Sept. 9, 1930. C. OTTEVAERE 1,775,138

AIRPLANE PROPELLER

Filed Feb. 23, 1929

Fig. 1

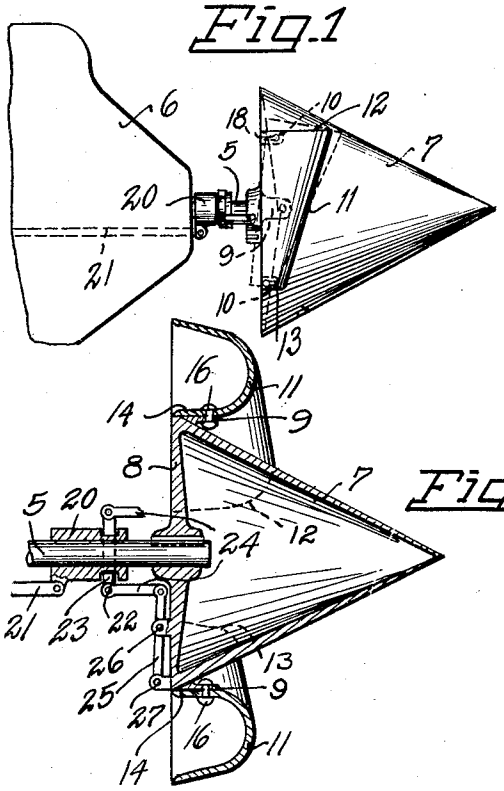


Fig. 2

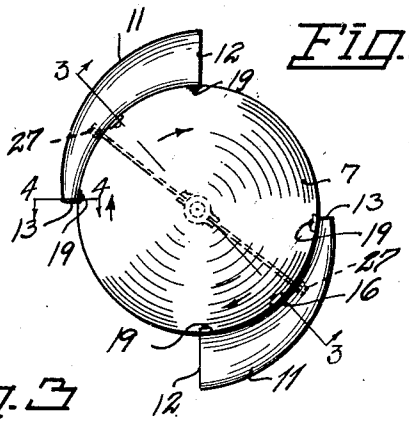


Fig. 3

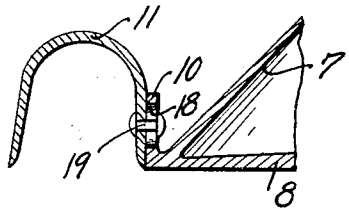
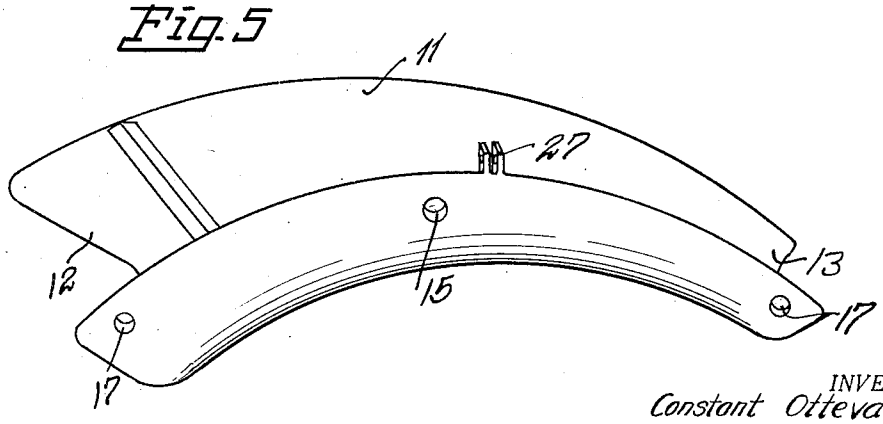


Fig. 4

Fig. 5



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UNITED STATES PATENT OFFICE

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AIRPLANE PROPELLER

Application filed February 23, 1929. Serial No. 342,016.

