

Title (en)

Vacuum pump and installation method for air conditioner

Title (de)

Vakuumpumpe und Einrichtungsverfahren für eine Klimaanlage

Title (fr)

Pompe à vide et procédé d'installation d'un dispositif de conditionnement d'air

Publication

EP 1336758 A3 20040204 (EN)

Application

EP 03003453 A 20030214

Priority

- JP 2002038112 A 20020215
- JP 2002113014 A 20020416
- JP 2002115854 A 20020418

Abstract (en)

[origin: EP1336758A2] A vacuum pump and an installation method for an air conditioner are provided, whereby, the installation of an air conditioner can be performed readily in a short period of time, whilst restricting harmful effects on the environment. The interior of a cylinder (15) is divided into two chambers by a piston (16), and intake ports (20) and exhaust ports (19) are provided, these intake ports and exhaust ports having non-return valves installed respectively at the top dead center and the bottom dead center of these two chambers of the cylinder. When the piston (16) is caused to move in either direction, then if the respective exhaust ports (19) are connected together, the air inside the cylinder is exhausted, thereby causing the exhaust port (19) side in the cylinder to assume a pressurized state, and if the intake ports (20) are coupled, then the intake ports (20) in the cylinder are caused to assume a negative pressure state. <IMAGE>

IPC 1-7

F04B 33/00; **F25B 45/00**

IPC 8 full level

F25B 45/00 (2006.01)

CPC (source: EP KR)

F24F 1/00 (2013.01 - KR); **F25B 45/00** (2013.01 - EP); **F25B 2345/006** (2013.01 - EP)

Citation (search report)

- [XAY] EP 1170505 A2 20020109 - MATSUSHITA ELECTRIC IND CO LTD [JP]
- [Y] US 4858478 A 19890822 - KUSH ROBERT S [US], et al
- [X] US 5297399 A 19940329 - TIEKEN JAMES B [US]
- [A] EP 0962728 A1 19991208 - MATSUSHITA ELECTRIC IND CO LTD [JP]
- [A] EP 1041349 A2 20001004 - MATSUSHITA ELECTRIC IND CO LTD [JP]
- [A] US 4149574 A 19790417 - LEHMANN WILFRIED, et al
- [A] US 5718119 A 19980217 - WAKITA KATSUYA [JP], et al
- [A] CH 131667 A 19290228 - BAUMANN CARL [CH]
- [A] US 4188196 A 19800212 - CASPER RUDOLF [DE], et al
- [A] GB 1553648 A 19790926 - AMEY G C
- [A] US 5494410 A 19960227 - MAIER-LAXHUBER PETER [DE], et al
- [A] US 4975028 A 19901204 - SCHULTZ GLEN R [US]
- [A] EP 0587545 A2 19940316 - ELECTROLUX AB [SE]
- [A] US 6299420 B1 20011009 - SAPUTO RICHARD A [US], et al
- [A] FR 2406737 A1 19790518 - GUILLAUMONT JEAN [FR]
- [Y] PATENT ABSTRACTS OF JAPAN vol. 1999, no. 04 30 April 1999 (1999-04-30)
- [X] PATENT ABSTRACTS OF JAPAN vol. 2000, no. 22 9 March 2001 (2001-03-09)
- [A] PATENT ABSTRACTS OF JAPAN vol. 2000, no. 13 5 February 2001 (2001-02-05)
- [A] PATENT ABSTRACTS OF JAPAN vol. 1996, no. 07 31 July 1996 (1996-07-31)

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 PT SE SI SK TR

DOCDB simple family (publication)

EP 1336758 A2 20030820; **EP 1336758 A3 20040204**; CN 1438457 A 20030827; KR 20030068449 A 20030821

DOCDB simple family (application)

EP 03003453 A 20030214; CN 03106007 A 20030217; KR 20030008817 A 20030212