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(54) **Built-in domestic appliance with decorative panel applied to the door**

(57) In a built-in domestic appliance with a door hinged along its bottom side and provided with a front decorative panel applied to the appliance through a mounting system including a sliding coupling (1,2,3,4,5) between the panel and the door with sliding direction orthogonal to the rotation axis of the door, the panel has such a height that its bottom end comes into contact with the appliance base in the final phase of the door open-

ing, and the sliding coupling includes a spring (8) suitable to push the panel toward the rotation axis. In this way it is possible to mount panels of greater height on the same machines manufactured for the application of standard panels, without requiring any modification of the machine base, since the opening and closing movement of the door also causes the automatic movement of the panel with respect to the door.

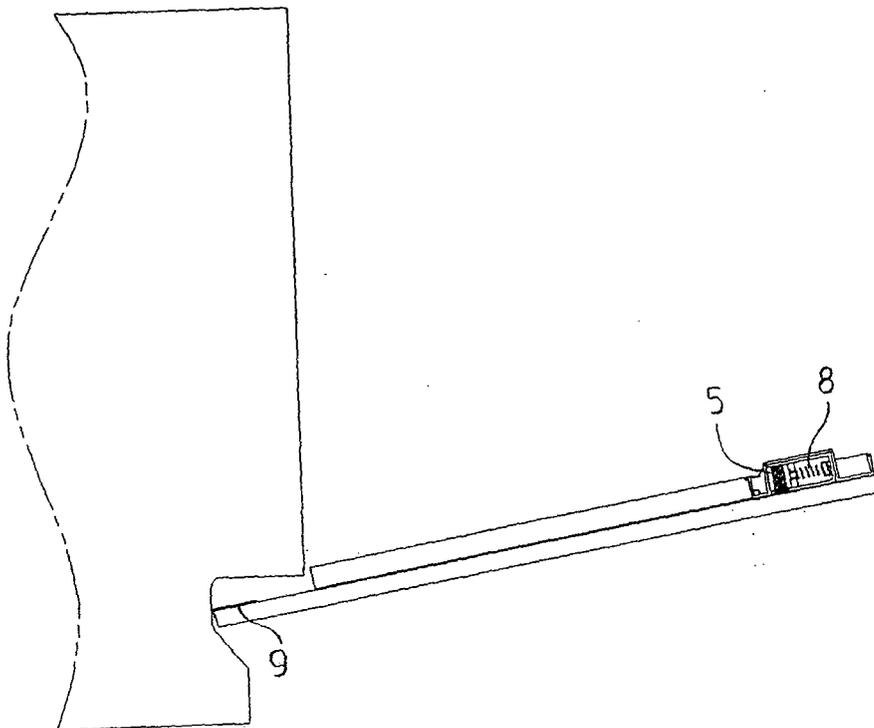


Fig. 4

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Description

[0001] The present invention relates to built-in domestic appliances having the door lined with a decorative panel, and in particular to domestic appliances in which the panel slides with respect to the door. Reference will be made hereafter to a dishwasher while it is clear that what is said applies to any other domestic appliance having a similar door hinged along its bottom side, e.g. a washing machine.

[0002] This type of decorative panel is known to be used to camouflage a built-in appliance so that it blends with the kitchen furniture. This is achieved by applying to the door of said appliance, by various means, a panel having the same appearance of the other doors. In this way there is no visible element allowing to distinguish the appliance from the other members which make up the kitchen, its controls being accessible only when the door is open.

[0003] However, the presence of this panel poses a particular problem when it has a height greater than the standard height of 720 mm, since this would result in the interference of the panel with the dishwasher base at the end of the door opening, otherwise the door could not open completely to 90°.

[0004] To overcome this problem there are presently dishwashers specifically manufactured with more room in the lower portion in order to be able to receive higher panels. However this solution has the double drawback of reducing the room available inside the machine to house the members arranged in the lower portion of the dishwasher, as well as the need to manufacture a specific version only for those few markets (e.g. Switzerland) where higher panels are used.

[0005] Therefore the object of the present invention is to provide a domestic appliance provided with a mounting system for the decorative panel that overcomes the aforementioned drawbacks.

[0006] This object is achieved by means of a domestic appliance in which the panel is mounted through a sliding coupling between the panel and the door with sliding direction orthogonal to the rotation axis of the door, said coupling including an elastic member suitable to push the panel toward the rotation axis so as to achieve an automatic movement of the panel.

