(12) UK Patent Application (19) GB (11) 2 453 798 (13) A

(43) Date of A Publication 22.04.2009

(21) Application No: 0720769.9

(22) Date of Filing: 16.10.2007

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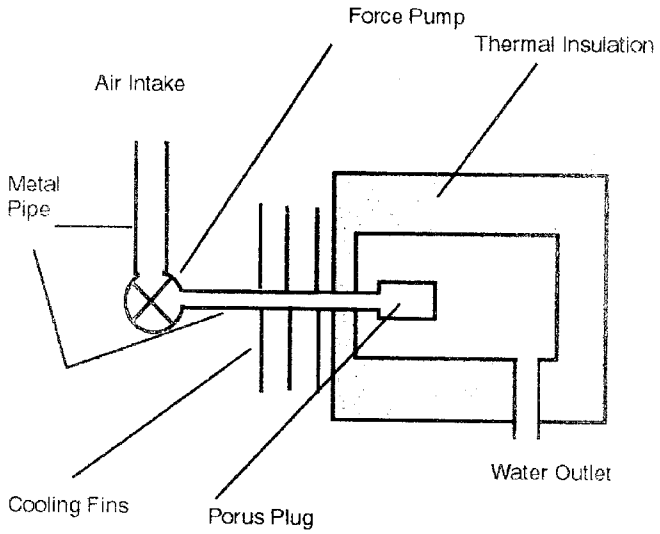
(51) INT CL:
E03B 3/28 (2006.01) ***B01D 5/00*** (2006.01)
B01D 53/00 (2006.01) ***B01D 53/26*** (2006.01)

(56) Documents Cited:
GB 2151504 A **WO 1993/004761 A1**
BE 000895340 A2 **DE 003431186 A1**
US 5168728 A **US 4539816 A**

(58) Field of Search:
INT CL **B01D, E03B**
Other: **Online: EPODOC, WPI, GOOGLE**

(54) Abstract Title: **Water Extractor**

(57) A device for extracting potable water from air comprises a pipe for drawing in air, a force pump for compressing the air, cooling fins provided around the pipe to allow the heat of compression to dissipate, and a thermally insulated cavity into which the air expands and cools. A nozzle may be provided in the cavity containing a porous material such as sharp sand through which the air is adiabatically expanded to below the dew point such that water condenses out and is collected.



Like a fish tank aerator

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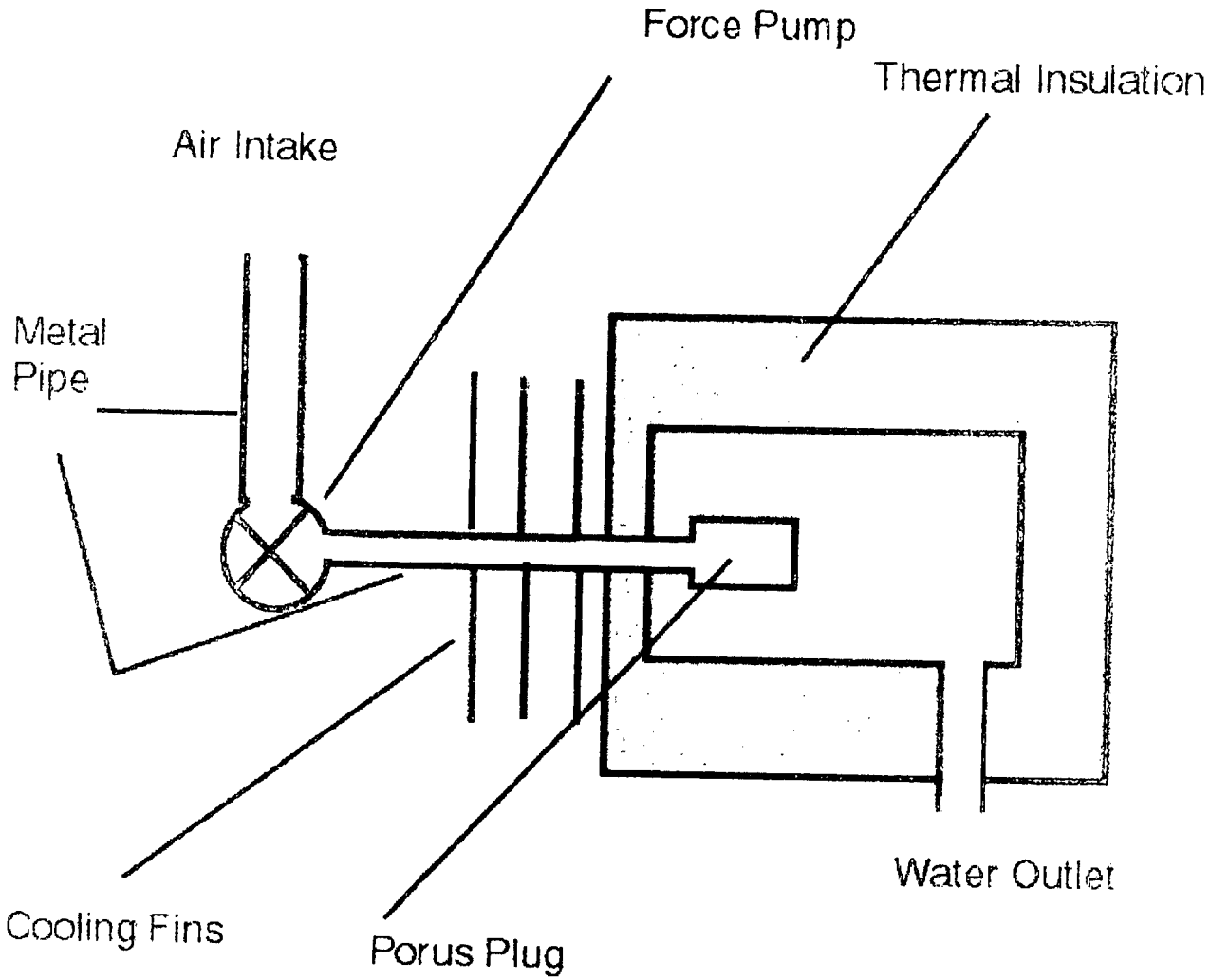

