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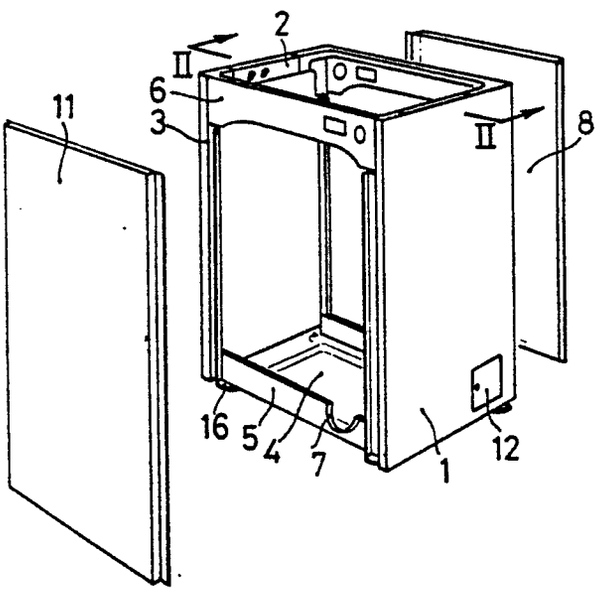
(54) Improvements to clothes washing machines.

(57) Improvements in the casing body of clothes washing machines characterized in that the said body comprises a polyvalent frame structure which can be used both for top loading and for front loading clothes washing machines and is formed from a sheet component bent to form a U of which the horizontal member (4) which is provided with an amply dimensioned trapezoidal section indentation forms the base of the body of the machine and the vertical members (1) form two opposing sides of the machine, these being joined in the region of their upper extremities by horizontal components (6), the whole forming a parallelepiped casing body.

FIG.1



EP 0 265 704 A1

IMPROVEMENTS TO CLOTHES WASHING MACHINES

This invention relates to improvements in the casing body of clothes washing machines designed to offer considerable advantages with respect to the current state of the art in that they result in reducing the number of washing machine assembly lines to one sole assembly line which will provide for the manufacture of both front and top loading machines, the latter equally in various sizes including the so called small size top loader or compact washing machine.

Current practice requires, for the production of conventional known bodies, as many production lines as there are models to be produced, resulting in a number of disadvantages, mainly of an economic nature, with a low utilization of the equipment and high labour costs spread over the multiplicity of lines and hence a less than optimum efficiency. The several production lines also require increased tooling and furthermore the lines occupy considerable useful space in the factory.

This present invention obviates these disadvantages by permitting the possibility of manufacturing one polyvalent casing body for clothes washing machines which can serve as the main structure for both front and top loading models as well as for a diversity of sizes of model such that all variations of model of these machines can be produced on one single production line.

Basically the casing body which is the object of this invention patent consists of a frame structure in the form of a sheet component formed to a 'U' constituting a central member being the base of the machine and two vertical members. Two members join the tops of the said vertical members and thus define a rectangular open area such that the casing body so formed as a parallelepiped has two open lateral sides and an open upper side, the two other sides and the base being closed.

In the case of the front loading washing machine the casing body which is the object of this invention is then fitted with a rear panel and another similiarly dimensioned front panel but in which there is a circular aperture corresponding to the area where access to the inside drum has to be provided. The top of the casing is closed with a further full panel.

The construction of a top loading washing machine is similar but with the rear and front panels being of the same shape.

For the production of this standardized casing body the assembly can be carried out on a single assembly line given that the body leaves ample means of access on two sides so permitting the fitting of both the top loading drum assemblies or the front loading assemblies and all the other components of the machine within the interior without difficulty.

The casing body which is the object of this invention offers in addition improved protection and safety having a closed in bottom panel giving protection against accidents. This mode of construction also allows the provision of an automatic means for detection of escaping water, the bottom panel being especially designed to hold water against leakage. Such detection means may shut off the supply of water at the electrovalve of the machine or even at the domestic supply tap in the house circuit or could emit an aural signal indicating failure of the electrovalve to shut off the flow.

The novel construction gives a high degree of rigidity to the casing and an improved spreading of the load stresses due to the fact that the tub of the machine is suspended from the upper extremities of the vertical members of the 'U' shaped component, the load then being transmitted partly, through the two horizontal members joining the said upper extremities of the vertical members of the 'U' to vertical strut sections sited parallel to the edges of these members.

To assist the explanation of this description the attached drawings show the general characteristics which contribute to the improvements to clothes washing machines with one practical embodiment of those characteristics as stated in the claims of this patent, the drawings to be viewed in a wide and general sense being merely informative and non restrictive.

