(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 281 347 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
05.02.2003 Bulletin 2003/06

(51) Int Cl.[7]: **A47L 15/50**

(21) Application number: **01830513.6**

(22) Date of filing: **01.08.2001**

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

(71) Applicant: **CANDY S.p.A.**
I-20052 Monza (Milano) (IT)

(72) Inventor: **Fumagalli, Silvano**
20052 Monza MI (IT)

(74) Representative: **Simino, Massimo et al**
Perani Mezzanotte & Partners
Piazza S. Babila, 5
20122 Milano (IT)

(54) Domestic dishwasher machine with an additional cutlery basket.

(57) Domestic dishwasher machine, with a front door (3) hinged at the bottom wherein, in addition to an upper rack (11,12), with a vertical position which can be modified, and a lower rack, both removable from the washing chamber, it has an additional auxiliary basket (10), housed in a counterdoor recess and supported by support means other than the upper and lower racks, like, amongst the different possible solutions, the stop heads (23) of the sliding guides (13) for supporting the upper rack (11), so as to make the position of the auxiliary basket (10) independent from the vertical position of the upper rack.

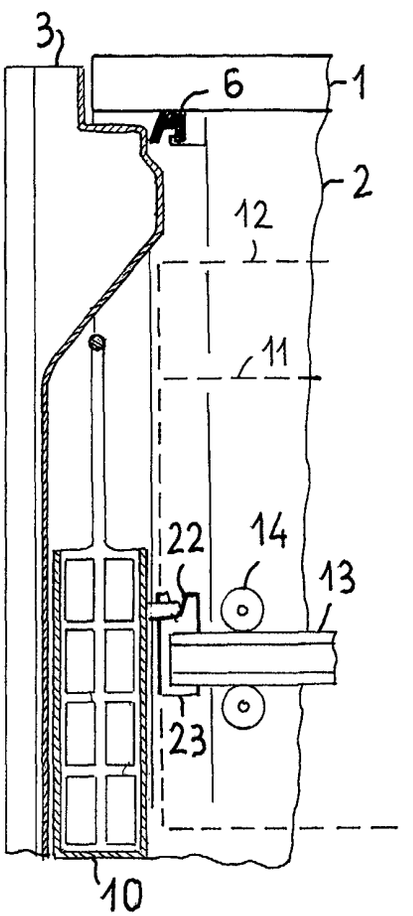


FIG.4

EP 1 281 347 A1

Description

[0001] The present invention relates to a domestic dishwasher machine with an additional cutlery basket and more generally an additional basket for kitchen utensils.

[0002] It is known that domestic dishwasher machines are generally equipped with a loading door hinged at the bottom and consisting of a front panel and of a counterdoor conveniently shaped through drawing to form a frame which engages, to seal against sprays and steam, with a gasket fixed to the mouth of the washing chamber.

[0003] The air space formed between the front panel and counterdoor, with a thickness to the order of 6-7 cm, is conveniently used to house, in the upper part of the door, control devices of the machine and a measuring/dispensing device for detergent and for rinse aid liquid additives.

[0004] In the lower part of the door the counterdoor has a recess, surrounded by the frame, which increases the useful volume of the washing chamber and allows the use, in the machine, of a removable lower rack, with a greater depth and capacity, partially housed in the recess.

[0005] Vice-versa the upper rack (normally two racks are foreseen, upper and lower respectively) also removable, must be of a more contained size, so as not to interfere with the measuring device housed in the door.

[0006] For reasons of modularity and of cost-effectiveness of production the rack can therefore consist, as described in the document EP0143754, of two elements: a rack entirely contained in the washing chamber, having an identical size as the upper rack and a third auxiliary basket, fixed at the front, also removably, to the lower rack and housed in the counterdoor recess.

[0007] Alternatively the third auxiliary basket can be fixed to the counterdoor.

[0008] In order to allow these concepts to also be extended to the upper rack and to increase the load volume of the machine, foreseeing a recess in the counterdoor extending almost to the top of the loading door, different devices have been proposed.

In the document EP0671143 it is foreseen, for example to move the measuring and dispensing device for the detergent and the control devices into the upper part of the body of the machine, requiring a greater encumbrance in height of the machine, so that the greater load volume is obtained at the expense of a greater total encumbrance.

[0009] In a patent application presented together with the present one, however, a measuring/dispensing device is disclosed which is housed in the upper side of the frame of the counterdoor which allows the counterdoor recess to be extended almost up to the top of the door without requiring a greater encumbrance in height of the machine and makes it possible to use an upper rack with a greater depth, of identical size as the lower one, or alternatively a third basket hooked to the upper rack and housed in the recess.

