

W. H. MALLORY.  
Steering Propellers.

No. 152,238.

Patented June 23, 1874.

fig. 1.

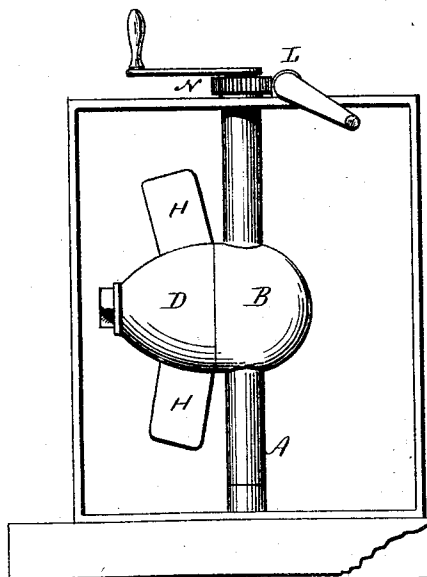


fig. 2.

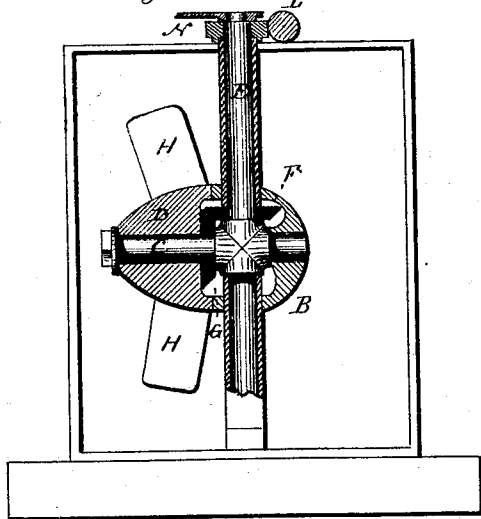


fig. 4.

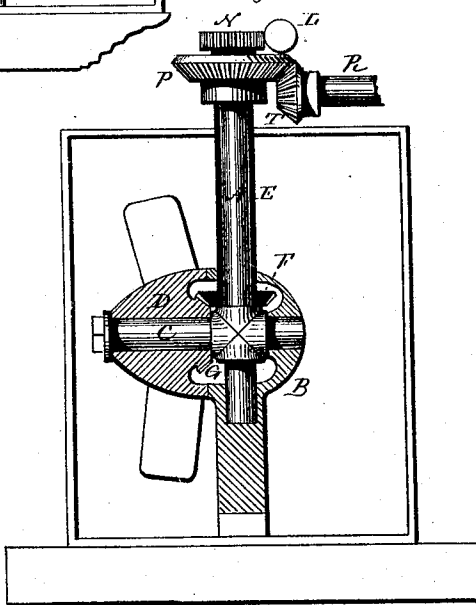
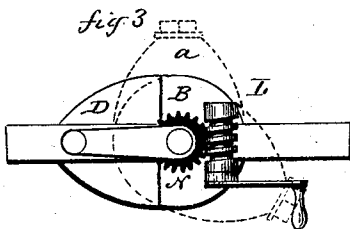


fig. 3.



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## IMPROVEMENT IN STEERING-PROPELLERS.

Specification forming part of Letters Patent No. **152,238**, dated June 23, 1874; application filed June 4, 1874.

*To all whom it may concern:*

Be it known that I, WILLIAM H. MALLORY, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented a new Improvement in Steering-Propellers; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent in—

Figure 1, a side view; Fig. 2, a vertical central section; Fig. 3, a top view, and in Fig. 4, a modification.

This invention relates to an improvement in that class of propellers which are constructed so as to be turned to the right or left upon a vertical axis for the purpose of steering the vessel.

In the usual construction of this class of propellers the adjustment or swing is limited. The object of this invention is to so construct the propeller and its connections that its extent of swing may be unlimited—that is, that it may be rotated completely around, if desirable; and the invention consists in two vertical shafts, one within the other, one of said shafts supporting a horizontal shaft, which forms a bearing for the propeller, and serves as a means for turning the propeller in a horizontal plane. The other, revolving, communicates power to the propeller to cause its revolution, as more fully hereinafter described.

A is a vertical shaft, supported in suitable bearings at the top and bottom. To this shaft a shell, B, is attached, the center of which is the axial line of the propeller, and within this is a horizontal shaft, C, attached to the hollow shaft A, so as to become practically a part of it. This shaft C extends at right angles from the hollow shaft A, and on this the hub D of the propeller is arranged and secured, but so as to revolve freely on said shaft C. Within the hollow shaft A is the driving-shaft E, caused to revolve by the application of power thereto in any convenient manner. On this shaft is a bevel-gear, F, within the shell B, and on the hub a corresponding bevel-gear, G, the two gears working together so that the revolution of the shaft E will cause a corresponding revolution to the propeller. The hub D is provided with blades H of any suitable construction.

A rotation is imparted to the outer shaft A, independent of the shaft E, by any suitable means here represented, as by a worm, L, working into a gear, N. By the turning of the shaft A the horizontal shaft C will be swung to the right or left accordingly, and may be turned entirely around, different positions being shown in Fig. 3 in broken lines. This turning of the shaft A turns the propeller, to change the direction of the vessel, as may be required, and without, in the slightest degree, changing the revolution of the propeller. If turned at right angles, as at *a*, Fig. 3, the power of the propeller will be exerted transversely only. If reversed from the position in Fig. 2—that is, the shaft A turned one-half around—then the power of the propeller will be exerted in the opposite direction. These are the two extremes, one of which will exert the power of the propeller to force the vessel forward, and the other to force it backward, the propeller always revolving in the same direction, so that at any time when it is required to reverse the action of the propeller it is only necessary to turn the shaft A one-half around, which may be done without, in the slightest degree, slackening the engine.

While I have represented the inner shaft as the driving-shaft, and the outer shaft to support the horizontal or bearing shaft, it will be evident that this order may be reversed, as seen in Fig. 4, it only being essential that the axial line of the two shafts shall be common to both.

The best method of applying power is shown in Fig. 4, a bevel-gear, P, on the vertical shaft, and a horizontal shaft, R, with a bevel-gear, T, working in the gear P, to which the power may be conducted from the engine in any convenient manner.

I claim as my invention—

The two vertical shafts A E, one within the other, one of said shafts supporting a horizontal shaft, which forms a bearing for the propeller and serves as a means for turning the propeller in a horizontal plane, the other shaft revolving and combined with mechanism to communicate a corresponding revolution to the propeller, substantially as described.

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Witnesses:

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