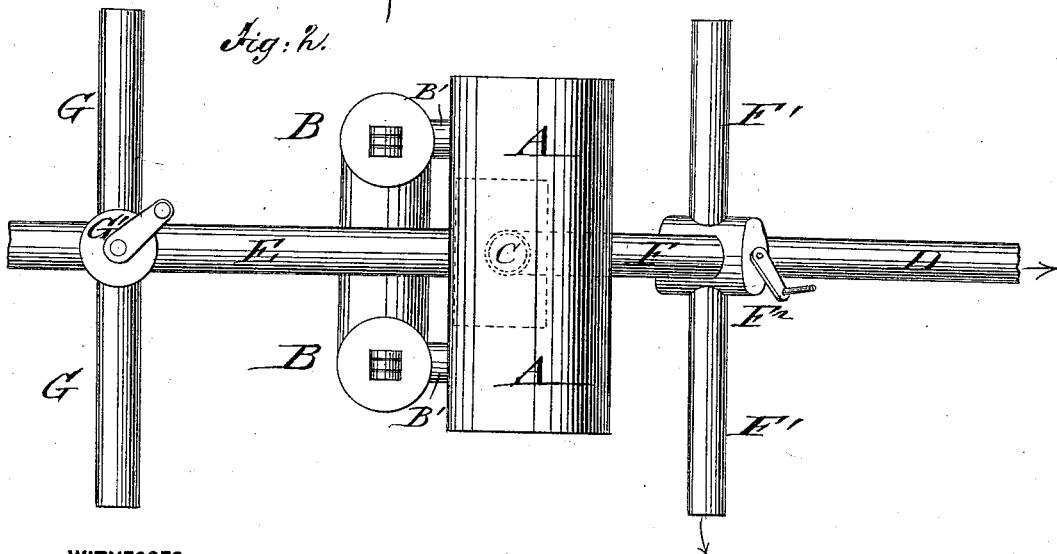
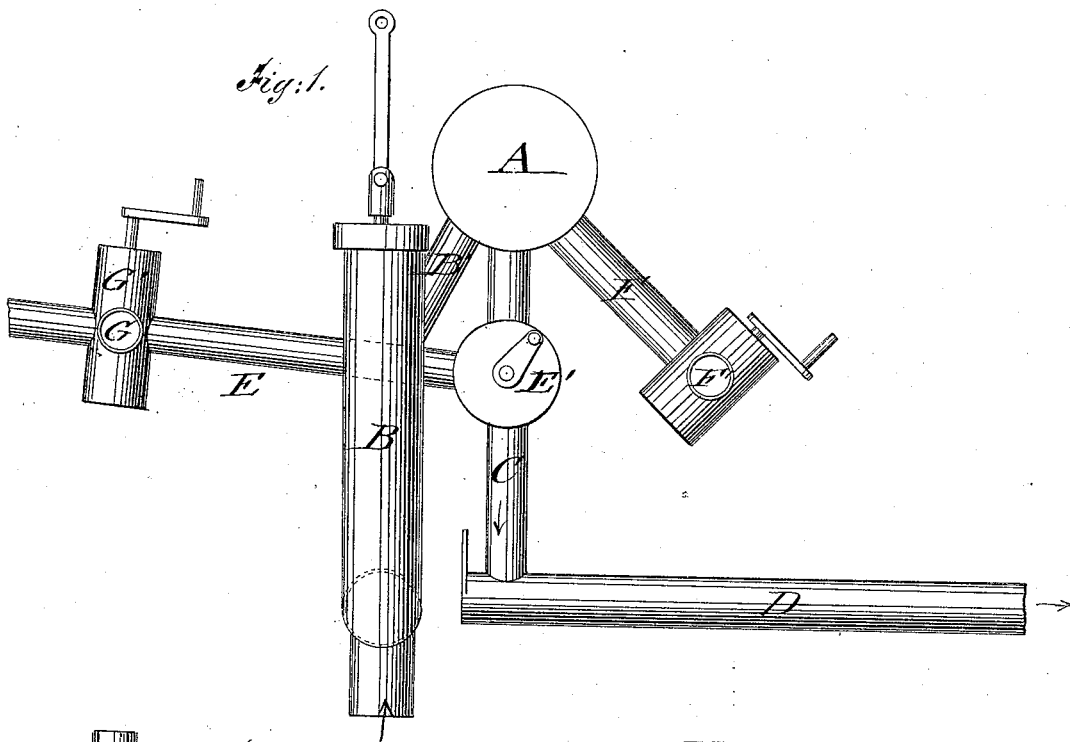


W. F. MORRISON.  
 DEVICES FOR PROPELLING VESSELS.

No. 194,835.