[0010] These solutions have one basic drawback: the upper rack can generally be positioned at two different heights, at the choice of the user. Whilst it is easy for the user to check, during the course of the loading operation, that the crockery is correctly housed in the upper rack and does not interfere with the roof of the washing chamber, whatever the vertical position of the rack, it is not so easy to ensure that the crockery, the cutlery and the utensils, arranged in the upper rack part or in the auxiliary basket which is housed in the counterdoor recess, do not interfere with the upper side of the frame of the counterdoor.

[0011] This implies that the loading door be closed with possible damage being caused in the case of interference. The use of a confining template, consisting for example of an upper rack or auxiliary basket handle does not solve the problem, unless it foresees a capability to control the height, according to the position of the rack, with all the risks that the variability of the height position, entrusted to the diligence of the user, carries.

[0012] This problem is solved and a more efficient use of the available space and a more convenient use of the dishwasher machine object of the present invention are achieved, wherein a third auxiliary basket which, instead of being supported by the upper rack, thus being able to be vertically displaced together with the upper rack, is supported, optionally removably, in a predetermined vertical position, independently from the vertical position of the upper rack, by the side walls of the washing chamber, with the help of elements which can consist of suitable arms or of guides which support the upper rack and which have a vertically invariable position.

[0013] The characteristics and the advantages of the invention will become clearer from the following description, made with reference to the attached drawings wherein:

figure 1 is a partial section, front-back, of a first embodiment of a dishwasher machine with an auxiliary basket in accordance with the present invention;

figure 2 is a partial front view of the machine of figure 1, with the loading door open;

figure 3 is a section view like that of figure 1, with the auxiliary basket removed from the machine;

figure 4 is a partial section, front-back, of a second embodiment of a dishwasher machine with an auxiliary basket in accordance with the present invention;

figure 5 is a section view like that of figure 4 with support guides of the upper rack and of the auxiliary basket removed from the machine;

figure 6 is a section view from above according to the section I-I of figure 4;

figure 7 is a perspective view of the whole of a third embodiment of a dishwasher machine with an auxiliary basket in accordance with the present inven-

tion;
figure 8 is a partial perspective view of a fourth embodiment of a dishwasher machine in accordance with the present invention.

[0014] With reference to figure 1 the dishwasher machine comprises a machine body with walls which form a washing chamber, with a front loading opening. In figure 1 the upper wall 1 and a side wall 2 are partially visible.

[0015] The loading opening is closed by a loading door 3, hinged at the bottom to the body of the machine and consisting of a front panel 4 and of a counterdoor panel, or simply a counterdoor 5.

The counterdoor 5, made of stainless steel, is shaped by drawing to form a peripheral frame which, with the door closed, comes into contact with a sealing gasket 6, arranged near to the edges of the loading opening.

[0016] In the volume between the front panel and the upper side of the frame of the counterdoor, shown with a broken line and identified with the reference numeral 7, are housed the control devices, which can be accessed through the front panel or from the upper edge of the loading door, with the door slightly open.

[0017] The machine can be built-in, as illustrated in figure 1, in which case a work surface 8 is placed on top of the upper wall 1 and a masking panel 9 is placed over the front panel 4.

[0018] In the volume 7, as described in a patent application filed together with the present one, can also be housed the measuring/dispensing device for detergent.

[0019] Alternatively the control and detergent dispensing devices can be arranged in the upper wall 1, as described in the document EP0671143; or, in the case of the measurer, inside the washing chamber, as described in the document EP0602572.

[0020] In this way in the counterdoor, between the sides of the frame, a wide recess is available which increases the useful volume of the washing chamber and allows the housing. as illustrated, of an auxiliary cutlery or utensil basket 10, arranged in the upper part of the recess and placed on top of the front face of the upper rack of the machine, schematically represented with the broken line 11 and having a vertical encumbrance I1.

[0021] Under the upper rack 11, not visible in the figures, a second rack is, however, arranged, usually with a greater length than that of the upper rack and partially housed in the lower part of the counterdoor recess, or else consisting of a rack with an identical size as the one above to which an auxiliary basket similar to the basket 10 is hooked.

[0022] Whereas the lower rack, being slidably rested upon the base of the washing chamber, conveniently shaped, has a fixed vertical position, the upper rack 11, supported by removal guides 13, sliding between guiding rollers 14, can generally take up two different working positions, one represented by the broken line 11, the other by the broken line 12, which correspond to a vertical encumbrance 12.

