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(71) Applicant: **Electrolux Appliances Aktiebolag**
105 45 Stockholm (SE)

(72) Inventors:
- **BALDI, Claudio**
  33080 Porcia (PN) (IT)
- **GRUPPO, Luca**
  33080 Porcia (PN) (IT)

(74) Representative: **Electrolux Group Patents**
AB Electrolux
Group Patents
105 45 Stockholm (SE)

(54) PACKAGING FOR A HOUSEHOLD APPLIANCE, KIT COMPRISING A PACKAGING FOR A HOUSEHOLD APPLIANCE AND METHOD TO PACKAGE A HOUSEHOLD APPLIANCE

(57) The invention relates to a packaging (30) for a household appliance (1), in particular a laundry treating appliance. The packaging (30) includes a base (31) on which the appliance (1) is apt to be placed, and four angular members (33, 34, 35, 36) apt to cover four corners (6, 7, 8, 9) of the appliance, the four angular members extending from the base. One of the four angular members (33, 34, 35, 36) includes a protrusion (50, 60) apt to be positioned in front of a movable element (11) of the household appliance (1), the movable element (11) being located in one of a front surface (3), back surface (5) or lateral surfaces (4) of a casing (2) of the appliance (1) and being movable from an open to a closed positions, wherein a distance between a point of the movable element (11) and the front, back or lateral surface (3, 4, 5) in the closed position is different from a distance between the same point of the movable element (11) and the front, back or lateral surface (3, 4, 5) in the open position, the protrusion (50, 60) extending between two different angular members (33, 34, 35, 36), and including a surface apt to come into contact with the movable element of the household appliance to keep the movable element (11) in the closed position. The invention also relates to a kit comprising the packaging (30) and the household appliance (1).

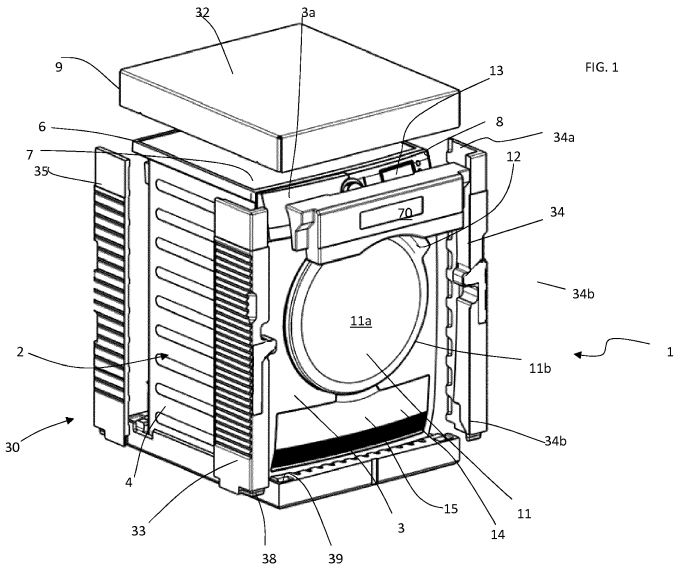

FIG. 1

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Description

Field of the invention

[0001] The present invention relates to a packaging for a household appliance, a kit comprising a packaging for a household appliance and a method to package a household appliance. The household appliance to which the present invention is particularly directed is a laundry treating appliance like a laundry washing and/or drying machine.

Background art

[0002] Household appliances, such as laundry treating appliances, comprise a casing having four side surfaces, in particular a front surface, a back surface and two lateral surfaces arranged between the front and the back surface and a top and a base surface. The four side surfaces define four vertical corners for the casing that are prone to accidental collisions especially during the transportation of the household appliance.

[0003] Therefore, there is the need to protect the household appliance and in particular the four vertical corners during transportation and storage of the household appliance.

[0004] To this end, it is known providing the four vertical corners with four vertical posts made of polystyrene and having an "L" cross section embracing the corners, so that the vertical corners of the casing are no longer affected by damages caused by accidental collisions.

[0005] Moreover, the household appliances such as laundry treating appliances include commonly movable elements, namely door that closes the laundry treatment chamber, swivelling doors, sliding drawers and similar, mostly provided on the front surface of the casing. These movable elements need to be secured in their closed or locked positions during transportation, in order to avoid possible damages due to unpredictable and accidental openings of the same.

[0006] Ordinarily, the movable elements are secured in their closing position by strips of adhesive tape extending over a portion of the movable element and a portion of the relevant side surface of the casing.

[0007] The strips of adhesive tape are applied on the household appliances by an operator which cuts strips of suitable length, removes the peel from the adhesive side of the tape and eventually tapes the strips in the correct position on the household appliance, clearly by paying close attention to not twist the strips around themselves.

[0008] The Applicant has noticed that the operation of taping of the movable elements of the household appliance is time consuming.

[0009] However, this operation cannot be feasibly performed by an automatic machine, since, despite the apparently simple procedures of removal of the peel from the adhesive side of the tape and subsequent positioning of the adhesive strips in the correct position, such an automatic machine would be complex and relatively expensive.

[0010] The Applicant has further noticed that, when household appliances are stored for long period or are stored at particular environment conditions, for example at very high or very low temperature, the adhesive tape is prone to lose its adhesive strength and therefore the mobile elements of the appliance can open during the subsequent transportation.

[0011] However, the properties of the adhesive tape cannot be freely chosen having regard only to the adhesion strength of the tape, since it is to be avoided that when the household appliance is unpacked and the adhesive tape is removed, marks of glue remain onto the appliance.

[0012] In fact, the removal of possible remaining glue from the surfaces of the appliance, such as the porthole or the varnished metallic cabinet, requires undue and commonly unpleasant effort to the user and, any case, can damage the surface of the appliance.

Summary of the invention

[0013] The goal of the invention is to provide a packaging for a household appliance, in particular preferably for a laundry treating appliance, a kit comprising a packaging for said household appliance and the appliance, and a method to package said household appliance that can prevent movable elements of the household appliance from opening during storage and transportation in a simple and time effective manner.

[0014] According to a first aspect, the invention relates to a packaging for a household appliance, said packaging including a base on which the appliance is apt to be placed, and four angular members apt to cover four corners of the appliance, said four angular members extending from the base, characterized in that one of the four angular members includes a protrusion apt to be positioned in front of a movable element of the household appliance, said movable element being located in one of a front surface, back surface or lateral surfaces of a casing of said appliance and being movable from an open to a closed positions, wherein a distance between a point of said movable element and said front, back or lateral surface in said closed position is different from a distance between said point of said movable element and said front, back or lateral surface in said open position, said protrusion extending between two different angular members, and including a surface apt to come into contact with said movable element of said household appliance to keep the movable element in the closed position.

[0015] According to a second aspect, the invention relates to a kit comprising: a household appliance including a casing defining a front surface, two lateral surfaces, a back surface and four lateral corners, said casing further including in one of said front surface, back surface or lateral surfaces a movable element, said element being

movable from an open to a closed position, wherein a distance between a point of said movable element and said front, back or lateral surface in said closed position is different from a distance between said point of said movable element and said front, back or lateral surface in said open position; a packaging including a base on which the appliance is placed, and four angular members covering the four lateral corners of the appliance, said four angular members extending from the base, characterized in that one of the four angular members includes a protrusion to be positioned on a surface of the movable element of the household appliance, said protrusion extending between two different angular members, and said protrusion including a surface apt to come into contact with said movable element of said household appliance so as to keep said movable element in the closed position.

[0016] According to a third aspect, the invention relates to a method to package a household appliance, the method including: providing a household appliance including a casing defining a front surface, two lateral surfaces, a back surface and four lateral corners, said casing further including in one of said front surface, back surface or lateral surfaces a movable element, said element being movable from an open to a closed position, wherein a distance between a point of said movable element and said front, back or lateral surface in said closed position is different from a distance between said point of said movable element and said front, back or lateral surface in said open position; providing a packaging including a base, and four angular members, wherein one of the four angular members includes a protrusion; positioning the household appliance on the base of the packaging, and positioning the angular members so as to cover the lateral corners of the household appliance; and positioning the protrusion in front of the movable element so that it is in contact with the same and keeps the movable element in the closed position.

[0017] The household appliance to which the present invention refers comprises a casing defining a front surface, a back surface, two lateral surfaces extending between the front and back surfaces, a top surface and a basement. Between a first lateral surface and the front surface a first vertical corner is defined, as well as a second vertical corner is defined between a second lateral surface and the front surface, a third vertical corner is defined between the first lateral surface and the back surface, and a fourth vertical corner is defined between the second lateral surface and the back surface.

[0018] In the present context, the terms "vertical" and "horizontal" are referred to the positions of elements with respect to the household appliance in its normal installation or functioning. Indeed, a horizontal plane formed by two horizontal perpendicular directions is defined, and a vertical direction, perpendicular to the horizontal plane, is defined as well in a 3-D space, by the ground on which the household appliance is resting. However, the same definition applies when the ground is not really horizontal, but tilted with respect of the same. Also in this case, all spatial terminology like "upper", "lower", "lateral" can be still used, referring to a local coordinate system where the horizontal plane is a locally horizontal plane on which the household appliance rests and the vertical direction is the locally vertical coordinate along which the household appliance extends.

