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### (54) SEALING DEVICE FOR PAPER-BASED CONTAINER

(57) The sealing device for a paper-based container (3) has an elongated release base member (1) with a double-sided adhesive layer (2) on a major side along the length of the release base member (1). The release base member (1) is adhered to a front portion of a flap (3B) of the container (3) by the double-sided adhesive

layer (2) so that the flap may be used to seal the container (3). To open the container (3), a pull strip (12) of the release base member (1) is pulled off and the flap (3B) is separated. To reuse the container (3), a second sealing device is applied to another flap (3A) of the container (3) so that the container (3) may be reused.

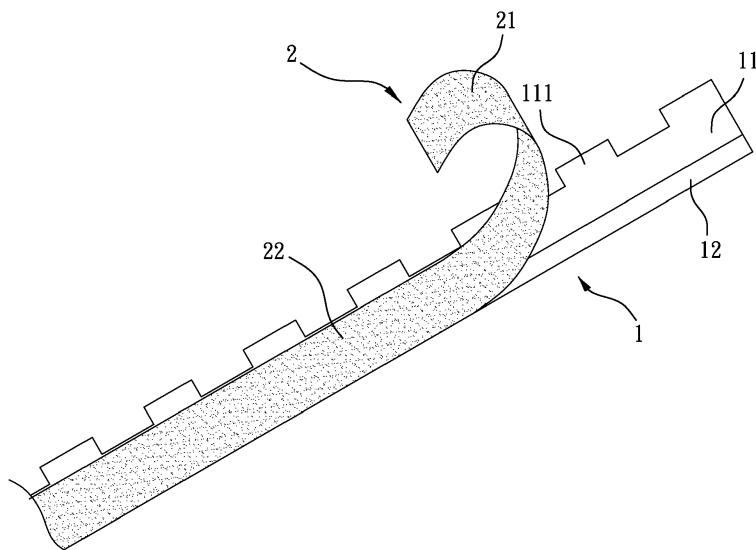


FIG. 2

## Description

### BACKGROUND OF THE INVENTION

#### (a) Technical Field of the Invention

**[0001]** The present invention is generally related to container packaging, and more particular to a sealing device for sealing paper-based containers such as cartons, boxes, or envelopes so that these containers may be reused.

#### (b) Description of the Prior Art

**[0002]** For on-line store owners and electronic commerce operators, they usually package their products in a carton, a box, or an envelope (hereinafter, a container), seal the container with duct tape, and then ship the products out through couriers or forwarders. Postal and express delivery operators also follow similar processes.

**[0003]** When a customer receives such a container, he/she has to remove the duct tape, usually by tearing the duct tape off or by cutting off the duct tape with a knife. The container often suffers various degrees of damage and cannot be reused. This would be rather inconvenient when the customer would like to return the product using the same container. This is also not environmentally friendly as the damaged container is thrown away for not being able to be used again.

### SUMMARY OF THE INVENTION

**[0004]** An objective of the present invention is to provide a sealing device for a paper-based container so that the container may be reused again after being used and opened.

**[0005]** The present invention is characterized in that an elongated release base member has double-sided adhesive layer on a major side along the length of the release base member. The release base member is adhered to a front portion of a flap of the container by the double-sided adhesive layer so that the flap may be used to seal the container. To open the container, a pull strip of the release base member is pulled off and the flap is separated. To reuse the container, a second sealing device is applied to another flap of the container so that the container may be reused.

**[0006]** The sealing device for a paper-based container includes a release base member of an elongate shape having a separation line along a length of the release base member separating the release base member into a base piece and a pull strip, and a double-sided adhesive layer having a first adhesive piece and a second adhesive piece on two major sides of the double-sided adhesive layer, respectively. The first adhesive piece is for adhering a major side of the release base member; the second adhesive piece is for adhering a front portion of a flap of the paper-based container; and, to apply the flap to seal

the paper-based container, the base piece is removed from the release base member to reveal the first adhesive piece.

**[0007]** Preferably a number of protrusions are configured along a major edge of the base piece protruding perpendicularly to the major edge so that the base piece may be conveniently peeled off the release base member.

**[0008]** Preferably the base piece has a width greater than that of the pull strip so that the release base member may be reliably adhered to the front portion of the flap.

**[0009]** Preferably the first adhesive piece covers the pull strip entirely and the base piece partially so that the release base member may be reliably adhered to the front portion of the flap.

**[0010]** Preferably the protrusions are not covered by the first adhesive piece so that the base piece may be conveniently peeled off the release base member by the protrusions.

**[0011]** Preferably the front portion of the flap has two perforated lines of appropriate length along and parallel to two major edges of the pull strip, respectively, so that the pull strip may be conveniently pulled off

**[0012]** In contrast to prior art, the release base member is adhered to a front portion of a flap of the container that seals the container. To open the container, a pull strip of the release base member is pulled off, the flap is separated, and the container is open. To reuse the container, a second sealing device is applied to another flap of the container so that the container may be reused.

**[0013]** The foregoing objectives and summary provide only a brief introduction to the present invention. To fully appreciate these and other objects of the present invention as well as the invention itself, all of which will become apparent to those skilled in the art, the following detailed description of the invention and the claims should be read in conjunction with the accompanying drawings. Throughout the specification and drawings identical reference numerals refer to identical or similar parts.

**[0014]** Many other advantages and features of the present invention will become manifest to those versed in the art upon making reference to the detailed description and the accompanying sheets of drawings in which a preferred structural embodiment incorporating the principles of the present invention is shown by way of illustrative example.

### BRIEF DESCRIPTION OF THE DRAWINGS

**[0015]**

FIG 1 is a planar diagram showing a release base member of a sealing device according to an embodiment of the present invention.

FIG 2 is a perspective diagram showing a double-sided adhesive layer attached to the release base member of FIG 1.

FIG 3 is a perspective diagram showing two release

base members of FIG 1 adhered to two major flaps of a carton, respectively.

FIG 4 is a perspective diagram showing a base piece peeled off a release base member on a second major flap of FIG 3.

FIG 5 is a perspective diagram showing the second major flap of FIG 4 after the base piece is peeled off its release base member.

FIG 6 is a perspective diagram showing, to open a carton, a pull strip is pulled from the second major flap of FIG 5.

FIG 7 is a perspective diagram showing the pull strip of FIG 6 is completely pulled off the second major flap of the carton.

FIG 8 is a perspective diagram showing minor flaps of the carton of FIG 6 are unfolded.

FIG 9 is a perspective diagram showing, to reuse the carton of FIG 8, minor flaps of the carton are folded.

FIG 10 is a perspective diagram showing a base piece peeled off a release base member on a first major flap of FIG 9.

FIG 11 is a perspective diagram showing the first major flap of FIG 10 after the base piece is peeled off its release base member.

FIG 12 is a perspective diagram showing the first major flap of FIG 11 is folded to seal the carton.

FIG 13 is a perspective diagram showing a sealing device of the present invention applied to an envelope.

FIG 14 is a perspective diagram showing a base piece peeled off a release base member on a flap of FIG 13.

FIG 15 is a perspective diagram showing the flap of FIG 14 after the base piece is peeled off its release base member.

FIG 16 is a perspective diagram showing the flap of FIG 15 is folded to seal the envelope.

