



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**19.07.2023 Bulletin 2023/29**

(51) International Patent Classification (IPC):  
**B65D 5/50 (2006.01)**

(21) Application number: **23150894.6**

(52) Cooperative Patent Classification (CPC):  
**B65D 5/5035; B65D 5/5054; B65D 5/5057**

(22) Date of filing: **10.01.2023**

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR**  
 Designated Extension States:  
**BA**  
 Designated Validation States:  
**KH MA MD TN**

(71) Applicant: **VKR Holding A/S**  
**2970 Hørsholm (DK)**

(72) Inventors:  
 • **Andersen, Erik**  
**2970 Hørsholm (DK)**  
 • **Jacobsen, Carina Juul**  
**2970 Hørsholm (DK)**

(30) Priority: **11.01.2022 DK PA202270008**

(74) Representative: **AWA Denmark A/S**  
**Strandgade 56**  
**1401 Copenhagen K (DK)**

(54) **A HOLDING ELEMENT FOR USE IN PACKAGING A PRODUCT, A PACKAGING, A METHOD FOR MAKING A HOLDING ELEMENT, AND A METHOD FOR PACKAGING A PRODUCT**

(57) A holding element (1) for use in packaging a product comprising a plurality of components (31,32,33) having different size and/or geometry in a packaging unit (2) and a method for making it are disclosed. In use the holding element is attached to an inner bottom surface (20) of the packaging unit in such a way that the holding element is in contact with at least one of the components of the product. The holding element is made from a pa-

per-based material by folding and/or stacking and comprises protrusions (111,112,121,122), recesses and/or slots extending in one or more planes (A,B,C,D), which is/are parallel with the bottom side of the holding element. The holding element may comprise a locking section (13,14,153) or a locking element for retaining it in a folded state. A packaging and a method for packaging a product using such a holding element are also disclosed.

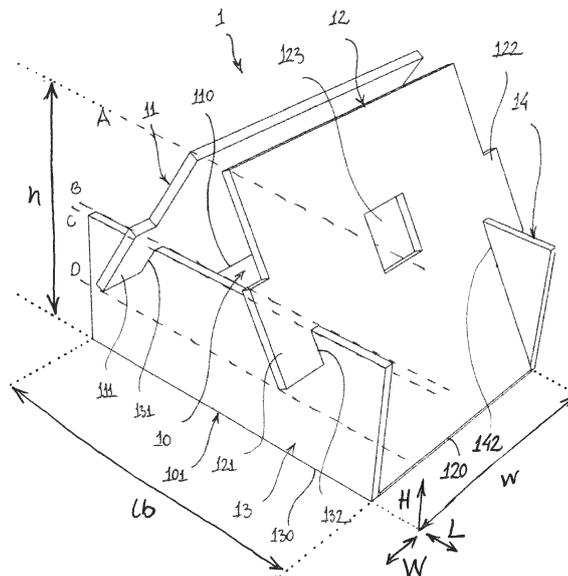


Fig. 1

## Description

### Technical Field

**[0001]** The present invention relates to a holding element for use in packaging a product comprising a plurality of components having different size and/or geometry in a packaging unit, where a bottom side of the holding element is configured for being attached to an inner bottom surface of the packaging unit in such a way that the holding element is in contact with at least one of the components of the product, and where the holding element comprises protrusions, recesses and/or slots extending in one or more planes, which is/are parallel with the bottom side of the holding element. The invention further relates to a packaging including such a holding element, to a method for making a holding element, and to a method for packaging a product using such a holding element.

### Background Art

**[0002]** Such a holding element is known from EP1710163A1, where blocks, made preferably from expanded polystyrene (EPS), are used for keeping components of a flashing assembly for a roof window in their intended positions within the packaging unit. Flashing assemblies typically comprise several components made of sheet metal, such as aluminium or copper, and components made from aluminium are typically painted and lacquered. As components of a flashing assembly will be at least partially visible in the installed state of the roof window product, it is important that they are not scratched or deformed. And even more importantly, a deformation is to be avoided as it may influence negatively on the weather proofing function of the flashing or covering components. By preventing the components from moving too much around in the packaging unit, which is typically a cardboard box, the risk of them being jammed between other component is reduced, and so is the possibility for contact with other components, which might result in scratches.

**[0003]** While the holding elements described in EP1710163A1 have worked well from a product protection point of view, the blocks cannot easily be re-used and are rarely recycled, which has given rise to environmental concerns.

### Summary of Invention

**[0004]** With this background, it is an object of the invention to provide an alternative holding element having a reduce climate footprint and a packing including such a holding element.

**[0005]** A further object of the invention is to provide a method for making an alternative holding element having a reduce climate footprint.

**[0006]** A still further object of the invention is to provide a method for packaging a product using such an alter-

native holding element.

**[0007]** In a first aspect of the invention at least one object is achieved with a holding element of the kind mentioned in the introduction, which is furthermore characterised in that the holding element is made from a paper-based material by folding and/or stacking.

**[0008]** In a second aspect of the invention at least one object is achieved with a method for making a holding element, where a paper-based material is folded and/or stacked thereby forming a bottom side and protrusions, recesses and/or slots extending in one or more planes, which is/are parallel with the bottom side of the holding element, said bottom side of the holding element being configured for being attached to an inner bottom surface of a packaging unit. The product may for example be a flashing assembly for a roof window.

**[0009]** The paper-based material may for example be corrugated cardboard or honeycomb cardboard, and by folding and/or stacking it a three-dimensional shape suitable of serving as a holding element can be achieved with a minimal material consumption. A further reduced material consumption may be achieved by designing one blank for a holding element configured to be folded in several different ways and/or by designing blanks so that they can be combined differently in stacks, thereby allowing different holding elements configured for use with different products to be made from the same blanks. Even though corrugated cardboard or honeycomb cardboard contains a small amount of adhesive, which will typically contain one or more polymers, the total amount of polymers used will be considerable reduced compared to the prior art blocks of EPS. This may in itself reduce the climate footprint, but it may also mean that the holding element does not have to be separated from the packaging unit for recycling, since the packaging unit will typically also be made from cardboard and will thus belong to the same recycling fraction. This considerably increases the likelihood of the holding elements actually being recycled instead of just being disposed of as combustible waste. Moreover, pollution of the cardboard waste fraction, which has been known to result from EPS blocks not being separated from the packaging unit, is avoided.

**[0010]** Another potential advantage of using a paper-based material is that it may be biologically degradable. Light-weight packaging items, such as cardboard and EPS, are easily caught by wind when installing a roof window product on a roof of building and may end up in nature or other places where it cannot be collected by the installer. While it is of course not the intention to leave packaging material behind, a biodegradable holding element made from a paper-based material does little harm.

**[0011]** It is to be understood that while paper and cardboard are usually made from wood-fibres, other plant fibres, including fibres originating from straw, bamboo, bagasse, esparto, other grasses, hemp, flax, and cotton, may also be used, including combinations of different types of fibres.

