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(71) Applicant: **Movopack S.r.l.**
20124 Milano (IT)

(72) Inventors:
• **TORRIANI, Tomaso**
20124 Milano (IT)
• **ROSSI, Federico**
20124 Milano (IT)

(74) Representative: **Studio Torta S.p.A.**
Via Viotti, 9
10121 Torino (IT)

(54) **REUSABLE PACKAGING FOR A HOUSEHOLD APPLIANCE AND METHOD FOR REUSING SAID PACKAGING**

(57) A reusable packaging for a household appliance has a lower base (3) shaped to contain a lower portion of the household appliance (2); an upper base (6) shaped to contain an upper portion of the household appliance (2); and a plurality of elongated connecting elements (9), which are releasably connectable to the upper base (6) and to the lower base (3) and are configured to be arranged around the household appliance (2); each elongated connecting element (9) comprising a first body (10) and a second body (11) releasably connectable to each other, wherein the first body (10) extends along the transverse axis (A1) for a fifth dimension (D5) and the second body (11) extends along the transverse axis (A1) for a sixth dimension (D6) greater than the fifth dimension (D5).

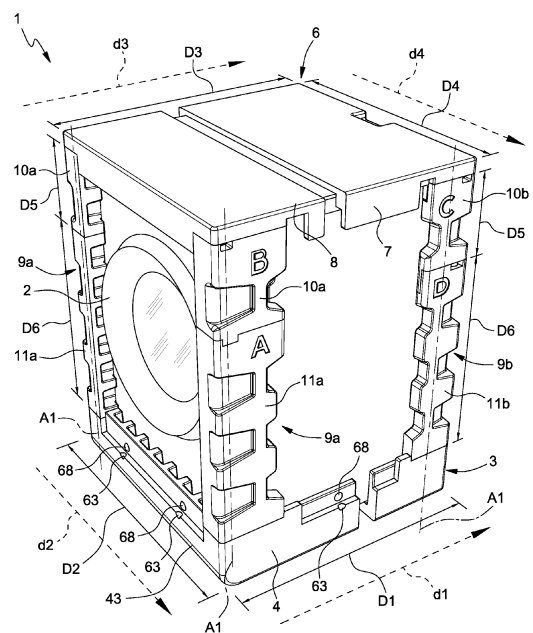


FIG. 1

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DescriptionCROSS REFERENCE TO RELATED APPLICATIONS

[0001] This patent application claims priority from Italian patent application no. 102022000005966 filed on March 25, 2022, the entire disclosure of which is incorporated herein by reference.

TECHNICAL FIELD

[0002] The present invention relates to a reusable packaging for a household appliance and a method for reusing said packaging.

[0003] In particular, the present invention relates to a reusable packaging for a washing machine.

BACKGROUND

[0004] Currently, to avoid damaging a household appliance during transport of said household appliance to an installation site it is known to package the household appliance. By way of example, the packaging of a washing machine provides for arranging a plurality of polystyrene packaging elements around the washing machine, so that the outer surfaces of the packaged washing machine are protected from any impacts and frictions during transport. Said polystyrene packaging elements have mechanical properties that perform the task of absorbing accelerations through compression without returning to the original shape.

[0005] Generally, during transport of the household appliance and/or removal of the household appliance from the packaging, said packaging elements are damaged, and in fact are therefore unusable to transport a further household appliance. Said damage is due at least in part to the mechanical properties of polystyrene, which as stated is compressed following impacts and does not return to its original shape.

[0006] However, the packagings of the cited documents are not suitable for household appliances of different dimensions and can be reused for a limited number of transports, as the physical properties and mechanical and structural features of said packagings determine their rapid deterioration.

SUMMARY

[0007] An object of the present invention is to produce a reusable packaging for a household appliance that reduces the drawbacks of the prior art.

[0008] In accordance with the present invention, there is produced a reusable packaging for a household appliance according to one of the claims from 1 to 13.

[0009] Thanks to the present invention, the packaging can be assembled in a simple and quick manner by an automatic or semi-automatic assembly machine.

[0010] Moreover, the particular division of the elongat-

ed connecting elements in the first body and in the second body makes it possible to reduce risks of breakage or damage of the elongated connecting elements themselves during assembly.

[0011] Moreover, thanks to the present invention, waste related to the transport of a household appliance is reduced and, thanks to the features of this packaging, the operating life of the packaging is increased compared to known packagings and the packaging can be reused numerous times.

[0012] In particular, the packaging is configured to assume:

- a packaging configuration configured to transport and protect a household appliance during said transport; and
- a redelivery configuration configured to transport the packaging without the household appliance inside.

[0013] In the redelivery configuration, after the household appliance has been removed, the packaging can be transported to a collection point in a simple manner, avoiding damage to the packaging and extending the operating life of the packaging. In this way, the costs and the environmental impact of the operations for transporting household appliances can be reduced.

[0014] In particular, the lower base comprises a first base element and a second base element which are couplable with each other in an adjustable manner and preferably the upper base comprising a third base element and a fourth base element which are couplable with each other in an adjustable manner.

[0015] In this way, the dimensions of the packaging can be adapted to household appliances of different dimensions, allowing reuse of a same packaging for a plurality of different types of household appliances, in particular for a washing machine.

[0016] A further object of the present invention is to provide a method for reusing a packaging for a household appliance that reduces the drawbacks of the prior art.

[0017] In accordance with the present invention, there is provided a method for reusing a packaging for a household appliance in accordance with at least one of the claims from 14 to 20.

[0018] Thanks to the present method, the packaging can be reused in a simple and inexpensive manner for household appliances of different dimensions.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] Further features and advantages of the present invention are defined in the appended dependent claims and will be apparent from the description provided below of a non-limiting example of embodiment, with reference to the accompanying figures, wherein:

- Fig. 1 is a perspective view, with parts removed for clarity, of a packaging produced in accordance with

- the present invention and in a packaging configuration.
- Fig. 2 is an exploded perspective view, with parts removed for clarity, of the packaging of Fig. 1;
 - Fig. 3 is a perspective view, with parts removed for clarity, of the packaging of Fig. 1 in a redelivery configuration;
 - Fig. 4 is a perspective view, with parts removed for clarity, of the packaging of Fig. 3 in a further operating configuration;
 - Fig. 5 is a perspective view, with parts removed for clarity, of an upper base of the packaging of Fig. 1;
 - Figs. 6 and 7 are perspective views, with parts removed for clarity, of respective details of an elongated connecting element of the packaging of Fig. 1;
 - Fig. 8 is a side elevation view, with parts removed for clarity, of the packaging of Fig. 1 in a further operating configuration;
 - Fig. 9 is a flow chart of a method for reusing the packaging of Fig. 1 produced in accordance with the present invention; and
 - Fig. 10 is block diagram of determined steps of the reusing method of Fig. 9.

DESCRIPTION OF EMBODIMENTS

[0020] With reference to Figs. 1 and 2, the number 1 indicates as a whole a packaging for household appliances, in particular for washing machines.

[0021] In the case described and illustrated herein, the packaging 1 is arranged around a household appliance 2, in particular a washing machine.

[0022] In accordance with further embodiments of the present invention, not shown in the accompanying figures, the packaging 1 can be used for other types of household appliances, such as dishwashers, dryer, ovens, microwave ovens, refrigerators, freezers, or the like.

[0023] It is understood that the packaging 1 in accordance with the present invention can be used to package objects of shape and dimensions comparable with the shape and the dimensions of a washing machine.

[0024] The packaging 1 comprises a lower base 3, extending for a dimension D1 along a direction d1 and for a dimension D2 along a direction d2 substantially orthogonal to the direction d1.

[0025] The lower base 3 is shaped to contain a lower portion of the household appliance 2.

[0026] The packaging 1 further comprises an upper base 6, extending for a dimension D3 along a direction d3 and for a dimension D4 along a direction d4 substantially orthogonal to the direction d3.

