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(54) METHOD FOR ASSEMBLING AND PACKAGING A HEATING DEVICE

(57) provide a method for assembling and packaging of a heating device, in particular an indoor hydraulic module of a heat pump or a boiler, wherein the method comprises the steps of providing a bottom base on a mounting surface, positioning a part of a hydraulic module of a heating device onto the bottom base, secure one or more casing elements to the part of the hydraulic module using a securing means to assemble the heating device, and positioning a cover over at least an upper part of the assembled heating device, wherein the bottom base and/or the cover is folded to create a box around the assembled heating device, and wherein the bottom base and the cover are made of a recyclable, foldable, packaging material.

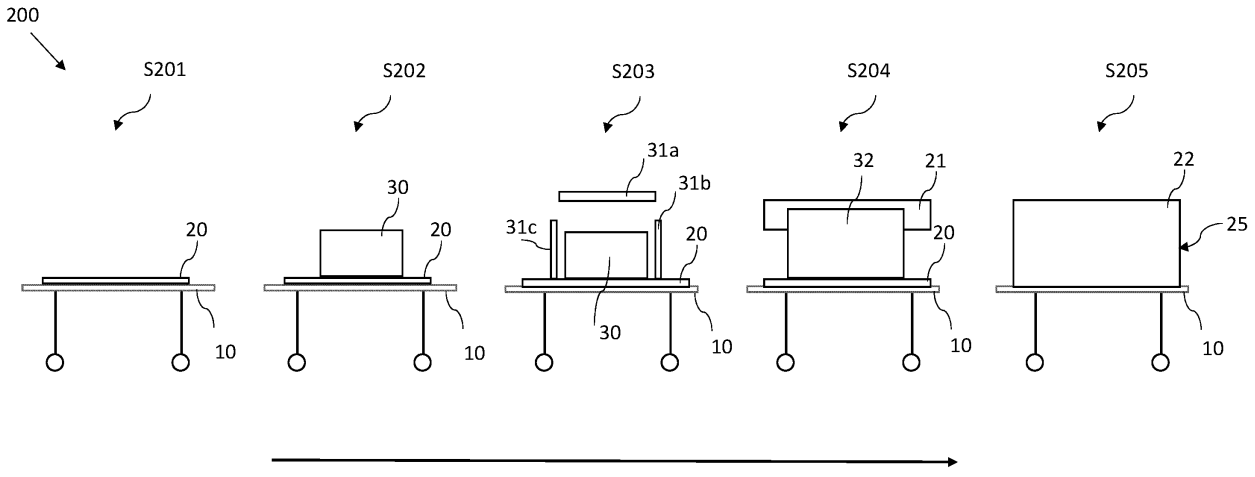

FIG. 2

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Description

[0001] The invention relates to a method for assembling and packaging a heating device, in particular to a method for assembling and packaging of an indoor hydraulic module of a heat pump or a boiler. Additionally, the invention relates to an assembled and packaged product, in particular an assembled and packaged product obtained by the method according an embodiment of the invention. Also, the invention relates to recyclable, foldable, packaging material for use in the method according to an embodiment of the invention.

[0002] Assembling and packaging a heating device, such as a heating unit of a heat pump or a boiler, usually comprises the steps of first assembling the heating unit and, when fully assembled, place the fully assembled heating unit in a package. This package enables the assembled heating unit to be protected from the environment during handling, storing and transporting of the assembled heating unit. Typically, the package comprises a polystyrene cushioning, such as polystyrene foam, placed around the fully assembled heating unit and a cardboard box in which the fully assembled heating unit with the polystyrene cushioning is positioned. Alternatively, the package comprises a polystyrene cushioning placed around the fully assembled heating unit and a plastic sheet or foil is wrapped around the polystyrene cushioning with the fully assembled heating between the cushioning.

[0003] When packaging the fully assembled heating device, the polystyrene cushioning will have to be placed around the fully assembled heating device in multiple steps. The fully assembled heating device will be laid down on a first side of the device and a first part of polystyrene cushioning is placed on a second side of the device. Then, the device with the first part of cushioning is flipped around and a second part of polystyrene cushioning is placed on a third side of the device. Additional polystyrene cushioning parts may be added on the other sides as well. When all the polystyrene cushioning parts are placed, the fully assembled heating device together with the polystyrene cushioning parts are positioned inside a cardboard box.

[0004] This method requires space for packaging, space for storing the polystyrene cushioning, additional time and energy for flipping around the fully assembled heating device to place the polystyrene cushioning, and above all the polystyrene cushioning might break during handling and has to be replaced during packaging. Also, when unpacking the assembled heating device prior to installing it at an end-user additional handling is required again. The assembled heating device has to be turnaround multiple times again to remove the different kinds of packaging which may cause damage, such as scratching, denting or breakage, to the heating device. During handling of the polystyrene, it may break and decompose into small pieces and thus polluting the environment. Also when the dimensions of the assembled heating device are changed for any reason, the polystyrene cushioning usually cannot be modified to fit new dimensions and thus cannot be repurposed. Furthermore, the use of polystyrene cushioning is not environmentalfriendly or eco-friendly as it is a difficult material to re-use or recycle.

[0005] It is therefore desirable to obtain a method for assembling and packaging a heating device, wherein the packaging of the heating device is done during assembly of the heating device to reduce the required additional space, time, and energy for packaging. Furthermore, it is desirable to obtain the cushioning effect of the polystyrene cushions without the actual need of using polystyrene. By using a sustainable and eco-friendly packaging material during the assembling and packaging process, both the issue of additional handling during packaging and the issue of using an environmental unfriendly packaging are solved at the same time.

[0006] The object of the invention is obtained by providing a method for assembling and packaging of a heating device, in particular an indoor hydraulic module of a heat pump or a boiler, wherein the method comprises the steps of providing a bottom base on a mounting surface, positioning a part of a hydraulic module of a heating device onto the bottom base, secure one or more casing elements to the part of the hydraulic module using a securing means to assemble the heating device, and positioning a cover over at least an upper part of the assembled heating device, wherein the bottom base and/or the cover is folded to create a box around the assembled heating device, and wherein the bottom base and the cover are made of a recyclable, foldable, packaging material. The recyclable, foldable, packaging material may be a packaging material that can be processed to re-use again and is not harmful to the environment, and thus eco-friendly, such as cardboard, cellulose or reusable plastic such as bioplastics made of renewable biomass sources such as vegetables or oils. By providing this method, the aforementioned issues with the known method for packaging are alleviated.

