

E. Beard.
Screw Propeller.

Patented Apr 10, 1841.

Nº 2,045.

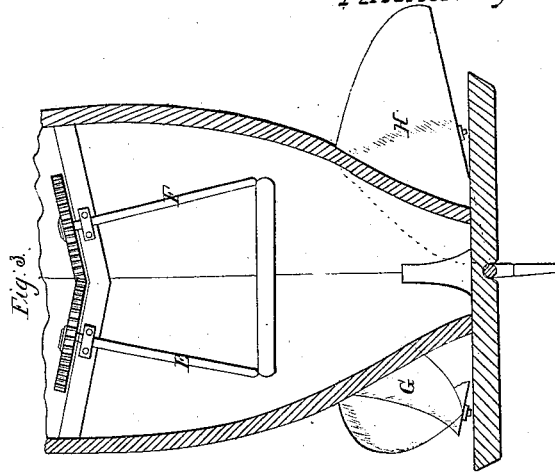


Fig. 2.

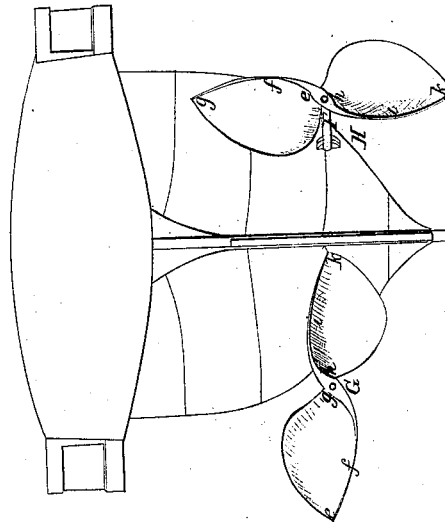


Fig. 4.

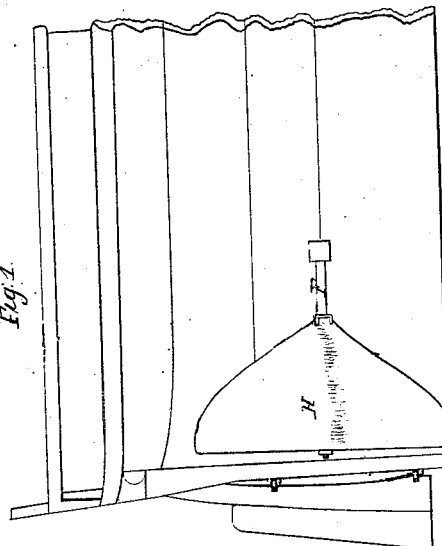
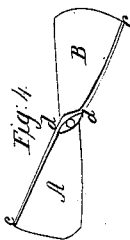
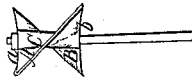


Fig. 5.



UNITED STATES PATENT OFFICE.

EBENEZER BEARD, OF NEW SHARON, MAINE.

IMPROVEMENT IN THE FORM OF THE SCREW-PROPELLER FOR PROPELLING VESSELS.

Specification forming part of Letters Patent No. 2,045, dated April 10, 1841.

To all whom it may concern:

Be it known that I, EBENEZER BEARD, of New Sharon, in the county of Franklin and State of Maine, have invented a new and useful Improvement in Screw-Propellers to be Applied to Vessels or Steamboats; and I do hereby declare that the following is a full and exact description of the same.

The said description, taken in connection with the accompanying drawings hereinafter referred to, composes my specification, setting forth and exhibiting the principles of construction of my improvements, by which they may be distinguished from others of a like character, and such parts or combinations therein as I claim and for which I solicit an exclusive property to be secured to me by Letters Patent.

The figures of the accompanying plate of drawings represent my improvement.

Figure 1 is a side elevation of the stern of a vessel with the propellers attached. Fig. 2 is an end elevation, and Fig. 3 a horizontal section.

The object of my improvement is to cause the force which propels the vessel forward to operate in a direction parallel or nearly so with the keel, thereby projecting or forcing the water set in motion by the revolution of the propellers directly astern.

In the screw-propellers heretofore used, the faces of the wings or paddles are constructed flat or approaching to a plane surface, they being parts of a very thin but wide thread of a screw projected about a cylinder or shaft. These paddles as they are generally arranged act to propel the water at an angle or in a diagonal direction with the keel of the vessel or the shaft on which they are placed, the propelling force exerted by their revolutions being in a line oblique to the keel, and consequently much power is lost, and only a portion of said force operates to send the vessel directly ahead, the remainder being lost in the water. Now, in order to cause all or nearly all the power applied to contribute to the direct propulsion of the vessel, it is necessary to give to the screw-paddles a shape in their transverse section somewhat different than has heretofore been customary.

Fig. 4 exhibits the transverse section of a screw-paddle applied to a shaft, Fig. 5 being a top view of the same. In the latter figure

it will be perceived that each wing A B of the paddle makes a part of a long helix formed from *a* to *b* upon a cylinder C, and that each of the said wings in its section or end view from *c* to *d* is a straight line, as seen in Fig. 4. Such a paddle will generally act upon or throw the water from it more or less in a direction oblique to the keel or longitudinal axis of the ship. This evidently produces a loss in the effective power exerted to throw the vessel forward. The paddles may be arranged in the dead wood of the keel in front of the rudder or in the stern on each side of the stern-post, as seen in Figs. 2 and 3.

My improvement consists in curving the paddles or wings in their transverse section, as shown at *e f g h i k* in Fig. 2—that is to say, so that if a section through the paddle perpendicular to its axis of revolution be taken at any part of the same, the paddle shall be curved in said section more or less as represented at *e f g*, Fig. 2. The curve to be given to the paddle in such sections of the same should be such as to cause the force of propulsion reflected from the face of the paddle upon the water to be in a direction parallel to the keel or longitudinal axis of the ship. This peculiar shape of the paddles will vary according to circumstances; but principally from the manner in which the paddle-shaft is arranged, whether parallel to the keel or oblique to the same, as seen in Fig. 3, where E F represent the shafts of the paddles G H. It is evident that if the shaft is arranged as in Fig. 3, a greater curve should be given to the wing in order to act on the water as above described.

Having thus described my improvements, I shall claim—

Curving the wings of the screw paddles or propellers in a direction perpendicular to the shaft or their axis of revolution, substantially in manner and for the purpose above set forth.

In testimony that the above is a true description of my said invention and improvement, I have hereto set my signature this 5th day of February, in the year 1841.

EBENEZER BEARD.

Witnesses:

R. H. EDDY,

EZRA LINCOLN, Jr.