**[0012]** In Europe, up to 5% of other materials, such as adhesives, is acceptable in recycling, but a maximum of 3% is recommended.

**[0013]** A further advantage applying to the holding element made by folding is that it can be stored and supplied in an un-folded state, thus taking up considerably less space than the blocks used in the prior art. Unfolding of the holding element prior to reuse or recycling may also provide advantages with respect to space.

**[0014]** A third aspect of the invention relates to a packaging for use in packaging a product comprising a plurality of components having different size and/or geometry, which packaging comprises a packaging unit and at least one holding element as described above, said holding element being formed separately from said packaging unit and attached to an inner bottom surface of said packaging unit, the holding element being arranged in dependence of the geometry of the components of the product for separation thereof in such a way that at least one of the components may be retained from movement relative to the packaging unit in two directions being perpendicular to each other.

**[0015]** A fourth aspect of the invention relates to a method for packaging a product comprising a plurality of components having different size and/or geometry in a packaging unit, comprising:

Providing a packaging unit, such as a cardboard box or a blank for a cardboard box,

Forming at least one holding element separately from said packaging unit by folding and/or stacking a paper-based material,

Arranging the holding element(s) on the inner bottom surface of the packaging unit such that the holding element is in contact with at least one of said components, the holding element being arranged in dependence of the geometry of the components for separation thereof in such a way that at least one of the components is retained from movement relative to the packaging unit in two directions being perpendicular to each other, and

Fastening the holding element(s) to the inner bottom surface of the packaging unit, for example by adhesion.

**[0016]** Using one or more holding elements of the type described above in packaging a product comprising a plurality of components having different size and/or geometry and arranging it/them in dependence of the geometry of the components of the product for separation thereof allows a simply and reliable protection of the components with a minimal material consumption and hence a comparatively small climate foot print. Furthermore, the holding element may be recycled together with a packaging unit if the packaging is also made from a paper-based material as is often the case. Providing the holding element separately rather than forming part of the packaging unit and subsequently attaching it to an inner bot-

tom surface of said packaging unit, allows the same type of holding element and the same type of packaging unit to be used for several different products, by arranging the holding element in dependence of the specific product being packaged. One blank for a holding element may potentially be folded in several different ways and/or blanks may be combined differently in stacks, thereby forming different holding elements configured for use with different products.

**[0017]** The method may further comprise fastening at least one of the components of the product to an inner bottom surface the packaging unit or to another component of the product, for example by adhesion, thereby supplementing the retention provided by the holding element(s).

**[0018]** It is presently considered advantageous that the packaging unit is either a cardboard box or a blank, which is folded into a cardboard box once the holding element(s) has/have been fastened and possibly after arranging one or more components of the product thereon. It is, however, also within the scope of the invention to fasten the holding element(s) to a packaging sheet, which is then arranged in a cardboard box or on a blank for a cardboard box. It is even possible to arrange the entire content of the packaging on the packaging sheet before arranging the packaging sheet in the cardboard box or on the blank. The use of a packaging sheet may result in a reinforcement of the bottom of the packaging.

**[0019]** While corrugated cardboard is presently considered advantageous for the packing unit, other materials such as pasteboard, may also be used and folded into a box or carton.

**[0020]** In the following, a description common to all aspects of the invention will be given, and it is to be understood that features described with reference to one aspect also applies to the others unless otherwise stated.

**[0021]** In one embodiment, where the holding element is made by folding, it comprises a locking section or locking element retaining the holding element in the folded state. Examples of locking elements are dots or lines of adhesive or mechanical fasteners, such as staples, snap-locking fasteners or hook-and-loop type fasteners, such as Velcro®. Examples of locking sections are a flap folded into a recess in the holding element, an edge of the paper-based material fitting into a slot in the holding element, pairs of slot engaging with each other, and hook-shaped recesses or flaps engaging with each other.

**[0022]** In one embodiment, where the holding element is made by folding, it comprises a bottom section, a first side section, a second side section, and a third side section, said bottom section forming the bottom side of the holding element, said first and second side sections being non-parallel and converging in a height direction extending away from the bottom section perpendicular thereto, and said third side section constituting a locking section retaining the first and second side sections. The first and second side sections being non-parallel and converging in the height direction means that their mutual

distance decreases with increasing distance from bottom section, possibly giving the holding element a triangular or trapezoidal shape when seen from the side in parallel to the bottom section and to the first and second side sections. The third side section may be rectangular, such that its corners furthest from the bottom section project over the first and second side sections, thus providing a protrusion on either side of the holding element. The third side section may be shorter than the first and second side sections, such that these protrusions are located closer to the bottom section in the folded state than the distal edges of the first and second side sections located furthest from the bottom section. In that case, the holding element will have the overall shape of the letter A when seen from the side in parallel to the bottom section and to the first and second side sections. This holding element is preferably made from corrugated cardboard.

**[0023]** In one embodiment the holding element is made from two or more layers of corrugated cardboard and/or honeycomb cardboard each having two major surfaces and one or more minor surfaces extending between them, said layers being stacked and interconnected with one or both of the major surfaces of each layer facing a major surface of another layer and with the major surfaces of all layers extending substantially in parallel. One layer defines the bottom side of the holding element, and other layers may be made with different size and/or shape so that recesses or protrusions are formed on the holding element.

**[0024]** In a holding element made from two or more layers, which have been stacked and interconnected, a slot may be formed between two layers by the layers being left unconnected at a section of their respective major surfaces. Such a slot may for example be used for insertion of an edge of a component made from sheet metal, such as a component of a flashing assembly, whereby the component will be retained.

**[0025]** To make the holding element as versatile as possible, mutually opposite sides of the holding element extending away from the bottom side may be provided with identical protrusions, recesses and/or slots. This may for example allow identical holding elements to be used at both ends of an elongate product component without having to turn one of them. It may, however, also be advantageous that the mutually opposite sides of the holding element are provided with different protrusions, recesses and/or slots so that the same holding element may be used for different purposes by arranging it in different orientations.

**[0026]** In one embodiment, the holding element is provided with a plurality of recesses, slots and/or protrusions, which can be used depending on the orientation of the holding element in relation to the packaging unit. Changing the orientation of the holding element will thus allow the use of the same holding element for different purposes, for example by protrusions of the holding element being arranged in different heights above the inner bottom surface of the packaging unit. A similar advantage

may be achieved by providing a blank for a holding element, which can be folded in different ways depending on the intended use.

**[0027]** In one embodiment, the bottom side is substantially square. This may make the holding element versatile with respect to possible orientations on the packaging unit, and/or provide a high ratio between retention capability and the space taken up by the holding element.

**[0028]** In one embodiment, the width and the length of the bottom side of the holding element are 2 times the height of the holding element measured perpendicular to the bottom side or less. In one embodiment the width and the length of the bottom side are 1,5 times the height of the holding element or less. In one embodiment the width and the length of the bottom side are equal to or smaller than the height of the holding element.

