F. MORRIS.

PROPELLERS FOR VESSELS.

No. 188,398. Patented March 13, 1877.

Fig. 1

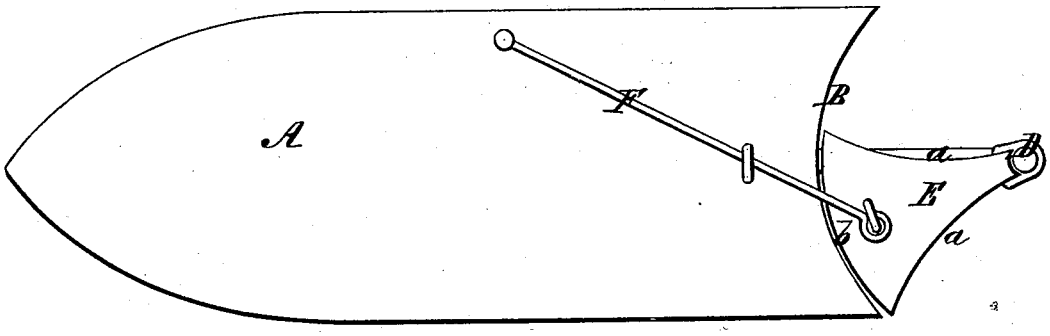


Fig. 2

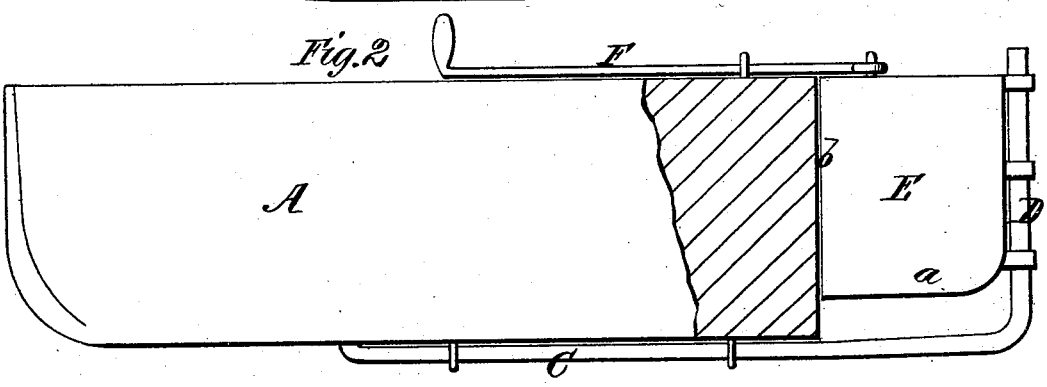


Fig. 3

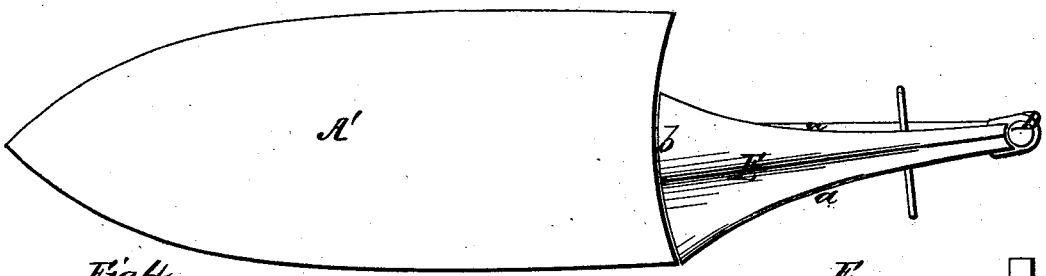
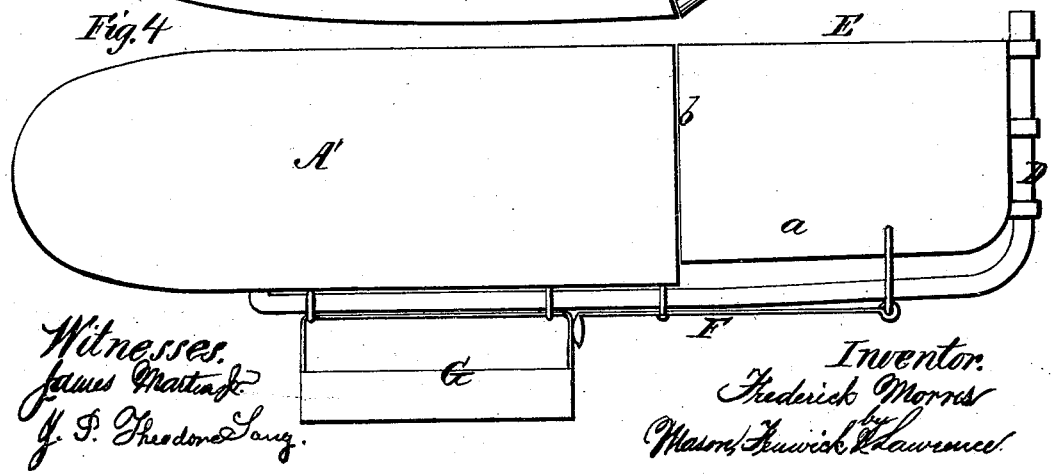


Fig. 4



Witnesses.
James Martin Jr.
J. P. Theodore Lang.

