Oct. 6, 1942. E. A. F. PRESSER 2,298,021

PROPELLER

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Fig. 1.

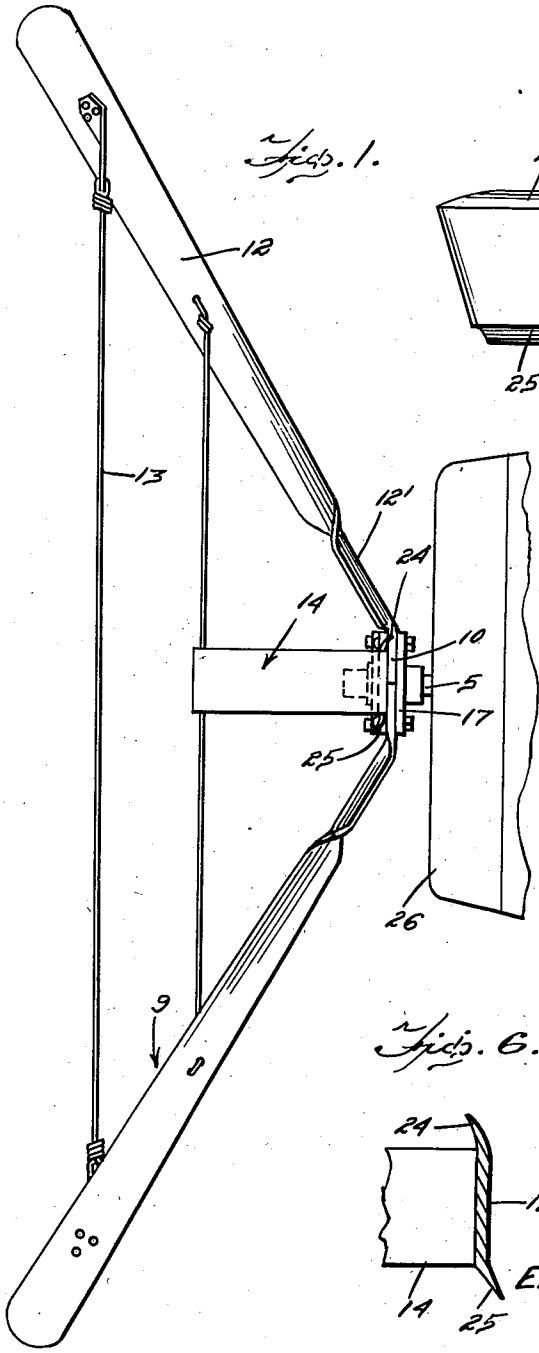


Fig. 8.

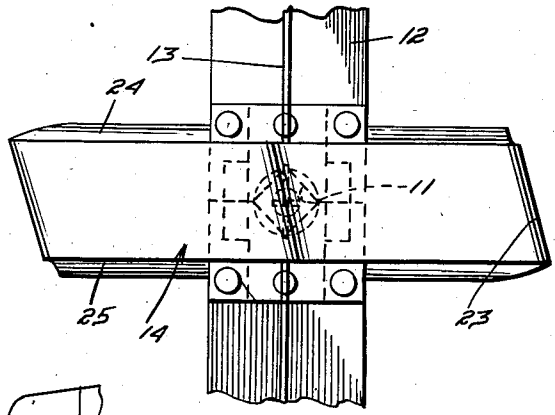


Fig. 7.

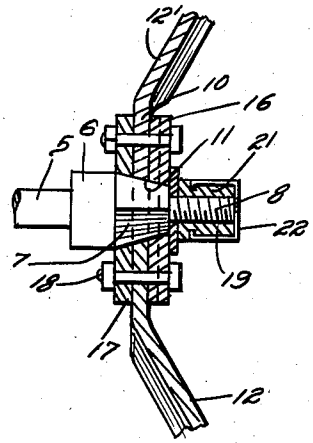


Fig. 6.