**[0029]** It is presently considered advantageous that the ratio between the longer of the length and width of the bottom side of the holding element and the length of the shortest side of inner bottom surface of the packaging unit is in the range from 1:3 to 1:20.

**[0030]** In one embodiment the height of the holding element measured from the bottom side in the height direction corresponds substantially to the distance between the inner bottom surface of the packaging unit and an opposite top section of the packaging unit forming a top surface, such as a lid. Such a holding element may contribute to preventing sagging of the top section and/or deformation of packaging unit caused for example by other items being arranged on top of it. In another embodiment the height of the holding element corresponds to the distance between the inner bottom surface of the packaging unit and an upper side of the highest component of the product in the packaged state. In that case the top section of the packaging unit may not be prevented from sagging or from being deformed, but the highest component will be protected from deformation caused by other items being arranged on top of the packaging unit.

**[0031]** The holding element(s) may for example be fastened to the packaging unit by means of a pressure sensitive, a non-hardening adhesive, or a hot-melt adhesive. Mechanical fasteners, such as staples, may also be used.

**[0032]** The components of the product may be divided in two or more groups, each being retained by means of one or more holding elements, said groups for example comprising components to be used at different stages of the installation or use of the product. As an example, flashing components for use at the top of a roof window may be arranged at one side of the packaging held by one or more holding elements, and flashing components for use at the bottom of the roof window may be arranged at the other side of the packaging held by one or more other holding elements.

## Brief Description of Drawings

**[0033]** In the following description embodiments of the invention will be described with reference to the schematic drawings, in which

Fig. 1 is a perspective view of a first embodiment of a holding element;

Fig. 2 is top view of a blank for making the holding element shown in Fig. 1;

Fig. 3 is a perspective view of a packaging including four holding elements of the type shown in Figs 1 and 2;

Fig. 4 is a perspective view of a second embodiment of a holding element shown in contact with two components of a product;

Fig. 5 is a perspective view of a third embodiment of a holding element shown in contact with two components of a product; and

Fig. 6 is a perspective view of a fourth embodiment of a holding element shown in contact with two components of a product.

## Description of Embodiments

**[0034]** Referring initially to Fig. 1, a holding element 1 for use in packaging a product comprising a plurality of components having different size and/or geometry in a packaging unit is shown. The holding element 1 comprises a bottom section 10, a first side section 11, a second side section 12, a third side section 13, and a fourth side section 14, and is made from the paper-based blank shown in Fig. 2. The bottom section 10 defines a bottom side 101 of the holding element facing downwards in Fig. 1 and being configured for being attached to an inner bottom surface of a packaging unit as will be described below.

**[0035]** The holding element 1 is made by folding along lines 110, 120, 130, 140, and the third and fourth side sections 13, 14 retain the first and second side sections 11, 12 by protrusions 111, 112, 121, 122 of the first and second side sections being inserted in slots 131, 132, 141, 142 in the third and fourth side sections. The third and fourth side sections 13, 14 thus constitute locking sections retaining the holding element 1 in the folded state.

**[0036]** In this embodiment slots 1111, 1121, 1211, 1221 are also provided at the protrusions 111, 112, 121, 122 so that a slot at each protrusion may engage with each of the slots 131, 132, 141, 142 in the third and fourth side sections. This may ease the assembly of the holding element 1, but it is to be understood that one set of slots, either at the protrusions or in the third and fourth side sections 13, 14, may suffice.

**[0037]** In this embodiment the slots 131, 132, 141, 142, 1111, 1121, 1211, 1221 are all made with flaps 1110, 1120, 1210, 1220, 1310, 1320, 1410, 1420, which can be bent away from the slot during assembly of the holding

element. This contributes to a firm fixation of the first and second side sections 11, 12, but it is also possible to use slots without such flaps at the protrusions and/or in the third and fourth side sections.

**[0038]** The slots 131, 132, 141, 142 shown in the third and fourth side sections have a trapezoidal shape at the sections where no flap is present. This is intended to facilitate insertion of the protrusions 111, 112, 121, 122 by providing a funnel-effect, but straight slots may also be employed.

**[0039]** The fact that the holding element 1 is made by folding entails that it can be supplied as a flat blank and folded only when needed, thus saving space during storage and transportation. This also applies to the other folded embodiments, which will be described below.

**[0040]** The holding element 1 in Fig. 1 defines four planes A, B, C, D being defined by the upper edges of the first and second side sections 11, 12, by the upper edges of the protrusions 111, 112, 121, 122 of first and second side sections, by the upper edges of the third and fourth side sections 13, 14, and by the lower edges of the protrusions 111, 112, 121, 122 of first and second side sections, respectively. The references to upper and lower here indicate the positions relative to the bottom section 10 in a height direction H extending away from the bottom section perpendicular thereto. In this embodiment, each of the planes A, B, C, D is parallel with the bottom side 101 of the holding element, but if for example the protrusions 111, 121 of first and second side sections had different shapes or were provided at different heights, or if the first and second side sections were of a different height, planes A, B, and/or D could be inclined with respect to the bottom side. Likewise, plane C could be inclined by making the third and fourth sections with different heights or with inclined upper edges.

**[0041]** In the embodiment shown in Fig. 1, the first and second side sections 11, 12 are non-parallel and converging in the height direction H. This provides strength and stability to the holding element 1, but the first and second side sections 11, 12 could also be parallel or diverging in the height direction H.

**[0042]** In the embodiment shown in Fig. 1 and Fig. 2, a width w of the bottom section 10 measured in a width direction W parallel to the folding lines 110, 120 delimiting the first side section 11 and the second side section 12 is 5% shorter than a length lb of the bottom section 10 measured in a length direction L in parallel to the folding lines 130, 140 delimiting the third side section 13 and the fourth side section 14, making the bottom side almost square. In the flat state shown in Fig. 2 the first side section 11 and the second side section 12 both have a length ls in the length direction L corresponding to the length of the bottom section, and due to the first and second side sections 11, 12 converging in the folded state shown in Fig. 1, the height h of the holding element 1 is less than the length lb of the bottom section 10. In the embodiment shown ls is approximately 1,4 times h.

**[0043]** Openings 123 in the first and second side sec-

tions 11, 12 may be used as a handle to facilitate handling of the holding element 1 or for engagement with a component of a product to be retained. In this embodiment the openings are made by bent a section of material 1231 along folding line 1230 into the space delimited by the side sections 11, 12, 13, 14, but it is also possible to simply remove the section of material 1231. Such openings are an optional feature and may be present also in other configurations of the holding element even though not explicitly described. Likewise, it is to be understood that the holding element 1 may comprise only one opening and/or that the opening(s) may be located differently on the holding element.

**[0044]** Turning now to Fig. 3 the holding element 1 shown in Fig. 1 is shown in use in a packaging, where a flashing assembly 3 for weather proofing two roof windows mounted side-by-side is arranged in a packaging unit 2, said flashing assembly being divided in two groups each being retained by two holding elements 1.

