Feb. 16, 1932. J. D. LANGDON 1,845,295

CENTRIFUGAL PROPELLER

Filed July 15, 1929

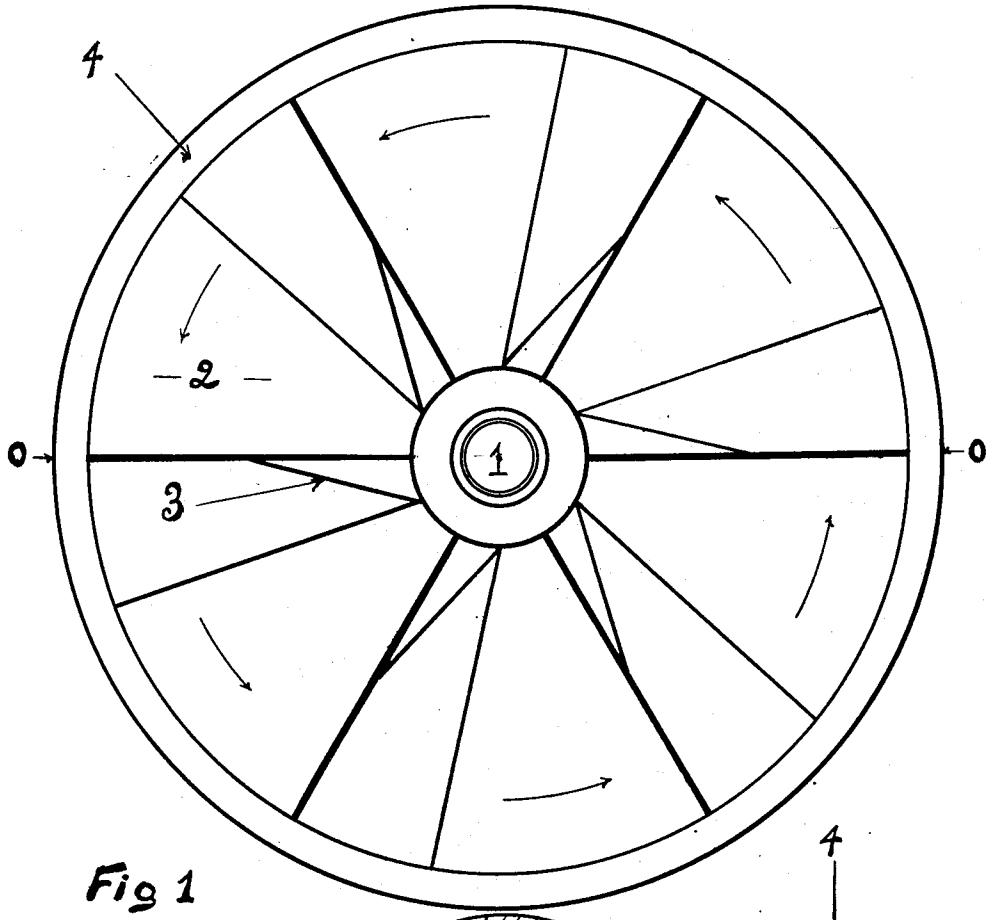


Fig 1

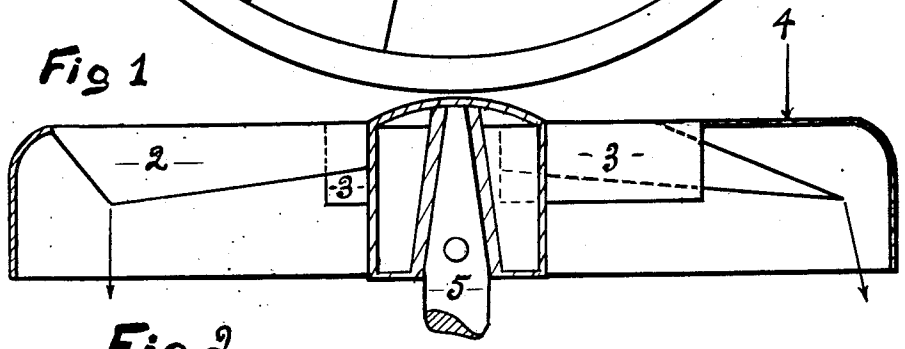


Fig 2

J. D. Langdon

INVENTOR

Patented Feb. 16, 1932 1,845,295

UNITED STATES PATENT OFFICE

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CENTRIFUGAL PROPELLER

Application filed July 15, 1929. Serial No. 378,485.

