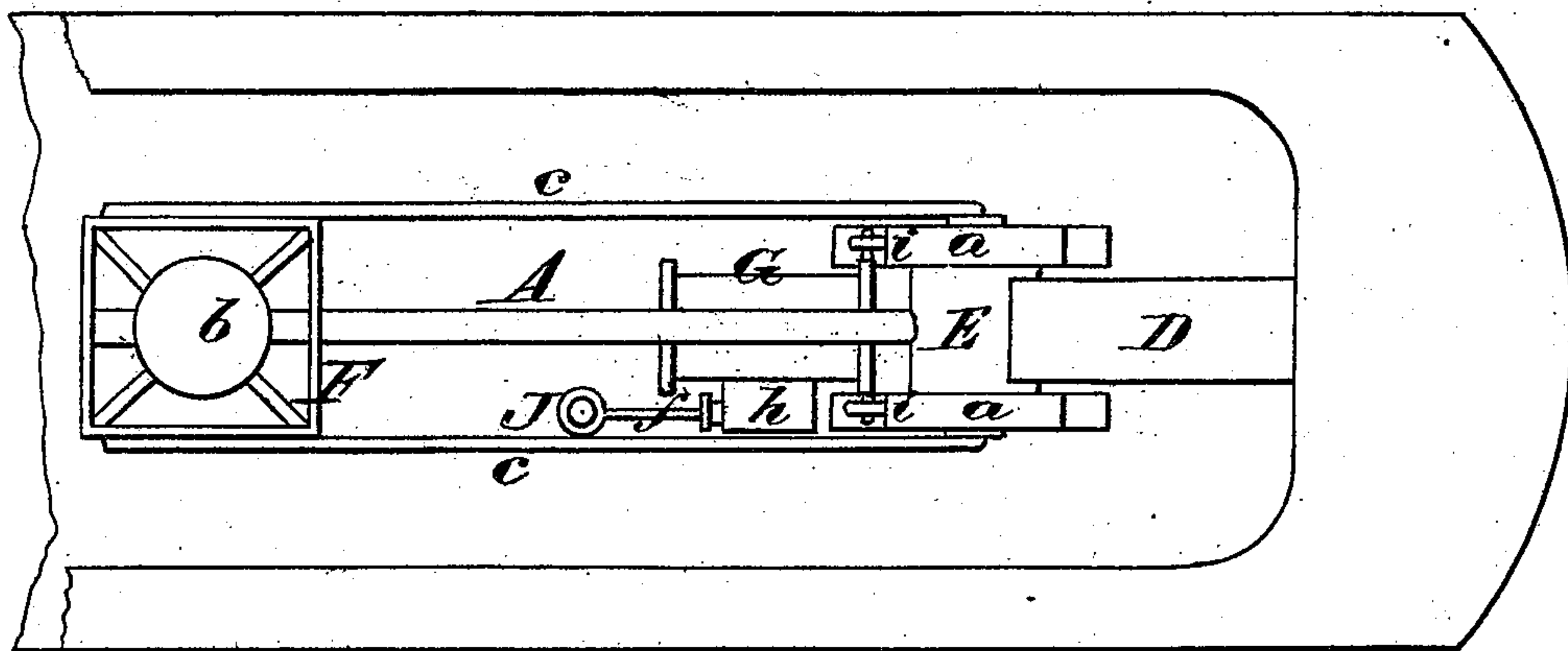
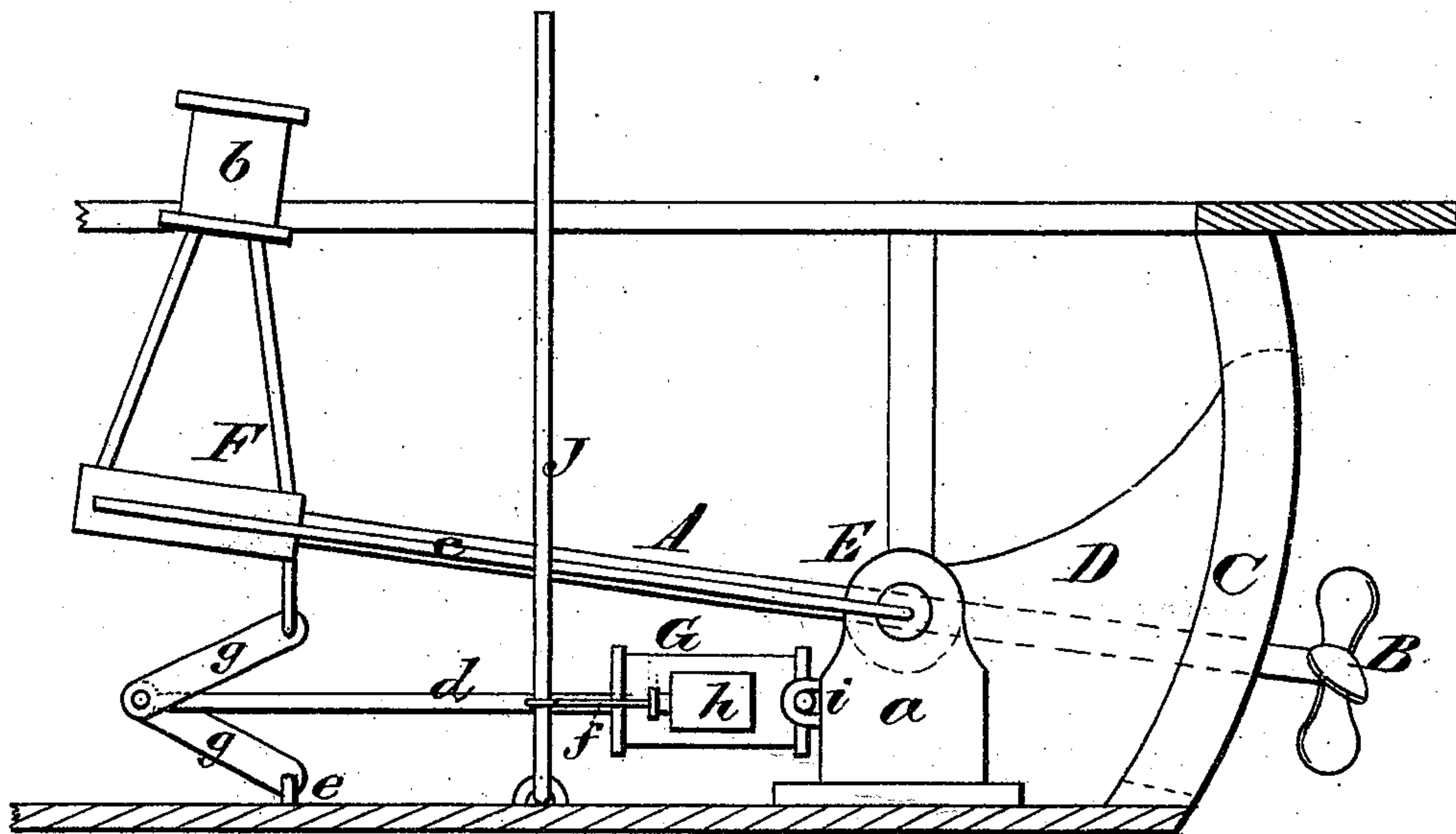


