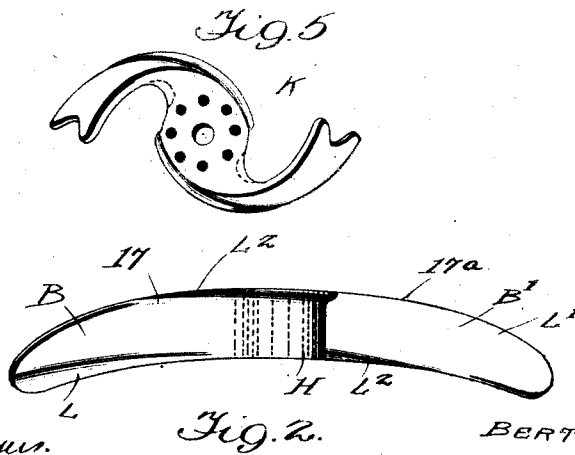
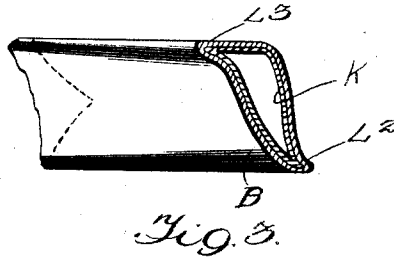
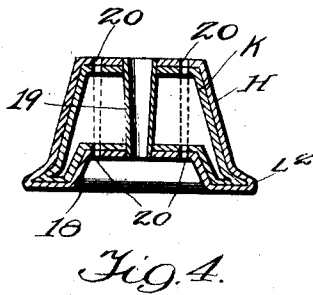


1,365,808.

Fig. 1.



WITNESSES

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BERT B. WOOD, OF YUBA, WISCONSIN.

PROPELLER.

1,365,808.

Specification of Letters Patent.

Patented Jan. 18, 1921.

Application filed September 29, 1919. Serial No. 327,127.

To all whom it may concern:

Be it known that I, BERT BENSON WOOD, a citizen of the United States, and a resident of Yuba, in the county of Richland and State of Wisconsin, have invented certain new and useful Improvements in Propellers, of which the following is a specification.

My invention relates to propellers generally and particularly to airplane propellers.

It is a purpose of my invention to provide an air propeller having the desirable features of simplicity, durability, and efficiency, and a propeller which is constructed to produce a forward thrust of great intensity to airplanes or other vehicles.

I will describe one form of propeller embodying my invention and will then point out the novel features thereof in claims.

In the accompanying drawings:

Figure 1 is a view showing in rear elevation one form of propeller embodying my invention;

Fig. 2 is a view showing in top plan the propeller shown in Fig. 1;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1; and

Fig. 5 is a detail view showing one form of core embodying my invention.

Similar reference characters refer to similar parts in each of the several views.

Referring specifically to the drawings, and particularly to Figs. 1 and 2, my improved form of propeller essentially consists of a hub H, a pair of blades B and B', and a core, K, it being understood, however, that any number of blades can be used without departing from the spirit of my invention. The hub H and the blades B and B' are formed of two sections of sheet metal which are bent in the form shown in Fig. 1 and are secured preferably by welding, along their edges to provide a propeller which is hollow throughout. Each section of the sheet metal is formed from a single length of metal which is bent or cast in any suitable manner to the desired shape so that the body of the propeller consists of only two lengths of metal. The two sections of sheet metal are so formed that when secured together they provide the blades B and B' which project from the periphery of the hub H at diametrically opposite points, and

are then curved in opposite directions in such manner that it may be said they are disposed tangential of the hub. The opposite sides of each blade are curved transversely in the form of an arc so as to provide convexed surfaces, and the blade as a unit is twisted longitudinally in the form of a spiral. As will be noted in Fig. 2, the forward edges 17 and 17', respectively, of the blades B and B' are disposed in the same arc, and such arc is curved to the rear side of the propeller so that during rotation of the same, each blade moves in a different vertical plane.

