April 14, 1931. G. ANDERSON 1,801,216

WINGED SCREW PROPELLER FOR AIRCRAFT

Filed June 3, 1929

Fig. 1.

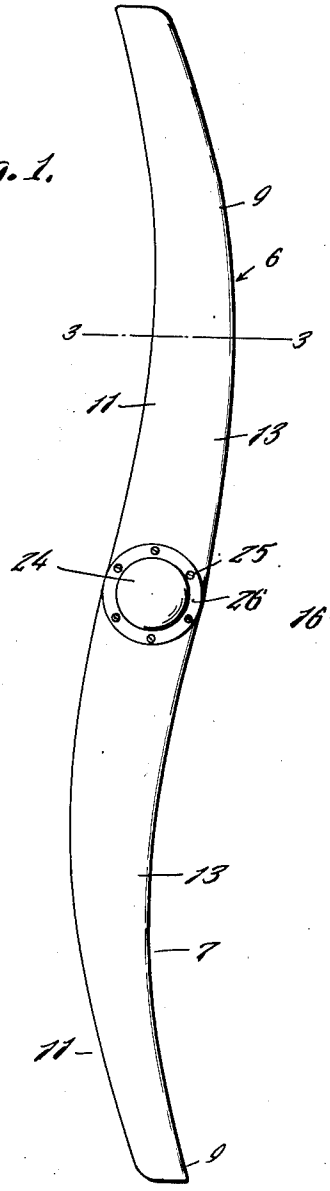


Fig. 2.

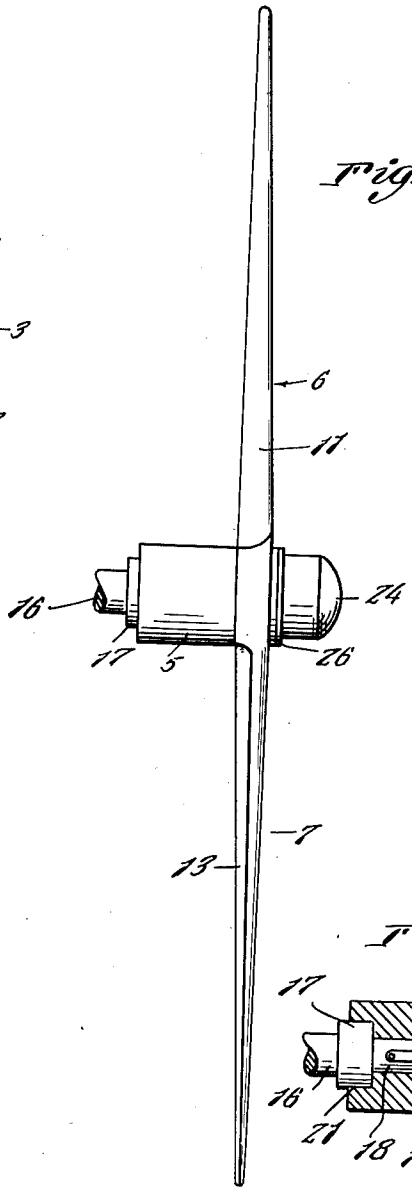
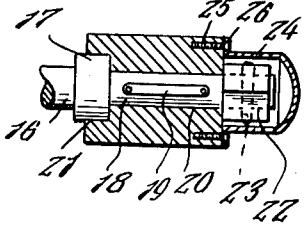


Fig. 4.



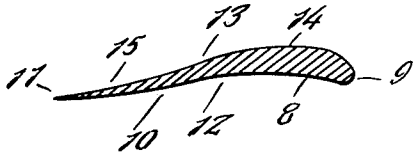


Fig. 3.

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UNITED STATES PATENT OFFICE

GEORGE ANDERSON, OF BIGGAR, SASKATCHEWAN, CANADA

WINGED SCREW PROPELLER FOR AIRCRAFT

Application filed June 3, 1929. Serial No. 368,072.

This invention relates to screw propellers, and forms the basis of an aeroplane propeller construction of the type forming the subject matter of a pending application, Serial No. 354,062, filed by me April 10, 1929.

The present invention has as its primary object the provision of a screw propeller so shaped in cross section as to simulate a bird wing, and which is applicable for use with aeroplanes, or other like lighter than air crafts.

A salient object of the invention is to provide a screw propeller wherein the blades are so formed as to create a partial vacuum on the top side of the blade whereby an air craft or like lighter than air vessel may obtain an increased lift in flight.

Another very important object of the invention is to provide a propeller blade of the screw type which is very simple in construction, durable and thoroughly efficient in operation, and which can be readily and easily assembled on the craft upon which it is to be used.