[0007] The main advantage of the domestic appliance with the panel mounting system according to the present invention is the possibility of being able to mount also higher panels on the same machines manufactured for the application of standard panels, without requiring any modification of the machine base.

[0008] Still another advantage of the present system stems from its extreme structural simplicity which makes it cheap and reliable.

[0009] These and other advantages and features of the domestic appliance according to the present invention will be evident to those skilled in the art from the following detailed description of an embodiment thereof,

with reference to the attached drawings, wherein:

Fig.1 is a diagrammatic view showing the rear side of the panel of a dishwasher according to the invention;

Fig.2 is a diagrammatic front view of the dishwasher on which there is applied the panel of fig.1;

Fig.3 is a diagrammatic side view of the above-mentioned dishwasher with the panel applied thereon, with the door in the closed position;

Fig.4 is a view similar to the preceding one with the door in the phase where the interference with the dishwasher base begins; and

Fig.5 is a view similar to the preceding one with the door fully open.

[0010] With reference to Figures 1 to 3, there is seen that a dishwasher according to the present invention includes a decorative panel applied to the door through hooks 1 (four in the illustrated example) engaging corresponding slots 2, formed in the machine, within which the sliding can take place. On the panel there is also secured a bracket 4 carrying a pin 3, almost centrally, suitable to engage a corresponding sliding insert 5 arranged in the upper front part 6 of the machine.

[0011] The sliding insert 5 is mobile in the vertical direction, guided by its seat 7, and is pushed downward by a spring 8. In the lower portion of the panel there are also preferably provided plastic protections 9, extending to the bottom face, to favour the grazing of the panel on the machine base.

[0012] The simple and effective operation of the present mounting system for the panel is readily understood from the description above with the help of figures 4 and 5.

[0013] In the initial phase the door opening is not different from that of conventional dishwashers, but when the final phase of the opening is reached (fig.4) the panel, at the protections 9, comes into contact with the machine base. At this moment, due to the push received from the base, the panel starts to slide upward with respect to the door compressing spring 8, through pin 3 engaged in insert 5, and thus allowing to reach the complete opening (fig.5).

[0014] Obviously when the door is closed the push of spring 8 takes the panel back to the rest position as soon as the interference zone is cleared.

[0015] It is clear that the above-described and illustrated embodiment of the domestic appliance according to the invention is just an example susceptible of various modifications. In particular, the sliding coupling may be made in other ways and/or in other positions and the same applies to the elastic return member, as long as there is retained the automatic movement during the opening and closing movement due to the interference between the bottom end of the panel and the machine base.

