



(12)

## EUROPEAN PATENT APPLICATION

(21) Application number : **95109291.5**

(51) Int. Cl.<sup>6</sup> : **A47L 15/42**

(22) Date of filing : **15.06.95**

(30) Priority : **16.06.94 IT TO940132 U**

(43) Date of publication of application :  
**20.12.95 Bulletin 95/51**

(84) Designated Contracting States :  
**DE ES FR GB IT**

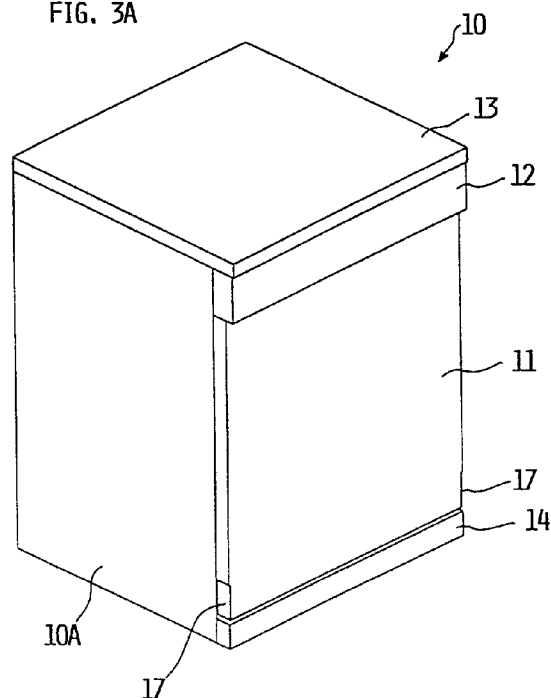
(71) Applicant : **Merloni Elettrodomestici S.p.A.**  
**Viale Aristide Merloni, 47**  
**I-60044 Fabriano (AN) (IT)**

(72) Inventor : **Frairia, Carlo**  
**Via Caprilli 19**  
**Pinerolo (TO) (IT)**  
Inventor : **Schena, Giuseppe**  
**Via Martiri della Libertà 18**  
**Bricherasio (TO) (IT)**

(54) **Dishwashing machine of the free-standing type**

(57) A domestic dishwashing machine is described, of the type comprising a cabinet (10) within which a washing tub is defined, and a frontal door (11) hinged to said cabinet (10), for access to said washing tub, the hinging point (15) of the door (11) to the cabinet (10) is higher than the lower edge of the door (11); the main characteristic of the described dishwashing machine consists in that the door (11) has two portions of different widths, where a first portion of door (11) that substantially extends above said hinged zone (15) having an overall width at least equal to that defined by the lateral walls (10A) of the cabinet (10) of the machine and a second portion (17) of door (11) that extends substantially below said hinged zone (15) having a minor width compared to the upper portion, and in particular smaller than the width defined by the lateral walls (10A) of the cabinet of the machine.

FIG. 3A



The present invention refers to a domestic dishwashing machine, of the type comprising a cabinet within which a washing tub is defined, and a frontal door hinged to said cabinet, for access to said washing tub, the point in which the door is hinged to the cabinet is higher than the lower edge of the door.

Machines of the type mentioned are known and, due to aesthetic and functional reasons, are continually substituting dishwashers in which the door is hinged in correspondence to its lower edge to the cabinet of the machine.

Machines of the type mentioned are typically of the so called free-standing type, i.e. destined to be installed in view in any part of the kitchen, therefore not built-in within a cabinet and/or generally not having a decorative front panel, for instance wooden.

The machines of the type mentioned have the peculiarity that, as the door is hinged to the cabinet at an intermediate point (i.e. not in correspondence with the lower edge of the door), the cabinet of the machine has to be realised in such a way that at least the portion of the door lower than the hinging point can penetrate, during the opening operation, the bulk of the cabinet of the machine; such characteristic is obviously not necessary in machines in which the door is hinged to the cabinet substantially in correspondence with its lower edge.

Generally with free-standing dishwashing machines in which the width of the door is equal to that of the lateral walls of the cabinet, for overcoming the aforementioned problem, reliefs are obtained in the lateral walls of the cabinet; such reliefs are situated below the hinging point of the door therefore, during the opening of the door, its lower portion may penetrate such apertures without encountering obstacles in the lateral walls of the cabinet. Said lateral reliefs are covered with covering plates, or ears, of a suitable material, generally integral to the skirting of the machine, i.e. the frontal element of the machine situated below the door.

Such solution, apart from complicating the realisation of the cabinet of the machine (due to the apertures) and of the skirting (that has to provide two lateral plates), also results in being unsatisfactory from an aesthetic point of view, as the presence of the lateral covering plates on the sides of the machine, such plates are also raised, are anything but pleasing to the eye.