[0023] From this, if the auxiliary basket 10 is supported by the upper rack, in a removable or permanent manner, the vertical position thereof is also variable itself, with the risk of interference of its load with the upper side of the frame of the counterdoor, when the loading door is closed. The drawback can be overcome in part by foreseeing different hooking positions of the basket to the upper rack and entrusting the choice of the appropriate position to the diligence of the user, with the risk of the user committing an error.

[0024] To avoid this drawback the auxiliary basket 10 is advantageously supported by two arms, one of which 15 can be seen in figures 1,2,3, hinged at one end onto the side walls of the washing chamber, near to the roof of the chamber and rotating in the plane of the side walls. The basket 10, in turn, is equipped with wings 16 for the hinged coupling with the opposite end of the arms.

[0025] The arms 15, conveniently shaped for reasons which shall be discussed later on, extend downwards up to the guides 13 for supporting the upper rack 11.

[0026] Clearly the arms 15 are arranged flush with the side walls of the washing chamber, at a convenient distance so as not to interfere with the gasket 6 on one side and with the sides of the upper rack 11 on the other.

[0027] In rest state, corresponding to when the machine is washing, with the loading door closed, the basket 10, supported by the arms 15, is arranged vertically in the counterdoor recess, at a height defined by the length of the arms and by the position of the hinging wings 16, with the rear face resting upon the front face of the rack 11.

[0028] Clearly, in this position the auxiliary basket 10 interferes with the removal of the upper rack 11 from the washing chamber, which is necessary for the loading/unloading of the crockery into/from it.

[0029] To allow this operation it is sufficient, with the loading door open, to lift the rack 19, equipped with a handle 17 for this purpose.

[0030] The lifting of the rack causes a rotation of the arms which become arranged as illustrated in figure 3, in a stable position, ensured by balancing springs housed in the side walls of the machine and not illustrated or, more simply, by a stop device, consisting (fig. 3) of the latch eyelet 18 for closing shut the loading door, with which the machine is already usually provided and of a hook 19 with which the basket 10 is supplied.

[0031] With the basket 10 in this position it is not only possible to extract the upper rack 11 from the washing chamber for the loading/unloading of the crockery, but the loading and unloading of the auxiliary basket 10, which is situated at a substantially equal height to that of the work surface 8, is also eased.

Figure 3 explains, without the need for clarification, the special saddle-curved shape of the arms 15, which prevents the interference of the arms with the upper wall 1 of the machine and with the possible overhanging work surface 8, usually jutting out from the front of the ma-

chine.

[0032] Advantageously, the handle 17 can be of a size to carry out the confining template function for the load of the basket 10, which must not extend outside of-the basket beyond the height of the handle, to avoid interference with the frame of the counterdoor, when the basket is replaced in the rest position and the door is closed.

[0033] The figures 4,5,6 represent an alternative solution which is even simpler from the constructive point of view. In figures 4,5,6 the functionally equivalent elements to those of figures 1,2,3 are defined with the same reference numerals.

[0034] In this alternative embodiment the auxiliary basket 10 is equipped with two short side arms 20, as seen in figure 6, with an end pin 21 which fits onto a saddle 22, formed in the stop head 23 with which the support guides 13 of the upper rack 11 are equipped.

[0035] In this embodiment the fact that the basket 10 can be removed, only being hooked onto the heads 23, is indispensable for the following reason: as illustrated in fig. 5, in dishwasher machines the support guides 13 of the upper rack can be removed from the washing chamber with a stroke C1 which does not allow the complete removal of the upper rack 11.

[0036] Therefore, the upper rack is not integral with the support guides but in turn is bound to the guides 13 by means of the rollers 24,25 (or 26,27, when the rack is mounted in the upper position) the axis of which is integral with the rack and which can slide inside the guides 13 and allow a relative stroke C2, between the guides and rack, which adds up to the stroke C1 of the guides and allows the complete removal of the upper rack.

[0037] It is thus clear that in the presence of the auxiliary basket 10, the interference of the rack 11 with the auxiliary basket 10, prevents this additional stroke.

[0038] With the simple removal of the auxiliary basket 10 this hindrance is taken away.

[0039] It is clear that the loading/unloading operation of the basket 10 can take place with the basket installed or also and more conveniently with the auxiliary basket removed and rested on a work surface.

[0040] Also in this case the handle 17 of the auxiliary basket can carry out the function of a confining template. It is worth making a brief comment on figure 6 which shows another aspect: in some dishwasher machines, if not all, the rotor 28 which ensures the spraying of the crockery during the course of the wash cycle and which is mounted at the bottom to the upper rack can have a diameter which partly occupies the counterdoor recess.