FIG 17 is a perspective diagram showing, to open the envelope, a pull strip is pulled from the flap of FIG 16.

FIG 18 is a perspective diagram showing the flap of FIG 17 after the base piece is peeled off its release base member.

FIG 19 is a perspective diagram showing the flap of FIG 16 is unfolded to open the envelope.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

**[0016]** The following descriptions are exemplary embodiments only, and are not intended to limit the scope, applicability or configuration of the invention in any way. Rather, the following description provides a convenient illustration for implementing exemplary embodiments of the invention. Various changes to the described embodiments may be made in the function and arrangement of the elements described without departing from the scope

of the invention as set forth in the appended claims.

**[0017]** As illustrated in FIG 1, a sealing device according to an embodiment of the present invention includes a release base member 1 and a double-side adhesive layer 2. The release base member 1 is made of a material capable of providing a release effect against adhesives and has an elongated strip shape. The release base member 1 may be rolled into a roll for convenient storage, transportation, and process. The release base member 1 has, along its length, a separation line 13 separating the release base member 1 into a base piece 11 and a pull strip 12. The base piece 11 has a series of protrusions 111 disposed along a main edge of the base piece 11, protruding perpendicularly to the main edge of the base piece 11. The protrusions 111 may have various shapes and are disposed apart at equal intervals. The base piece 11 has a width greater than that of the pull strip 12.

**[0018]** The double-sided adhesive layer 2, as shown in FIG 2, includes a first adhesive piece 21 and a second adhesive piece 22 on two opposing major sides of the double-side adhesive layer 2, respectively. The first adhesive piece 21 is for adhering a major side of the release base member 1. In the present embodiment, the first adhesive piece 21 covers a majority portion of the base piece 11 and the entire pull strip 12. The protrusions 111 are not covered by the first adhesive piece 21.

**[0019]** The sealing device is applied as follows. As shown in FIG 3, a carton 3 has a top opening. A first major flap 3A and a second major flap 3B are connected to two opposing edges of the carton 3's top opening, respectively. A first minor flap 3C and a second minor flap 3D are connected to another two opposing edges of the carton 3's top opening, respectively. Each of the first and second major flaps 3A and 3B has a front portion of its inner side adhered to the second adhesive piece 22 of a sealing device. The front portion mentioned above has two perforated lines 31 of appropriate length along and parallel to two major edges of the pull strip 12, respectively.

**[0020]** To package the carton 3, the first and second minor flaps 3C and 3D are folded to cover the top opening. Then the first major flap 3A covers the first and second minor flaps 3C and 3D. The base piece 11 on the second major flap 3B is torn off along the separation line 13 to reveal the first adhesive piece 21, as shown in FIGS. 4 and 5. As the protrusions 111 are not attached to double-sided adhesive layer 2, the base piece 11 therefore may be conveniently torn off by pulling the protrusions 111. The second major flap 3B is then folded to cover the first major flap 3A, and first adhesive piece 21 on the second major flap 3B is adhered to the first major flap 3A. The carton 3 is as such packaged.

**[0021]** As shown in FIG 6, to open a sealed carton 3, the pull strip 12 between the two perforated lines 31 on the second major flap 3B is pulled along the length of the release base member 1 until the pull strip 12 is completely torn off the second major flap 3B as shown in FIG 7. The second major flap 3B is now partitioned by an elongated

gap 30 into two parts and a part of the second major flap 3B now can be freely unfolded to open the carton 3.

**[0022]** The second major flap 3B is now destroyed and cannot be used again. To reuse the carton 3 for packaging, as shown in FIG 8, the flaps 3A, 3B, 3C, and 3D are opened and products to be packaged are placed in the carton 3. Then, again the first and second minor flaps 3C and 3D are folded to cover the top opening of the carton 3 as shown in FIG 9. Then the second major flap 3B covers the first and second minor flaps 3C and 3D. The base piece 11 on the first major flap 3A is torn off along the separation line 13 to reveal the first adhesive piece 21, as shown in FIGS. 10 and 11. The first major flap 3A is then folded to cover the second major flap 3B, and first adhesive piece 21 on the first major flap 3A is adhered to the second major flap 3B as shown in FIG 12. The carton 3 is as such reused. Similarly, to open a sealed carton 3, the pull strip 12 between the two perforated lines 13 on the first major flap 3A is pulled along the length of the release base member 1 until the pull strip 12 is completely torn off the first major flap 3A. The first major flap 3A is partitioned into two parts and a part of the first major flap 3A now can be freely unfolded to open the carton 3.

**[0023]** Please note that the carton 3 may also have a bottom opening sealed by separate sets of major and minor flaps (not sown) using the same sealing devices. In other words, four sealing devices may be applied respectively to the major and minor flaps at the carton 3's top and bottom openings. The carton 3 therefore can be used for packaging up to four times.

**[0024]** The sealing device may also be applied to seal envelopes commonly used by postal or express delivery services. As shown in FIG 13, an envelope 4 includes an enclosure member 41 and a flap 42 at an opening 410 of the enclosure member 41. The flap 42 has a front portion of its inner side adhered to the release base member 1 of a sealing device. The front portion has two perforated lines 421 of appropriate length along and parallel to two major edges of the pull strip 12, respectively.

**[0025]** As shown in FIGS. 14 and 15, to seal the envelope 4, the base piece 11 of the release base member 1 is torn off to reveal the first adhesive piece 21. The flap 42 is then folded so that the first adhesive piece 21 is adhered to the enclosure member 41 as shown in FIG 16. To open the envelope 4, similarly, the pull string 12 between the perforated lines 421 is pulled from an end of the flap 42 along the length of the release base member 1, as shown in FIG 17, until the pull strip 12 is completely off the flap 42 as shown in FIG 18. The opening 410 of the envelope 4 is as such revealed as shown in FIG 19.

**[0026]** While certain novel features of this invention have been shown and described and are pointed out in the annexed claim, it is not intended to be limited to the details above, since it will be understood that various omissions, modifications, substitutions and changes in the forms and details of the device illustrated and in its operation can be made by those skilled in the art without

departing in any way from the claims of the present invention.

## 5 Claims

1. A sealing device for a paper-based container (3), comprising  
10 a release base member (1) of an elongate shape having a separation line (13) along a length of the release base member (1) separating the release base member (1) into a base piece (11) and a pull strip (12); and  
15 a double-sided adhesive layer (2) having a first adhesive piece (21) and a second adhesive piece (22) on two major sides of the double-sided adhesive layer (2), respectively;  
20 wherein the first adhesive piece (21) is for adhering a major side of the release base member (1); the second adhesive piece (22) is for adhering a front portion of a flap (3A, 3B) of the paper-based container (3); and, to apply the flap (3A, 3B) to seal the paper-based container (3), the base piece (11) is removed from the release base member (1) to reveal the first adhesive piece (21).  
25
2. The sealing device according to claim 1, wherein a plurality of protrusions (111) are configured along a major edge of the base piece (11) protruding perpendicularly to the major edge.  
30
3. The sealing device according to claim 2, wherein the base piece (11) has a width greater than that of the pull strip (12).  
35
4. The sealing device according to claim 3, wherein the first adhesive piece (21) covers the pull strip (12) entirely and the base piece (11) partially.  
40
5. The sealing device according to claim 4, wherein the protrusions (111) are not covered by the first adhesive piece (21).  
45
6. The sealing device according to claim 1, wherein the flap (3A, 3B) has two perforated lines (31) of appropriate length along and parallel to two major edges of the pull strip (12), respectively.  
50