Free-standing machines are also known in which the problem of allowing penetration of the lower part of the door within the bulk of the lateral walls of the machine's cabinet, is overcome by realising the door of a uniform width, less than that of the bulk of the cabinet; in such solution the lower part of the door respects the hinging point is therefore free to enter between the lateral walls of the machine.

Also such solution, however, is shown to be unsatisfactory from the aesthetic point of view. In fact

the machine in practice has a door being narrower than the cabinet, with a result that the frontal view of the machine is not homogeneous: in fact to the sides of the door the lateral walls are visible, that for pleasing aesthetic reasons should however be covered by the door; likewise the upper surface, or top, of the dishwasher, which extends above the upper edge of the door, results in being larger than the door when the latter is closed.

From that described above it therefore seems clear as to how for a free-standing type machine the solutions known to the abovementioned problems determine unsatisfactory aesthetic and functional results.

The aim of the present invention is that of solving the abovementioned drawbacks and in particular to indicate a free-standing dishwashing machine of the type mentioned that has an improved aesthetic appearance and is of contained costs.

For reaching such aims, the subject of the present invention is a domestic dishwashing machine, incorporating the characteristics of the annexed claims.

Further aims and advantages of the present invention will result in being clear from the following detailed description and annexed drawings, supplied purely as an explanatory and non-limiting example, wherein:

- figures 1A, 1B and 1C schematically represent a prospective, front and side views of a dishwashing machine, in a first known embodiment;
- figures 2A and 2B schematically represent a prospective and front views of a dishwashing machine, in a second known embodiment;
- figures 3A, 3B and 3C schematically represent a prospective, front and side views of a dishwashing machine, according to the present invention;
- figure 4 schematically represents a possible embodiment of the door of the dishwashing machine according to the present invention;
- figures 5A and 5B schematically represent prospective and side views of a dishwashing machine according to a first possible variation of the present invention;
- figures 6A and 6B schematically represent prospective and side views of a dishwashing machine according to a second possible variation of the present invention;

In figures 1A, 1B and 1C a free-standing dishwashing machine of the first type mentioned in the opening of the description is represented. Reference number 1 indicates the dishwashing machine as a whole and 2 its door, hinged to the cabinet of the machine with a hinge of the type known, with 3 the control panel of the dishwasher is indicated, 4 indicates the upper surface, or top, and with 5 its skirting is indicated.

The door 2 has an overall width having equal to that of the cabinet 1 of the machine: for this reason, within the lateral walls of the cabinet of the machine, indicated with 1A, the aforementioned reliefs have to be provided, obtained below the hinging zone, generally indicated with 6, of the door 2 on the cabinet of the dishwashing machine.

The presence of the reliefs, one of which is indicated with 7 in figure 1B, allows for penetration of the lower part of the door 2 during opening within the bulk of the cabinet 1A. As can be seen, however, in order to cover such lateral reliefs 7 lateral plates have to be provided, indicated with 8, that in the illustrated case are obtained in a single piece with the skirting 5.

As said, such solution is unsatisfactory from an aesthetic point of view, mainly due to the presence of the plates 8 being in view, that result in being raised respect the lateral walls 1A.

In figures 2A and 2B the second type of free-standing dishwashing machine mentioned in the opening of the present description is schematically illustrated.

Also in such figure 2, the machine as a whole is indicated with 1, with 2 its door, with 3 its control panel, with 4 its upper surface, 5 indicates its skirting.

As can be seen, the door 2 in this case has a uniform width being less than the width, defined by the lateral walls 1A, of the cabinet 1 of the machine.

It is clear that in this case, the part of the door 2, below the zone of hinging 6 to the cabinet 1 is free to penetrate during its opening the bulk of the cabinet, therefore neither the lateral reliefs in the walls 1A, nor the lateral covering plates 8 are necessary, described with reference to figures 1A, 1B and 1C.

As mentioned in the opening of the present description, however, also such solution for an aesthetic point of view is unsatisfactory, because the lateral walls 1A are visible at the sides of the door 2, and the upper surface 4 of the dishwasher, that extends above the upper edge of the door- 2, results in being larger than the latter.

From an exam of the known solutions of the illustrated problem, it appears evident how these have been conditioned by a technical prejudice, i.e. that the whole door has to be of the same width.

In figures 3A, 3B and 3C the dishwashing machine subject of the present invention, with different views, is schematically illustrated.

In such figure 3, 10 illustrates the dishwashing machine as a whole, being of a substantially similar bulk as those illustrated in figures 1 and 2; 11 indicates its door as a whole, 12 the control panel of the machine, 13 the upper surface and with 14 the skirting.

As opposed to the previously described known art, in this case the door 11 does not have a uniform width, but rather has, substantially, two portions being of different widths, even if only slightly.

More in particular, the portion of the door 11 that extends above the hinging zone, indicated with 15, has an overall width being at least equal to that defined by the lateral walls of the cabinet of the machine; on the contrary the portion of door 11 that extends substantially below the hinging point 15 has on the other hand a width being less than that defined by the lateral walls of the cabinet of the machine, now indicated with 10A.

