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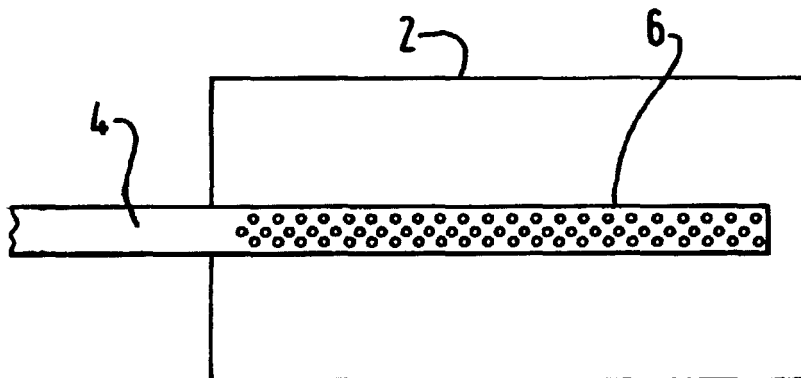
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(54) **Improved metal foam containers**

(57) A gas container made from metal foam material comprising at least one extraction tube a portion of which extends into the container said portion being

formed with a plurality of perforations.



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Description

[0001] Foam structures are known in industry and the number of applications for metallic foam structures is continually increasing. For example, aluminium foam metal having a continuously connected, open celled (reticulated) geometry is available and employed in:-

- a) energy/ impact absorbers;
- b) heat exchangers; and
- c) lightweight composite panels.

[0002] When used with heat exchangers the high surface to volume ratio allows for a compact design and the high specific stiffness, that is, high strength to weight ratio makes the material useful in aerospace and car applications.

[0003] Foam structures are now proposed for high pressure gas containers and in particular high pressure gas containers having an irregular shape for example a non-cylindrical or spherical shape. When irregular or complex shapes are required then foam material such as metal foams are formed typically by mixing small quantities of a gasifier e.g. titanium hydride with aluminium powder and subjecting the mixture to heat and pressure to form a sintered sheet.

[0004] The sintered sheet or a portion thereof is then placed in a mould which is then heated to higher temperature at which the metal melts and hydrogen is released from the titanium hydride to provide an even dispersion of bubbles. During the foaming process a fluid extraction tube is cast into the container and the moulded object is then allowed to solidify and subsequently shock quenched in a cryogen, for example, liquid nitrogen.

[0005] The extraction tube normally penetrates far enough into the metal foam container to provide a mechanically firm anchor but fluid access to it is limited by the diameter by the extraction tube.

[0006] It is an aim of the present invention to provide at least one extraction tube for a gas container made from metal foam which will allow the collection of gas from all parts of the metal foam container and enable extraction to take place at faster rates than currently are possible.

[0007] According to the present invention, a gas container made from metal foam includes at least one extraction tube a portion of which extends into the container said portion being formed with a plurality of perforations or slots.

[0008] In a preferred embodiment a plurality of perforated extraction tubes are provided each being connected to a common manifold.

[0009] An embodiment of the invention will now be described by way of example reference being made to the Figure of the accompanying drawing which is a schematic sketch of a gas container made from metal foam including at least one extraction tube.

[0010] As shown a gas container 2 made from metal foam includes an extraction tube 4. As illustrated, the extraction tube 4 is cast deeply into the container 2 and the portion of the tube, where it is cast within the container 2 includes a plurality of perforations 6. The function of the extraction tube 4 with the perforations 6 is to collect and convey gas from all parts of the container 2 and thereby enable extraction of the gas to take place at a fast rate.

[0011] In a further embodiment the gas container 2 may be provided with two or more extraction tubes each of which is connected to a common manifold.

Claims

1. A gas container made from metal foam material comprising at least one extraction tube a portion of which extends into the container said portion being formed with a plurality of perforations.
2. A gas container as claimed in claim 1, in which a plurality of perforated extraction tubes are provided and connected to a common manifold.