Inventor.
Frederick Morris
by Mason Fenwick & Lawrence

UNITED STATES PATENT OFFICE.

FREDERICK MORRIS, OF NORWOOD, NEW JERSEY.

IMPROVEMENT IN PROPELLERS FOR VESSELS.

Specification forming part of Letters Patent No. **188,398**, dated March 13, 1877; application filed January 31, 1877.

To all whom it may concern:

Be it known that I, FREDERICK MORRIS, of Norwood, in the county of Bergen and State of New Jersey, have invented a new and useful Propeller for Boats and Balloons; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top view of my propeller applied to a boat, and Fig. 2 is a side view of the same. Figs. 3 and 4 are top and side views of the propeller applied for propelling a balloon.

My invention is particularly intended for propelling canal-boats; and its object is to avoid great disturbance or agitation of the water and consequent washing away of the banks of the canal. But, while the invention will answer specially for canals, its use may be extended for propelling river-boats and balloons.

The nature of my invention consists in a propeller-blade of triangular form in its horizontal section, and of segmental form on its forward end, in combination with a fulcrum-standard applied upon a suitable support afforded by the boat or balloon which is being propelled. This combination is such that the propeller, when vibrated by a suitable rod or lever attached to the structure being propelled, will act with an oblique surface against the water or air on each side of the structure, and thereby cause the boat or balloon to move forward.

Second. It consists in so proportioning the width of the forward end of the propeller-blade with respect to the width of the boat or balloon, and regulating the vibrations of the blade, that the two faces of the blade are prevented from passing to either side of the central axis of the boat or balloon, on which line the fulcrum standard or axis of the propeller is placed. By this construction the propeller never gets upon what is termed the dead-center, and the water of the canal or river cannot get wedged in between the propeller and the stern of the boat in a manner to render the operation of vibrating the propeller laborious.

Third. My invention consists in a propeller of any appropriate form, vibrated by its forward end on a fulcrum-standard, remotely situated from the stern of the boat or balloon, and sustained by a support, which is a rigid part of the frame of the boat or balloon.

Fourth. My invention consists in making the propeller-blade with concave faces.

In the accompanying drawings, A represents a boat of any known form. The stern of this boat is made with a concave form, as shown at B. The concave is an arc of a circle, the center of which is the point where the fulcrum-standard of the propeller is located. C is an extended keel, taffrail, or appropriate frame-work, constructed on the boat and supported properly. This keel, or its equivalent, is back of the stern of the boat, and it affords the necessary support for a fulcrum-standard, D, and a propeller-blade, E, which swings on said fulcrum-standard. The propeller-blade is of triangular form, and its faces *a a* are oblique to the water upon which it acts, or to the longitudinal axis of the boat, and its forward end is an arc of a circle, as shown at *b*, and just fits the concave B in the stern of the boat. The width of this blade is, at its segment-shaped end, a little greater than one-half the width of the stern of the boat, and the movement of vibration permitted is only sufficient to bring the respective faces of the blade flush with the outline of the stern. The faces of the blades may be flat or concave, as practice may prove most advantageous. It is believed that a slight concavity in the faces will give the best results. F is a rod or lever, attached to the boat by a pivot or other means. This rod or lever is connected to the forward end of the blade E, and by vibrating this rod or lever the blade will be vibrated and caused to sweep against the water, and thereby propel the boat forward.

The blade, when applied to a balloon, A′, operates against the air, instead of the water, and it is believed that it would be best to make the blade hollow and have it inflated, the same as the other or body portion of the balloon. The lever F, which operates the propeller-blade of the balloon, will be placed convenient to the car or basket G, so as to be grasped by the manager.

It is contemplated to use power-engines for

operating the propeller in many applications of the invention.

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

1. A boat provided with a propeller which is supported on a fulcrum at a point remote from the boat proper, and in rear of the working-face of the propeller, substantially as and for the purpose described.

2. The triangular propeller, having diverging working-faces, in combination with the concave end of the stern of the boat, substantially as and for the purpose described.

3. The propeller, made with its broadest end a little wider than one-half the width of the stern of the boat, and limited in its movement so as not to pass the central longitudinal axis of the boat, substantially as and for the purpose described.

4. The triangular propeller-blade, made with concave faces, substantially as and for the purpose described.

Witness my hand in the matter of my application for an improved propeller this 31st day of January, A. D. 1877.

FREDERICK MORRIS.

Witnesses:

J. P. THEODORE LANG,

GEO. R. MILBURN.