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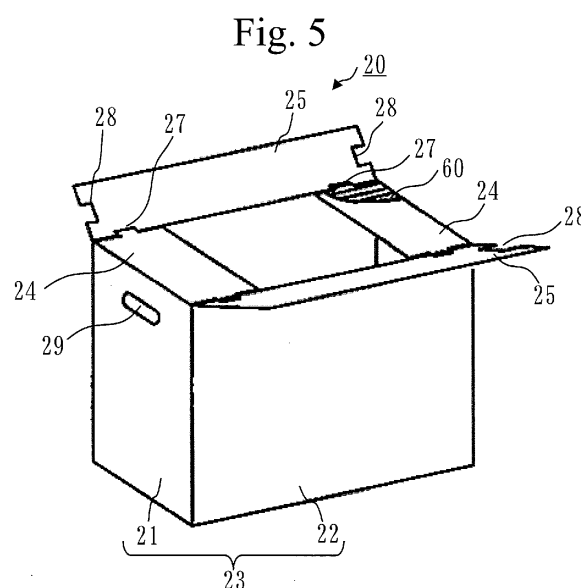
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(54) **PACKAGE**

(57) A package packages an object to be packaged by placing the object to be packaged on a tray box, covering the object with packaging corrugated cardboard (20) from the top, and wrapping a binding band. The packaging corrugated cardboard (20) includes a peripheral wall (23) having a pair of first sidewalls (21) and a pair of second sidewalls (22), an inner flap (24) connected to a top side of each of the first sidewalls (21), and an outer flap (25) connected to a top side of each of the second sidewalls (22). Each inner flap (24) is provided with a pair of protrusions (27) protruding from both side ends of the flap. When the inner flap (24) and then the outer flap (25) are closed, an opening on a top side of the peripheral wall (23) is closed with the protrusions (27) being brought into contact with the second sidewalls (22).



Description

Technical Field

[0001] The present invention relates to a package that protects an object to be packaged such as an outdoor unit of an air conditioner.

Background Art

[0002] An object to be packaged such as an outdoor unit of an air conditioner is packaged as follows.

[0003] First, the object to be packaged is placed on a tray box which is a tray-like corrugated cardboard box containing a cushioning material such as expanded polystyrene. An upper cushioning material such as expanded polystyrene is then placed over the top of the object to be packaged. After that, the object to be packaged with the upper cushioning material placed thereon is covered with packaging corrugated cardboard having an open bottom, around which a binding band is wrapped.

Citation List

Patent Literature

[0004] Patent Literature 1: JP 2006-282258 A

Summary of Invention

Technical Problem

[0005] In packaging the object to be packaged such as the outdoor unit of the air conditioner in the aforementioned manner, the binding band is fastened tightly in order to prevent loosening and unfastening of the binding band caused by rough handling or the like. This sometimes causes the binding band fastened tightly to bite into a corner of the top side of the packaging corrugated cardboard.

[0006] An object of the present invention is to prevent the binding band from biting into the corner.

Solution to Problem

[0007] A package according to the present invention includes:

- a peripheral wall to have a pair of first sidewalls facing each other, a pair of second sidewalls facing each other, and an opening at one end;
- an inner flap to be provided at the one end of each of the first sidewalls;
- an outer flap to be provided at the one end of each of the second sidewalls; and
- a pair of protrusions to protrude from both side ends of the inner flap, wherein closing of the inner flap and then the outer flap closes

the opening at the one end of the peripheral wall with protrusions being brought into contact with the second sidewalls.

5 Advantageous Effects of Invention

[0008] According to the present invention, the protrusions protruding from both side ends of the inner flap are brought into contact with the second sidewalls when the inner flap is closed. The corner being reinforced with the protrusion, the binding band may be wrapped around a part corresponding to the arrangement of the protrusion to be able to avoid biting into the corner.

10 15 Brief Description of Drawings

[0009]

Fig. 1 is an exploded perspective view of a package 10 according to a first embodiment.

Fig. 2 is a perspective view of the package 10 according to the first embodiment.

Fig. 3 is a developed view of packaging corrugated cardboard 20 of the package 10 according to the first embodiment.

Fig. 4 is a perspective view of a state in which both flaps of the packaging corrugated cardboard 20 of the package 10 according to the first embodiment are opened.

Fig. 5 is a perspective view of a state in which an outer flap 25 of the packaging corrugated cardboard 20 of the package 10 according to the first embodiment is opened.

Fig. 6 is a perspective view of a state in which both of the flaps of the packaging corrugated cardboard 20 of the package 10 according to the first embodiment are closed.

Fig. 7 is a plan view of the packaging corrugated cardboard 20 of the package 10 according to the first embodiment.

Fig. 8 is a partial cross-sectional view of the packaging corrugated cardboard 20 of the package 10 according to the first embodiment.

Fig. 9 is a partial cross-sectional view of the packaging corrugated cardboard 20 of the package 10 according to the first embodiment.

Fig. 10 is a developed view of packaging corrugated cardboard 20 of a package 10 according to a second embodiment.

Fig. 11 is a plan view of the packaging corrugated cardboard 20 of the package 10 according to the second embodiment.

Fig. 12 is a partial cross-sectional view of the packaging corrugated cardboard 20 of the package 10 according to the second embodiment.

Fig. 13 is a developed view of packaging corrugated cardboard 20 of a package 10 according to a third embodiment.

Fig. 14 is a plan view of the packaging corrugated cardboard 20 of the package 10 according to the third embodiment.

Fig. 15 is a partial cross-sectional view of the packaging corrugated cardboard 20 of the package 10 according to the third embodiment.