[0027] The upper base 6 is shaped to contain an upper portion of the household appliance 2.

[0028] Moreover, the packaging 1 comprises a plurality of elongated connecting elements 9a and 9b, which are releasably connected to the upper base 6 and to the lower base 3 so as to extend along a respective transverse axis A1 between the upper base 6 and the lower base 3 and

are configured to be arranged around the household appliance 2.

[0029] In other words, when each elongated connecting element 9a, 9b is connected to the upper base 6 and to the lower base 3, the respective transverse axis A1 is substantially orthogonal to the directions d1, d2, d3 and d4.

[0030] Each elongated connecting element 9a, 9b comprises a body 10a, 10b and a body 11a, 11b releasably connectable to each other, wherein the body 10a, 10b extends along the respective transverse axis A1 for a dimension D5 and the body 11a, 11b extends along said transverse axis A1 for a dimension D6 greater than the dimension D5.

[0031] In accordance with an embodiment of the present invention, a ratio between the dimension D6 and the dimension D5 is in the range of 1.5 to 3.5, preferably 2 to 3. In particular, the dimension D6 is equal to 2.09 or 2.49 times the dimension D5.

[0032] In accordance with an alternative embodiment, not shown in the accompanying figures, the dimension D5 of the body 10a, 10b and the dimension D6 of the body 11a, 11b can be substantially equal or can assume any other relative proportion.

[0033] In accordance with a non-limiting embodiment of the present invention, the body 10a, 10b is releasably connectable to the upper base 6 and the body 11a, 11b is releasably connectable to the lower base 3.

[0034] In particular, each elongated connecting element 9a, 9b is configured to be arranged around a respective corner of the household appliance 2.

[0035] In the non-limiting case of the present invention described and illustrated herein, the packaging 1 comprises four elongated connecting elements 9a, 9b.

[0036] In particular, the two elongated connecting elements 9a are substantially equal to each other and are configured to be arranged around the corners of a front portion of the household appliance 2 so as to absorb the impacts in the front part of the household appliance 2 during transport of the household appliance 2 without undergoing permanent deformations. The two elongated connecting elements 9b are substantially equal to each other and are configured to be arranged around the corners of a back portion of the household appliance 2 so as to absorb the impacts in the back part of the household appliance 2 during transport of the household appliance 2, without undergoing permanent deformations.

[0037] In other words, the elongated connecting elements 9a are different from the connecting elements 9b. In particular, each elongated connecting element 9a comprises a corner portion 69a extending along the direction d1 and a corner portion 70a extending along the direction d2. Each elongated connecting element 9b comprises a corner portion 69b extending along the direction d1 and a corner portion 70b extending along the direction d2. The length of the corner portion 69a measured along the direction d1 is greater than the length of the corner portion 69b measured along the direction d1.

[0038] For greater clarity, in the case in which the household appliance 2 is a washing machine, the front portion of the household appliance 2 comprises a door.

[0039] In accordance with a further embodiment, not shown in the accompanying figures, the four elongated connecting elements 9a, 9b are substantially equal to one another.

[0040] Moreover, the lower base 3 comprises a base element 4 and a base element 5 couplable with each other in an adjustable manner, in particular in accordance with a plurality of positions, to allow adjustment of the dimension D1. The upper base 6 comprises a base element 7 and a base element 8 couplable with each other in an adjustable manner, in particular in accordance with a plurality of positions, to allow adjustment of the dimension D3.

[0041] In accordance with a non-limiting embodiment of the present invention, the lower base 3, the upper base 6 and each elongated connecting element 9a, 9b are made of expanded polypropylene (EPP).

[0042] In accordance with a further non-limiting embodiment of the present invention, not shown in the accompanying figures, the packaging 1 comprises at least one reinforcing element, which is configured to be arranged between two elongated connecting elements 9a, 9b extending in a direction substantially perpendicular to each transverse axis A1. Preferably, the reinforcing element is made of wood, polystyrene, plastic material or expanded polypropylene.

[0043] It is understood that further components can be added to the packaging 1 described and illustrated here. In particular, said further components can be coupled with the lower base 3 and/or the upper base 6 and/or each elongated connecting element 9a, 9b in a fixed or movable manner to adapt the packaging 1 to different household appliances 2 or to different types of household appliance 2.

[0044] With reference to Fig. 1, the packaging 1 is shown in a packaging configuration. In particular, the packaging 1 is configured to assume the packaging configuration during transport of the household appliance 2 to an installation site.

[0045] In the packaging configuration, the lower base 3 contains a lower portion of the household appliance 2, the upper base 6 contains an upper portion of the household appliance 2, and the elongated connecting elements 9a, 9b are connected to the upper base 6 and to the lower base 3 and are arranged around the household appliance 2.

[0046] With reference to Fig. 2, the lower base 3 and the upper base 6 respectively comprise an edge 12 in relief and an edge 13 in relief.

[0047] Each elongated connecting element 9a, 9b comprises a tooth 14 and a tooth 15, each of which is arranged at an end 16 of the elongated connecting element 9a, 9b, and a seat 17 arranged at an end 18 of the connecting element 9a, 9b opposite the end 16.

[0048] The edge 12 of the lower base 3 is provided

with a plurality of seats 19, each of which is arranged at a corner portion of the edge 12 and is configured to house the tooth 14.

[0049] Moreover, the edge 12 is structured to cooperate with each tooth 15 so as to releasably couple each connecting element 9a, 9b to the lower base 3.

[0050] The upper base 6 is provided with a plurality of teeth 20, each of which is arranged at a corner portion of the edge 13 and is configured to be housed in the seat 17 so as to releasably couple each elongated connecting element 9a, 9b to the upper base 6.

[0051] Moreover, an inner portion of the edge 12 of the lower base 3 comprises a plurality of protrusions 68, preferably in the shape of a hemisphere. The edge 13 of the upper base 6 has a plurality of housings 67, preferably in the shape of a hemisphere, each of which is configured to house the respective protrusion 68 when the packaging 1 is in a redelivery configuration (Fig. 3) so as to lock the position of the upper base 6 relative to the lower base 3.

[0052] Each housing 67 is produced in a wall of the edge 13 facing the inside of the upper base 6. Each protrusion 68 is produced in a wall of the edge 12 facing the outside of the lower base 3.

[0053] In accordance with a non-limiting embodiment of the present invention, each of the base elements 4, 5, 7, 8 and each of the bodies 10a, 10b, 11a, 11b comprises an identification element 64, such as an RFID element or a QR code or a barcode.

[0054] Each identification element 64 is configured to allow recognition of the respective base element 4, 5, 7, 8 or of the respective body 10a, 10b, 11a, 11b so as to allow tracking of the movements of said base element 4, 5, 7, 8 or of said body 10a, 10b, 11a, 11b in an automated packaging management facility 1.

[0055] Moreover, each identification element 64 is configured to allow tracking of the useful life of the respective base element 4, 5, 7, 8 or of the respective body 10a, 10b, 11a, 11b so as to replace worn base elements 4, 5, 7, 8 and bodies 10a, 10b, 11a, 11b.

[0056] With reference to Fig. 3, the packaging 1 is shown in a redelivery configuration. In particular, the packaging 1 is configured to assume the redelivery configuration during transport from the installation site towards a collection point, after the household appliance 2 has been removed.

[0057] In the redelivery configuration, the lower base 3 and the upper base 6 are coupled to each other so as to form a housing envelope 21 and each elongated connecting element 9a, 9b (not visible in Fig. 3) is housed within said housing envelope 21, in particular the inside of the housing envelope 21 is entirely closed with respect to the outside.

[0058] In particular, the inside of the housing envelope 21 is also closed along the lateral surface thanks to the edges 12 and 13, which in the redelivery configuration are connected to each other contiguously to define a closed lateral surface that protects the inside of the hous-

ing envelope 12.

[0059] In particular, each edge 12 and 13 is provided with respective teeth 22 and with respective seats 23, each of which is configured to house a respective tooth 22 so as to firmly couple the lower base 3 and the upper base 6.

