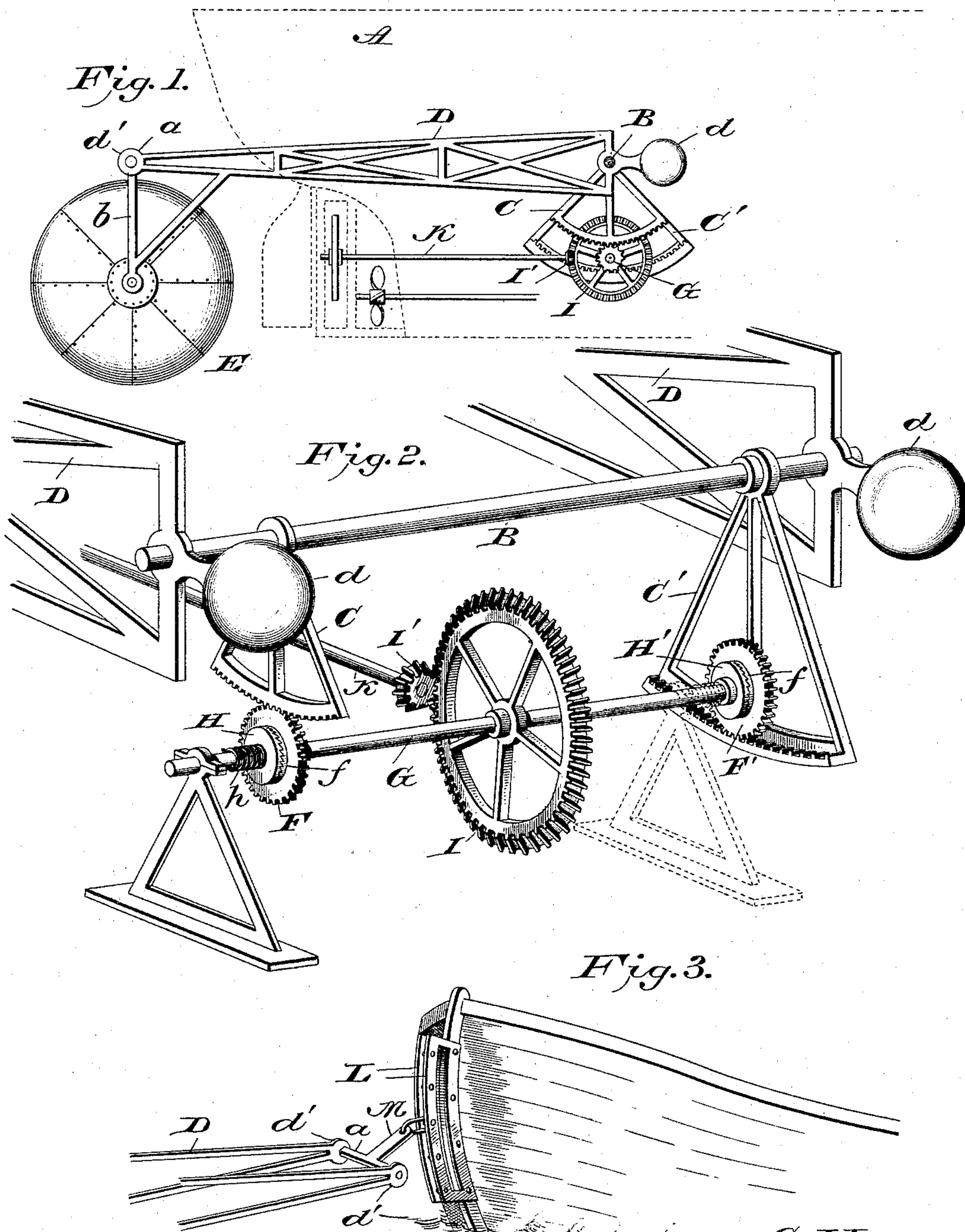


(No Model.)

C. J. LOWE.  
MEANS FOR PROPELLING VESSELS.

No. 468,668.

Patented Feb. 9, 1892.



Witnesses *L. S. Elliott*  
*E. M. Johnson*

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by

*[Signature]*  
Attorney



# UNITED STATES PATENT OFFICE.

CHARLES J. LOWE, OF GRAND FORKS, NORTH DAKOTA.

## MEANS FOR PROPELLING VESSELS.

SPECIFICATION forming part of Letters Patent No. 468,668, dated February 9, 1892.

Application filed October 17, 1891. Serial No. 408,968. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES J. LOWE, a citizen of the United States of America, residing at Grand Forks, in the county of Grand Forks and State of North Dakota, have invented certain new and useful Improvements in Means for Propelling Vessels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in propellers for vessels.