In the drawings:

Figure 1 shows a perspective view of the casing body for top loading washing machines accompanied by two of its closure panels. Figure 2 is a cross section along the plane II - II of Figure 1.

Figures 3, 4 and 5 are respectively perspective views of the casing body for clothes washing machines of the front loading, top loading and small size top loading types.

Figures 6, 7 and 8 are respectively views of the finished models of the front loading, top loading and small size top loading washing machines.

The references shown on the drawings correspond to the enumeration given in thetextual description of the clothes washing machine casing body below.

This clothes washing machine casing body consists of a 'U' shaped component comprising two vertical members -1-and a central member -4- having therein a distinct trapezoidal section rectangular shaped indentation. To provide rigidity of the

assembled unit the members -1-have fitted thereto the rim sections -2-and the side struts sections -3-, these serving also for securing the closure panels. The base member -4-is also includes an orthogonal section -5-with a semi-circular cut out -7-to take the outlet water filter body for the drum evacuation.

The top extremities of hte members -1-are connected by horizontal members -6-, thus forming a parallelepiped body which is the main framework of the washing machine.

After assembling the internal components of the machine within the body, this being facilitated by the ample area of access through the two open sides of the casing. the two lateral panels and the top panel are fitted thus completing the assembly of the machine. A front loading machine will have its top panel -8-as a plain sheet while the front panel -9-will incorporate, apart from the access cover -12-to the filter, a large circular opening -13- to which will be fitted the door giving access to the interior of the drum.

The panels -8-and -11-in top loading machines are identical to the rear panel of the front loading machines.

On the same production line can be assembled top loading washing machines that differ from the above types solely by reason of their height, having the same cross section dimensions and the same components but requiring shorter side panels. Thus the casing body -10-will be of less height than the casing body -1-but will be of an identical structure. The rear panel -15-and the front panel -14-will differ solely in height from the previously described models while the other components such as the horizontal members -6-, the base -4-etc. will be the same as for the other previously described variations of clothes washing machines.

All the machines stand on conventional supporting means -16-situated at the corners of the casing body base.

Anything that does not alter, affect, modify or change the essence of the improvements described herein will be a variable for purposes of this patent.

Claims

1.-Improvements in the casing body of clothes washing machines characterized in that the said body comprises a polyvalent frame structure which can be used both for top loading and for front loading clothes washing machines and is formed from a sheet component bent to form a U of which the horizontal member which is provided with an amply dimensioned trapezoidal section indentation forms the base of the body of the machine and the vertical members form two opposing sides of the machine, these being joined in the region of their upper extremities by horizontal components, the whole forming a parallelepiped casing body.

2.-Improvements in the casing body of clothes washing machines as the the first claim, characterized in that strut sections are provided at the edges of the vertical members of the U component supporting horizontal members which join the said vertical members of the U in the region of their upper extremities.

3.-Improvements in the casing body of clothes washing machines as in the previous claims, characterized in that the casing is completed after fitting the internal components of the machine, by attaching two panels which close in the open sides.

4.-Improvements in the casing body of clothes washing machines as in the previous claim, characterized in that one of the panels fitted to close in the open sides in the case of the front loading machines is provided with an opening to which is fitted the door giving access to the drum.

5.-Improvements in the casing body of clothes washing machines as in the previous claim, characterized in that the two closing in panels are similar in the case of top loading machines.

6.-Improvements in the casing body of clothes washing machines as in the previous claims, characterized in that the same body is used for the manufacture of small or compact type washing machines, the height of the lacteral members of the U form component being reduced in such cases.

7.-Improvements in the casing body of clothes washing machines as in the previous claims, characterized in that there are provided in the lower part of the casing of the machine automatic means for detecting the escape of water which means may include aural warning devices and operation of the electrovalve or of the domestic supply tap.