[0060] The lower base 3 and the upper base 6 have respective openings 26 and 27 so as to form a handle 28 when the lower base 3 and the upper base 6 are coupled together.

[0061] In particular, the handle 28 is formed by a portion of the lower base 3 and by a portion of the upper base 6 so that gripping of the handle 28 by a user helps to maintain the lower base 3 and the upper base 6 coupled together.

[0062] In more detail, the housing envelope 21 is structured in the shape of a case.

[0063] Moreover, the packaging 1 comprises a plurality of openings 63, each of which is cut into the edge 12 of the lower base 3 or the edge 13 of the upper base 6 so that, when the packaging 1 is in the redelivery configuration, said opening 63 is bounded by a portion of the edge 12 and by a portion of the edge 13. In particular, in the redelivery configuration, each opening 63 is structured to allow at least one finger of an operator to be inserted inside it to allow decoupling of the lower base 3 and of the upper base 6.

[0064] In particular, the packaging comprises an identification element 65, which, in the redelivery configuration, is arranged on the edge 12 preferably in a position adjacent to the handle 28. Said identification element 65 is configured to contain information relating to the assembly and/or disassembly and/or transport instructions for the packaging 1.

[0065] In an embodiment, the identification element 65 allows connection to a web page in which the assembly and/or disassembly and/or transport instructions of the packaging 1 are contained. In particular, the identification element 65 can, for example, be a QR code or an internet address or an email address.

[0066] With reference to Fig. 4, the bodies 10a, 10b, 11a and 11b are housed in determined positions inside the lower base 3.

[0067] Moreover, the lower base 3 and each elongated connecting element 9a, 9b are provided with at least one determined symbol 38, 39, 40, 41 configured to guide assembly and disassembly of the packaging 1.

[0068] In particular, the face of the lower base 3 facing the upper base 6 is provided with a plurality of symbols 38, 39, 40, 41 (only the symbols 40 and 41 are visible in Fig. 4), each of which is arranged in a determined portion of the lower base 3. In particular, each symbol 38, 39, 40, 41 is arranged on a face of the lower base 3 in use facing the upper base 6.

[0069] Each body 10a, 10b is provided with one of the symbols 39 or 40 and each body 11a, 11b is provided with one of the symbols 38 or 41. The bodies 10a, 10b, 11a and 11b can be housed in the lower base 3 at portions

of the lower base 3 provided with an analogous symbol 38, 39, 40, 41.

[0070] Moreover, the disassembly instructions of the packaging 1 comprise disassembly instructions of the lower base 3 and/or of the upper base 6 and/or of each connecting element 9a, 9b from the packaging configuration by the use of said symbols 38, 39, 40, 41.

[0071] The assembly instructions of the packaging comprise assembly instructions of the lower base 3 and/or of the upper base 6 and/or of each connecting element 9a, 9b in the redelivery configuration by the use of said symbols 38, 39, 40, 41.

[0072] Moreover, the lower base 3 comprises a plurality of supporting pads 37 for the household appliance 2, which are configured to support a lower portion of the household appliance 2.

[0073] Con reference to Fig. 5, the base element 7 and the base element 8 are coupled with each other in an adjustable manner along the direction d3.

[0074] In particular, the base element 8 comprises a plurality of elongated housings 24 extending along a direction substantially parallel to the direction d3. In more detail, each elongated housing 24 comprises a groove cut into the base element 8. The base element 7 comprises a plurality of coupling elements 25, each of which is configured to be housed in a determined position between a plurality of positions in the respective elongated housing 24. In more detail, each coupling element 25 comprises a body in relief on the base element 7.

[0075] In accordance with a non-limiting embodiment of the present invention, each elongated housing 24 is made of a different material from the material of the base element 8 and/or each coupling element 25 is made of a different material from the material of the base element 7.

[0076] In particular, in a non-limiting embodiment of the present invention, the base element 8 comprises three elongated housings 24 and the base element 7 comprises three coupling elements 25, each of which is configured to be housed in the respective elongated housing 24.

[0077] In the non-limiting case of the present invention described and illustrated herein, the base element 7 comprises a main portion 78 and an end portion 79 provided with coupling elements 25.

[0078] In particular, the end portion 79 has a thickness that is less than the thickness of the main portion 78, in particular measured along a direction perpendicular to the axis d3.

[0079] In more detail, the main portion 78 and the end portion 79 are made of the same material, preferably expanded polypropylene (EPP).

[0080] Alternatively, the end portion 79 can be made of a different material to the material of the main portion 78 and can preferably be embedded in the main portion 78 or glued on the main portion 78. In this configuration, the end portion 79 is preferably made of polypropylene (PP) or of any other plastic material, while the main por-

tion 78 is preferably made of expanded polypropylene (EPP).

[0081] In accordance with an alternative embodiment, not shown in the accompanying figures, the end portion 79 comprises a plurality of slats, preferably three slats, each of which carries a respective coupling element 25 of the coupling elements 25 described above and extends towards the base element 8 when the base element 7 and the base element 8 are coupled to each other.

[0082] In accordance with the present invention, the base element 7 and the base element 8 extend along the direction d3 for respective dimensions of different length. In particular, the length of the dimension of the base element 7 along the direction d3 is greater than the length of the dimension of the base element 8 along the direction d3. In more detail, in the redelivery configuration, the ratio between the length of the dimension D7 of the base element 7 along the direction d3 and the length of the dimension D8 of the base element 8 along the direction d3 is between 1.2 and 1.6, preferably equal to about 1.4.

[0083] Analogously to the lower base 3 and with reference to Figs. 1 and 2, the base element 4 and the base element 5 of the lower base 3 are coupled to each other in an adjustable manner along the direction d1.

[0084] In particular, the base element 5 comprises a plurality of further elongated housings (not visible in the accompanying figures) extending along a direction substantially parallel to the direction d1. The base element 4 comprises a plurality of further coupling elements (not visible in the accompanying figures), each of which is configured to be housed in a determined position between a plurality of positions in the respective elongated housing.

[0085] In accordance with the present invention, the base element 4 and the base element 5 extend along the direction d1 for respective dimensions of different length. In particular, the length of the dimension of the base element 4 along the direction d1 is greater than the length of the dimension of the base element 5 along the direction d1. In more detail, in the redelivery configuration, the ratio between the length of the dimension D9 of the base element 4 along the direction d1 and the length of the dimension D10 of the base element 5 along the direction d1 is between 1.5 and 1.9, preferably equal to about 1.7.

[0086] With reference to Fig. 3, in the redelivery configuration the base element 4 is directly coupled to the base element 8 and the base element 5 is directly coupled to the base element 7. In particular, the dimension D7 is greater than the dimension D9 and the dimension D8 is smaller than the dimension D10. In more detail, the coupling portions between the base elements 4 and 5 and the coupling portions between the base elements 7 and 8 are staggered from one another along the direction d1 or d3.

[0087] In this way, it is possible to increase the seal of the housing envelope 21 when closed and increase the resistance of the packaging 1 to impacts.

[0088] With reference to Figs. 6 and 7, each body 10a,

10b and each body 11a, 11b are coupled to each other by a rotational latching mechanism 29.

[0089] In particular, each body 10a, 10b comprises a pin 30 arranged at one end 31 of the body 10a, 10b, and a tooth 32, which is arranged at the end 31 and is provided with a through opening 33.

[0090] Each body 11a, 11b comprises an insertion seat 34, which is produced at an end 35 of the body 11a, 11b and is configured to house the pin 30 of the body 10a, 10b; and a pin 36, which is arranged at the end 35 and is configured to be inserted into the through opening 33.