Description of Embodiments

First Embodiment

Description of structure

[0010] The structure of a package 10 according to a first embodiment will be described with reference to Figs. 1 and 2.

[0011] As illustrated in Fig. 1, the package 10 includes packaging corrugated cardboard 20, a tray box 30, an upper cushioning material 40, and a binding band 50.

[0012] The packaging corrugated cardboard 20 has a bottom that is open and a top side that is closed by inner flaps 24 and outer flaps 25. The tray box 30 is formed of a tray-like corrugated cardboard box 31 which contains a lower cushioning material 32 made of a cushioning material such as expanded polystyrene. The upper cushioning material 40 is made of a cushioning material such as expanded polystyrene. The binding band 50 is a band made of polypropylene and having the width of 12 to 20 mm.

[0013] An outdoor unit 100, which is an object to be packaged, of an air conditioner is placed on the tray box 30 and topped with the upper cushioning material 40, as illustrated in Fig. 1. The outdoor unit 100 topped with the upper cushioning material 40 is then covered from the top with the packaging corrugated cardboard 20, around which the binding band 50 is wrapped. The outdoor unit 100 is thus packaged with the package 10 as illustrated in Fig. 2.

[0014] The structure of the packaging corrugated cardboard 20 according to the first embodiment will be described with reference to Figs. 3 to 8.

[0015] As illustrated in Fig. 3, the packaging corrugated cardboard 20 includes a peripheral wall 23 having a pair of first sidewalls 21 and a pair of second sidewalls 22. The first sidewall 21 has a narrower width than the second sidewall 22 in this case. The packaging corrugated cardboard 20 includes the inner flaps 24 connected to the top sides of the first sidewalls 21, and the outer flaps 25 connected to the top sides of the second sidewalls 22. The outer flaps 25 are butt flaps, the edges of which butt against each other when closed. The packaging corrugated cardboard 20 includes a joint 26 that joins the ends of the peripheral wall 23 together. Here, the joint 26 is provided at a side end of the second sidewall 22.

[0016] Each of the inner flaps 24 is provided with a pair of protrusions 27 protruding from both side ends of the flap. The protrusion 27 is rectangular in shape in this case. On the other hand, each of the outer flaps 25 is

provided with a notch 28 at a position corresponding to the protrusion 27. The notch 28 is rectangular in shape having the same size as the protrusion 27 or larger than the protrusion 27.

[0017] Each of the first sidewalls 21 includes a hand-hold opening 29 that is bored for a handler to lay his hand thereon.

[0018] As illustrated in Fig. 4, the packaging corrugated cardboard 20 is folded between the first sidewalls 21 and the second sidewalls 22 to place and fix the joint 26 provided at the side end of the second sidewall 22 over an inner wall of the side end of the first sidewall 21. This allows the pair of the first sidewalls 21 to face each other and the pair of the second sidewalls 22 to face each other. Note that at this point, the inner flaps 24 and the outer flaps 25 are open so that the top side of the packaging corrugated cardboard 20 is open.

[0019] The inner flaps 24 are closed as illustrated in Fig. 5, and then the outer flaps 25 are closed as illustrated in Fig. 6. This closes the opening on the top side of the packaging corrugated cardboard 20, which is formed into the shape of a rectangular parallelepiped with an open bottom.

[0020] As illustrated in Fig. 7, a width A1 between the edges of the pair of the protrusions 27 is slightly wider than a width B1 of the first sidewall 21. The width B1 of the first sidewall 21 is slightly wider than a width C1 of the inner flap 24. That is, a protrusion dimension a1 of the protrusion 27 is slightly larger than a dimension c1 ($= (B1 - C1)/2$) between the end of the first sidewall 21 and the end of the inner flap 24.

[0021] When the inner flaps 24 are closed and then the outer flaps 25 are closed, as illustrated in Fig. 6, the inner flaps 24 and the protrusions 27 are pressed down by the outer flaps 25. Then, the packaging corrugated cardboard 20 being made of corrugated cardboard, the first sidewall 21 is bent slightly to cause the edge of the protrusion 27 to come into contact with the vicinity of an upper end of the second sidewall 22, as illustrated in Fig. 8. In other words, the protrusion 27 protrudes, pushing the second sidewall 22 from the inside to the outside.

[0022] The binding band 50 is wrapped so as to pass outside the part of the second sidewall 22 in contact with the edge of the protrusion 27.

[0023] Here, when the protrusion dimension a1 of the protrusion 27 is too large, the protrusion 27 is possibly bent at the time the outer flaps 25 are closed to press down the inner flaps 24 and the protrusions 27. When the protrusion dimension a1 of the protrusion 27 is too small, on the other hand, the protrusions 27 do not protrude even when the inner flaps 24 and the outer flaps 25 are closed.

[0024] It is thus desirable for the protrusion dimension a1 of the protrusion 27 to be approximately twice the thickness of the corrugated cardboard forming the packaging corrugated cardboard 20. Specifically, it is desirable for the protrusion dimension a1 of the protrusion 27 to be approximately 10 to 16 mm.

[0025] Moreover, when a width dimension b1 of the protrusion 27 is too large, the protrusion 27 is less easily bent and put inside the second sidewall 22 at the time the outer flaps 25 are closed to press down the inner flaps 24 and the protrusions 27. This causes reduced workability. When the width dimension b1 of the protrusion 27 is too small, on the other hand, it is hard for the binding band 50 to be wrapped so as to pass outside the part in contact with the edge of the protrusion 27.

[0026] It is thus desirable for the width dimension b1 of the protrusion 27 to be approximately two to five times the width of the binding band 50. Specifically, it is desirable for the width dimension b1 of the protrusion 27 to be approximately 30 to 100 mm.

