United States Patent [19]

Regelson et al.

[11] **3,712,054**

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[54] **METHOD FOR SUPPRESSION OF HEAT RADIATION**

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[73] Assignee: **The United States of America as represented by the Secretary of the Navy**

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[21] Appl. No.: **866,073**

[52] **U.S. Cl.** **60/39.02**, 60/39.5, 60/271, 60/39.09

[51] **Int. Cl.**.....**F02g 3/00**

[58] **Field of Search** ..60/39.02, 204, 39.66; 222/399, 222/373, 152, 335; 244/136, 3.16; 239/290

[56] **References Cited**

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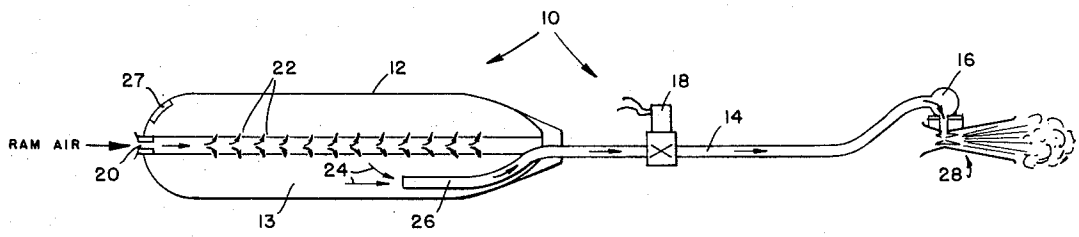
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Attorney—Edgar J. Brower, Roy Miller and Gerald F. Baker

[57] **ABSTRACT**

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

1 Claim, 6 Drawing Figures



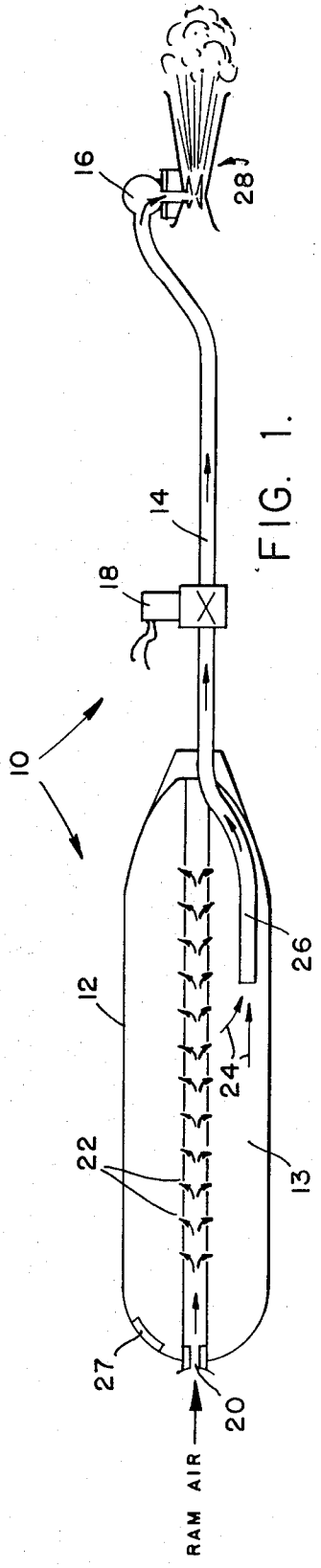


FIG. 1.

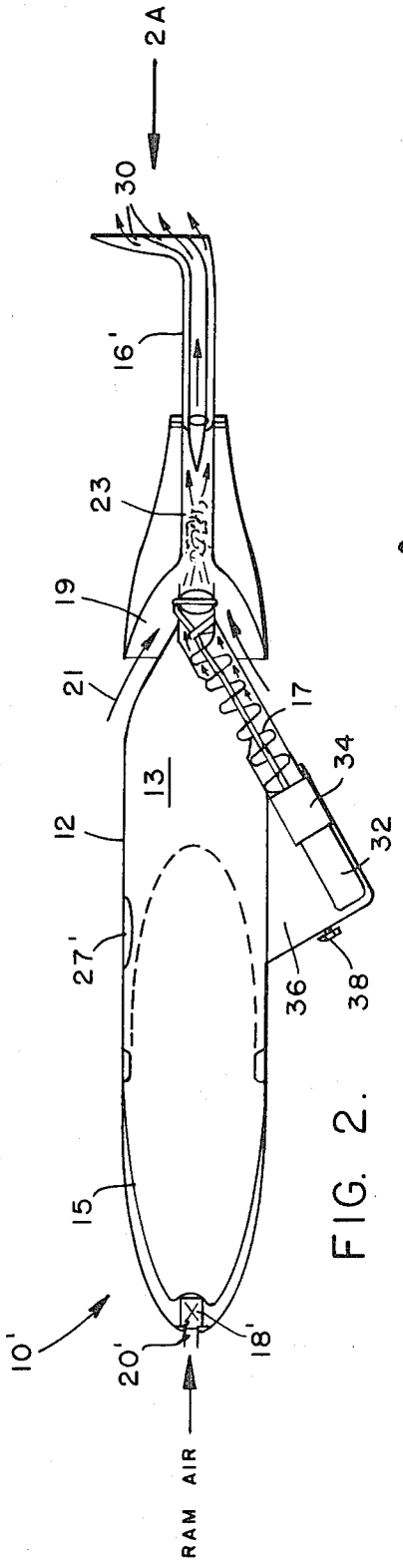


FIG. 2.

