

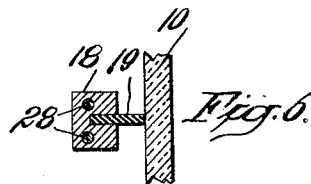
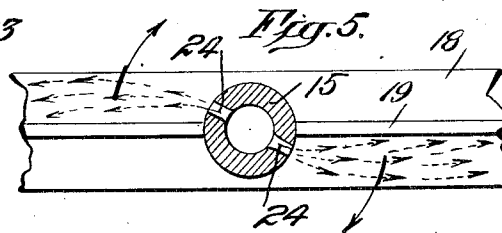
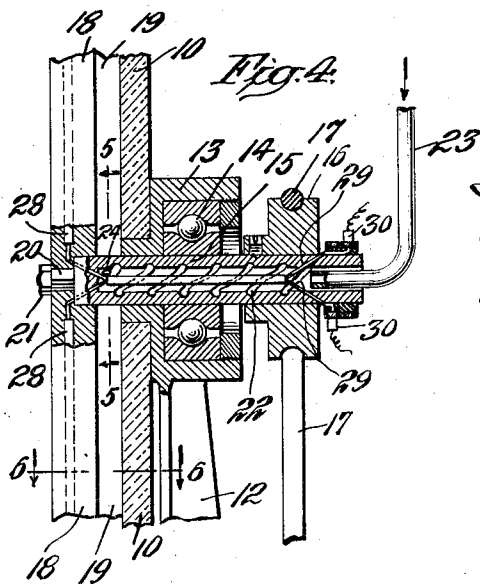
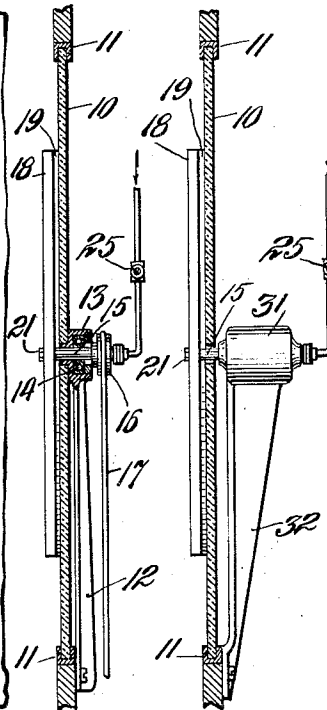
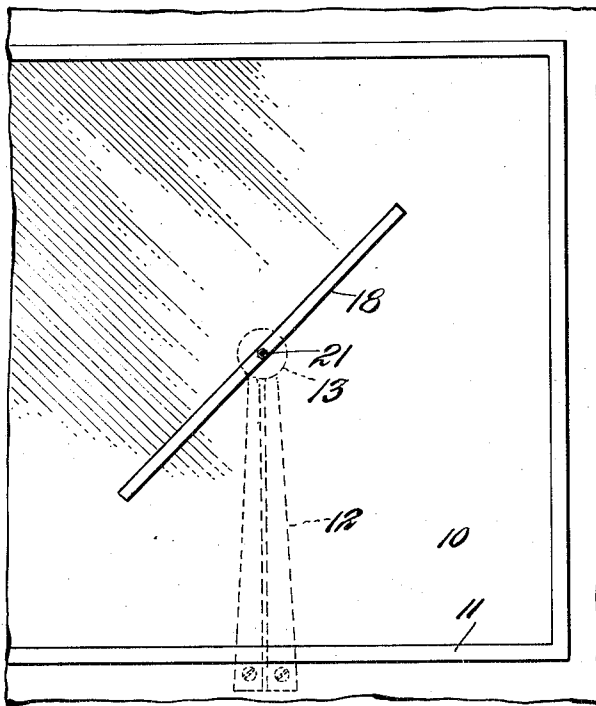
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MECHANISM FOR PREVENTING FORMATION OF ICE ON WINDSHIELDS

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MECHANISM FOR PREVENTING FORMATION
OF ICE ON WINDSHIELDS

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4 Claims. (Cl. 15—250)

This invention relates to a mechanism for preventing the formation of ice on airplane windshields.

Ice forms so rapidly, particularly when airplanes are operated at high speed and high altitude, that transport planes carry hammers in the pilots' cockpits for smashing the glass in case of severe icing. So far as I am aware, no satisfactory way of preventing formation of ice on airplane windshields has so far been devised.