[0007] The heating device may be any commercial or residential heating device for heating a building or a part of a building. The heating device may be, amongst others, a heat pump, a boiler or a part thereof. In particular, the heating device may be a heating unit of a heat pump or a boiler. More particular, the heating device may be an indoor hydraulic module of a heat pump or a boiler. The heat pump or boiler may be any heat pump or boiler as typically seen in commercial or residential buildings.

[0008] By providing a bottom base made of a recyclable, foldable, packaging material on a mounting surface, the method of assembling and packaging starts with a first piece of packaging. The mounting surface may be an essentially flat surface, in particular a flat surface, which can hold the bottom base without deteriorate the form or shape of the bottom base. The mounting surface is preferably at least as large as the heating device that will rest upon it to fully support the heating device. The mounting surface may be larger than the heating device

to add additional working space. The mounting surface may be smooth enough to be able to turn-around the heating device on the bottom base around a vertical axis and the mounting surface may be rough enough to create some grip between the mounting surface and the bottom base to prevent the heating device on the bottom base to slip off the mounting surface.

[0009] When the bottom base is provided on the mounting surface, a part of a hydraulic module of a heating device is positioned on the bottom base. Said part of the hydraulic module may be an open frame comprising, amongst others, one or more pipes further comprising a connection means to one or more external fluid systems such as an outdoor unit or a radiator. Optionally, the hydraulic module may further comprise a heat exchanger to transfer heat from one fluid to another fluid and the heat exchanger is connected to the one or more pipes being arranged within the part of the hydraulic module. The bottom base may have markings printed or drawn on the surface to guide an operator or a machine to position the part of the hydraulic module correctly onto the bottom base. After positioning the part of the hydraulic module, one or more casing elements are secured to the part of the hydraulic module. These casing elements may be a side panel, a back panel and/or a cover panel. The casing elements may be secured through any conventional securing means such as attaching the casing elements in a reversible fashion by using screws, pins, clips or force fit elements. But the casing elements may also be secured in a fixed or fastened fashion by using rivets. The securing means may be different for each casing element. By securing the casing elements to the part of a hydraulic module, the hydraulic module is completed and thereby an assembled heating device is formed, which is still situated on top of the bottom base. This way the assembly of the heating device and a first part of the packaging of the heating device is performed within the same process, in particular it is performed simultaneously.

[0010] After the heating device is assembled, a cover made of a recyclable, foldable, packaging material is positioned over at least an upper part of the assembled heating device. Then, either the bottom base, the cover or both are folded around the assembled heating device thereby creating a box around the assembled heating device. The bottom base, the cover or both may also be at partially pre-folded before any of the steps to help guiding the positioning of the part of the hydraulic module or ensuring a tight fit between the hydraulic module and the bottom base and/or the cover. The bottom base, the cover or both may also be folded in between any of the steps to stabilize the part of the hydraulic module during further assemble or to ensure a tight fit between the hydraulic module and the bottom base and/or the cover. Preferably, after folding both the bottom base and the cover extend over the entirety of the assembled heating device. By folding the bottom base, the cover or both around the assembled heating device, a package is created that protects the assembled heating device against, for instance, dust or external impact during transport and/or handling of the package.

[0011] This way, the assembly and packaging of the heating device is completed within the same process, without the need of packaging the heating device in a separate or additional assembly line and without the need of flipping around the assembled heating device as the packaging is formed around the heating device during assembly. In an additional step, a strap may be provided around the assembled and package heating device to strap the bottom base and the cover together.

[0012] In an embodiment, the method for assembling and packaging the heating device further comprises the step of positioning a cushioning part, made of a recyclable, foldable, packaging material, over the assembled heating device before positioning the cover over both the cushioning part and the, at least upper part, of the assembled heating device wherein the cushioning part is created by folding a piece of recyclable, foldable, packaging material around the assembled heating device.

[0013] The cushioning part may be first laid on top of the assembled heating device as a flat piece of recyclable, foldable, packaging material. It may be then folded and wrapped around the heating device to form a cushioning part around the heating device. Alternatively, the flat piece of recyclable, foldable, packaging material may be partially folded as to guide the cushioning part over the assembled heating device and, when positioned on top of the assembled heating device in a partially folded form, be further folded and wrapped around the assembled heating device. By using a flat piece of recyclable, foldable, packaging material that will be folded and wrapped around the assembled heating device, the flat pieces takes less space when stored prior to use and alleviates the use of polystyrene cushioning parts and thus provides a sustainable and eco-friendly alternative to the use of polystyrene.

[0014] In an embodiment, the bottom base and/or the cover may be further folded to create a cushion layer between the assembled heating device and the bottom base and/or the cover. By further folding either the bottom base, the cover or both and creating a cushion layer, a cushioning layer can be created without the requirement of a separate cushioning part or create an additional cushioning layer in addition to a separate cushioning part.

[0015] In an embodiment, the recyclable, foldable, packaging material is pre-creased for folding. The pre-creasing may make the folding of the recyclable, foldable, packaging easier and reduce the risk of misfolding and/or tearing the recyclable, foldable, packaging material during folding. As the sizes and shapes of the heating device may vary, the pre-creasing may accommodate different folding lines to fit any size and shape of the heating device. The pre-creasing for each folding line may therefore be, for instance, multiple precreases running in parallel to each other.

[0016] In an embodiment, the recyclable, foldable,

packaging material has one or more pre-creased handles wherein the pre-creased handles may be folded towards the assembled heating device, thereby supporting the assembled heating device. By having the handles pre-creased and folding towards the assembled heating device, the part of the recyclable, foldable, packaging material that is folder towards the assembled heating device may abut and fit tightly with the assembled heating device. This way, the assembled heating device may be structurally supported by the folded material.

[0017] In an embodiment, the recyclable, foldable, packaging material has one or more pre-creased storage pocket elements wherein the pre-creased storage pocket elements may be folded to create a storage pocket for storing accessories. By having elements of a storage pocket pre-creased and folded to create a storage pocket, accessories such as cables, manuals, filter elements, or external sensors. This way, no additional bags with accessories has to be supplied inside the package.