[0041] Therefore, to avoid interference with the rotor which, above all can take up two different vertical positions according to the position of the upper rack, the auxiliary basket 10 can conveniently be provided with an undercut 50 in its middle part, conveniently extending at a height in relation to the different heights that the rotor can take up.

[0042] Clearly, the same device can be used in the embodiment described with reference to the figures 1,2,3 and in the embodiments which shall be described hereafter.

[0043] Figure 7 shows a variant of the previous embodiment which does not require the removal of the basket 10 from its support for the complete removal of the upper rack 11 from the washing chamber.

[0044] In this variant the support guides 29, 38 of the upper rack are of the telescopic type and are each equipped with an extension arm 30, 51, respectively, which increases the useful volume.

[0045] The complicated structure for ensuring the relative sliding between the extension arms 30, 51 and the respective guides 29, 38 (bearings or antifriction rollers) is compensated by the fact that in this case the upper rack can simply be rested on supports foreseen in the arms 30,51 and without there being the need for sliding on the guides, the rollers 24,25,26,27 of figure 5 can be eliminated.

[0046] On the head of the two extension arms 30, 51 a support is mounted, respectively 31,32 which can consist of a simple hinge eyelet, upon which the basket 10 is hinged, for this purpose equipped with two pins 33,34, but preferably, as shown, it consists of a vertical plate with a slit and supporting saddles 35,36,37 at different heights, so as to be able to regulate the height of the basket 10 as desired or simply to take the basket to an even more convenient height for the loading and unloading operations.

[0047] Whatever the height of the basket 10 the plates 31,32 and possibly a connection bar 39 between the two plates, extending between the tops of them, constitute a fixed confining template for controlling the vertical encumbrance of the objects arranged in the basket in relation to the available space in the counterdoor recess.

[0048] Besides which, even if for this purpose two simple plugs or ridges in the plates are sufficient, the confining template 39 can be useful to hook the rack in an upturned position, being conveniently equipped for this purpose with one or, as illustrated, two hooks 40,41. To allow the free accessibility to the lower rack 42 of the machine and its removal it is sufficient, without removing the upper rack, to lift the basket 10 into the slit of the plates and possibly flip it onto the upper rack or hook it to the bar 39 in an upturned position.

[0049] The complete removal of the upper rack, as shown in figure 7 is allowed by the telescopic guides, without any need for removal of the auxiliary basket 10.

[0050] A further variant which does not require the use of telescopic guides is represented in figure 8.

[0051] In the solution embodiment of figure 8 the auxiliary basket 10 is divided into two baskets 10A, 10B, which are not necessarily the same, respectively hinged, with a vertical axis of rotation, on the stop heads 43 of conventional support guides 44 of the upper rack.

[0052] The two baskets 10A,10B can be conveniently provided with a tile 45, 46, also only having a limited extension, which functions as a confining template for

the vertical encumbrance of the load, as well as for a possible undercut 47 to avoid the interference with a rotor with an increased diameter.

[0053] For the removal of the upper rack from the washing chamber it is sufficient to rotate, even only partially, the two baskets.

[0054] Their rotation by an angle even greater than 90° as shown for the basket 10A is then made possible by the sliding, even only limited, of the support guides 44, which moves the hinging axis well outside of the washing chamber.

[0055] It is also clear that many other variants can be brought without departing from the scope of the invention, as defined by the claims which follow.

[0056] For example with reference to figures 1,2,3, the support arms 15, instead of being hinged onto the sides of the body of the machine, can be hinged onto wings protruding from the roof of the washing chamber.

Claims

1. Domestic dishwasher machine, with a body (1,2) forming a washing chamber closed by a front door (3) hinged at the bottom to the body and equipped with a counterdoor recess, comprising an auxiliary basket (10) housed in said recess and in addition to an upper rack (11,12) and a lower rack, housed in the washing chamber, **characterised in that** said auxiliary basket is supported by said body (1,2) with intermediate elements (15,22,31,32) other than said upper or lower rack, said auxiliary basket or said intermediate elements being equipped with a template (17,39,45,46) for confining the vertical encumbrance for the load of said additional basket (10).

2. Machine according to claim 1 wherein said intermediate elements comprise two rotating arms (15) with one end hinged, with a horizontal hinging axis, to the body of said machine and the other end hinged to said auxiliary basket (10).

3. Machine according to claim 1 wherein said intermediate elements comprise the stop heads (23) of two sliding guides (13) for supporting the upper rack (11), said heads being equipped with a removable hooking saddle (22) of said auxiliary basket (10).

4. Machine according to claim 1 wherein said intermediate elements comprise the heads (31,32) of telescopic extension arms (30,51) of the guides (29) for supporting said upper rack (11), said heads being equipped with hinge fasteners, with a horizontal hinging axis, for said auxiliary basket (10).

