March 12, 1929. T. J. LEE 1,705,126

HEATER FOR AEROPLANES

Filed June 16, 1927

Fig. 1.

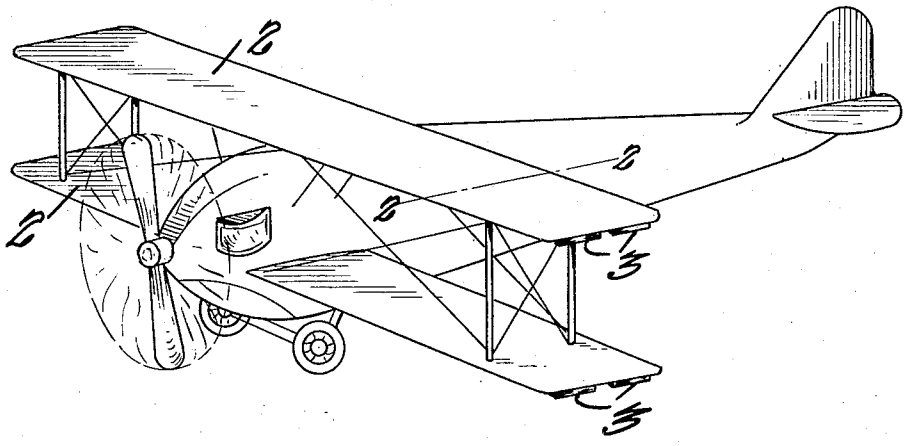


Fig. 2.

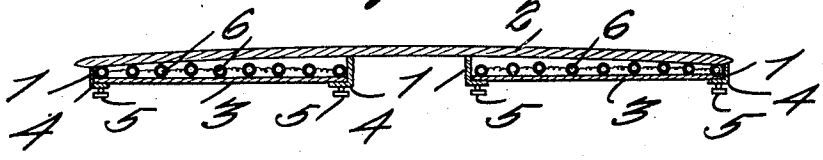
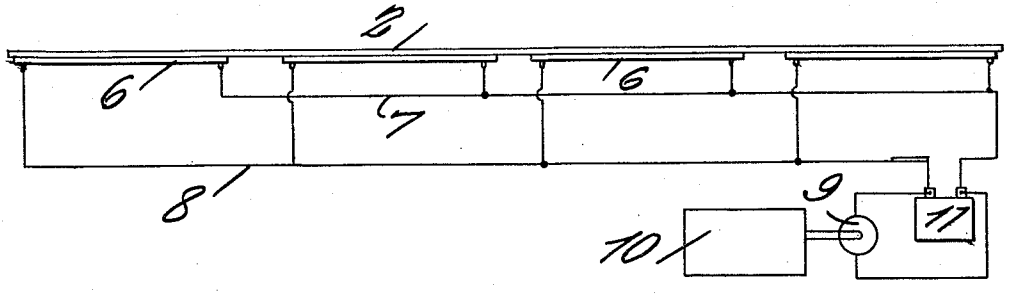


Fig. 3.



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HEATER FOR AEROPLANES.

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This invention relates to an improvement in aeroplane construction, and more particularly to the heating means to be applied to the planes or other desired parts of the aeroplane in order to provide for the heating of any exposed portion or portions of the aeroplane to prevent the accumulation of ice thereon.

It is well known that in aeroplane flying and particularly long distance flights moisture accumulates on the exposed portions of the plane and particularly the external surfaces of the planes, which moisture congeals in the form of ice and adds such a weight to the plane as to at best materially retard its progress, with the continual liability of forcing the plane down under the accumulated weight.

The main object of the present invention is the provision of heating means in the form of independent units, preferably though not necessarily electrically controlled, which may be applied at will to selected areas of the aeroplane and particularly the wings or planes to maintain a heated condition of any desired intensity which will prevent the congealing of moisture or the accumulation of ice or snow thereon.

The invention is illustrated in the accompanying drawings, in which:

Figure 1 is a perspective view of an aeroplane illustrating the application of the invention.

Figure 2 is an enlarged section on line 2—2 of Figure 1.

Figure 3 is a diagrammatic view illustrating the means for energizing and controlling the electric heaters.

The invention is here shown as applied to a conventional aeroplane of the bi-plane type and involves the provision of guides 1 fixed at appropriate points on the aeroplane, and preferably beneath the lower surface of the planes or wings 2. A heating unit in the form of a plate 3 adapted to be removably positioned on the edge flanges 4 of the guides 1 and to be secured in place by set-screws or other securing means 5 is adapted to be arranged in the guides at will, and is provided with an appropriate type of heating elements, here shown as coils 6.

A series of such heating units will be positioned at desired points on the wings or planes, and in other appropriate positions, and such units, in the instance illustrated, will be energized for the development of heat in the coils 6 through main conductors 7 and 8 which may be energized directly from a generator 9 driven from the engine 10 in a well understood manner, or may be energized from a storage battery 11, the capacity of which is governed by the generator in the usual manner.

The heating units are connected in parallel with the conductors 7 and 8 so that maximum heat may be developed in each, and the service of one will not depend upon the electrical integrity of any other unit.

Obviously, each unit may if desired be provided with a switch to be controlled by the aviator, and the main circuits may also be provided with a switch, so that the aviator may utilize the effect of the heating unit only when such effect is desired, thereby saving the current when the heating function of the units is not necessary.

The units when in operation will serve to heat the adjacent parts of the aeroplane, and particularly the wings or planes, to a degree to prevent ice accumulation on the surface, it being appreciated that the degree of heat necessary to secure this result is not very great.

While the heating units are shown as electrically energized, such being a convenient method of applying the heat, it is to be understood that the invention contemplates the use of any heating media, whether electrical or not, such for example as the use of heating units in the form of more or less closed containers adapted to be supported on the guide brackets and having flexible pipe connection with the exhaust of the engine to utilize the exhaust gases of the heating medium, or the use of a circulating system of fluid which may be heated at a central point by the engine and caused to circulate at will through the heating units. These modifications being obvious adaptations of the invention here disclosed, are not believed necessary to illustrate.

The heating units where electrically energized may be positioned and connected prior to the start of the flight, and may be energized at will by the aviator when desired through the operation of a switch located convenient to his hand on the instrument-board. Thus, in meeting adverse conditions during a flight, the aviator has at his command a means to prevent the accumula-

tion of ice or the like on the planes or other parts of his aeroplane, and may thus avoid a serious and dangerous condition which experience has proven is almost certainly encountered in long distance flights.

What I claim to be new is:

A heater for aeroplane wings comprising a plurality of electric heating units and a means secured to the aeroplane wing for removably holding the units in contact with the under surface of the wing.

In testimony whereof I affix my signature.

THOMAS J. LEE.