**[0045]** The packaging unit 2 is here a cardboard box of the three-sided hinge cover type and comprises a bottom section having an inner bottom surface 20 on which the flashing assembly rests, two shorter side sections 21, two longer side sections 22, and a lid section 23 hinged to one of the longer side sections. Other types of a packaging units, including boxes of the shoe box type, may, however, also be used.

**[0046]** The flashing assembly 3 here comprises a plurality of components having different size and geometry, including two bottom flashing members 31, two top flashing members 32, and side flashing members 33. The holding element may, however, also be used in packaging other products.

**[0047]** In this embodiment, the holding elements 1 are attached to the inner bottom surface 20 of a packaging unit 2 by the bottom side of bottom section 10 of each holding element being glued or adhered thereto, but other means of attachment and/or another number of holding element may also be employed. At present the use a hot-melt or pressure sensitive adhesive is considered advantageous.

**[0048]** The holding elements are arranged so that the protrusions 111, 121 project over an edge 311 of the bottom flashing members 31 and abut on an inner side 321 of the top flashing members, thereby retaining the bottom flashing members in the height direction H and the top flashing members in the width direction W direction. The total height of each holding element 1 is such that the position of the upper edges of the first sides sections 11, 12 corresponds substantially to the location of the component located highest in the packed state, here the side flashing member 33. This entails that in the closed state of the packaging unit 2 the holding elements will support the lid section 23, thereby reducing the risk of damage to the flashing assembly 3 in case a heavy item is arranged on top of the package.

**[0049]** The fact that the holding element 1 is symmetrical with identical protrusions and recesses on opposite

sides means that it can be turned one way or the other and still engage the components of the product in the intended manner. It is, however, possible to make the first and second side sections 11, 12 with protrusions at different levels at the two sides. That would make the holding element even more versatile by allowing it to engage with even more different product components, but it would also require that the user arranging them in the packaging unit 2 has more skill and precision and it could potentially result in higher production costs.

**[0050]** Turning now to Fig. 4, a second embodiment of the holding element 1 is shown. Here as well as in the remaining figures, the same reference numbers as in Figs 1-3 will be used for items having substantially the same function, even if they are not identical, and it is to be understood that features such as the opening 123 may apply to all embodiments even if not explicitly described.

**[0051]** The holding element 1 in Fig. 4 is made from a paper-based material, such as corrugated cardboard, by folding along lines 110, 120, 150 and comprises four sections, namely a bottom section 10, a first side section 11, a second side section 12, and a fifth side section 15. The fifth side section overlaps the second side section 12 and is provided with tabs 153, which are bent into recesses in the second side section, thus serving as locking sections retaining the holding element 1 in the folded state. It would, however, also be possible to interconnect the second and fifth side sections using an adhesive or separate locking elements, such as staples. At present it is considered advantageous to use locking sections as the paper-based material is thus kept free of other materials, which will facilitate recycling.

**[0052]** The bottom section 10 rests on the inner bottom surface 20 of a packaging unit and engages a bottom flashing member 31 and a top flashing member 32 as described above with reference to Fig. 3.

**[0053]** The total height of the holding element 1 corresponds to the height of the top flashing member 32, and protrusions 122 of the first and second side sections 11, 12 engage the inner side 321 of the top flashing member. It is to be understood that in this embodiment too, the first side section 11 has a protrusion corresponding to the one marked 112 in Fig. 2, and that it is located at the same height as the protrusion 122, just as is seen for protrusions 111, 121 in Fig. 3. The position of the protrusions 112, 122 allow them to project underneath a bent edge 322 of the top flashing member thereby allowing a tight contact with the top flashing member.

**[0054]** Upper edges 114, 124 at recesses in the first and second side sections 11, 12 serve the same purpose as the upper edges of the third and fourth side sections of the holding element in Fig. 1, so that this embodiment too provides four planes. In this embodiment, these upper edges 114, 124 projects under and supports an edge 311 of the bottom flashing member 31.

**[0055]** The first and second side sections 11, 12 are converging in substantially the same way as in the em-

bodiment in Fig. 1, but the first side section 11 is here perpendicular to the bottom section 10 and the second side section is inclined so that the holding element 1 has the overall shape of a right-angled triangle.

**[0056]** This holding element 1 could also be used in a different orientation, where the longer section here forming the first side section 11 was attached to the inner bottom surface 20 of the packaging unit, thus serving as the bottom section. The result would be a lower and wider holding element with protrusions located at different heights above the inner bottom surface 20 of the packaging unit.

**[0057]** A third and somewhat simpler embodiment of the holding element 1 is shown in Fig. 5. This embodiment comprises only a bottom section 10 and a first side section 11, which are perpendicular to each other in the folded state. The bottom section 10 and the first side section 11 are identical, meaning that the bottom section may also serve as the first side section and vice versa by turning the holding element. In this embodiment recesses and protrusions are provided only at one end in the width direction W, but there could also be recesses and protrusions at the other end, either identical to those shown or different to allow different uses.

**[0058]** In Fig. 5 the holding element 1 is shown inserted into a groove formed by the bent edge 322 of the top flashing member 32. This provides a good contact with the top flashing member 32, which may at least partially compensate for the reduced structural stability of this holding element 1 compared to those in Fig 1-4.

**[0059]** The material used for the embodiments shown in Figs 1-5 may for example be corrugated cardboard or paperboard.

**[0060]** A fourth embodiment of the holding element 1 is shown in Fig. 6. This holding element is made by stacking four layers 16, 17, 18, 19 of honeycomb cardboard, each layer having different dimensions such that protrusions and recesses are formed, and each layer being provided with a paper cover facilitating interconnection and attachment to the inner bottom surface 20 of the packaging unit.

**[0061]** The free upper surface 161 of the lowermost layer 16 seen in the height direction H serves substantially the same function as the upper edges of the third and fourth side sections 13, 14 in Fig. 1 and the upper edges 114, 124 in Fig. 4, i.e. projecting under and/or supporting the edge 311 of the bottom flashing member 31. Likewise, the protrusions formed by the third layer 18 serve the same function as the protrusions 111, 112, 121, 122 of first and second side sections 11, 12 in Figs 1-5, engaging the inner side 321 of the top flashing member 32, and the free upper surface 181 projects underneath the bent edge 322. It would also be possible to leave out the second layer 17 and interconnect the first and third layers 16, 18 only partially, leaving a slot between them, which could be used for receiving the edge 311 of the bottom flashing members 31. This would require a higher degree of precision in arranging the holding element 1,

but would in turn provide a very reliable retainment of the bottom flashing member 31.