My invention relates to airplane propellers and certain objects of the invention are to provide a propeller consisting of a cone with blades attached thereto and whereby the cone directs the air to the blades with increased force. Further objects are to make said blades large at their engaging ends and tapering to their smaller ends whereby the force of their engagement with the air is increased. Still further objects are to provide pivotal and control means for the blades whereby they may be set at various angles for the purpose of increasing or decreasing their force of engagement with the air and thus vary the speed of the plane whereon they are installed.

With the above and other objects in view which will appear as the description proceeds, the invention consists of the novel construction, adaptation, combination and arrangement of parts hereinafter described and claimed. These objects are accomplished by devices illustrated in the accompanying drawings; wherein:—

Figure 1 is a view in side elevation showing the device mounted on the propeller shaft of an airplane;

Fig. 2 is a view in front elevation of the propeller;

Fig. 3 is a view in longitudinal section taken on a broken line 3, 3 of Fig. 2;

Fig. 4 is a detail view in transverse section showing a slotted connection of a blade with the cone for limiting the pivotel movement of the blade and taken on a broken line 4, 4 of Fig. 2; and

Fig. 5 is a view in perspective of one of the propeller blades.

Referring to the drawings throughout which like reference numerals designate like parts, the numeral 5 indicates a shaft projecting from the forward end of an airplane 6. My device comprises a cone 7 having its base 8 keyed to said shaft as clearly shown in Fig. 3 of the drawings. Said cone is provided with two opposite lugs 9 adjacent its base and two smaller lugs 10 are disposed at equal distances from each of the lugs 9 for reasons presently set forth.

The blades, designated as a whole by the numeral 11, comprise trough-like members that converge from their larger ends 12 to their smaller ends 13. The inner flange 14 of said blades is provided with a hole 15 by means of which the blades are pivoted to the lugs 9 by pins 16. The end portions of the blades are provided with holes 17 that register with slots 18 in the lugs 10 and pins 19, secured through said holes and slots, provide means whereby said blades may be pivotally moved on their pins 16 with said slots serving as guides and limiting means for the pivotal movement as will be understood.

The means for manual control of the pivotal function of the propeller blades 11 is shown most clearly in Fig. 3 of the drawings. Said means comprises an annular collar 20 slidably mounted on the shaft 5 with a shifting lever or rod 21 connected therewith. This collar is provided with a transverse groove 22 with a yoke 23 mounted therein. Connecting links 24 are pivotally extended from said yoke to levers 25 that may be pivoted at 26 to lugs on the base 8 of the cone 7. The remote ends of said levers are pivotally connected to lugs 27 on the blades 11.

Referring to Fig. 2 of the drawings wherein the device is supposedly rotating in a clockwise direction as indicated by the arrows, it is obvious that the air will enter the large ends 12 and leave from the smaller ends 13. Thus the air, which has already been condensed and guided to the blades 11 by the cone 7, will be given a further compressed action by the blades in forcing the plane ahead.

If an increase of speed in the plane is desired a pull on the lever 21 through its associated connections will cause the levers 25 to pivotally move the larger ends 12 of the blades 11 outwardly causing them to obviously engage a larger volume of air. By moving said levers in the opposite direction the larger ends of said blades will be moved inwardly and thus decrease the speed. Thus it will be seen that the angle or pitch of the blades determines the speed and the speed may be regulated without altering or interfering with the running of the engine. By means of my device a low speed motor may

be used with the gear shifts eliminated and give greater speed with a longer life.

Having thus decreased my invention, it being understood that minor changes may be resorted to in its construction without departing from its scope and spirit, what I claim and desire to secure by Letters Patent of the United States is:—

The combination with an airplane, of an airplane propeller comprising a cone keyed to the airplane shaft, two flange blades pivotally mounted at their centers to lugs at diametrically opposite points adjacent the base of the cone, the air engaging ends of said blades being larger than their air expelling ends, lever means for pivotally altering the angle of the two blades at one and the same time, and slot means for limiting the pivotal movement of the blades.

In testimony whereof I affix my signature.

CONSTANT OTTEVAERE.