FIG. 1

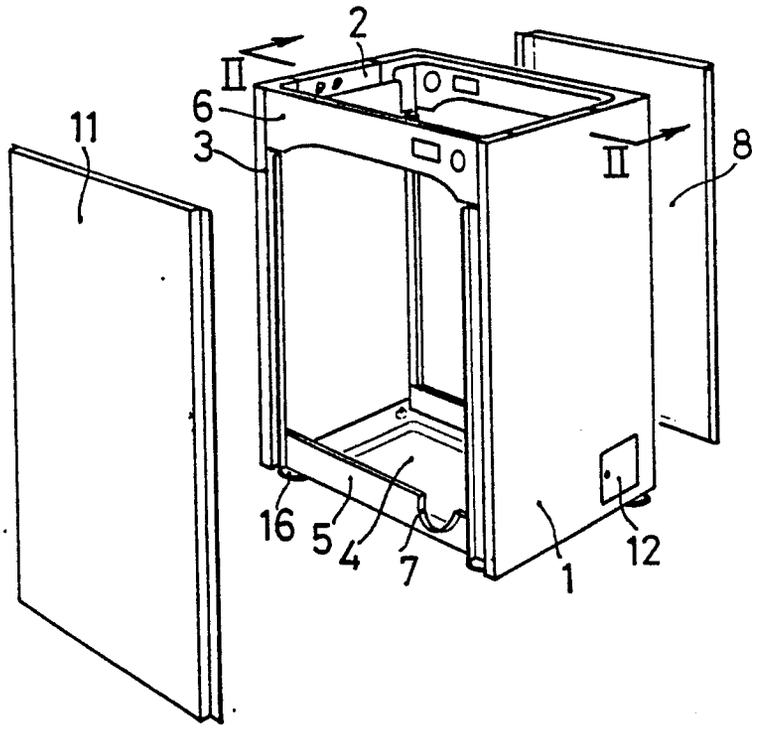


FIG. 2

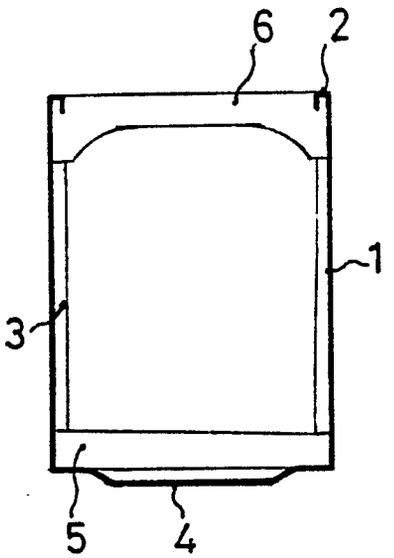


FIG. 3

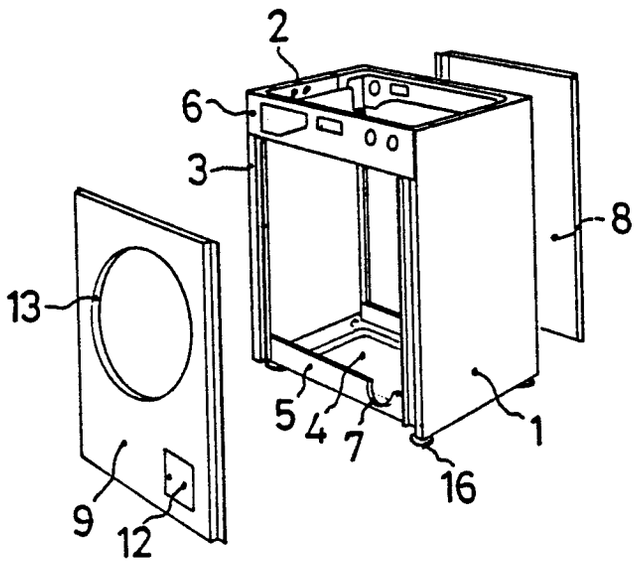


FIG. 4

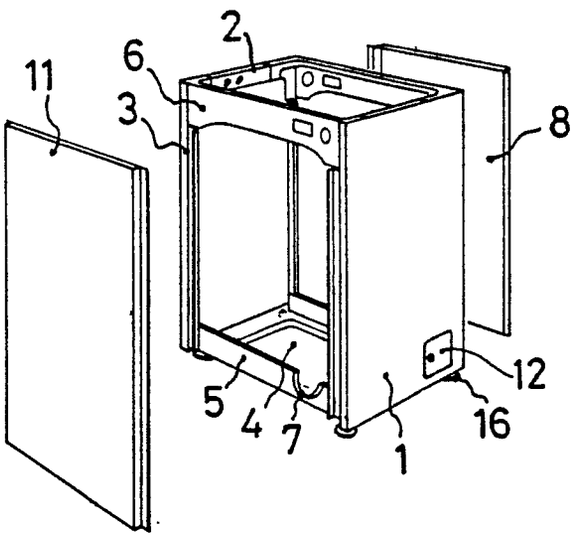


FIG. 5

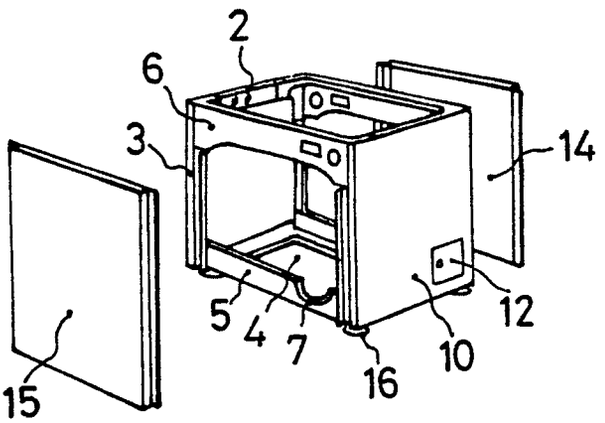


FIG. 6

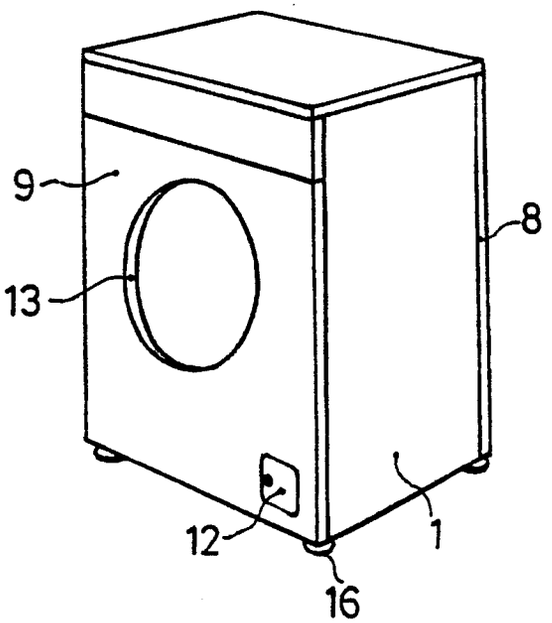


FIG. 7

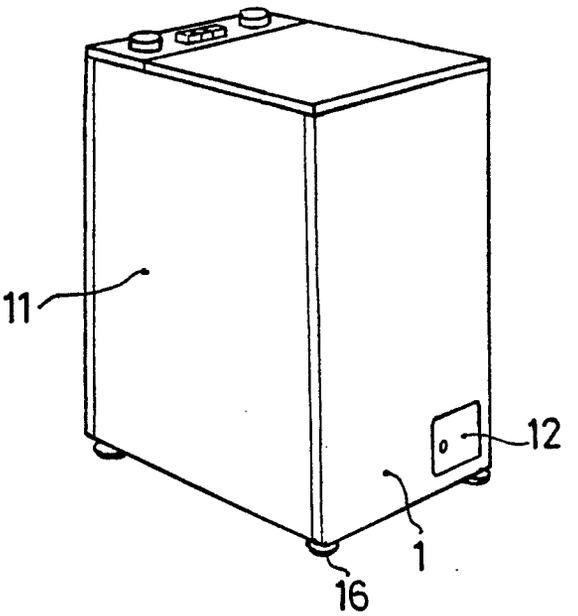
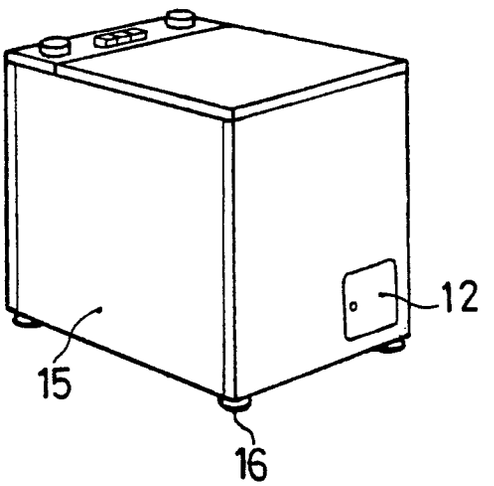


FIG. 8



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EUROPEAN SEARCH REPORT

Application Number

EP 87 11 4354

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.4)
A	GB-A-1 049 982 (THE SINGER CO.) * Figure 1; page 1, lines 54-61 *	1	D 06 F 39/12
A,P	EP-A-0 208 334 (ZANUSSI) * Whole document *	1-3,5	
A	GB-A- 966 231 (ESSWEIN) * Figures; claims *	1-3,5	
A	FR-A-2 082 075 (CHALECTRO) * Figure; claims *	1-3,5	
A	FR-A-1 520 703 (CHALECTRO) * Figures; claims *	1-3,5	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

D 06 F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	11-01-1988	COURRIER,G.L.A.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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E : earlier patent document, but published on, or after the filing date
D : document cited in the application
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