METHOD FOR SUPPRESSION OF HEAT RADIATION

Inventors: Ephraim Regelson, Kensington, Md.; Howard L. Sumnicht, China Lake; John D. Crecelius, Ridgecrest, both of Calif.

Assignee: The United States of America as represented by the Secretary of the Navy

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Primary Examiner—Samuel Feinberg
Attorney—Edgar J. Brower, Roy Miller and Gerald F. Baker

UNITED STATES PATENTS

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A radiation field is attenuated by dispersing in it a cloud of discrete particles. Several dust dispensers are disclosed for this purpose.

I Claim, 6 Drawing Figures

ABSTRACT
1 METHOD FOR SUPPRESSION OF HEAT RADIATION

BACKGROUND OF THE INVENTION

In the past, exhaust area radiation has been attenuated with varying degrees of success by the use of cumbersome covers, shields or other modifications to the aircraft, usually at the sacrifice of increased weight and decreased aerodynamic stability.

It has been found, with the use of this invention, that attenuation of radiation has been greater with less added weight and practically no effect on aerodynamic stability.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

FIG. 1 is a side view, in schematic form, of a first embodiment of the invention;

FIG. 2 is a side view, in schematic form, of a second embodiment of the invention;

FIG. 2A is a view looking in the direction of the arrow 2A in FIG. 2.

FIG. 3 is a side view of a third modification of the invention;

FIG. 3A is a view taken along line 3A-3A of FIG. 3;

and

FIG. 4 is a perspective view of still a fourth embodiment of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 shows a very simple dust dispenser 10 comprising a dust reservoir 12 communicating through a pipe 14 with a dispenser manifold 16. Dispensing of the dust 13 from reservoir 12 is controlled by means of a valve 18 which is preferably electrically operable. It will be apparent from the drawing that when the valve 18 is opened ram air will enter through the port 20 and thence through holes 22 into the mixing chamber of reservoir 12 to fluidize the dust particles. The force of the air will then continue carrying particles of dust along the lines of arrows 24 into the end 26 of pipe 14 and progress to the manifold 16. Fluidized dust is then dispersed through a plurality of venturis 28 for maximum dispersion.

In the FIG. 2 device, 10', the ram air entering port 20' does not mix with the dust 13 but acts upon a rubber diaphragm 15 which pushes upon the dust 13 to move it toward a feed screw 17. Feed screw 17 forces the dust from the reservoir 12 into a mixing area 19 where further ram air, moving along the lines of arrow 21, causes the fluidization of the dust and forces the dust along a conduit 23 to manifold 16' which manifold dovetails into a semicircular array of dust outlets 30 more clearly seen with reference to FIG. 2A.

Feed screw 17 is rotated by a motor 32 through gear box 34 under the control of controller 36 and hand operable switch 38, for example.

The dispenser 40 shown in FIG. 3, like the FIG. 1 embodiment, dispenses the dust through a plurality of venturis 28' from a manifold 46 when dust is delivered along pipe 44. A control valve 42 regulates ram air through opening 41 and hole 45 through the dust chamber 43. When control valve 42 is opened and pressure is raised in chamber 43, a pressure actuated diaphragm 52 acts against return spring 54 to pull the plug 48 from opening 49 through coupling rod 55, thus allowing fluidized dust to pass through conduit 44 and into manifold pipe 46.

The venturi 28' are shown in this modification arranged about a semicircle as shown in FIG. 3A and the use of two such units can give a full 360° range.

In the FIG. 4 device, alternative passageways 51, 53 are filled with dust (powder) and the two ends sealed. The forward end 62 is closed by a releasable band 64 and the aft end 53 by a communicating passageway 65. An explosive device 58, for example, is used to remove band 64, uncovering holes 57, admitting ram air to passageways 51. Air circulates through passageways 51 and 53 to emerge from holes 59 through skin 56 into the surrounding airstream.

What is claimed is:

1. The method of attenuating the heat radiation signature of a heat exhausting vehicle engine, comprising;

- storing on said vehicle a supply of powdered material;
- temporally fluidizing said powdered material with compressed air;
- conveying a quantity of said fluidized powder to the vicinity of a heat radiating portion of said vehicle or engine; and
- dispersing a quantity of said powder into the immediate area surrounding said heat radiating portion.

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