[0018] In an embodiment, the recyclable, foldable, packaging material may be chosen from recyclable, foldable, packaging material such as cardboard, cellulose, reusable plastic material or a combination thereof, and the cardboard may further be chosen from double corrugated cardboard, triple corrugated cardboard, or a combination thereof. Reusable plastic materials may plastics such as bioplastics made of renewable biomass sources such as vegetables or oils. Preferably, the recyclable, foldable, packaging material is cardboard which is, when chosen from double corrugated or triple corrugated cardboard, has a thickness and stiffness well suited to protect the assembled heating device from the environment. Cardboard is an eco-friendly and sustainable packaging material, as the source is a renewable source and the cardboard can be recycled and re-used as cardboard without negatively impacting the environment. When folded and wrapped around the assembled heating device, the cardboard may have an additional stiffness in at least one direction to be able to stack multiple assembled and packaged heating devices on top of each other.

[0019] In an embodiment, the recyclable, foldable, packaging material may be molded cardboard or cellulose pulp. While molded cardboard or cellulose pulp is already preformed in a particular shape, the molded pulp packaging materials may easily be stacked as each piece may fit into one another. Polystyrene cushioning usually is bulky and/or blocky and as such cannot fit into one another, thus occupying more storage space. Also, when stacking polystyrene cushioning it will likely break or tear as polystyrene foam is quite fragile. Thus the molded cardboard or cellulose pulp provides an eco-friendly alternative for polystyrene.

[0020] In an aspect of the invention, a packaged product, in particular a packaged product obtained by the method described above, may be provided wherein the packaged product comprises a product such as a heating device, a bottom base under the heating device and a cover over the heating device wherein a cushion layer is present between the heating device and the cover positioned over the heating device and wherein the bottom base and the cover are made of a recyclable, foldable, packaging material. The cushion layer may be either formed by folding a piece of the bottom base and/or the cover into a cushion layer, or by proving an additional piece of recyclable, foldable, packaging material separately folded into a cushion layer. Said packaged product has the advantage that it suitably protects an assembled heating device by using only recyclable, foldable, packaging material and alleviates the use of polystyrene cushioning parts.

[0021] In an embodiment, the cushion layer is part of the bottom base and/or cover. By having either the bottom base, the cover or both folded into a cushion layer, a cushioning layer is formed without the requirement of a separate cushioning part or an additional cushioning layer is formed in addition to a separate cushioning part.

[0022] In an embodiment, a cushioning part made of a separate piece of recyclable, foldable, packaging material is present between the product and the bottom base and/or the cover.

[0023] In another aspect of the invention, recyclable, foldable, packaging material for use in the method described above is provided wherein the packaging material is a recyclable material such as cardboard, cellulose, reusable plastic material or a combination thereof.

[0024] In an embodiment, the recyclable, foldable, packaging material is cardboard wherein the cardboard is chosen from cardboard such as double corrugated cardboard, triple corrugated cardboard, or a combination thereof.

[0025] In an embodiment, the recyclable, foldable, packaging material is molded cardboard or cellulose pulp.

[0026] In the figures, the subject-matter of the invention is schematically shown, wherein identical or similarly acting elements are usually provided with the same reference signs.

Figure 1 shows a schematic representation of a method according to the prior art.

Figure 2 shows a schematic representation of a method according to the present invention.

Figure 3A shows a schematic representation of a bottom base according to an embodiment of the invention.

Figure 3B shows a schematic representation of a cushioning part according to an embodiment of the invention.

Figure 3C shows a schematic representation of a cover according to an embodiment of the invention.

Figure 4A shows a schematic representation of a packaged product obtained from the method according to the present invention.

Figure 4B shows an exploded view of a packaged product obtained from the method accord-

ing to the present invention.

Figure 5 shows a cross-sectional view of a packaged product according to an aspect of the invention.

[0027] With reference to Figure 1, a method 100 according to the prior art is shown. This method 100 comprises steps S101 to S110 as shown in Figure 1 from left to right. In a first step S101, a fully assembled heating device 1 is provided on a support surface 2 with a first polystyrene cushioning 3a positioned under the assembled heating device 1. In a next step S102, the assembled heating device 1 is tilted vertically and the support surface 2 is removed in step S103 followed by positioning a second polystyrene cushioning 3b over the assembled heating device 1 as shown in step S104. Then, the assembled heating device 1 with the polystyrene cushioning 3a and 3b is placed in a cardboard box 4 and further accessories 5 may be added in the cardboard box 4 as shown in step S105. The cardboard box may then be closed in step S106, provided with a label 6 in step S107, sealed and strapped with straps 7a and 7b in step S108 before being tilted back into a horizontal position in steps S109 and S110.

[0028] In Figures 2, a preferred method 200 according to the present invention is shown. This method 200 comprises steps S201 to S205 as shown in Figure 1 from left to right. In this method 200, a bottom base 20 is provided on a mounting surface 10 as shown in step S201. Then, a part of a hydraulic module 30 of a heating device 32 is positioned on top of the bottom base 20 as shown in step S202. Then, casing elements 31a, 31b and 31c are secured to the part of the hydraulic module 30 of the heating device 32 in step S203. By securing the casing elements 31a, 31b, and 31c to the part of a hydraulic module 30, the hydraulic module is completed and thereby an assembled heating device 32 is formed. After having assembled the heating device 32, a cushioning part 21 is positioned over the heating device 32 as shown in step S204. With the cushioning part 21 covering at least a part of the heating device 32, a cover 22 is positioned over the cushioning 21 and the heating device 32 as shown in step S205. This results in an assembled and packaged product 25. In an additional step not shown, straps may be provided to strap the bottom base 20 and the cover 22 together.

[0029] Figures 3A, 3B and 3C show examples of the recyclable, foldable, packaging materials used in the preferred method as shown in Figure 2.

[0030] In Figure 3A, an example of a bottom base 20, before folding, is given. As shown, bottom base 20 has pre-creased folding lines 40a to 40f. These pre-creased folding lines 40a to 40f may make the folding of the bottom base 20 easier and reduce the risk of misfolding and/or tearing the bottom base 20. As the sizes and shapes of the heating device 32 may vary, the amount and position of the pre-creasing may vary too to accommodate different folding lines to fit any size and shape of the heating device 32. Also, position markers 41a to 41d are shown. Said markers may be printed or drawn on the surface of the bottom base 20 to guide an operator or a machine to position the part of the hydraulic module 30 correctly onto the bottom base 20. Furthermore, crushing areas 42a and 42b are shown. Said crushing areas 42a and 42b facilitate the handling and position of the cardboard correctly for an operator by allowing a part of bottom base 20 to be folded and crushed between the bottom base 20 and the casing elements 31a, 31b, and 31c. Upon folding the bottom base 20, the crushing areas 42a and 42b are folded inward towards the assembled heating device 32 and will be tucked under the casing elements 31a, 31b, and 31c of the assembled heating device 32. As such, these crushing areas 42a and 42b give the operator clearance for folding crushing areas 42a and 42b between the bottom base 20 and the casing elements 31a, 31b, and 31c.