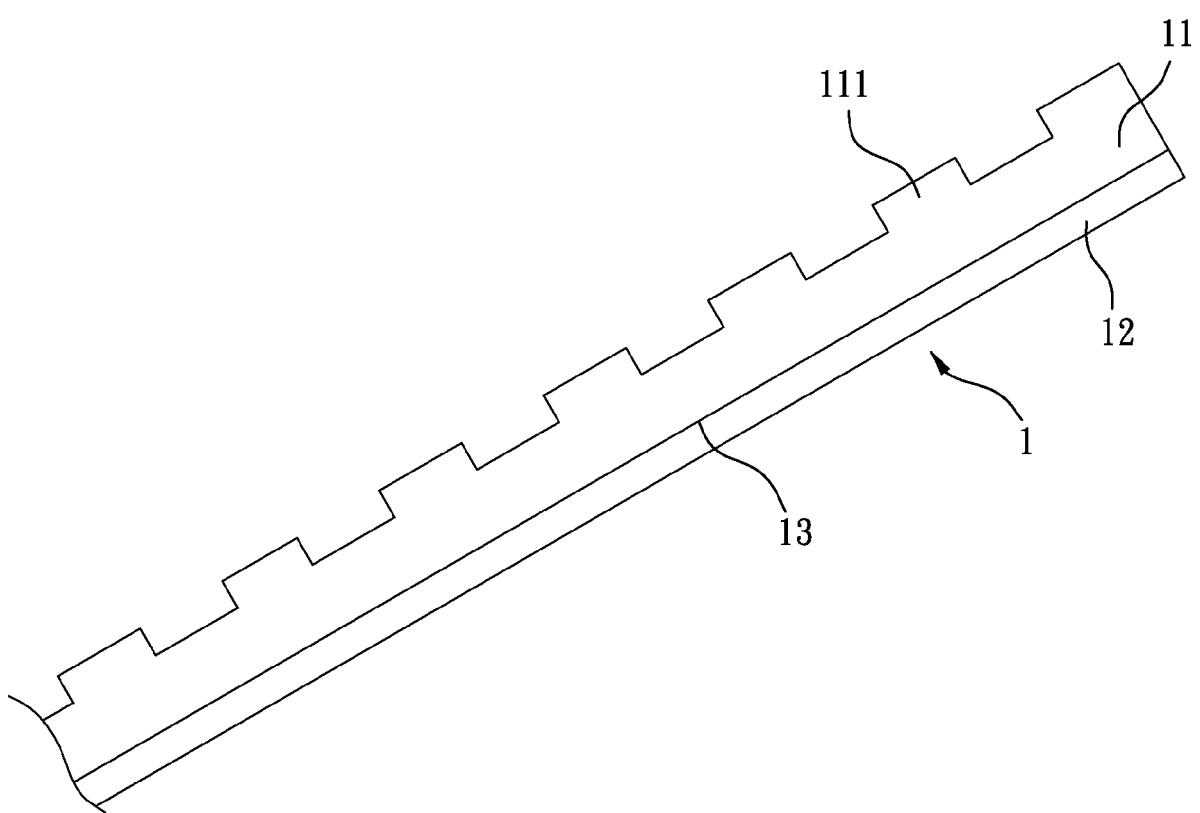


FIG. 1

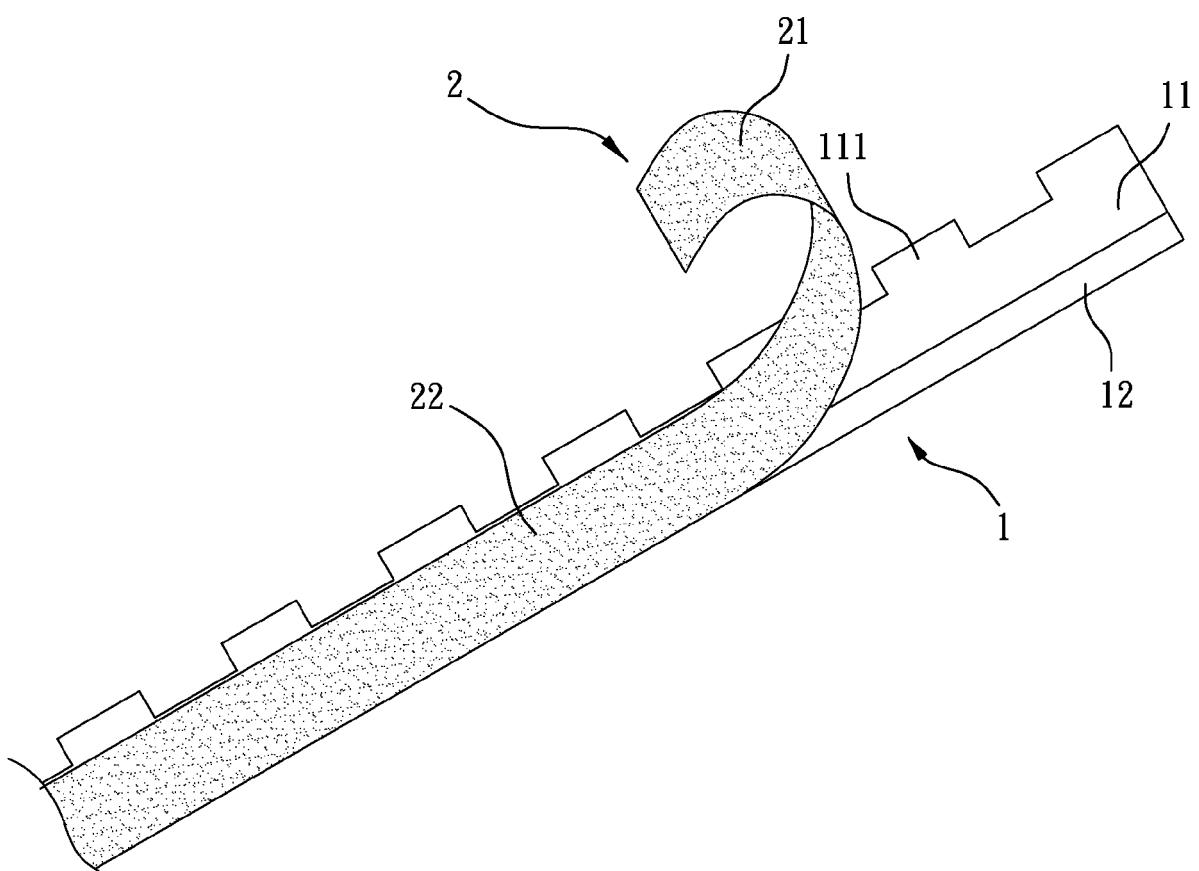


FIG. 2

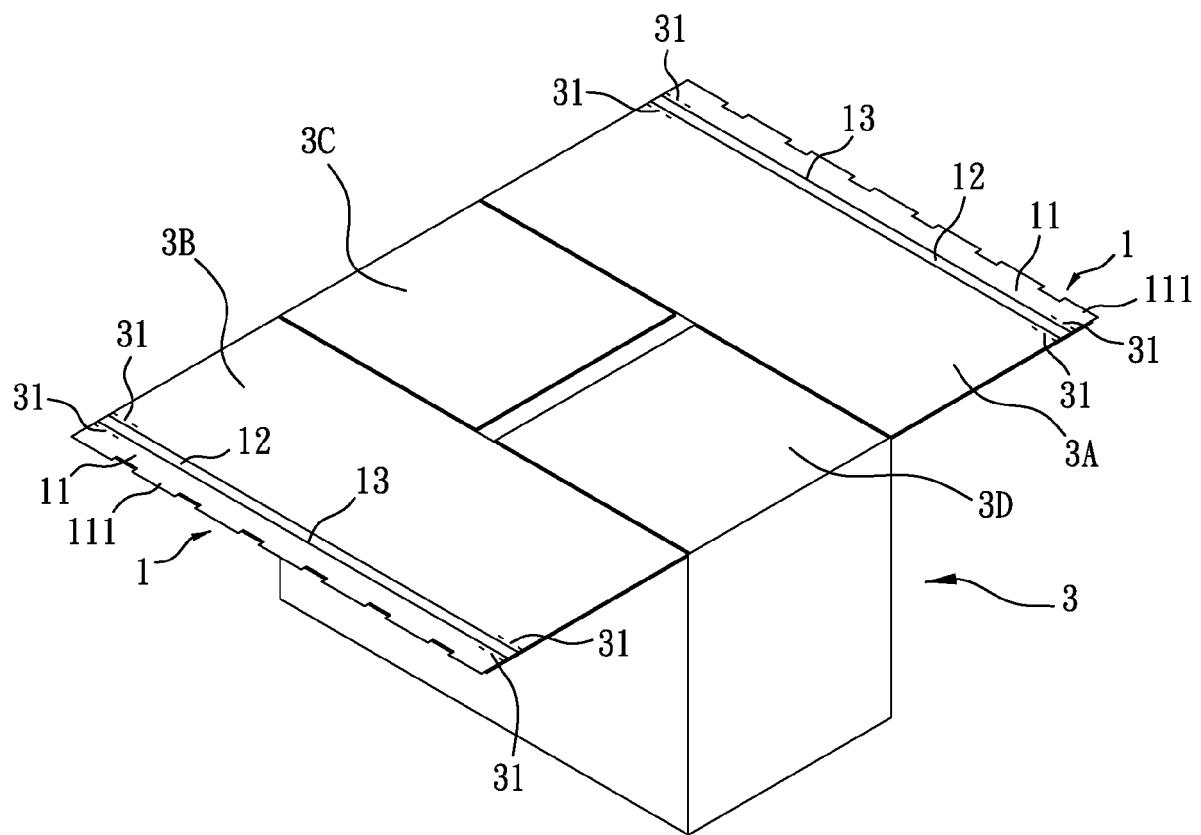


FIG. 3

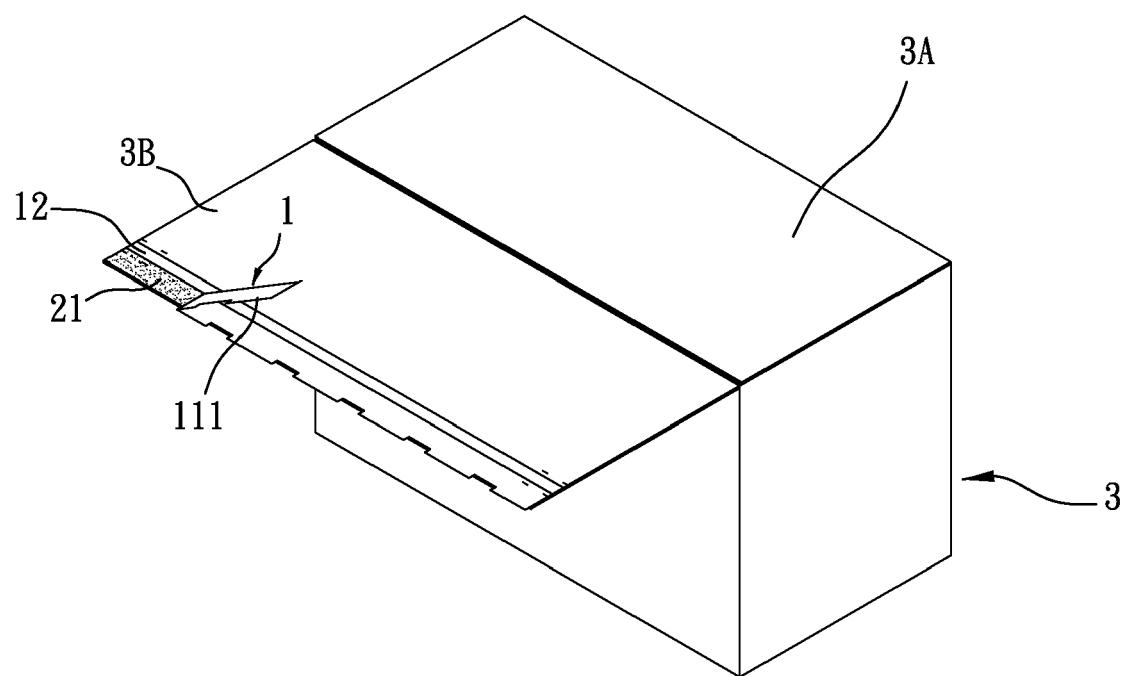


FIG. 4

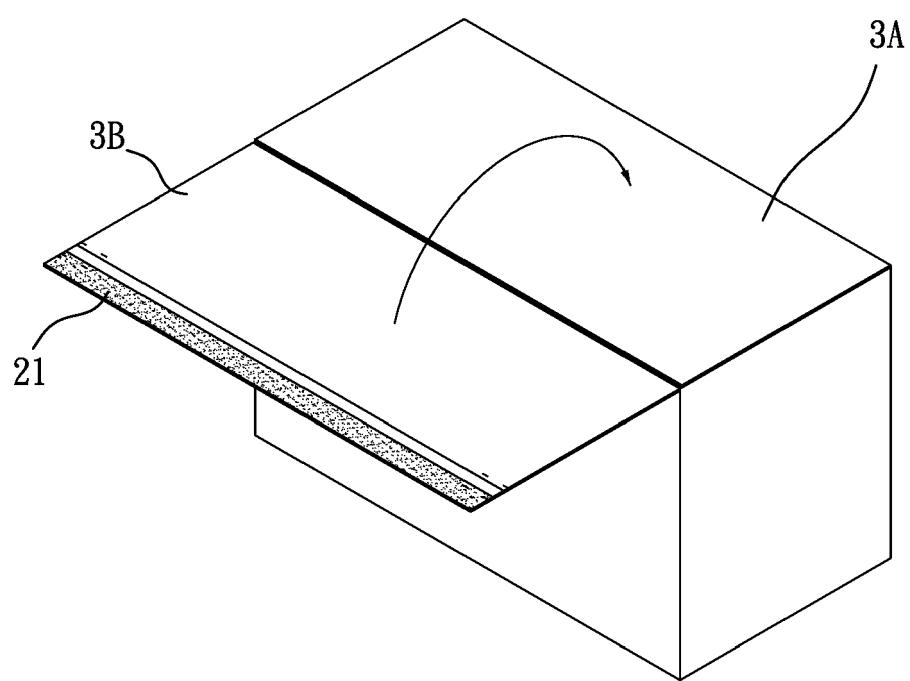


FIG. 5

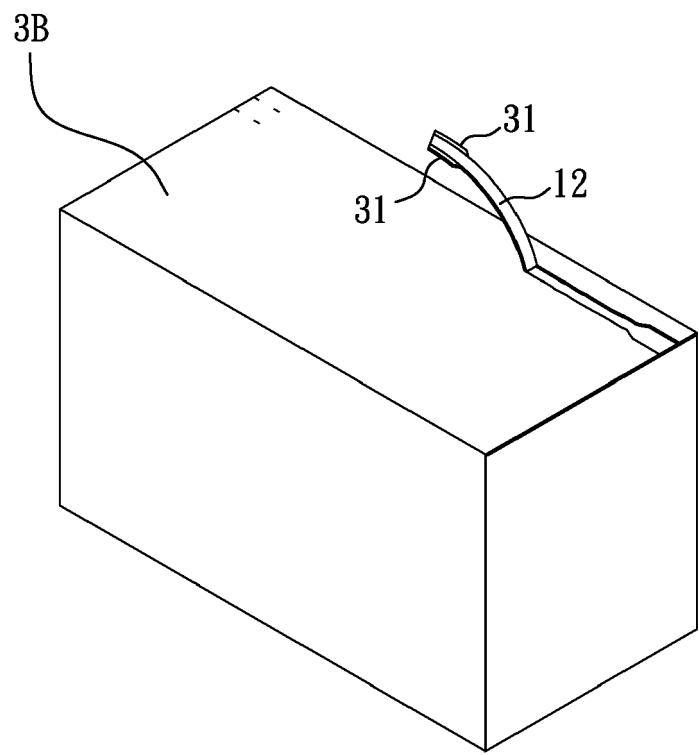


FIG. 6

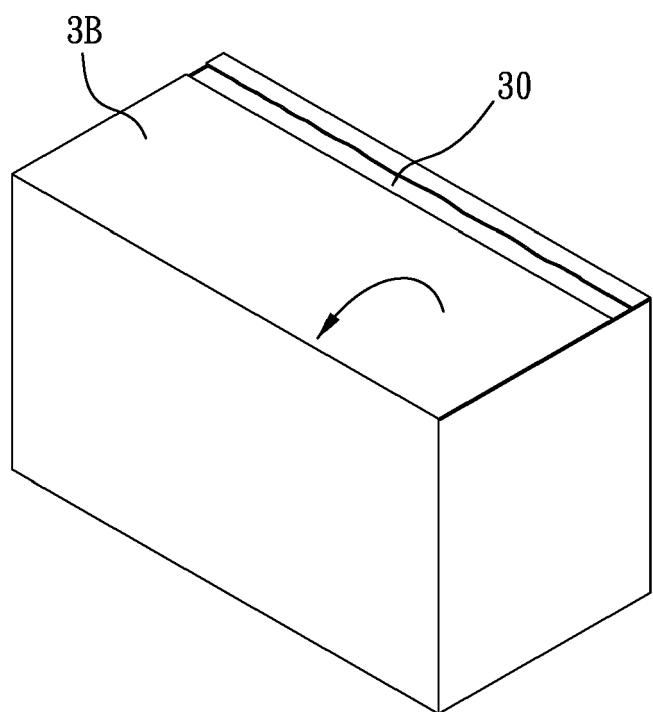


FIG. 7

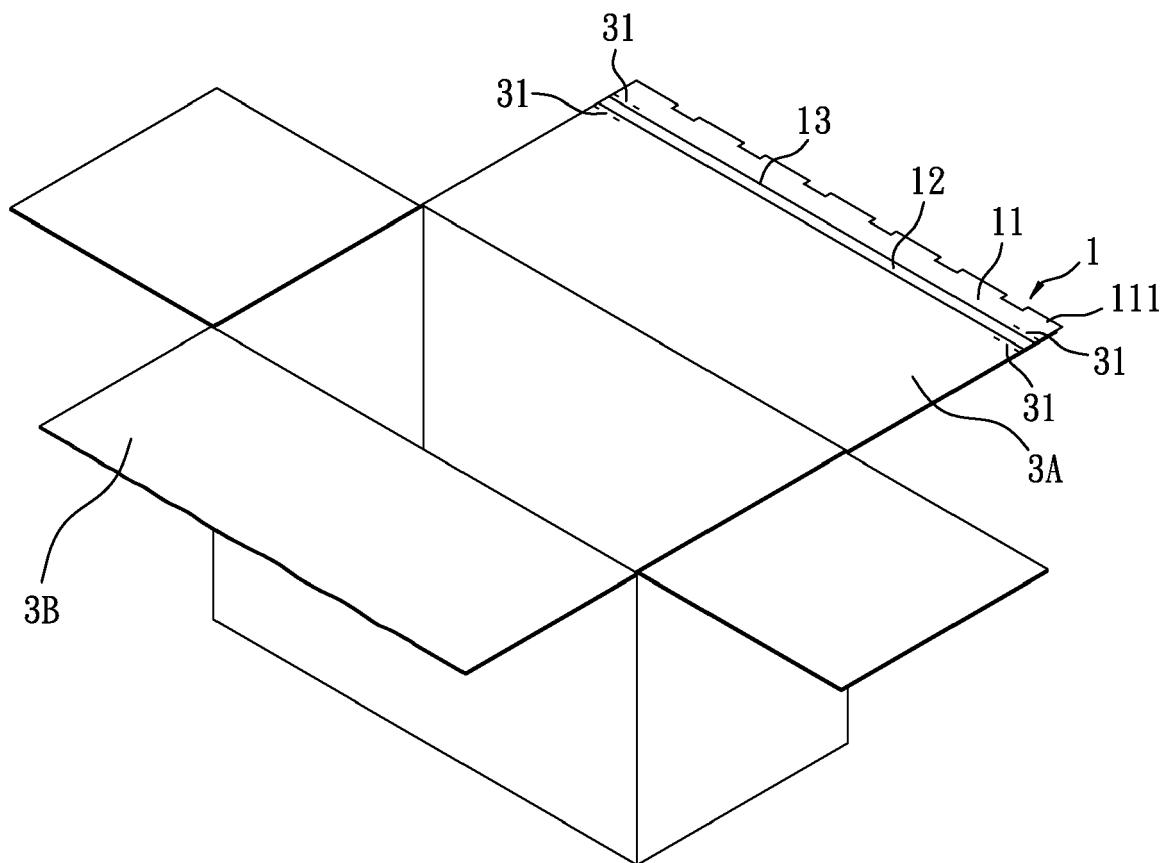