[0019] The household appliance to which the present invention preferably refers is preferably a laundry treating appliance and may include a washing machine, a drier or a combined washer-dryer. Alternatively, the household appliance may include an oven or a fridge.

[0020] A laundry treating appliance commonly includes a washing and/or drying chamber, such as a drum, which is a treatment chamber, where the laundry can be located in order to be washed and/or dried. The chamber can be rotated around a chamber axis during the washing and/or drying operations. Further, the laundry treating appliance is preferably a front-loading machine, which means that the axis of rotation of the laundry chamber is positioned in a horizontal manner or slightly tilted with respect to a horizontal plane. In a front-loading machine the treatment chamber has a load opening on the front surface of the casing; the load opening being preferably closed by a door.

[0021] In a household appliance there might be several elements which are movable with respect to the remaining of the casing. For example, as below detailed, the household appliance may include a door which moves from a closed to an open position, or vice-versa, so that at least a point of the same has a distance from one of the surfaces of the casing which changes, from a minimal (door closed) to a maximal distance (door open and substantially perpendicular to the casing). Other movable elements present in the appliance could be a drawer which can be opened and closed slidably, a swivelling door, a filter grid, etc., better detailed below.

[0022] A point of the movable element, which could be the whole movable element or just part of it, has a distance from the front or back or lateral surface, depending on the position of the movable element, when it is in a closed position, which is different from the distance of the same point of the movable element from the front, back or lateral surface when it is in an open position. For example, a point in a handle of the door changes distance from the front surface when the door is open or when the door is closed. Considering the door that closes the treatment chamber as a movable element, the door is hinged to the casing of the laundry treating appliance, preferably it is hinged to the front surface of the casing, about a vertical axis. The door has a central portion preferably made of transparent material, such as tempered glass or acrylic glass (namely poly(methyl methacrylate)). The central portion is surrounded by a support frame, preferably made of plastic or metallic material, so as to define a porthole. The support frame is hinged to the front surface of the casing about a vertical axis so as to swivel and to allow a direct access to the treatment chamber.

The support frame is preferably ring shaped and comprises a handle for allowing a user to open and close the porthole. The handle comprises a cantilevered portion projecting from the support frame toward, or away from, the central portion. The hinge between the support frame and the casing acts on a side of the support frame and on a first hinge position of the casing located adjacent to the load opening of the treatment chamber. The hinge may be disassembled from the first hinge position of the casing for being assembled at a second hinge position of the casing opposite to the first hinge position with respect to the load opening, in order to allow the handle of the door to be mounted in a first angular position and in a second angular position. Preferably, the second angular position of the handle is substantially rotated of about 180° with respect the first angular position. Moreover, the first angular position of the handle involves a right to left opening of the door, while the second angular position of the handle involves a left to right opening of the door.

[0023] The front surface may comprise a user panel to command the functioning of the appliance by the user.

[0024] The basement has, among others, the function of housing several components of the machine, such as heat exchangers (if the appliance is provided with), a motor for rotating the treatment chamber, a fan, etc. Further, it has also the function of supporting some of the surfaces of the casing. The basement can be realized in any material; preferably it is realized in plastic material. The basement is generally positioned on a floor and rests substantially horizontally when the appliance is in a standard operating condition. The basement is substantially parallel to the plane where it rests, namely a horizontal plane.

[0025] The household appliance may further comprise additional movable elements movable from an open to a closed position, where the distance of at least a point of the movable element from the casing varies. The additional movable element can be a further door, called a swivelling door, also hinged to the casing, for accessing a portion, such as components, of the household located inside the casing and/or the basement. For example, the swivelling door may give access, in case of a dryer or a combined washer-dryer, to one or more heat exchangers or to a condense canister in order to check or empty the same, to a fan for moving process drying air. The swivelling door is preferably provided on the front surface of the appliance, more preferably it is provided in the plinth. The swivelling door is hinged to the front surface about a vertical or horizontal axis for being opened and closed.

[0026] A further possible movable element of the laundry treatment appliance may be a drawer movable from a closed position wherein it is inserted into the appliance and an opened position wherein it is extracted from the appliance. An example of a drawer can be the drawer for storing the detergent for the washing cycle of the laundry treatment appliance, or the drawer to store condensed water in a dryer.

[0027] In order to protect the household appliance during storage and transportation, the present invention comprises a packaging. The packaging comprises a base on which the appliance is apt to be placed, and four angular members covering the four lateral corners of the casing of the appliance. Preferably, the packaging may also comprise a top cover apt to cover at least partially the top surface of the appliance. Each of the four angular members preferably comprises two walls substantially perpendicular to each other forming an internal corner apt to contact a relevant lateral corner of the appliance and an external corner opposite to the internal corner. The four angular members are preferably made of any material apt to prevent the vertical corners from damages in case of accidental bumps or hits against the angular members. An example of suitable material is expanded polystyrene (EPS), which guarantees adequate strength to the angular members and a low specific weight.

[0028] It is to be understood that two or more angular members may be connected to each other by walls covering respective walls of the casing of the household appliance. Therefore, two angular members may be portions of a unitary piece of the packaging.

[0029] According to the invention, at least one of the four angular members includes a protrusion adapted to be positioned in front of a surface of the movable element of the household appliance so that a surface of the protrusion comes into contact with the movable element, or it is substantially adjacent to it with a minimal gap, when in closed position, and prevents the same from opening. Indeed, the opening of the movable element would cause an abutment of the movable element onto the protrusion, which prevents such opening movement.

[0030] The protrusion extends from an angular member towards the adjacent angular member, in particular it extends on the surface of the casing hosting the movable element to be kept in closed position. For example, the protrusion extends on the front surface wherein it is provided the door for closing the load opening of the laundry treatment chamber.

[0031] Therefore, when the angular members are positioned on the lateral corners for protecting the same from possible damages, the movable element of the household appliance, such as the door that closes the load opening of the treating chamber or the swivelling door (or both), is kept in its closed position by the protrusion. No further operation is required for preventing the movable element from opening.

[0032] A simple and time effective way to prevent movable element of the household appliance from opening during storage and transportation is thus provided.

[0033] Further, the mechanical properties of the material used for realizing the angular members are also suitable for effectively creating a mechanical stop able to keep in closed position at least one movable element of the appliance during storage and transportation.

[0034] At least one of the four angular members, already used as a protective element, can be also used for generating such a mechanical stop - the protrusion -

when formed in the proper position for holding the movable element in its closed position, without the need of further additional elements than those already present in the appliance.

[0035] According to any of the tree aspects, the invention may include, alternatively or in combination, any of the following characteristics.

[0036] Preferably, the household appliance includes a laundry treating appliance, such as for example a washing machine, a dryer or a washer - dryer.

[0037] Preferably, the household appliance includes a refrigerator or an oven for food.

[0038] Preferably, the angular members are held in position against the corners of the appliance by wrapping the packaging in a plastic film that surround the whole household appliance. Furthermore, the angular member can be maintained in position by providing the same with fittings protruding from the lower portion thereof that cooperate with corresponding receiving portion provided in the base of the packaging.

[0039] Preferably, the protrusion is realized integral with the angular member. Therefore, the protrusion can be realized together with the angular member without requiring a dedicated manufacturing process. This allows to reduce the manufacturing cost and time. Moreover, advantageously, this feature further speeds up the operation of securing the movable element in its closed position. Indeed, by positioning the angular member having the protrusion on the lateral corner of the appliance, the protrusion is already in the proper position in front of the movable element. Further, the number of components to be assembled and produced is kept relatively low.

[0040] Preferably, the protrusion is integral with one wall of the angular member, more preferably the wall coplanar with the surface of the appliance having the movable element to be keep closed.

[0041] Alternatively, or in addition, said protrusion is removably coupled to said angular member.

[0042] In this embodiment, the protrusion can be attached and detached to the angular member. In this way the production steps to produce the packaging remains substantially unchanged and the protrusion is attached to the angular member depending on the specific needs. For example, the protrusion can be attached to the angular member in a number of different positions.

[0043] Each angular member may include one or more protrusions, of the same or of different types.

[0044] Preferably, said packaging includes a top cover apt to cover at least partially a top surface of the household appliance and wherein said four angular members extend from the base to the top cover.

[0045] The top cover might be a separate element which covers the top of the appliance, or at least part of it, or it can be integral with one or more of the angular members, for example protruding from the same so as to cover a portion of the top surface of the appliance.

[0046] Preferably, the protrusion includes a seat having a shape matching a portion of the movable element. More preferably, said seat is integral with the protrusion and it is made of the same material of the protrusion. Moreover, said seat of the protrusion preferably remains in front of the portion of the movable element to which the seat is countershaped when the protrusion is in its operative position, namely when the protrusion prevents the movable element from opening. In this way, movements of the movable element are substantially completely hindered. The seat might include a single surface facing an equally shaped surface of the movable element.

[0047] Preferably, said protrusion comprises a free end portion extending away from an angular member and spaced apart from an adjacent and subsequent angular member.