According to the present invention, the formation of ice on windshields is prevented by feeding an anti-freeze fluid to the outside surface of the windshield, and by distributing this fluid over a given area of the windshield by means of a rapidly rotating blade.

Features, objects and advantages of the invention will be pointed out or become apparent in connection with the following detailed description of mechanism illustrating the invention, reference being had to the accompanying drawing wherein:

Fig. 1 is a front elevation of a section of a windshield on which is mounted one form of mechanism according to the invention;

Fig. 2 is a vertical section taken through Fig. 1;

Fig. 3 is a vertical section showing a modified form of mechanism, also according to the invention;

Fig. 4 is a vertical section, on enlarged scale, showing certain details of the device illustrated in Fig. 2;

Fig. 5 is a view taken on the line 5—5 of Fig. 4, on enlarged scale; and

Fig. 6 is a section taken on the line 6—6 of Fig. 4.

In the drawing, there is shown at 10 a section of a glass windshield mounted in a suitable frame 11. A bracket 12, which is secured at one end to the frame 11, supports a housing 13 for a bearing 14 in which is mounted a shaft 15. On the outer end of shaft 15, which extends through the windshield, there is secured, for instance by means of squared end 20 and nut 21, a rotatable member 18. To this member 18 there are secured blades 19, preferably set back from the leading edge of the member 18. These blades are arranged so that they lie close to the outside surface of the glass. To assist in preventing ice from collecting on the member 18, this member may contain, if desired, electric heating elements 28, to which current may be supplied through wires 29 and brushes 30.

Suitable means are provided for rotating the shaft 15 at high speed, such as 1000 to 2500

R. P. M. This may be accomplished by means of a pulley 16 and belt 17 driven from any convenient source of power (not shown), or an electric motor 31, mounted on bracket 32, may drive the shaft 15 directly, as shown in Fig. 3.

An anti-freeze fluid is fed to the outside of the windshield, adjacent the axis of rotation of the blades 19. For this purpose the shaft 15 is hollow and its inner wall is preferably rifled as shown at 22. An anti-freeze fluid is fed into the interior of the shaft 15 through a stationary pipe under control of a valve 25. Any desirable anti-freeze fluid may be employed, for instance a mixture of glycerine and alcohol. As best shown in Fig. 5, the shaft 15 is provided with diametrically opposed openings 24, adjacent the outside of the windshield, through which the fluid is fed to the leading sides of the blades 19, with respect to the direction of their rotation. The rotation of the blades wipes the anti-freeze fluid over the desired area.

The present invention thus provides a simple and effective means for preventing the formation of ice on windshields, through the centrifugal action of the rapidly rotating blades on the anti-freeze fluid. The blades rotate fast enough so that they do not interfere with the pilot's visibility. When the freezing conditions are not severe, the device can be operated without the anti-freeze fluid by closing the valves 25. Thus the device has utility as a windshield wiper in addition to preventing the formation of ice.

While the invention has been developed particularly for use in connection with airplanes, it will be understood that it is also applicable to automobiles and other vehicles.

The terms and expressions which have been employed are used as terms of description and not of limitation, and there is no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described, or portions thereof, but it is recognized that various modifications are possible within the scope of the invention claimed.

What I claim is:

1. Mechanism of the character described, comprising a wiper mounted for rotation close to the outside surface of a windshield, a hollow shaft on which said rotatable wiper is mounted, means to rotate said shaft at a speed such that said wiper is practically invisible, and means to supply an anti-freeze liquid through said shaft to the surface of said wiper, whereby the liquid is distributed over the outside surface of the windshield by centrifugal force.

2. A device of the character described for a vehicle windshield, comprising a rotatable blade, a shaft on which said blade is mounted, means including a port near the axis of rotation for feeding liquid into the path of the blade near the inner end thereof, and means to rotate the blade at a speed such that it is practically invisible, whereby the liquid is distributed over the outside surface of the windshield by centrifugal force.
3. An anti-icing device of the character described, comprising a rotatable wiper blade, a shaft on which said blade is mounted, means including a port near the axis of rotation for feeding anti-freeze liquid to the leading surface of said blade near the inner end thereof, and means

to rotate the blade at a speed such that it is practically invisible, whereby said blade wipes the anti-freeze liquid over the area traversed by the blade.

4. A windshield wiper of the character described, comprising rotatable blades, a shaft on which said blades are mounted, means including ports at the inner ends of said blades for feeding liquid into the path of the blades, and means to rotate said blades at a speed such that the liquid is distributed outwardly along said blades and over the area of the windshield traversed by said blades.

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