[0031] In Figure 3B, an example of a cushioning part 21, before folding, is given. As shown, cushioning part 21 has pre-creased folding lines 43a to 43j. These pre-creased folding lines 43a to 43j may make the folding of the cushioning part 21 easier and reduce the risk of misfolding and/or tearing the cushioning part 21. As the sizes and shapes of the heating device 32 may vary, the amount and position of the pre-creasing may vary too to accommodate different folding lines to fit any size and shape of the heating device 32. When folded along said pre-creased folding lines 43a to 43j, the cushioning part 21 is folded in a manner to form a cushion.

[0032] In Figure 3C, an example of a cover 22, before folding, is given. As shown, cover 22 has pre-creased folding lines 44a to 44e. These pre-creased folding lines 44a to 44e may make the folding of the cover 22 easier and reduce the risk of misfolding and/or tearing the cover 22. As the sizes and shapes of the heating device 32 may vary, the amount and position of the pre-creasing may vary too to accommodate different folding lines to fit any size and shape of the heating device 32. Furthermore, pre-creased handles 45a and 45b are shown. During folding of cover 22, the pre-creased handles 45a and 45b may be folded towards the assembled heating device 32 thereby supporting the assembled heating device 32. Also, pre-creased openings 46a and 46b are shown. These pre-creased may be folded open to, for instance, insert additional manuals into the package.

[0033] Figures 4A and 4B show a schematic representation of an assembled and packaged product 25. Figure 4A shows the outside view of such an assembled and packaged product 25. In said figure, a bottom base 20 and a cover 22 with handle 45a opening 46a can be seen. In Figure 4B, an exploded view of such an assembled and packaged product 25 is shown. In said figure, a cushioning part 21 and a heating device 32 can be seen in between the bottom base 20 and the cover 22.

[0034] In Figure 5, a cross-sectional view of an assembled and packaged product 25 is shown. As can be seen, a heating device 32 is situated on top of a bottom base

20. On top of the heating device 32, a cushioning part 21 is provided. A cover 22 is provided over both the heating device 32 and the cushioning part 21. Furthermore, it can be seen that the bottom base 20 is folded around both the heating device 32 and the cover 22. Crushing area 42a can be seen tucked between the bottom base 20 and the heating device 32. Also, handle holes 47a and 47b are shown representing the space that is left when folding pre-creased handles 45a and 45b. It can be seen that the pre-creased handles 45a and 45b are folded directly under cushioning part 21 towards the heating device 32 giving additional support and stabilization directly under the cushioning part 21 and indirectly supporting the heating device 32 through the cushioning part 21. The heating device 32, the bottom base 20, the cushioning part 21 and the cover 22 are tightly fit with each other. The cover 22 may absorb any shock the package might receive from the outside and transfer it to the cushioning part 21. Furthermore, the combination of the cover 22 and the cushioning part 21 results in a sufficiently rigid and stiff package that allows multiple assembled and packaged products 25 to be stacked without applying any force on the heating device 32 inside the package as any weight on top of the cover 22 is transferred and distributed through the package.

Reference Signs

[0035]

1	assembled heating device according to the prior art
2	support surface
3a-3b	polystyrene cushioning
4	cardboard box
5	accessories
6	label
7a-7b	strap
10	mounting surface
20	bottom base
21	cushioning part
22	cover
25	assembled and packaged product according to an embodiment
30	part of a hydraulic module
31a-31c	casing element
32	heating device
40a-40f	pre-creased folding lines of the bottom base
41a-41d	position markers on the bottom base
42a-42b	crushing areas of the bottom base
43a-43j	pre-creased folding lines of the cushioning part
44a-44e	pre-creased folding lines of the cover
45a-45b	pre-creased handles of the cover
46a-46b	pre-creased openings of the cover
47a-47b	handle holes in the cover
100	method according to the prior art
200	method according to an embodiment
S101-S110	method steps according to the prior art
S201-S205	method steps according to an embodiment

Claims

1. A method (200) for assembling and packaging of a heating device (32), in particular an indoor hydraulic module of a heat pump or a boiler, wherein the method comprises the steps of:

- providing a bottom base (20) on a mounting surface (10);
- positioning a part of a hydraulic module (30) of a heating device (32) onto the bottom base (20);
- secure one or more casing elements (31a, 31, b, 31c) to the part of the hydraulic module (30) using a securing means to assemble the heating device (32); and
- positioning a cover (22) over at least an upper part of the assembled heating device (32);

wherein the bottom base (20) and/or the cover (22) is folded to create a box around the assembled heating device (32); and

wherein the bottom base (20) and the cover (22) are made of a recyclable, foldable, packaging material.

2. The method (200) according to claim 1, wherein the method further comprises the step of positioning a cushioning part (21) over the assembled heating device (32) before positioning a cover (22) over the cushioning part (21) and the at least an upper part of the assembled heating device (32); and wherein the cushioning part (21) is created by folding a piece of recyclable, foldable, packaging material around the assembled heating device (32).

3. The method (200) according to claim 1 or 2, wherein at least a part of the bottom base (20) and/or the cover (22) may be further folded to create a cushion layer between the assembled heating device and the bottom base (20) and/or the cover (22).

4. The method (200) according to any of the preceding claims, wherein the recyclable, foldable, packaging material is pre-creased for folding.

5. The method (200) according to any of the preceding claims, wherein the recyclable, foldable, packaging material has one or more pre-creased handles (45a, 45b) wherein the pre-creased handles (45a, 45b) may be folded towards the assembled heating device (32), thereby supporting the assembled heating device (32).

6. The method (200) according to any of the preceding claims, wherein the recyclable, foldable, packaging material has one or more pre-creased storage pocket elements wherein the pre-creased storage pocket elements may be folded to create a storage pocket for storing accessories.

