In a preferred embodiment, a flexible barrier is provided that separates an internal volume of the aircraft, the barrier including one or more panels configured to fail at predetermined pressure differential values, thereby permitting a predetermined flow of air through the barrier during a decompression event. The panels provide an environmental seal and also accommodate decompression events without being affected by dirt, debris or the like. The panels are designed to vent at pressures above that of 'normal' operational pressure variations. They are of a non-fragmentation design and thus no other isolation device is required to retain ruptured components.

In accordance with a first aspect of the present invention there is provided a barrier for providing isolation between two internal volumes within an aircraft, comprising:

a wall section adapted for location within an aircraft, the wall section having an aperture formed therein;

mounting means located on the wall section proximate the aperture; and

a substantially planar burst panel member having first and second opposingly-facing sides, the burst panel member adapted for location within the mounting means and dimensioned so as to overlie the aperture when received by the mounting means;

the burst panel member comprising a line of weakness provided therein, adapted such that, in use, exposure of the burst panel member to an atmospheric pressure differential between air volumes respectively adjacent the first and second sides exceeding a predetermined value causes the burst panel member to rupture along said line of weakness,

wherein the wall section is formed of a flexible textile material.

In accordance with a second aspect of the present invention there is provided a method for providing isolation between two internal volumes within an aircraft, the method comprising the step of:

providing a barrier for location within the aircraft, the barrier comprising:

a wall section, the wall section having an aperture formed therein;

mounting means located on the wall section proximate the aperture; and

a substantially planar burst panel member having first and second opposingly-facing sides, the burst panel member adapted for location within the mounting means and dimensioned so as to overlie the aperture when received by the mounting means;

the burst panel member comprising a line of weakness provided therein, adapted such that, in use, exposure of the burst panel member to an atmospheric pressure differential between air volumes respectively adjacent the first and second sides exceeding a predetermined value causes the burst panel member to rupture along said line of weakness,

wherein the wall section is formed of a flexible textile material.

Various other features of the invention are set out in the accompanying claims.

Detailed description

The invention will now be described with reference to the accompanying drawings, in which:

Fig. 1 schematically shows a perspective view of a barrier in accordance with an embodiment of the present invention;
Fig. 2 schematically shows an exploded perspective view of a burst panel for use in a barrier in accordance with the present invention; and
Fig. 3 schematically shows a perspective view of the burst panel of Fig. 2 in a fully assembled state.

A first embodiment of the invention is schematically shown in Fig. 1. Here, a smoke barrier 1 is provided which is used to divide an aircraft main body into cargo / passenger compartments (passenger to freighter conversions) thus dividing up what was previously one compartment. The barrier 1 takes the form of a flexible textile barrier, which is tightly secured and sealed with the interior of the compartment, which may be by using various fastener types, to provide isolation, as is generally known in the art, to create a wall section. Doors 2, 3 are provided port and starboard, which are closeable by zippers, enabling passage through the barrier when required. View ports 4, 5 are provided to enable viewing of the cargo compartment without opening the barrier 1.

Claims

1. A barrier (1) for providing isolation between two internal volumes within an aircraft, comprising:
a wall section adapted for location within an aircraft, the wall section having an aperture (6, 7) formed therein;
mounting means (13, 14, 15) located on the wall section proximate the aperture; and
a substantially planar burst panel member (9) having first and second opposingly-facing sides, the burst panel member adapted for location within the mounting means and dimensioned so as to overlie the aperture when received by the mounting means;
the burst panel member comprising a line of weakness (16) provided therein, adapted such that, in use, exposure of the burst panel member to an atmospheric pressure differential between air volumes respectively adjacent the first and second sides exceeding a predetermined value causes the burst panel member to rupture along said line of weakness, characterised in that the wall section is formed of a flexible textile material.

2. A barrier according to claim 1, wherein the burst panel member comprises a plurality of spatially separated lines of weakness.

3. A barrier according to claim 2, wherein the wall section comprises a plurality of apertures, and each spatially-separated line of weakness is located within the burst panel member so as to overlie a respective aperture when the burst panel is located within the mounting means.

4. A barrier according to claim 2, wherein each spatially-separated line of weakness is located within the burst panel member so as to overlie the aperture when the burst panel is located within the mounting means.

5. A barrier according to any of claims 2 to 4, wherein each spatially-separated line of weakness is adapted to rupture at a different respective predetermined value of atmospheric pressure differential.

6. A barrier according to any preceding claim, comprising at least one additional wall section aperture, and respective at least one additional mounting means and burst panel member.

7. A barrier according to claim 6, wherein each burst panel member is adapted to rupture at a different predetermined value of atmospheric pressure differential.

8. A barrier according to any preceding claim, wherein the mounting means is releasable, to permit replacement of a burst panel member.

9. A barrier according to any preceding claim, wherein the line of weakness is formed by etching or scoring the burst panel member.

10. A barrier according to claim 9, wherein the burst panel member has etched lines of weakness on both first and second opposingly-facing sides thereby to provide a bidirectional burst panel member.

11. A barrier according to any one of claims 1 to 9, wherein the burst panel member is bowed thereby to provide an unidirectional burst panel member.

12. A method for providing isolation between two internal volumes within an aircraft, the method comprising the step of:
providing a barrier (1) for location within the aircraft, the barrier comprising:
a wall section, the wall section having an aperture (6, 7) formed therein;
mounting means (13, 14, 15) located on the wall section proximate the aperture; and
a substantially planar burst panel member having first and second opposingly-facing sides, the burst panel member (9) adapted for location within the mounting means and dimensioned so as to overlie the aperture when received by the mounting means;
the burst panel member comprising a line of weakness (16) provided therein, adapted such that, in use, exposure of the burst panel member to an atmospheric pressure differential between air volumes respectively adjacent the first and second sides exceeding a predetermined value causes the burst panel member to rupture along said line of weakness, characterised in that the wall section is formed of a flexible textile material.