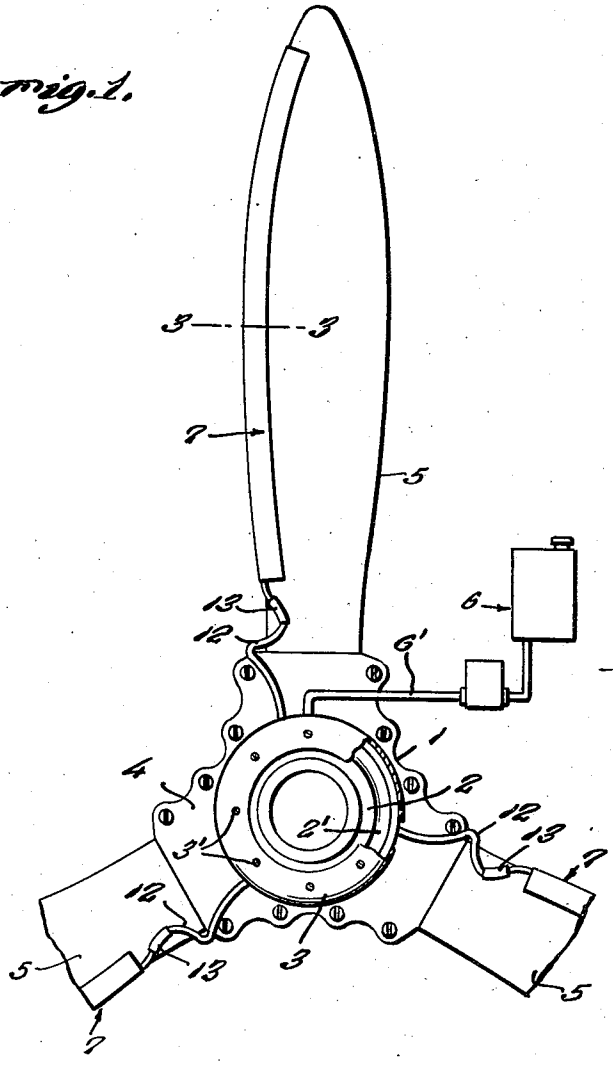
Jan. 25, 1944. J. DE STEFANO 2,339,772

PROPELLER

Filed Feb. 16, 1942

Fig. 1.



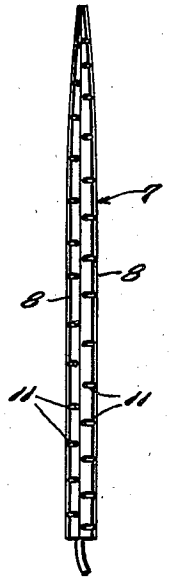
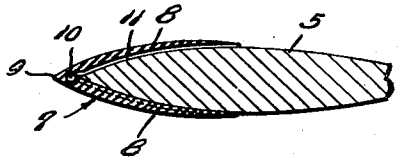


Fig. 2.

Fig. 3.



Inventor

John De Stefano

By Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

Patented Jan. 25, 1944 2,339,772

UNITED STATES PATENT OFFICE

2,339,772

PROPELLER

John De Stefano, Rahway, N. J.

Application February 16, 1942, Serial No. 431,141

3 Claims. (Cl. 244—134)

My invention relates to improvements in propellers for airplanes, seaplanes, dirigibles, and the like, and more particularly to de-icing apparatus for such propellers.

The invention is designed with the primary object in view of equipping such propellers, inexpensively, with practical, quick acting means for preventing the formation of ice thereon while the propellers are in operation.

Other and subordinate objects are also comprehended by my invention, all of which, together with the precise nature of my improvements, will be readily understood when the succeeding description and claims are read with reference to the drawing accompanying and forming part of this specification.

In said drawing:

Figure 1 is a fragmentary view in elevation of a propeller equipped with my improvements,

Figure 2 is a view in rear edge elevation of the boot, and

Figure 3 is a fragmentary view in transverse section taken on the line 3—3 and drawn to an enlarged scale.