**[0062]** The holding element 1 in Fig. 6 is considerably more stable than those shown in Figs 1-5, particularly when it comes to pressure applied in the height direction, for example caused by another item being arranged on top of the packaging, as the relatively large top surface 191 will serve to distribute loads. On the negative side, this holding element 1 takes up more space and may be more expensive to manufacture. To reduce cost, one or more of the layers 16, 17, 18, 19 may be made wholly or partially from several layers of corrugated cardboard of identical dimensions stacked on top of each other and interconnected. The layers of corrugated cardboard may extend either in parallel to the bottom side 160 or in the height direction.

**[0063]** Even though the use of the holding elements 1 has been described above as relating to the retainment of a bottom flashing member 31 and a top flashing member 32 it is to be understood that these are just examples of components of a product. Other examples are other flashing components, such as side flashing members, insulating members for use around a window in an installed state, and window accessories, such as shutters, shades, blinds, and curtains.

**[0064] List of reference numerals**

1	Holding element
10	Bottom section
101	Bottom side
11	First side section
110	Folding line
111	Protrusion
112	Protrusion
114	Upper edge at recess
12	Second side section
120	Folding line
121	Protrusion
122	Protrusion
123	Opening
1230	Folding line
1231	Section of material
124	Upper edge at recess
13	Third side section
130	Folding line
131	Slot
1310	Flap
132	Slot
1320	Flap
14	Fourth side section
140	Folding line
141	Slot
1410	Flap
142	Slot
1420	Flap
15	Fifth side section
150	Folding line
153	Tab

16	Layer
160	Bottom side
161	Free upper surface
17	Layer
18	Layer
181	Free upper surface
19	Layer
191	Top surface
2	Packaging unit
20	Bottom surface
21	Shorter side section
22	Longer side section
23	Lid section
3	Flashing assembly
31	Bottom flashing member
311	Edge of bottom flashing member
32	Top flashing member
321	Inner side of top flashing member
322	Bent edge of top flashing member
33	Side flashing member
A	Plane
B	Plane
C	Plane
D	Plane
H	Height direction
L	Length direction
W	Width direction
h	Height
lb	Length of bottom section
ls	Length of side section
w	Width

### Claims

1. A holding element (1) for use in packaging a product comprising a plurality of components (31, 32, 33) having different size and/or geometry in a packaging unit (2), where a bottom side (101, 160) of the holding element is configured for being attached to an inner bottom surface (20) of the packaging unit in such a way that the holding element is in contact with at least one of the components of the product, and where the holding element comprises protrusions (111, 112, 121, 122), recesses and/or slots extending in one or more planes (A, B, C, D), which is/are parallel with the bottom side of the holding element, characterized in that the holding element (1) is made from a paper-based material by folding and/or stacking.
2. A holding element (1) according to claim 1 made by folding and comprising a locking section (13, 14, 153) or locking element retaining the holding element in the folded state.
3. A holding element (1) according to claim 2, where a flap serves (153) as a locking section by being folded

into a recess in the holding element.

4. A holding element (1) according to one or more of the preceding claims made by folding and comprising a bottom section (10), a first side section (11), a second side section (12), and a third side section (13), said bottom section forming the bottom side (101) of the holding element, said first and second side sections (11, 12) being non-parallel and converging in a height direction (H) extending away from the bottom section perpendicular thereto, and said third side section (13) constituting a locking section retaining the first and second side sections.
5. A holding element (1) according to claim 1, where the holding element is made from two or more layers (16, 17, 18, 19) of corrugated cardboard or honeycomb cardboard each having two major surfaces and one or more minor surfaces extending between them, said layers being stacked and interconnected with one or both of the major surfaces of each layer facing a major surface of another layer and with the major surfaces of all layers extending substantially in parallel.
6. A holding element (1) according to claim 5, where a slot is present between two layers (16, 17, 18, 19) by the layers being left unconnected at a section of their respective major surfaces.
7. A holding element (1) according to claim 5 or 6, where a recess is formed by at least one layer (16, 17, 18, 19) having a different shape than the other layer(s).
8. A holding element (1) according to one or more of the preceding claims, where mutually opposite sides of the holding element extending away from the bottom side (101, 160) are provided with identical protrusions, recesses and/or slots.
9. A holding element (1) according to one or more of the preceding claims, where the width (w) and the length (lb) of the bottom side (10) is 2 times the height (h) of the holding element measured perpendicular to the bottom side or less, preferably 1,5 times the height of the holding element or less.
10. A packaging for use in packaging a product comprising a plurality of components (31, 32, 33) having different size and/or geometry, which packaging comprises a packaging unit (2) and at least one holding element (1) according to one or more of claims 1 to 9, said holding element being formed separately from said packaging unit and attached to an inner bottom surface (20) of said packaging unit, the holding element being arranged in dependence of the geometry of the components of the product for sep-

aration thereof in such a way that at least one of the components may be retained from movement relative to the packaging unit in two directions being perpendicular to each other.

5

11. A packaging according to claim 10, where the height (h) of the holding element (1) measured from the bottom side (10) in the height direction (H) corresponds substantially to the distance between the inner bottom surface (20) of the packaging unit and an opposite top section (23) of the packaging unit forming a top surface and/or to the distance between the inner bottom surface (20) of the packaging unit and an upper side of the highest component of the product in the packaged state.
12. A packaging according to claim 10 or 11, where the product is a flashing assembly (3) for a roof window.
13. A method for making a holding element (1), where a paper-based material is folded and/or stacked thereby forming a bottom side (101, 160) and protrusions, recesses and/or slots extending in one or more planes, which is/are parallel with the bottom side of the holding element, said bottom side of the holding element being configured for being attached to an inner bottom surface (20) of a packaging unit.
14. A method for packaging a product comprising a plurality of components (31, 32, 33) having different size and/or geometry in a packaging unit (2), comprising:

10

15

20

25

30

Providing a packaging unit (2),  
 Forming at least one holding element (1) separately from said packaging unit (2) by folding and/or stacking a paper-based material,  
 Arranging the holding element(s) (1) on the inner bottom surface (20) of the packaging unit (2) such that the holding element is in contact with at least one of said components (31, 32, 33), the holding element being arranged in dependence of the geometry of the components for separation thereof in such a way that at least one of the components is retained from movement relative to the packaging unit in two directions being perpendicular to each other, and  
 Fastening the holding element(s) (1) to the inner bottom surface (20) of the packaging unit.