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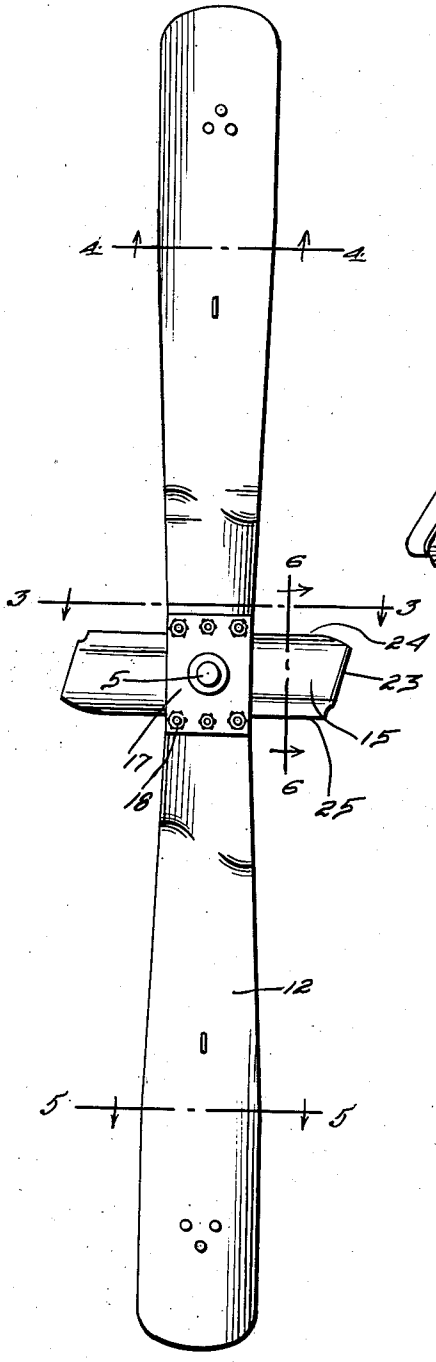


Fig. 2.

Fig. 3.

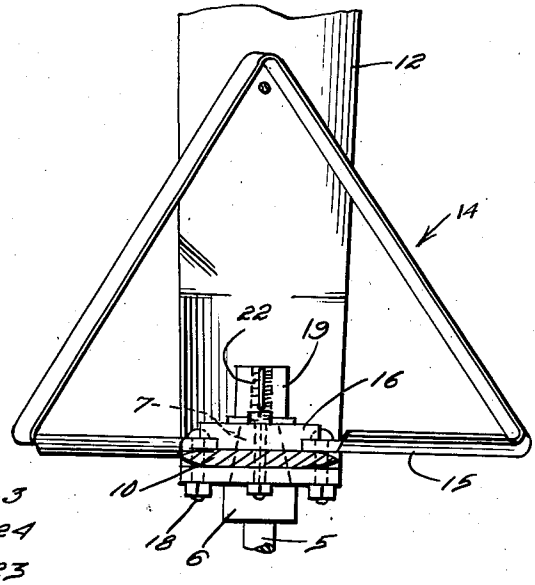


Fig. 4.

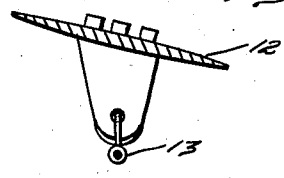
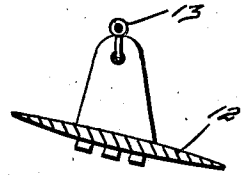


Fig. 5.



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Patented Oct. 6, 1942 2,298,021

UNITED STATES PATENT OFFICE

2,298,021

PROPELLER

Eric Arnold Fritz Presser, East Chicago, Ind.

Application January 23, 1941, Serial No. 375,690

4 Claims. (Cl. 170—166)

The present invention relates to new and useful improvements in propellers adapted for either air or water propulsion and has for its primary object to provide means for increasing the propelling force without necessitating any increase in the speed of rotation of the propeller.

To accomplish this purpose I provide a propeller construction adapted to eliminate the usual vacuum caused at the stern of the hull of a vessel by the forward motion of the vessel when using conventional types of propellers, and also to create a vacuum at the nose of an airplane through the use of my invention and thus accelerate the movement of the vessel or airplane.

A further object of the invention is to provide a propeller of simple and practical construction, which is of improved efficiency, relatively inexpensive to manufacture and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which

Figure 1 is a side elevational view showing the propeller mounted at the front end of an airplane,

Figure 2 is a front elevational view,

Figures 3, 4, 5 and 6 are sectional views taken respectively on the lines 3—3, 4—4, 5—5 and 6—6 of Figure 2,

Figure 7 is a fragmentary sectional view through the hub of the propeller, and

Figure 8 is an enlarged fragmentary front elevational view of the central triangularly-shaped inner blades.

Referring now to the drawings in detail, wherein I have disclosed a preferred embodiment of the invention, the numeral 5 designates the propeller shaft, which includes the head 6 having the forwardly tapering portion 7 of square or other non-circular shape in cross section and provided with the forwardly extending threaded stem 8.

The main or outer propeller blades are shown at 9 and include the abutting inner end portions 10 disposed at right angles to the shaft and having the notches 11 conformably receiving the square portion 7 of the shaft, the blades being disposed in a forwardly diverging relation as shown in Figure 1.

The blades are twisted angularly as shown at 12 throughout the greater portion of the length thereof to provide the necessary traction and a portion of the blades immediately adjacent their inner portions 10 are twisted oppositely to the portion 12 to provide a counter-pitch as shown at 12'. The blades are connected by a plurality of brace wirees 13 to prevent bending of the blades by wind resistance and centrifugal force.