Claims

1. A built-in domestic appliance with a door hinged along its bottom side and provided with a front decorative panel applied to the appliance through a mounting system including a sliding coupling between the panel and the door with sliding direction orthogonal to the rotation axis of the door, **characterized in that** the panel has such a height that its bottom end comes into contact with the appliance base in the final phase of the door opening, said sliding coupling including an elastic member suitable to push the panel toward said rotation axis. 5
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2. A built-in domestic appliance according to claim 1, **characterized in that** the sliding coupling is achieved through a plurality of hooks (1) arranged on the rear of the panel and engaged in corresponding slots (2), formed in the appliance, within which the sliding can take place. 15
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3. A built-in domestic appliance according to claim 1 or 2, **characterized in that** the interaction between the elastic member and the door takes place through a pin (3), arranged on the rear of the panel, engaging a corresponding insert (5) vertically slidable in a seat (7) formed in the appliance, the elastic member also being housed in said seat (7). 25
4. A built-in domestic appliance according to claim 3, **characterized in that** the elastic member consists of a spring (8) arranged in the seat (7) above the sliding insert (5). 30
5. A built-in domestic appliance according to claim 3 or 4, **characterized in that** the seat (7) is formed in a substantially central position in the upper portion of the door. 35
6. A built-in domestic appliance according to one or more of the preceding claims, **characterized in that** the panel is provided at its bottom end with one or more plastic protections (9) extending to the bottom face. 40
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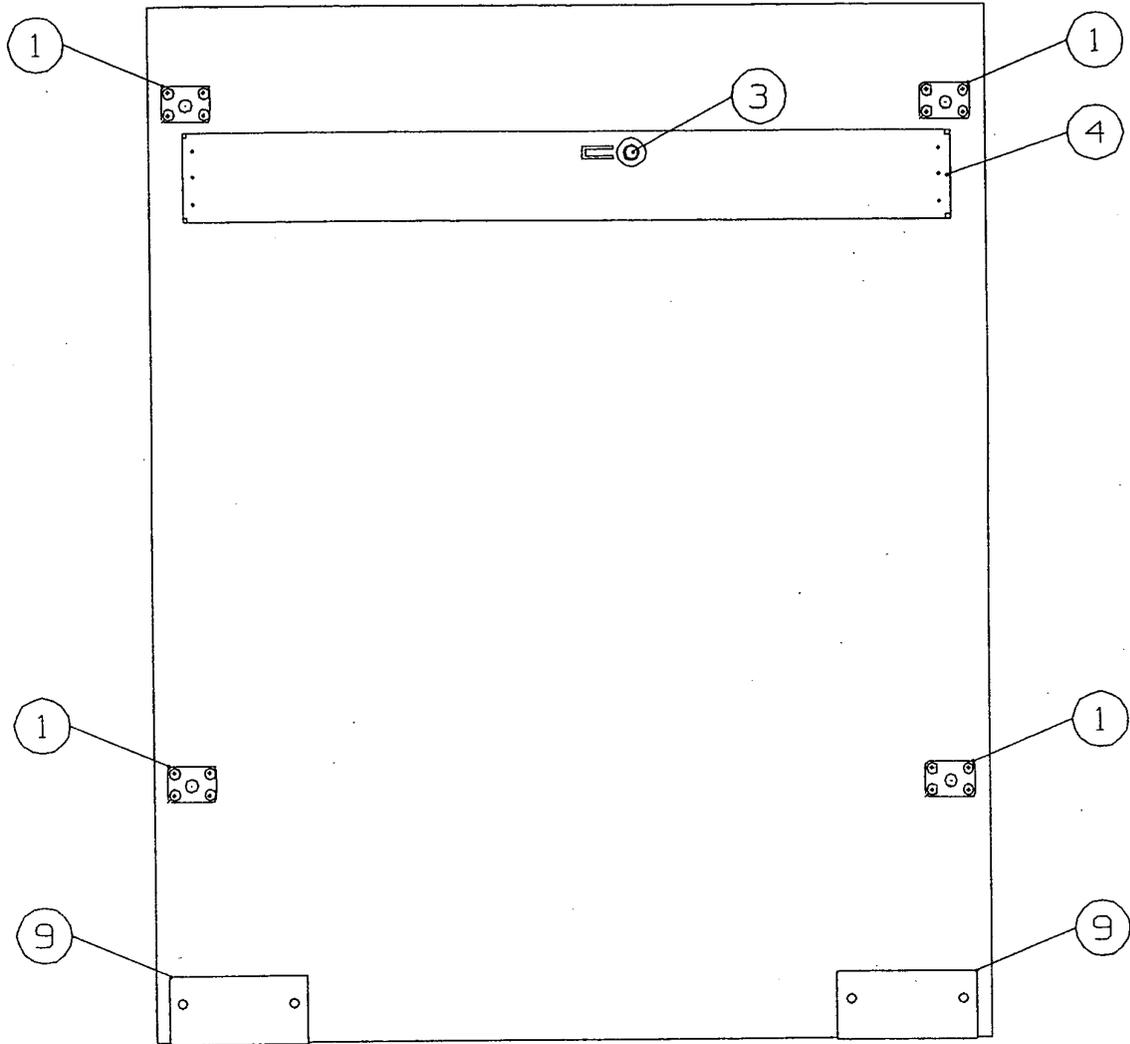