7. The method (200) according to any of the preceding claims, wherein the recyclable, foldable, packaging material may be chosen from recyclable, foldable, packaging material such as cardboard, cellulose, reusable plastic material or a combination thereof; and wherein the cardboard may further be chosen from double corrugated cardboard, triple corrugated cardboard, or a combination thereof.

8. The method (200) according to any of the preceding claims, wherein the recyclable, foldable, packaging material may be molded cardboard or cellulose pulp.

9. A product (25) directly obtained by the method (200) according to any of the claims 1 to 8.

10. A packaged product (25), in particular a packaged product (25) obtained by the method (200) of any of the claims 1 to 8, comprising:

- a product such as a heating device (32);
- a bottom base (20) under the heating device (32);
- a cover (22) over the heating device (32);

wherein a cushion layer is present between the heating device (32) and the cover (22) positioned over the heating device (32), and wherein the bottom base (20) and the cover (22) are made of a recyclable, foldable, packaging material.

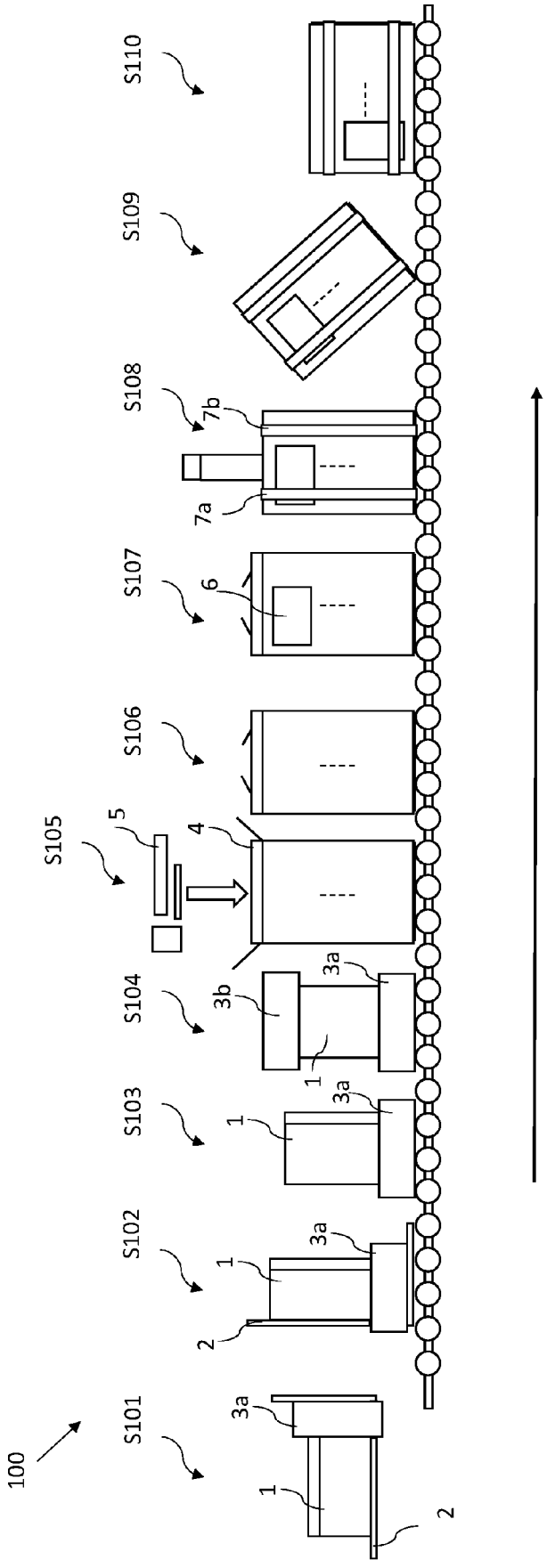
11. A packaged product (25) according to claim 10, wherein the cushion layer is a part of the bottom base (20) and/or cover (22).

12. A packaged product (25) according to claim 10 or 11, wherein a cushioning part (21) is present between the product (25) and the bottom base (2) and/or the cover (22), and wherein the cushioning part (21) is a separate piece of recyclable, foldable, packaging material.

13. A recyclable, foldable, packaging material for use in a method (200) according to any of the claims 1 to 8, wherein the packaging material is a recyclable material such as cardboard, cellulose, reusable plastic material or a combination thereof.

14. A recyclable, foldable, packaging material according to claim 13, wherein the cardboard is chosen from cardboard such as double corrugated cardboard, triple corrugated cardboard, or a combination thereof.

15. A recyclable, foldable, packaging material according to claim 13, wherein the recyclable material is molded cardboard or cellulose pulp.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3a
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7a
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FIG. 1