An inner triangular-shaped blade 14 is also provided which includes inturned ends 15 forming a base portion, said ends overlying the inner ends of the blades 9 and clamped under the opposite edges of a stepped fastening plate 16 positioned on the square section of the shaft.

A fastening plate 17 is also positioned on the shaft inwardly of the ends of the blades 9, and the inner and outer fastening plates and the ends of the inner and outer blades are secured in assembled relation as a unit on the shaft by bolts 18, to form the hub portion for the blades.

A nut 19 is then threaded on the stem 8 against a washer 20 to secure the hub on the shaft, the nut and end of the stem being provided with a groove 21 in which a U-shaped wire spring 22 is fitted to lock the nut against turning.

The sides of the triangular blade 14 are twisted as shown at 23 at an angle to the axis of the shaft and the trailing and leading edges of the base portion of the triangular blade are bent oppositely as shown at 24 and 25 to provide a counter-pitch at the base of the inner blade 14.

When the propeller is used on an airplane, of which the fuselage is indicated at 26 in Figure 1, and with the respective blades arranged as illustrated, the base portion of the triangular blade 14 extends transversely in advance of the nose of the fuselage so that the counter-pitch formed by the edges 24 and 25 cooperate to draw the air from the nose and throw the air forwardly against the sides 23 of the inner triangular blade 14, thus to pull the air from in front of the fuselage reducing the air resistance to which the fuselage is usually subjected and tending to produce a vacuum to facilitate forward movement of the airplane. The inner triangular blade 14 then feeds the air laterally to the outer blades 9, which because of their diverging relation spreads the air radially from the path of the fuselage. The counter-pitch portion 12' of the blades 9 also serves to pull the air from the immediate vicinity of the nose of the fuselage to enlarge the vacuum area and likewise throws the air in the path of the triangular blades 14.

When the propeller is used for marine propulsion the rotation of the propeller is reversed to convert the same into a pusher type, the base and sides of the inner triangular blade as well as the

counter-pitch portion 12', functioning oppositely to pull the water inwardly from the region of the angle between the blades 9, now diverging in backward direction, toward the stern to prevent the formation of the usual vacuum caused by the forward motion of the vessel and tending to cause a pressure area between hull and propeller.

It is believed the details of construction, advantages and manner of use of the device will be readily understood from the foregoing without further detailed explanation.

Having thus described the invention, what is claimed as new is:

1. A propeller comprising an inner triangular-shaped blade having a base portion extending at right angles to the axis of rotation thereof, said base portion having oppositely inclined leading and trailing edges and said inner blade having longitudinally extending converging sides and a pair of outer blades extending in diverging relation from said base portion of the inner blade, said inner blade being adapted to act on fluid in the region of the hub of the propeller to move the fluid laterally relative to the axis of rotation of the propeller.

2. A propeller comprising an inner triangular-shaped blade having a base portion extending at right angles to the axis of rotation thereof, said base portion having oppositely inclined leading and trailing edges and said inner blade having longitudinally extending converging sides and a pair of outer blades extending in diverging relation from said base portion of the inner blade, said trailing and leading edges of the base portion acting on fluid in the region of the base to move the same longitudinally toward the sides of the inner blade and said sides being adapted to move the fluid laterally.

3. A propeller comprising an inner triangular-shaped blade having a base portion extending at right angles to the axis of rotation thereof, said base portion having oppositely inclined leading and trailing edges and said inner blade having longitudinally extending converging sides, and a pair of outer blades extending in diverging relation from said base portion of the inner blade, the inner ends of said outer blades extending transversely with respect to said base portion of the inner blade, said outer blades including oppositely inclined portions immediately adjacent their inner ends, said oppositely inclined portions of the inner and outer blades cooperating to act on fluid in the region of the hub to move the fluid into the path of the longitudinally converging sides of the inner blade and said longitudinally converging sides of the inner blade acting on the fluid to throw the same into the path of rotation of the propeller and the outer blades.

4. A propeller comprising an inner triangular-shaped blade having a base portion extending at right angles to the axis of rotation thereof, said base portion having oppositely inclined leading and trailing edges and said inner blade having longitudinally extending converging sides, and a pair of outer blades extending in diverging relation from said base portion of the inner blade, the inner ends of said outer blades extending transversely with respect to said base portion of the inner blade, said outer blades including oppositely inclined portions immediately adjacent their inner ends, said oppositely inclined portions of the inner and outer blades cooperating to act on fluid in the region of the hub to move the fluid into the path of rotation of the longitudinally converging sides of the inner blade tending to produce a vacuum in the region of the hub upon rotation of the propeller in one direction and tending to prevent formation of a vacuum and to produce a pressure in the region of the hub when rotated in an opposite direction, and said longitudinally converging sides of the inner blade acting on the fluid to remove the same from the path of rotation of the outer blades with the effect of forming a compression area between the hull on which the propeller is mounted and the propeller.

ERIC ARNOLD FRITZ PRESSER.