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(54) **A WASHER/DRYER**
WASCHTROCKNER
LAVE-LINGE / SÈCHE-LINGE

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Description

[0001] The present invention relates to a washer/dryer wherein the damages that can occur during transportation are prevented.

[0002] In washers/dryers; rear, side and front walls are fastened to each other by connecting elements such as screws and thus, the outer cabinet is formed. Forces coming from various directions by impacts and falls that can occur during transportation act on these screws and connecting elements. In the situation that the connecting elements and the areas wherein they are mounted cannot resist the forces, deformations and metal sheet-tearings can occur in these areas. In the state of the art, various methods are used in order to prevent the damages that can occur at the connection points during transportation and to facilitate the assembly of the outer cabinet.

[0003] In the state of the art German Patent No DE3722301, a telescopic connection structure and additionally, an assembly method that is performed by screwing through the slots aligned with the front wall upper bolt on the body is explained.

[0004] In another state of the art embodiment, the United States of America Patent Application No US20040107738, an improvement made in the assembly of the front panel to the side panels in the washing machine is described. The fixing is performed by fitting the side flanges formed on the side panel to the notch recesses on the front panel. Since the number of recesses on the panel is high, the amount of load corresponding to each connection point is reduced.

[0005] The aim of the present invention is the realization of a washer/dryer wherein the damages that can occur during transportation are reduced and which can be easily assembled.

[0006] The washer/dryer realized in order to attain the aim of the present invention is explicated in the claims.

[0007] The washer/dryer of the present invention comprises an upper fold formed on the free edge of the front wall upper flange by the bending of this edge upwards, and a side fold each, formed on the free edges of the front wall side flanges by the bending of these edges such that they will face each other.

[0008] The front wall, furthermore, comprises two flaps extending upwards at both sides of the upper fold and at least two flaps at the upper end of the side folds, extending towards the other flaps located on the upper fold, in order to provide that the front wall is fixed onto the side walls. The flaps located on the upper fold and on the side fold overlap and thus, form the area wherein the fixing is performed. When the two flaps are fixed by being brought to the point on the side wall wherein the fixing will be performed, since the three surfaces, which are overlapped, are fixed to each other, a fixing with high resistance is provided.

[0009] The assembly of the front wall to the side walls can be performed by screwing, riveting, welding or such

a method.

[0010] In the embodiment wherein the front wall is fixed to the side walls by screw, the flaps comprise a hole each, through which the screw can be passed during fixing and the washer/dryer comprises at least two screws used in fixing. When the flaps are overlapped, the holes are also aligned, and the screw is enabled to be passed there-through and to be fixed to the side wall positioned behind them.

[0011] In an embodiment of the present invention, the hole wherein the screw first enters, that is, the hole situated on the flap on the upper fold is smaller than the one behind it. Thus, at the production of holes and flaps, it is possible to work with a greater margin of error and the need for using critical measurements in moulds decreases.

[0012] In an embodiment of the present invention, the side fold comprises a slit between the edge, wherein the side fold joins the side flange, and the flap such that it will enable the partial movement of the flap. Thus, the flap is provided to obtain a flexibility and to be more resistant against the rotating and tension forces acting thereon.

[0013] In an embodiment of the present invention, the flap extending from the side fold towards the other flap on the upper fold comprises an inclined step at its portion between the side and the upper fold. The step, also, improves the resistance of the flap against forces acting from different directions.

[0014] The model embodiments relating to a washer/dryer realized in order to attain the aim of the present invention are illustrated in the attached figures, where:

[0015] Figure 1 - is the perspective view of a washer/dryer.

[0016] Figure 2 - is the rear view of a washer/dryer front wall.

[0017] Figure 3 - is the detailed perspective view of the flaps on the upper fold and the side fold.

[0018] Figure 4 - is the detailed cross-sectional view of the flaps on the upper fold and the side fold as fixed to the side wall by screw.

[0019] The elements illustrated in the figures are numbered as follows:

- 45 1 Washer/dryer
- 2 Side wall
- 3 Front wall
- 4 Upper flange
- 5 Upper fold
- 50 6 Side flange
- 7 Side fold
- 8 108 Flap
- 9 109 Hole
- 10 Slit
- 55 11 Step
- 12 Screw

[0020] The washer/dryer (1) comprises at least two

side walls (2) covering the volume from sides wherein the tub and other elements are situated, a front wall (3) fixed onto the side walls (2).

