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• **Lee, Jung Suk**
Jinju-si, Gyeongsangnam-do 52799 (KR)

(72) Inventors:
• **Kim, Nam Sub**
Jinju-si, Gyeongsangnam-do 52799 (KR)
• **Lee, Jung Suk**
Jinju-si, Gyeongsangnam-do 52799 (KR)

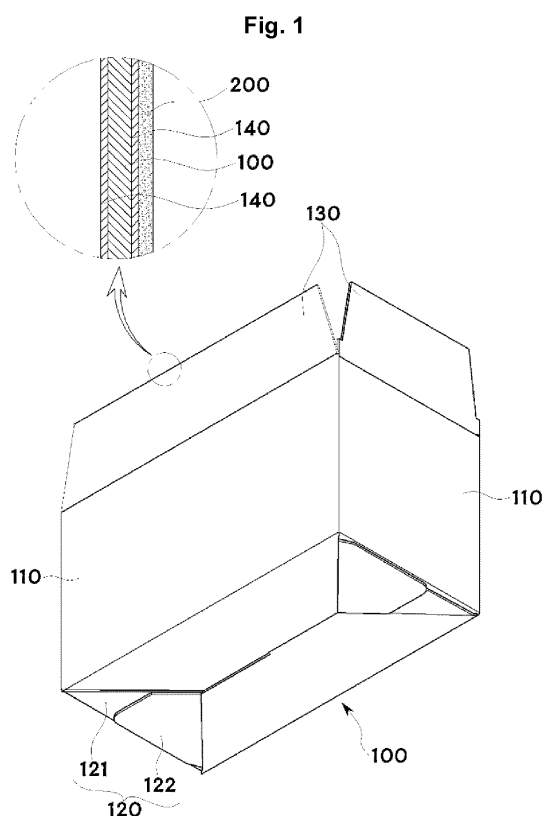
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(74) Representative: **González López-Menchero, Álvaro Luis**
Protectia Patentes y Marcas, S.L.
C/ Arte 21, 2ª
28033 Madrid (ES)

(71) Applicants:
• **Kim, Nam Sub**
Jinju-si, Gyeongsangnam-do 52799 (KR)

(54) **PACKAGING BOX HAVING HEAT-RETAINING AND COLD-RETAINING FUNCTIONS**

(57) The packaging box having heat-retaining and cold-retaining functions according to the present invention includes: a box main body including side parts, in which side surfaces are formed by four side walls folded and secured to form a space for storing contents therein, floor parts which respectively extend from the lower portions of the four side walls to form the floor, and lid parts which respectively extend from the upper portions of the four side walls to cover the upper sides of the side parts in openable and closable fashion; and a foamed sheet which protects the contents contained inside the box main body from an external shock and is provided inside the box main body to maintain heat retention and cold retention.



Description

[Technical Field]

[0001] The present invention relates to a packaging box with heat-retaining and cold-retaining functions, and more particularly, to a packaging box with heat-retaining and cold-retaining functions, which can conveniently package and store contents requiring heat retention and cold retention in safety because there is concern over decomposition of the contents, and prevent moisture from permeating into a box main body.

[Background Art]

[0002] In general, packaging boxes are manufactured with various materials, such as paper, corrugated cardboard, Styrofoam or others, in order to protect contents stored therein from an external shock and to make a user carry it easily.

[0003] In the case that such a packaging box is made of Styrofoam, it can protect the contents stored therein from an external shock as well as provide waterproof, heat-retaining and cold-retaining functions, but storing and transporting the packaging box are very expensive because the packaging box is compression-molded to maintain a specific volume to contain contents therein.

[0004] In the meantime, the packaging boxes made with paper or corrugated cardboard can considerably reduce logistics expenses because they are easy to manufacture, are spread and stacked one on another to be stored and are assembled simply to be used. However, because they are made with paper, they have several disadvantages in that they are weak, are not reusable, and do not provide heat-retaining and cold-retaining effects as much as the user want.

[0005] Moreover, because the packaging boxes made with paper or corrugated cardboard is deteriorated in waterproofing property, when warm food or frozen food is packed, the inside of the packaging box gets damp due to a difference in temperature, such that the packaging box cannot maintain its shape and is crushed. Therefore, such packaging boxes made with paper or corrugated cardboard have a disadvantage in that it is inconvenient to carry.

[Disclosure]

[Technical Problem]

[0006] Accordingly, the present invention has been made in view of the above-mentioned problems occurring in the prior art, and it is an object of the present invention to provide a packaging box with heat-retaining and cold-retaining functions, which can conveniently package and store contents requiring heat retention and cold retention in safety because there is concern over decomposition of the contents, and prevent moisture from permeating

into a box main body.

[Technical Solution]

[0007] To accomplish the above object, according to the present invention, there is provided a packaging box with heat-retaining and cold-retaining functions including: a box main body including side parts, in which side surfaces are formed by four side walls folded and secured to form a space for storing contents therein, floor parts which respectively extend from the lower portions of the four side walls to form the floor, and lid parts which respectively extend from the upper portions of the four side walls to cover the upper sides of the side parts in openable and closable fashion; and a foamed sheet which protects the contents contained inside the box main body from an external shock and is provided inside the box main body to maintain heat retention and cold retention.

[0008] In an embodiment of the present invention, the box main body has a waterproofing means formed on the entire surface for waterproofing.

[0009] In an embodiment of the present invention, the waterproofing means is one selected from laminating coating and CR coating.

[0010] In an embodiment of the present invention, the waterproofing means is one selected from aluminum foil sheet, a polyethylene-coated sheet, and a coating wax made of a paraffin material.

[0011] In an embodiment of the present invention, the foamed sheet has the same shape as the box main body, and is formed to be smaller than the box main body to be located inside the box main body.