FIG. 8

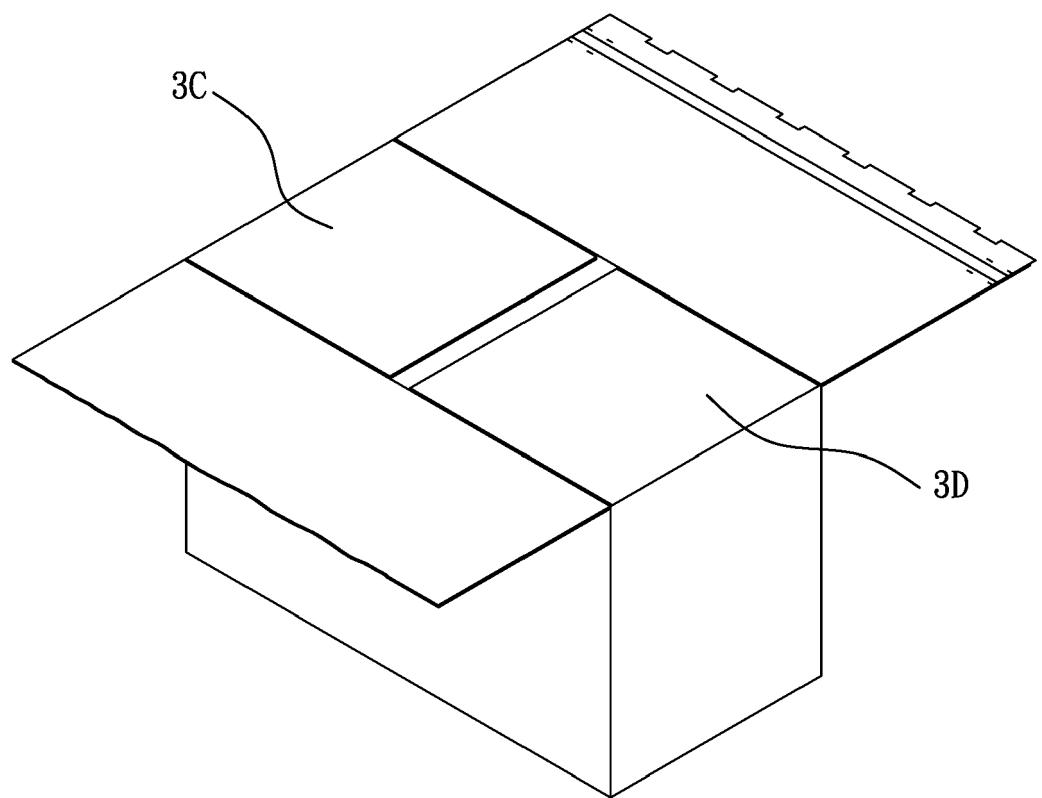


FIG. 9

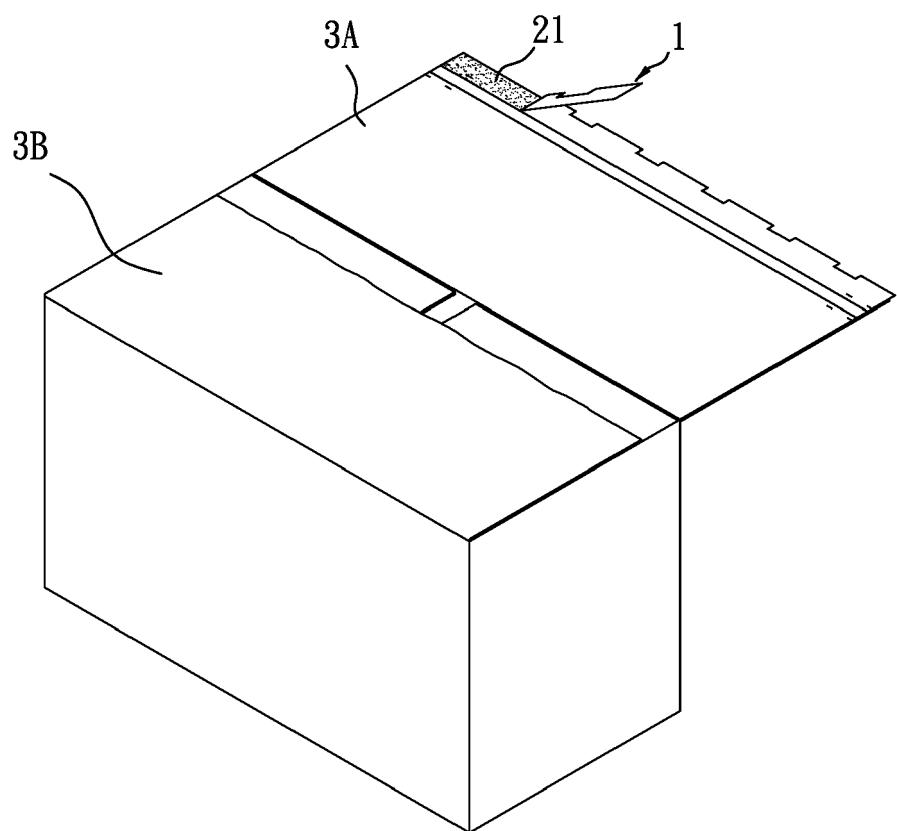


FIG. 10

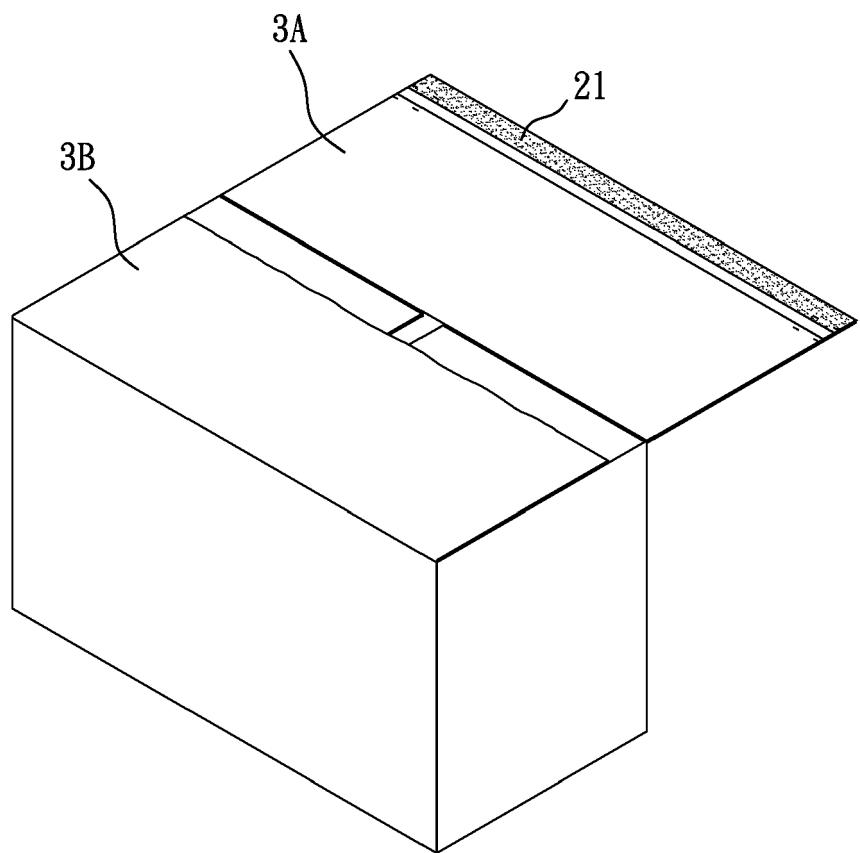


FIG. 11

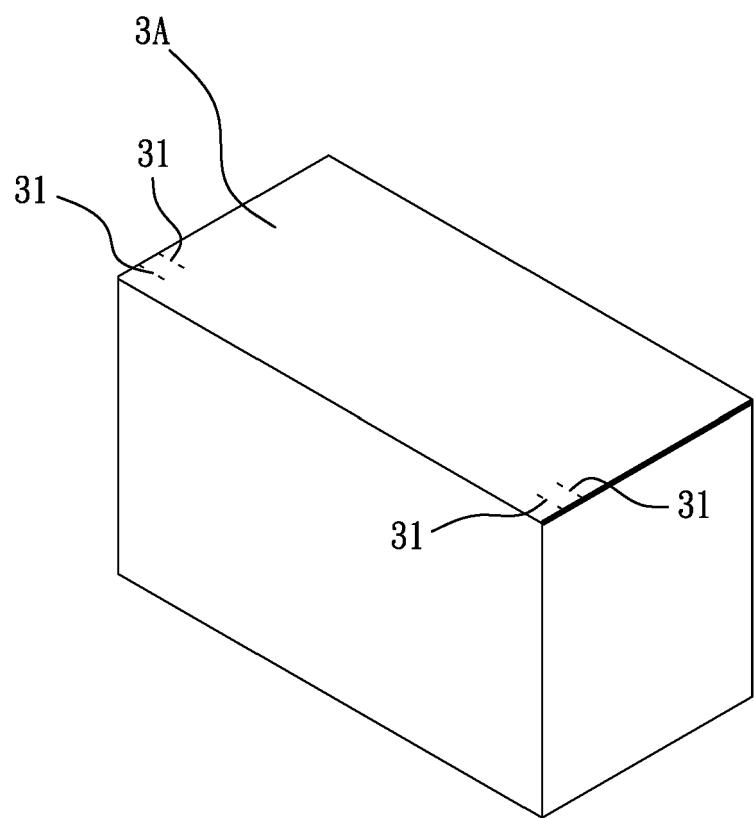


FIG. 12

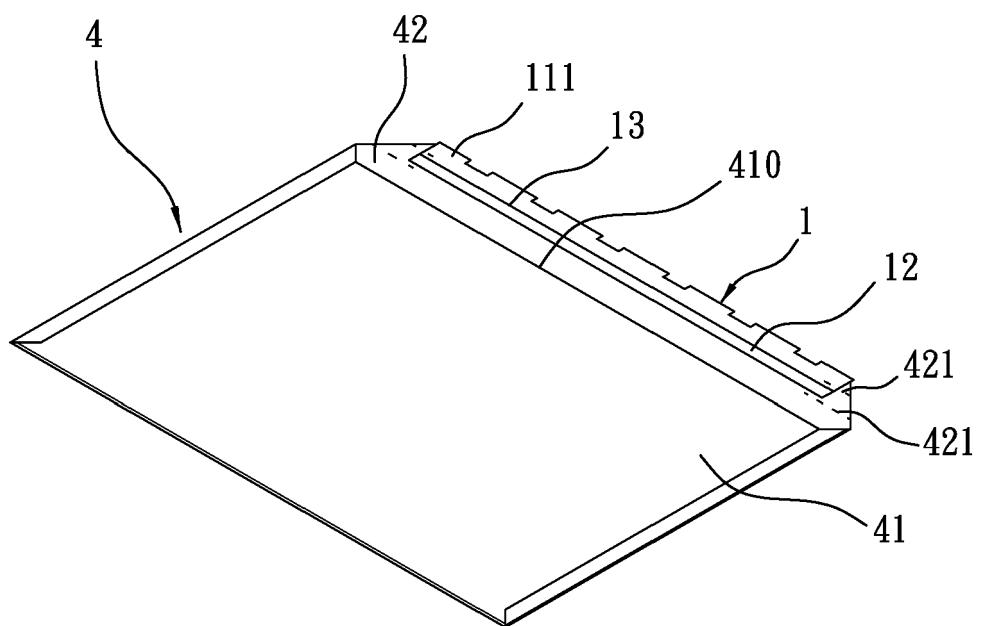


FIG. 13

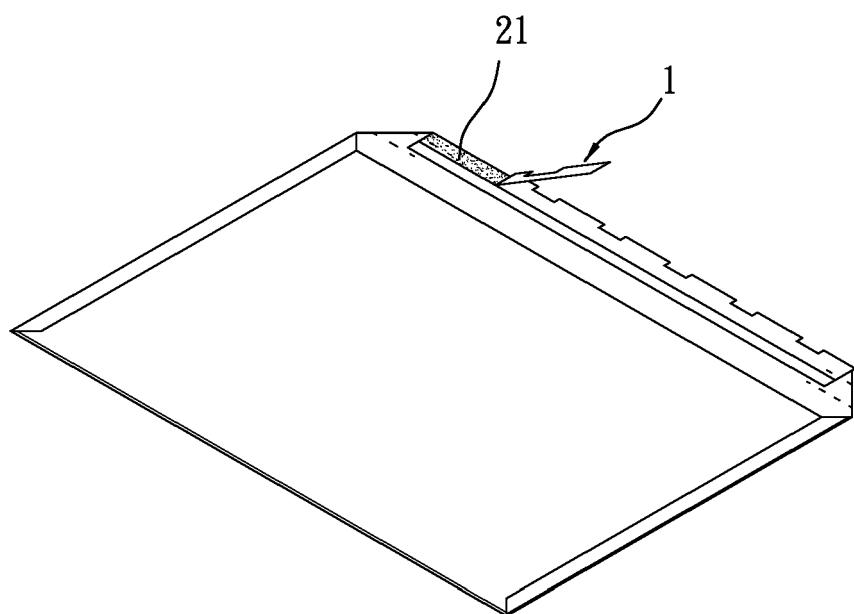


FIG. 14

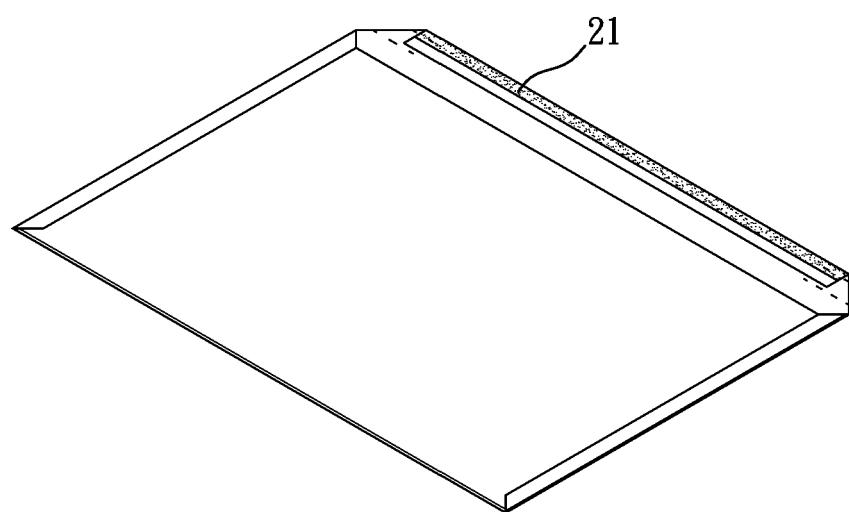


FIG. 15