Referring to the drawing by numerals, my invention has been shown therein as forming part of the equipment of a standard type of propeller embodying a hub 1 equipped with a concentric so-called slinger ring 2 rotating with the hub and formed in one face thereof with an annular groove 2' which together with an annular stationary shield 3 secured to the motor, not shown, by bolts 3' forms a chamber for containing de-icing fluid to be thrown under the action of centrifugal force out of said ring and through hose lines 12 suitably connected at one end to said ring, there being a hose line for each propeller blade. Blade sockets 4 carry the blades 5. A forced feed liquid supply plant designated generally 6 usually located on the cockpit of the plane (not shown) supplies the groove 2' or chamber by way of a feed line 6' suitably connected to the shield 3.

According to my invention, for each blade 5 there is provided an elongated cliplike boot 7 fitting over the leading edge of the blade and extending along said edge for the greater part of the length of the blade. Each boot 7 comprises a pair of side flaps 8 diverging from what constitutes the leading edge 9 of the boot, whereby the boot is adapted to straddle the leading edge of the blade 5. Preferably, the flaps 8 of each boot 7 are gradually reduced in thickness from the leading edge 9 to the free edges of the flaps 8, as best shown in Figure 3. In the leading edge 9 of each boot 7 a manifold duct 10 is provided and which extends from what constitutes the inner end of the boot to a suitable point adjacent the outer end of said boot. In the inner side face of each flap 8 a plurality of transverse grooves 11 are provided which are spaced equidistantly apart longitudinally of the boot 7 with outer ends communicating with the manifold 10 and inner ends opening onto the free side edges of the flaps 8. Preferably, the grooves 11 in one flap of the boot 7 are arranged to alternate with the grooves in the other flap. Intermediate the grooves 11 the flaps 8 of each boot 7 are secured to the propeller blade 5 in any suitable manner, as for instance, by cement, not shown. The boots 7 may be formed of any desired material, for instance, rubber or rubber composition.

A hose line 13, with a suitable coupling, extends between the inner end of the manifold duct 10 of each boot 7 to the appropriate line 12.

The invention is designed for use with any suitable liquid adapted to prevent the formation of ice on the propeller blades 5 and which, as will be obvious, will, under rotation of the propeller, be ejected from the slinger ring 2 under the action of centrifugal force through the hose connections 12, 13 into the manifold ducts 10 of the boots 7 and out of the groves 11 to spread over the blades 5 and maintain a protecting film on the same to keep the blades free from ice.

The foregoing will, it is believed, suffice to impart a clear understanding of my invention without further explanation.

Manifestly, the invention, as described, is susceptible of modification without departing from the inventive concept, and right is herein reserved to such modifications as fall within the scope of the subjoined claims.

What I claim is:

1. In a propeller for airplanes and the like, a hub including a storage chamber for liquid adapted to prevent the formation of ice, propeller blades mounted in said sub, a clip-like boot straddling the leading edge of each blade and including a leading edge having a manifold duct extending longitudinally thereinto and opening onto one end thereof, and a pair of side flaps provided with transverse grooves in the inner faces thereof communicating at ends thereof with said duct and opening onto the sides of said blade, said grooves having opposite ends opening onto free side edges of said flaps, and means to establish communication between said

chamber and the open end of the duct of each boot.

2. In a propeller for airplanes and the like, a hub including a storage chamber for liquid adapted to prevent the formation of ice, propeller blades mounted in said hub, a clip-like boot straddling the leading edge of each blade and including a leading edge having a manifold duct extending longitudinally thereinto and opening onto one end thereof, and a pair of side flaps provided with transverse grooves in the inner faces thereof communicating at ends thereof with said duct and opening onto the sides of said blade, said grooves having opposite ends opening onto free side edges of said flaps, and means to establish communication between said chamber and the open end of the duct of each boot, the grooves in the inner face of each flap being spaced apart longitudinally of the flap in alternating relation to the grooves in the other flap.

3. A de-icing boot for use on the leading edge of an airplane propeller blade, comprising an elongated clip-like member having a leading edge portion adapted to be extended along said edge of said blade, and provided with a manifold duct extending longitudinally thereinto and opening on one end of said portion to provide for the introduction of a de-icing liquid into said duct, and a pair of opposed side flaps extending from said portion for straddling said edge of said blade and provided with transverse grooves in the inner faces thereof communicating at inner ends thereof with said duct and having outer ends opening onto the free edges of said flaps, the grooves in each flap being spaced apart longitudinally of the flap in alternating relation to the grooves in the other flap, said grooves providing for distributing de-icing liquid from said duct over said blade at closely spaced points along the blade.

JOHN DE STEFANO.