[0091] With reference to Fig. 8, the lower base 3 comprises a support surface 42 configured to rest on the ground T, and a rounded edge 43 adjacent to the support surface 42. In particular, the base element 4 is provided with a rounded edge 43. In particular, the rounded edge 43, in particular measured along its outer surface, has a radius of curvature comprised between 30 millimetres and 90 millimetres, preferably between 40 millimetres and 80 millimetres, even more preferably equal to 40 millimetres or to 50 millimetres or to 70 millimetres or to 80 millimetres. In this way, during the operations to remove the household appliance 2 from the packaging 1, it is possible to tilt the household appliance 2 around the rounded edge 43 so as to uncouple the base element 5 from the base element 4 in a simple and quick way.

[0092] Analogously to the base element 7, the base element 5 of the lower base 3 comprises a main portion 80 and an end portion 81 on which the coupling elements 25 are present.

[0093] In use and with reference to Fig. 9, the packaging 1 is assembled around the household appliance 2 (block 44). Said assembly provides for the steps of adjustably coupling the base element 4 and the base element 5 so as to adjust the dimension D1 of the lower base 3 (block 45); housing the household appliance 2 in the lower base 3 (block 46); coupling the elongated connecting elements 9a, 9b to the lower base 3 so as to arrange each elongated connecting element 9a, 9b around the household appliance 2 (block 47); adjustably coupling the base element 7 and the base element 8 so as to adjust the dimension D3 (block 48); and coupling the upper base 6 to each elongated connecting element 9a, 9b so as to arrange the upper base 6 over the household appliance 2 (block 49).

[0094] In accordance with a non-limiting embodiment of the present invention, the household appliance 2 is housed in the lower base 3 (block 46) when it is not yet completely assembled and assembly of the household appliance 2 is subsequently terminated before the elongated connecting elements 9a, 9b are coupled to the lower base 3 (block 47).

[0095] In particular, the packaging 1 arranged around the household appliance is covered in a heat-shrink film.

[0096] The packaged household appliance 2 is transported to an installation site (block 50).

[0097] In the installation site, the packaging 1 is disassembled so as to remove the household appliance 2 from

the packaging 1 (block 51).

[0098] Said disassembly comprises the steps of removing the upper base 6 from the elongated connecting elements 9a, 9b (block 52); removing each connecting element 9a, 9b from the lower base 3 (block 53); tilting the household appliance 2 around the rounded edge 43 (block 54); uncoupling the base element 5 from the base element 4 while the household appliance 2 is tilted around the rounded edge 43 (block 55); and removing the base element 4 from the lower portion of the household appliance 2 (block 56).

[0099] In particular, the lower base 3, the upper base 6 and each connecting element 9a, 9b are disassembled from the packaging configuration by following the disassembly instructions related to the symbols 38, 39, 40, 41.

[0100] Subsequently, the base element 5 is once again coupled to the base element 4 so as to form the lower base 3 (block 57).

[0101] At this point, each elongated connecting element 9a, 9b is housed inside the lower base 3 (block 58). In particular, each elongated connecting element 9a, 9b provided with a determined symbol 38, 39, 40, 41 is arranged in the portion of the lower base 3 provided with an analogous symbol 38, 39, 40, 41.

[0102] Once all the elongated connecting elements 9a, 9b have been housed inside the lower base 3, the upper base 6 and the lower base 3 are coupled to each other so as to form a closed housing envelope 21 for each elongated connecting element 9a, 9b (block 59).

[0103] In particular, the lower base 3, the upper base 6 and each connecting element 9a, 9b are assembled in the redelivery configuration following the assembly instructions related to the symbols 38, 39, 40, 41.

[0104] Subsequently, the housing envelope 21 is transported to a collection point (block 60), in which the quality of the packaging 1 is checked (block 61) and the surface of the packaging 1 is washed (block 62). In particular, washing of the packaging 1 consists of washing the outer surfaces of the packaging 1, carried out by at least one sprayball washer.

[0105] Subsequently, the packaging 1 is transported to a household appliance production facility 2 (block 66).

[0106] At this point, the packaging 1 is assembled around a further household appliance 2 (block 44) and the preceding steps are repeated in sequence.

[0107] With reference to Fig. 10, the steps from block 60 to block 66 are illustrated in greater detail with the description of intermediate steps, in particular after reaching the collection point in the redelivery configuration (block 60 of Fig. 9), the packaging 1 is disassembled (block 71). In particular, the upper base 6 is uncoupled from the lower base 3 and each elongated connecting element 9a, 9b is removed from the lower base 3.

[0108] Subsequently, each base element 4, 5, 7 and 8 and each body 10a, 10b, 11a and 11b is identified through reading of the respective identification element 64 (block 72) and is washed with a determined washing procedure (block 62).

[0109] During the washing step of each base element 4, 5, 7 and 8 and of each body 10a, 10b, 11a and 11b, the quality of each base element 4, 5, 7 and 8 and of each body 10a, 10b, 11a and 11b (block 61) is checked and the base elements 4, 5, 7 and 8 and the bodies 10a, 10b, 11a and 11b that do not meet determined quality requirements are rejected.

[0110] After washing, each base element 4, 5, 7 and 8 and each body 10a, 10b, 11a and 11b is once again identified by the respective identification element 64 and is automatically sorted to separate the different components of the packaging 1 (block 74) for drying.

[0111] After the drying procedure (block 75), each base element 4, 5, 7 and 8 and each rejected body 10a, 10b, 11a and 11b is reintegrated with a new base element 4, 5, 7 and 8 or a new body 10a, 10b, 11a and 11b (block 76).

[0112] Subsequently, each base element 4 is coupled to the respective base element 5 so as to form the lower base 3, each base element 7 is coupled to the respective base element 8 so as to form the upper base 6, each body 10a is coupled to the respective body 11a to form the elongated connecting element 9a, and each body 10b is coupled to the respective body 11b to form the elongated connecting element 9b (block 77).

[0113] At this point, each lower base 3, each upper base 6 and each elongated connecting element 9a, 9b is transported to a household appliance production facility 2 (block 66).

[0114] In an alternative embodiment, not illustrated in the accompanying figures, the upper base is omitted and optionally replaced by a non-reusable element such as a cardboard box, which will be recycled according to normal recycling processes. In this embodiment, in the redelivery configuration the first base element and the second base element of the lower base are coupled so that one of the two is over the other so as to form a housing envelope and each elongated connecting element is housed within said housing envelope. Finally, it is evident that variations can be made to the present invention with respect to the embodiments described without departing from the scope of protection of the appended claims.

Claims

1. A reusable packaging for a household appliance, preferably for a washing machine, the packaging (1) comprising:

- a lower base (3), extending for a first dimension (D1) along a first direction (d1) and for a second dimension (D2) along a second direction (d2) preferably substantially orthogonal to the first direction (d1), wherein the lower base (3) is shaped to contain a lower portion of the household appliance (2); wherein preferably the lower base (3) comprises a first base element (4) and a second base element (5) which are couplable

with each other;

- preferably an upper base (6), which extends for a third dimension (D3) along a third direction (d3) and for a fourth dimension (D4) along a fourth direction (d4) preferably substantially orthogonal to the third direction (d3), wherein the upper base (6) is shaped to contain an upper portion of the household appliance (2); and

- a plurality of elongated connecting elements (9), which are releasably connectable to the lower base (3) and preferably to the upper base (6) so as to extend along a respective transverse axis (A1) between the lower base (3) and preferably the upper base (6) and are configured to be arranged around the household appliance (2);

preferably each elongated connecting element (9) comprising a first body (10) and a second body (11) releasably connectable to each other, preferably the first body (10) is releasably connectable to the upper base (6) and preferably the second body (11) is releasably connectable to the lower base (3);

wherein the lower base (3) and/or each elongated connecting element (9) and/or preferably the upper base (6) are made of expanded polypropylene.

