Jan. 5, 1932. J. SQUIRES 1,839,811

PROPELLER

Filed Feb. 15, 1929

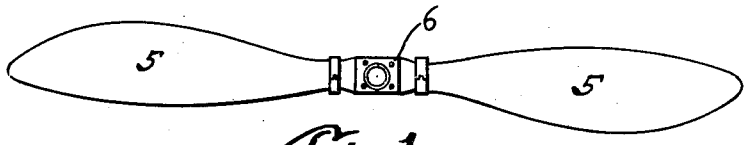


Fig. 1.

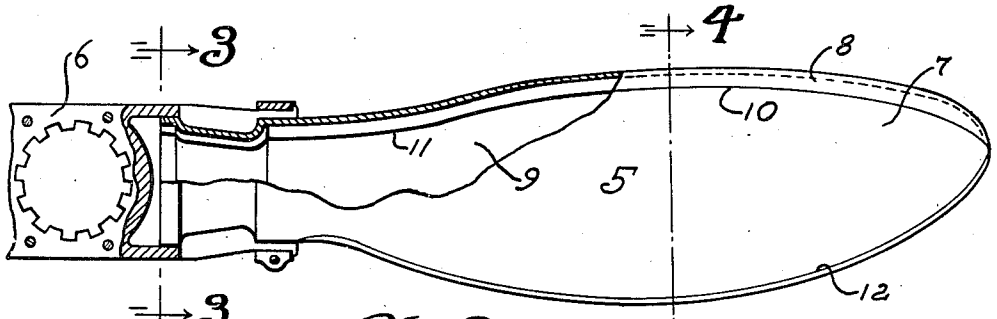


Fig. 2.

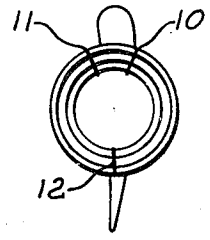


Fig. 3.

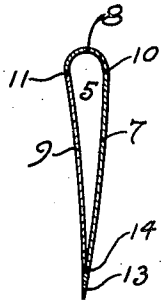


Fig. 5.

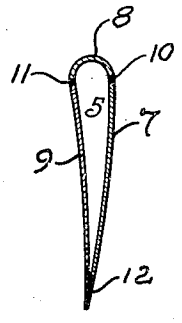


Fig. 4.

INVENTOR
JOHN SQUIRES.
BY
Harness, Dickey & Pierce
ATTORNEY

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UNITED STATES PATENT OFFICE

JOHN SQUIRES, OF DETROIT, MICHIGAN

PROPELLER

Application filed February 15, 1929. Serial No. 340,059.

This invention relates to propeller blades and more particularly to blades adapted to or intended for aeronautical use.

For various reasons it is desirable to fabricate airplane propellers of hollow construction. Various means have been utilized for making blades of this character. Among other means is the provision of stamped or otherwise formed parts which are secured together by any suitable means. A common expedient is to weld the adjacent edges of the pieces together so as to form a hollow construction. This welding frequently occurs along the leading edge or face of the blade or along the trailing edge of face thereof, or both.

A desirable shape of propeller blade is an airfoil form and in constructions of that type the leading edge of the blade is round while the trailing edge is sharp. In this type of blade the portions which are most severely attacked by various elements, including rain, hail or the like, are the leading and trailing edges. Because of the fact that the welded portions of the blade are not as hard or as dense as a cast, rolled or forged metal can be made, it quite often happens that the life of the propeller is considerably shortened because the weakest portions of the blades are subjected to the greatest damage from the elements.

Among the objects of my invention, therefore, is the fabricating of a propeller blade from a plurality of parts joined together at the points other than those above pointed out.

With the above and other objects in view, my invention consists in the arrangement, combination and construction of the various parts of my improved device as described in the specification, claimed in my claims and shown in the accompanying drawings, in which:

Fig. 1 is a front elevation of a propeller embodying my invention.

Fig. 2 is a view partly in section and partly in elevation of one blade of the propeller and the hub thereof.

Fig. 3 is a view taken on line 3—3 of the propeller blade disclosed in Fig. 2, the hub portion of the propeller being omitted.

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

Fig. 5 is a view similar to Fig. 4 showing a modified form of my invention.

I have shown a propeller consisting of a pair of blades 5 and hub 6. It will be readily understood that the separate hub 6 may be secured to the blades 5 by any one of several well known means or that the hub may be integrally formed with the blades.

As shown, the blades are of airfoil form and comprise three parts or pieces 7, 8 and 9. The pieces 7 and 9 form the top and bottom of the blades while the piece 8 forms the front or leading edge thereof. The piece 8 is of generally U shaped formation and is secured at the ends of the legs of the U to the pieces 7 and 8 by welding as at 10 and 11 respectively. In this manner the leading edges of the blades will not contain a weld and are, therefore, much better able to withstand the ravages of the elements in operation.

As will be seen in Fig. 4, the trailing edges of the blades are sharp. The edge is formed by the end of the piece 9. The piece 7 terminates short of the edge of the piece 9 and may be welded thereto as at 12, the weld likewise terminating short of the edge of the piece 9 so that it is adjacent to but removed from the trailing edge of the blade.

In the construction as shown in Fig. 5 the trailing edges of the pieces 7 and 9 are substantially coincident and a separate piece 13 is secured thereto by welding as at 14 so that said piece forms the trailing edge of the blade, removed from the weld 14.

While I have herein disclosed one form of my invention, I desire it to be understood that various modifications thereof may be made without departing from the spirit of my invention. I have described the parts of the blades as being secured together by welding, but I desire it to be understood that the word "welded" is used in a generic sense.

What I claim is:

1. A propeller blade comprising a plurality of parts welded together, substantially the entire leading portion of the blade comprising a separate part of generally U shaped

cross section welded at the ends of the U to other portions of the blade.

2. A propeller blade comprising at least three parts welded together, substantially the entire leading edge of the blade being rounded, said blade being provided with a longitudinal weld adjacent to but removed from both sides of said leading edge.

3. A propeller blade comprising a plurality of parts welded together, said blade having a longitudinal weld over substantially its entire length located on each side of said blade adjacent to but removed from the leading edge thereof.

4. A hollow metallic propeller blade made up of at least three parts forming the exterior surface of said blade and joined to each other over substantially the entire length of said blade along lines removed from the leading and trailing edges of said blade.

5. A hollow metal propeller blade the exterior surface of which throughout substantially the entire length of said blade is made up of a pair of side members and nose member welded to said side members along lines rearwardly removed from the leading edge of said blade.

6. A hollow metallic propeller blade the exterior surface of which for substantially the entire length thereof is formed of three portions welded together.

7. A hollow metallic propeller blade the exterior surface of which for substantially the entire length thereof is formed of three portions welded together along lines removed from the leading edge of said blade.

8. A hollow metallic propeller blade, the exterior surface of which for substantially the entire length thereof is formed of three portions welded together along lines removed from both the leading and trailing edges of said blade.

JOHN SQUIRES.