[0012] In an embodiment of the present invention, the packaging box further includes a bubble wrap interposed between the box main body and the foamed sheet to protect the contents contained inside the foamed sheet from an external shock.

[0013] In an embodiment of the present invention, the packaging box further includes a cold-retaining pack which is selectively stored together with the contents inside the foamed sheet for releasing chilly air in order to maintain cold retention of the contents.

[0014] In an embodiment of the present invention, the floor part comprises: first floor members respectively extending from two side walls opposed to each other in a trapezoidal shape; and second floor members respectively extending from the other side walls, which are opposed to each other, so as to be partially overlapped with inner and outer surfaces of the first floor members when the side parts are formed in a rectangular shape.

[0015] In an embodiment of the present invention, the floor part comprises: first floor members respectively extending from two side walls opposed to each other to prevent distortion; a second floor member and a third floor member respectively extending from the other side walls, which are opposed to each other, so as to be joined to each other when being pressed by a predetermined force.

[Advantageous Effects]

[0016] As described above, the packaging box with heat-retaining and cold-retaining functions according to an embodiment of the present invention can conveniently package and store contents requiring heat retention and cold retention in safety during a distribution process, store wet or moist contents therein or prevent moisture from permeating into the box, thereby being reused and being used for a long time.

[0017] Furthermore, the packaging box with heat-retaining and cold-retaining functions according to an embodiment of the present invention includes the floor part of the box main body combined simply without any adhesive tape, thereby forming the floor easily and rapidly.

[Description of Drawings]

[0018]

FIG. 1 is a perspective view of a packaging box according to a first preferred embodiment of the present invention.

FIG. 2 is a development view of the packaging box according to the first preferred embodiment of the present invention.

FIG. 3 is a view showing an assembly operation of the packaging box according to the first preferred embodiment of the present invention.

FIGS. 4 to 6 are views of a packaging box according to a second preferred embodiment of the present invention.

FIG. 7 is a perspective view of the packaging box according to the second embodiment of the present invention.

FIG. 8 is a development view of the packaging box according to the second embodiment of the present invention.

FIG. 9 is a view showing an assembly operation of the packaging box according to the second embodiment of the present invention.

FIG. 10 is a development view of the packaging box according to a third embodiment of the present invention.

FIGS. 11 to 13 are graphs for explaining performance of the packaging box with heat-retaining and cold-retaining functions according to an embodiment of the present invention.

<Explanation of reference numerals in drawings>

[0019]

100: Box main body
110: Side part
111: joining member
120: Floor part
121: First floor member

122: Second floor member
123: Third floor member
130: Lid part
131: Through hole
140: Coated layer
200: Foamed sheet

[Mode for Invention]

[0020] Hereinafter, reference will be now made in detail to the preferred embodiment of the present invention with reference to the attached drawings. However, it would be understood that the preferred embodiments disclosed in the present invention are to describe the present invention in detail in such a manner that those skilled in the art can easily execute the present invention but the technical idea and scope of the present invention are not limited by the preferred embodiments.

[0021] FIG. 1 is a perspective view of a packaging box according to a first preferred embodiment of the present invention, FIG. 2 is a development view of the packaging box according to the first preferred embodiment of the present invention, and FIG. 3 is a view showing an assembly operation of the packaging box according to the first preferred embodiment of the present invention.

[0022] As shown in FIG. 1, the packaging box according to the first preferred embodiment of the present invention includes a box main body 100 and a foamed sheet 200.

[0023] Here, the box main body 100 is made of paper and is formed in a hexahedral shape, such that various kinds of contents may be contained in an inner space of the box main body. The box main body 100 includes side parts 110, floor parts 120, and lid parts 130.

[0024] In more detail, the side parts 110 form side surfaces of the box main body 100 and have four side walls to form a rectangular column shape corresponding to the shape of the floor parts 120. In this instance, the four side walls are configured such that side end portions are connected with one another and folding lines are respectively formed at connected portions between the side end portions.

[0025] As shown in FIG. 2, a joining member 111 is formed at the outermost side wall out of the four side walls. The joining member 111 is adhered on the inner surface of the side wall, which is at right angles to another side wall when the side parts 110 are formed in the rectangular column shape so as to firmly maintain the rectangular column shape.

[0026] Moreover, the floor parts 120 respectively extend from lower portions of the four side walls of the side parts 110 in the same width as the side walls to form the floor of the box main body 100. The floor parts 120 are divided into first floor members 121 and second floor members 122.

[0027] In this instance, preferably, the first floor members 121 respectively extend from two side walls opposing to each other in a trapezoidal shape, and the second

floor members 122 respectively extend from the other side walls, which are opposed to each other, and from which the first floor members 121 do not extend.

[0028] When the first floor members 121 and the second floor members 122 are joined to form the floor of the box main body, the first floor members 121 reinforce and support load applied to the floor of the box main body by the contents contained in the box main body 100. The second floor members 122 are partially overlapped with the inner surface of the first floor members 121 and are partially overlapped with the outer surface of the first floor members 121, and then, the overlapped portions are fixed by an adhesive.

[0029] That is, as shown in FIG. 3, when the side parts 110 are formed in the rectangular column shape, the first floor members 121 and the second floor members 122 are joined with each other to form the floor of the box main body, such that the packaging box does not need additional taping work and can remarkably reduce working hours.

[0030] Additionally, the lid parts 130 respectively extend from upper portions of the four side walls of the side parts 110 in the same width as the side walls to cover the upper side of the box main body 100 in openable and closable fashion. Preferably, the lid parts 130 are formed to get narrower toward the end portion. That is, because the width of the lid part 130 is gradually reduced toward the end portion, when the upper part of the box main body 100 is opened or closed, they can be smoothly folded without any interference.

