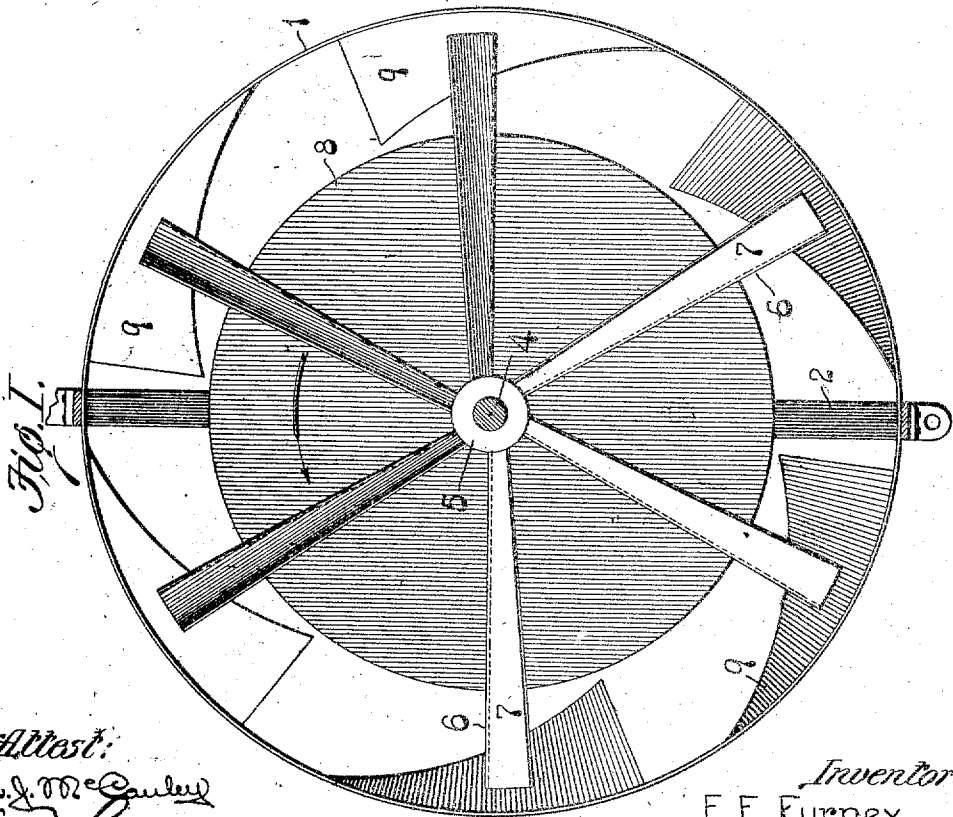
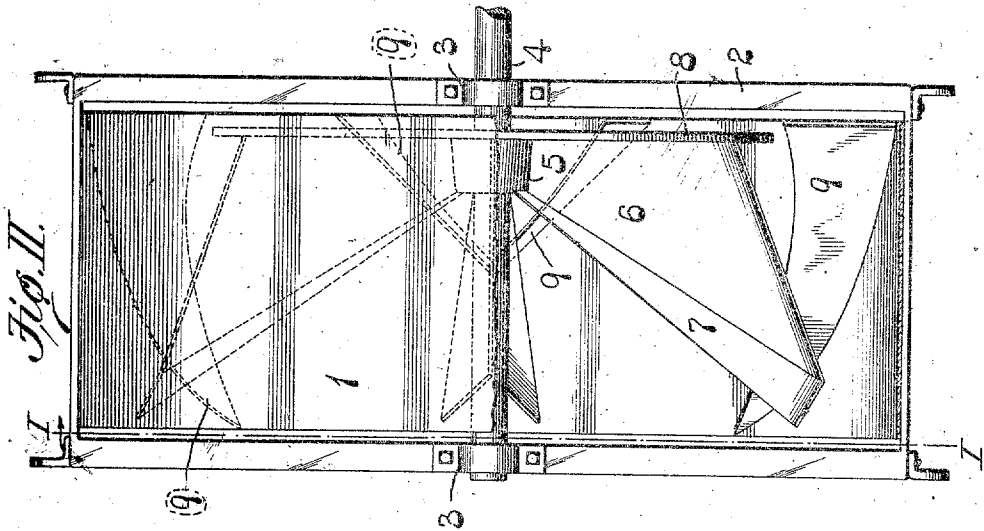


E. E. FURNEY.  
PROPELLER.

APPLICATION FILED OCT. 18, 1909.

962,136.

Patented June 21, 1910.



Attest:  
A. J. McCauley  
E. E. Furney

Inventor:  
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by *E. E. Furney* atty.

# UNITED STATES PATENT OFFICE.

ELLIOTT E. FURNEY, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO JOHN F. O'NEIL, OF ST. LOUIS, MISSOURI.

## PROPELLER.

332,136.