[0021] The front wall (3) comprises

- an upper flange (4) formed on its upper edge by the bending of this edge backwards and an upper fold (5) formed on the free edge of the upper flange (4) by the bending of this edge upwards,
- a side flange (6) each, formed on its side edges by the bending of these edges backwards and a side fold (7) each, formed on the free edges of the side flanges (6) by the bending of these edges such that they will face each other, and
- two flaps (8) located at the two ends of the upper fold (5), extending from the upper fold (5) upwards, used in fixing the front wall (3) to the side wall (2).

[0022] The front wall (3), furthermore, comprises at least two flaps (108)

- extending from the upper end of the side folds (7) towards the upper fold (5),
- each of which is aligned with a flap (8) located on the upper fold (5),
- providing the area wherein the fixing with the side wall (2) on the front wall (3) is performed to be two-fold.

[0023] The front wall (3) is formed preferably of a metal plate by being bent. When the bending and forming process is completed, the flaps (8, 108) situated on the side fold (7) and the upper fold (5) are aligned one in front of the other at the same level. In this situation, the front wall (3) is first disposed onto the side wall (2) slidably and then joined to the point on the side wall (2), whereto it will be fixed, by screwing, riveting, welding or such a fixing method. This process is performed for the flaps (8, 108) situated both at the right and the left sides. Thus, the front wall (3) is fixed onto the side walls (2). By means of the two-fold structure that is formed by the flaps (8, 108) overlapping at the place wherein the fixing is performed, a three-fold area is formed wherein the front wall (3) and the side wall (2) join together. Thus, the resistance of the area, wherein the fixing is performed, against unexpected forces that can occur as a result of, for example, loading tension and fall during transportation is improved.

[0024] In the preferred embodiment of the present invention, the washer/dryer (1) comprises at least two screws (12) for the assembly of the front wall (3) to the side walls (2). The flaps (8, 108) comprise a hole (9, 109) each, through which the screw (12) can be passed. When the flaps (108) located on the side fold (7) are aligned with the flaps (8) located on the upper fold (5), the holes (9, 109), also, overlap with each other such that the screw can be passed therethrough. When the front wall (3) is desired to be assembled to the side walls (2), the screw (12) is passed through the holes (9, 109) aligned with the

screw housing on the side wall (2) and is tightened.

[0025] In an embodiment of the present invention, the hole (9) that is situated on the flap (8) located on the upper fold (5) is smaller than the hole (109) that is located on the flap (108) situated on the side fold (7). In other words, the hole (9) remaining at the front face of the front wall (3) is smaller than the hole (109) remaining behind it. Thus, measurement errors that can occur in moulding processes are prevented from causing any problem regarding the aligning of the holes (9, 109) during assembly.

[0026] In an embodiment of the present invention, the side fold (7) comprises a slit (10) located between the flap (108) on the side fold (7) and the edge, wherein the side fold (7) joins the side flange (6). Thus, the side fold (7) provides the problems such as tearing and twisting that occur in the side fold (7) and the flap (108) during production and thereafter to be reduced.

[0027] In an embodiment of the present invention, the flap (108) located on the side fold (7) comprises an almost S-shaped step (11) at its portion extending towards the upper fold (5). Thus, the resistance of the flap (108) and the side fold (7) against the forces acting on them is improved.

[0028] In the washer/dryer (1) of the present invention, in the situation wherein overload acts on during transportation, the front wall (3) and the area wherein the front wall (3) joins the side wall (2) are prevented from being strained and detached.

[0029] It is to be understood that the present invention is not limited to the embodiments disclosed above and an expert in the technique can easily introduce different embodiments. These should be considered within the scope of the protection postulated by the claims of the present invention.

Claims

1. A washer/dryer (1) comprising at least two side walls (2) that cover the volume from sides wherein the tub and other elements are situated, and a front wall (3) that is fixed onto the side walls (2) and that has an upper flange (4) formed on its upper edge by the bending of this upper edge backwards and an upper fold (5) formed on the free edge of the upper flange (4) by the bending of this free edge upwards, a side flange (6) each, formed on its side edges by the bending of these side edges backwards and a side fold (7) each, formed on the free edges of the side flanges (6) by the bending of these edges such that they will face each other, **characterised in that** front wall (3) has two flaps (8) located at the two ends of the upper fold (5), extending from the upper fold (5) upwards, used in fixing the front wall (3) to the side wall and (2), and at least two flaps (108) extending from the upper end of the side folds (7) towards the upper fold (5), each of which is aligned to overlap

with a flap (8) located on the upper fold (5), providing the area, wherein the fixing with the side wall (2) on the front wall (3) is performed, to be two-fold.