[0031] Because such a box main body 100 made of paper is weak in moisture or dampness, a waterproofing means 140 is formed on the entire box main body 100 for preservation. In this instance, the waterproofing means 140 allows wet goods or damp goods to be stored and serves to prevent moisture from permeating into the box by external environment. It is preferable that the coating means 140 be one selected from laminating coat and CR coating.

[0032] That is, if the waterproofing means 140 is one of laminating coating to coat vinyl onto the box main body 100 and CR coating to form a fine gloss on the box main body 100 through a chemical process, it improves water resistance, oil resistance, moisture resistance and anti-fouling property of the box main body 100 and makes the box main body 100 look classy due to enhanced color reflectivity.

[0033] In another embodiment, the waterproofing means 140 may be one selected from aluminum foil sheet, a polyethylene-coated sheet, and coating wax made of a paraffin material, which have good waterproof property and vaporproof property, and may be formed integrally with the entire inner surface of the box main body 100.

[0034] In the meantime, the foamed sheet 200 is mounted on the inner face of the box main body 100. The foamed sheet 200 protects the contents contained in the box main body 100 from an external shock and maintains

heat-retaining and cold-retaining functions of the box main body 100. In this instance, the foamed sheet 200 is made of an expanded polyethylene material, which is mainly used for packing materials, construction materials, insulating materials, and so on. It is preferable that the foamed sheet 200 be formed to be smaller than the box main body 100 and be located inside the box main body 100.

[0035] As described above, when the foamed sheet 200 made of the expanded polyethylene material is mounted on the inner face of the box main body 100, the box main body 100 is enhanced in shock absorptiveness, is not deteriorated in buffering property in spite of repetition of shocks, is improved in adiabatic effect due to low heat conductivity, is cheap and lightweight, and can minimize its volume at the time of packing.

[0036] FIGS. 4 to 6 are views of a packaging box according to a second preferred embodiment of the present invention.

[0037] In the second preferred embodiment illustrated in FIG. 4, the box main body 100 includes internal and external cardboards 100a and 100b made with corrugated paper fabric, and a corrugated medium 100c of a wave form located between the internal and external cardboards 100a and 100b.

[0038] In the second preferred embodiment illustrated in FIG. 4, the packaging box can prevent the box main body 100 from getting wet or damaged when external moisture or water passes through the corrugated medium 100c.

[0039] In the second preferred embodiment illustrated in FIG. 5, a bubble wrap 300 may be interposed between the box main body 100 and the foamed sheet 200. The bubble wrap 300 serves to absorb shock applied to the box main body 100 when the packaging box according to the present invention is distributed. In this instance, the bubble wrap 300 may be an air cap.

[0040] In more detail, the bubble wrap 300 has a plurality of air bags in which air is sealed. The bubble wrap 300 may be located on the entire surface of the inner face of the box main body 100 and fixed by an adhesive or a double-sided adhesive tape. In this instance, it is preferable that the bubble wrap 300 be fixed such that the box main body 100 is smoothly foldable by the folding lines.

[0041] In other words, the bubble wrap 300 absorbs shock transferred to the inside when a shock is applied to the box main body 100 during a distribution process so as to protect the contents located inside the aluminum foil sheet in safety and doubly provide heat-retaining and cold-retaining effects of the contents contained in the packaging box.

[0042] In addition, in the embodiment illustrated in FIG. 6, a cold-retaining pack 400 may be selectively stored together with the content inside the foamed sheet 200 according to properties of the content stored in the packaging box. The cold-retaining pack 400 releases chilly air when it is stored inside the foamed sheet 200 so as to

preserve the content for a long period of time.

[0043] Such a cold-retaining pack 400 includes a case 410 made of the same material as the foamed sheet 200, and an ice pack 420 stored in the case 410 in the form of a lump of ice. In this instance, the ice pack 420 and dry ice are put together inside the case 410 to maintain chilly air for a long time according to weather, namely, in the summer season. Preferably, the case 410 has a plurality of cold air pores 410a formed to gradually release chilly air to the outside.

[0044] Therefore, when the cold-retaining pack 400 is contained in the foamed sheet 200 together with the content requiring cold insulation, it can maintain chilly air longer than when the content is contained alone.

[0045] FIG. 7 is a perspective view of the packaging box according to the second embodiment of the present invention, FIG. 8 is a development view of the packaging box according to the second embodiment of the present invention, and FIG. 9 is a view showing an assembly operation of the packaging box according to the second embodiment of the present invention.

[0046] As shown in FIG. 7, the packaging box according to the second embodiment of the present invention includes the box main body 100 and the foamed sheet 200, and is the same as or similar to the packaging box according to the first preferred embodiment of the present invention. However, as shown in FIGS. 8 and 9, the packaging box according to the second embodiment of the present invention is different in the shape and joining method of the floor parts 120 of the box main body 100 from the packaging box according to the first preferred embodiment. Therefore, for simplification of description, only the floor parts 120 will be described in detail.

[0047] The floor parts 120 of the box main body 100 of the packaging box according to the second preferred embodiment of the present invention respectively extend from lower portions of the four side walls in the same width as the side walls to form the floor of the box main body 100. The floor parts 120 are divided into first floor members 121, a second floor member 122 and a third floor member 123.

[0048] The first floor members 121 respectively extend from two side walls opposed to each other, the second floor member 122 and the third floor member 123 respectively extend from the other side walls, from which the first floor members 121 do not extend.

[0049] In this instance, the first floor member 121 has a joining piece 121a formed such that some of the second floor member 122 is overlapped and joined to the joining piece 121a, the second floor member 122 has a joining groove 122a of a 'C' shape, and the third floor member 123 has an insertion member 123a inserted and joined into the joining groove 122a.

[0050] As described above, when the first floor members 121, the second floor member 122 and the third floor member 123 are joined together to form the floor of the box main body, the joining piece 121a of the first floor member 121 is joined to the joining groove 122a of the

second floor member 122 to be partially overlapped so as to reinforce and support the load, which is applied to the floor by the content contained in the box main body 100, and the insertion member 123a of the third floor member 123 is inserted and fixed into the joining groove 122a of the second floor member 122.