[0048] Two adjacent angular members are preferably not connected by the protrusion when the packaging surrounds the appliance; that is, preferably the protrusion does not link two opposite facing angular members. Preferably, the protrusion extends from one angular member and fails to reach the adjacent, or any other, angular member. The protrusion comprises a first end secured to the relevant angular member and a second free end which projects away from the angular member. The protrusion extends from the relevant angular member by a length that is just sufficient to position the second free end on, for example in front of, a surface of the movable element. The above cited seat of the protrusion is preferably positioned at the second free end of the protrusion. Two angular members could be connected at the base of the packaging and eventually at the top cover of the packaging.

[0049] Preferably, the dimension in horizontal direction of the protrusion is smaller than the dimension in horizontal direction of the angular member, namely the protrusion projects from the relevant angular member for a length that is smaller than the horizontal thickness of the angular member.

[0050] Preferably, at least two protrusions are formed in two different angular members of the packaging. More preferably, the two protrusions are facing the same surface of the casing of the household appliance, for example both protrusions face either the front, the lateral or the back surface of the casing. In a further preferred embodiment, both protrusions act on the same movable element of the appliance. For example, both the protrusions may act on the support frame of the porthole that closes the threating chamber of the appliance, preferably they act on opposite portions of the support frame. In a different embodiment, the protrusions act on the same movable member, however in two different operative positions of the same. As an example, the first protrusion is provided on a first angular member for facing the handle of the door of the threating chamber when mounted in the first angular position, while the second protrusion is provided in the second angular member for facing the handle of the door of the threating chamber when mounted in the second angular position.

[0051] Advantageously, at least one of said angular members is formed in polystyrene.

[0052] A standard packaging material is preferably used, so that standard manufacturing steps are used as well.

[0053] Preferably, two angular members are formed from the same board.

[0054] Preferably, an outer rim of an angular member has a complementary shape to an outer rim of a different angular member.

[0055] Preferably, the angular member having one of the two protrusions comprises, vertically adjacent to the protrusion, a recess countershaped to the protrusion of the other angular member. Preferably, an outer rim of an angular member has a complementary shape to an outer rim of a different angular member. Preferably, the outer rim of an angular member having a protrusion has a complementary shape to the outer rim of the other angular member having a protrusion. These features allow to form the protrusions and the two angular members at the same time by cutting a board in two.

[0056] In this embodiment, two angular members are preferably realized from the same board of material and then are divided when they needed to be mounted on the appliance. In this way the number of different pieces of the packaging for transporting purposes is limited. The two angular members may be linked at their outer rim, which is cut or broken along for example a pre-cut line when mounting. The two outer rims thus have a complementary shape. Alternatively, the two angular members may be linked differently, for example by means of the respective protrusions, which are connected and separated at mounting. Alternatively or in addition, two angular members can be formed from the same board and the protrusion formed on one angular member is - before mounting -attached to the body of another angular member and the two need to be separated before packaging the appliance.

[0057] For example, the board used to form the two angular member may be realized using injection moulding. The material forming the angular member is injected in a mould in which the two angular members are thus formed and a strip of material connects the two angular members. The strip of material is broken or cut when the packaging needs to be mounted around the appliance.

[0058] Preferably, said movable element includes a door or a drawer of said household appliance.

[0059] Preferably, in an alternative or additional embodiment, the packaging further comprises a bar connecting two different angular members, more preferably connecting two adjacent angular members. For example it may connect two facing angular members, so that the bar faces a single surface of the casing of the appliance. Preferably, the bar connects the two angular members positioned at the opposite sides of the front surface of the appliance. Preferably, the bar comprises joining portions positioned at opposite ends thereof for firmly connecting the bar to the angular members. In the preferred embodiment of the invention, each joining portion comprises projections apt to match respective recesses in the upper portion of the relevant angular member. In the preferred embodiment, the bar is positioned at least partially over a handle of a door of the household appliance.

[0060] Preferably, said bar is positioned at least partially over a handle of a door of said household appliance.

[0061] Preferably, the bar is positioned at the upper portion of the front surface of the appliance so as to cover the user panel. Preferably, the bar is made of the same material of the angular member. Preferably, the bar comprises a surface facing the appliance having a shape matching the shape of the user panel of the appliance.

[0062] Preferably, the step of providing a packaging includes:

forming two angular members from a single board. Preferably, the two angular members are formed cutting or breaking a board in two, so that an outer rim of an angular member has a complementary shape to an outer rim of a different angular member.

[0063] Alternatively, or in addition, the step of providing a packaging includes:

- o forming two angular members attached to each other by means of a protrusion formed in one of the angular members, and
- o cutting or breaking a joining element between the protrusion and the angular member which the protrusion is attached thereto.

[0064] As already mentioned, preferably two angular elements are realized jointly and separated when they need to be mounted around the appliance. The two angular members may be joined by means of the protrusions. If two protrusions are available, one per angular member, the joining can take place between the two protrusions. If only one protrusion is present, the joining can take place between the protrusion and the body of the other angular member not having a protrusion.

[0065] Preferably, the method includes wrapping the packaging surrounding the household appliance in a plastic film.

[0066] The plastic film is a further protection for the appliance, in particular with regards to scratches.

[0067] Preferably, the method includes:

- o providing the packaging with a first and a second protrusions;
- o providing the household appliance with a door having a handle, said handle being apt to be attached to the door in a first angular position or in a second angular position;
- o positioning the first protrusion in front of the door

when the handle is in the first angular position; or

o positioning the second protrusion in front of the door when the handle is in the second angular position.

[0068] The same packaging can be used for appliances having their door mounted in a first or a second angular positions, so that the door is opened from the left or from the right. Thus few different packages need to be manufactured.

Brief description of the drawings

[0069] These and other features and advantages of the present invention will better appear from the reading of the following detailed description of an exemplary and non-limitative embodiment thereof, depicted in the annexed drawings, wherein:

- Fig. 1 is an isometric view of a first embodiment of a household appliance and a first embodiment of its respective packaging according to the present invention;
- Fig. 2 is a further isometric view of the the first embodiment of the household appliance and respective packaging of figure 1;
- Fig. 3 is a front view of the first embodiment of the household appliance and the respective packaging of figure 1;
- Fig. 4 is an enlarged isometric view of a detail of the first embodiment of the household appliance and the respective packaging of figure 1;
- Fig. 5 is an enlarged isometric view of a detail of the first embodiment of the packaging of figure 1;
- Fig. 6 is an isometric view of a second embodiment of a household appliance and a second embodiment of its respective packaging according to the present invention;
- Figs. 7 and 8 are two isometric view of a detail of the second embodiment of a packaging of the household appliance of figure 6; and
- Figs. 9 - 11 are three isometric views of a detail of a third embodiment of the household appliance of figure 6.

Detailed description of an exemplary embodiment of the invention

[0070] With reference to figure 1, an isometric view of a first embodiment of a household appliance and its respective packaging according to the present invention is depicted. The household appliance referred in the following description of this first embodiment, globally denoted as 1 is a laundry treating machine, for example a laundry dryer or a laundry washer/dryer.

[0071] The laundry treating appliance 1 has an external casing or appliance cabinet 2, inside which structural and functional parts of the machine are accommodated, such as a tumbler (or, in the case of a laundry washer/dryer, a drum rotatable within a tub), a moisture condensing system for demoisturizing the drying air, fans, pumps, valves, motors, vibration dampening devices, electronics (not shown in the figures). The casing 2 comprises front surface 3, a back surface 4 (shown in figure 2), two lateral surfaces 5 extending between the front 3 and back surface 4, a top surface 6 and a basement (not shown in the figures). Between a first lateral surface 4 and the front surface 3 it is defined a first vertical corner 7, between a second lateral surface 4 and the front surface 3 it is defined a second vertical corner 8, between the first lateral surface 4 and the back surface 5 it is defined a third vertical corner 9, between the second lateral surface 4 and the back surface 5 it is defined a fourth vertical corner 10.

[0072] A laundry loading opening is formed in the front surface 3 of the casing 2, for allowing access to the treatment chamber and a door 11 is provided for closing the load opening. The door 11 has a central portion 11 a preferably made of transparent material. The central portion 11 a is surrounded by a support frame 11 b. The support frame 11 b is hinged to the front surface 3 of the casing 2 about a vertical axis and comprises a handle 12 for allowing a user to open and close the door 11. The handle 12 comprises a cantilevered portion 12a projecting from the support frame 11 b away from the central portion 11 a.

[0073] An upper portion of the front surface 3 includes a drawer 3a and a user panel 13 where settings of the cycle may be introduced and visual or acoustic signal relative to the status of the cycle or relative to the status and functioning of the laundry treating machine may be displayed, for example by means of LEDs or screen.

[0074] Below the door 11 that closes the treatment chamber, it is provided a plinth 14. The plinth 14 is a cover for a bottom part of the laundry treating machine 1 where the moisture condensing system is, at least partly, located, for example an air-air heat exchanger where the moisture-laden drying air, coming from the laundry treatment chamber, is cooled down by a flow of cooling air taken in from the outside environment, so as to cause condensation of the moisture. The plinth 14 is for this purpose preferably perforated, so as to enable the cooling air to be taken in and expelled.

[0075] A portion of the plinth 14 is swivably coupled to the casing 2 so as to define a swivelling door 15 openable to allow access to the area behind it and closable when the area behind it is not to be accessed. In the depicted example, the swivelling door 15 is horizontally hinged, at its lower side, to the plinth 14.

[0076] The laundry treating appliance 1 is at least partially covered by a packaging 30 for protecting the machine 1 from bumps during transportation or storage.