5. Machine according to claim 1 wherein said auxiliary basket is divided into two independent half-baskets (10A,10B) and wherein said intermediate elements comprise the stop heads (43) of two sliding guides (43) for supporting said upper rack, said heads (43) being equipped with hinged fasteners, with a vertical hinging axis, for each of said half-baskets (10A, 10B), respectively.

6. Dishwasher machine according to claim 1,2 or 3 wherein said confining template is a handle (17) for moving said auxiliary basket.

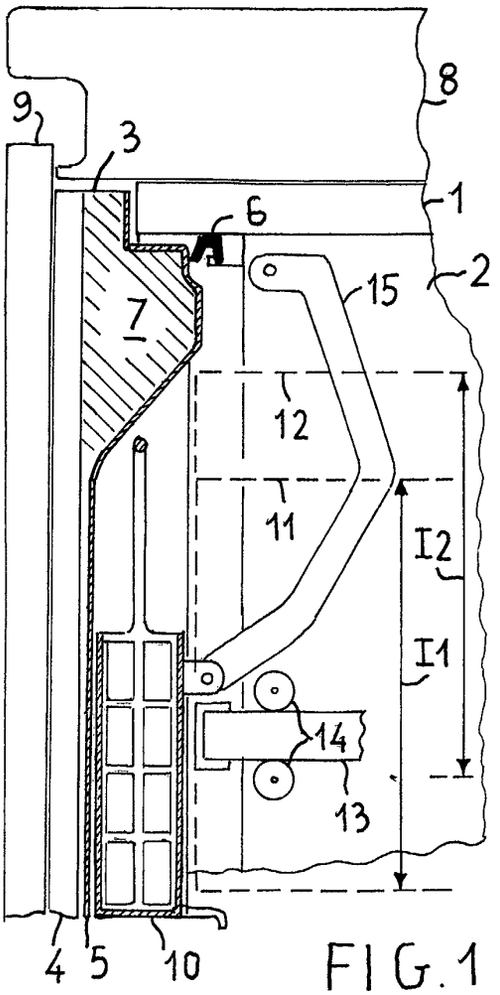


FIG. 1