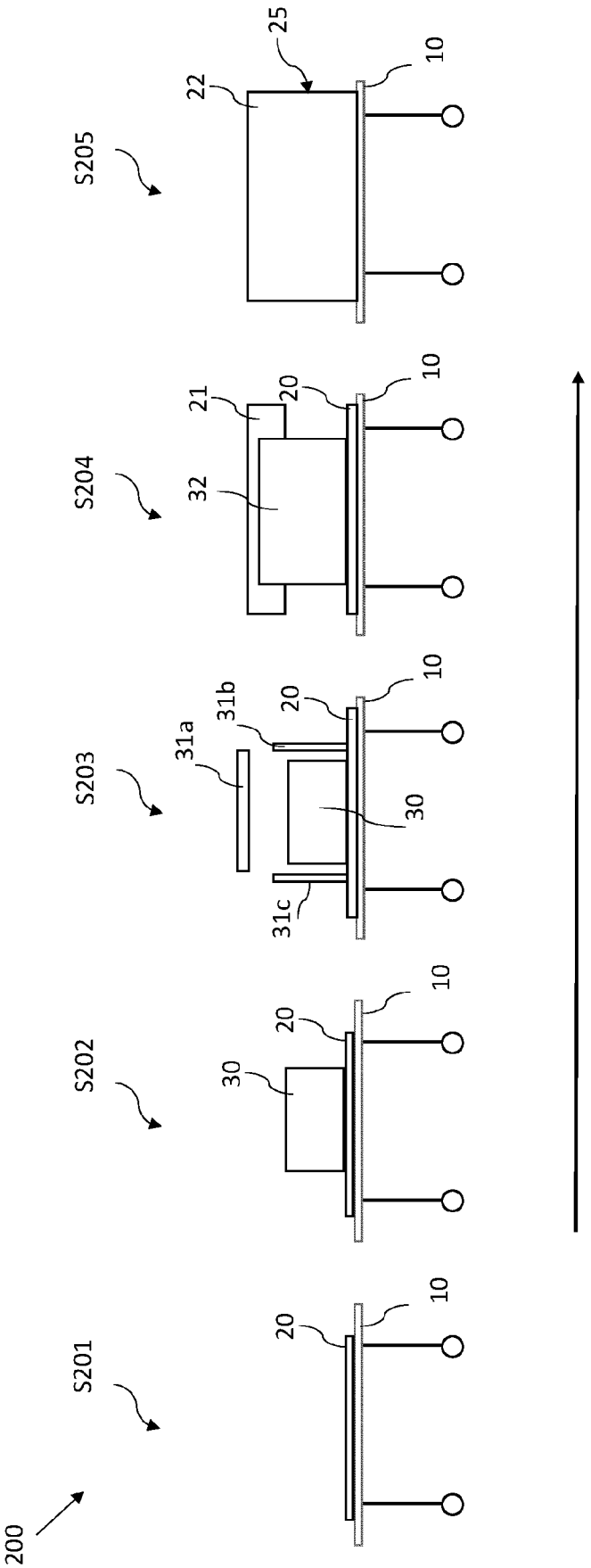

FIG. 2

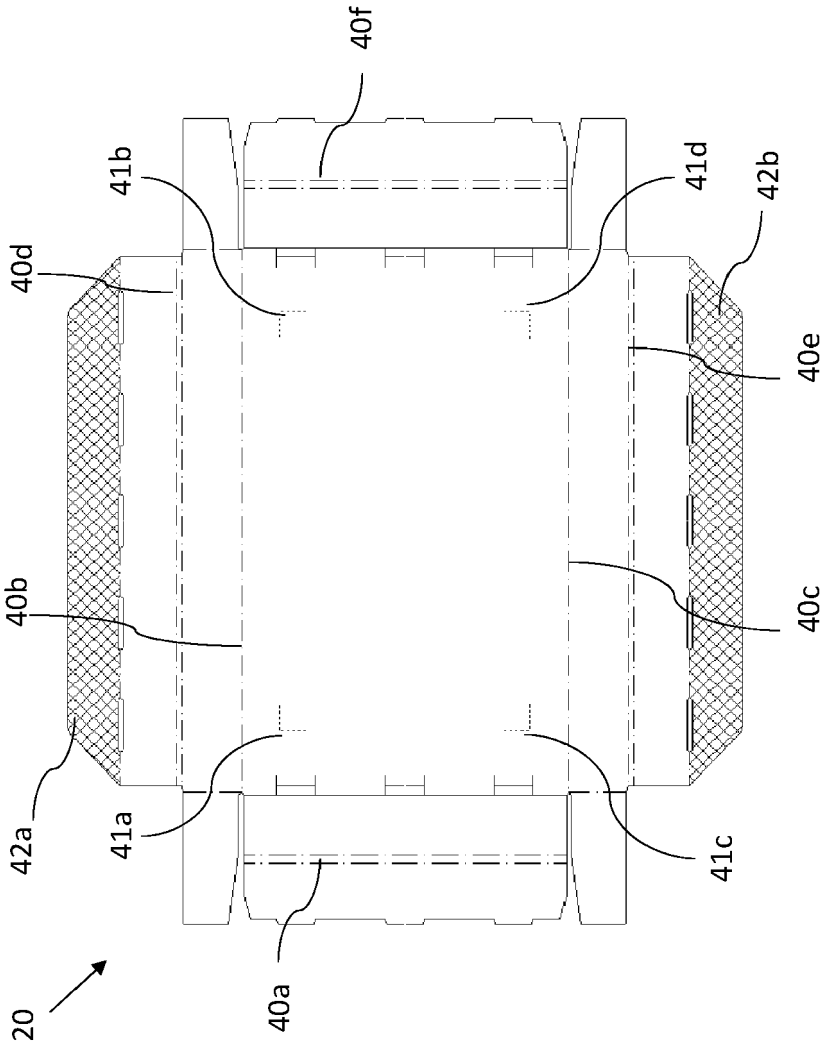

FIG. 3A

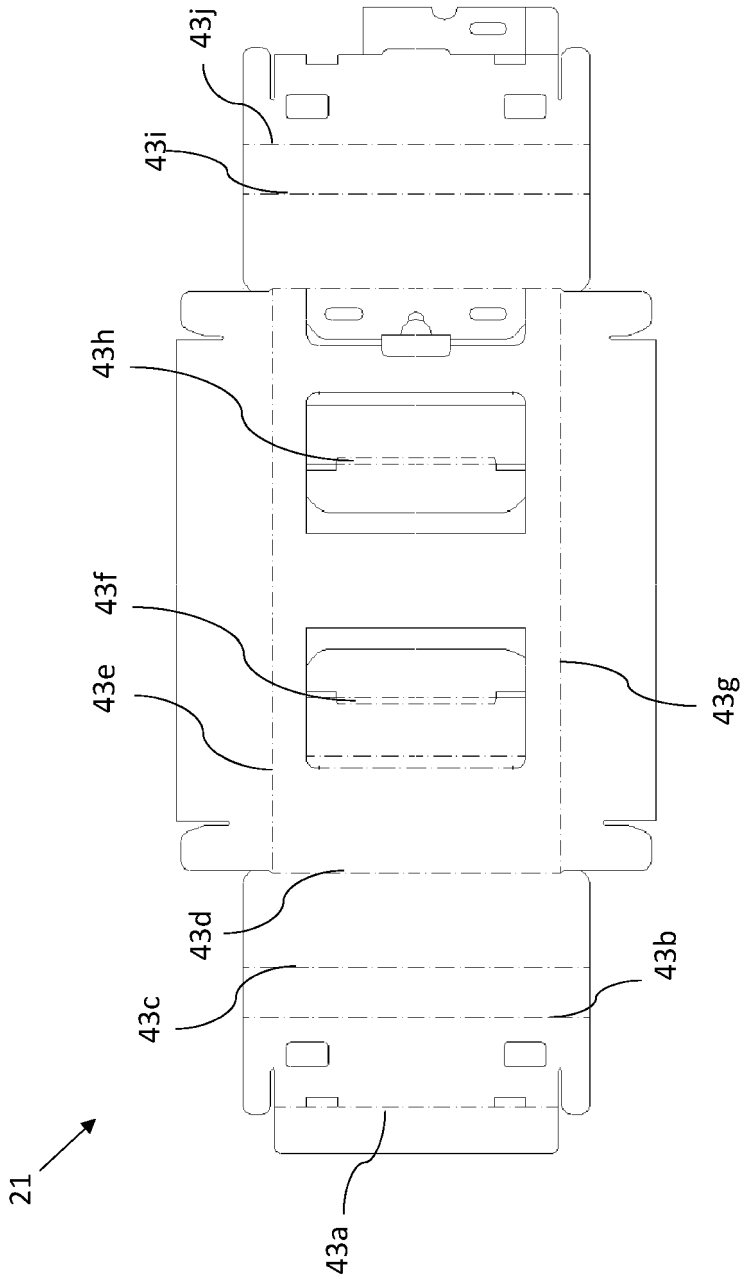

FIG. 3B

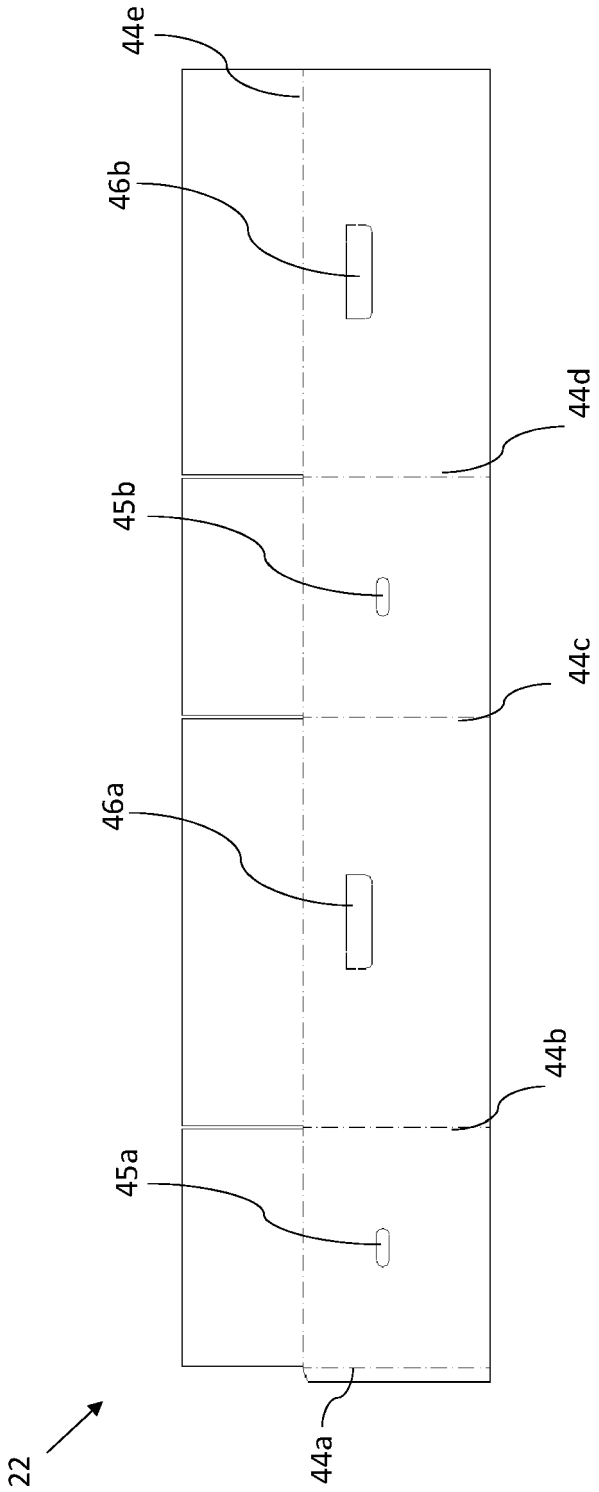

FIG. 3C

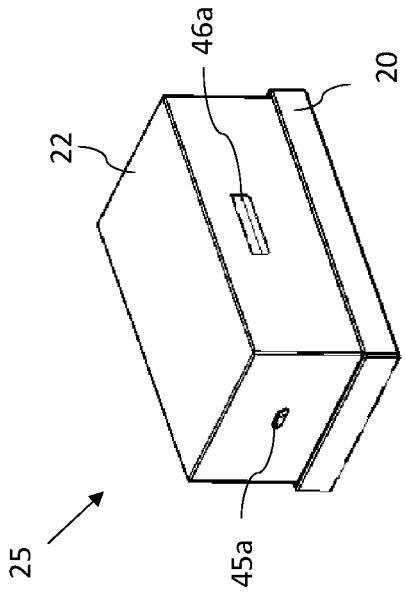

FIG. 4A

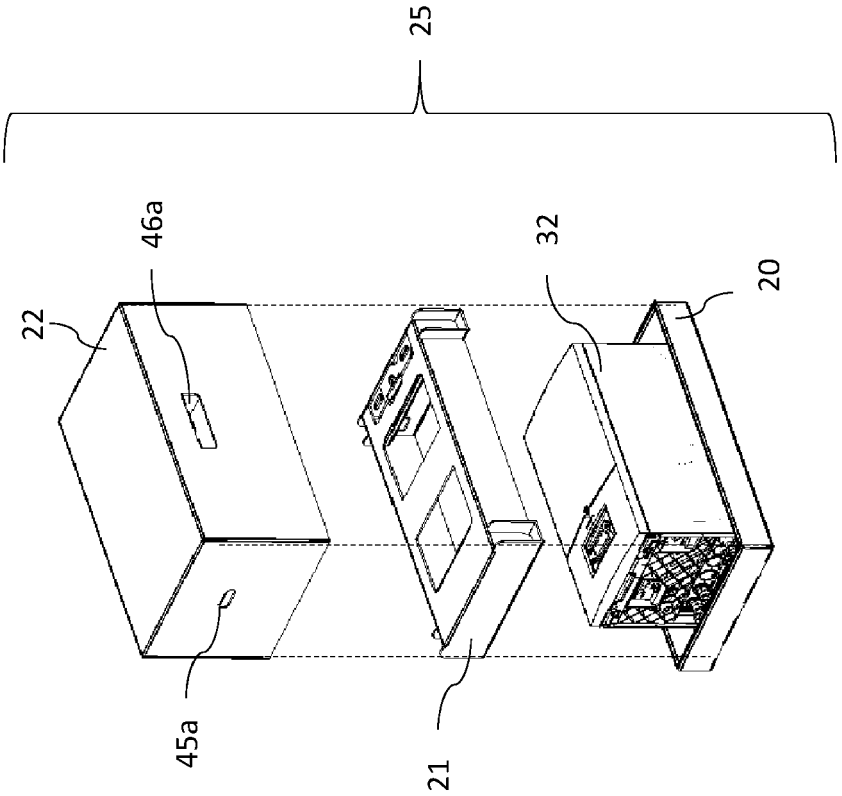

FIG. 4B

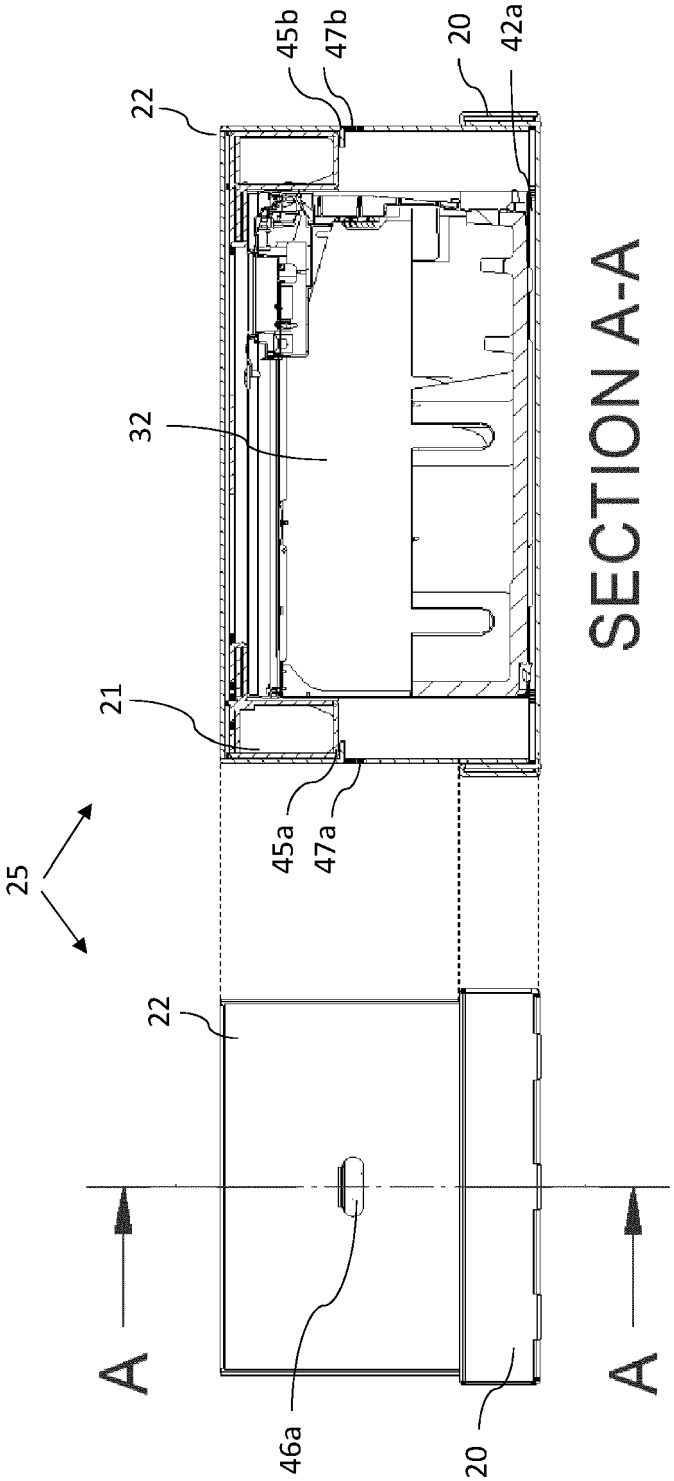

FIG. 5

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EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2 932 438 A (SMITH MAX M) 12 April 1960 (1960-04-12) * column 1, line 15 - column 6, line 21 * * figures 1-31 *	1-14	INV. B65D5/32 B65D5/50 B65D5/68 B65D81/05