[0027] An area 60 in Figs. 2 to 7 indicates the direction of grain of a corrugated medium in the corrugated cardboard forming the packaging corrugated cardboard 20.

[0028] As illustrated in Figs. 5 and 7, the direction of the grain of the corrugated medium in the corrugated cardboard is orthogonal to the direction in which the protrusion 27 protrudes. That is, the direction of the grain of the corrugated medium in the corrugated cardboard is orthogonal to the direction of a shearing stress acting on the packaging corrugated cardboard 20 by the binding band 50.

Effects of first embodiment

[0029] As has been described, the package 10 according to the first embodiment is structured such that each of the inner flaps 24 of the packaging corrugated cardboard 20 includes the pair of the protrusions 27, the edge of each of which comes into contact with the second sidewall 22 when the inner flaps 24 and the outer flaps 25 are closed. The binding band 50 is then wrapped so as to pass outside the part of the second sidewall 22 in contact with the edge of the protrusion 27.

[0030] The protrusion 27 reinforces the corner of the top side of the packaging corrugated cardboard 20 to be able to prevent the binding band 50 from biting into the packaging corrugated cardboard 20 even when the binding band 50 is wrapped tightly. In other words, when the binding band 50 tightly binds the corner of the top side from the outside to the inside, the protrusion 27 protrudes from the inside to the outside to be able to prevent the binding band 50 from biting into the packaging corrugated cardboard 20.

[0031] Note that the protrusion 27 may be bent when binding of the binding band 50 is too tight. Even when bent, however, the protrusion 27 keeps preventing the binding band 50 from biting into the packaging corrugated cardboard 20 since the edge of the protrusion 27 remains in contact with the first sidewall 21, as illustrated in Fig. 9.

[0032] The package 10 according to the first embodiment achieves reinforcement with the protrusion 27 provided on the inner flap 24 without arranging another component. The reinforcement can thus be achieved with a simple structure at low cost.

[0033] Specifically, the packaging corrugated cardboard 20 can be cut out and manufactured from a sheet of corrugated cardboard with the notch 28 provided in a part of the outer flap 25 corresponding to the protrusion 27. Note that the provision of the notch 28 does not particularly lead to a reduction in strength because the notch 28 is not formed in a part receiving the force of the binding band 50. The notch 28 does not particularly lead to a reduction in workability, either.

[0034] The direction of the grain of the corrugated medium in the corrugated cardboard is orthogonal to the direction in which the binding band 50 shears the packaging corrugated cardboard 20. As a result, the packaging corrugated cardboard 20 is not readily torn by the force received from the binding band 50.

[0035] Note that in the aforementioned description, the inner flap 24 is connected to the first sidewall 21 having the smaller width, and the outer flap 25 is connected to the second sidewall 22 having the larger width. Conversely, however, the inner flap 24 may be connected to the second sidewall 22 having the larger width, and the outer flap 25 may be connected to the first sidewall 21 having the smaller width. The protrusion 27 may then be formed on the inner flap 24 connected to the second sidewall 22 having the larger width.

[0036] Alternatively, the first sidewall 21 and the second sidewall 22 may have the same width.

[0037] Moreover, each of the inner flaps 24 is provided with only one pair of the protrusions 27 in the aforementioned description. Each of the inner flaps 24 may however be provided with a plurality of pairs of the protrusions 27.

[0038] Moreover, the protrusion 27 is rectangular in shape in the aforementioned description. The protrusion 27 may however be formed in another shape such as a trapezoid.

[0039] A protruding shape equivalent to the protrusion 27 may also be formed on the upper cushioning material 40 that is located below the protrusion 27 in packaging the outdoor unit 100. This can further increase reinforcement strength.

[0040] The effect of preventing biting of the binding band 50 can be obtained by just providing the protruding shape on the upper cushioning material 40 instead of providing the protrusion 27 on the first sidewall 21. In this case, however, it is desirable for the upper cushioning material 40 to be made of material that is not brittle like expanded polystyrene but has some degree of strength while being usable as a cushioning material.

[0041] Moreover, the binding band 50 has the width of 12 to 20 mm in the aforementioned description. The width of the binding band 50 need not however be limited to 12 to 20 mm.

[0042] Note that the smaller the width of the binding band 50, the larger the binding pressure of the binding band 50 acting on the corner of the top side of the binding band 50. This makes it easy for the binding band 50 to bite into the packaging corrugated cardboard 20. Accord-

ingly, the corner of the top side of the packaging corrugated cardboard 20 needs to be reinforced sufficiently in using a band with the width smaller than 12 mm as the binding band 50.

[0043] On the other hand, the larger the width of the binding band 50, the smaller the binding pressure of the binding band 50 acting on the corner of the top side of the binding band 50. This makes it hard for the binding band 50 to bite into the packaging corrugated cardboard 20. However, a band wider than 20 mm is not widely used and can cause an increase in cost.

Second Embodiment

[0044] A package 10 according to a second embodiment is different from that of the first embodiment in that a protrusion 27 has a bent shape. This difference will be described in the second embodiment.

[0045] The structure of packaging corrugated cardboard 20 according to the second embodiment will be described with reference to Figs. 10 to 12.

[0046] A bend part 271 is formed in the protrusion 27 as illustrated in Fig. 10. The bend part 271 is a guide line parallel to the surface of a second sidewall 22. The guide line is a bend line along which a flute is crushed for easy bending of corrugated cardboard.

[0047] The protrusion 27 is bent at a right angle along the bend part 271 such that the edge of the protrusion faces downward when an inner flap 24 is closed.

[0048] With the protrusion 27 being bent along the bend part 271, the inner flaps 24 are closed and then outer flaps 25 are closed to close an opening on a top side of the packaging corrugated cardboard 20.

