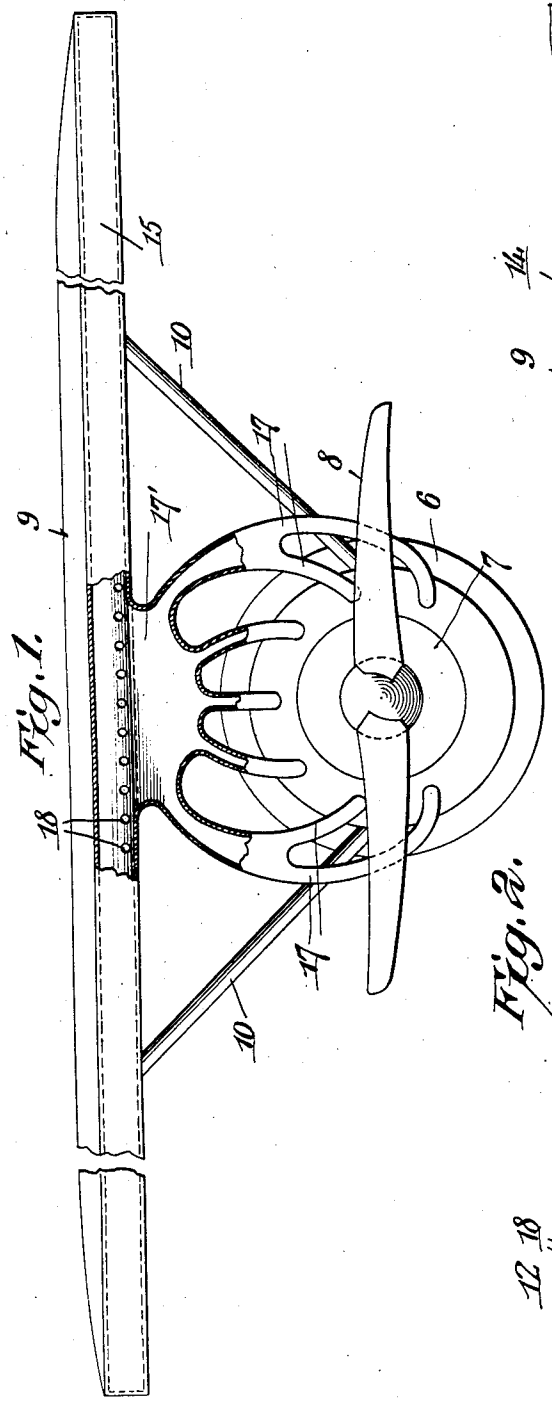
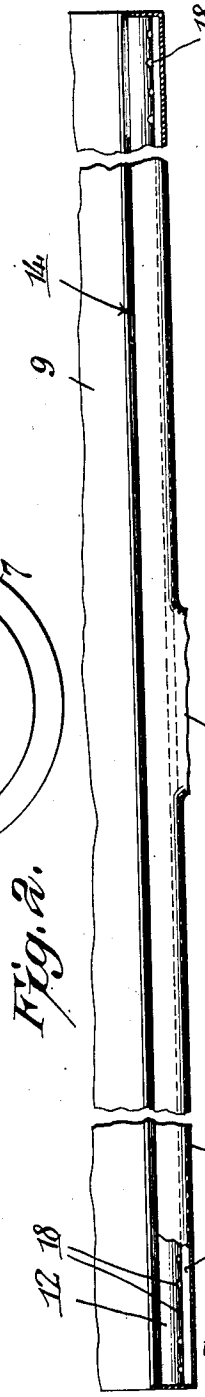
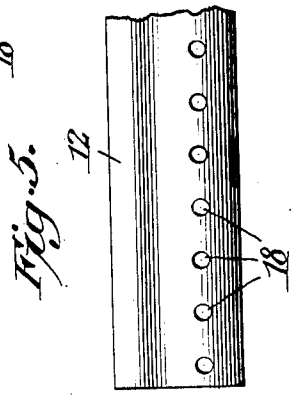
March 11, 1930. R. E. S. TOOMEY ET AL 1,749,858

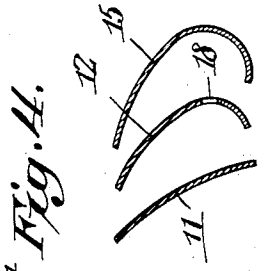
AIRPLANE APPLIANCE

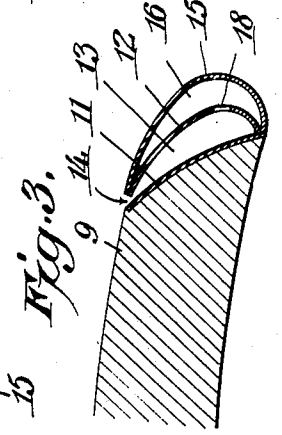
Filed April 24, 1928











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UNITED STATES PATENT OFFICE

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AIRPLANE APPLIANCE

Application filed April 24, 1928. Serial No. 272,472.

This invention relates generally to airplane construction, and particularly to means for preventing the accumulation or collection of sleet, snow or other deposits upon the wings or other parts of the airplane.

It is generally known that in airplane flights a source of danger is always present, due to the fact that snow or sleet may at any time be encountered, or heavy mist and rain may collect upon the plane or other parts of the airplane and freeze, thus rendering the plane extremely difficult if not impossible to properly manage. The common source of danger is the collection or accumulation of ice or sleet upon the wings of the airplane, and it is the aim of the present invention to provide means whereby this may be prevented.