Specification of Letters Patent. Patented June 21, 1910.

Application filed October 18, 1909. Serial No. 523,273.

*To all whom it may concern:*

Be it known that I, ELLIOTT E. FURNEY, a citizen of the United States of America, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Propellers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification.

My invention relates to a propeller more particularly intended for use in airships, or which may be used upon other craft, such, for instance, as marine vessels. Inasmuch, however, as the propeller is especially adaptable for use in airships, it will be here-in considered as utilized upon a vehicle of this nature.

The object of my invention is to produce a propeller in the use of which a partial vacuum may be created in front of the propeller due to the production of centrifugal force within the propeller, thereby reducing atmospheric resistance in front of the propeller; and, further to provide means within the propeller housing against which the fluid is delivered tangentially to be deflected therefrom in a backward direction, and in the striking of which the fluid acts to create force in a forward direction by virtue of which the propeller is advanced into the partial vacuum constantly maintained in front of the propeller.

Figure I is a front elevation of my propeller with the propeller frame in section on line I—I, Fig. II. Fig. II is a view of the propeller partly in side elevation and partly in section.

In the accompanying drawings: 1 designates the housing of my propeller which is open from end to end, and is preferably of cylindrical shape. This housing is supported by a frame 2, preferably of rectangular shape, as shown in Fig. II, and which may be connected in any suitable manner to the craft with which the propeller is used. The frame is provided with journal boxes 3.

4 designates a propeller shaft that is mounted in the journal boxes 3, and which may be driven by any suitable motor located back of the propeller and sheltered thereby, with an object in view to be hereinafter more particularly mentioned.

5 designates the hub of the propeller

wheel carried by the propeller shaft, the hub being rigidly connected to said shaft.

6 are wings of the propeller wheel extending radially from the hub 5, preferably in the shape of truncated scalene triangles, as shown in the drawings, Fig. II, the long sides of the wings being those presented forwardly and outwardly toward the front end of the housing 1; and the rear ends of the wings being of less length than the forward ends of the wings. Each wing is provided at its front end with a vane 7 extending at an angle to the plane of the body of the wing, and which is adapted to cause each wing to catch the air more efficiently during the rotation of the propeller wheel.

At the rear of the propeller wheel is a disk 8 that serves to prevent the passage of air through the propeller wheel throughout the radius of said disk, and which, by its presence, makes it necessary that the air acted upon by the propeller wheel within the housing 1 be thrown outwardly with centrifugal force to strike, tangentially, vanes to be next particularly mentioned.

9 designates a plurality of turbinate vanes arranged obliquely in the housing 1, relative to the axis of the propeller, which are preferably of less width at the forward end of the propeller than they are at the rear end of the propeller.

During the rotation of the propeller wheel, the air caught by the wings of said wheel is projected tangentially against the rear faces of the turbinate vanes 9, being deflected backwardly within the propeller housing by said vanes, and by striking these turbinate vanes, acts to exert a forward pressure against them. The backward deflection of the air also causes air to be filled in back of the disk 8 at the rear of the propeller wheel, while atmospheric air pressure exerts a forward pressure against the disk, thereby affording additional propelling force, under the influence of which the propeller is driven into the partial vacuum constantly created in front of the propeller.

It is to be noted that the disk 8 in my propeller is capable of affording shelter for the motor by which the propeller shaft 4 is operated, and which is intended to be attached directly to the propeller shaft, in order that the motor may not offer resistance even during the most rapid flight of an airship.

equipped with my propeller. It is also to be noted that in the use of my propeller, the impact of air against the turbinate vanes, or what may properly be termed deflecting vanes, counteracts the tendency of the motor to rotate an airship, equipped with my propeller, in a direction the reverse of that in which the propeller is being operated. The construction, therefore, permits the use of a single propeller instead of two propellers that are designed to balance each other with the object in view of preventing the rotation referred to.

I claim:

1. In a propeller, a housing, vanes at the interior of said housing, and a propeller wheel operable to produce centrifugal force in said housing and by which fluid is delivered tangentially therefrom to the rear sides of said vanes, the said propeller wheel having a disk back of its wings.

2. In a propeller, a housing, turbinate

vanes within said housing, and a propeller operable to produce centrifugal force in said housing to deliver fluid tangentially therefrom to the rear sides of said turbinate vanes, the propeller wheel having a disk located back of its wings.

3. In a propeller, a housing, turbinate vanes within said housing, and a propeller in said housing to produce centrifugal force therein and having wings provided with front vanes, the wings being adapted to deliver fluid tangentially to the rear sides of said turbinate vanes, the said propeller wheel having a disk located back of its wings.

In testimony whereof, I have hereunto affixed my signature, this 15th day of October, 1909.

ELLIOTT E. FURNEY.

In the presence of—

A. J. McCauley,  
E. B. Linn.