As can be seen in figure 4, in the illustrated case the door 11 has a base structure realised in a metallic material; such base structure comprises in a known way a drawn inner-door 11A, for instance in stainless steel, destined to face the internal washing tub of the machine, and a frontal part 11B, eventually equipped with a decorative film.

The door 11 of the machine according to the invention advantageously has a peripheral frame, indicated with 16, for instance in a plastic material, which can be fixed to the base structure 11A-11B by way of screws, or by snap fit means.

Such frame 16 has according to the invention a reduction in its width in correspondence with both the sides of the portion of the door destined to penetrate the lateral walls of the cabinet of the machine.

Such width reductions, indicated with number 17, are of such dimensions that allow the part of the frame 16 of minor width, and therefore of the door, to freely penetrate the lateral walls, indicated with 10A, without encountering obstacles (in such figure 4, the width or thickness reductions result in being made obvious respect to figures 3A and 3C, with the simple aim of making them more visible).

In this way, therefore, the necessity of providing reliefs on the lateral walls 10A is avoided, whereas they are necessary in the case of figure 1. Likewise the door 11 has an almost entire width being equal to that of the lateral walls, and therefore they are for the greater part hidden from the frontal view, when the door is closed; the door 11 in its upper part is of an equal width to that of the upper surface 13 of the dishwasher.

It is therefore clear that according to the invention the problems of an aesthetic nature are also solved which are typical of the known machine of figure 2.

It is to be emphasised that the width reductions 17 of the frame 16, or if preferred the portion of the door 11 being of a smaller width, is of a limited length, in the order of 10-15 cm, and their positioning, in the lower part of the machine, do not have any aesthetic consequences which significantly effect the overall appearance.

In any case, even the vision of the width reductions 17 can be eliminated; in figures 5A-5B and 6A-6B realisation variants of the dishwashing machine according to the invention are in fact illustrated which allow for obtaining such effect.

In figures 5A and 5B, where the same reference

numbers as figures 3A,3B,3C and 4 are used, 18 indicates one of two frontal protrusions of the lateral walls 10A of the cabinet; such protrusions 18 are located in correspondence to the width reductions 17 of the frame 16, said reductions therefore result in being covered.

Therefore, in such embodiment, from an aesthetic point of view even the minimum part of the reduced width of the door 11 is eliminated with regards aesthetics, by way of the lateral protrusions 18.

The overall effect of the door, seen from the front, is therefore uniform from an aesthetics point of view; laterally the machine is also aesthetically pleasing in the homogeneous sense, in that it has no raised parts, which is the case with the known art of figure 1.

In figures 6A and 6B, where the same reference numbers as figures 3A,3B,3C and 4 are used, a further possible embodiment of the dishwasher according to the invention is illustrated.

In such embodiment, the skirting 14 of the dishwasher, i.e. the aesthetic element which is normally fixed to the frontal part of the cabinet of the machine, below the door, has two lateral appendix 19 which extend upwardly.

As in the case of figures 5A and 5B, the dimensions and form of the lateral appendix 19 of the skirting 14 are such to cover the width reductions 17 of the frame 16 of the door 11, obtaining an aesthetic appearance practically the same as that of the machine illustrated in figure 5B. Advantageously such appendix 19 each have a tongue 20, apt at being inserted in the lateral walls 10A, for assuring stability and providing structural strength.

Therefore, also in such embodiment, the overall aesthetic appearance, apart from the functional aspects, of the machine is uniform, be it frontal or laterally, without any part being raised or behind another.

From the given description the characteristics of the dishwasher machine according to the present invention result in being clear, as do its advantages.

In particular they are represented in that, according to the invention, it is possible to realise a dishwasher machine, of the type equipped with a frontal door hinged in an intermediate point, without the aesthetic and functional problems of the known art; in particular the necessity of providing complicated reliefs and raised covering plates on the lateral walls of the cabinet are eliminated; notwithstanding this, according to the invention, the machine is realised in a way so as to simply impede the frontal view of the lateral walls of the cabinet, in the background, and the view of an upper surface being of a greater width compared to the door.

From the above it results how the solution subject of the present invention, being simple, practical and of extremely contained industrial costs, allows for fully obtaining the established aims.

It is clear that numerous variants are possible by the skilled man to the dishwashing machine described as an example, without for this departing from the novelty principles inherent in the inventive idea, as it is clear that in the practical realisation of the invention the forms, the materials and details illustrated may be substituted with technically equivalent elements.

For instance the frame 16 could be indifferently realised from a single piece or distinct pieces, in an appropriate material, such as moulded plastic.

In another possible embodiment, in place of a peripheral frame two single elements could be provided being of a plastic material, integrally fitted to the two vertical sides of the door, upon which the width reductions 17 can be obtained.

