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(71) Applicant: **Panasonic Corporation**
Kadoma-shi
Osaka 571-8501 (JP)

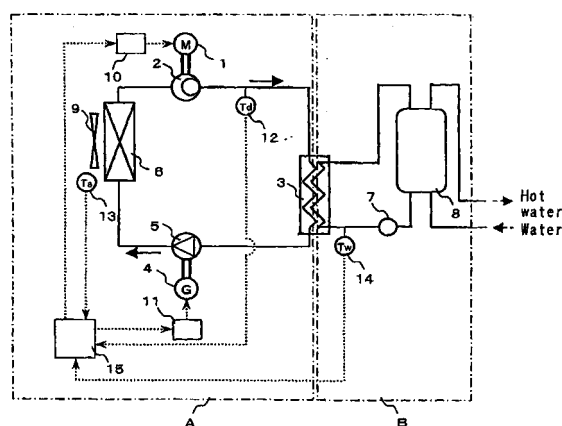
(72) Inventors:
• **Okaza, Noriho**
Matsushita Electric Industrial Co., Ltd.
1-chome, Chuo-ku
Osaka-shi, Osaka 540-6319 (JP)
• **Nakatani, Kazuo**
Matsushita Electric Industrial Co., Ltd.
1-chome, Chuo-ku
Osaka-shi, Osaka 540-6319 (JP)

(74) Representative: **Eisenführ, Speiser & Partner**
Postfach 31 02 60
80102 München (DE)

(54) **Control method of refrigeration cycle apparatus**

(57) It is an object of the present invention to stably operate the refrigeration cycle apparatus having an expansion mechanism capable of recovering pressure energy at the time of expansion, and to enhance the stability at the time of actuation. A control method of the refrigeration cycle apparatus including a compressing mechanism 2, a heat source-side heat exchanger 6, the expansion mechanism 5 which recovers power, and a utilizing-side heat exchanger 3. The number of revolutions of the expansion mechanism 5 is controlled such that the number of revolutions becomes equal to a target number of revolutions of the expansion mechanism 5 determined from a discharging temperature of the compressing mechanism 2. The number of revolutions of the expansion mechanism 5 can appropriately be controlled, the refrigeration cycle apparatus can be operated stably, and the stability of the refrigeration cycle apparatus at the time of actuation can be enhanced.

Fig. 1



EP 1 793 182 A3



EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2004/250556 A1 (SIENEL TOBIAS H [US]) 16 December 2004 (2004-12-16) * paragraph [0021] - paragraph [0044]; figures 3-5 * * paragraph [0028] * * paragraph [0037] - paragraph [0038]; figure 3b *	1,2,5	INV. F25B9/06 F25B49/02 ADD. F25B9/00
X	JP 2005 291622 A (MATSUSHITA ELECTRIC IND CO LTD) 20 October 2005 (2005-10-20) * paragraph [0018]; figure 6 *	1,5	
A	US 6 272 871 B1 (EISENHOUR RONALD SNOWDEN [US]) 14 August 2001 (2001-08-14) * column 4, line 13 - column 8, line 60; figures 1-17 *	1	
A	JP 2004 061061 A (MATSUSHITA ELECTRIC IND CO LTD) 26 February 2004 (2004-02-26) * the whole document *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			F25B
<p>2 The present search report has been drawn up for all claims</p>			
Place of search Munich		Date of completion of the search 17 June 2010	Examiner Szilagy, Barnabas
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p>		<p>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 & : member of the same patent family, corresponding document</p>	



Application Number

EP 06 02 4851

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due 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 those claims for which no payment was due.

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:

see additional sheet(s)

☐ The present supplementary 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 (Rule 164 (1) EPC).

**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

EP 06 02 4851

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, 2, 5

Control method of a refrigeration cycle apparatus, wherein when a discharging temperature of said compressing mechanism is higher than a predetermined target discharging temperature, the number of revolutions of said expansion mechanism is increased, and when the discharging temperature of said compressing mechanism is lower than the target discharging temperature, the number of revolutions of said expansion mechanism is reduced

2. claims: 1, 3

Control method of a refrigeration cycle apparatus, wherein when a discharging temperature of said compressing mechanism is higher than a predetermined target discharging temperature and when the number of revolutions of said expansion mechanism exceeds an upper limit value of a using range of a predetermined number of revolutions of said expansion mechanism, the number of revolutions of said compressing mechanism is reduced.

3. claims: 1, 4

Control method of a refrigeration cycle apparatus, wherein when a discharging temperature of said compressing mechanism is lower than a predetermined target discharging temperature, and when the number of revolutions of said expansion mechanism exceeds a lower limit value of a using range of a predetermined number of revolutions of said expansion mechanism, the number of revolutions of said compressing mechanism is increased.

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

EP 06 02 4851

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
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17-06-2010

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