



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
29.06.2005 Bulletin 2005/26

(51) Int Cl.7: **A47L 9/16, A47L 5/36**

(43) Date of publication A2:
02.07.2003 Bulletin 2003/27

(21) Application number: **02028358.6**

(22) Date of filing: **17.12.2002**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
IE IT LI LU MC NL PT SE SI SK TR**
Designated Extension States:
AL LT LV MK RO

- **Morita, Akihiro**
Kakogawa-shi, Hyogo-ken (JP)
- **Fujiyoshi, Toshiyuki**
Himeji-shi, Hyogo-ken (JP)
- **Matsuhashi, Hiromichi**
Kasai-shi, Hyogo-ken (JP)
- **Azumi, Takaya**
Kasai-shi, Hyogo-ken (JP)

(30) Priority: **18.12.2001 JP 2001384387**

(71) Applicant: **Sanyo Electric Co., Ltd.**
Moriguchi-shi, Osaka (JP)

(72) Inventors:
• **Dohi, Kenichiro**
Himeji-shi, Hyogo-ken (JP)

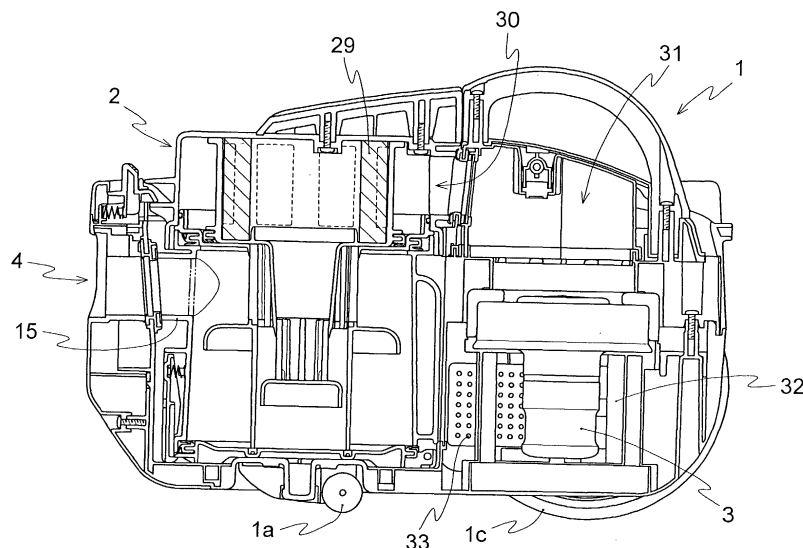
(74) Representative:
Leson, Thomas Johannes Alois, Dipl.-Ing.
Patentanwälte
Tiedtke-Bühling-Kinne & Partner,
Bavariaring 4
80336 München (DE)

(54) **Vacuum cleaner**

(57) A vacuum cleaner including a cyclone style dust box provided in a vacuum cleaner main body, an outer filter portion provided within the dust box which forms a first cyclone space between the outer filter portion and an inner wall of the dust box, an inner filter portion provided within the outer filter portion which forms

a second cyclone space between the inner filter portion and an inner wall of the outer filter portion, and a flange portion provided to the outer filter portion which extends towards an inner wall of the dust box. It is possible to achieve a high dust collection efficiency since two cyclone spaces are provided in a dust box interior.

FIG. 7





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 02 8358

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 4 853 008 A (DYSON ET AL) 1 August 1989 (1989-08-01)	1	A47L9/16 A47L5/36
Y	* column 1, line 65 - column 3, line 65 * -----	2,3	
X	US 5 267 371 A (SOLER ET AL) 7 December 1993 (1993-12-07)	1	
Y	* column 3, lines 1-60; figures 4-7 * -----	2,3	
X	EP 0 728 435 A (BLACK & DECKER INC) 28 August 1996 (1996-08-28)	1	
	* column 1, line 25 - column 2, line 35 * -----		
X	US 4 826 515 A (DYSON ET AL) 2 May 1989 (1989-05-02)	1	
	* column 2, line 38 - column 8, line 45 * -----		
Y	US 2001/042283 A1 (OH JANG-KEUN ET AL) 22 November 2001 (2001-11-22)	2	
	* paragraph [0037]; figures 3,4 * -----		
Y	WO 99/22874 A (B.H.R. GROUP LIMITED; SAUNDERS, DAVID, HENRY; ARATO, EMIL, GYORGY; DAV) 14 May 1999 (1999-05-14)	3	TECHNICAL FIELDS SEARCHED (Int.Cl.7) A47L
	* page 7, line 17 - page 9, line 34 * -----		
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 6 May 2005	Examiner Martin Gonzalez, G
CATEGORY OF CITED DOCUMENTS 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 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			

1
EPO FORM 1503 03.82 (P04C01)

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

EP 02 02 8358

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.

06-05-2005

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4853008	A	01-08-1989	CA 1321960 C	07-09-1993
			AU 610745 B2	23-05-1991
			AU 3903089 A	01-03-1990

US 5267371	A	07-12-1993	CA 2061469 A1	20-08-1993
			AU 3307193 A	26-08-1993
			EP 0557096 A1	25-08-1993
			JP 6054778 A	01-03-1994

EP 0728435	A	28-08-1996	EP 0728435 A1	28-08-1996

US 4826515	A	02-05-1989	AT 14974 T	15-09-1985
			CA 1182613 A1	19-02-1985
			DE 3171910 D1	26-09-1985
			DK 272181 A ,B,	20-12-1981
			EP 0042723 A2	30-12-1981
			JP 1440279 C	30-05-1988
			JP 57066728 A	23-04-1982
			JP 62050140 B	22-10-1987
			JP 1440322 C	30-05-1988
			JP 61191329 A	26-08-1986
			JP 62050141 B	22-10-1987
			US 4853011 A	01-08-1989
			US 4593429 A	10-06-1986
			US 5160356 A	03-11-1992

US 2001042283	A1	22-11-2001	KR 2001005547 A	29-11-2001
			DE 10110581 A1	29-11-2001
			FR 2808987 A1	23-11-2001
			GB 2362341 A ,B	21-11-2001
			RU 2199261 C2	27-02-2003

WO 9922874	A	14-05-1999	AU 9755698 A	24-05-1999
			DE 69816852 D1	04-09-2003
			EP 1157650 A2	28-11-2001
			EP 1028813 A1	23-08-2000
			WO 9922874 A1	14-05-1999
			GB 2330786 A ,B	05-05-1999
			US 6531066 B1	11-03-2003

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82