[0051] That is, as shown in FIG. 9, the first floor members 121, the second floor member 122 and the third floor member 123 are joined together to form the floor of the box main body just by being pressed after being folded simply without taping work, such that the box main body 100 can be formed more easily and rapidly.

[0052] FIG. 10 is a development view of the packaging box according to a third embodiment of the present invention.

[0053] As shown in FIG. 10, the packaging box according to the third embodiment of the present invention includes the box main body 100 and the foamed sheet 200 like the packaging box according to the first preferred embodiment. However, the third preferred embodiment is different from the first preferred embodiment in the shape and the joining method of the floor parts 120 and in that two lid parts 130 opposed to each other have through holes 131 through which a strap is connected. The structures and actions of the other parts of the packaging box according to the third preferred embodiment are the same as or similar to the packaging box according to the first preferred embodiment and can be sufficiently inferred from the above description. Therefore, for simplification of description, repeated description will be omitted.

[0054] FIGS. 11 to 13 are graphs for explaining performance of the packaging box with heat-retaining and cold-retaining functions according to an embodiment of the present invention.

[0055] In more detail, FIG. 11 is a graph showing comparison between cold-retaining temperature (1011) of the packaging box with heat-retaining and cold-retaining functions according to the embodiment of the present invention at the average outside temperature of 18.29°C (1010) and cold-retaining temperature (1012) of the Styrofoam box according to the conventional art.

[0056] Moreover, FIG. 12 is a graph showing comparison between cold-retaining temperature (1021) of the packaging box with heat-retaining and cold-retaining functions according to the embodiment of the present invention at the average inside temperature of 16°C (1010) and cold-retaining temperature (1022) of the Styrofoam box according to the conventional art.

[0057] As shown in FIGS. 11 and 12, the cold-retaining temperature of the packaging box according to the embodiment of the present invention and the cold-retaining temperature of the Styrofoam box according to the conventional art were all increased from the lapse of time of 20 hours, but the cold-retaining temperature of the packaging box according to the embodiment of the present invention were maintained at lower temperature in a time interval between 20 hours and 30 hours.

[0058] FIG. 13 is a graph showing comparison in carbon dioxide shielding ratio between the packaging box according to the embodiment of the present invention and the paper box according to the conventional art.

[0059] As shown in FIG. 13, in the paper box (1032) according to the conventional art, entire carbon dioxide was all released as soon as carbon dioxide is injected, but the packaging box (1031) with heat-retaining and cold-retaining functions according to the embodiment of the present invention maintained concentration of carbon dioxide for some considerable time.

[0060] As described above, in order to extend the expiration date of foods, the packaging box (1031) with heat-retaining and cold-retaining functions according to the present invention can change composition of air to reduce breathing of foods, which are easy to spoil, and maintain gas environment conditions for restricting growth of microorganisms and repressing enzyme reactions to lengthen the life of the foods and maintain freshness.

Claims

1. A packaging box having heat-retaining and cold-retaining functions comprising:
 - a box main body including side parts, in which side surfaces are formed by four side walls folded and secured to form a space for storing contents therein, floor parts which respectively extend from the lower portions of the four side walls to form the floor, and lid parts which respectively extend from the upper portions of the four side walls to cover the upper sides of the side parts in openable and closable fashion; and
 - a foamed sheet which protects the contents contained inside the box main body from an external shock and is provided inside the box main body to maintain heat retention and cold retention.
2. The packaging box according to claim 1, wherein the box main body has a waterproofing means formed on the entire surface for waterproofing.
3. The packaging box according to claim 2, wherein the waterproofing means is one selected from laminating coating and CR coating.
4. The packaging box according to claim 2, wherein the waterproofing means is one selected from aluminum foil sheet, a polyethylene-coated sheet, and a coating wax made of a paraffin material.
5. The packaging box according to claim 1, wherein the foamed sheet has the same shape as the box main body, and is formed to be smaller than the box main body to be located inside the box main body.
6. The packaging box according to claim 1, further comprising:
 - a bubble wrap interposed between the box main body and the foamed sheet to protect the contents contained inside the foamed sheet from an external shock.
7. The packaging box according to claim 1, further comprising:
 - a cold-retaining pack which is selectively stored together with the contents inside the foamed sheet for releasing chilly air in order to maintain cold retention of the contents.
8. The packaging box according to claim 1, wherein the floor part comprises: first floor members respectively extending from two side walls opposed to each other in a trapezoidal shape; and second floor members respectively extending from the other side walls, which are opposed to each other, so as to be partially overlapped with inner and outer surfaces of the first floor members when the side parts are formed in a rectangular shape.
9. The packaging box according to claim 1, wherein the floor part comprises: first floor members respectively extending from two side walls opposed to each other to prevent distortion; a second floor member and a third floor member respectively extending from the other side walls, which are opposed to each other, so as to be joined to each other when being pressed by a predetermined force.