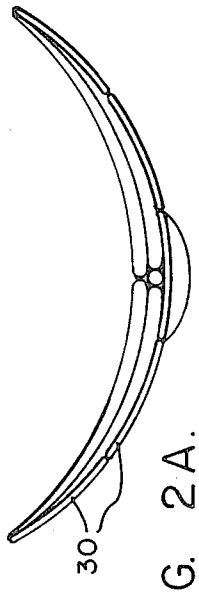


FIG. 2A.

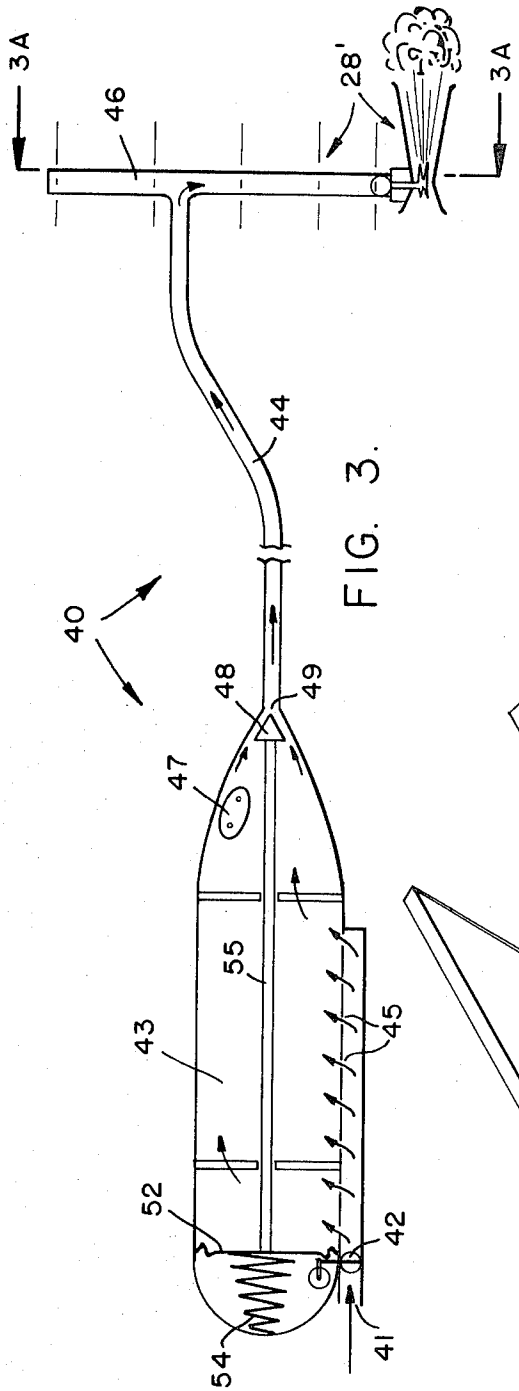


FIG. 3.

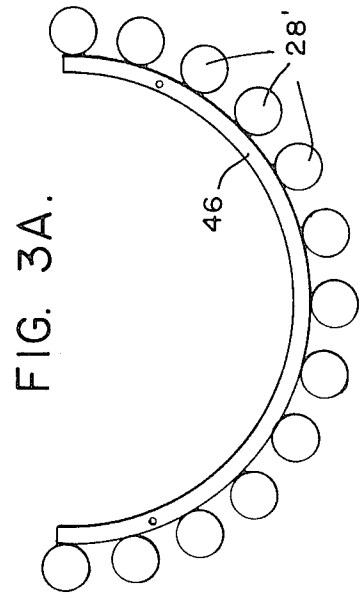


FIG. 3A.

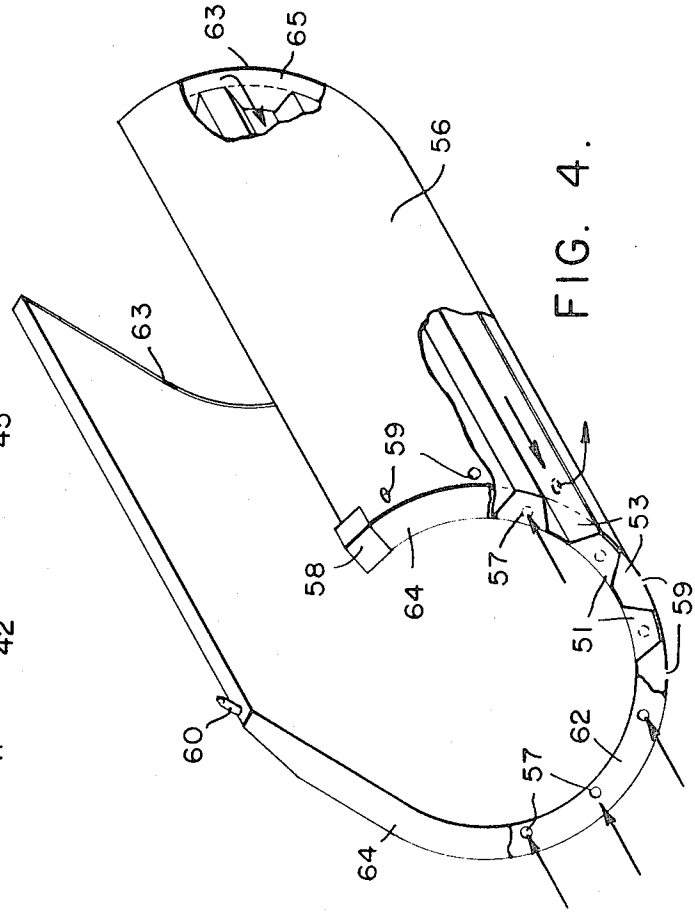


FIG. 4.

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 dispensed 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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