[0049] As illustrated in Fig. 11, a width D2 between the bend parts 271 of a pair of the protrusions 27 is slightly wider than a width B2 of a first sidewall 21. The width B2 of the first sidewall 21 is slightly wider than a width C2 of the inner flap 24. That is, a protrusion dimension d2 of the protrusion 27 up to the bend part 271 is slightly larger than a dimension c2 ($= (B2 - C2)/2$) between the end of the first sidewall 21 and the end of the inner flap 24. A protrusion dimension a2 of the protrusion 27 up to the edge thereof is approximately twice the protrusion dimension d2 up to the bend part 271.

[0050] When the inner flaps 24 are closed and then the outer flaps 25 are closed, the inner flaps 24 and the protrusions 27 are pressed down by the outer flaps 25. Then, as illustrated in Fig. 12, the first sidewall 21 is bent slightly to cause a surface of the edge side of the protrusion 27 being bent to come into contact with the vicinity of an upper end of the second sidewall 22.

[0051] Here, the protrusion dimension d2 up to the bend part 271 is nearly equal to the protrusion dimension a1 for the same reason as that for the protrusion dimension a1 according to the first embodiment. Moreover, a width dimension b2 of the protrusion 27 is nearly equal to the width dimension b1 of the protrusion 27 according to the first embodiment.

Effects of second embodiment

[0052] As has been described, the package 10 according to the second embodiment is structured such that, with the protrusion 27 being bent, the surface on the edge side of the protrusion being bent comes into contact with the second sidewall 22 when the inner flaps 24 and the outer flaps 25 are closed. A binding band 50 is then wrapped so as to pass outside a part of the second sidewall 22 in contact with the surface on the edge side of the protrusion 27.

[0053] The protrusion 27 reinforces the corner on the top side of the packaging corrugated cardboard 20 to be able to prevent the binding band 50 from biting into the cardboard even when the binding band 50 is wrapped tightly.

[0054] Specifically, unlike the first embodiment, the protrusion 27 is in surface contact with the second sidewall 22 to be able to increase reinforcement strength.

[0055] The bend part 271 may be not the single guide line formed at a bend position but a plurality of scores or creases formed in the vicinity of the bend position. Note, however, that strength against binding of the binding band 50 is possibly reduced when too many of the scores or creases are formed. It is thus desirable to determine the number of scores or creases in consideration of both the strength against binding of the binding band 50 and efficiency of the bending operation.

Third Embodiment

[0056] A package 10 according to a third embodiment is different from that of the first and second embodiments in that a protrusion 27 has a shape that is folded back. This difference will be described in the third embodiment.

[0057] The structure of packaging corrugated cardboard 20 according to the third embodiment will be described with reference to Figs. 13 to 15.

[0058] A fold-back part 272 is formed in the protrusion 27 as illustrated in Fig. 13. The fold-back part 272 is a guide line parallel to the surface of a second sidewall 22. The protrusion 27 is folded back 180 degrees downward at the fold-back part 272.

[0059] With the protrusion 27 being folded back at the fold-back part 272, inner flaps 24 are closed and then outer flaps 25 are closed to close an opening on a top side of the packaging corrugated cardboard 20.

[0060] As illustrated in Fig. 14, a width D3 between the fold-back parts 272 of a pair of the protrusions 27 is slightly wider than a width B3 of a first sidewall 21. The width B3 of the first sidewall 21 is slightly wider than a width C3 of the inner flap 24. That is, a protrusion dimension d3 of the protrusion 27 up to the fold-back part 272 is slightly larger than a dimension c3 ($= (B3 - C3)/2$) between the end of the first sidewall 21 and the end of the inner flap 24. A protrusion dimension a3 of the protrusion 27 up to the edge thereof is approximately twice the protrusion dimension d3 up to the fold-back part 272.

[0061] When the inner flaps 24 are closed and then the outer flaps 25 are closed, the inner flaps 24 and the protrusions 27 are pressed down by the outer flaps 25. Then, as illustrated in Fig. 15, the first sidewall 21 is bent slightly to cause the fold-back part 272 of the protrusion 27 to come into contact with the vicinity of an upper end of the second sidewall 22.

[0062] Here, the protrusion dimension d3 up to the fold-back part 272 is nearly equal to the protrusion dimension a1 for the same reason as that for the protrusion dimension a1 according to the first embodiment. Moreover, a width dimension b3 of the protrusion 27 is nearly equal to the width dimension b1 of the protrusion 27 according to the first embodiment.

Effects of third embodiment

[0063] As has been described, the package 10 according to the third embodiment is structured such that, with the protrusion 27 being folded back, the fold-back part 272 comes into contact with the second sidewall 22 when the inner flaps 24 and the outer flaps 25 are closed. A binding band 50 is then wrapped so as to pass outside a part of the second sidewall 22 in contact with the surface on the edge side of the protrusion 27.

[0064] The protrusion 27 reinforces the corner on the top side of the packaging corrugated cardboard 20 to be able to prevent the binding band 50 from biting into the cardboard even when the binding band 50 is wrapped tightly.

[0065] Specifically, the protrusion 27 is folded in two unlike the first embodiment to be able to increase reinforcement strength.

[0066] Note that as illustrated in Fig. 15, a groove 41 may be formed on a top side of an upper cushioning material 40 to accommodate the tip of the protrusion 27 being folded back. This can prevent a bulge on the top side that is otherwise formed by folding back the protrusion 27. As a result, an unstable state caused by the bulge on the top side can be avoided when the package 10 containing an object to be packaged is stacked at the time of storage in a warehouse or transport.