Fig. 1

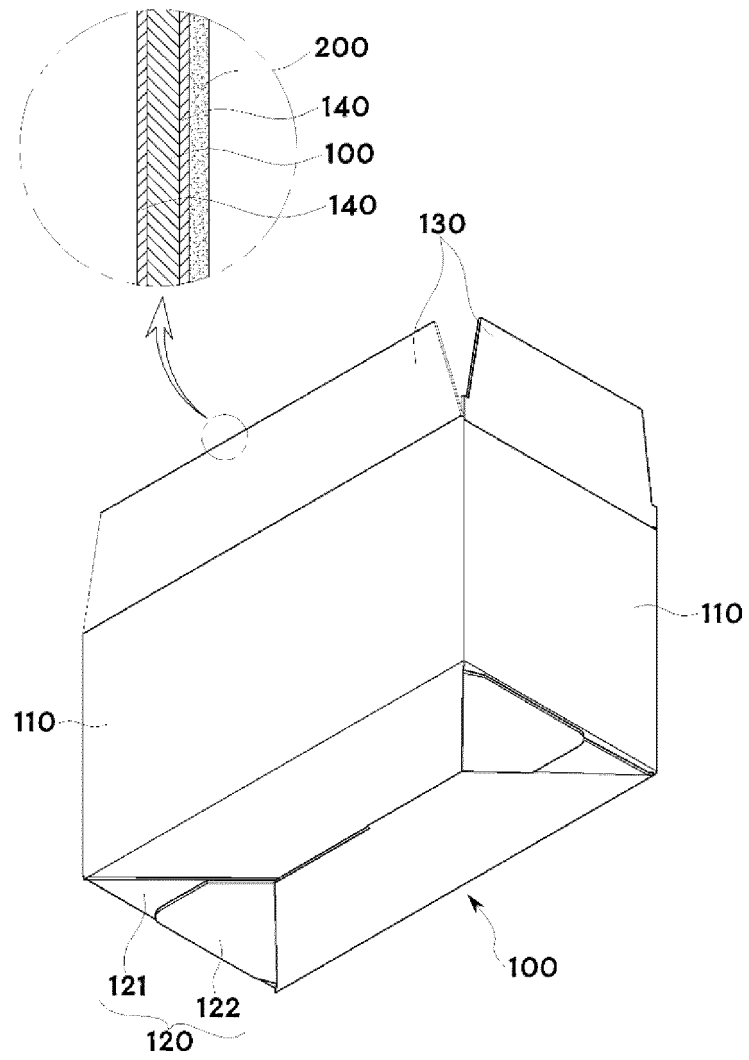


Fig. 2

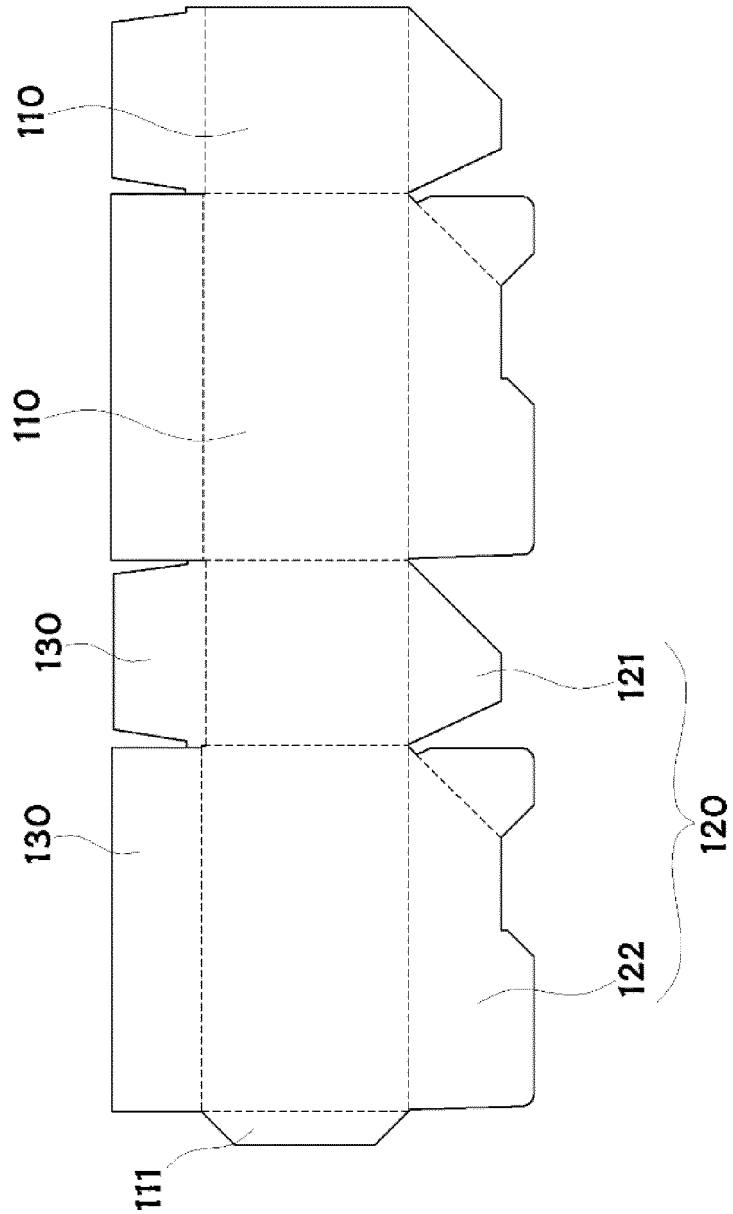


Fig. 3

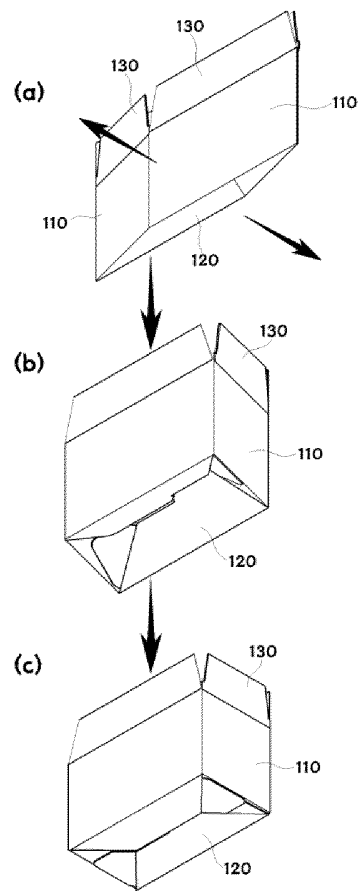


Fig. 4

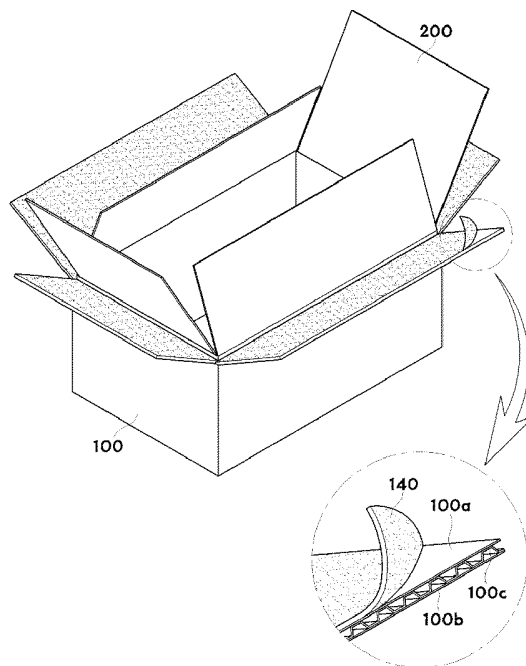


Fig. 5

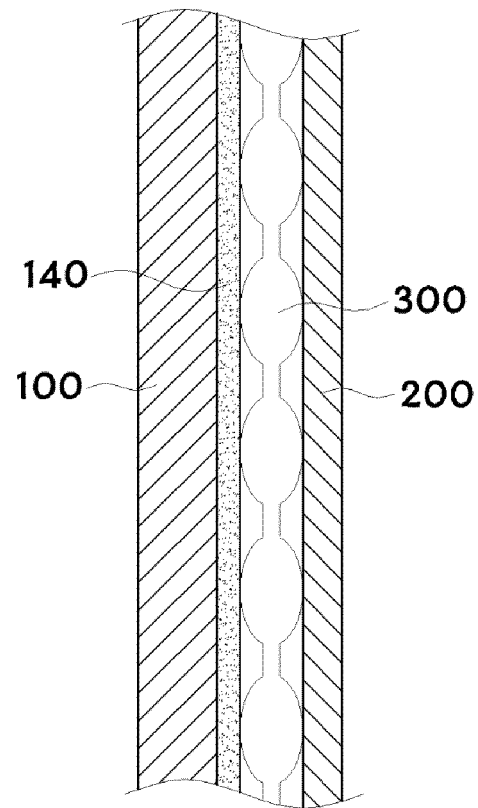


Fig. 6

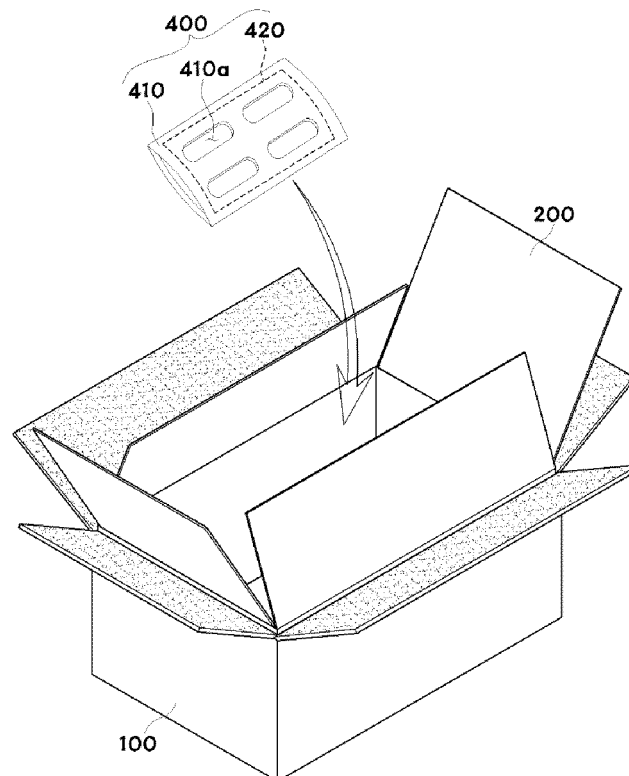


Fig. 7

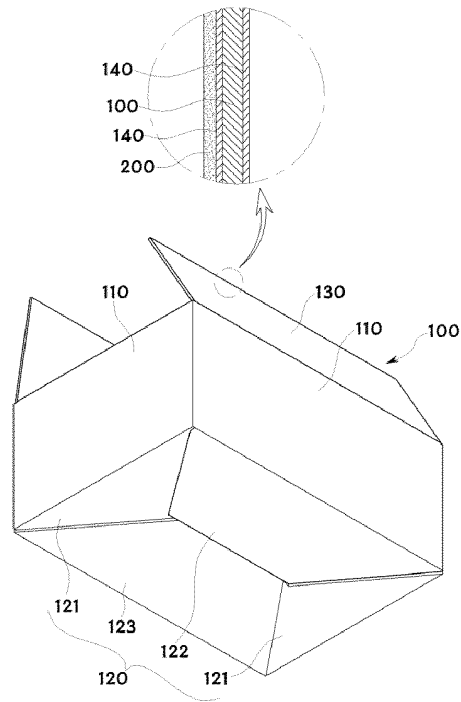


Fig. 8

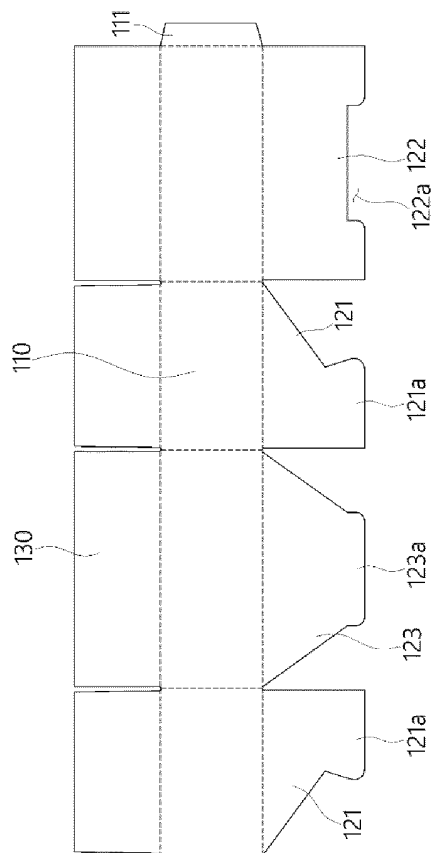


Fig. 9

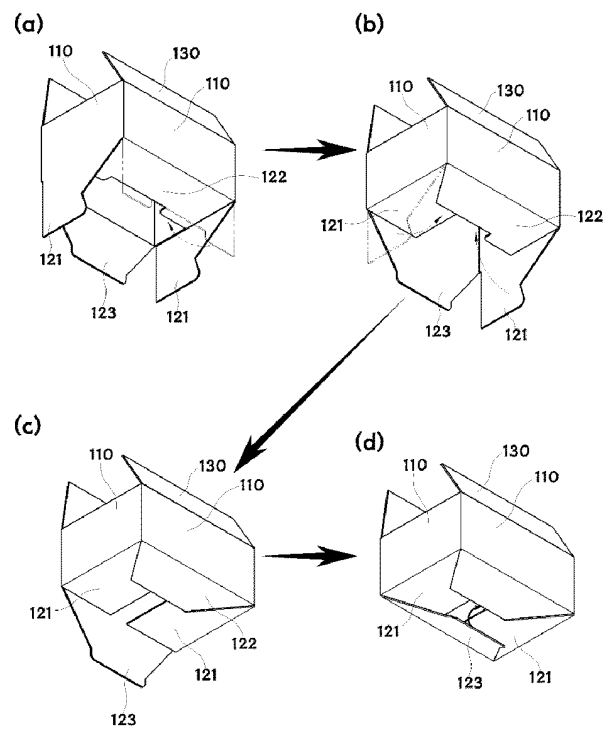


Fig. 10

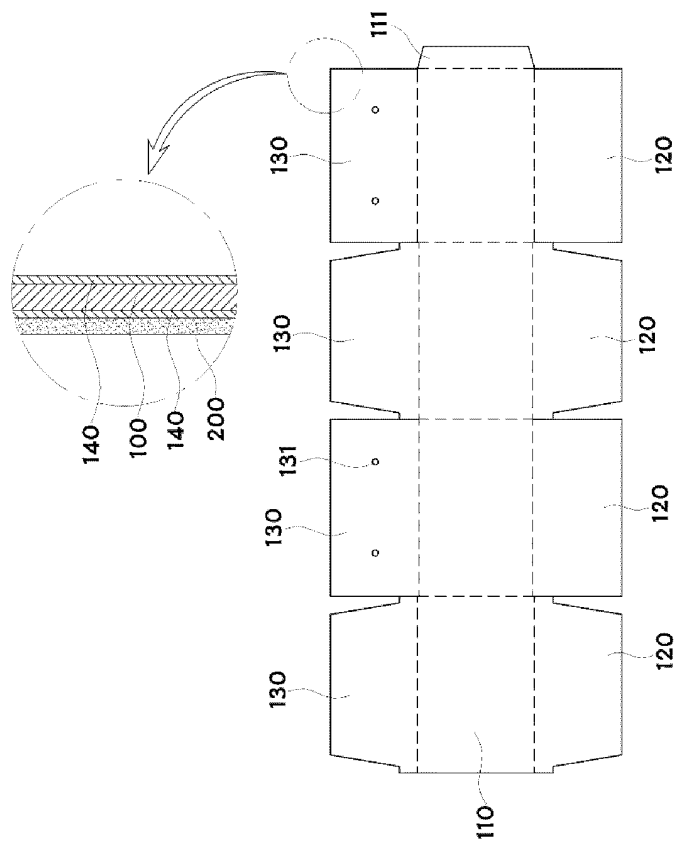


Fig. 11

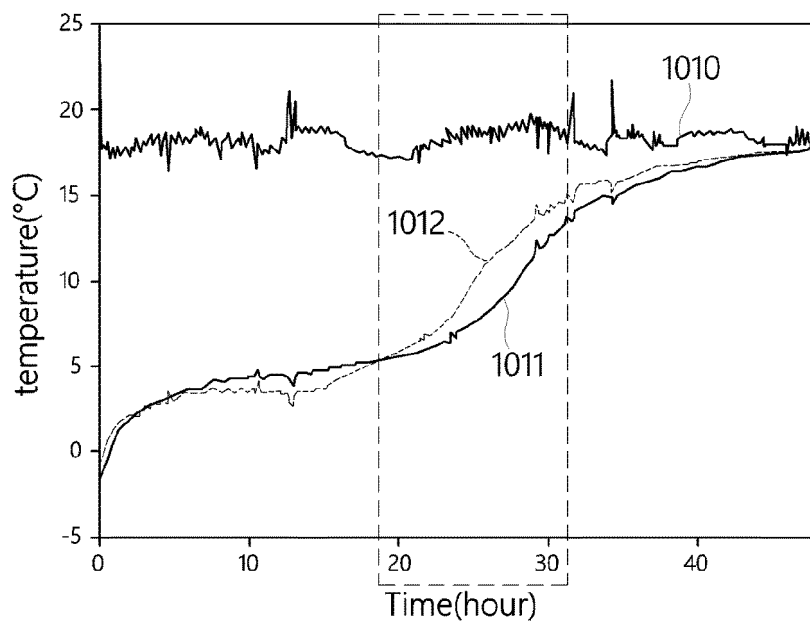


Fig. 12

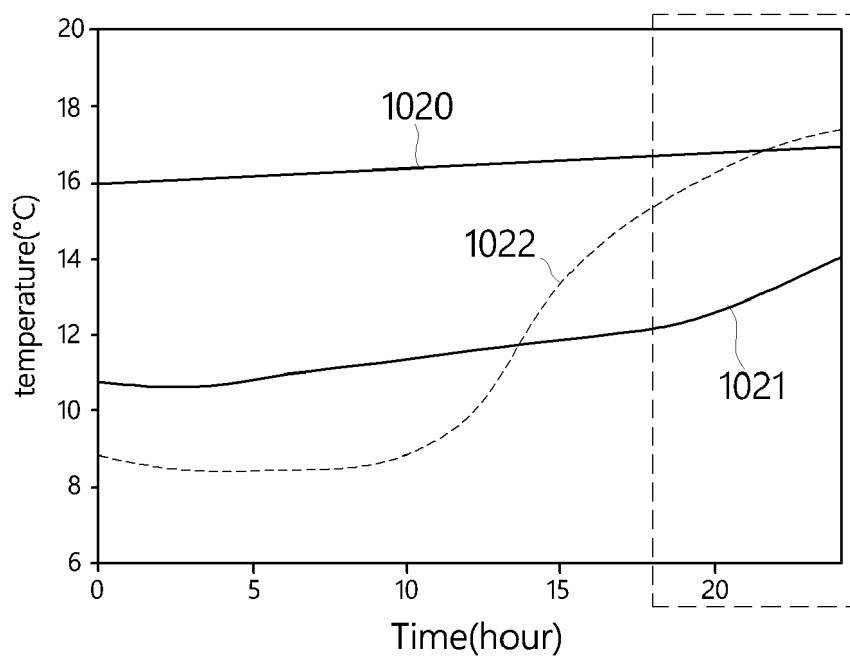
