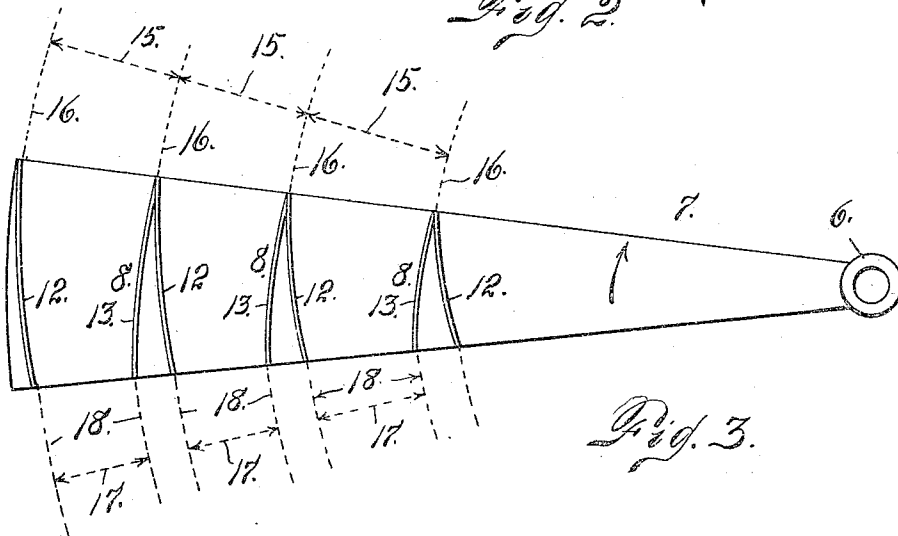
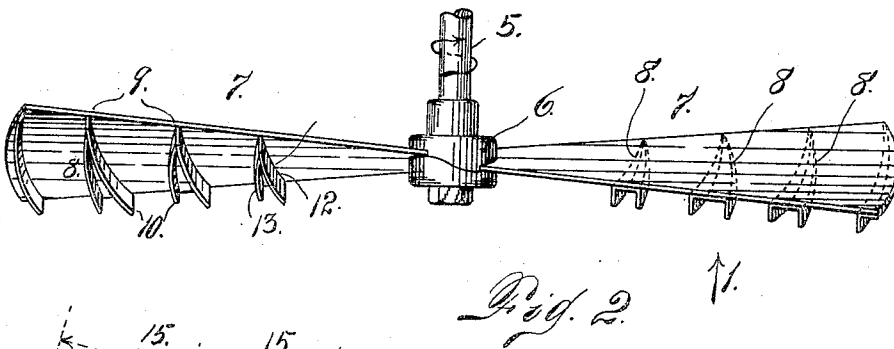
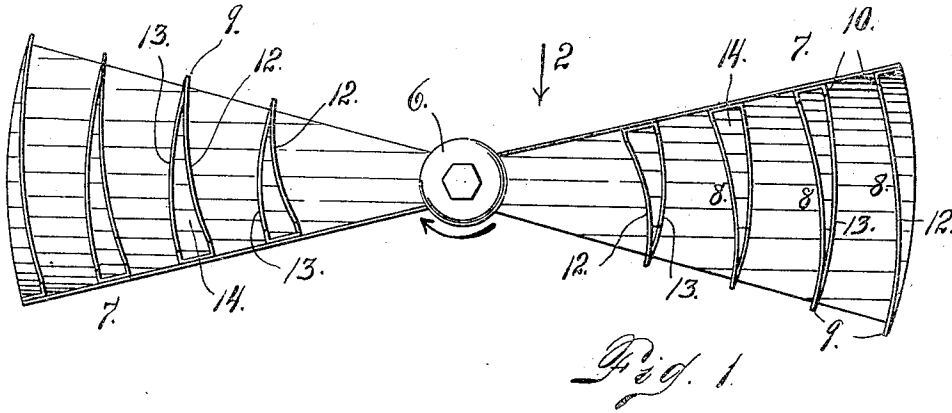


B. F. SEYMOUR.
 PROPELLER FOR FLYING MACHINES.
 APPLICATION FILED AUG. 24, 1911.

1,244,786.

Patented Oct. 30, 1917.



Witnesses

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BENJAMIN F. SEYMOUR, OF DENVER, COLORADO.

PROPELLER FOR FLYING-MACHINES.

1,244,786.

Specification of Letters Patent. Patented Oct. 30, 1917.

Application filed August 24, 1911. Serial No. 645,812.

To all whom it may concern:

Be it known that I, BENJAMIN F. SEYMOUR, a citizen of the United States, residing at the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Propellers for Flying-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in propellers for flying machines.

My present improvement consists in equipping the propeller blades with transversely disposed deflectors, so arranged that the distance between the deflectors, where the air escapes when the propeller is in operation, is less than the distance between these deflectors where the air enters. By virtue of this arrangement, I accomplish two important objects. By the transverse arrangement of the deflectors, the air is prevented from escaping at the outer extremities thereof, or moving outwardly longitudinally of the blades under the action of centrifugal force due to the rotation of the blades within their zone of travel. This feature makes it practicable to rotate the propeller at any desired speed, without producing a vacuum or cavity within the zone of travel.