## RAISING AND LOWERING PROPELLER SHAFTS.

Patented Feb. 1, 1876.



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# UNITED STATES PATENT OFFICE.

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ASSIGNORS TO HENRY G. WAGNER, OF SAME PLACE.

## IMPROVEMENT IN RAISING AND LOWERING PROPELLER-SHAFTS.

Specification forming part of Letters Patent No. **172,945**, dated February 1, 1876; application filed  
January 15, 1876.

*To all whom it may concern:*

Be it known that we, MAHLON B. ATKINSON and THOMAS JOHNSON, of Georgetown, in the county of Washington and District of Columbia, have invented a new and valuable Improvement in Steam-Propellers; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a longitudinal vertical section of our propeller, and Fig. 2 is a plan view of the same.

This invention has relation to means for giving vertical adjustment to the propeller-shaft of a vessel, when such shaft is journaled in the frame of the engine, which gives rotary motion to it.

The nature of my invention consists in the combination, with a vertically-vibrating propeller-shaft, of one or more hydrostatic engines, so applied to the frame of the engine which rotates said shaft that the propeller can be adjusted and held at any desired point, as will be hereinafter explained.

In the annexed drawings we have represented in detail the stern portion of a canal-boat having our invention applied to it.

A designates the shaft of a propeller, B, which latter may be constructed in any suitable manner. The shaft A passes freely through a vertically-slotted stern-post, C, through a water-tight housing, D, through a cylinder, E, and is journaled in the base of an engine-frame, F. The cylinder E is journaled in standards *a*, and is suitably packed against the housing D, so as to prevent the ingress of water, but allow the propeller-shaft to be vibrated vertically. The shaft A, where it passes through the oscillating cylinder E, is also packed water-tight. The frame F may be constructed in any suitable manner, and at the upper portion of this frame is an engine-cylinder, *b*, the piston-rod of which communicates rotary motion to the propeller-shaft. The engine-frame is rigidly connected by beams *c c* to the journals of the oscillating cylinder E, so that this frame, the shaft A, and the cylinder E all move up and down together.

Prior to our invention the movable parts

above described were adjusted by means of a screw. We now adjust them by the following means:

G designates a cylinder, which is pivoted to the standards *a* at *i*, and which has a piston in it, the rod *d* of which is pivoted to toggle-levers *g g*. The upper one of these levers is connected to the base of the engine-frame F, and the lower one is connected to the bottom of the boat, at *e*. On one side of the cylinder G is a chest, *h*, in which is a "D-valve," the stem *f* of which is attached to a lever, J, extending above deck.

The cylinder G, its chest, its valve, and ports are constructed precisely like an ordinary high-pressure engine.

This engine communicates with the water-space of the steam-boiler used for driving the propeller, and, when it is desired to raise or depress this propeller, it is only necessary to move lever J in the proper direction, and admit water from the steam-boiler on one side or the other of the piston in the cylinder G.

Instead of mounting cylinder G as shown in the drawings it may be placed directly beneath the frame F, and its piston-rod pivoted thereto.

It will be seen from the above description that we adjust the propeller-shaft by a hydrostatic engine, taking the water from the boiler which drives the engine that operates the propeller-shaft.

By using water under pressure in the cylinder G we have practically an incompressible body, and can hold the propeller-shaft positively wherever desired.

It is proper to state here that the steam-engine and the hydrostatic engine will communicate with the steam-boiler by means of flexible pipes.

What we claim as new, and desire to secure by Letters Patent, is—

In combination with the vertically-adjustable propeller-shaft and its engine-frame, a hydrostatic engine, applied substantially as described, for adjusting said shaft, as set forth.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

M. B. ATKINSON.  
THOMAS JOHNSON.

Witnesses:

EUGENE W. JOHNSON,  
JOS. B. LOOMIS.