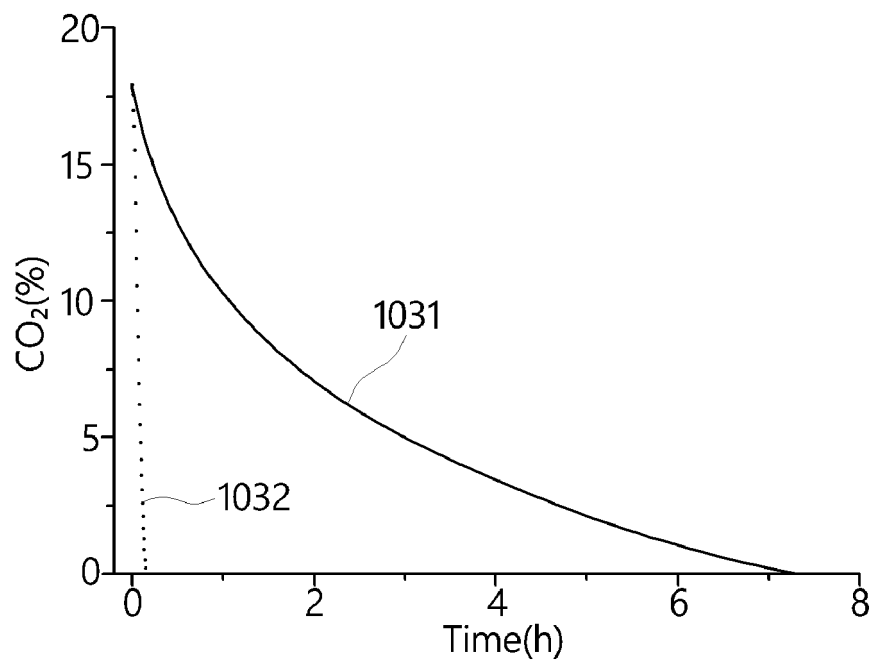


Fig. 13



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2016/007170

A. CLASSIFICATION OF SUBJECT MATTER

B65D 5/56(2006.01)i, B65D 81/38(2006.01)i, B65D 81/02(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B65D 5/56; B65D 81/02; B65D 81/38; B65D 25/20; B65D 5/62

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility models and applications for Utility models: IPC as above

Japanese Utility models and applications for Utility models: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS (KIPO internal) & Keywords: keeping warm, cold insulation, packing, box, side