It is also clear that on the door 11 the two portions of different widths could be obtained directly by way of a suitable pressing of the base structure 11A-11B, and therefore without the necessity of supplying a frame.

## Claims

1. Domestic dishwashing machine, of the type comprising a cabinet (10) within which a washing tub is defined, and a frontal door (11) hinged to said cabinet (10), for access to said washing tub, the hinging zone (15) of the door (11) to the cabinet (10) being higher than the lower edge of the door (11), characterised in that the door (11) has two portions of different widths, where a first portion of door (11) that substantially extends above said hinging zone (15) has an overall width at least equal to that defined by the lateral walls (10A) of the cabinet (10) of the machine and a second portion of door (11) that extends substantially below said hinging zone (15) has a minor width compared to the upper portion, and in particular smaller than the width defined by the lateral walls (10A) of the cabinet of the machine.
2. Dishwashing machine, according to claim 1, characterised in that said door (11) has a peripheral frame (16) upon which width reductions (17) are present, said width reductions being realised in substantial correspondence to the portions of the door (11) that substantially extends below said hinging zone (15).
3. Dishwashing machine, according to claim 2, characterised in that said frame (16) is realised in a single piece or in distinct pieces.
4. Dishwashing machine, according to claim 1, characterised in that said door (11) comprises lateral elements, integral to the two vertical sides of the door, having width reductions in substantial

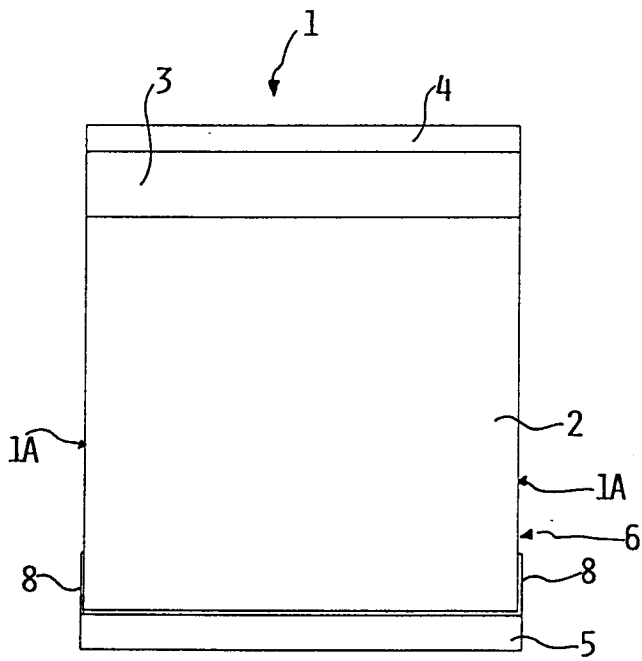
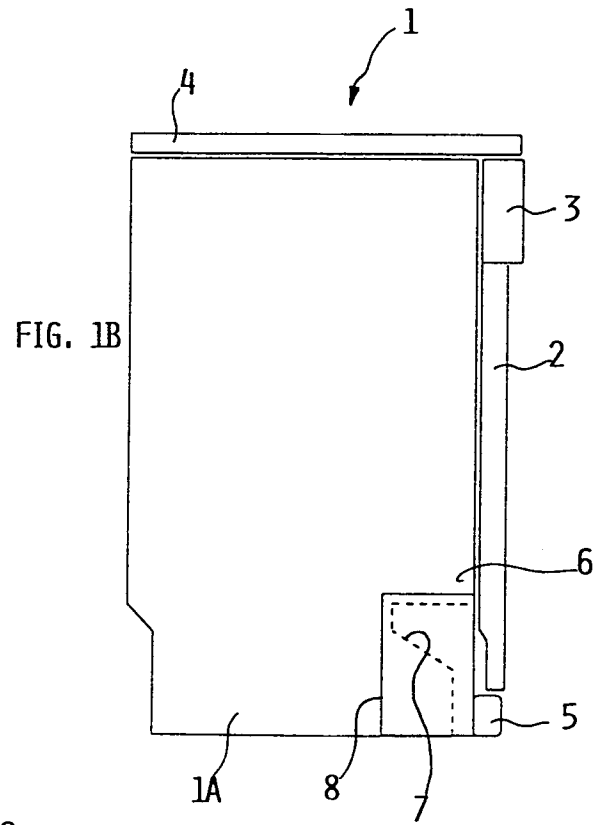
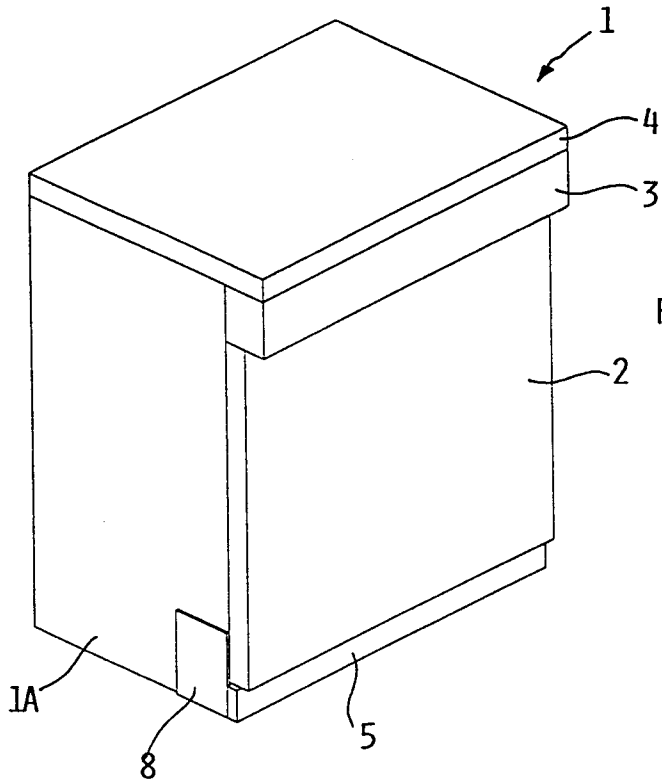
correspondence to the portion of the door (11) that substantially extends below said hinging zone (15).