2. A washer/dryer (1) as in Claim 1, **characterized by** at least two screws (12) for the assembly of the front wall (3) to the side walls (2), and flaps (8, 108) having a hole (9, 109) each, that overlap with each other such that the screw (12) can be passed therethrough when the flaps (108) located on the side fold (7) are aligned with the flaps (8) located on the upper fold (5).
3. A washer/dryer (1) as in Claim 2, **characterized by** the hole (9) which is situated on the flap (8) located on the upper fold (5) and which is smaller than the hole (109) that is located on the flap (108) situated on the side fold (7).
4. A washer/dryer (1) as in any one of the above Claims, **characterized by** the side fold (7) that has a slit (10) located between the flap (108) on the side fold (7) and the edge, wherein the side fold (7) joins the side flange (6).
5. A washer/dryer (1) as in any one of the above Claims, **characterized by** the flap (108) that is located on the side fold (7) and that comprises an almost S-shaped step (11) at its portion extending towards the upper fold (5).

Patentansprüche

1. Wasch-/Trockenmaschine (1), **umfassend** wenigstens zwei Seitenwände (2), die den Raum von Seiten abdecken, in dem der Waschbehälter und andere Elemente angeordnet sind, und
 - eine Vorderwand (3), die an den Seitenwänden (2) befestigt ist und
 - einen oberen Flansch (4), der an ihrer Oberkante durch Biegen dieser Oberkante nach hinten ausgebildet ist, und eine obere Falz (5) aufweist, die an der freien Kante des oberen Flansches (4) durch Biegen dieser freien Kante nach oben ausgebildet ist, je einen Seitenflansch (6), der an ihren Seitenkanten durch Biegen dieser Seitenkanten nach hinten, und je eine Seitenfalz (7) aufweist, die an den freien Kanten der Seitenflansche (6) durch Biegen dieser Kanten derart, dass sie einander zugewandt sind, ausgebildet ist, **dadurch gekennzeichnet, dass** die Vorderwand (3) Folgendes aufweist:
 - zwei Klappen (8), die an den zwei Enden der oberen Falz (5) angeordnet sind und sich von der oberen Falz (5) nach oben erstrecken und zum Befestigen der Vorderwand (3) an der Sei-

tenwand (2) benutzt werden, und wenigstens zwei Klappen (108),
 - die sich vom oberen Enden der Seitenfalze (7) zur oberen Falz (5) erstrecken,
 - von denen jede derart ausgerichtet ist, dass sie eine Klappe (8) an der oberen Falz (5) überlagert,
 - wodurch dafür gesorgt wird, dass der Bereich, in dem das Befestigen mit der Seitenwand (2) an der Vorderwand (3) durchgeführt wird, zweifach ist.

2. Wasch-/Trockenmaschine (1) nach Anspruch 1, **gekennzeichnet durch** wenigstens zwei Schrauben (12) zum Anbringen der Vorderwand (3) an den Seitenwänden (2), und Klappen (8, 108), die jeweils eine Öffnung (9, 109) aufweisen, und die einander überlagern, derart, dass die Schraube (12) hindurchgeführt werden kann, wenn die Klappen (108), die an der Seitenfalz (7) angeordnet sind, mit den Klappen (8) an der oberen Falz (5) übereinstimmen.
3. Wasch-/Trockenmaschine (1) nach Anspruch 2, **dadurch gekennzeichnet, dass** die Öffnung (9) an der Klappe (8), die an der oberen Falz (5) angeordnet ist, kleiner ist als die Öffnung (109) an der Klappe (108), die an der Seitenfalz (7) angeordnet ist.
4. Wasch-/Trockenmaschine (1) nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Seitenfalz (7) einen Schlitz (10) zwischen der Klappe (108) an der Seitenfalz (7) und der Kante aufweist, an der die Seitenfalz (7) sich mit dem Seitenflansch (6) verbindet.
5. Wasch-/Trockenmaschine (1) nach einem der vorangehenden Ansprüche, **dadurch gekennzeichnet, dass** die Klappe (108) an der Seitenfalz ein nahezu S-förmige Stufe (11) an ihrem Abschnitt umfasst, der sich zur oberen Falz (5) hin erstreckt.