35

40

45

50

55

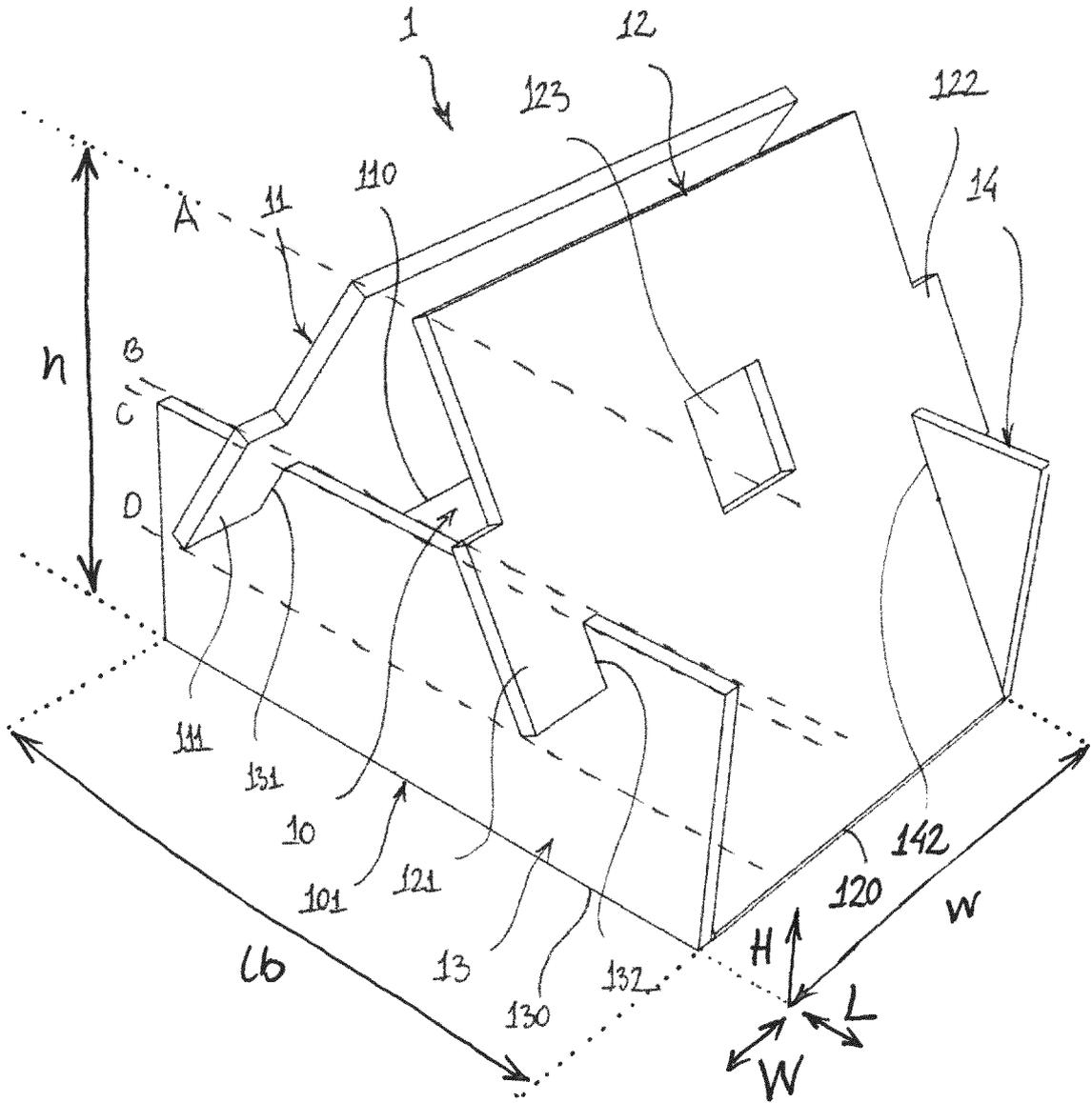


Fig. 1

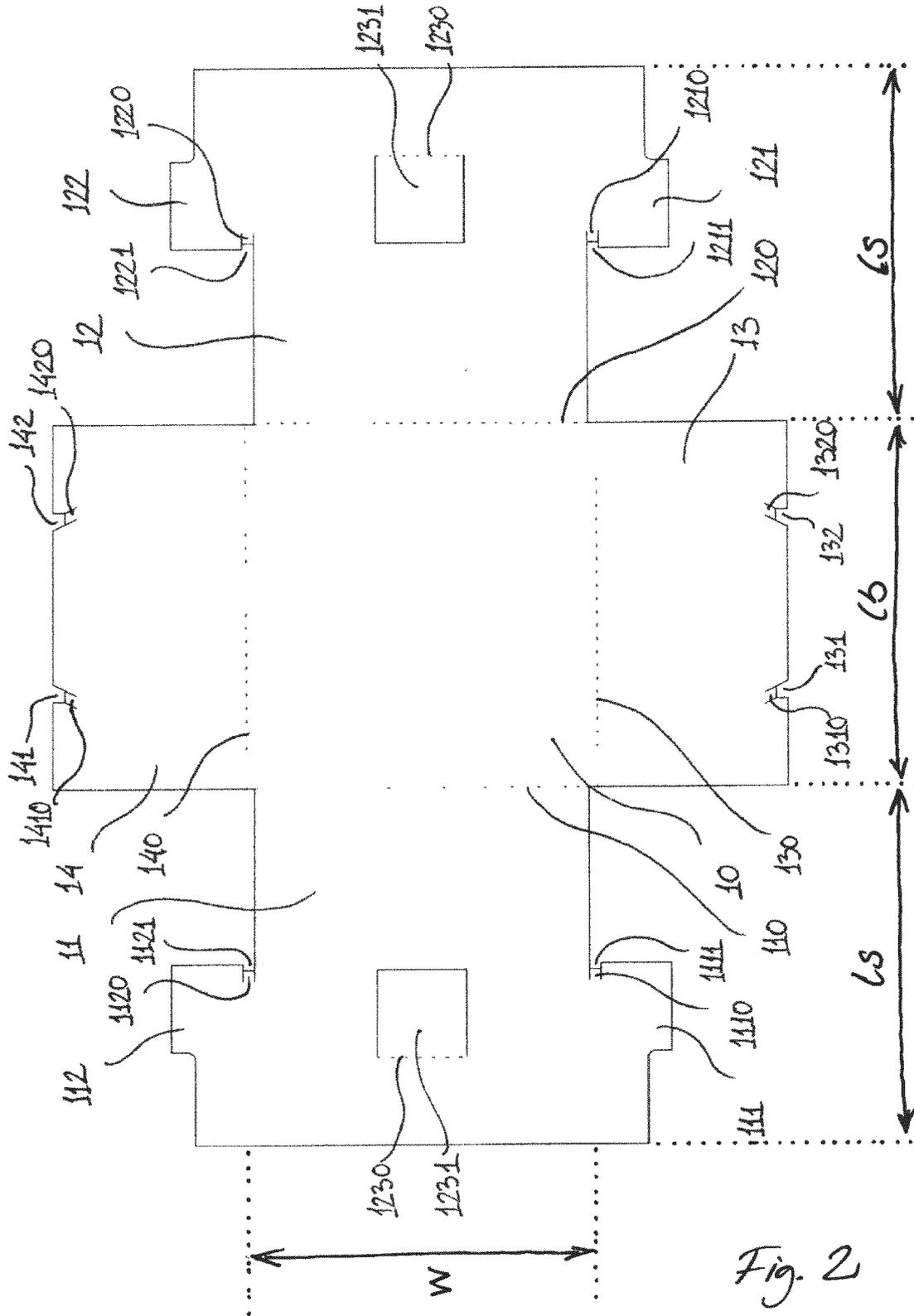