As shown in Fig. 1, each blade B or B' is bent along its rear edge from a point approximately medially of its length to provide an angularly disposed lip L or L' which terminates at the free end of the blade and is tapered in width toward such free end.

As illustrated to advantage in Figs. 3 and 4, the forward and rear edges of each blade are provided with tapered lips L² and L³ which extend from the hub H and terminate rearwardly of the lips L or L'.

To reinforce the center of the propeller, as well as the blades, I provide a core designated at K which is cast of light metal and is bent in the form shown in Fig. 5, so as to conform to the internal curvature of the hub H and a portion of the blades B and B'. In the applied position of the core, as shown in Fig. 1, the hub H is reinforced throughout, while the blades are reinforced for approximately one-half of their length which is sufficient to render the blades rigid under all conditions. As shown in Fig. 4, the hub H and the center of the core K are relatively wide as compared to the usual form of propeller head so as to provide an outer surface of greater area for the purpose of engaging a maximum amount of air. However, in order to render the propeller applicable to shafts of the standard length, the hub H and core K are indented on their front side, as at 18 in Fig. 4, thus reducing the width of the hub sufficiently to accommodate the standard shaft. To receive the propeller shaft the hub H and the core K are formed at corresponding points with aligned openings, in which is arranged a sleeve 19, it being understood that the shaft seats within such sleeve. The hub and core

are also formed with other openings 20 to receive bolts (not shown) for securing the propeller to the shaft.

In the operation of the propeller, the rotating blades present a flat surface to the air adjacent the hub, and such surface being disposed at right angles to the plane in which the propeller rotates, a maximum resistance is offered to the air thus forcing the latter outwardly and away from the hub H and thereby creating a vacuum around the hub. Upon creation of this vacuum, the air bordering the circle described by the propeller is naturally compressed and thus creates a pressure inwardly toward the hub, which pressure is contrary to the outward pressure created by the blades so that the two opposing forces produce a strong compression of the air in the path in which the lips L rotate. The lips L working against this compression force the air sidewise or backward thus imparting a forward thrust to the propeller blades and thereby forcing the vehicle upon which it is mounted forward in the same manner as a boat is thrust forward by the pressure of the oar on the water.

The lips L^2 and L^3 are provided for the purpose of giving additional strength to the blades, the lips L^2 also assisting in removing the air away from the center of the propeller and directing it to the lips L and L' thereby greatly increasing the thrust action of such lips.

From this operation it will be manifest that I have provided a propeller which increases the compression of the air rearwardly of the propeller in its forward course, and by such compression, the propeller is caused to force the plane, vessel or

car forward with a greater force thereby obtaining a greater speed of the vehicle through the air.

Although I have herein shown and described only one form of propeller embodying my invention, it is to be understood that various changes and modifications may be made herein without departing from the spirit of the invention and the spirit and scope of the appended claims.

Having described my invention, what I claim is:

1. A propeller comprising a hub, and blades extending tangentially from said hub, said blades being curved longitudinally in the form of an arc and twisted longitudinally in the form of a spiral.

2. A propeller comprising a hub, blades extending tangentially from said hub, said blades being curved longitudinally in the form of an arc and twisted longitudinally in the form of a spiral, angularly-disposed lips formed on the rear edges of said blades adjacent the free ends thereof, and other lips formed on the front and rear edges of said blades at a point adjacent the hub.

3. A propeller comprising a hub, blades extending tangentially from said hub, said blades being curved longitudinally in the form of an arc and twisted longitudinally in the form of a spiral, angularly-disposed lips formed on the rear edges of said blades adjacent the free ends thereof, and other lips formed on the front and rear edges of said blades at a point adjacent the hub, all of said lips tapering in width from one end to the other with the first mentioned lips tapering in a direction opposite to the taper of the second mentioned lips.

BERT B. WOOD.