5. Dishwashing machine, according to claim 2 or 3 or 4, characterised in that said frame (16), or the elements of which it is made, or said lateral elements are fixed to said door by way of screws or snap fitting means. 5
- 10
6. Dishwashing machine, according to claim 1, characterised in that the two portions of different width are directly obtained by way of the pressing of the base structure (11A-11B) of said door (11). 15
7. Dishwashing machine, according to at least one of the previous claims, characterised in that means (18,19) are provided that, with the door (11) closed, cover the sides of said portion of door having the minor width, or cover said width reductions (17). 20
8. Dishwashing machine, according to the previous claim, characterised in that said covering means (18,19) are an integral part of the cabinet (10) of the machine or of a skirting (14) present on the lower part of the cabinet (10) of the machine. 25
9. Dishwashing machine, according to the previous claim, characterised in that the covering means (18,19) comprise two protrusions (18) of the lateral walls (10A) of the cabinet (10) of the machine, forwardly extending, on the sides of said portions of door (11) having the minor width, or on said width reductions (17). 30
- 35
10. Dishwashing machine, according to claim 8, characterised in that the covering means (18,19) comprise two lateral appendix (19) of said skirting (14), upwardly extending, on the sides of said portions of door (11) having the minor width, or on said width reductions (17). 40

45

50

55



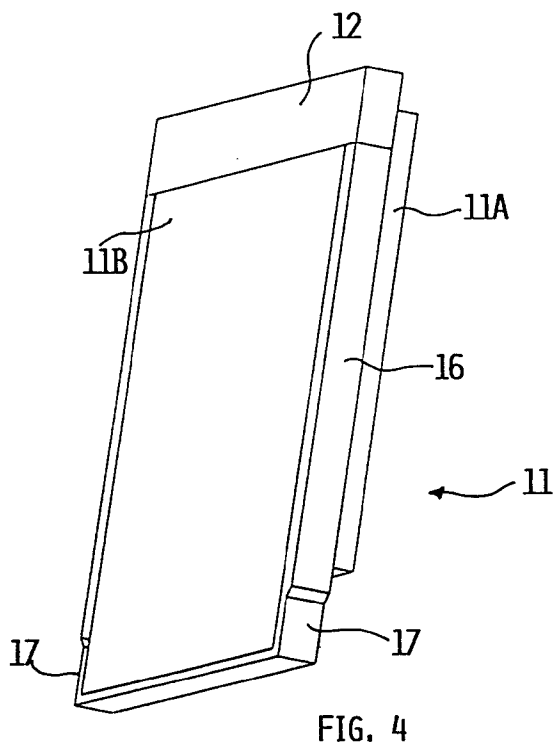
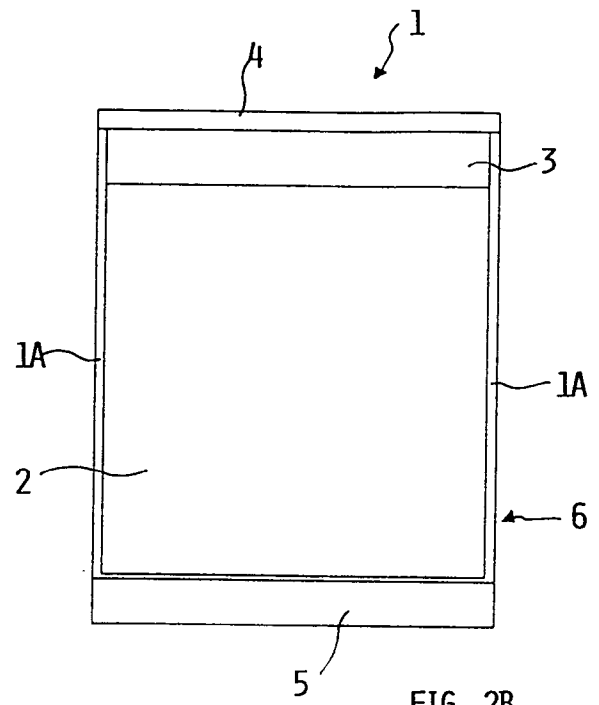
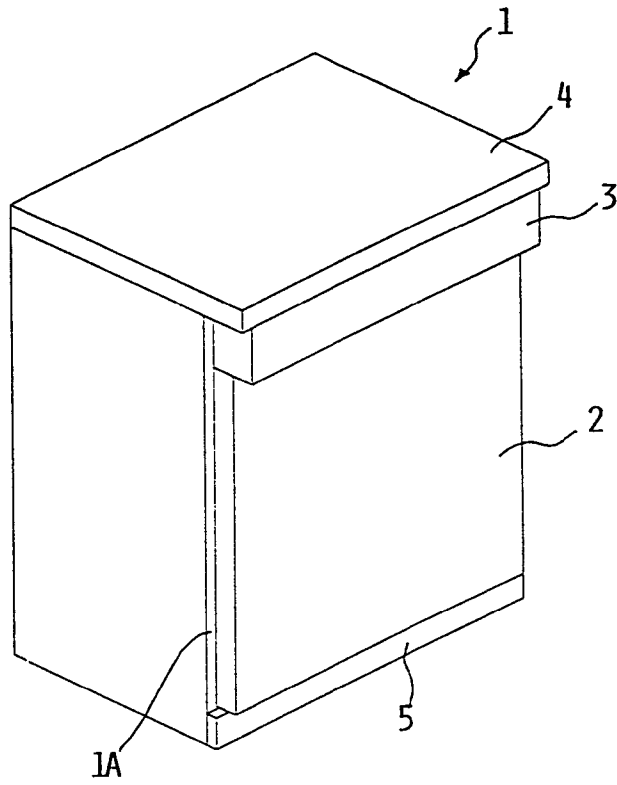