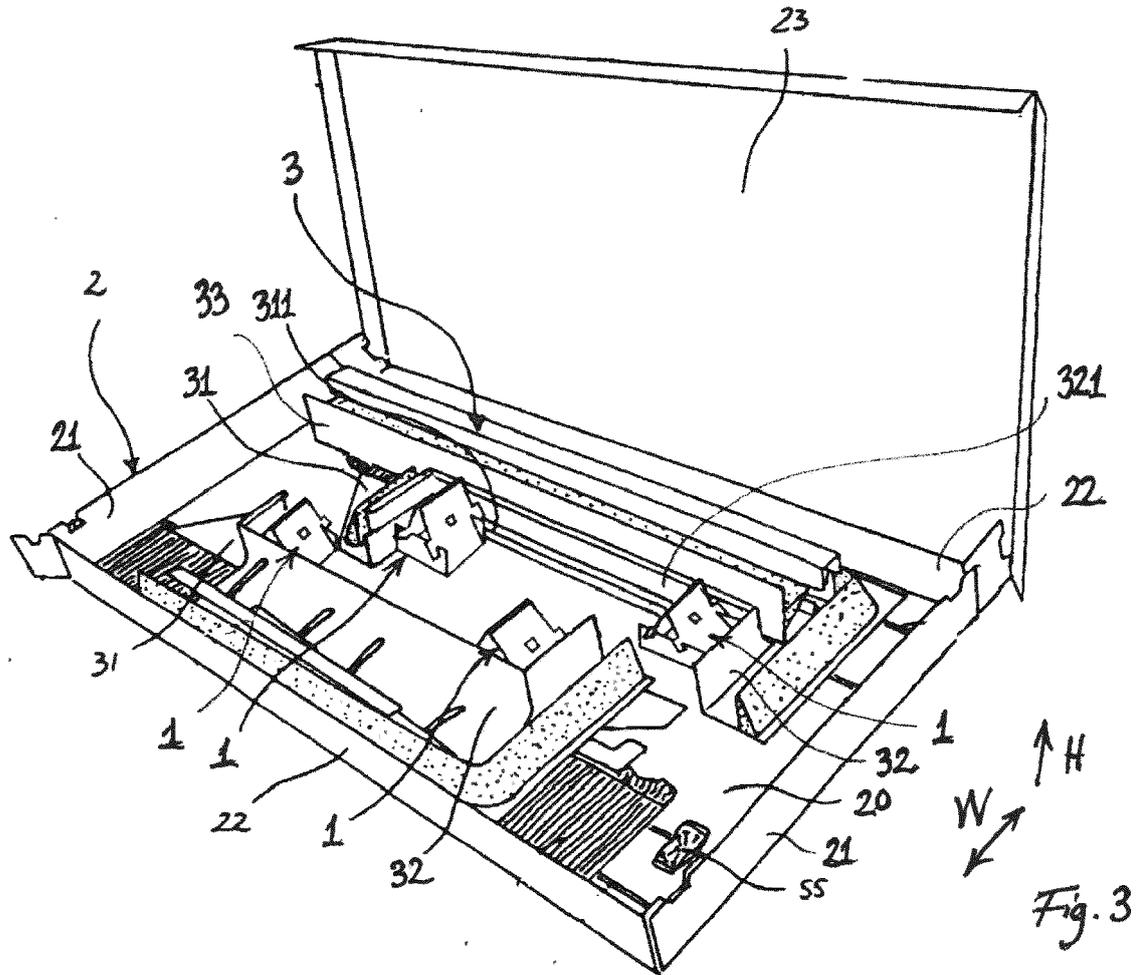
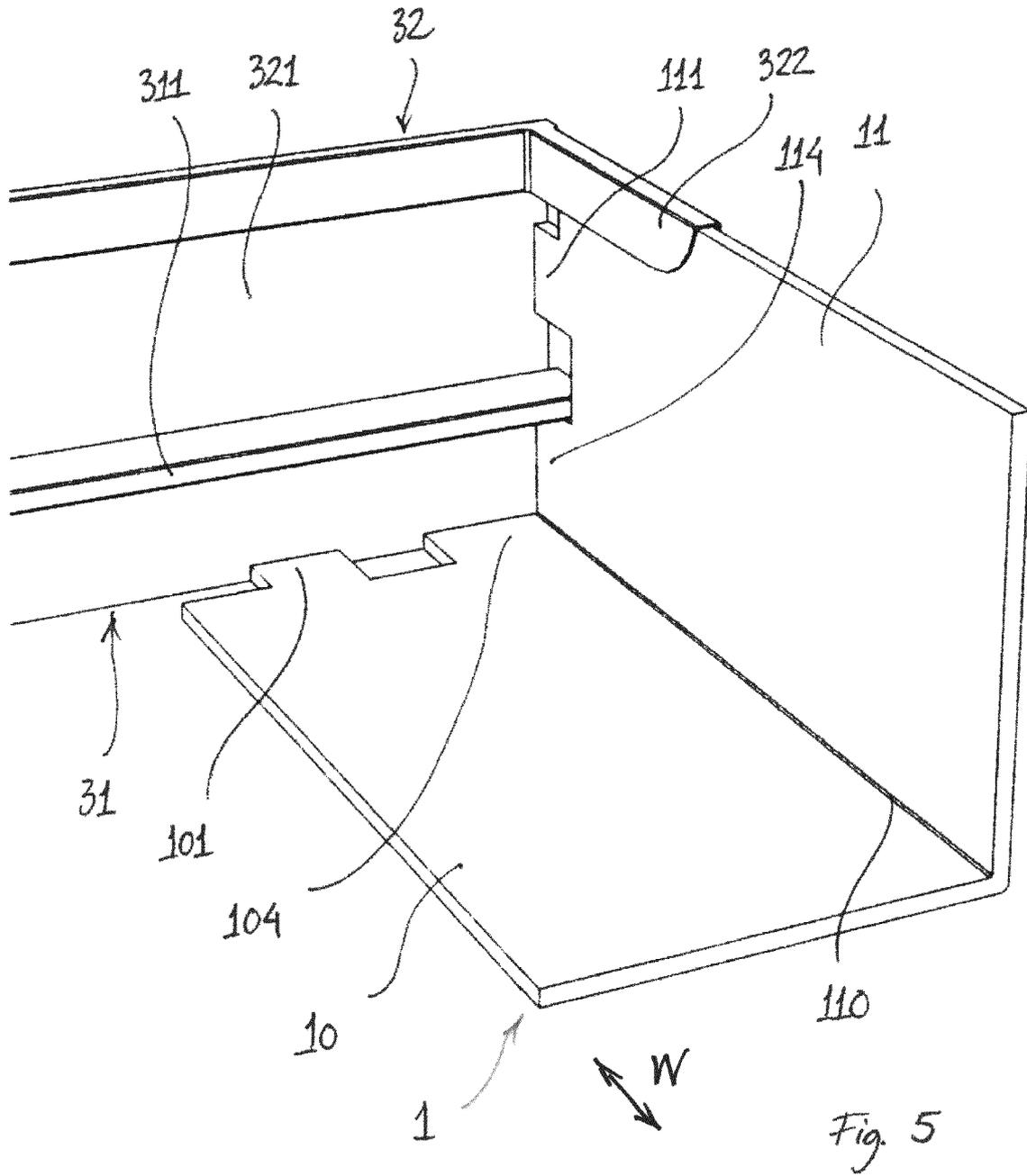