Other objects and advantages of the invention will become apparent during a study of the following description taken in connection with the accompanying drawings, wherein:

Figure 1 is a front elevation of my improved propeller;

Figure 2 is an edge elevation thereof;

Figure 3 is a transverse sectional view taken on line 3—3 of Figure 1.

Figure 4 is a detail sectional view showing the means of securing the propeller to the propeller shaft of an air craft.

With reference more in detail to the drawings it will be seen that my improved propeller comprises a hub 5 and a pair of propeller blades designated 6 and 7, respectively, radiating therefrom. In forming the propeller the blades are preferably formed integrally with the hub, and while I have herein shown the propeller as consisting of but two blades, it is to be understood that four or any other number of blades may be used in accordance with my invention. It is to be noted that each of the blades 6 and 7 are curved throughout their length as clearly illustrated in Figure 1. As also illustrated to advantage in Figure 1 each of the blades gradually decrease in width throughout their length from points adjacent the hub to terminate in relatively narrow extremities. As shown in Figure 3, the blades 6 and 7 are in cross section so formed as to simulate the structure of a bird wing. Thus it will be seen that each of the blades is relatively thick at the forward edge thereof through its length as designated at 8, and has its forward edge 9 rounded and extending downwardly and forwardly of the blade. Each of the said blades gradually decrease in thickness to taper rearwardly as at 10 to provide a relatively sharp trailing edge 11. Thus it will be seen that the trailing or rear surface or face 12 of the blade curves upwardly and rearwardly to a point intermediate the longitudinal edges of the blade and thence downwardly and rearwardly toward the trailing edge of the blade as in the manner clearly illustrated in Figure 3 of the drawing.

The forward or leading surface 13 of the blade is so formed as to provide the relatively rounded forward portion 14, which forward portion extends from the rounding leading edge 9 of the blade to a point intermediate the longitudinal edges of the blade and then from this intermediate point gradually slopes downwardly and rearwardly toward the trailing edge 11 of the blade to provide the substantially flat rear portion 15. Thus it will be seen that the blade of the propeller is so shaped as to conform to the shape of a bird wing.

In securing the improved propeller to an air craft the propeller shaft 16 is preferably provided with a collar 17 formed integrally

therewith, and a reduced portion 18 extending forwardly of the collar as shown.

The reduced portion 18 of the shaft is provided with a locking means 19 to provide suitable means for keying the hub 5 of the propeller to the shaft. The hub 5 of the propeller is of course provided with the bore 20 extending centrally therethrough through which the reduced portion 18 of the propeller shaft 16 extends, and a counter bore 21, into which counter bore 21 is received the collar 17 of the shaft 16 as clearly shown in Figure 4.

The propeller is further held securely upon the propeller shaft by means of the lock nut 22 screw-threadedly engaged with the extremity of the reduced portion 18 of the propeller shaft, and as shown a tapered pin 23 extends through both the nut and shaft through suitable holes drilled in the nut and reduced portion 18 of the shaft. A cap 24, which cap is preferably round, is then fitted over the nut to be secured to the hub 5 by means of set screws 25 passing through suitable openings formed in the cap flange 26 and the hub of the propeller, all in the manner clearly illustrated in Figure 4.

For the sake of explanation, it may be herein stated, that Fig. 2 merely illustrates the structural parts of the propeller as to the arrangement of the hub on the shaft and the tapered construction of the blade.

From the foregoing then it will be seen that I have provided a novel propeller together with means for attaching the same to the propeller shaft of an aircraft, the blade is so formed as to conform to the shape of the wing of a bird, whereby an increase in the thrust of a propeller is increased during rotation thereof, since from the shape of the propeller it will be seen that a partial vacuum will be formed on the rear or trailing side of the propeller thus increasing the efficiency of the propeller. Even though I have herein shown and described certain detail structural elements of my invention it is to be understood that the invention as herein shown and described is capable of certain changes, fully comprehended by the spirit of the invention as described and the scope of the appended claims.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:—

1. A propeller blade having a relatively thick rounded leading edge, and whose under surface is an irregular surface curving upwardly and away from the said leading edge and merging into a substantially flat surface as it continues to the trailing edge, and whose upper surface is also irregular, sloping rearwardly from the said leading edge and then downwardly to merge into a substantially flat surface continuing to the said trailing edge of the propeller blade, said blade gradually decreasing in width throughout the length of the blade beginning at a point adjacent the hub of the propeller.

2. A propeller blade which throughout its length is curved, and has a convex upper and a concave under surface adjacent its leading edge, and merging into a relatively flat upper and under surface continuing from the longitudinal median of the propeller blade to the trailing edge of the blade.

In testimony whereof I affix my signature.

GEORGE ANDERSON.