2. The packaging as claimed in claim 1, and being configured to assume:

- a packaging configuration (1) configured to transport and protect a household appliance during said transport, wherein the lower base (3) is configured to envelop and/or contain a lower portion of the household appliance (2), preferably the upper base (6) is configured to envelop and/or contain an upper portion of the household appliance (2), and the elongated connecting elements (9) are connected to the lower base (3) and preferably to the upper base (6) and are arranged around the household appliance (2), in particular they are configured to be in contact with side portions of the household appliance; and

- a redelivery configuration configured to transport the packaging without the household appliance inside, wherein the lower base (3) and preferably the upper base (6) define a housing envelope (21), in particular coupled to each other so as to form a housing envelope (21), and each elongated connecting element (9) is housed within said housing envelope (21), in particular the lower base (3) and preferably the upper base (6) define a seat within the housing envelope (21) which is entirely closed with respect to the outside of the housing envelope (21).

3. The packaging as claimed in claim 1 or 2, wherein the first base element (4) and the second base element (5) are couplable with each other in an adjustable manner, in particular according to a plurality of positions, to allow the adjustment of one between the first dimension (D1) and the second dimension (D2); in particular, the ratio between the dimension (D9) of the length of the first base element (4) measured along the direction (d1) and the dimension (D10) of the length of the second base element (5) measured along the direction (d1), preferably in the redelivery configuration, being between 1.5 and 1.9, preferably equal to about 1.7; preferably the upper base (6) comprising a third base element (7) and a fourth base element (8) couplable with each other in an adjustable manner, in particular according to a plurality of positions, to allow the adjustment of one between the third dimension (D3) and the fourth dimension (D4); in particular the ratio between the dimension (D7) of the length of the third base element (7) measured along the direction (d3) and the dimension (D8) of the length of the fourth base element (8) measured along the direction (d3), preferably in the redelivery configuration, being between 1,2 and 1,6, preferably equal to about 1,4.

4. The packaging as claimed in claim 3, wherein the first base element (4) and the second base element (5) are coupled together in an adjustable manner along one between the first direction (d1) and the second direction (d2); the third base element (7) and the fourth base element (8) being coupled to each other in an adjustable manner along one between the third direction (d3) and the fourth direction (d4); in particular, the second base element (5) comprises at least a first elongated housing (24) extending along a direction substantially parallel to one between the first direction (d1) and the second direction (d2); in particular the first base element (4) comprising at least one first coupling element (25) configured to couple at a given position between a plurality of positions along the respective first elongated housing (24); in particular the fourth base element (8) comprising at least one second elongated housing (24) extending along a direction substantially parallel to one between the third direction (d3) and the fourth direction (d4); in particular, the third base element (7) comprising at least one second coupling element (25) configured to couple at a given position between a plurality of positions along the respective second elongated housing (24).

5. The packaging as claimed in any one of the foregoing claims, wherein each first body (10) and each second body (11) are coupled to each other by a rotational latching mechanism (29); in particular each first body (10) comprises a first pin (30) arranged at one end (31) of said first body (10); in particular, each second

- body (11) comprising an insertion seat (34), which is arranged at one end (35) of said second body (11) and is configured to house the pin (30) of said first body (10).
6. The packaging as claimed in any one of the foregoing claims, wherein each elongated connecting element (9) comprises a first tooth (14; 15) arranged at a first end (16) of said elongated connecting element (9); the lower base (3) and/or preferably the upper base (6) being provided with a first seat (19) configured to house the first tooth (14; 15) so as to releasably couple each elongated connecting element (9) to the lower base (3) and/or preferably to the upper base (6); in particular wherein each elongated connecting element (9) comprises a second seat (17) arranged at a second end (18) of said elongated connecting element (9) opposite to the first end (16); in particular the lower base (3) and/or preferably the upper base (6) being provided with a second tooth (20) configured to be housed in the second seat (19) so as to releasably couple each elongated connecting element (9) to the lower base (3) and/or preferably the upper base (6).
 7. The packaging as claimed in any one of the foregoing claims, wherein the packaging comprises the upper base (6); the lower base (3) and the upper base (6) comprise respectively a first and a second edge (12, 13) in relief, each of which is provided with at least one respective third tooth (22) and at least one respective third seat (23) configured to house the third tooth (22) so as to couple the lower base (3) and the upper base (6).
 8. The packaging as claimed in any one of the foregoing claims, wherein the lower base (3) and/or the upper base (6) have respective openings (26, 27) so as to form a handle (28) when the lower base (3) and/or the upper base (6) are coupled together.
 9. The packaging as claimed in any one of the foregoing claims, wherein the first body (10) extends along the transverse axis (A1) for a fifth dimension (D5) and the second body (11) extends along the transverse axis (A1) for a sixth dimension (D6) greater than the fifth dimension (D5); preferably a ratio between the sixth dimension (D6) and the fifth dimension (D5) is in the range of 1.5 to 3.5, preferably 2 to 3, in particular equal to 2.09 or 2.49; preferably each elongated connecting element (9) is configured to be arranged around a respective corner of the household appliance (2).
 10. The packaging as claimed in any one of the foregoing claims, wherein the lower base (3) comprises a support surface (42) configured to rest on the ground (T), and a rounded edge (43) adjacent the support surface (42), preferably the rounded edge (43), in particular measured along its outer surface, has a radius of curvature comprised between 30 millimetres and 90 millimetres, preferably between 40 millimetres and 80 millimetres, in particular equal to 40 millimetres or 50 millimetres or 70 millimetres or 80 millimetres.
 11. The packaging as claimed in claim 2, wherein the lower base (3), the upper base (6) and each elongated connecting element (9) are provided with at least one determined symbol (38, 39, 40, 41); wherein the packaging (1) comprises a list of assembly and/or disassembly and/or transport instructions for the packaging (1) or comprises a first identification element (65) containing information for obtaining the list of assembly and/or disassembly and/or transport instructions for the packaging (1), wherein instructions for disassembling the lower base (3) and/or the upper base (6) and/or each connecting element (9) from the packaging configuration are illustrated by the use of said symbols (38, 39, 40, 41), and wherein instructions for assembling the lower base (3) and/or the upper base (6) and/or each connecting element (9) in the redelivery configuration are illustrated by the use of said symbols (38, 39, 40, 41).
 12. The packaging as claimed in any one of claims 2 to 11, wherein the packaging comprises the upper base (6); wherein an inner portion of the edge (12; 13) of the lower base (3) or the upper base (13) comprises a plurality of protrusions (68), preferably in the shape of a hemisphere; the edge (13; 12) of the upper base (6) or the lower base (3) comprising a plurality of housings (67), preferably in the shape of a hemisphere; wherein each of the housings (67) is configured to house the respective protrusion (68) when the packaging (1) is in a redelivery configuration so as to lock the position of the upper base (6) relative to the lower base (3) and vice versa; in particular, the packaging comprises a plurality of openings (63), each of which is cut into the first edge (12) of the lower base (3) and/or the second edge (13) of the upper base (6) so that, when the packaging (1) is in the redelivery configuration, said opening (63) is bounded by a portion of the first edge (12) and/or a portion of the second edge (13) so as to insert a body, preferably a finger, inside to decouple the upper base (6) and the lower base (6) from each other.
 13. The packaging as claimed in any one of the foregoing claims, wherein each base element (4; 5; 7; 8) and/or each body (10a; 10b; 11a; 11b) comprise a second identification element (64), preferably an RFID element or a QR code or a barcode, configured to allow recognition of the respective base element (4; 5; 7; 8) and/or the respective body (10a; 10b; 11a; 11b) so as to allow the tracking of said base element (4;

