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

Geschirrspülmaschine mit einem zusätzlichen Besteckkorb

Lave-vaisselle domestique avec un panier à couverts additionnel

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(73) Proprietor: **CANDY S.p.A.**
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)

(56) References cited:
EP-A- 0 143 754
EP-A- 0 671 143
EP-A- 0 963 733
US-A- 4 834 125
US-A- 5 069 360

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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 (e.g. see: document US-A-4834125).

[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 known patent application , 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 invention;

figure 8 is a partial perspective view of a fourth em-

bodiment 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 (5), 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 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 (5), 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 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 lower rack (42) is, however, arranged, usually with a greater length than that of the upper rack (11) 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 auxiliary basket (10) is hooked.

[0022] Whereas the lower rack (42), 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 (I2).

[0023] From this, if the auxiliary basket (10) is supported by the upper rack (11), 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 (5), when the loading door is closed. The drawback can be overcome in part by foreseeing different hooking positions of the auxiliary basket (10) to the upper rack (11) 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 auxiliary basket (10), in turn, is equipped with wings (16) for the hinged coupling with the opposite end of the arms (15).

[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 auxiliary 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 upper 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 upper rack (11), equipped with a handle (17) for this purpose.

[0030] The lifting of the upper rack (11) 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 auxiliary basket (10) is supplied.

[0031] With the auxiliary 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 machine.

[0032] Advantageously, the handle (17) can be of a size to carry out the confining template function for the load of the auxiliary basket (10), which must not extend outside of-the basket beyond the height of the handle (17), to avoid interference with the frame of the counterdoor (5), when the auxiliary basket (10) 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 auxiliary 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 (11) 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 (11) is not integral with the support guides (13) but in turn is bound to the guides (13) by means of the rollers (24,25) or (26,27), when the upper rack (11) is mounted in the upper position) the axis of which is integral with the upper rack (11) and which can slide inside the support guides (13) and allow a relative stroke C2, between the support guides (13) and upper rack (11), which adds up to the stroke C1 of the support guides (13) and allows the complete removal of the upper rack (11).

[0037] It is thus clear that in the presence of the auxiliary basket (10), the interference of the upper 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 auxiliary basket (10) can take place with the auxiliary basket (10) installed or also and more conveniently with the auxiliary basket (10) removed and rested on a work surface.

[0040] Also in this case the handle (17) of the auxiliary basket (10) 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 (11) can have a diameter which partly occupies the counterdoor recess.

[0041] Therefore, to avoid interference with the rotor (28) which, above all can take up two different vertical positions according to the position of the upper rack (11), 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 (28) 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 auxiliary 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 (11) 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 (11) 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 auxiliary 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 auxiliary basket (10) as desired or simply to take the auxiliary basket (10) to an even more convenient height for the loading and unloading operations.

[0047] Whatever the height of the auxiliary basket (10) the plates (31,32) and possibly a connection bar (39) between the two plates (31,32), extending between the tops of them, constitute a fixed confining template (39) for controlling the vertical encumbrance of the objects arranged in the auxiliary basket (10) 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 upper rack (11) 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 auxiliary basket (10) into the slit of the plates (31,32) 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 (11), 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 half-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 (11).

[0052] The two half-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 (28) with an increased diameter.

[0053] For the removal of the upper rack (11) from the washing chamber it is sufficient to rotate, even only partially, the two half-baskets (10a,10b).

[0054] Their rotation by an angle even greater than 90° as shown for the half-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) and a lower rack (42), housed in the washing chamber, **characterised in that** said auxiliary basket (10) is supported by said body (1,2) with intermediate elements (15,22,31,32) other than said upper or lower rack (11, 42), said auxiliary basket (10) or said intermediate elements (15, 22, 31, 32) 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 (10) 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 (11), 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 (10).