[0077] The packaging 30 comprises a base 31 on which the appliance is placed, a top cover 32 covering the top surface 6 of the appliance and four angular members 33, 34, 35, 36 each covering a respective lateral

corner 7, 8, 9, 10 of the appliance. Each of the four angular member 33, 34, 35, 36 comprises two walls 33a, 34a, 35a, 36a, 33b, 34b, 35b, 36b perpendicular each other forming an internal corner designed to contact the relevant lateral corner 7, 8, 9, 10 of the laundry treating appliance 1 and an external corner opposite to the internal corner.

[0078] At the exterior corner of each angular members 33, 34, 35, 36 are provided relevant handles 37 for allowing the packaging and the laundry treating appliance 1 to be picked up. The handles 37 are realized by recesses in the exterior corners of the angular members 33, 34, 35, 36.

[0079] The four angular members are preferably made of expanded polystyrene (EPS), which guarantees adequate strength to the angular members and a low specific weight. The base 31 of the packaging is preferably made of expanded polystyrene (EPS), while the top cover 32 is preferably made of cardboard.

[0080] The angular member 34 acting on one 8 of the two lateral corner 7, 8 that border the front surface 3 of the appliance comprises a protrusion 50 that extends toward the angular member 33 acting on the other lateral corner 7 that borders the front surface 3.

[0081] The protrusion 50 overlaps a portion of the door 11 that closes the treatment chamber so preventing the latter from opening. In the embodiment of the invention illustrated in the enclosed figures, the protrusion 50 overlaps a portion of the support frame 11 b of the door 11 (see in particular figure 3).

[0082] The protrusion 50 is integral with the angular member 34 from which it projects. The protrusion 50 is coplanar with the wall 34b of the angular member 34 acting on the front surface 3 of the appliance. The protrusion 50 projects from the angular member 34 just for the extent necessary to reach and to partially overlap a portion of the frame 11 b of the door 11, as shown in figure 3. In particular, the protrusion 50 comprises a first end 51 integral with the wall 34b of the angular member 34 and a second free end 52 which projects away from the angular member 34.

[0083] The protrusion 50 includes a seat 53 which is shaped for matching the portion of door 11 on which the protrusion 50 acts. The seat 53 is provided on the surface of the protrusion 50 facing the door 11. The seat 53 of the protrusion 50 is positioned at the second free end 52. In the embodiment illustrated in the encloses figures, where the protrusion 50 acts on the support frame 11 b of the door 11, the seat 51 is substantially flat since the support frame 11 b presents an outer surface substantially flat. In possible embodiments where the protrusion 50 acts on a movable element of the appliance or on a different portion of the door 11, the seat 53 can have a shape different from the flat surface of the present embodiment.

[0084] The angular element 33 bordering the front surface 3, opposite to the angular element 34 above cited having the protrusion 50, comprises a protrusion 60 too. However, embodiments in which the packaging includes a single protrusion, or more than two protrusions, are possible as well.

[0085] The protrusion 60 overlaps a portion of the door 11 diametrically opposite to the portion of the door on which acts the protrusion 50 already described, with respect to a vertical axis passing through the centre of the door 11. In the embodiment of the invention depicted in the enclosed figures, the protrusion 60 overlaps the support frame 11 b of the door 11 where the latter is hinged to the front surface 3.

[0086] The protrusion 60 is integral with the angular member 33 from which it projects. The protrusion 60 is coplanar with the wall 33b of the angular member 33 and projects from the angular member 33 just for the extent necessary to reach and to partially overlap the frame 11 b of the door 11. The protrusion 60 comprises a first end 61 secured to the wall 33b of the angular member 33 and a second free end 62 which projects away from the angular member 33.

[0087] The protrusion 60 includes a seat 63 which is shaped for matching the portion of door 11 on which the protrusion 60 acts. As for the already described protrusion 50, the seat 63 is substantially flat.

[0088] Vertically adjacent to the protrusion 50, 60, the relevant angular member 33, 34 comprises a recess 55, 65 countershaped to the protrusion of the other angular member. In particular, in one angular member 33 the recess 65 is placed vertically above the protrusion 60 and in the other angular member 34 the recess 55 is placed vertically below the protrusion 50. The recesses 55, 65 are provided in the wall 33b, 34b, facing the front surface 3, of the relevant angular member 33, 34. By putting the two angular members 33, 34 against each other, the protrusions 33, 34 enter into the recesses 33, 34 matching exactly the shape of the same. Moreover, since the outer rim of an angular member 33 has a complementary shape to an outer rim of a different angular member 34, when two angular members are put against each other they form a substantially rectangular board.

[0089] The packaging 30 further comprises a bar 70 connecting the angular members 33, 34 having the protrusions 50, 60. The bar 70 is not integral with the angular members 33, 34 and comprises joining portions 71 positioned at opposite ends 70a, 70b thereof. The joining portions 71 mechanically connect the bar 70 to the upper portions of the angular members 33, 34 (see figure 4). Each joining portion 71 comprises projections 72 apt to match respective recesses (not shown) in the upper portions of the angular members 33, 34. The projections 72 extend in a horizontal direction away from the ends 70a, 70b of the bar 70.

[0090] The bar 70 covers the upper portion of the front surface, in particular it covers the user panel 13 of the appliance and the drawer 3a. Moreover, the bar 70 is positioned partially over the handle 12 of the door 11, as illustrated in figure 3. The surface of the bar 70 facing the user panel 13 is counteshaped to the surface of the

user panel 13, so as to matching the same. The bar is preferably made of the same material of the angular members. The bar 70 thus has the same function of protrusions 60, 50 blocking the movements of handle 12. Indeed, further bar 70 includes a first and a second seat 75a, 75b formed on a surface of the bar facing the panel 13 when the bar 70 is mounted together with the rest of the packaging on the appliance. One of the seats, in the depicted embodiment seat 75b, is positioned in front on handle 12 to avoid movements of the latter. The shape of the seat 70b is such that it follows the surface contour of the handle 12. The presence of a second seat 75a allows modification in the positioning of the handle 12, for example in order to change from a configuration in which the door 11 is open with a movement from the right to the left to a movement from the left to the right (e.g. in case of a reversible door). In this way the package is usable in both handle's configurations without the need of further adjustments.

[0091] The method to package the household appliance comprises providing a household appliance, as for example the laundry treating machine 1 above described, and the packaging 30 above described.

[0092] The household appliance 1 is positioned on the base 31 of the packaging 30 and the covering 32 is placed on the top surface 6 of the appliance.

[0093] The two angular member 33, 34 are associated to the bar 70 by insetting the joining portions 71 of the latter into the recesses of the upper portion of the angular members 33, 34.

[0094] The four angular members 33, 34, 35, 36 are positioned on the base 31 and in contact with the respective lateral corner 7, 8, 9, 10 of the appliance. Preferably, each angular member 33, 34, 35, 36 is stably connected to the base 31 of the packaging 30. To this end, the angular member are maintained in position by providing the same with fittings 38 protruding from the lower portion of the relevant angular member 33, 34, 35, 36 that cooperate with corresponding receiving portion 39 provided in the base 31 of the packaging.

[0095] When the angular members 33, 34, 35, 36 are positioned on the lateral corners 7, 8, 9, 10, the movable element of the household appliance, as for example the door 11, is kept in its closed position by the protrusion 50. In order to avoid any possible movement of the angular members 33, 34, 35, 36 during the transportation of the appliance, the packed appliance is tightly and wholly wrapped in a plastic film.

[0096] In figure 6, a further embodiment of the appliance according to the invention is depicted. This appliance is preferably a washing machine and it is globally indicated with 100.

[0097] The washing machine 100 according to the invention which is schematically illustrated in the enclosed Figures is advantageously of the front-loading type; it is however clear that the invention is applicable, substantially without any crucial modification, to a top-loading washing machine.

[0098] With reference to Figure 6, the washing machine 100 comprises an external casing 200 in which frontal wall 3 an access opening is obtained, provided with a loading/unloading door 11, operable by a handle 12, which allows the access to a washing tub (not depicted) contained in the external casing 200; the washing tub contains a rotatable perforated drum (also not shown) in which the laundry to be washed can be loaded and unloaded. In this advantageous embodiment the drum embodies, therefore, a treating chamber in which one or more items, such as pieces of laundry can be loaded and treated with water and one or more additives, e.g. washing/rinsing products. The rotational axis of the drum is substantially horizontal.

[0099] As in the previous embodiment of the dryer 1, the casing 200 comprises front surface 3, a back surface 4 (shown in figure 2), two lateral surfaces 5 extending between the front 3 and back surface 4, a top surface 6 and a basement (not shown in the figures). Between a first lateral surface 4 and the front surface 3 it is defined a first vertical corner 7, between a second lateral surface 4 and the front surface 3 it is defined a second vertical corner 8, between the first lateral surface 4 and the back surface 5 it is defined a third vertical corner 9, between the second lateral surface 4 and the back surface 5 it is defined a fourth vertical corner 10.