Fig. 2







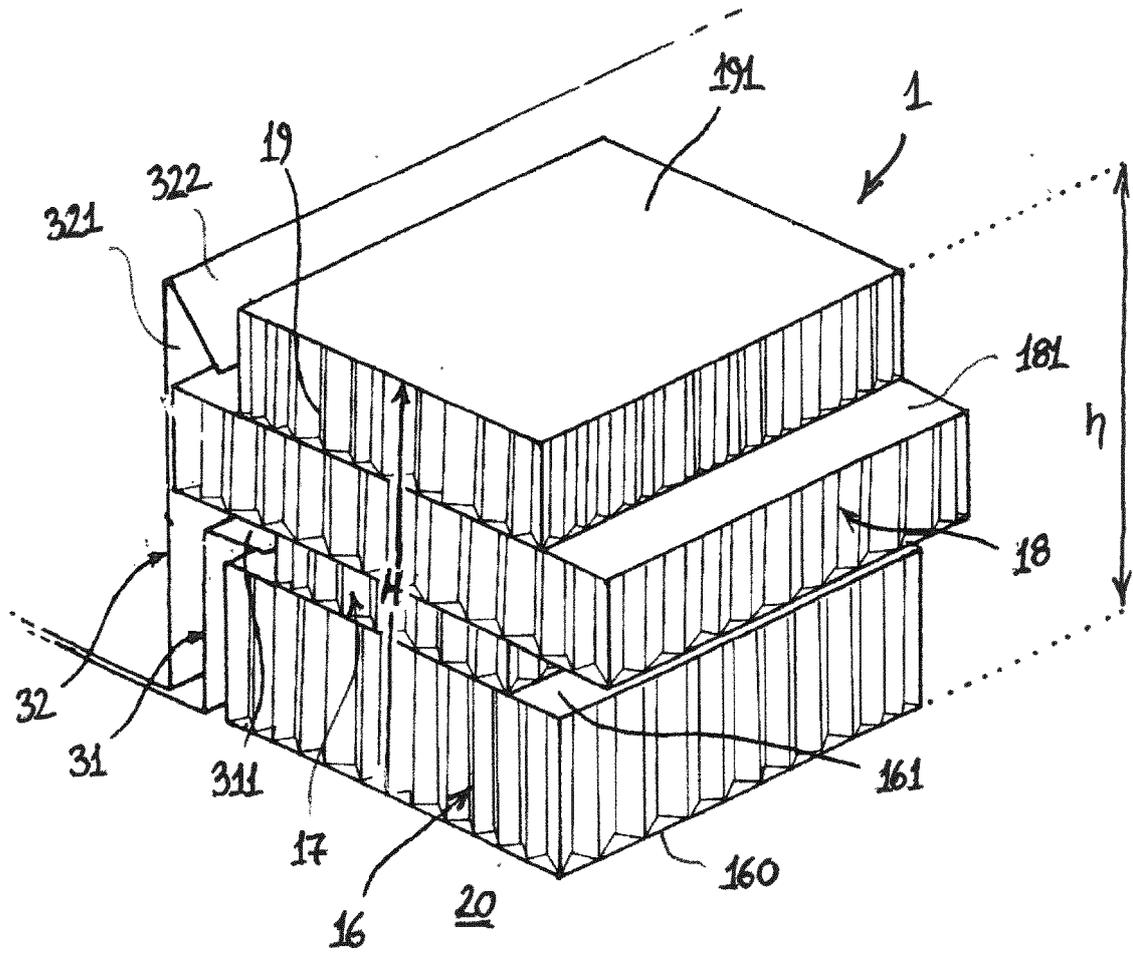


Fig. 6



EUROPEAN SEARCH REPORT

Application Number  
EP 23 15 0894

5

DOCUMENTS CONSIDERED TO BE RELEVANT

10

15

20

25

30

35

40

45

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X,P	EP 4 089 025 A2 (VKR HOLDING AS [DK]) 16 November 2022 (2022-11-16) * paragraphs [0097] - [0100], [0133] - [0138]; figures 1-52 *	1-14	INV. B65D5/50
X	US 3 363 753 A (TAYLOR ROBERT E) 16 January 1968 (1968-01-16) * column 3, line 4 - column 4, line 29; figures 1-13 *	1, 2, 4-10, 13, 14	
X	GB 471 136 A (CLIFFORD BENTLEY; THRISSELL ENGINEERING COMPANY) 30 August 1937 (1937-08-30) * page 6, line 93 - page 7, line 97; figures 1-8 *	1, 2, 4, 5, 8, 10, 13	
X	DE 200 06 319 U1 (BRAKEMANN VERPACKUNGEN GMBH [DE]) 6 July 2000 (2000-07-06) * page 5, lines 1-9; figures 1-4 *	1-4, 8, 10, 13, 14	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D

1

The present search report has been drawn up for all claims

50

Place of search <b>Munich</b>	Date of completion of the search <b>6 June 2023</b>	Examiner <b>Grondin, David</b>
----------------------------------	--	-----------------------------------

55

EPO FORM 1503 03:82 (F04C01)

CATEGORY OF CITED DOCUMENTS  
X : particularly relevant if taken alone  
Y : particularly relevant if combined with another document of the same category  
A : technological background  
O : non-written disclosure  
P : intermediate document

T : theory or principle underlying the invention  
E : earlier patent document, but published on, or after the filing date  
D : document cited in the application  
L : document cited for other reasons  
.....  
& : member of the same patent family, corresponding document

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 23 15 0894

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

06-06-2023

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
<b>EP 4089025 A2</b>	<b>16-11-2022</b>	<b>DK 202170236 A1</b> <b>EP 4089025 A2</b>	<b>21-11-2022</b> <b>16-11-2022</b>
<b>US 3363753 A</b>	<b>16-01-1968</b>	<b>NONE</b>	
<b>GB 471136 A</b>	<b>30-08-1937</b>	<b>NONE</b>	
<b>DE 20006319 U1</b>	<b>06-07-2000</b>	<b>DE 20006319 U1</b> <b>EP 1142792 A2</b>	<b>06-07-2000</b> <b>10-10-2001</b>

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**REFERENCES CITED IN THE DESCRIPTION**

*This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.*

**Patent documents cited in the description**

- EP 1710163 A1 [0002] [0003]