Fig. 1

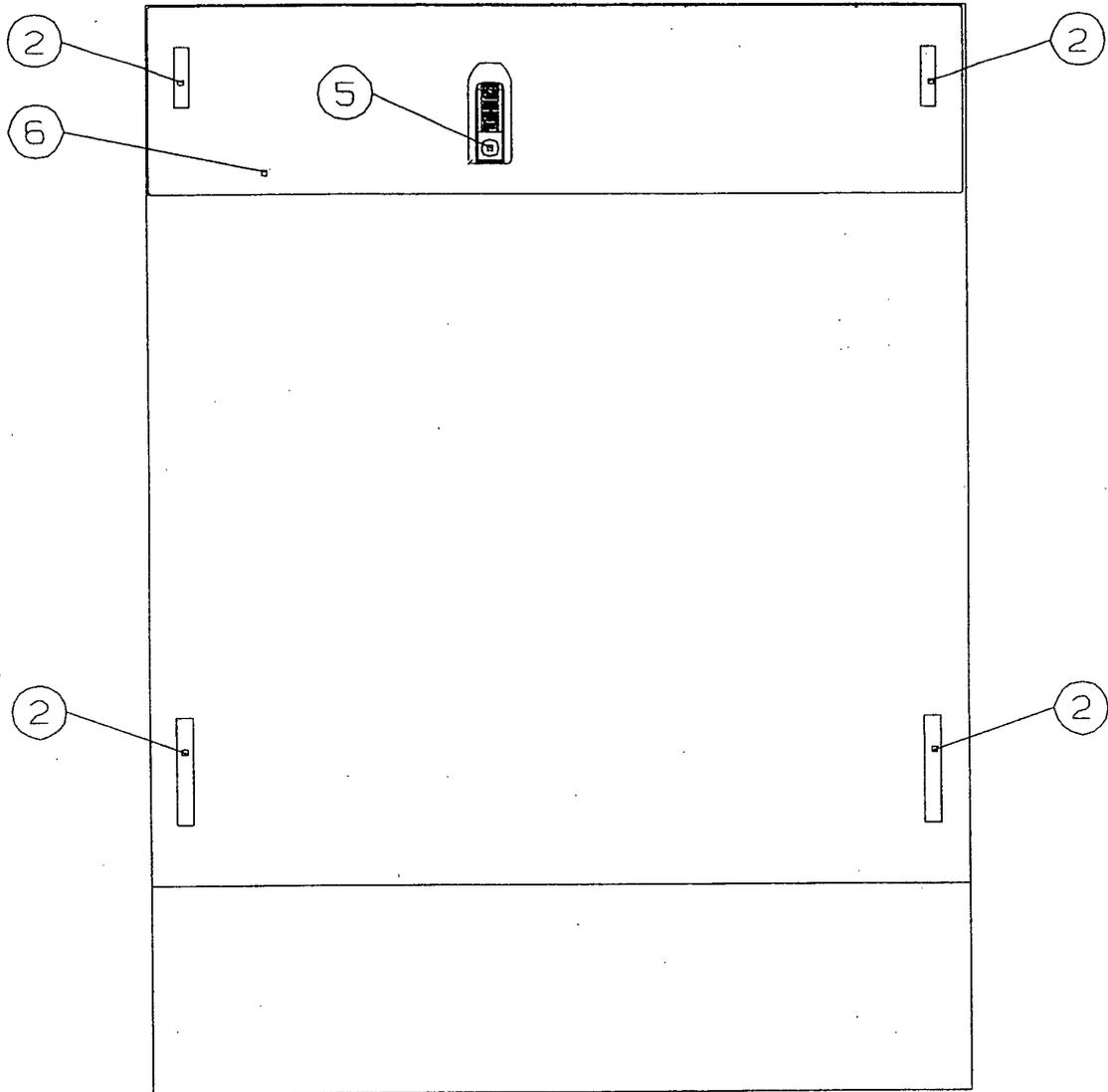


Fig. 2

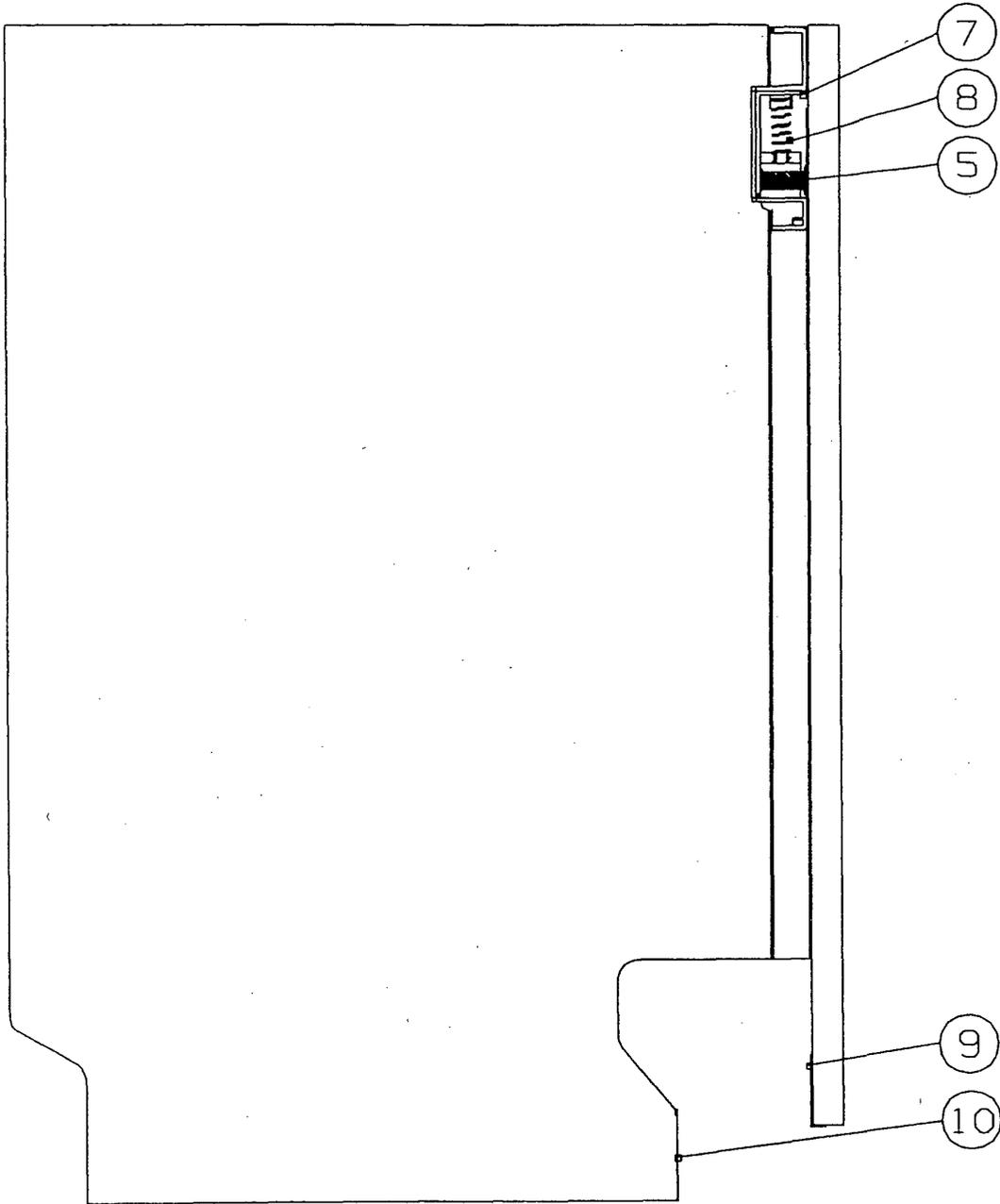


Fig. 3

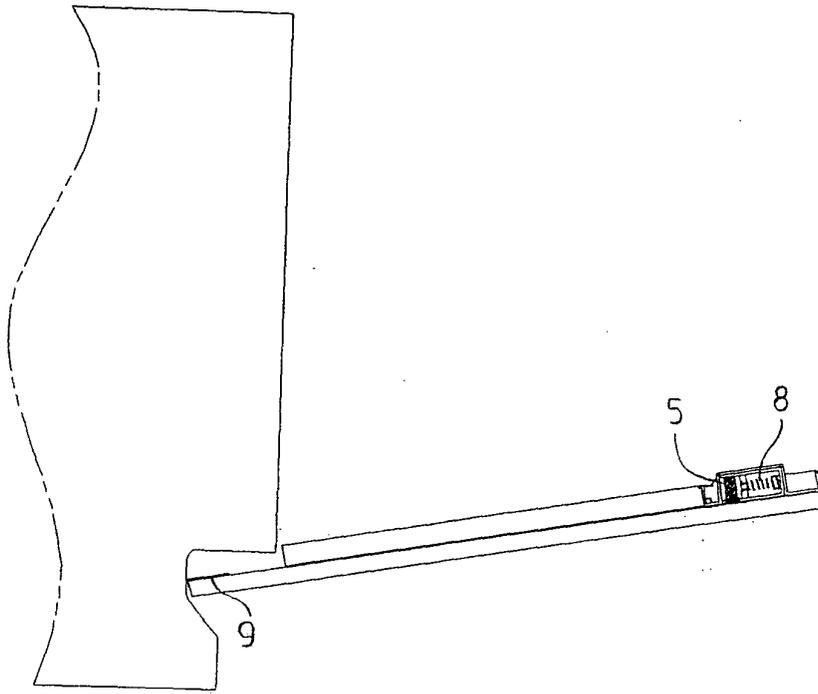


Fig. 4

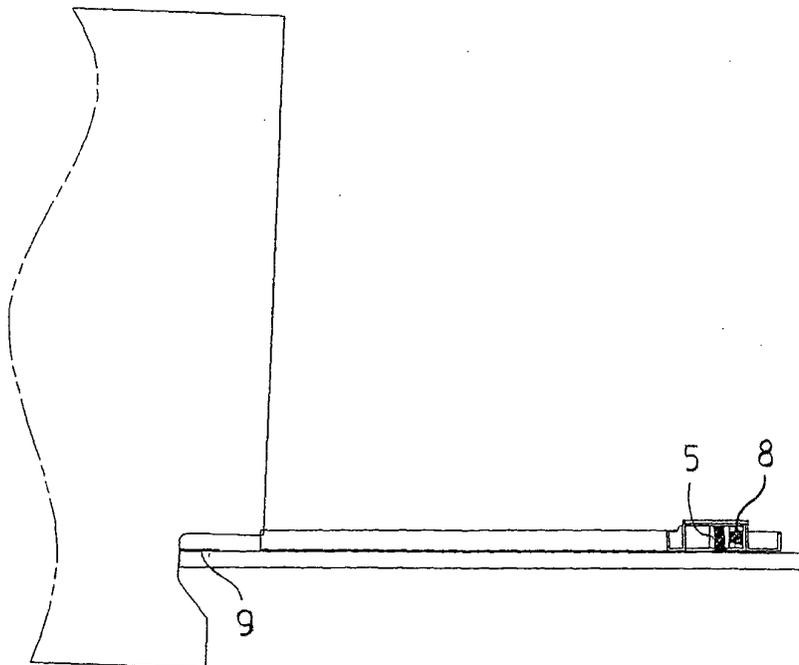


Fig. 5



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EUROPEAN SEARCH REPORT

Application Number
EP 03 42 5723

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)
Y	EP 0 261 083 A (SMEG SPA) 23 March 1988 (1988-03-23) * column 1, paragraphs 1,2 * * figures 1-3,7 * ---	1-4	A47L15/42 D06F39/14
Y	FR 2 464 692 A (BOSCH SIEMENS HAUSGERAETE) 20 March 1981 (1981-03-20) * figure 1 * * page 4, paragraph 1 * ---	1-4	
A	GB 641 584 A (ROBERT CHARLES LIGHTBOURNE;WELDALL & ASSEMBLY LTD) 16 August 1950 (1950-08-16) * page 2, line 96 - line 103; figure 2 * ---	1	