part, bottom part, cover part, foam sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 62-165214 U (ISHIZAKI SANGYO K.K.) 20 October 1987 See page 5, lines 8-20, claims 1, 4 and figures 1-8.	1-5
Y		6-9
Y	WO 2014-032339 A1 (SHENZHEN CHINA STAR OPTOELECTRONICS TECHNOLOGY CO., LTD. et al.) 06 March 2014 See abstract, claim 1 and figure 1.	6
Y	KR 10-2002-0054116 A (GDHS STRATEGIC DEVELOPMENT GROUP, S.L.) 06 July 2002 See claims 1, 5 and figures 1, 6.	7
Y	JP 03-038722 U (HONSHU PAPER CO., LTD.) 15 April 1991 See claim 1 and figures 1-4.	8
Y	JP 62-031023 U (ORIENTAL YOKI KOGYO: K.K.) 24 February 1987 See claim 1 and figures 1-2.	9

☐ Further documents are listed in the continuation of Box C.
 ☒ See patent family annex.

* Special categories of cited documents:

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"&" document member of the same patent family

Date of the actual completion of the international search

29 OCTOBER 2016 (29.10.2016)

Date of mailing of the international search report

31 OCTOBER 2016 (31.10.2016)

Name and mailing address of the ISA/KR

 Korean Intellectual Property Office
Government Complex-Daejeon, 189 Seonsa-ro, Daejeon 302-701,
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