- 5; 7; 8) and/or said body (10a; 10b; 11a; 11b) in an automated packaging management facility (1).
14. A method for reusing a packaging for a household appliance, preferably for a washing machine, the method comprising the steps of:
- assembling a packaging (1) as claimed in any one of the foregoing claims around the household appliance (2);
 - transporting the packaged household appliance (2) to an installation site;
 - disassembling the packaging (1) so as to remove the household appliance (2) from the packaging (1);
 - housing each elongated connecting element (9) inside the lower base (3) and/or the upper base (6);
 - coupling the lower base (3) and preferably the upper base (6) so as to form a housing envelope (21) for each elongated connecting elements (9);
 - transporting the housing envelope (21) to a collection point; and
 - assembling the packaging (1) around a further household appliance (2).
15. The method as claimed in claim 14, wherein the step of assembling the packaging (1) around a household appliance (2) comprises:
- housing the household appliance (2) in the lower base (3);
 - coupling each elongated connecting element (9) to the lower base (3) so as to arrange each elongated connecting element (9) around the household appliance (2); and
 - preferably coupling the upper base (6) to each elongated connecting element (9) so as to arrange the upper base (6) above the household appliance (2).
16. The method as claimed in claim 14 or 15, wherein the step of assembling the packaging (1) around a household appliance (2) comprises adjustably coupling the first base element (4) and the second base element (5) so as to adjust one between the first dimension (D1) and the second dimension (D2) of the lower base (3); and preferably adjustably coupling the third base element (7) and the fourth base element (8) so as to adjust one between the third dimension (D3) and the fourth dimension (D4) of the upper base (6).
17. The method as claimed in any one of claims 14 to 16, wherein the first base element (4) comprises a support surface (42) configured to rest on the ground (T), and a rounded edge (43) adjacent the support surface (42), preferably the rounded edge (43) has a radius of curvature within the range, in particular measured along its external surface, comprised between 30 millimetres and 90 millimetres, preferably between 40 millimetres and 80 millimetres, in particular equal to 40 millimetres or 50 millimetres or 70 millimetres or 80 millimetres; the step of disassembling the packaging (1) comprising tilting the household appliance (2) around the rounded edge (43) and uncoupling the second base element (5) from the first base element (4) while the household appliance (2) is tilted around the rounded edge (43).
18. The method as claimed in any one of claims 14 to 17, wherein the lower base (3), preferably the upper base (6) and each elongated connecting element (9) are provided with at least one determined symbol (38, 39, 40, 41); the method comprising the step of disassembling the lower base (3) and/or the upper base (6) and/or each connecting element (9) from the packaging configuration following disassembly instructions related to said symbols (38, 39, 40, 41), and assembling the lower base (3) and/or the upper base (6) and/or each connecting element (9) in the redelivery configuration following assembly instructions related to said symbols (38, 39, 40, 41); preferably the packaging (1) comprising the assembly and/or disassembly instruction list of the packaging (1) or comprising a first identification element (65) containing information to retrieve the assembly and/or disassembly instruction list of the packaging (1).
19. The method as claimed in any one of claims 14 to 18, comprising the steps of disassembling the packaging (1) from the redelivery configuration at a collection point; identifying each base element (4; 5; 7; 8) and each body (10a; 10b; 11a; 11b); and automatically sorting each base element (4; 5; 7; 8) and each body (10a; 10b; 11a; 11b) so as to separate the different components of the packaging (1), preferably each base element (4; 5; 7; 8) and/or each body (10a; 10b; 11a; 11b) comprise a respective second identification element (64), in particular an RFID element or a QR code or a barcode, configured to allow the recognition of the respective base element (4; 5; 7; 8) and/or the respective body (10a; 10b; 11a; 11b); preferably the step of identifying each base element (4; 5; 7; 8) and each body (10a; 10b; 11a; 11b) comprises the step of reading the respective second identification element (64); and preferably the step of automatically sorting each base element (4; 5; 7; 8) and each body (10a; 10b; 11a; 11b) so as to separate the different packaging components (1) comprises reading the respective second identification element (64).
20. The method as claimed in any one of claims 14 to

19, comprising the steps of checking the quality of the packaging (1) at the collection point; preferably the method comprising the step of washing the packaging (1).

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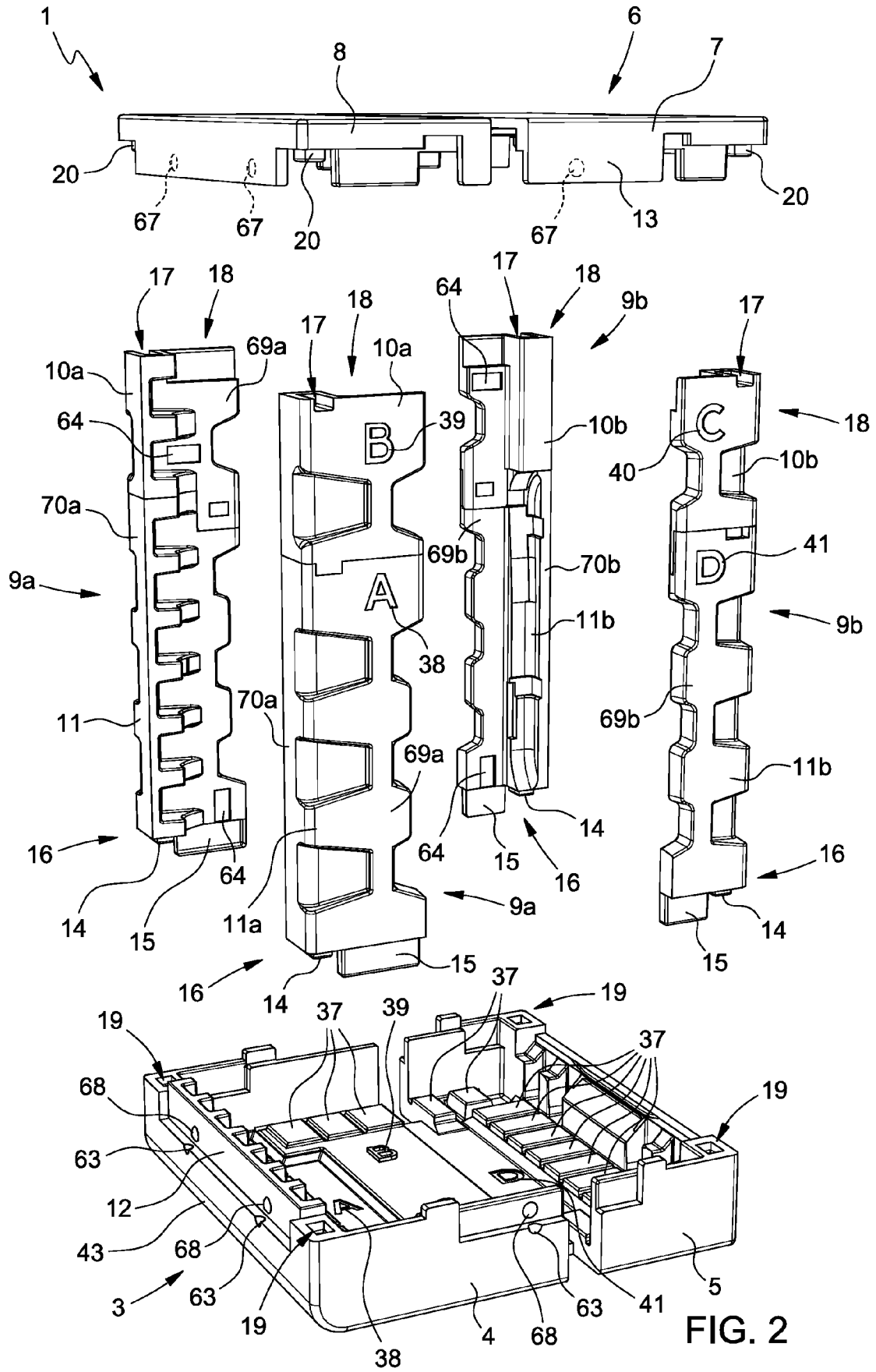