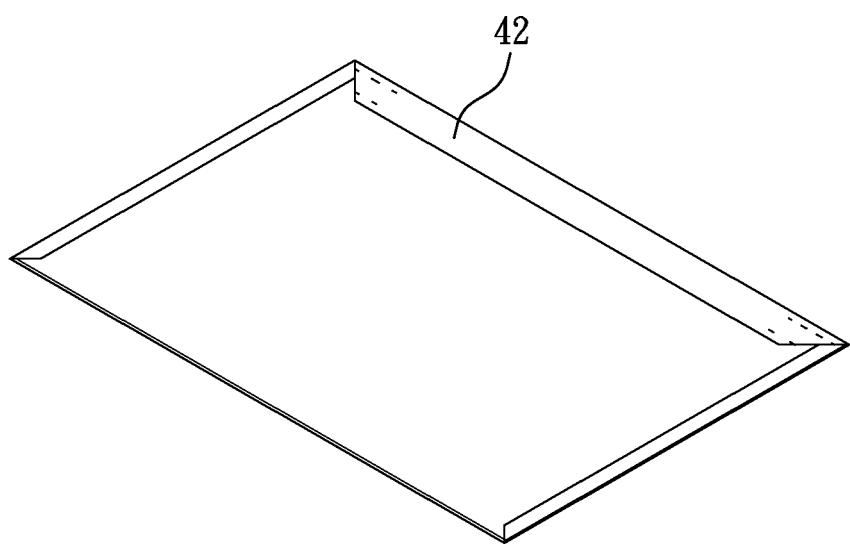


FIG. 16

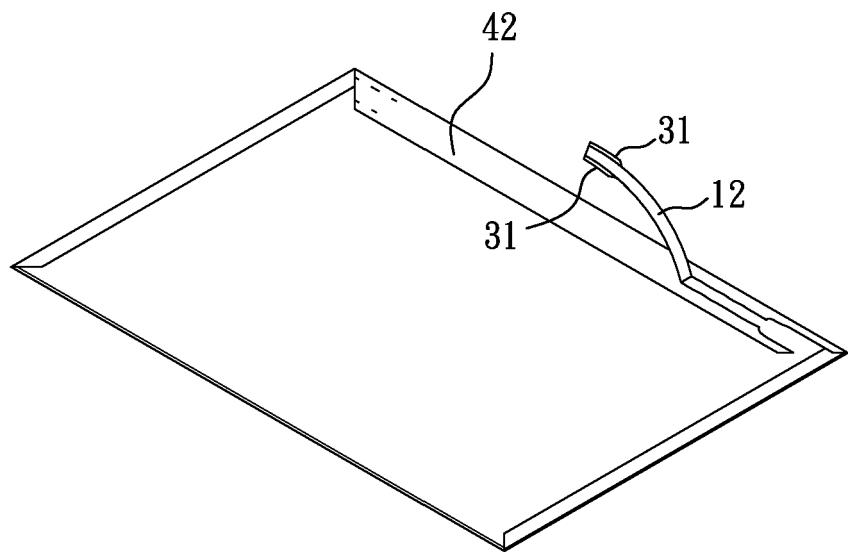


FIG. 17

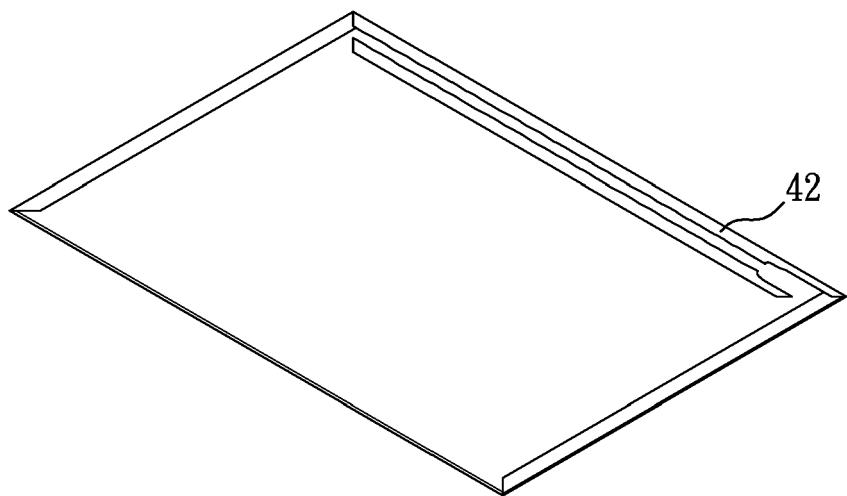


FIG. 18

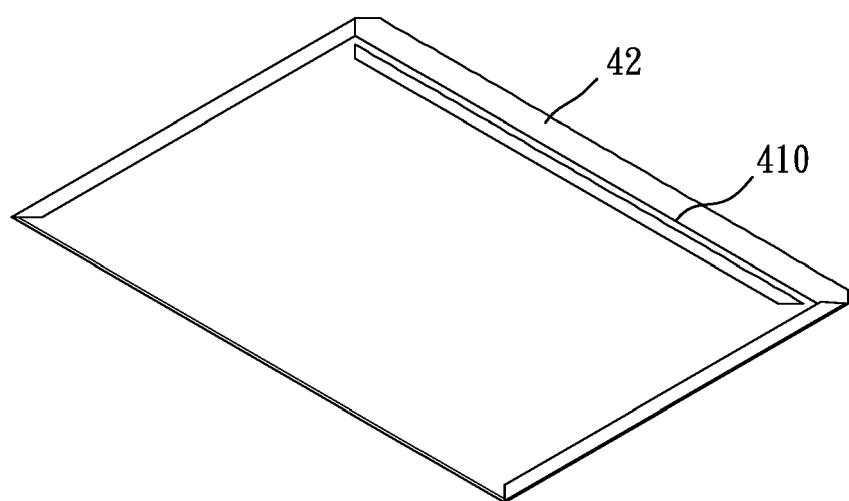


FIG. 19



## EUROPEAN SEARCH REPORT

Application Number

EP 16 17 9136

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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)