In the case of ordinary propellers, when rotated in the atmosphere, the speed at which the propeller can be rotated advantageously is limited by reason of the fact that the greater the speed of rotation, the greater the tendency to drive out the air from the zone of rotation and produce a vacuum or a condition whereby the atmosphere is so rarefied that the propeller blades virtually have nothing to act upon to produce the necessary resistance for effective operation in connection with flying machines.

This feature has been explained in my previous applications, Serial No. 531,188, filed December 3, 1909, and Serial No. 531,187, filed December 3, 1909.

The other object accomplished by virtue of the aforesaid arrangement of the transversely disposed deflectors consists in the

compression of the air at the line of its exit from the propeller blades due to the fact that the space between these blades is greater where the air enters than where it escapes. This compression increases the atmospheric resistance to the movement of the blades, and consequently coöperates with the transverse arrangement of the deflectors to prevent the formation of a vacuum or the production of a rarefied condition of the atmosphere equivalent to a vacuum.

Having briefly outlined my improved construction, I will proceed to describe the same in detail, reference being made to the accompanying drawing, in which is illustrated an embodiment thereof.

In this drawing:

Figure 1 is a view of a propeller, looking in the direction of the axis of the shaft upon which the blades are mounted.

Fig. 2 is a view looking at right angles to Fig. 1, or a view looking in the direction of arrow 2, Fig. 1.

Fig. 3 is a diagrammatic view, illustrating my peculiar construction and arrangement of the deflectors upon a propeller blade, the parts being shown on a larger scale than in the other views, so far as the length of the blade is concerned.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate a shaft having a hub 6, to which blades 7 are secured, the said blades being suitably inclined to the axis of the shaft to serve the necessary purpose of propulsion, when used in connection with a flying machine. Upon each blade of the propeller I arrange deflectors 8, which are transversely disposed and so arranged that the distance between the extremities 9 of any two deflectors, on the edge of the blade where the air enters during rotation, is greater than the distance between the opposite extremities 10 of the same deflectors on the edge of the blade where the air escapes or makes its exit. These deflectors may be constructed in any suitable manner. As illustrated in the drawing, they are shown to be V-shaped, the two members 12 and 13 of each blade being curved and diverging from the point 9 of the deflector toward the opposite edge of the latter, where they are farthest apart, the two parts 12 and 13 being illustrated as relatively thin, leaving a space between them. It

must be understood that the deflectors may, if desired, be formed solid, or in any other desired manner, so long as they are so arranged that the space between them, where the air enters, is farther apart than the space between them where the air escapes when the propeller is in operation.

In further explanation of the special construction of the deflectors shown in the drawing, it may be stated that each deflector is U-shaped in cross section, or in end view when looking at the extremity of the deflector where the air escapes from the blade. This gives a flat surface 14, which lies in engagement with the face of the propeller blade. Any suitable fastening means may be employed.

As no fastening devices are illustrated in the drawing, it must be assumed that the deflectors are soldered, brazed or electrically welded to the propeller blade. These are features which do not, in any way, affect the broad invention as heretofore outlined.

In the operation of my improved propeller, it will be understood that, as the blades move through the atmosphere, the latter, instead of "slipping" from the blade in a longitudinal direction, whereby there is a resulting tendency to produce a vacuum in the zone of rotation, the air is compelled to travel inwardly toward the axis of rotation. This result overcomes the tendency to produce a vacuum by the "slipping" of the atmosphere away from the propeller in a radial direction with reference to the said axis.

Referring to Fig. 3 of the drawing, the distance between the propeller blade, where the air enters, it being assumed that the blade is traveling in the direction indicated by the arrows in Figs. 1, 2 and 3 of the

drawing, is indicated by the dotted lines 15, or the distance between the dotted arcs 16 on the line 15; while the distance between the deflectors, where the air escapes, is indicated by the dotted lines 17, being the distance between the dotted arcs 18.

Having thus described my invention, what I claim is:

1. A propeller comprising blades of uniform thickness, and a series of wedge-shaped deflectors mounted upon one side of each blade, said deflectors being hollow and open at their larger extremities, and their walls being of uniform thickness, the walls of each deflector being spaced from the walls of adjacent deflectors.

2. A propeller comprising blades of uniform thickness, and a series of hollow wedge-shaped deflectors mounted transversely upon one side of each blade, the points of the wedges lying adjacent the forward edge of the blade and their opposite extremities being open, the walls of the deflectors being of uniform thickness, the walls of each deflector being spaced from the walls of adjacent deflectors.

3. A propeller comprising blades of uniform thickness and a series of deflectors mounted transversely upon one side of each blade, each deflector being composed of two relatively thin spaced members of uniform thickness meeting at a line at one extremity and diverging therefrom to the opposite extremity of the deflector, the two members forming each deflector being spaced from the members forming adjacent deflectors.

In testimony whereof I affix my signature in presence of two witnesses.

BENJAMIN F. SEYMOUR.

Witnesses:

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A. EBERT O'BRIEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."