FIG. 2

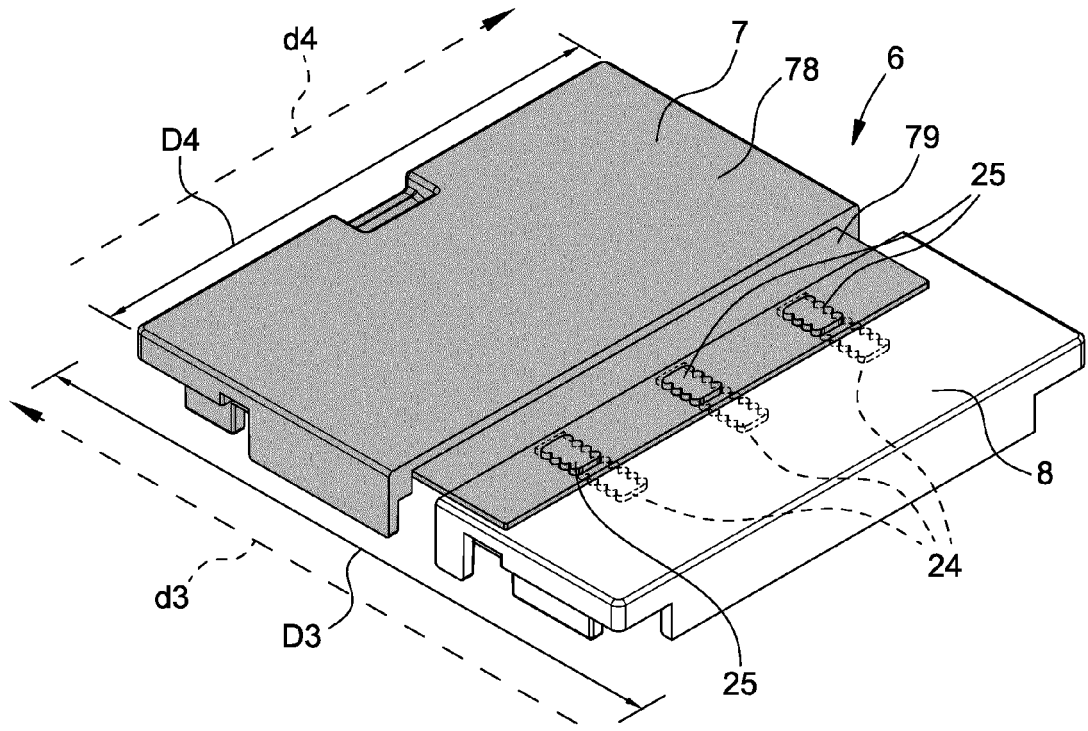


FIG. 5

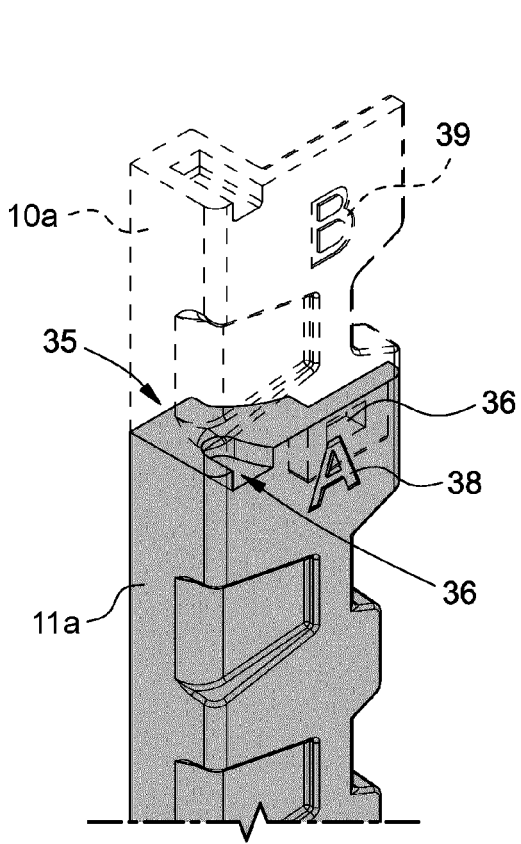


FIG. 6

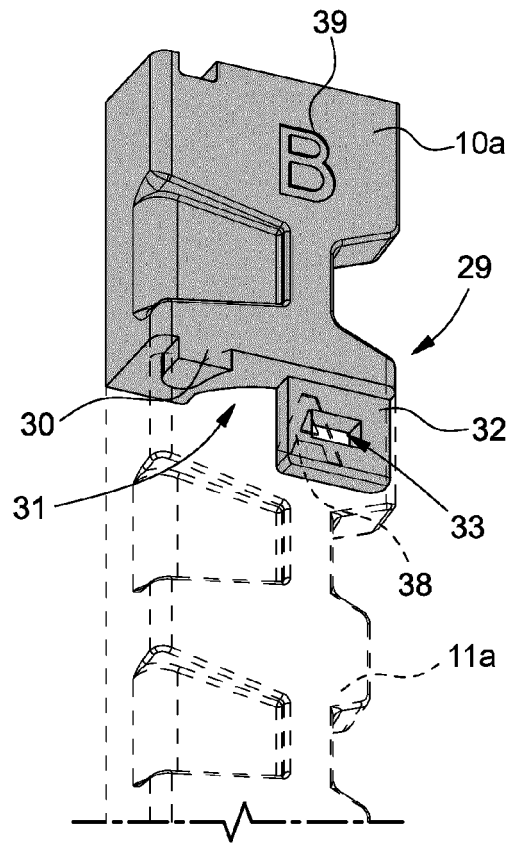


FIG. 7

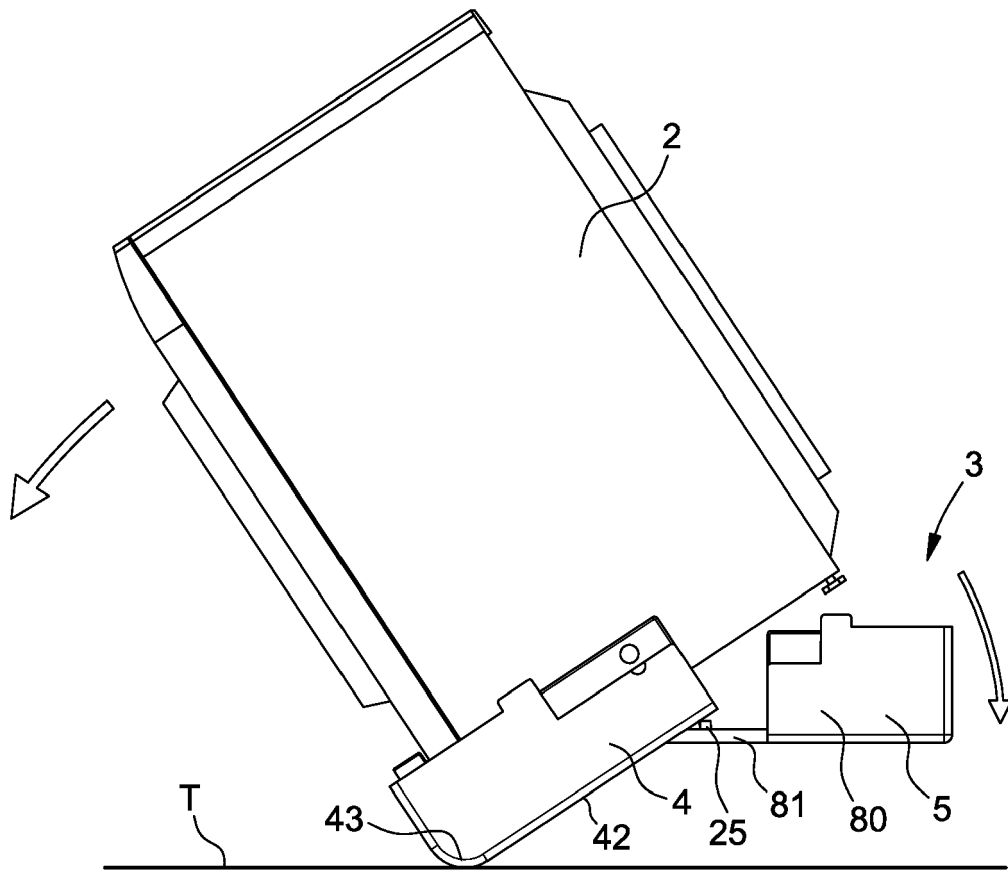


FIG. 8