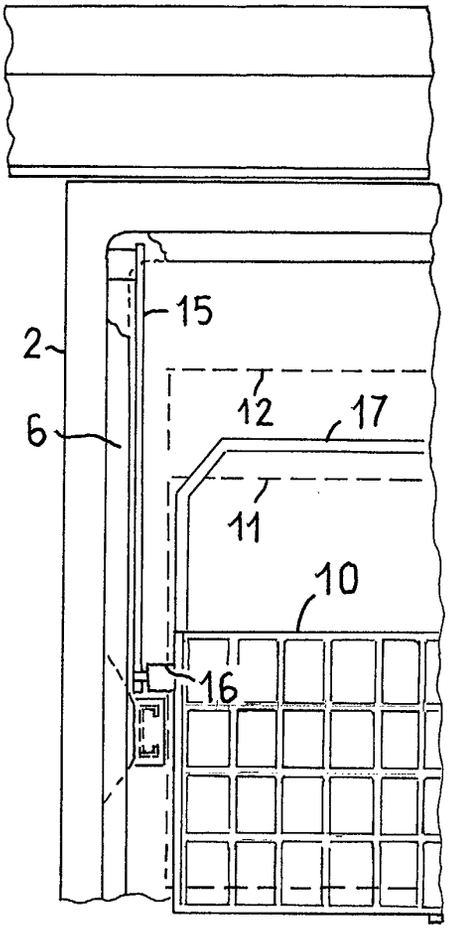


FIG. 2

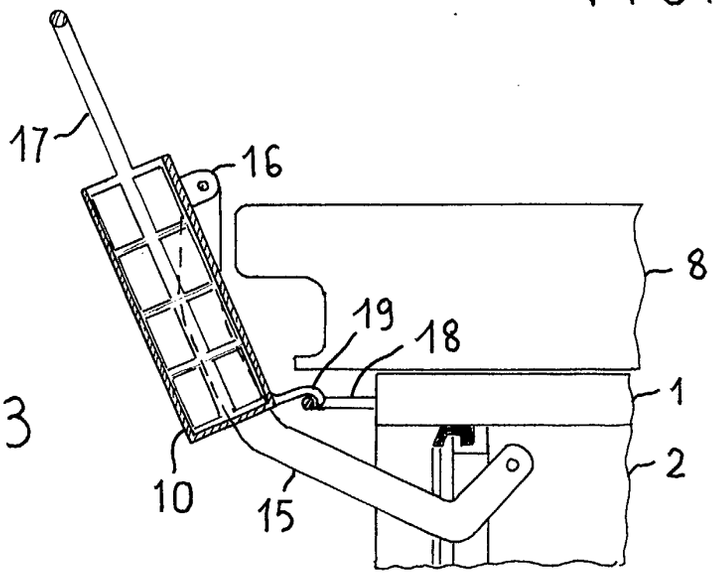


FIG. 3

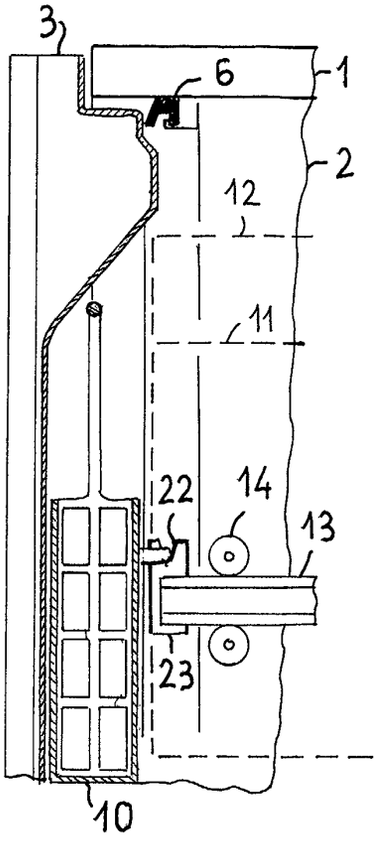


FIG.4

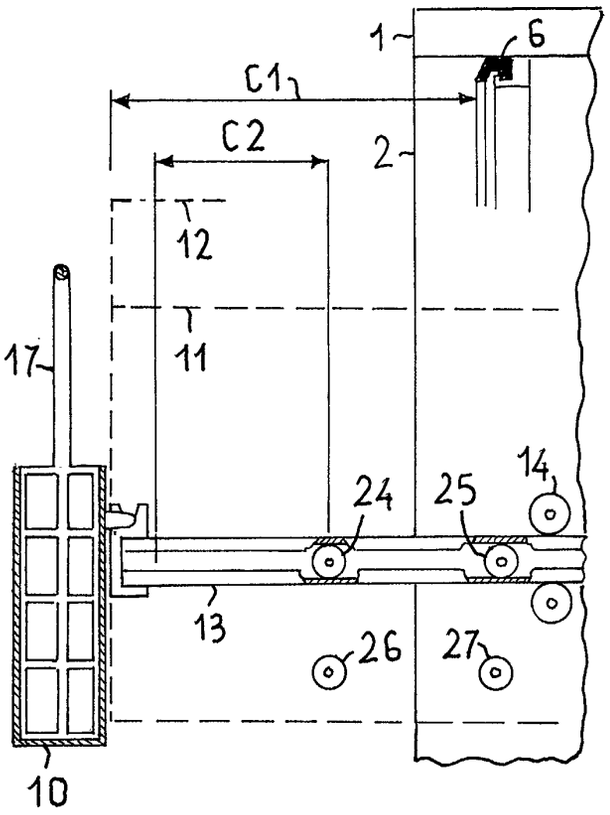


FIG.5

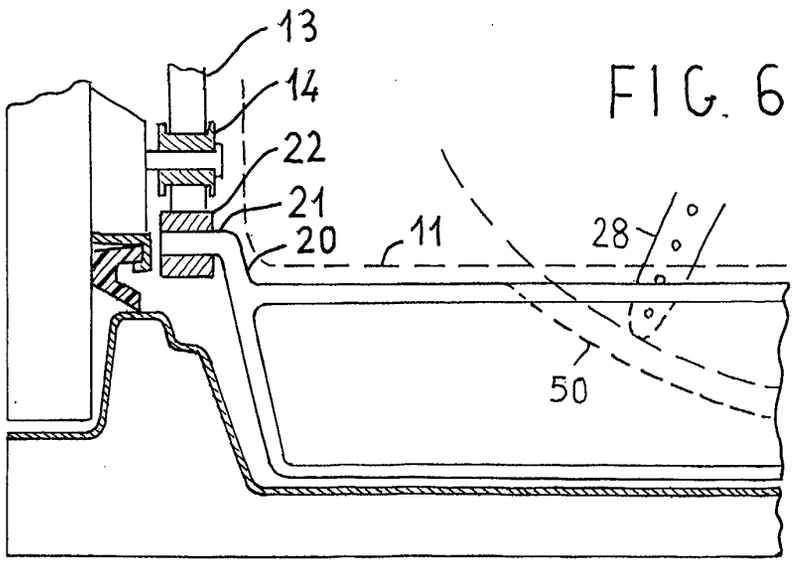
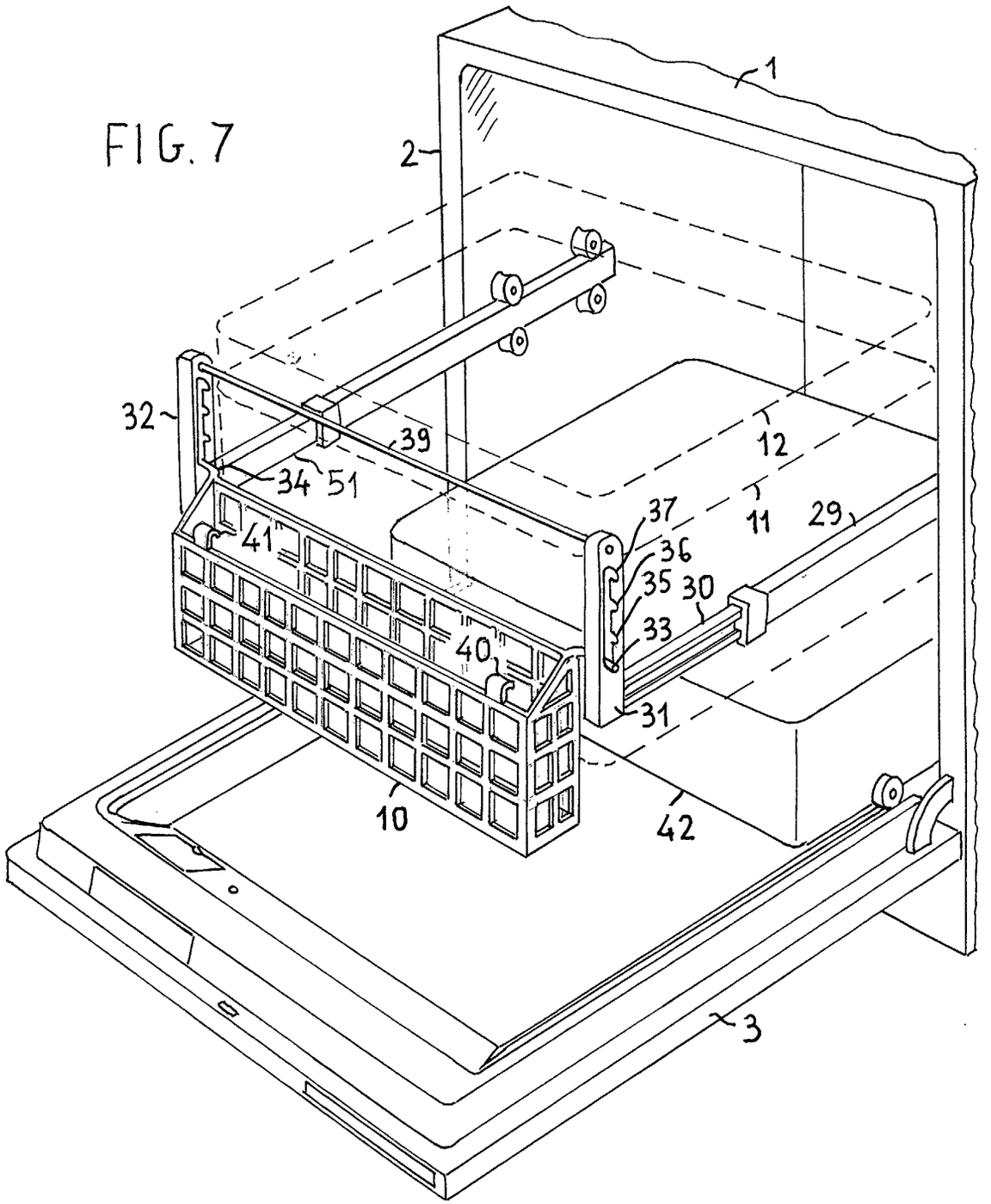