My invention relates to improvements in centrifugal propellers, particularly for use as air propellers, and has for its objects:

The primary object in my invention is the provision of means to compress air by centrifugal force within a propeller structure to create a high pressure area at the ends of propeller blades to produce a more rapid velocity of air as it leaves the propeller.

Another object in my invention is to create a low pressure area above and at the center of the propeller for the purpose of stabilization when the propeller is used for a helicopter.

Other and further objects will appear as the description proceeds, as illustrated by the drawings, of which,

Fig. 1 is a top or intake side view of the propeller.

Fig. 2 is a cross-sectional view of the propeller at —0—0—.

The construction of the propeller shown in the drawings is as follows: A hub —1—, six-propeller blades —2—, six impeller blades —3—, a rim —4— surrounding the ends of propeller blades —2—, said rim extending from a point inside of the ends of blades —2— and on the intake side of said propeller blades —2— and across the ends of said propeller blades —2—. A fragmentary portion of drive shaft —5— is inserted in hub —1— of Fig. 2.

The propeller shown is for the purpose of illustration only, and the structure may be changed within the scope of what is claimed.

The operation of my invention is as follows: The propeller is rotated in the direction shown by the arrows on Fig. 1 through the medium of shaft —5—, the heavy lines representing the forward intake sides of propeller blades —2—. Extending from the forward edges of propeller blades —2— are impeller blades —3—, which are disposed parallel with the axis of drive shaft —5—. In plan said impeller blades —3— are disposed in dihedral relationship to hub —1— and the forward edges of blades —2—. By the rotation of the propeller the air is drawn or forced under the edges of blades —2— and impinged against impeller blades —3—, said blades —3— acting to force the air outwardly or radially toward rim —4—, thus compressing the air against the rim —4—, forcing the air downwardly and away from the intake side of said propeller under increased pressure and at high velocity in the direction shown by arrows in Fig. 2. The impact of air when forced radially against rim —4— causes a frictional resistance against said rim —4—. Thus the rotational speed at the periphery of the propeller causes a swirling or cyclonic movement of the air.

The air being forced downwardly, or into the propeller, by blades —2—, and radially by impellers —3—, creates a low pressure area on the intake side of the propeller and also a low pressure area surrounding the drive shaft —5— connected with the propeller, the highest pressure area being beneath the down-turned rim —4—, which partially covers the ends of propeller blades —2— for a distance inwardly on the intake side of said propeller blades —2—.

Having described my propeller and its operation as included in my invention, and that which is new, I claim,

1. A centrifugal propeller and impeller comprising propeller blades, a downturned rim surrounding the ends of said propeller blades, impeller blades disposed adjacent to the high pressure side of said propeller blades, said impeller blades being disposed between the preceding trailing edge of one blade and the succeeding attacking edge of another blade of the propeller.

2. A centrifugal propeller and impeller comprising propeller blades, a rim surrounding the ends of said blades, said rim extending for a distance toward the center on the intake side of said blades, together with im-

peller blades disposed between the rearward edge of a preceding blade and the forward edge of a succeeding propeller blade.

3. A propeller and impeller comprising propeller blades to force air in one direction, impeller blades between said propeller blades to force air radially in relation to the axis of said propeller and impeller, a rim surrounding the ends of said blades, said rim extending for a distance on the intake side of said propeller blades and toward the axis of said propeller and impeller.

JESSE D. LANGDON.