A further object of the invention is to provide means of simplified and improved nature for utilizing heat generated by the motor in its normal operations as an agent to raise the temperature upon the wings above the freezing point, whereby to prevent accumulation as mentioned.

A still further object is to so construct the heat transmitting means as not to interfere with other parts or operations of the airplane, so as to evenly distribute the heat over a prescribed area, and which is of such nature as not to add materially to the weight of the airplane.

With these objects in view, together with others which will appear as the description proceeds, the invention consists in the novel construction, combination and arrangement of parts, all as will be disclosed more fully hereinafter, illustrated in the accompanying drawings and particularly pointed out in the claims.

In the drawings:

Fig. 1 is a front elevation of a portion of an airplane of conventional form and illustrating as associated therewith a heat distributing means embodying the invention,

Fig. 2 is a top plan view, parts broken away, of the forward edge portion of the airplane wing,

Fig. 3 is an enlarged fragmentary transverse sectional view taken through the forward edge of the wing,

Fig. 4 is a view somewhat similar to Fig. 3 and showing the parts of the heat distributing chamber in separated position, and

Fig. 5 is a front elevation of a portion of the heat distributing plate.

Referring now more particularly to the drawings, the body of the airplane is represented at 6, the forward end of which has mounted thereon the motor 7 equipped with the usual propeller blades 8. The motor and other parts of the airplane are illustrated only in conventional manner, and details of the structure and assemblage of the airplane per se are omitted.

The wing of the plane is represented at 9, and is braced upon the structure by means of struts 10, or may be secured to the fuselage in any other desired manner.

The forward edge of the wing 9 is provided with a protective member 11, preferably formed of metal and of a size corresponding to the length and thickness of the wing. This member may be formed integral with the wing at the time of its construction, or may be removable therefrom as desired. Associated with the member 11 is a plate 12, secured rigidly to the member 11 at its lower edge and corresponding to the length of said member 11. The plate 12 is concave longitudinally, and is free and spaced from the member 11 at its upper edge. The members 11—12 thus spaced apart, provide a heat chamber 13, with a restricted neck or discharge opening 14 at the upper forward edge of the plane 9. It will be understood, of course, that the neck or opening 14 corresponds to the length of the plane.

Arranged in advance of the plate 12 is a shell 15 which corresponds with the length of the said plate. This shell is secured at its lower longitudinal edge to the corresponding edge of the member 11, and is concave longitudinally with its upper edge secured to the corresponding edge of the plate 12. The shell 15 is spaced throughout its width from the plate 12, thus providing a compartment 16 between the shell and the said plate. This compartment 16 receives heat through a plu-

rality of pipes or tubes 17 leading from the motor 7. In the present instance the heat utilized is derived from the exhaust gases from the motor, and may be led from an exhaust manifold or manifolds to the compartment 16 either by individual pipes or through the media of the manifold represented at 17'.

The plate 12 is provided throughout its length with a series of spaced openings 18, located either midway between the lateral edges of the said plate or possibly nearer the lower than the upper edge.

In operation, the exhaust gases from the motor 7 pass through the pipes 17 and into the manifold 17', from whence they are distributed throughout the entire length of the compartment 16, and pass from that compartment through the openings 18 and into the distributing chamber 13. The heated gases are then delivered through the restricted neck 14 onto the upper surface of the plane or wing 9, so that the temperature of this upper surface will be maintained at a degree well above the freezing point. Distribution of the gases is accomplished by direct force of the exhaust gases in the compartment 16 as well as by an induced draft at the neck 14 caused by rapid passage of the plane through the air. The member 11 fully protects the forward edge and associated parts of the wing 9 against excessive or burning heat, and direct contact of the highly heated gases with the member 11 is prevented because of the compartment 16 arranged in advance of the chamber 13.

The device herein illustrated contemplates the use of exhaust gases as the heating medium, but it will be understood that the other heating agencies may be utilized to deliver heated fluid to the chamber and compartment. No means is shown in the present disclosure for cutting out the flow of heated gases to the chamber and compartment at times when no heat is necessary, but it will be understood that such means may be employed for establishing or breaking the communication between the heat generating agency and the compartment. It is obvious that in addition to supplying heat to the wing of the plane for the purposes mentioned, the attachment performs the function of a plane heater and muffler for the explosions.

While the foregoing is a description of the invention in its preferred form, it is apparent that minor changes in the details of construction and assemblage of parts may be resorted to without departing from the spirit of the invention as set forth in the claims.

Having thus described our invention, we claim:—

1. The combination with an airplane, of a heat transmitting chamber associated with the forward edge of the wing of said airplane, a compartment in advance of said chamber and in restricted communication with the latter, and means for conveying exhaust gases from the motor of said airplane to said compartment.

2. The combination with an airplane, of a heat insulating member covering the forward edge of the wing of said airplane, a plate secured at one edge to said member and spaced from the latter, the free edge of said plate coinciding with the upper edge of said wing and spaced a short distance therefrom, a shell secured at its edges to the upper and lower edges of said plate and spaced from the latter to provide a compartment, the said plate having spaced openings therein, and pipes establishing communication between said motor and said compartment for the delivery of hot gases from the former to the latter.

In testimony whereof we hereby affix our signatures.

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JAMES C. EVANS.