X	KR 2008 0002306 U (TAE S Y) 2 July 2008 (2008-07-02) * pages 2-5 * * figures 1-10 *	1-14	ADD. B65D5/468
X	US 10 906 719 B2 (APPLE INC [US]) 2 February 2021 (2021-02-02) * column 2, lines 25-39 *	13-15	
A	JP 2003 237877 A (FUJITSU GENERAL LTD) 27 August 2003 (2003-08-27) * paragraphs [0001] - [0011] * * figures 1-6 *	1-15	
A	WO 2016/181485 A1 (MITSUBISHI ELECTRIC CORP) 17 November 2016 (2016-11-17) * pages 1-11 * * figures 1-15 *	1-15	TECHNICAL FIELDS SEARCHED (IPC) B65D
A	KR 2008 0001444 U (TAE S Y) 30 May 2008 (2008-05-30) * pages 2-4 * * figures 1-6 *	1-15	
A	KR 2008 0000449 U (TAE S Y) 16 April 2008 (2008-04-16) * pages 2-4 * * figures 1-8 *	1-15	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	12 August 2022	Duc, Emmanuel

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12-08-2022

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2932438 A	12-04-1960	NONE	
KR 20080002306 U	02-07-2008	NONE	
US 10906719 B2	02-02-2021	CN 110937217 A	31-03-2020
		US 2020095046 A1	26-03-2020
JP 2003237877 A	27-08-2003	NONE	
WO 2016181485 A1	17-11-2016	CN 107531389 A	02-01-2018
		EP 3296228 A1	21-03-2018
		JP 6501875 B2	17-04-2019
		JP WO2016181485 A1	27-07-2017
		RU 2671055 C1	29-10-2018
		US 2018134440 A1	17-05-2018
		WO 2016181485 A1	17-11-2016
KR 20080001444 U	30-05-2008	NONE	
KR 20080000449 U	16-04-2008	NONE	

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