[0100] Advantageously, the washing machine 100 comprises a water inlet circuit, not visible in the figures, adapted for feeding water and washing/rinsing products, into the washing tub; the water inlet circuit comprises, for example, a removable drawer (not depicted), adapted to be filled with washing and/or rinsing products, e.g. liquid or concentrate or gel detergent, or powder detergent, or softener, an inlet duct, also not represented, connectable to water delivery means present outside the washing machine 100 and adapted to deliver fresh water to the drawer, and an outlet duct, fluidly connecting the drawer and the washing tub 5 and adapted to deliver water and washing/rinsing products into the washing tub.

[0101] The washing machine 100 also advantageously comprise a draining circuit, fluidly connected to the bottom of the washing tub and adapted to drain the washing/rinsing liquid from the washing tub; in a further embodiment, not illustrated, the draining circuit may be also provided with a recirculation circuit, adapted to drain the washing/rinsing liquid from the bottom of the washing tub, and to re-admit such liquid into an upper region of the washing tub, for improving the wetting of the laundry.

[0102] Water inlet circuit and draining circuit are considered standard and known in the art and therefore not further discussed.

[0103] The laundry treating appliance 100 is at least partially covered by a packaging 300 for protecting the machine 100 from bumps during transportation or storage.

[0104] The packaging 300 comprises a base 31 on which the appliance is placed, a top cover 32 covering the top surface 6 of the appliance and four angular mem-

bers 33, 34, 35, 36 each covering a respective lateral corner 7, 8, 9, 10 of the appliance. Each of the four angular member 33, 34, 35, 36 comprises two walls 33a, 34a, 35a, 36a, 33b, 34b, 35b, 36b perpendicular each other forming an internal corner designed to contact the relevant lateral corner 7, 8, 9, 10 of the washing machine and an external corner opposite to the internal corner.

[0105] The angular member 34 acting on one 8 of the two lateral corners 7, 8 that border the front surface 3 of the appliance 100 comprises a protrusion 500 that extends toward the angular member 33 acting on the other lateral corner 7 that borders the front surface 3.

[0106] The protrusion 500 overlaps a portion of the door 11 that closes the treatment chamber so preventing the latter from opening. In the embodiment of the invention illustrated in the enclosed figures, the protrusion 500 overlaps a portion of the support frame 11 b of the door 11 (see in particular figure 6).

[0107] The protrusion 500 is integral with the angular member 34 from which it projects. The protrusion 500 is coplanar with the wall 34b of the angular member 34 acting on the front surface 3 of the appliance. The protrusion 500 projects from the angular member 34 just for the extent necessary to reach and to partially overlap a portion of the frame 11 b of the door 11, as shown in figure 6.

[0108] The protrusion 500 includes a surface 501 which is tilted with respect to wall 34b and faces the frame 11 b of door 11 to follow its contour. Therefore, the protrusion 500 with its surface 501 can be in contact with a relatively "large" surface of door 11 to avoid opening of the same.

[0109] In this embodiment, there is no second protrusion in angular member 33, however there is bar 70 having the same functions as described with reference to the first embodiment above described of dryer 1.

[0110] With reference to figures 7 and 8, in the manufacturing process, two angular members, such as angular members 34 and 33, are produced from the same board and therefore - before packaging - they are connected. For example, as visible in this embodiment, the angular member 34 having protrusion 500 is attached to angular member 33, without protrusions, via the protrusion 500 itself. The protrusion 500 is attached to the body of the angular member 33 and, in order to package the washing machine 100, the material connecting the protrusion 500 to the body of the angular member 33 needs to be broken or cut.

[0111] According to a different embodiment of the invention depicted in figures 9 - 11, the protrusion 600 is not integral with angular element 34, but it is removably fixed to the same. For this purpose, the protrusion 600 includes a first and a second end 601, 602, the second end 602 being in contact with the frame 11b of the door 11, while the first end 601 is housed in a seat 603 realized in the angular member 34.

[0112] The coupling between the first end 602 and the seat 603 is a shape coupling, so that the protrusion 600 can be easily removed from seat 603 if needed.

[0113] Preferably, seat 603 is not accessible when the packaging 300 is wrapped around the laundry treating machine 1, 100, so that the protrusion 600 cannot be unintentionally removed. For this purpose, when the angular member 34 is mounted around the casing 2, the seat 603 faces the surface of the casing itself, in this case the front surface 3.

Claims

1. A packaging (30, 300) for a household appliance (1, 100), said packaging (30, 300) including a base (31) on which the appliance (1, 100) is apt to be placed, and four angular members (33, 34, 35, 36) apt to cover four corners (6, 7, 8, 9) of the appliance, said four angular members extending from the base, **characterized in that** one of the four angular members (33, 34, 35, 36) includes a protrusion (50, 60, 70, 500, 600) apt to be positioned in front of a movable element (11) of the household appliance (1, 100), said movable element (11) being located in one of a front surface (3), back surface (5) or lateral surfaces (4) of a casing (2, 200) of said appliance (1) and being movable from an open to a closed positions, wherein a distance between a point of said movable element (11) and said front, back or lateral surface (3, 4, 5) in said closed position is different from a distance between said point of said movable element (11) and said front, back or lateral surface (3, 4, 5) in said open position, said protrusion (50, 60, 70, 500, 600) extending between two different angular members (33, 34, 35, 36), and including a surface (53, 63, 501) apt to come into contact with said movable element of said household appliance to keep the movable element (11) in the closed position.

2. A kit comprising:

   o a household appliance (1, 100), including a casing (2, 200) defining a front surface (3), two lateral surfaces (4), a back surface (5) and four lateral corners (6, 7, 8, 9), said casing (2, 200) further including in one of said front surface, back surface or lateral surfaces (3, 4, 5) a movable element (11), said movable element (11) being movable from an open to a closed position, wherein a distance between a point of said movable element (11) and said front, back or lateral surface (3, 4, 5) in said closed position is different from a distance between said point of said movable element (11) and said front, back or lateral surface (3, 4, 5) in said open position;
   o a packaging (30, 300) including a base (31) on which the household appliance is placed, and four angular members (33, 34, 35, 36) covering

the four lateral corners (6, 7, 8, 9) of the appliance, said four angular members (33, 34, 35, 36) extending from the base, **characterized in that** one of the four angular members (33, 34, 35, 36) includes a protrusion (50, 60, 70, 500, 600) to be positioned on a surface of the movable element (11) of the household appliance, said protrusion (50, 60, 70, 500, 600) extending between two different angular members (33, 34, 35, 36), and said protrusion (50, 60, 70, 500, 600) including a surface (53, 601) apt to come into contact with said movable element (11) of said household appliance (1, 100) so as to keep said movable element (11) in the closed position.

3. A packaging (30, 300) or a kit according to claim 1 or 2, wherein said protrusion (50, 60, 500) is realized integral with said angular member (33, 34, 35, 36).

4. A packaging (30, 300) or a kit according to claim 1 or 2, wherein said protrusion (70, 600) is removably coupled to said angular member (33, 34, 35, 36).

5. A packaging (30, 300) or a kit according to any of the preceding claims, wherein said packaging includes a top cover (32) apt to cover at least partially a top surface (6) of the household appliance (1, 100) and wherein said four angular members (33, 34, 35, 36) extend from the base (31) to the top cover (32).

6. A packaging (30, 300) or a kit according to one or more of the preceding claims, wherein said protrusion (50, 60, 70, 500, 600) includes a seat (53, 63, 75a, 75b) having a shape matching a portion of said movable element (11).

7. A packaging (30, 300) or a kit according to one or more of the preceding claims, wherein said protrusion (50, 60, 500, 600) comprises a free end portion (52) extending away from an angular member (33, 34, 35, 36) and spaced apart from an adjacent and subsequent angular member (33, 34, 35, 36).

8. A packaging (30, 300) or a kit according to any of the preceding claims, wherein an outer rim of an angular member (33, 34, 35, 36) has a complementary shape to an outer rim of a different angular member (33, 34, 35, 36).

9. A kit according to one or more of the preceding claims, wherein said movable element (11) includes a door (11) or a drawer (3a) of said household appliance (1, 100).

10. A packaging or a kit according to one or more of the preceding claims, wherein said protrusion includes a bar (70) connecting two different angular members (33, 34, 35, 36), said bar (70) being apt to be positioned at least partially over a handle (12) of a door (11) of said household appliance (1, 100).

11. A method to package a household appliance (1, 100), the method including:

o providing a household appliance (1, 100) including a casing (2, 200) defining a front surface (3), two lateral surfaces (4), a back surface (5) and four lateral corners (6, 7, 8, 9), said casing (2, 200) further including in one of said front surface, back surface or lateral surfaces (3, 4, 5) a movable element (11), said movable element (11) being movable from an open to a closed position, wherein a distance between a point of said movable element (11) and said front, back or lateral surface (3, 4, 5) in said closed position is different from a distance between said point of said movable element (11) and said front, back or lateral surface (3, 4, 5) in said open position;
o providing a packaging (30) including a base (31) and four angular members (33, 34, 35, 36), wherein one of the four angular members (33, 34, 35, 36) includes a protrusion (50, 60, 70, 500, 600);
o positioning the household appliance (1, 100) on the base (31) of the packaging (30), and positioning the angular members (33, 34, 35, 36) so as to cover the lateral corners (6, 7, 8, 9) of the household appliance; and
o positioning the protrusion (50, 60, 70, 500, 600) in front of the movable element (11) so that it is in contact with the same and keeps the movable element (11) in the closed position.