Patentansprüche

1. Geschirrspülmaschine für Privathaushalte mit einem Gehäuse (1, 2), das einen Spülraum bildet, der durch eine am Gehäuseboden gelenkig befestigte und mit einer Gegentür-Aussparung ausgebildete Fronttür (3) geschlossen wird, einen Zusatzkorb (10) umfassend, der in der Aussparung und zusätzlich zu einem oberen Geschirrkorb (11) und einem unteren Geschirrkorb (42) im Spülraum untergebracht ist, **dadurch gekennzeichnet, dass** der Zusatzkorb (10) durch das Gehäuse (1, 2) mit Zwischenelementen (15, 22, 31, 32) gehalten wird, die sich vom oberen oder unteren Geschirrkorb (11, 42) unterscheiden, wobei der Zusatzkorb (10) oder die Zwischenelemente (15, 22, 31, 32) mit einem Formstück (17, 39, 45, 46) versehen sind, um die vertikale Belastung bei der Beladung des Zusatzkorbs (10) zu begrenzen.

2. Geschirrspülmaschine gemäß Anspruch 1, wobei die Zwischenelemente zwei drehbare Arme (15) umfassen, wobei das eine Ende der Arme gelenkig mit dem Gehäuse der Geschirrspülmaschine mit einer horizontalen Gelenkachse verbunden ist und das anderen Ende gelenkig mit dem Zusatzkorb (10) verbunden ist.

3. Geschirrspülmaschine gemäß Anspruch 1, wobei die Zwischenelemente Stoppköpfe (23) von zwei verschiebbaren Führungen (13) zur Aufnahme des oberen Geschirrkorbs (11) umfassen, wobei die Köpfe mit einem entfernbaren Einhängesattel (22) des Zusatzkorbs (10) ausgestattet sind.

4. Geschirrspülmaschine gemäß Anspruch 1, wobei die Zwischenelemente Köpfe (31,32) mit Teleskopausziehharmen (30, 51) der Führungen (29) zur Aufnahme des oberen Geschirrkorbs (11) umfassen,

wobei die Köpfe mit Gelenkbefestigungen mit einer horizontalen Gelenkachse für den Zusatzkorb (10) ausgestattet sind.

5. Geschirrspülmaschine gemäß Anspruch 1, wobei der Zusatzkorb (10) in zwei getrennte Halbkörbe (10A, 10B) aufgeteilt ist, und wobei die Zwischenelemente die Stoppköpfe (43) der beiden schiebbaren Führungen (43) zur Aufnahme des oberen Geschirrkorbs (11) umfassen, wobei die Köpfe (43) jeweils mit gelenkigen Befestigungen mit einer vertikalen Gelenkachse für jeden der Halbkörbe (10A, 10B) ausgestattet sind.

6. Geschirrspülmaschine gemäß Anspruch 1, 2 oder 3, wobei das Begrenzungsformstück ein Griff (17) zum Bewegen des Zusatzkorbs (10) ist.

Revendications

1. Lave-vaisselle domestique comportant un corps (1, 2) formant une chambre de lavage fermée par une porte frontale (3) articulée à la base du corps et pourvue d'un intervalle en contre-porte, comprenant un panier additionnel (10) logé dans ledit intervalle en complément d'un égouttoir supérieur (11) et d'un égouttoir supérieur (42) logés dans la chambre de lavage, **caractérisé en ce que** le panier additionnel (10) est associé au corps (1, 2) au moyen d'éléments intermédiaires (15, 22, 31, 32) autres que les égouttoirs supérieurs ou inférieurs (11, 42), ledit panier additionnel (10) ou lesdits éléments intermédiaires (15, 22, 31, 32) étant munis d'un gabarit (17, 39, 45, 46) pour délimiter l'encombrement vertical en charge du panier additionnel (10).

2. Lave-vaisselle selon la revendication 1, dans lequel les éléments intermédiaires comportent deux bras rotatifs (15) avec une extrémité articulée au corps du lave-vaisselle par un axe horizontal, et l'autre extrémité articulée au panier additionnel (10).

