

Title (en)

FREEZING DEVICE CONSTRUCTION METHOD AND FREEZING DEVICE

Title (de)

VERFAHREN ZUR HERSTELLUNG EINER GEFRIERVORRICHTUNG UND GEFRIERVORRICHTUNG

Title (fr)

PROCEDE DE CONSTRUCTION D'UN DISPOSITIF DE CONGELATION ET DISPOSITIF DE CONGELATION

Publication

**EP 1650509 A1 20060426 (EN)**

Application

**EP 04745546 A 20040603**

Priority

- JP 2004007690 W 20040603
- JP 2003175928 A 20030620
- JP 2003361828 A 20031022

Abstract (en)

A refrigeration apparatus constituted so that, by using a separation membrane, it can separate and eliminate the noncondensable gas, in a state mixed with a refrigerant inside a refrigerant circuit, which was left inside a refrigerant connecting pipe during on-site construction, wherein the efficiency of separating the noncondensable gas in the separation membrane is improved. An air conditioner (1) comprises a refrigerant circuit (10), wherein a heat source unit (2) and a utilization unit (5) are connected via a refrigerant connecting pipe (6, 7), and is provided with a gas separation apparatus (31). The gas separation apparatus (31) comprises a separation membrane apparatus (34) connected to a liquid side refrigerant circuit (11) that connects a heat source side heat exchanger (23) and a utilization side heat exchanger (51). The separation membrane apparatus (34) comprises a separation membrane (34b) that, by operating a compressor (21) and circulating refrigerant inside the refrigerant circuit (10), can separate from the refrigerant and discharge out of the refrigerant circuit (10) the noncondensable gas remaining in the refrigerant connecting pipe (6, 7).

IPC 1-7

**F25B 43/04**

IPC 8 full level

**F25B 43/04** (2006.01); **F25B 45/00** (2006.01)

CPC (source: EP KR US)

**F25B 1/00** (2013.01 - KR); **F25B 43/04** (2013.01 - KR); **F25B 43/043** (2013.01 - EP US); **F25B 49/00** (2013.01 - KR)

Cited by

US11732941B1; ITPI20120066A1; JP2014115165A; CN104508401A; EP3360607A3; US10584906B2; US11976860B2; US11698210B1; US11686515B2; US11911724B2; WO2013179241A3; WO2015020719A1; US9987568B2; US10119767B2; US10712100B2; US11913693B2

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR

DOCDB simple family (publication)

**EP 1650509 A1 20060426; EP 1650509 A4 20141008**; AU 2004249994 A1 20041229; AU 2004249994 B2 20070726;  
JP 2005030752 A 20050203; JP 3680278 B2 20050810; KR 100713986 B1 20070504; KR 20060010789 A 20060202;  
US 2007101759 A1 20070510; WO 2004113803 A1 20041229

DOCDB simple family (application)

**EP 04745546 A 20040603**; AU 2004249994 A 20040603; JP 2003361828 A 20031022; JP 2004007690 W 20040603;  
KR 20057021318 A 20051109; US 56062104 A 20040603