Revendications

1. Une machine à laver/sécher (1) **comportant** au moins deux parois latérales (2) qui couvrent le volume des côtés où la cuve et les autres pièces sont situées, et
 - une paroi avant (3) qui est fixée sur les parois latérales (2) et qui a
 - une flasque supérieure (4) formée sur son bord supérieur par le pliage de ce bord supérieur vers l'arrière et un pli supérieur (5) formé sur le bord libre de la flasque supérieure (4) par le pliage de ce bord libre vers le haut,
 - une flasque latérale (6) formée sur chacun de ses bords latéraux par le pliage de ces bords

- latérales vers l'arrière et un pli latéral (7) formé sur chacun des bords libres des flasques latérales (6) par le pliage de ces bords de telle sorte qu'ils font face l'un à l'autre, **caractérisée en ce que** la paroi avant (3) a
- deux oreilles (8) situées à deux extrémités du pli supérieur (5), qui s'étendent du pli supérieur (5) vers le haut et qui sont utilisées pour fixer la paroi avant (3) à la paroi latérale (2), et au moins deux oreilles (108)
 - s'étendant de l'extrémité supérieure des plis latéraux (7) vers le pli supérieur (5),
 - dont chacun est aligné de manière à se chevaucher avec une oreille (8) située sur le pli supérieur (5),
 - qui permet à la région, où la fixation avec la paroi latérale (2) sur la paroi avant (3) est réalisée, d'être pliée en deux.
2. Une machine à laver/sécher (1) selon la Revendication 1, **caractérisée par** au moins deux vis (12) pour le montage de la paroi avant (3) aux parois latérales (2), et des oreilles (8, 108), dont chacune a un trou (9, 109) qui se chevauchent de telle sorte que la vis (12) peut être passée à travers de ceux-ci lorsque les oreilles (108) situées sur le pli latéral (7) sont alignées avec les oreilles (8) situées sur le pli supérieur (5).
3. Une machine à laver/sécher (1) selon la Revendication 2, **caractérisée par** le trou (9) qui est situé sur l'oreille (8) située sur le pli supérieur (5) et qui est plus petit que le trou (109) situé sur l'oreille (108) située sur le pli latéral (7).
4. Une machine à laver/sécher (1) selon l'une quelconque des revendications précédentes, **caractérisée par** le pli latéral (7) qui ont une fente (10) située entre le pli (108) sur le pli latéral (7) et le bord, où le pli latéral (7) se joint avec la flasque latérale (6).
5. Une machine à laver/sécher (1) selon l'une quelconque des revendications précédentes, **caractérisée par** l'oreille (108) qui est située sur le pli latéral (7) et qui comprend une étape presque en forme de S (11) à sa partie s'étendant vers le pli supérieur (5).