12. The method according to claim 11, wherein the step of providing a packaging (30) includes:

o forming two angular members (33, 34, 35, 36) from a single board.

13. The method according to claim 11 or 12, wherein the step of providing a packaging (30, 300) includes:

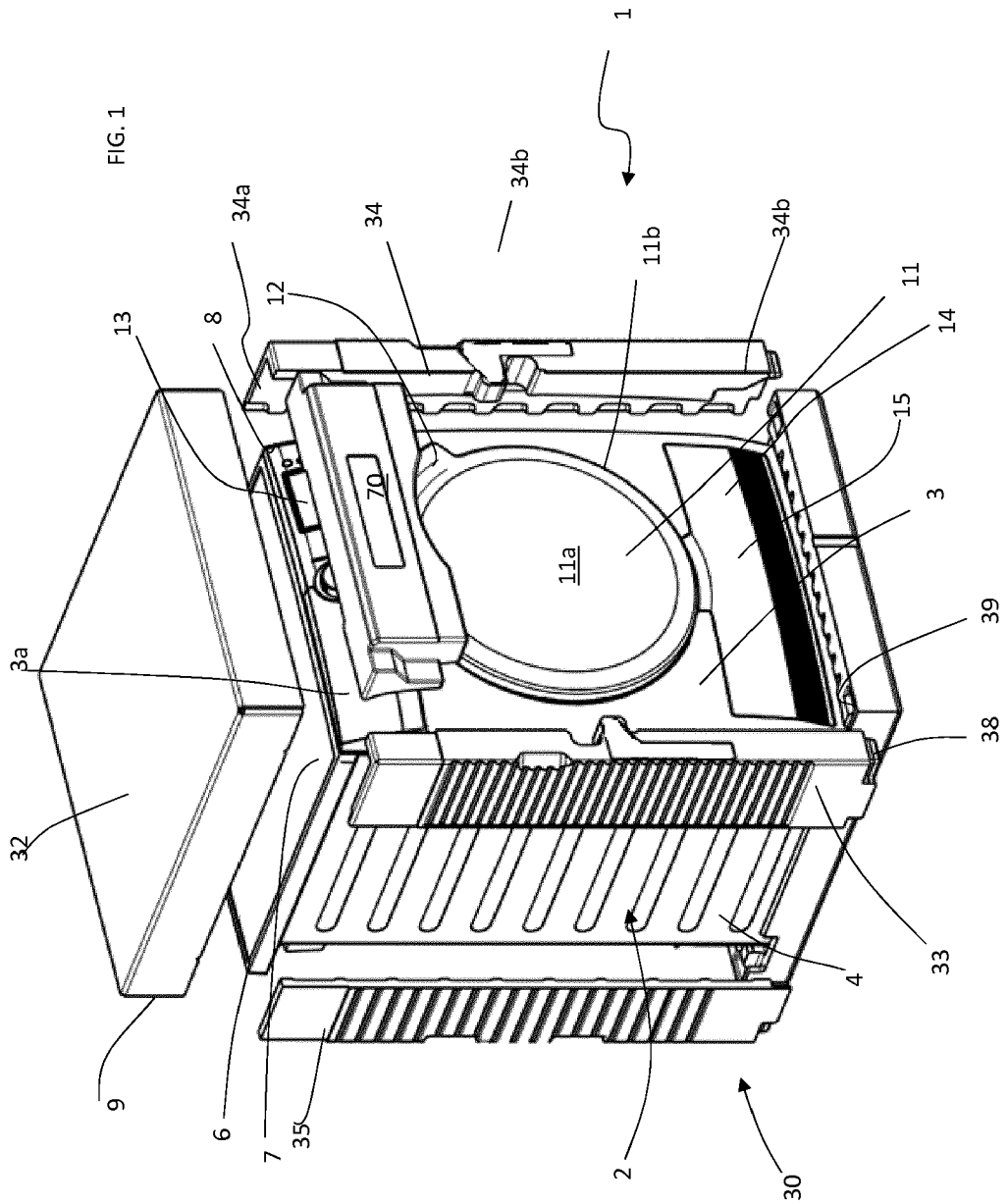
o forming two angular members (33, 34, 35, 36) attached to each other by means of a protrusion formed in one of the two angular members (600), and
o cutting or breaking a joining element between the protrusion (600) and the other of the two angular members.

14. The method according to any of claims 14 - 17, including wrapping the packaging (30, 300) surrounding the household appliance in a plastic film.

15. The method according to any of claims 11 to 14, including:

o providing the packaging (30, 300) with a first and a second protrusions (50, 60);
o providing the household appliance (1, 100) with a door (11) having a handle (12), said handle being apt to be attached to the door (11) in a first angular position or in a second angular position;
o positioning the first protrusion (50, 60, 70, 500, 600) in front of the door when the handle (12) is in the first angular position; or
o positioning the second protrusion (50, 60, 70, 500, 600) in front of the door when the handle (12) is in the second angular position.

FIG. 1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34
11b
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11
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13
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7
35
2
30

FIG. 2

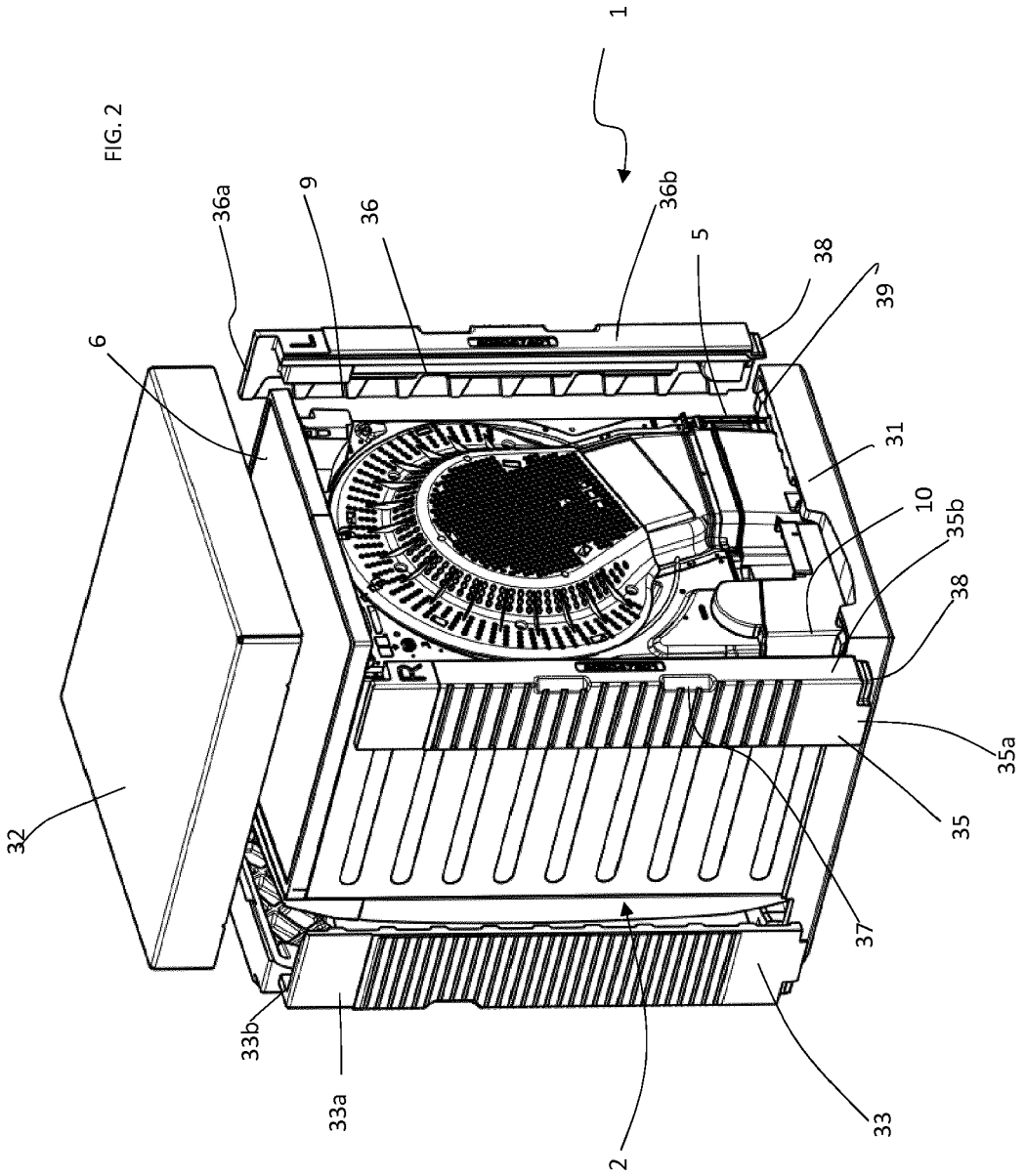
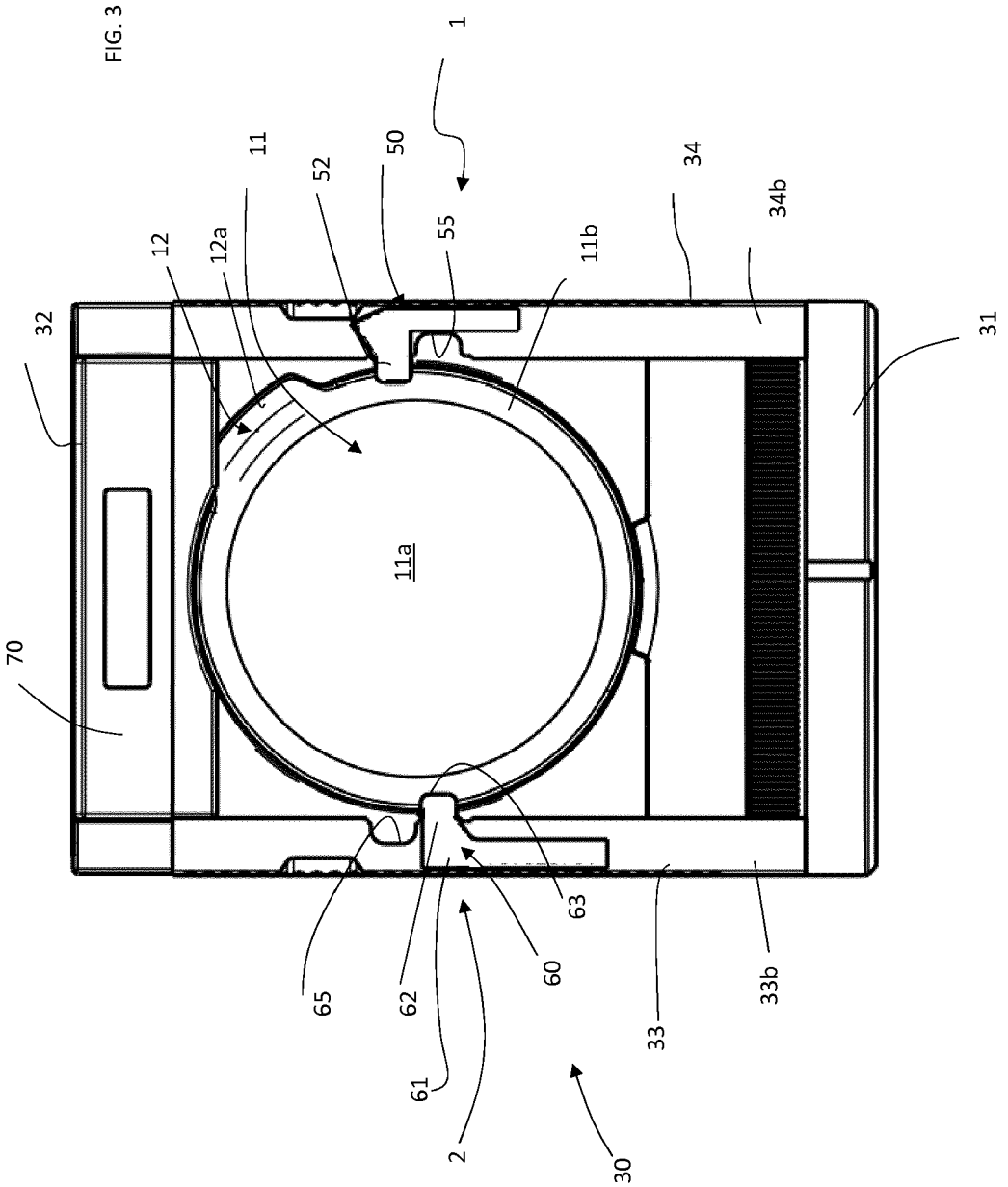


