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J. OSTRIA ET AL

1,923,325

AIRPLANE PROPELLER

Filed Oct. 6, 1931

Fig. 1.

Fig. 2.

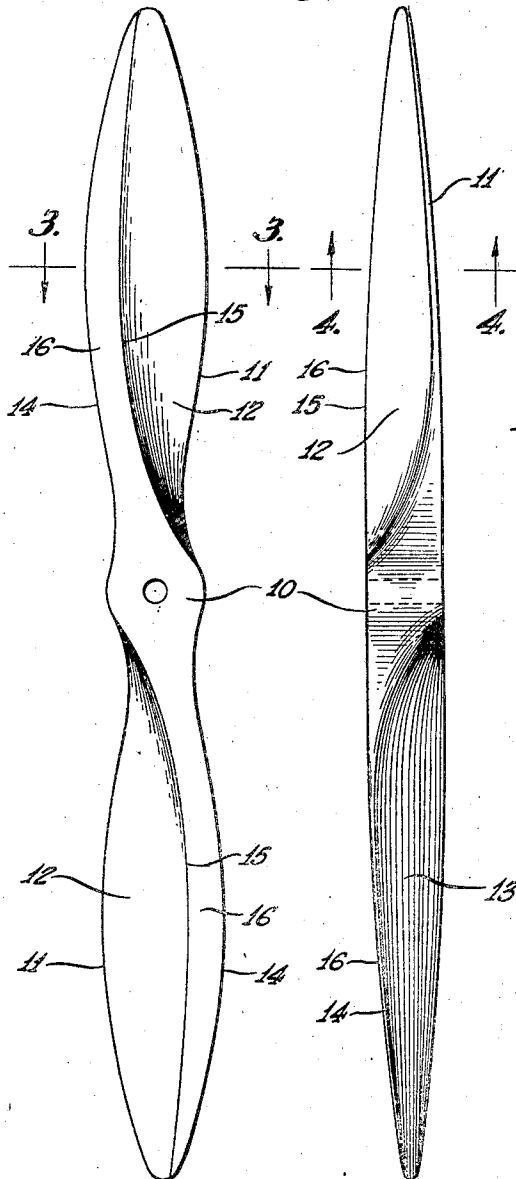


Fig. 3.

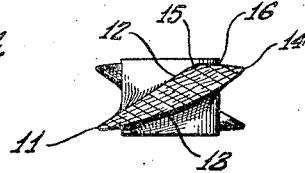
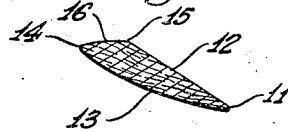


Fig. 4.



Jose Ostria &
Ray De May.
INVENTORS
Victor J. Evans & Co.
THEIR ATTORNEYS

UNITED STATES PATENT OFFICE

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AIRPLANE PROPELLER

José Ostria and Ray De May, Chicago, Ill.

Application October 6, 1931. Serial No. 567,228

1 Claim. (Cl. 170—159)

This invention relates to certain novel improvements in airplane propellers, and has for its principal object the provision of an improved construction of this character which will be highly efficient in use and economical in manufacture.

It is an object of this invention to provide an improved airplane propeller.

Another object of the invention is to provide a streamline propeller blade to eliminate the vacuum formed at the trailing edge of the blade when the same is revolving and thereby to eliminate the retardation of the movement of the blade caused by said vacuum as explained hereinafter.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawing, showing the preferred form of construction and in which:

Fig. 1 is a plan view of my improved propeller;

Fig. 2 is a side elevational view of my improved propeller;

Fig. 3 is a sectional view on line 3—3 in Fig. 1; and

Fig. 4 is a sectional view on line 4—4 in Fig. 2.

In the drawing, which illustrates a preferred and practical embodiment of the invention, 10 indicates the hub of our improved propeller, 11 the leading edges of the blades, 12 the thrust face, 13 the up stream side, and 15 the trailing edge. In practising the invention we extend a portion of the thrust face 12 transversely with respect to the long axis of the blade beyond the trailing edge 15 to point 14 to provide the air-shedding surface 16 on the thrust face of the blades.

When an airplane propeller of the types of the prior art is revolved the upstream side of the blade produces a vacuum which tends to retard the movement of the blade and experience teaches that about 40% of the power required to drive the ordinary type of propeller is expended in overcoming the resistance due to the vacuum created on the upstream side of the blades. With the present types of propellers the number of R. P. M. is limited to 3000 or 3500 in order to attain the highest efficiency since at speeds greater than this the efficiency diminishes because of the vacuum created by the upstream side of the blade. This loss of efficiency is brought about by reason of the fact that at more than 3000 or 3500 R. P. M. the propeller is turning at such a high rate of speed that the thrust face of the

blade strikes the vacuum created by the upstream side of the blade before air has had time to rush in to "close up" or fill up the vacuum; consequently, the efficiency of the blade drops off rapidly at speeds above about 3000 or 3500 R. P. M.

Our improved propeller is designed to prevent the creation of a vacuum and thereby to permit the blades to be revolved at much greater speeds than those now possible without loss of efficiency or power due to vacuum formation. This we accomplish by providing the air-shedding surface 16 on the thrust face of the blades, said air-shedding surfaces 16 extending substantially along the whole length of the blades. When the propeller is revolving, air passes over the thrust face 12 to the trailing edge 15 and from the latter the air flows over the air-shedding surface 16 to the outer end 14 of the surface 16 where it rapidly replaces the air moved by the upstream side 13 to prevent the formation of a vacuum by the latter.

While we have illustrated and described the preferred form of construction for carrying our invention into effect, this is capable of variation and modification, without departing from the spirit of the invention. We, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail ourselves of such variations and modifications as come within the scope of the appended claim.

Having thus described our invention what we claim as new and desire to protect by Letters Patent is:

An airplane propeller blade including a thrust face having a portion extending transversely with respect to the long axis of the blade beyond the trailing-edge of the blade substantially along the whole length thereof to provide an air-shedding surface.

JOSÉ OSTRIA.
RAY DE MAY.