[0067] Moreover, the protrusion 27 is folded back downward in the aforementioned description. The protrusion 27 may however be folded back upward as well.

[0068] Furthermore, the fold-back part 272 may be not the single guide line formed at a bend position but a plurality of scores or creases formed in the vicinity of the bend position. Note, however, that strength against binding of the binding band 50 is possibly reduced when too many of the scores or creases are formed. It is thus desirable to determine the number of scores or creases in consideration of both the strength against binding of the binding band 50 and efficiency of the fold-back operation.

Reference Signs List

[0069] 10: package, 20: packaging corrugated card-

board, 21: first sidewall, 22: second sidewall, 23: peripheral wall, 24: inner flap, 25: outer flap, 26: joint, 27: protrusion, 271: bend part, 272: fold-back part, 28: notch, 29: handhold opening, 30: tray box, 31: corrugated cardboard box, 32: lower cushioning material, 40: upper cushioning material, 41: groove, 50: binding band, 100: outdoor unit.

10 Claims

1. A package comprising:

a peripheral wall to have a pair of first sidewalls facing each other, a pair of second sidewalls facing each other, and an opening at one end; an inner flap to be provided at the one end of each of the first sidewalls; an outer flap to be provided at the one end of each of the second sidewalls; and a pair of protrusions to protrude from both side ends of the inner flap, wherein closing of the inner flap and then the outer flap closes the opening at the one end of the peripheral wall with protrusions being brought into contact with the second sidewalls.

2. The package according to claim 1, wherein an edge of each of the protrusions is brought into contact with the second sidewall when the inner flap and the outer flap are closed.

3. The package according to claim 1, wherein each of the protrusions is bent at some midpoint to cause a surface on an edge side of the protrusion being bent to be brought into contact with the second sidewall when the inner flap and the outer flap are closed.

4. The package according to claim 3, wherein each of the protrusions is bent with an edge facing downward.

5. The package according to claim 1, wherein each of the protrusions is folded back at some midpoint to cause a part being folded back to be brought into contact with the second sidewall when the inner flap and the outer flap are closed.

6. The package according to any one of claims 1 to 5, wherein each of the protrusions is provided at a position that is the same distance away from an edge of the inner flap.

