

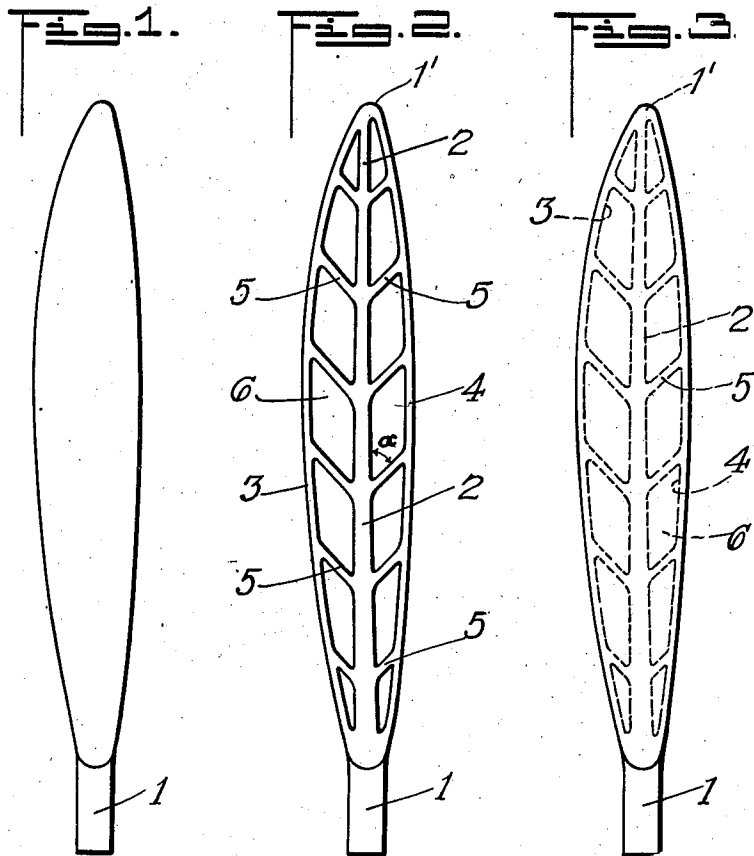
July 8, 1941.

C. DORNIER

2,248,221

PROPELLER BLADE

Filed March 15, 1938



INVENTOR
CLAUDE DORNIER.
BY *Karl A. Mayr*
ATTORNEY

UNITED STATES PATENT OFFICE

2,248,221

PROPELLER BLADE

Claude Dornier, Friedrichshafen-on-the-Bodensee, Germany, assignor of one-half to Dornier-Werke G. m. b. H., Friedrichshafen-on-the-Bodensee, Germany

Application March 15, 1938, Serial No. 195,948
In Germany March 20, 1937

4 Claims. (Cl. 170—159)

The present invention relates to a propeller blade and method of manufacturing it, more particularly to a metal air propeller blade of light weight, great strength, and smooth and lasting surface.

It is an object of the present invention to provide a propeller blade and method of manufacturing it which blade comprises an interior skeleton which is covered with strong sheet like material of smooth exterior surface. The skeleton is preferably of such configuration that the volume of the ribs is smaller than the volume of the free spaces in between the ribs so that a light structure is produced which is of sufficient strength to support the skin which covers it and to safeguard the propeller against deformation even under strenuous operating conditions.

The construction of a propeller blade according to my present invention is somewhat similar to that of airplane wings in which the skin transfers the forces acting thereon to an internal framework or skeleton.

Further and other objects of the present invention will be hereinafter set forth in the accompanying specification and shown in the drawing which, by way of illustration, shows what I now consider to be a preferred embodiment of my invention.

In the drawing:

Figure 1 is a diagrammatic illustration of the blank from which the skeleton for a propeller blade according to the present invention is made.

Figure 2 is a diagrammatic illustration of the skeleton of a propeller blade.

Figure 3 is a diagrammatic illustration of a propeller blade made according to the present invention.

The blank shown in Figure 1 has substantially the exterior configuration of a propeller blade. This blank must be exteriorly finished by filing, milling, or cutting, or similar operation so that the blade, after the covering skin is applied, has the correct shape. The body shown in Fig. 1, by means of drilling, milling, cutting or similar operations, is transformed into the skeleton resembling the skeleton of a leaf and shown in Figure 2. There is a main central rib 2 the thickness of which is gradually reduced as it extends from the root 1 to the tip 1' of the blade. Adjacent to the root 1 the side ribs 3 and 4 are branched off which are reunited with the main rib near the tip 1'. In addition, a plurality of transverse ribs 5 are provided which form acute angles α with the main rib 2. Between the in-

dividual ribs set forth large rhomb-shaped empty spaces 6 are provided.

The skeleton shown in Fig. 2 is covered with a thin metal skin whereby the finished blade shown in Fig. 3 is produced. The sheet metal forming the skin may be welded to the skeleton.

While I believe the above described embodiments of my invention to be preferred embodiments, I wish it to be understood that I do not desire to be limited to the exact details of the method, design and construction shown and described, for obvious modifications will occur to a person skilled in the art.

I claim:

1. A propeller blade consisting of two and only two major constructional elements: a one piece core member having the shape and configuration of the finished blade and having large openings amounting to at least one-half of the size of said core member and forming a framework comprising a central rib, marginal ribs, and a plurality of branch ribs substantially symmetrically branching from both sides of said central rib and extending to said marginal ribs, and skin means of substantially the same size and configuration externally covering said core member.

2. A propeller blade comprising a one-piece frame member having the shape and configuration of the finished blade and comprising a stem portion adapted to protrude from the hub end of the blade, a central rib portion extending from said stem portion substantially through the center of the blade to the tip thereof, a plurality of branch rib portions extending from both sides of said central rib portion to the edges of said blade, and an edge rib portion extending from said stem portion around said frame member and forming a loop interconnecting the outer ends of all of said ribs, and a skin member secured to and covering said frame member and being of substantially the same size and configuration as said frame member.

3. A propeller blade comprising a one-piece frame having the shape and configuration of the finished blade and comprising a central rib portion adapted to longitudinally extend through the entire length of the blade, a plurality of branch rib portions individually extending from both sides of said central rib portion to the edges of said blade, and an edge rib portion forming a loop around said frame and binding the outer ends of said central rib portion and of said branch rib portions, and a skin member secured to and covering said frame member and being

of substantially the same size and configuration as said frame member.

4. A propeller blade comprising a one-piece frame having the shape and configuration of the finished blade and comprising a central rib portion adapted to longitudinally extend through the entire length of the blade, a peripheral rib portion, a plurality of branch rib portions individually extending from both sides of said cen-

tral rib portion into said peripheral rib portion, said peripheral rib portion forming a loop around said frame and binding the outer ends of said central rib portion and of said branch rib portions, and a skin member secured to and covering said frame member and being of substantially the same size and configuration as said frame member.

CLAUDE DORNIER.