The object of the invention is to provide mechanism for converting the motion of the waves into a rotary motion for driving the propeller of a vessel; and the invention consists in providing a vessel with an oscillating lever, which is rigidly attached to a rock-shaft carrying toothed sectors, which mesh with gear-wheels mounted loosely on a shaft, which gear-wheels have clutch-faces, so that the oscillating movement of the lever and sectors will be converted into a continuous rotary motion, said motion being applied directly to a propeller-wheel; and the invention further consists in the construction and combination of the parts, as will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a side view showing the application of the propelling mechanism. Fig. 2 is a perspective view and Fig. 3 is a detail perspective view showing the manner of connecting the outer end of the lever to a vessel.

A designates the hull of a vessel, which is provided with a shaft B, supported in suitable bearings arranged transversely or at right angles with the keel of the vessel. This shaft is free to rock in its bearings and has rigidly secured thereto or keyed thereon sectors C and C'.

D refers to a lever which is rigidly secured to the shaft B, two being preferably employed, as shown in Fig. 2. The short ends of these levers are provided with counterbalancing-weights *d*, while their outer ends are provided

with eyes *d'*, through which a connecting-bar *a* passes, said connecting-bar carrying arms *b*, to the lower ends of which is secured a sphere or cylinder E, the same being preferably made up of boiler-iron in sections riveted together. Suitable brace-rods extend from the lower ends of the depending arms *b* to the levers D. The levers D pass through openings in the stern of the vessel, so that they can have an oscillating movement, and the sphere or cylinder is weighted, so that the outer ends of the levers will not only be moved upwardly by its buoyancy, but also downward by the weight thereof.

The sectors C and C' are provided with teeth, which mesh with cog-wheels F and F', loosely mounted on the shaft G. These cog-wheels are provided with clutch-faces *f*, with which the disks H and H', having clutch-faces, engage. The disks are secured to the shaft so as to slide laterally thereon, and are held in engagement with the clutch-faces *f* of the cog-wheels by springs *h*. It will be noted that the sector C engages with the upper edge of the cog F, while the sector C' is flanged and has teeth, which extend upwardly to engage the under side of the cog-wheel F'. Thus when the sectors are oscillated they will impart a rotary motion to the shaft G.

The shaft G carries at a suitable point a beveled gear-wheel I, which meshes with a beveled pinion I' on the end of the propeller-shaft K. The propeller secured to the shaft K is what is known as a "feathering-blade," and in practice I propose to locate in front and beneath such a propeller a screw of ordinary construction, adapted to be driven by steam-power in the usual manner.

In practice I prefer to use a cylinder or sphere, which is attached to the outboard end of the lever D; but should occasion require I may attach, instead of such a cylinder, a smaller vessel, as shown in Fig. 3, and in such a case I would secure to the bow thereof plates L L, which may have a series of perforations, and attach a double angle-bar M to the outboard ends of the levers. In such a case the smaller vessel would be the full equivalent of the float or cylinder. The balancing-weights *d* on the inner ends of the levers may be dispensed with, though I prefer to use them, as when the float is detached said counterbal-



ancing-weights will serve to hold the levers against the upper ends of the apertures in the stern of the vessel.

5 In operation the float rises and falls with the waves and oscillates the levers, which convert the power thus obtained into a rotary motion for driving the propeller-blades to propel the vessel.

10 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

15 1. In combination with a vessel, a cylindrical float secured to the projecting end of a lever or levers, said lever or levers being fulcrumed on a shaft having toothed sectors C and C', gear-wheels F and F', having clutch-faces, and gearing for rotating the shaft, having a propeller-wheel, substantially as set forth.

20 2. As a means for converting the undulatory motion of waves to the propulsion of a vessel, a float E, secured to the outboard or projecting end of a lever D, said lever being fulcrumed on a rock-shaft, toothed sectors C and C', of different diameters, secured to said  
25 rock-shaft, a rotary shaft G, having a gear-wheel I, a horizontal shaft K, having a pinion I' at one end and a propeller-wheel at the other, gear-wheels F and F', loosely mounted  
30 on the shaft G and provided with clutch-faces, disks H and H', having clutch-faces, and springs for holding them in engagement with

the gear-wheels F and F', substantially as shown, and for the purpose set forth.

3. In a device for the propulsion of vessels 35 by wave-power, a lever D, fulcrumed upon a rock-shaft and provided at one end with a counterbalancing-weight d, said lever passing through the hull of the vessel and provided with means for attaching a float to the outboard 40 end of the same, the rock-shaft having toothed sectors rigidly secured thereto, which mesh with gear-wheels having clutches, and the transverse shaft carrying a gear-wheel, with which meshes a pinion carried by the driven 45 shaft, substantially as set forth.

4. In a device for the propulsion of vessels, the combination of levers D, fulcrumed upon a horizontal rock-shaft, said levers being provided with counterbalancing-weights d, mech- 50 anism, substantially as shown, for converting the oscillating movement of the levers into a continuous rotary motion, and a float adapted to be attached to the outboard ends of the levers, the outer ends of the levers being con- 55 nected to each other by a cross-bar a, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES J. LOWE.

Witnesses:

J. B. WINEMAN,  
THOMAS THOMPSON.