Patented Sept. 4, 1877.



WITNESSES:

*Chas. Nida*  
*J. H. Scarborough*

INVENTOR:

*W. F. Morrison*  
 BY *Munn*

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

WILLIAM F. MORRISON, OF PLATTSMOUTH, NEBRASKA.

## IMPROVEMENT IN DEVICES FOR PROPELLING VESSELS.

Specification forming part of Letters Patent No. **194,835**, dated September 4, 1877; application filed June 30, 1877.

*To all whom it may concern:*

Be it known that I, WM. F. MORRISON, of Plattsouth, in the county of Cass and State of Nebraska, have invented a new and Improved Device for Propelling Vessels; and I do hereby declare that the following is a full, clear, and exact description of the same.

In the accompanying drawing, Figure 1 represents a side elevation of my improved device for propelling vessels without agitating the water, and Fig. 2 is a top view of the same.

Similar letters of reference indicate corresponding parts.

The object of my invention is to provide an improved device for propelling and steering vessels without agitating the water, the same to be used in canal, river, lake, and ocean navigation.

The invention relates particularly to the combination and arrangement of parts for steering a vessel. The desired effect is produced by the expulsion of water from suitably-arranged tubes.

In practice it matters not whether the water is discharged into the body of water surrounding the vessel, into the air, or into a vacuum, the effect upon the vessel being the same.

In the drawing, A represents a tank or cistern of suitable size, into which the water is forced by pumps B placed in horizontal, vertical, or inclined direction, as may be desired, the water to be received in the pumps either from the sides, bottom, or from the leakage water inside of the vessel.

Suitable check-valves B in the connecting-pipes of the pumps and tank admit the water into the tank, but prevent its return. Tank A is provided at the under side with a vertical outlet-pipe, C, from which branch out in longitudinal direction of the vessel, but at right angles thereto, rearward-extending pipe D, and a forward-extending pipe, E. The horizontal propelling-pipe D discharges the water with but little effect upon the body of water surrounding the vessel. The reaction of the water on the closed end of the pipe causes thereby the forward motion of the vessel when forced with suitable power by the water passing through the vertical pipe C. This effect of the discharged water is more or less modified and utilized by lengthening and enlarging the discharge in suitable proportions.

The forward-extending pipe E branches off at a suitable height above the lower pipe D, and discharges above the water-line, being supplied at the intersection with the vertical pipe C with a valve, E', so that the water may be discharged through either the upper or lower pipe, and that the reaction or force against the closed end of the pipe caused by the discharge of the water along through the pipe produces the forward or backward motion of the vessel.

An additional pipe, F, extends at a suitable inclination from tank A, and branches off into horizontal pipes F<sup>1</sup>, at right angles thereto, through which the outflow of the water is adjusted by a valve, F<sup>2</sup>, at the intersection with pipe F above the water-line, and thereby the vessel is steered in either direction.

Similar lateral pipes G, with adjustable valves G' at the point of intersection with pipes E, are applied near the forward end of pipe E for steering the vessel when propelled in backward direction.

The water surrounding the vessel is but little agitated, as the operation of supplying the water to the tank and the discharging of the same for propelling and steering purposes produces only a small effect on the same, the water being discharged at a very slow motion, while the internal reaction at the right angles of various discharge-pipes, together with the recoiling force of the confined water on the closed end of the pipes, gives a very effective propelling and steering capacity.

Having thus described my invention, what I claim as new is—

In combination with the water-supply tank, a cistern, A, and the propelling discharge-pipes D and E, the lateral pipes F<sup>1</sup> and G branching off at right angles from pipes F and E, and being regulated by adjustable valves for steering the vessel in either direction during its forward and return motion, substantially as described.

WILLIAM FRANCIS MORRISON.

Witnesses:

J. E. MORRISON,  
W. J. DESPAIN,  
J. N. WISE,  
J. W. JOHNSON,  
JOHN W. HAINES,  
C. P. MOORE,  
J. W. JENNINGS.