FIG. 3



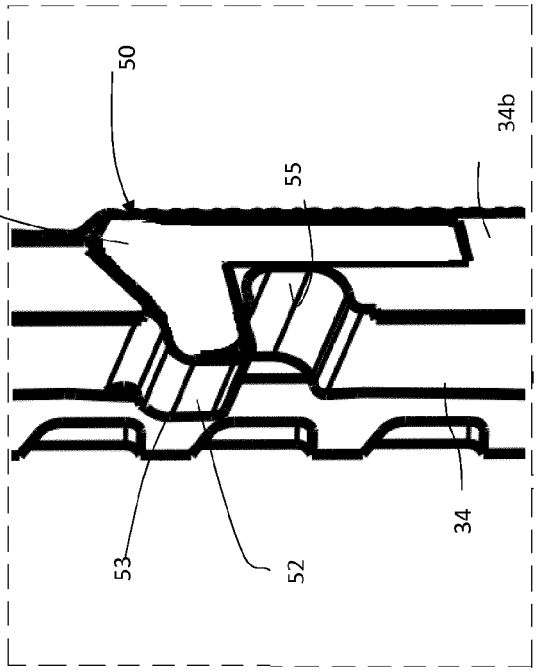


FIG. 5

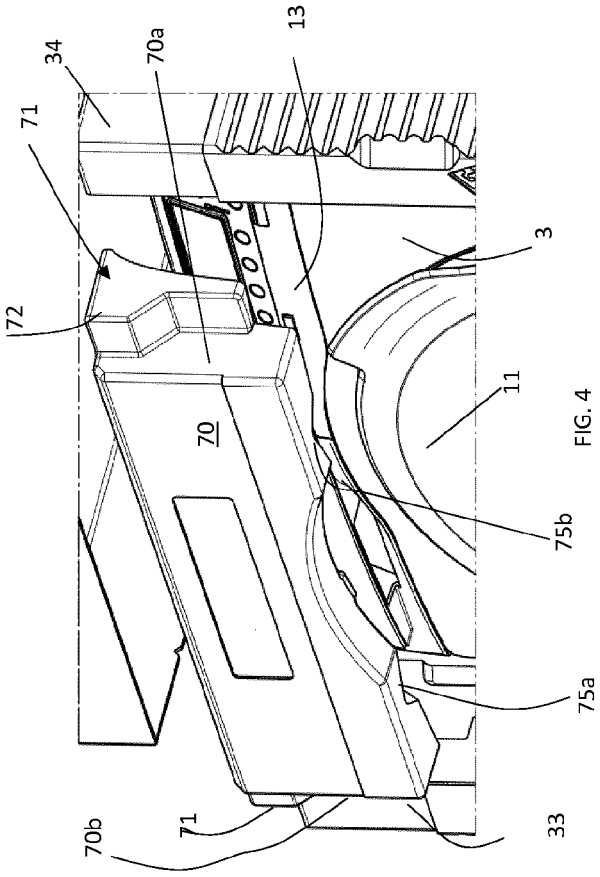
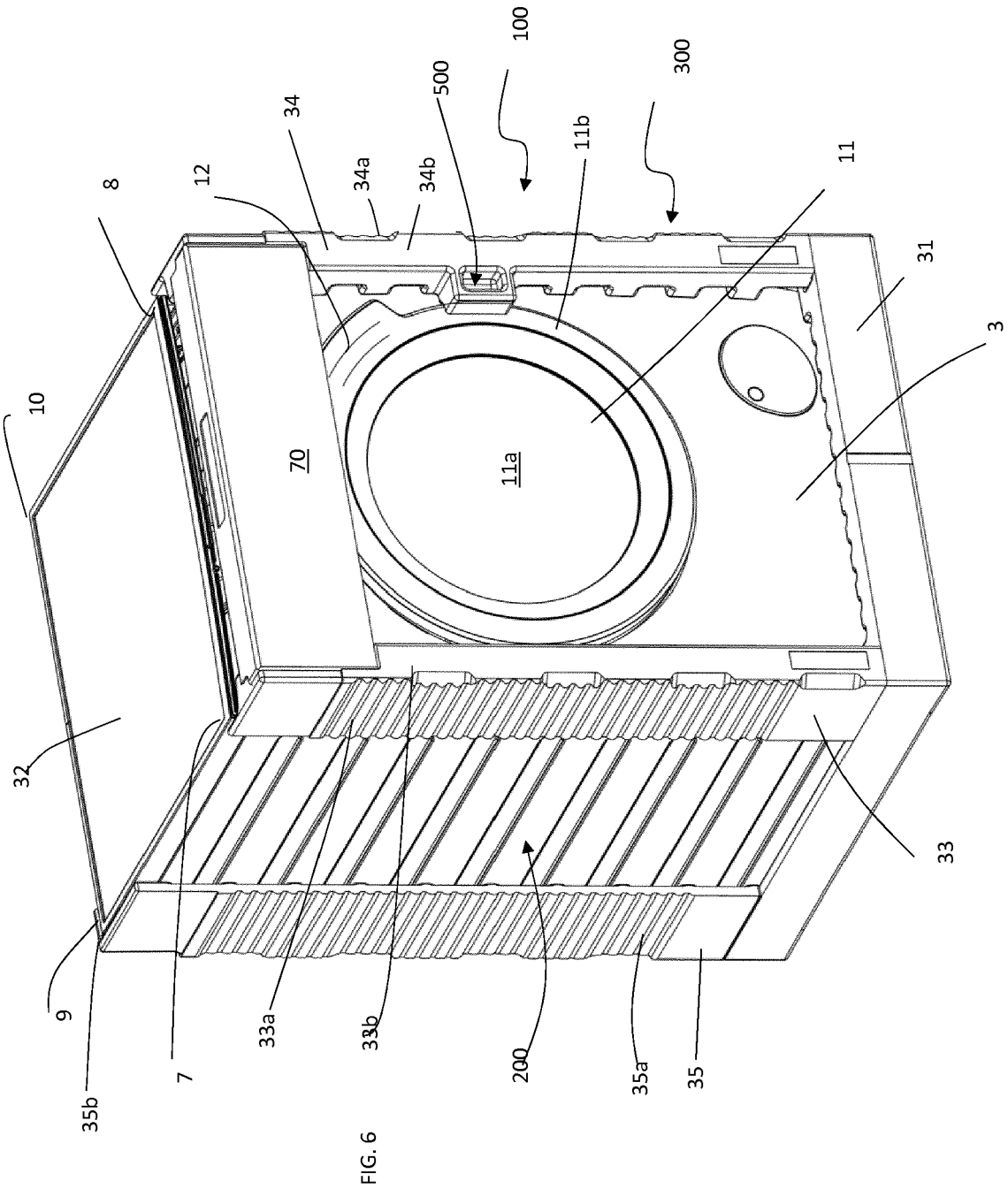