10	A FR 2 153 551 A5 (FLEXICO FRANCE SARL) 4 May 1973 (1973-05-04) * page 3, line 5 - page 4, line 33; figures 1-3 *	1-6	INV. B65D27/06 B65D27/16 B65D27/38 B65D5/02
15	A EP 1 361 162 A2 (TESA AG [DE]) 12 November 2003 (2003-11-12) * paragraph [0070] - paragraph [0075]; figures 1-4 *	1-6	B65D5/20 B65D63/10
20	A DE 20 2008 017591 U1 (3 V GMBH VERPACKUNG VERPACKEN [DE]) 15 April 2010 (2010-04-15) * paragraph [0054]; figure 1 *	1-6	
25			
30			TECHNICAL FIELDS SEARCHED (IPC)
35			B65D
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45			
50	1 The present search report has been drawn up for all claims		
55	Place of search Munich	Date of completion of the search 16 December 2016	Examiner Derrien, Yannick
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EP 16 17 9136

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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16-12-2016

10	Patent document cited in search report	Publication date	Patent family member(s)			Publication date
	FR 2153551	A5	04-05-1973	NONE		
15	EP 1361162	A2	12-11-2003	EP	1361162	A2
				ES	2247445	T3
				US	2005074571	A1
20	DE 202008017591	U1	15-04-2010	NONE		
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