7. The package according to any one of claims 1 to 6, wherein the package is formed by using corrugated cardboard.

Fig. 1

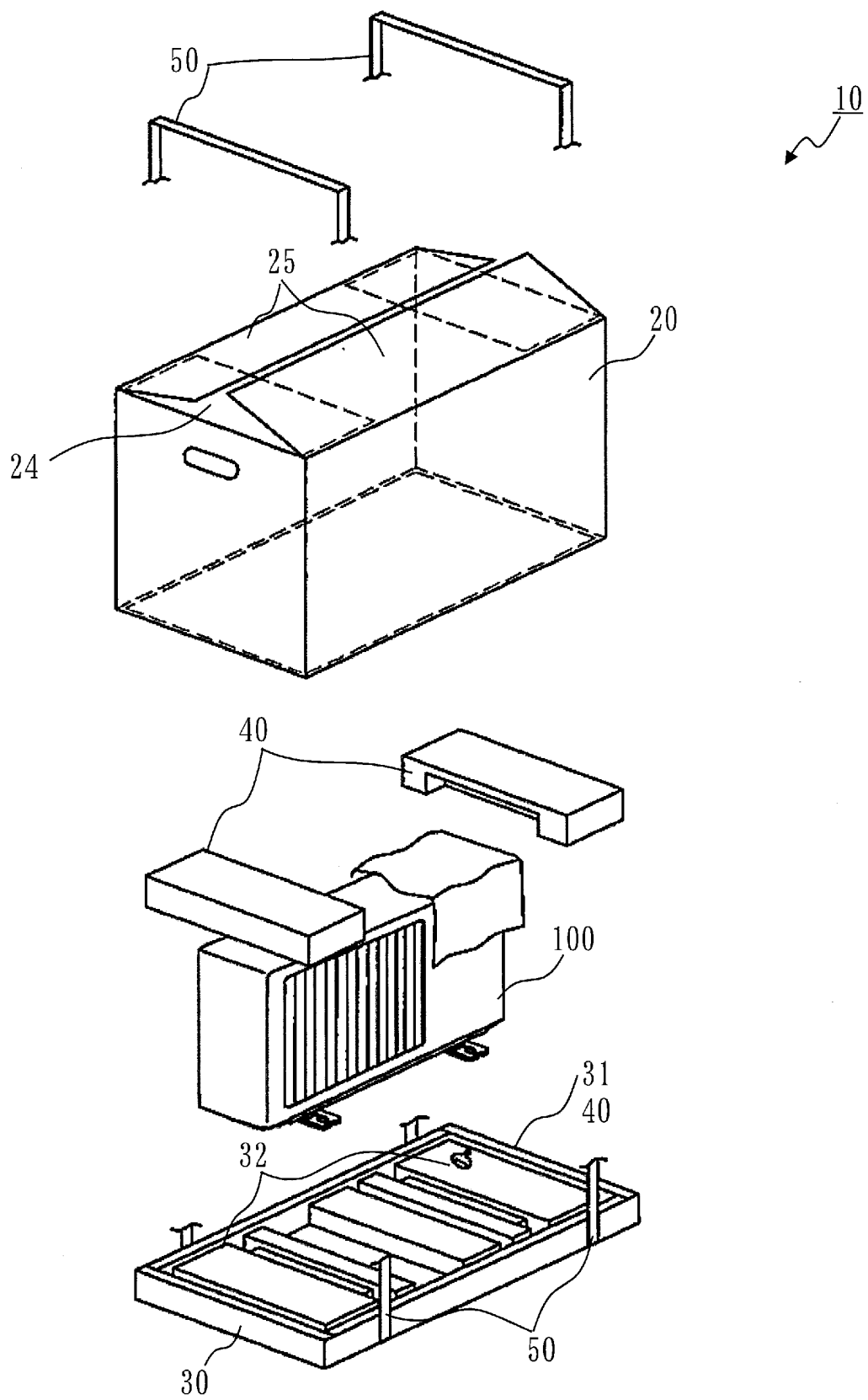


Fig. 2

