

(19)



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(11)

EP 1 018 627 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
06.12.2000 Bulletin 2000/49

(51) Int Cl.7: **F25B 29/00, F24D 3/18,**
F24H 9/12, F25B 30/02

(43) Date of publication A2:
12.07.2000 Bulletin 2000/28

(21) Application number: **00200011.5**

(22) Date of filing: **05.01.2000**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE

Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **07.01.1999 NL 1010979**

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(54) Heat pump

(57) A heat pump comprising a compressor circuit (1-14) including, seen in the direction of flow of the compressor circuit:

- a compressor (1);
- a primary part of a first heat exchanger, to be referred to as the condenser (4);
- an expansion valve (8); and
- a primary part of a second heat exchanger, to be referred to as the evaporator (11);

wherein the compressor (1) is connected with a subframe (4,11,15-17), which subframe (4,11,15-17) is connected, via first damping elements (18,19), with a mounting frame (20,21) which is intended to be fixedly connected to a fixed structure, wherein the first damping elements (18,19) provide vibration isolation between the subframe (4,11,15-17) and the mounting frame (20,21), wherein a control unit (73) regulates the rotational speeds of the heat source circuit pump (23), the central heating circuit pump and/or the compressor (1).

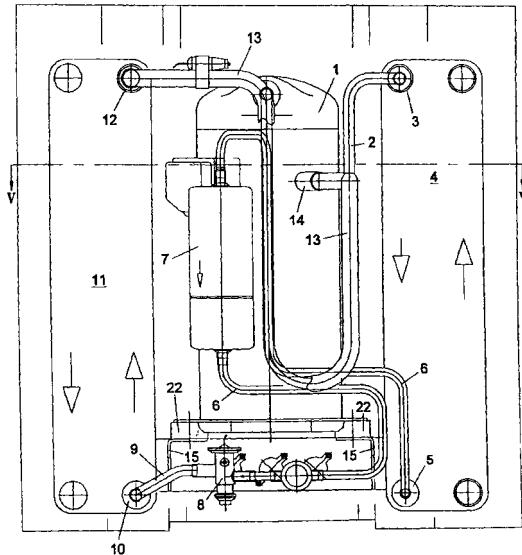


Fig. 1



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EUROPEAN SEARCH REPORT

Application Number
EP 00 20 0011

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IntCL7)
Y	US 4 305 260 A (BACKLUND ANDERS D) 15 December 1981 (1981-12-15) * column 1, line 57 - column 5, line 32 * * claims 1,2 * * figures 1,2 *	1,2	F25B29/00 F24D3/18 F24H9/12 F25B30/02
A	---	3-12,22, 23,26-29	
Y	US 5 070 708 A (MALOSH JAMES B ET AL) 10 December 1991 (1991-12-10) * abstract * * claims 1,3,4 * * figures 2,5,7 *	1,2	
A	US 1 753 944 A (REPLOGLE JOHN R) 8 April 1930 (1930-04-08) * page 3, line 36 - page 3, line 46 * * page 3, line 83 - page 3, line 98 * * page 5, line 125 - page 6, line 9 * * claim 5 * * figure 1 *	1,2,7	
A	FR 2 532 729 A (ROSSIGNOL SA) 9 March 1984 (1984-03-09) * abstract * * claims 1,2,8,9 * * figures 1,2 *	1,2,4,5	TECHNICAL FIELDS SEARCHED (IntCL7) F25B F25D F24D F24H
A	US 5 274 200 A (DAS SATHISH R ET AL) 28 December 1993 (1993-12-28) * abstract * * claim 1 * * figures 3-5 *	1,8-10	
	---	-/-	
<p>The present search report has been drawn up for all claims</p>			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	21 July 2000	CORREIA DOS REIS, I	
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons A : technological background O : non-written disclosure P : intermediate document B : member of the same patent family, corresponding document	
EPO FORM 1500.03.02 (P04001)			



CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-12, 22-29



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EUROPEAN SEARCH REPORT

Application Number

DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
A	US 4 449 376 A (FAGAN JR THOMAS J ET AL) 22 May 1984 (1984-05-22) * column 3, line 6 - column 3, line 19 * * column 5, line 17 - column 5, line 23 * * claims 1,3,4 * * figure 1 * ---- DE 33 02 081 A (STIEBEL ELTRON GMBH & CO KG) 26 July 1984 (1984-07-26) * abstract * * claim 1 * * figure 1 * -----	1,2,7 1
		TECHNICAL FIELDS SEARCHED (Int.Cl.)
The present search report has been drawn up for all claims		
Place of search	Date of completion of the search	Examiner
THE HAGUE	21 July 2000	CORREIA DOS REIS, I
CATEGORY OF CITED DOCUMENTS		
X : particularly relevant if taken alone	T : theory or principle underlying the invention	
Y : particularly relevant if combined with another document of the same category	E : earlier patent document, but published on, or after the filing date	
A : technological background	D : document cited in the application	
O : non-written disclosure	L : document cited for other reasons	
P : intermediate document	B : member of the same patent family, corresponding document	



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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 00 20 0011

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-12, 22-29

Heat pump comprising a compressor mounted on a damped subframe

2. Claims: 13-29

Heat pump comprising compressor speed control

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 20 0011

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

21-07-2000

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
US 4305260 A	15-12-1981	SE	432477 B	02-04-1984
		DE	3027356 A	12-02-1981
		SE	7906238 A	21-01-1981
US 5070708 A	10-12-1991	CA	1313765 A	23-02-1993
US 1753944 A	08-04-1930	NONE		
FR 2532729 A	09-03-1984	NONE		
US 5274200 A	28-12-1993	NONE		
US 4449376 A	22-05-1984	CA	1218854 A	10-03-1987
DE 3302081 A	26-07-1984	NONE		