3. Lave-vaisselle selon la revendication 1, dans lequel les éléments intermédiaires comportent les têtes d'arrêt (23) de deux guides coulissants (13) retenant l'égouttoir supérieur (11), lesdites têtes étant munies d'un siège d'accrochage amovible (22) pour le panier additionnel (10).

4. Lave-vaisselle selon la revendication 1, dans lequel les éléments intermédiaires comportent les têtes (31, 32) de bras d'extension télescopiques (30, 51) des guides (29) retenant l'égouttoir supérieur (11), lesdites têtes étant munies d'attaches articulées d'axe horizontal pour le panier additionnel (10).

5. Lave-vaisselle selon la revendication 1, dans lequel le panier additionnel (10) est divisé en deux demi paniers indépendants (10A, 10B) et dans lequel les éléments intermédiaires comportent les têtes d'arrêts (43) de deux guides coulissants (43) retenant l'égouttoir supérieur (11), lesdites têtes étant munies d'attaches articulées d'axe vertical pour chacun desdits demi -panier additionnels, (10A, 10B).

6. Lave-vaisselle selon la revendication 1, 2 ou 3, dans lequel le gabarit délimiteur est une poignée (17) permettant de déplacer le panier additionnel (10).

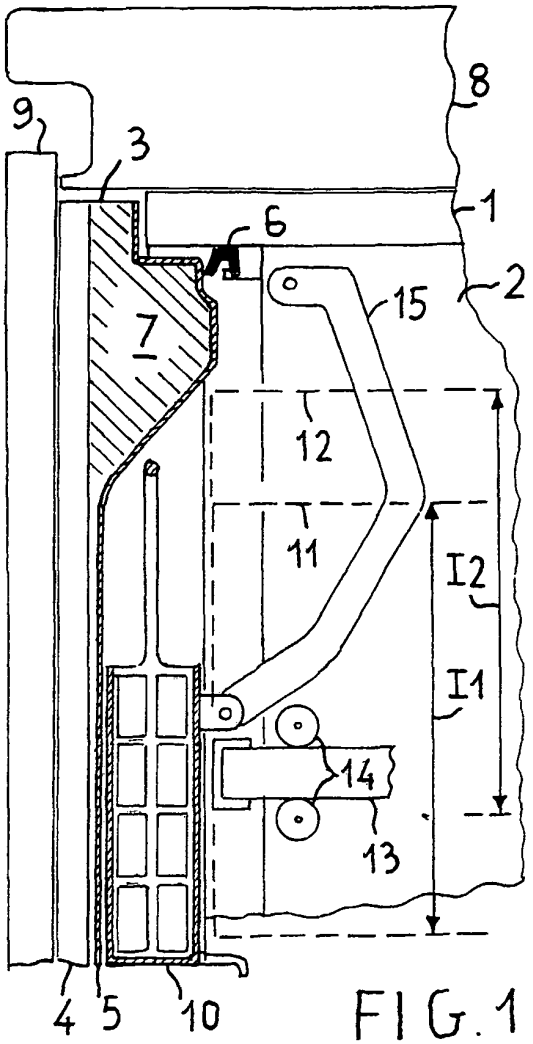


FIG. 1

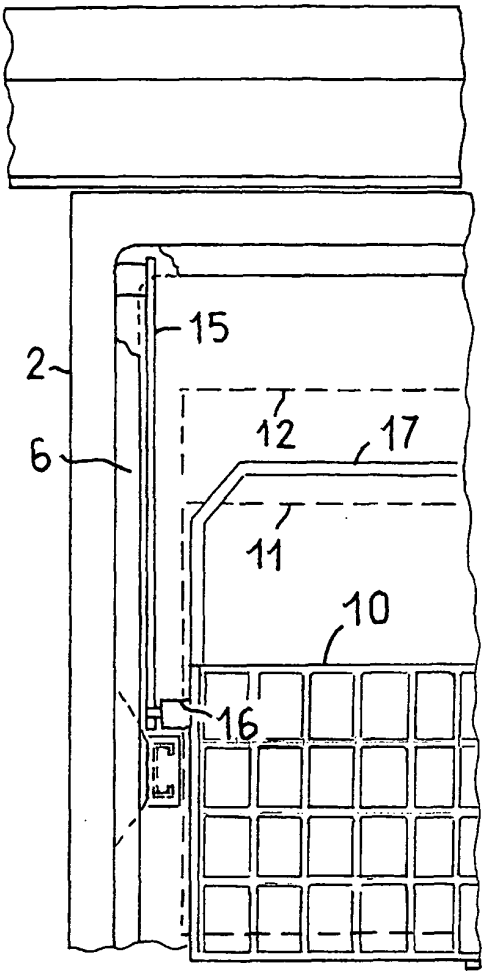


FIG. 2

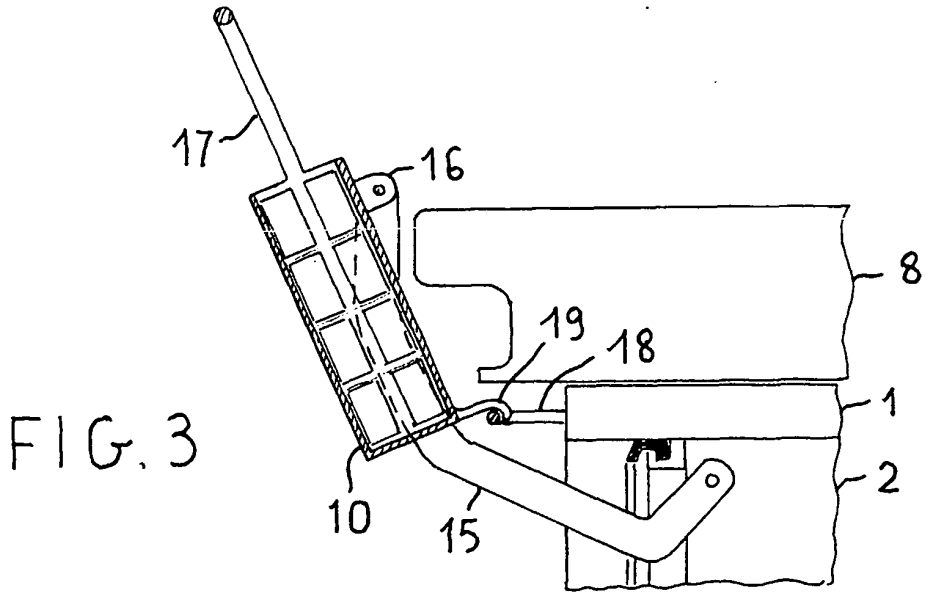


FIG. 3

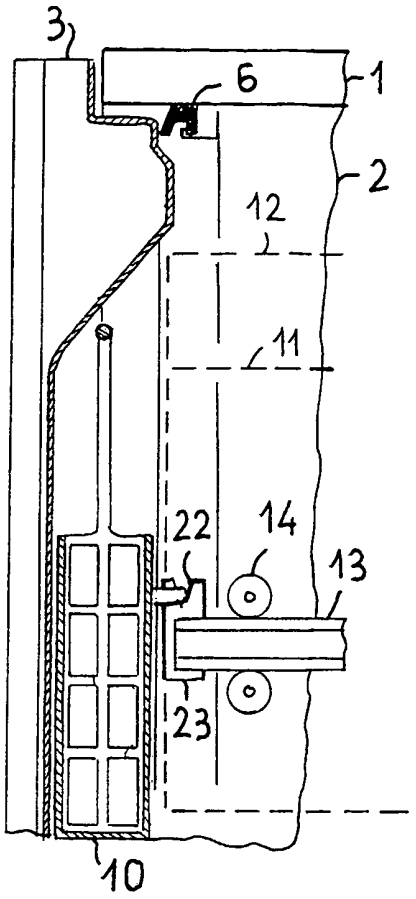


FIG.4

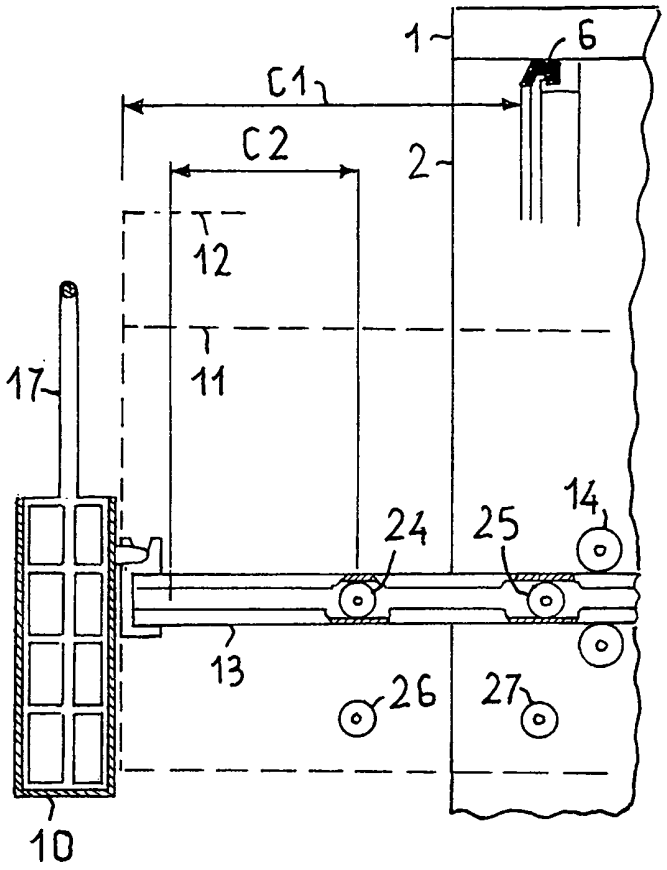


FIG.5

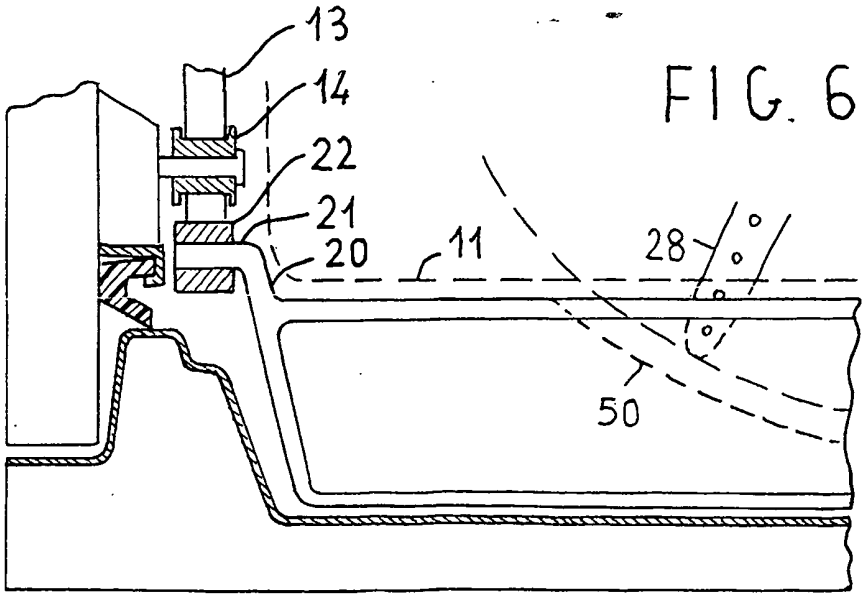
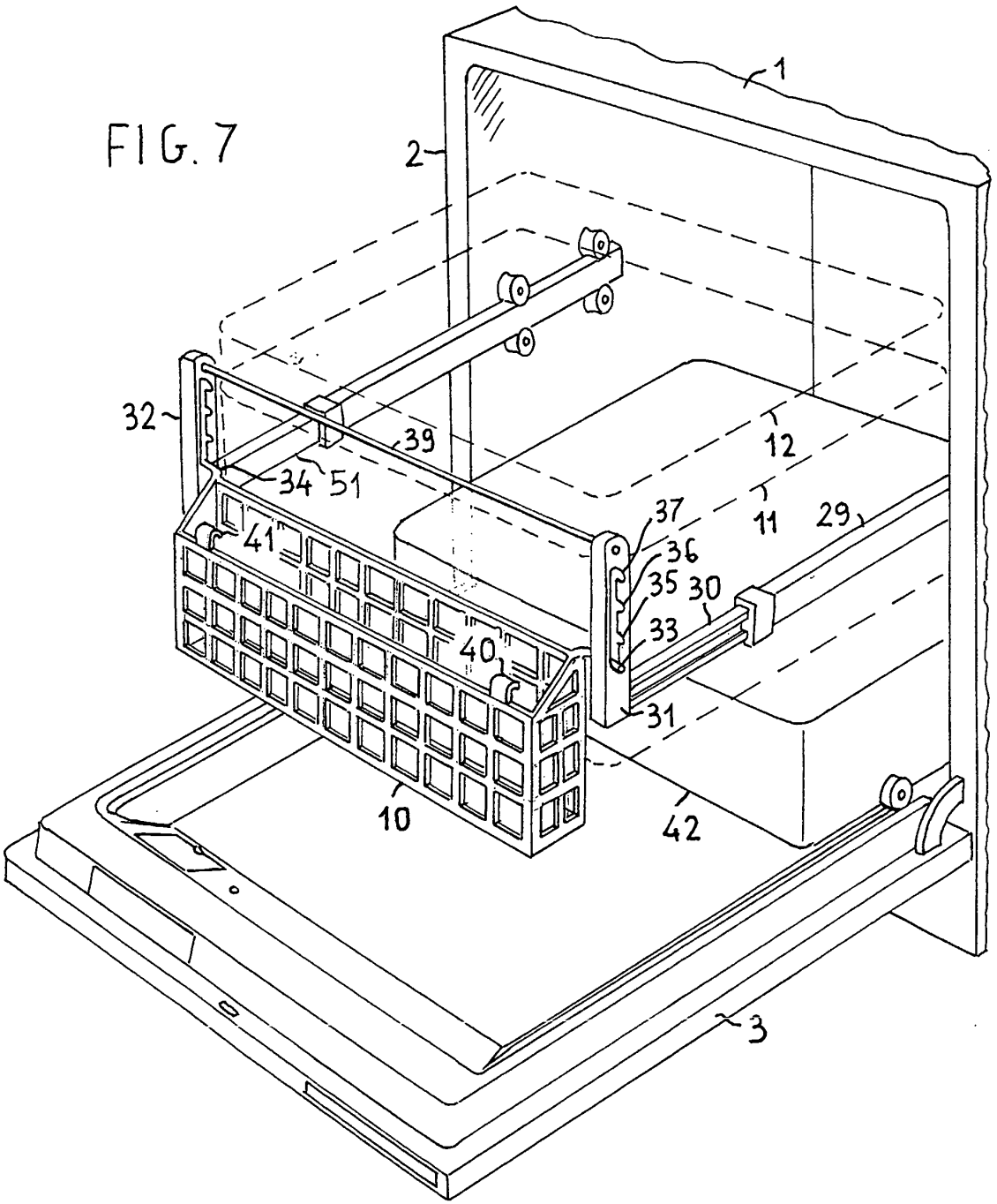


