPELLER.

Specification forming part of Letters Patent No. 36,526, dated September 23, 1862.

To all whom it may concern:

Be it known that I, OVID PLUMB, of Millport, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Propeller Canal-Boats; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a horizontal section of the bottom of my improved canal propeller in the plane indicated by the line $x x$, Fig. 2, the boat being represented as bottom upward; Fig. 2, a longitudinal vertical section of the same in the plane indicated by the line $y y$, Fig. 1; Fig. 3, a transverse vertical section thereof in the plane indicated by the line $z z$, Fig. 2; Fig. 4, a fragment of the view represented in Fig. 1, but showing a modification of the water-ways and the valves or gates for turning or deflecting the current of water.

Like letters designate corresponding parts in all the figures.

My invention consists in an inclosed central longitudinal water-passage extending the whole length of the boat, open at both ends, over the middle of which is situated a paddle-wheel, and having leading from said passage on either side longitudinally of the paddle-wheel the ends of a water way or ways, passing around laterally, and opening at the side of the wheel-case, so that the benefit of the centrifugal action of the water therein acted on by the wheel is obtained; and also in connection with the passage and the water way or ways of the use of adjusting gates or valves for deflecting the water from the said passage to the water-way on one side of the wheel, and allowing its discharge at the other side, so as to adapt the boat to be driven in either direction at pleasure, and with equal facility.

In the ordinary construction of most canal-propellers heretofore, the paddle-wheel or propeller has been placed in the rear of the boat, so that it could be driven only in one direction. Thus, in addition to the disadvantage of having to turn the boat around to go in the opposite direction, the paddle-wheel is not adapted to equal action as the boat is loaded heavier or lighter. A paddle-wheel located in the center of the boat possesses many obvious advantages, and my improvements are

intended to render such more effective in use and operation.

The boat A may be of ordinary shape and construction. In its bottom, extending the whole length, is made a central longitudinal main water-passage, B, of suitable size to admit sufficient water for the paddle-wheel to act on in propelling the vessel, and having both ends open, but its bottom closed by the bottom a of the boat, substantially as represented. Centrally, or nearly so, over this water-passage is situated a vertical paddle-wheel, C, of ordinary construction and of suitable size for the purpose intended. It rests in a close circular case or chamber, D, of a size that will just allow the wheel to turn freely therein without extra space. Laterally on either or both sides of the wheel, and usually around its shaft, is made a hole or passage, b , through the side E of the case, and this passage opens into a lateral water-way, G, of suitable size parallel with the main water-passage B and opening into it on opposite sides of the wheel longitudinally, as clearly represented at $d d'$. The position of the water-way is indicated in Fig. 2 by dotted lines.

Against the openings d and d' of the water way or ways leading from the main passage are situated vertical hinged valves or gates H and H', of a size and shape that cover the said openings and just fill vertically the space of the passage B. These gates are conveniently turned on their axes $f f$ by means of shafts I I extending upward to the deck of the boat. Thus arranged by turning either gate parallel with the main passage against the lateral opening of the water-way the water will be allowed a straight course through the said main passage B; but by turning it back so that its swinging end rests against the opposite side of the main passage, the main passage will be closed and the current of water deflected or turned into the lateral water-way.

If a water-way is used on each side of the main passage, as represented in Fig. 4, two valves are used in place of one, shutting back, respectively, against the openings, as indicated by red lines, and their ends meeting in the center for deflecting the water, as indicated by black lines.

The operation is as follows: Suppose the gate H' to be turned outward, so as to deflect

the current of water into the end d' of the water-way, as indicated by the corresponding arrow in Figs. 1 and 2, and suppose the opposite gate H to be closed against its corresponding opening, thus leaving that portion of the main passage open communicating with the wheel. Then there will be no escape for the water in the water-way except through the opening b to the interior of the wheel-case D. Here it is acted on by the paddle-wheel and carried quickly around in the chamber, as indicated by arrows therein, thus acquiring a strong centrifugal action; and, finally, when reaching the trough in the bottom, it escapes at a tangent rearwardly and reacts on the outside water, thus giving motion to the boat. The impetus and force of the water are largely increased by its centrifugal action in the chamber D, and in this respect the arrangement is a very superior one. In addition to this the main water-passage, being entirely inclosed except at its ends, allows no downward escape of the water, its only passage being backward, thus retaining the full force of the centrifugal action, and also discharging in such a manner as not to cause swells on the banks of the canal. The paddle-wheel, by being located in the center of the boat, is the least affected by overloading, and, indeed, by my improved arrangement is not affected in any degree, for with the lightest load the boat rests sufficiently deep in the water for the proper action of all the parts, and with the heaviest loads the main water-passage B and chamber D can only be filled, the only difference being in the pressure of the water. The machinery, by being situated in the middle of the boat, keeps it well balanced. The water on which the wheel acts, passing directly through from front to rear, instead of being forced around at the sides of the boat, tends to remove a portion of the resistance in front and to apply force in the rear most effectually.

When the boat is to run in the opposite di-

rection, all that is necessary to do is to reverse the position of the gates or valves, as indicated by red lines in Figs. 1 and 2, and turn the paddle-wheel in the opposite direction. Thus the boat is adapted to run in either direction equally well by merely shifting the position of the gates, saving the trouble and time of turning it around.

By a simple connection of the shafts I I of the gates in any convenient manner the gates or valves may be made to operate automatically—that is, so that one will be opened when the other is closed.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The side water way or ways G, connecting with the main inclosed passage B on either side longitudinally of the paddle-wheel, and opening into the wheel-chamber D by the passage b in such a manner that the water admitted therein is carried around by the paddle-wheel, thus producing a centrifugal action and escaping at the rear, the whole arranged and operating substantially as herein described.

2. Covering the openings of the water way or ways G leading from the main water-passage by the hinged adjusting valves or gates H H', so that the water may be deflected in at either end of said way or ways and discharged into the chamber D, and thence out through the opposite end of the main passage to adapt the boat to running in either direction, combined and operating substantially as herein set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

OVID PLUMB.

Witnesses:

JOHN L. REQUA,
R. F. OSGOOD.