FIG. 6

FIG. 7



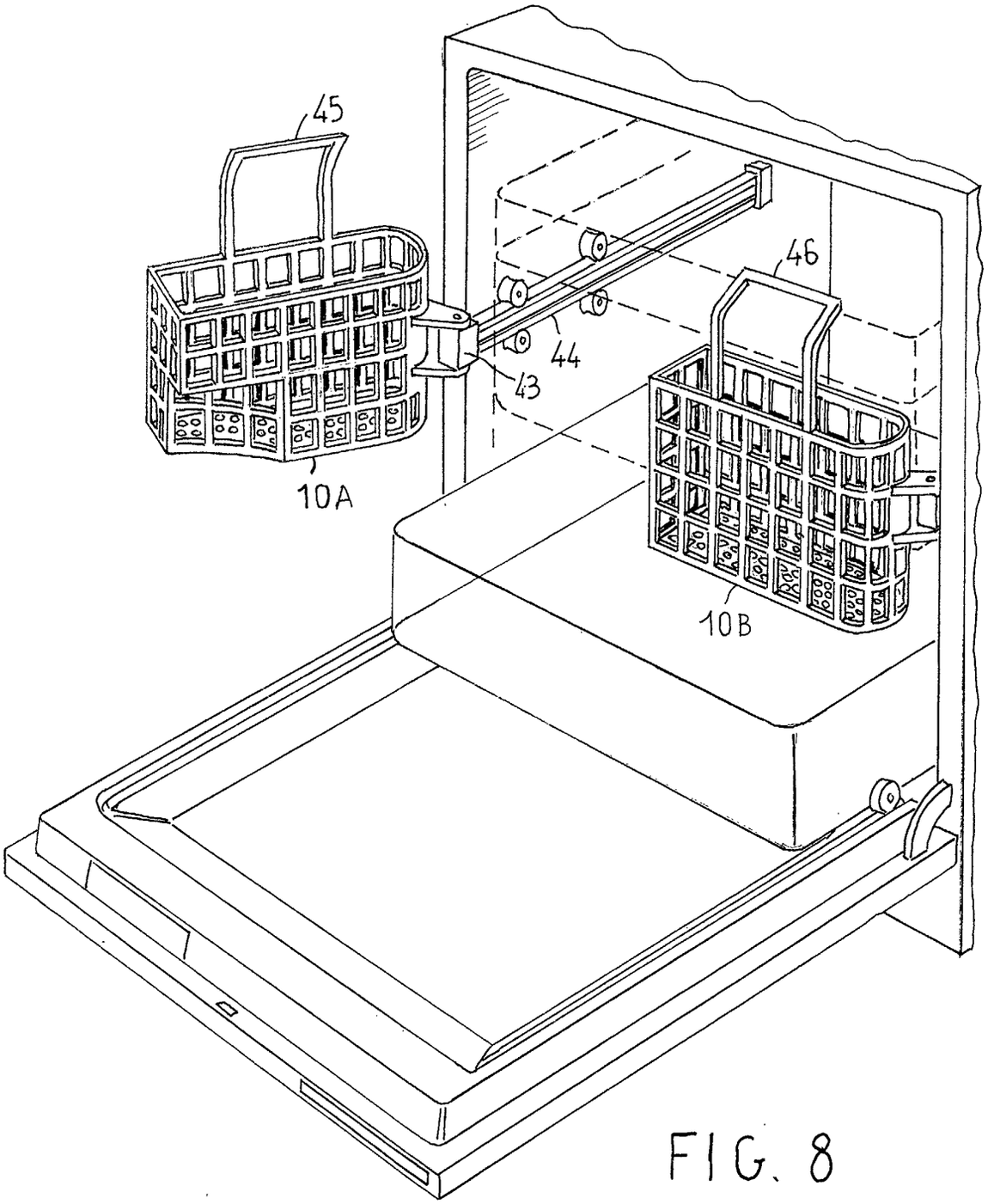


FIG. 8

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 83 0513

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)
A	US 4 834 125 A (INSALACO ROBERT W) 30 May 1989 (1989-05-30) * figures *	1	A47L15/50
D,A	EP 0 143 754 A (INDESIT) 5 June 1985 (1985-06-05)		
A	EP 0 963 733 A (CANDY SPA) 15 December 1999 (1999-12-15)		
A	US 5 069 360 A (DINGLER GEOFFREY L ET AL) 3 December 1991 (1991-12-03)		
D,A	EP 0 671 143 A (ZANUSSI ELETTRODOMESTICI) 13 September 1995 (1995-09-13)		

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A47L

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	13 December 2001	Debard, M

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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 01 83 0513

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.

13-12-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4834125 A	30-05-1989	NONE	
EP 0143754 A	05-06-1985	IT 1159635 B	04-03-1987
		EP 0143754 A1	05-06-1985
EP 0963733 A	15-12-1999	EP 0963733 A1	15-12-1999
US 5069360 A	03-12-1991	CA 2049828 A1	28-02-1992
EP 0671143 A	13-09-1995	IT PN940014 A1	11-09-1995
		EP 0671143 A1	13-09-1995

EPO FORM P0459

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