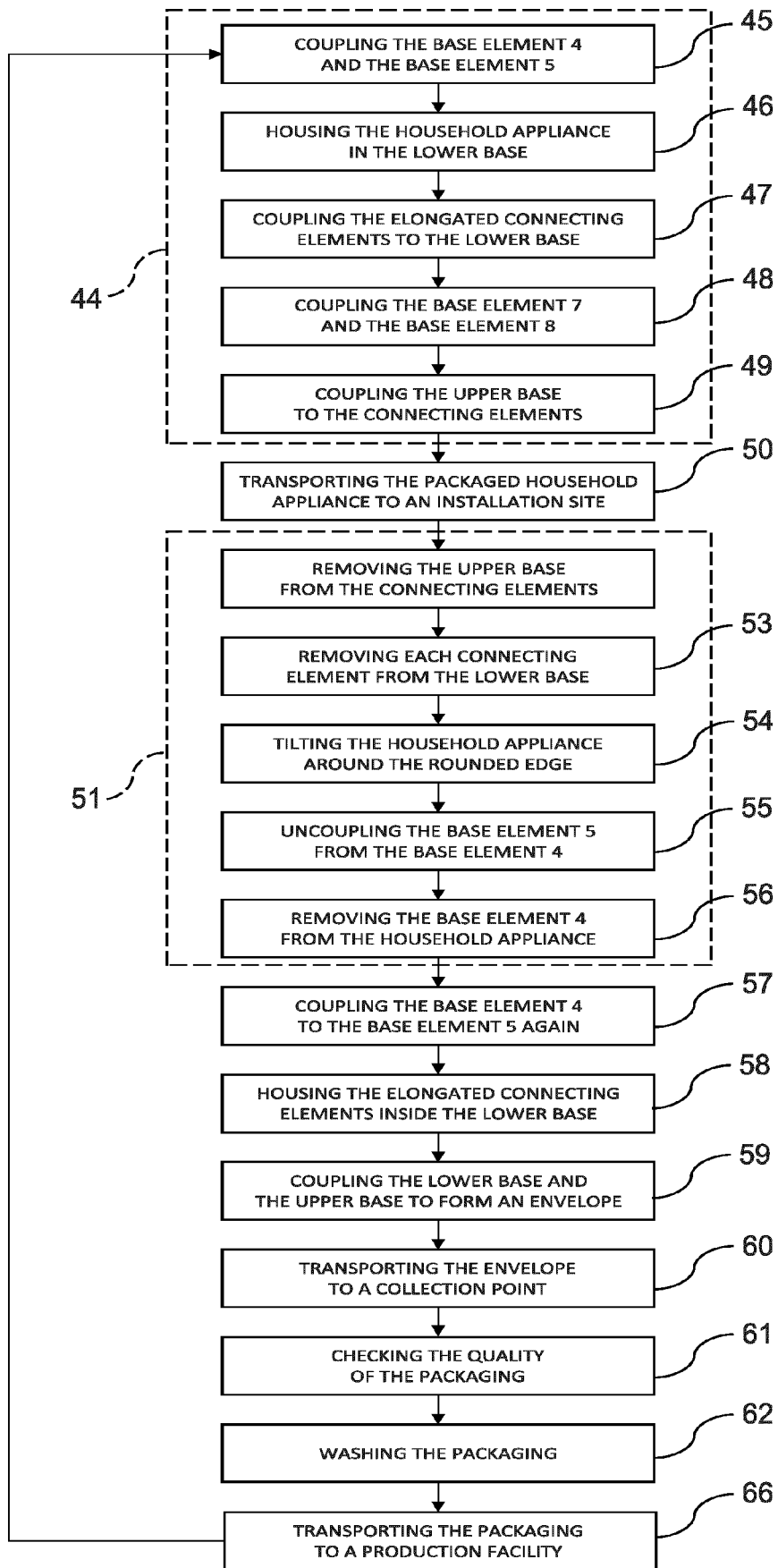


FIG. 9

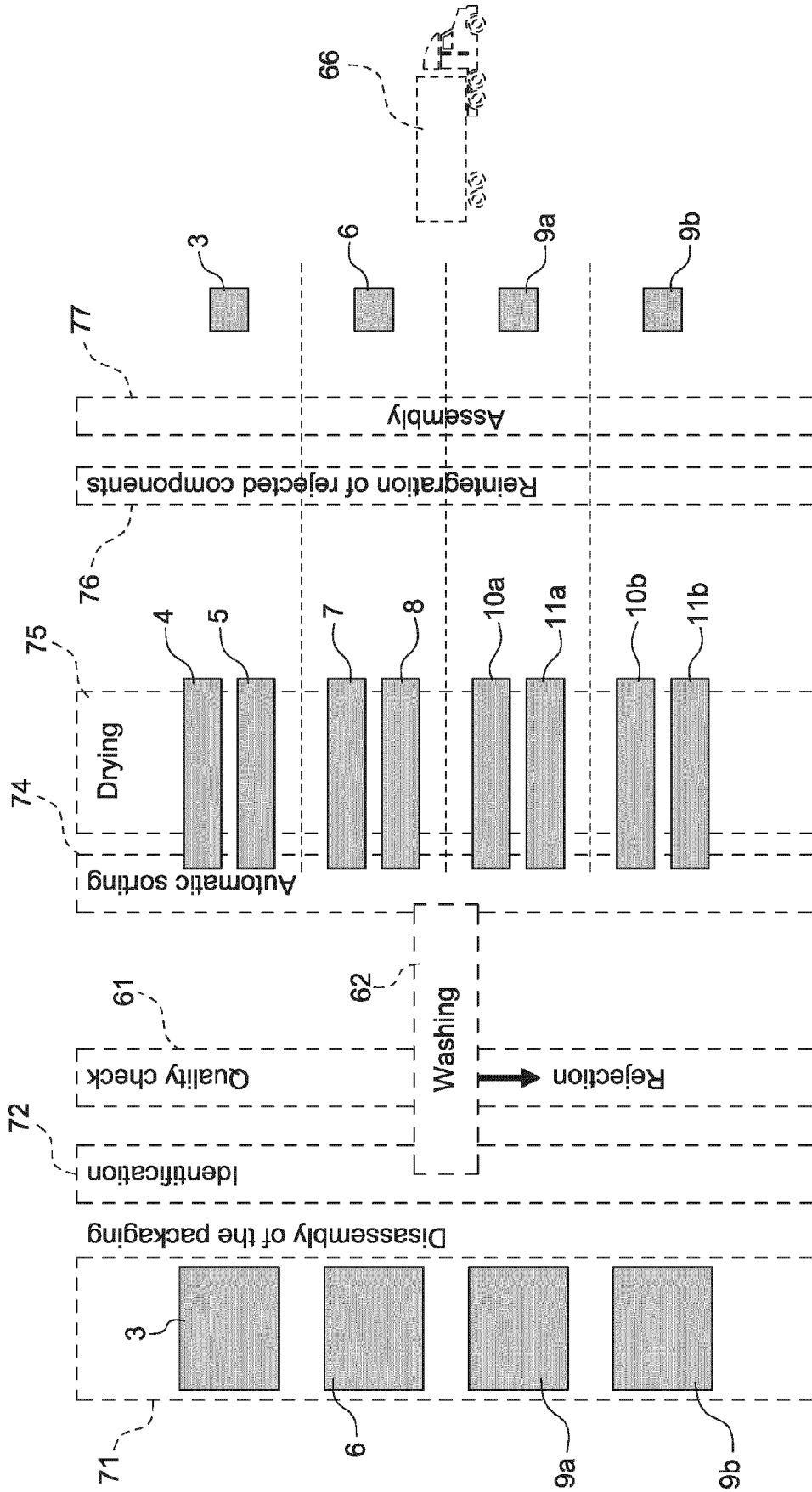


FIG. 10

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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