FIG. 3A

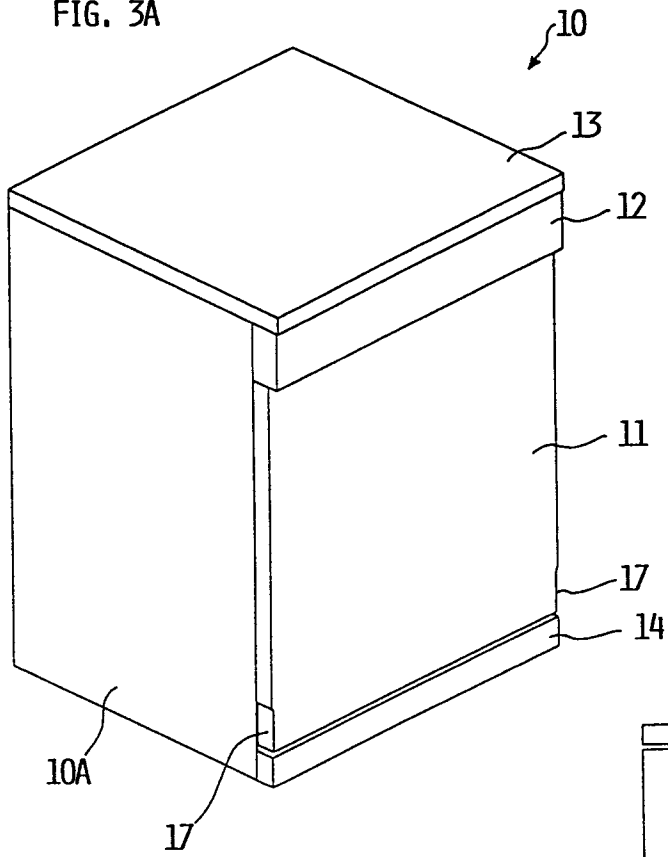


FIG. 3B

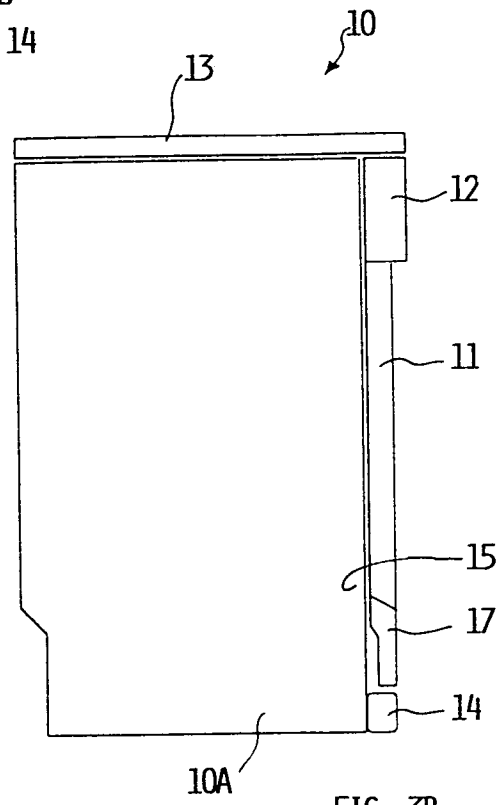
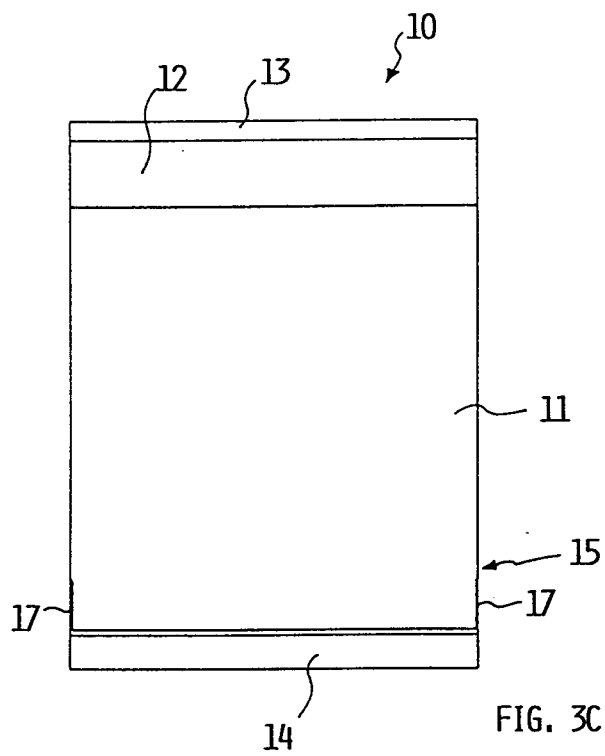