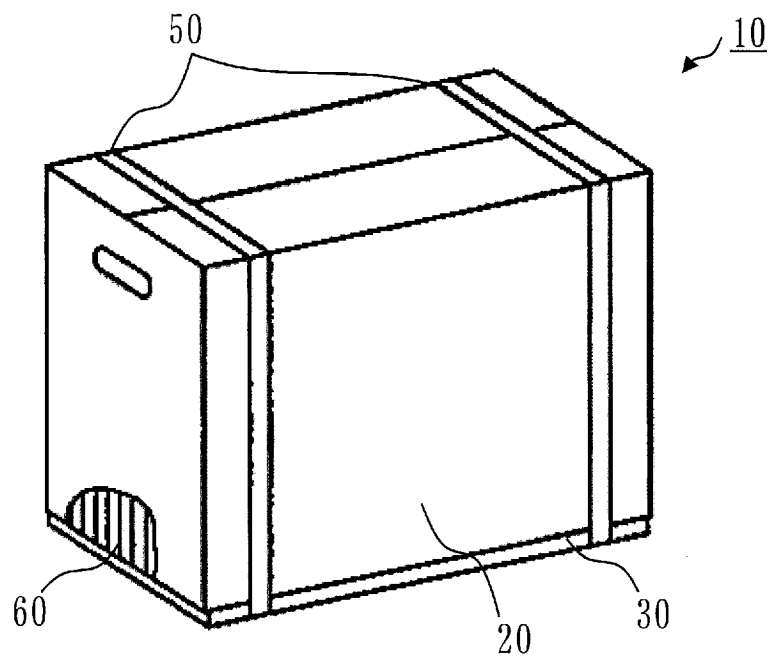


Fig. 3

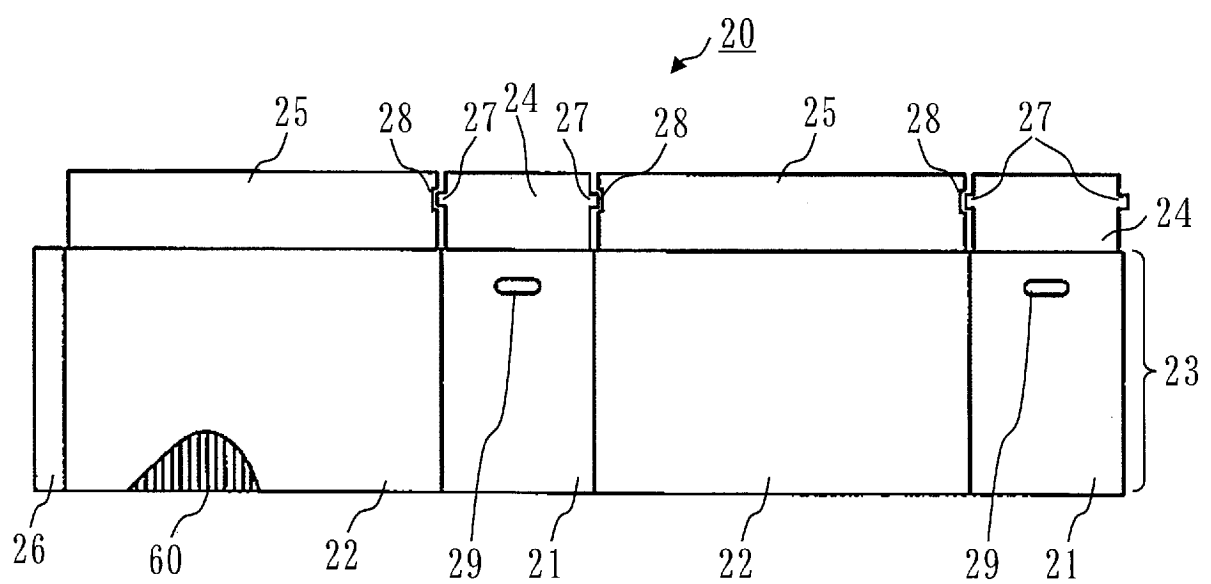


Fig. 4

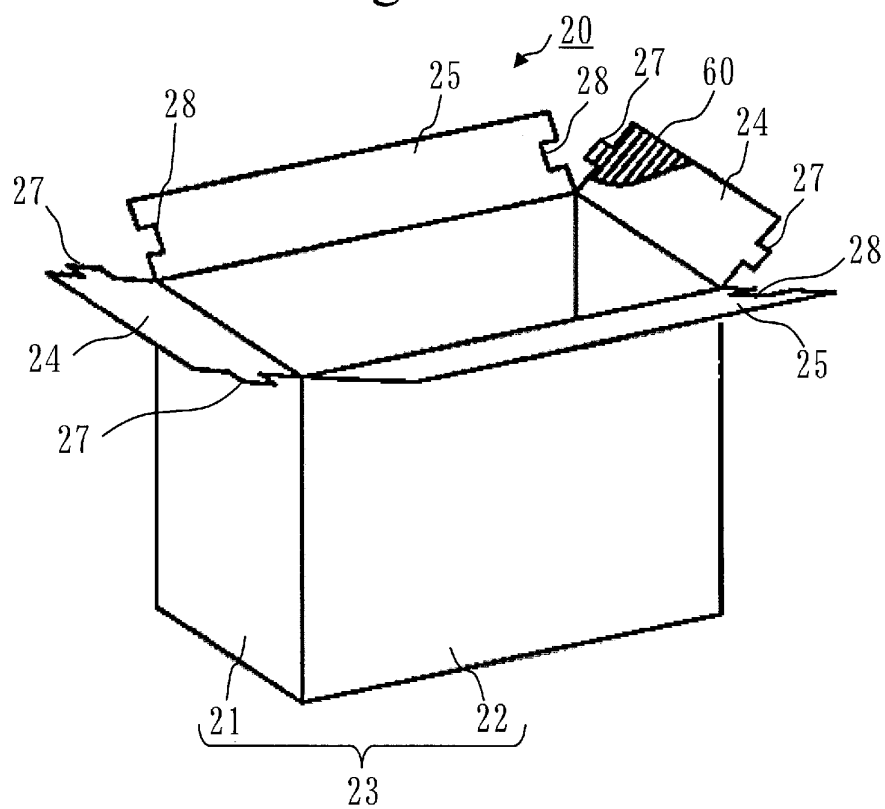


Fig. 5

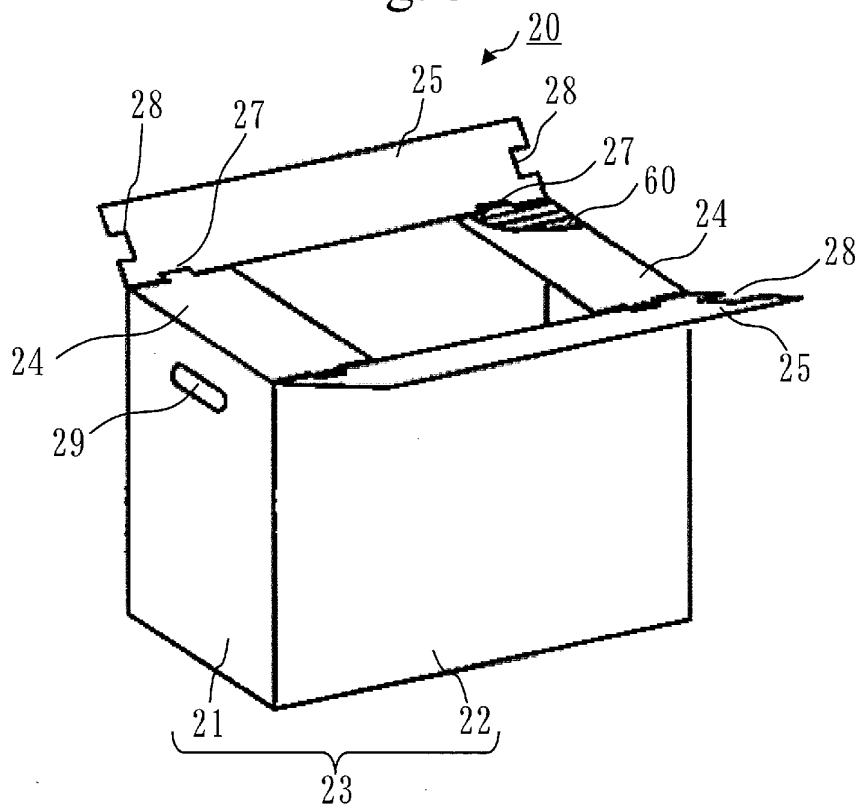


Fig. 6