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Figure 1

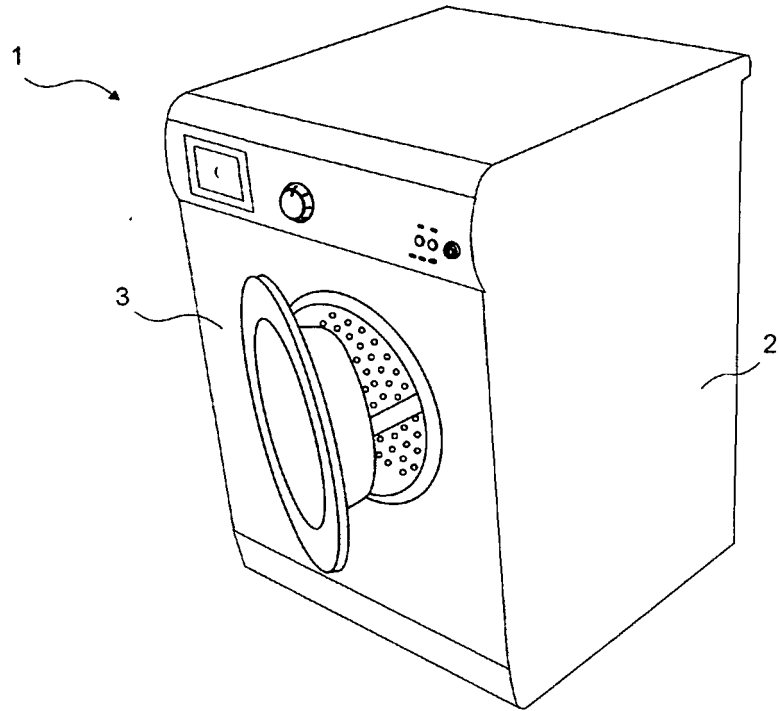


Figure 2

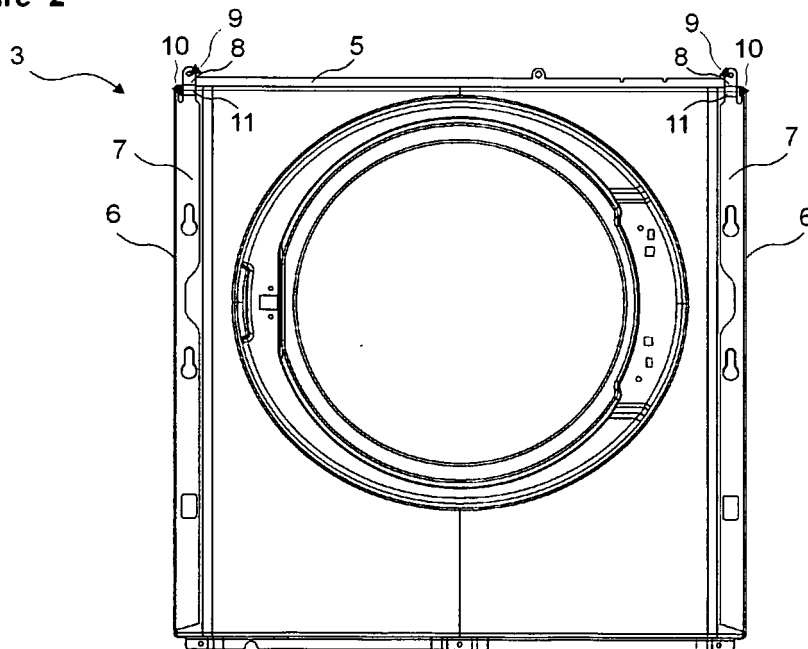


Figure 3

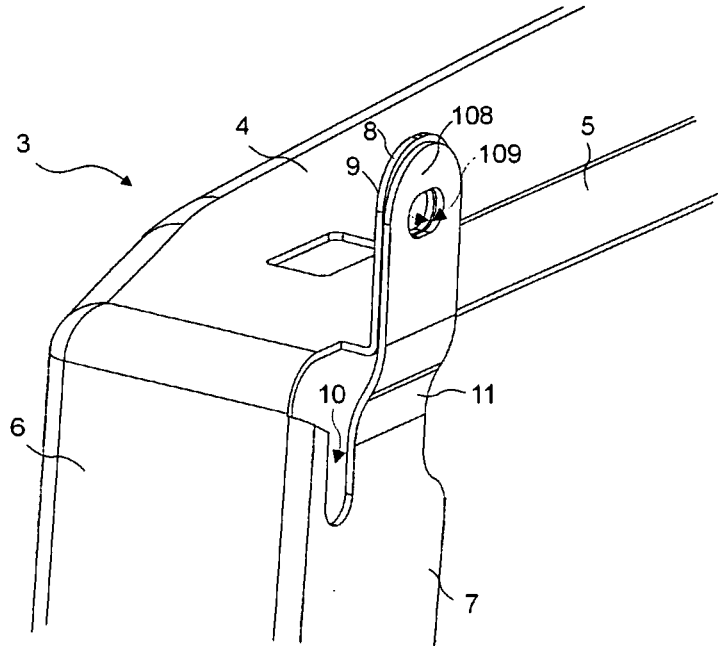
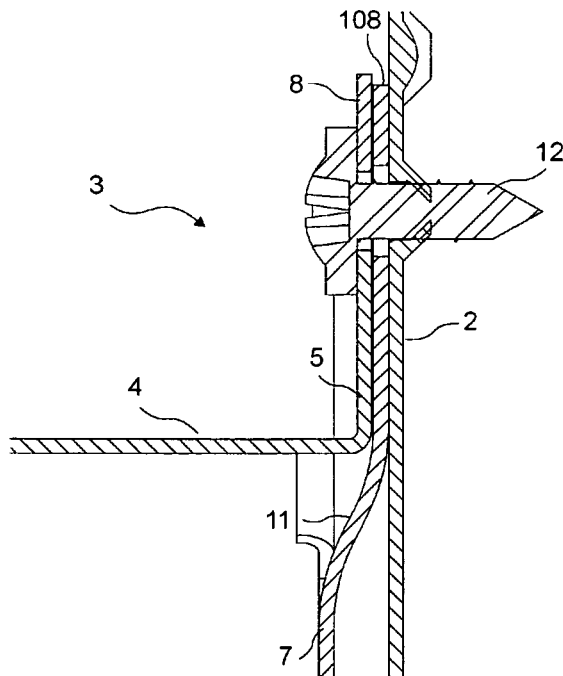


Figure 4



REFERENCES CITED IN THE DESCRIPTION

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