A	EP 0 873 715 A (SMEG SPA) 28 October 1998 (1998-10-28) * column 3, line 48 - line 54 * ---	1	
A	EP 0 543 696 A (ESSWEIN SA) 26 May 1993 (1993-05-26) * figures 3,4 * ---	2	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
A	DE 101 61 658 A (ELECTROLUX AG ZUERICH) 26 June 2003 (2003-06-26) * column 3, line 40; figure 3 * ---	5	A47L D06F F25D F24C
A	DE 29 37 369 A (BOSCH SIEMENS HAUSGERAETE) 9 April 1981 (1981-04-09) * page 6, line 7 - line 11; figures 1,2 * -----	6	
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 26 April 2004	Examiner Papadimitriou, S
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	

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EPO FORM 1503 03.02 (P04C01)

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

EP 03 42 5723

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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26-04-2004

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
EP 0261083	A	23-03-1988	IT	210333 Z2	06-12-1988
			DE	3760635 D1	02-11-1989
			EP	0261083 A2	23-03-1988

FR 2464692	A	20-03-1981	DE	2937413 B1	20-11-1980
			CH	645793 A5	31-10-1984
			FR	2464692 A1	20-03-1981
			IT	1132826 B	09-07-1986

GB 641584	A	16-08-1950	NONE		

EP 0873715	A	28-10-1998	IT	MI970940 A1	22-10-1998
			DE	69806999 D1	12-09-2002
			DE	69806999 T2	30-04-2003
			EP	0873715 A1	28-10-1998
			ES	2182259 T3	01-03-2003

EP 0543696	A	26-05-1993	DE	4312482 A1	20-10-1994
			FR	2683849 A1	21-05-1993
			EP	0543696 A1	26-05-1993
			ES	2096057 T3	01-03-1997

DE 10161658	A	26-06-2003	DE	10161658 A1	26-06-2003

DE 2937369	A	09-04-1981	DE	2937369 A1	09-04-1981