FIG. 4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500
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34a
34b
11b
11
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35b

FIG. 6

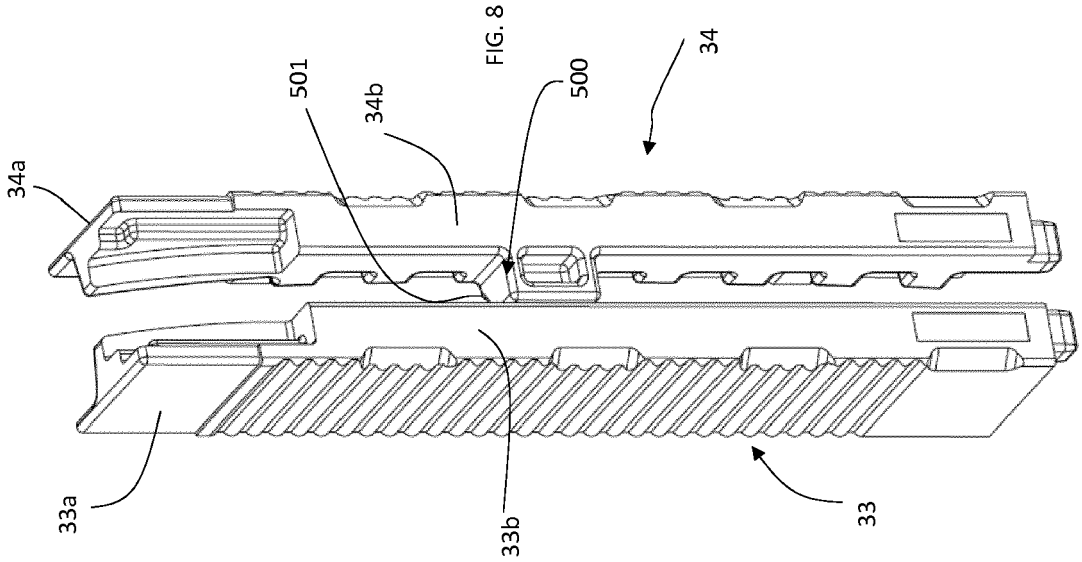

FIG. 8

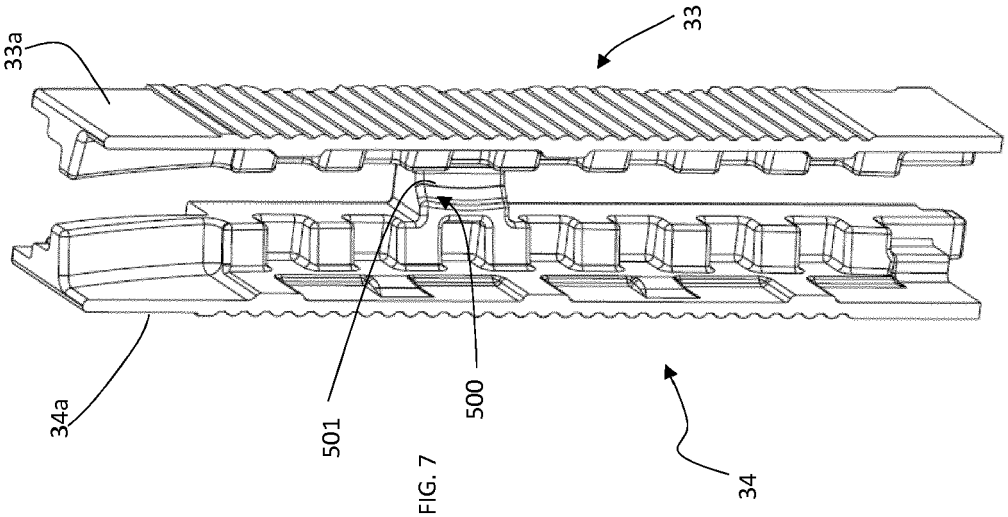

FIG. 7

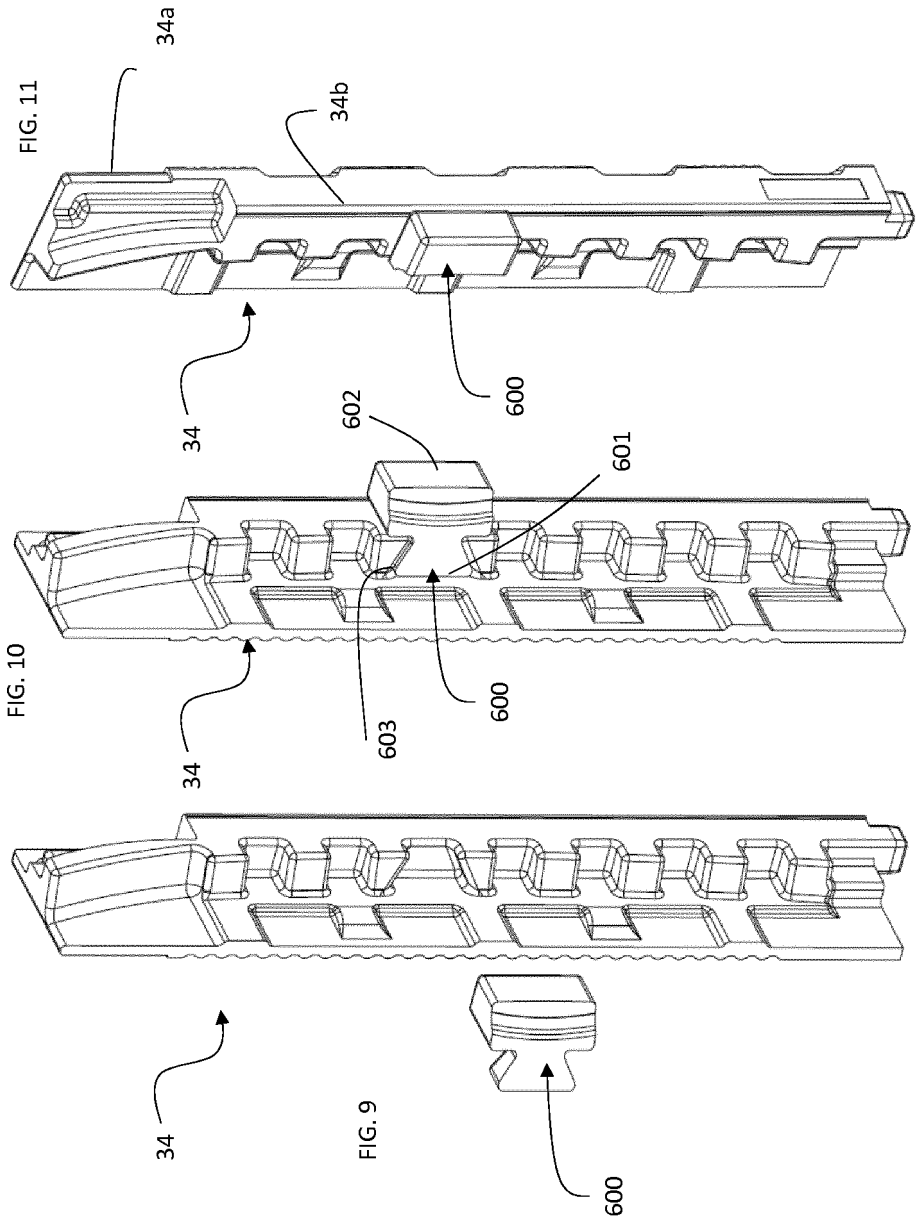

FIG. 11

FIG. 10

FIG. 9

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EUROPEAN SEARCH REPORT

Application Number
EP 16 17 2464

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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X Y	EP 1 612 159 A1 (BSH BOSCH SIEMENS HAUSGERAETE [DE]) 4 January 2006 (2006-01-04) * paragraph [0026] - paragraph [0028] * * figure 2 * -----	1 2-14	
Y	EP 0 798 221 A1 (SCHOELLER PLAST AG [CH]) 1 October 1997 (1997-10-01) * column 7, line 53 - line 59 * * figures 3,10 * -----	8	TECHNICAL FIELDS SEARCHED (IPC) B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	3 November 2016	Fitterer, Johann

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L : document cited for other reasons

& : member of the same patent family, corresponding document

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03-11-2016

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