FIG. 6

FIG. 7



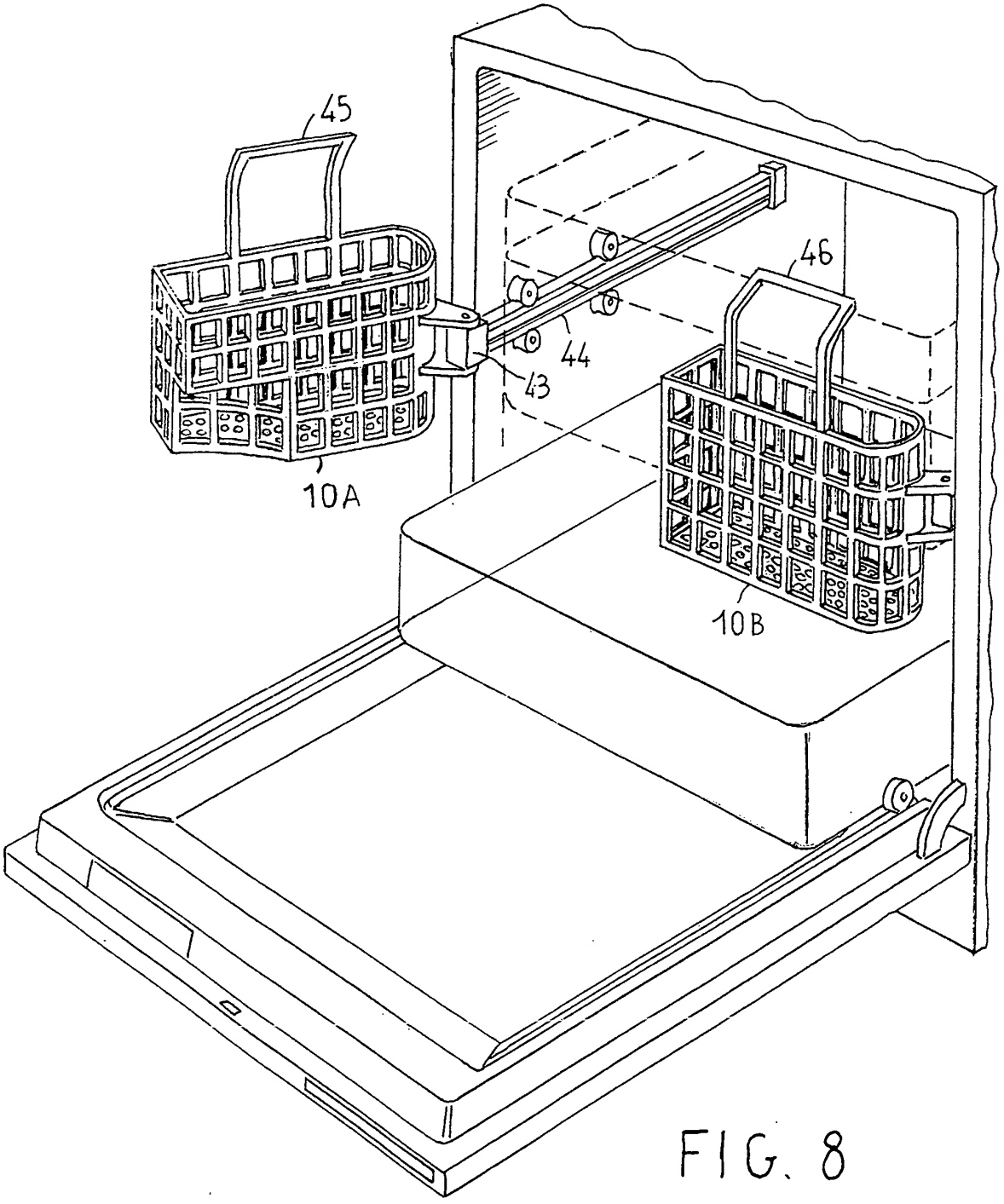


FIG. 8

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 4834125 A **[0001]**
- EP 0143754 A **[0006]**
- EP 0671143 A **[0008] [0019]**
- EP 0602572 A **[0019]**