FIG. 3C





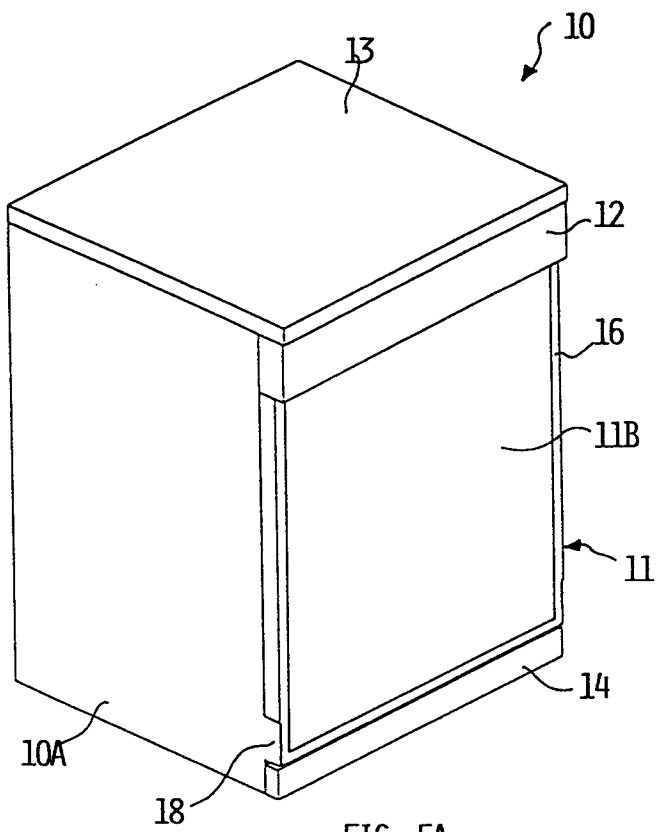


FIG. 5A

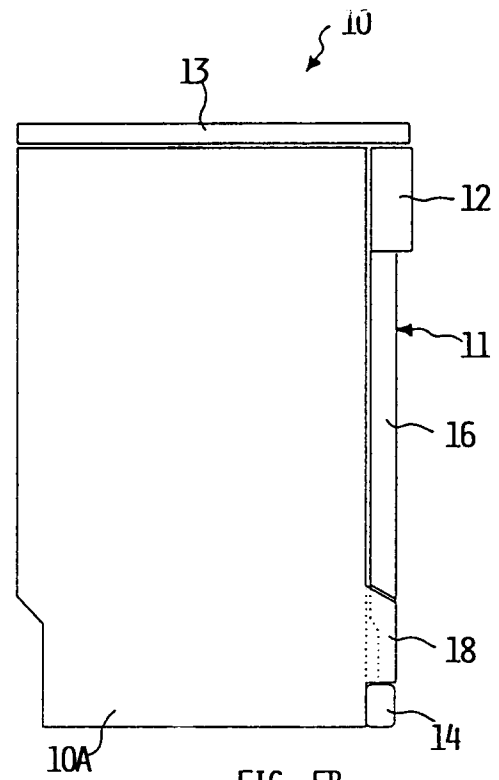


FIG. 5B

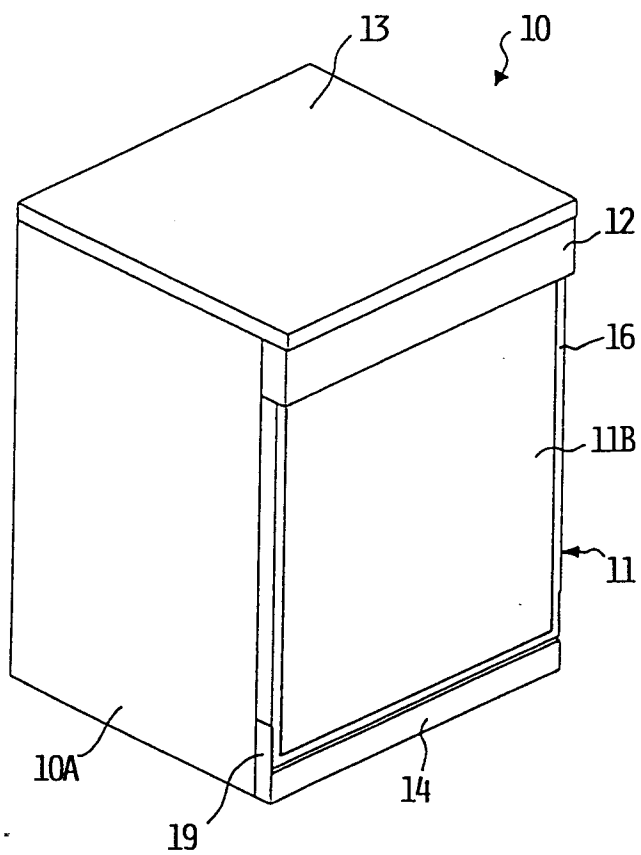


FIG. 6A

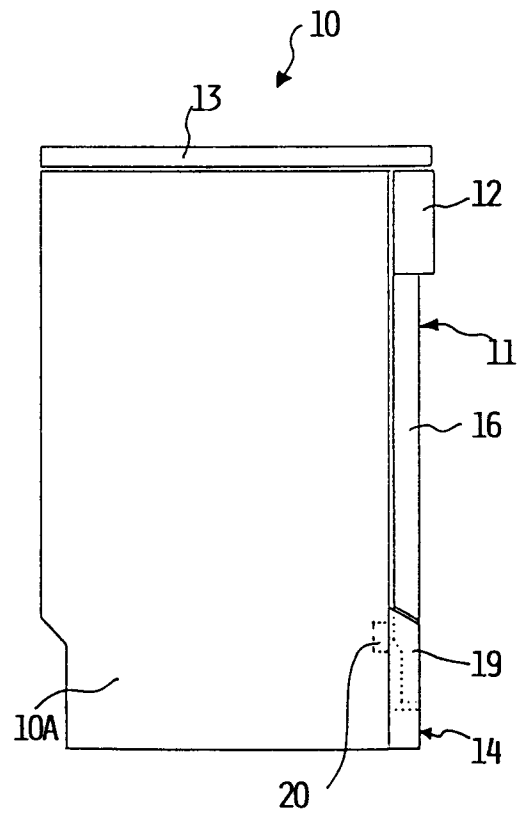


FIG. 6B



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 95 10 9291

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.6)
X	FR-A-2 497 653 (SIMPSON LTD) * page 3, line 3 - page 4, line 6; claim 4; figure 3 *	1-4	A47L15/42
A	---	7-9	
A	DE-U-85 31 220 (ZANUSSI ELETTRODOMESTICI S.P.A.) * page 3, line 30 - page 4, line 25; claims 1-3; figure 2 *	1-4	
A	DE-U-84 19 968 (LICENTIA PATENT-VERWALTUNGS-GMBH) * the whole document *	1	
A	DE-A-31 04 836 (LICENTIA PATENT-VERWALTUNGS-GMBH) * page 5-6; figures 1,2 *	5	
A	PATENT ABSTRACTS OF JAPAN vol. 18 no. 421 (C-1234) ,8 August 1994 & JP-A-06 125863 (TOSHIBA CORP) 10 May 1994, * abstract *	1	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			A47L
Place of search THE HAGUE		Date of completion of the search 25 September 1995	Examiner Munzer, E
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 (3.12.92) (P04C01)