Like a fish tank aerator

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escription

Water Generator

Air always contains a little water vapor, in arid lands the air is usually too hot to allow the water carried to condense. This occurs under hot desert conditions. In cold deserts any water present is only available as ice and the air is almost devoid of water. However it is true of all air including air that could supply water for domestic water supplies in temperate climates. To extract water from hot desert air the air must be cooled to blow the dew point. If the air is cooled to below freezing water temperatures then ice will be deposited.

A possible simple way of cooling the air is to compress it, allow the heat of compression to dissipate then allow the air to expand into an insulated cavity. If air is forced through a nozzle containing a porous material such as sharp sand and then allowed to expand into an insulated chamber, it will cool because of adiabatic expansion.

A simple device that will do this is shown in the diagram below. The pump needs to deliver air to the chamber so that for a cooling rate of (Power Output of motor/R (the gas constant)) degrees a second in suitable units such as MKS, FPS or SI).

The amount of water extracted would depend on the absolute humidity and the rate of mass flow of the air.

Mass (Kg) of water extracted per second= power of pump (Watt) /(latent heat of vaporization of water/Kg)

Volume of air/second = Absolute Humidity (mass (Kg) /volume (L)/Power of Pump.

Claims

The unit will supply potable water from air when an energy supply is available.

Intellectual Property Office

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Application No: GB0720769.9 **Examiner:** Heather Webber

Claims searched: 1 **Date of search:** 14 February 2008

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1	US 5168728 A (DJELOUAH et al) see especially column 4 lines 12 - 55 and figures
X	1	US 4539816 A (FOX) see especially column 4 line 55 - column 5 line 42 and figures
X	1	BE 895340 A2 (DEJAEGHER ROGER) see WPI abstract accession number: 1983-39220K [17] and figures
X	1	DE 3431186 A1 (ZACHERL LUTZ) see WPI abstract accession number: 1986-070003[11] and figures
X	1	GB 2151504 A (BRIAN WILLS) see especially page 2 lines 10 - 55 and figures
X	1	WO 93/04761 A1 (RAGUSA et al) abstract and figures especially

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC[X] :

Worldwide search of patent documents classified in the following areas of the IPC

B01D; E03B

The following online and other databases have been used in the preparation of this search report

EPODOC, WPI, GOOGLE

International Classification:

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Subclass	Subgroup	Valid From
E03B	0003/28	01/01/2006
B01D	0005/00	01/01/2006
B01D	0053/00	01/01/2006
B01D	0053/26	01/01/2006