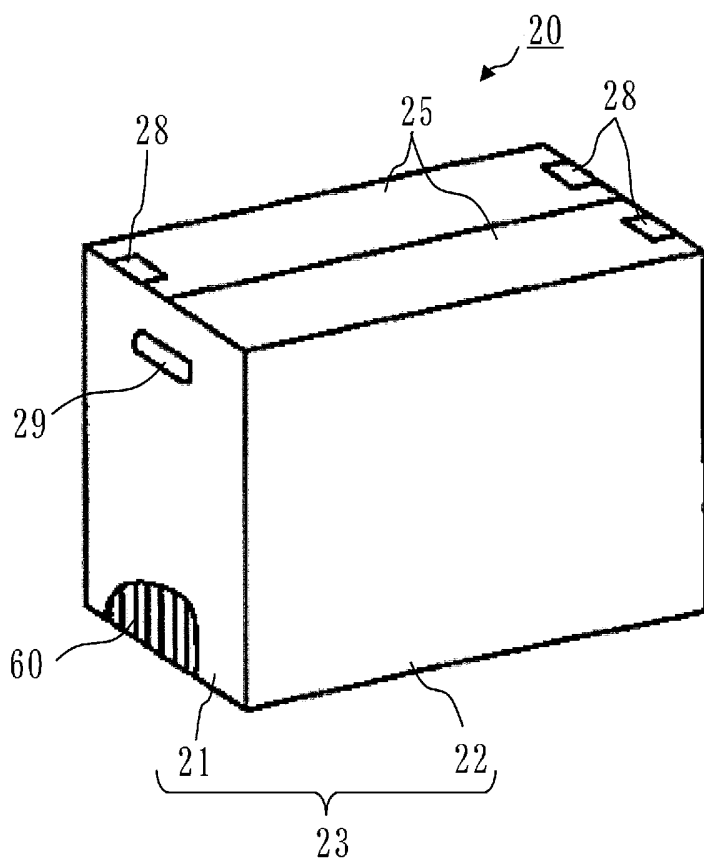


Fig. 7

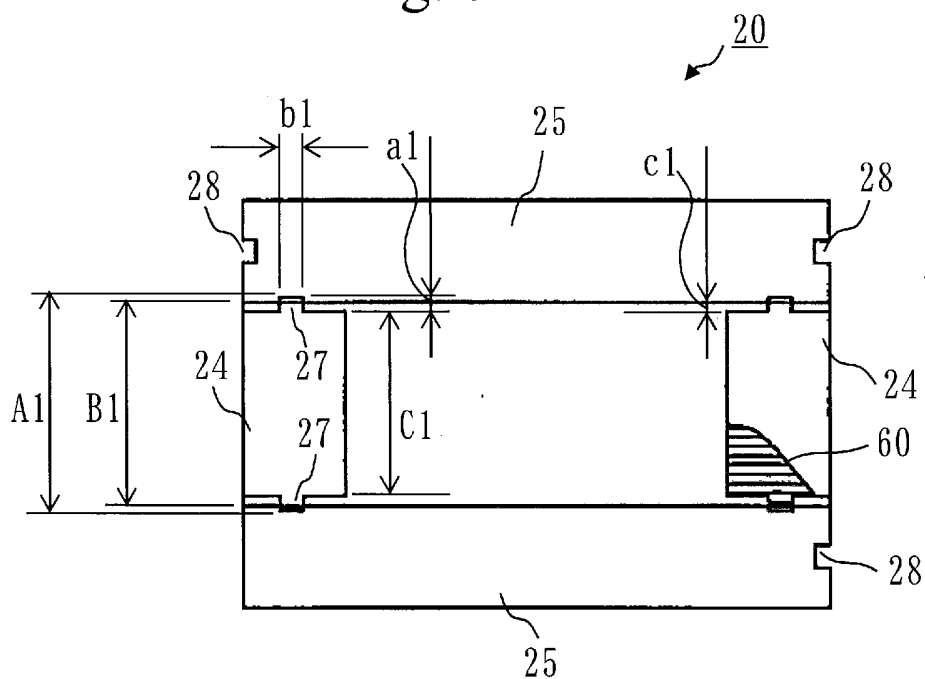


Fig. 8

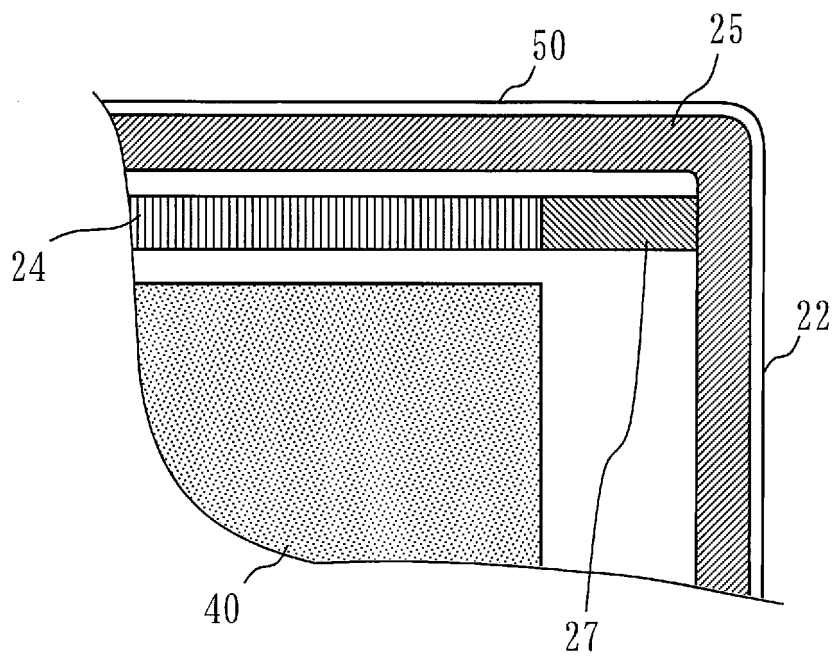


Fig. 9

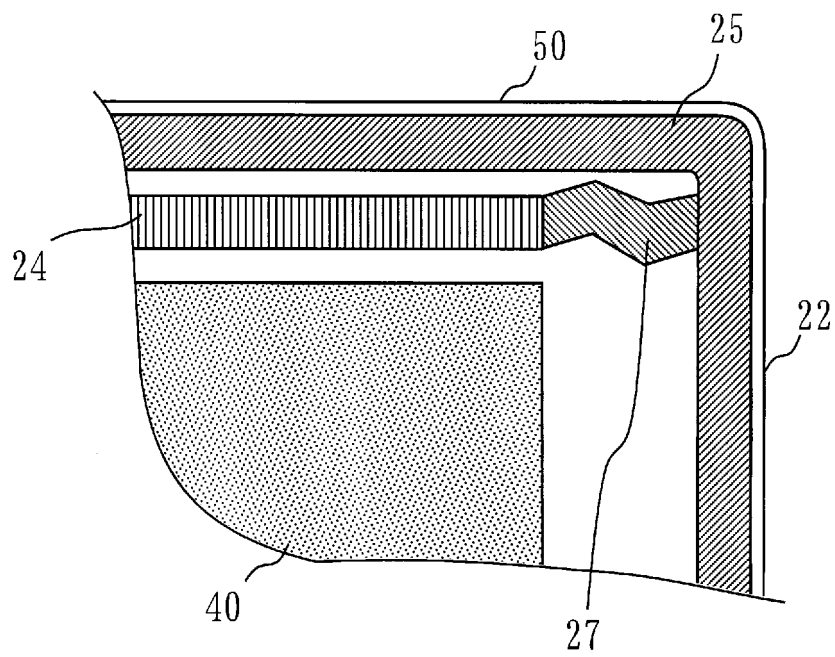


Fig. 10

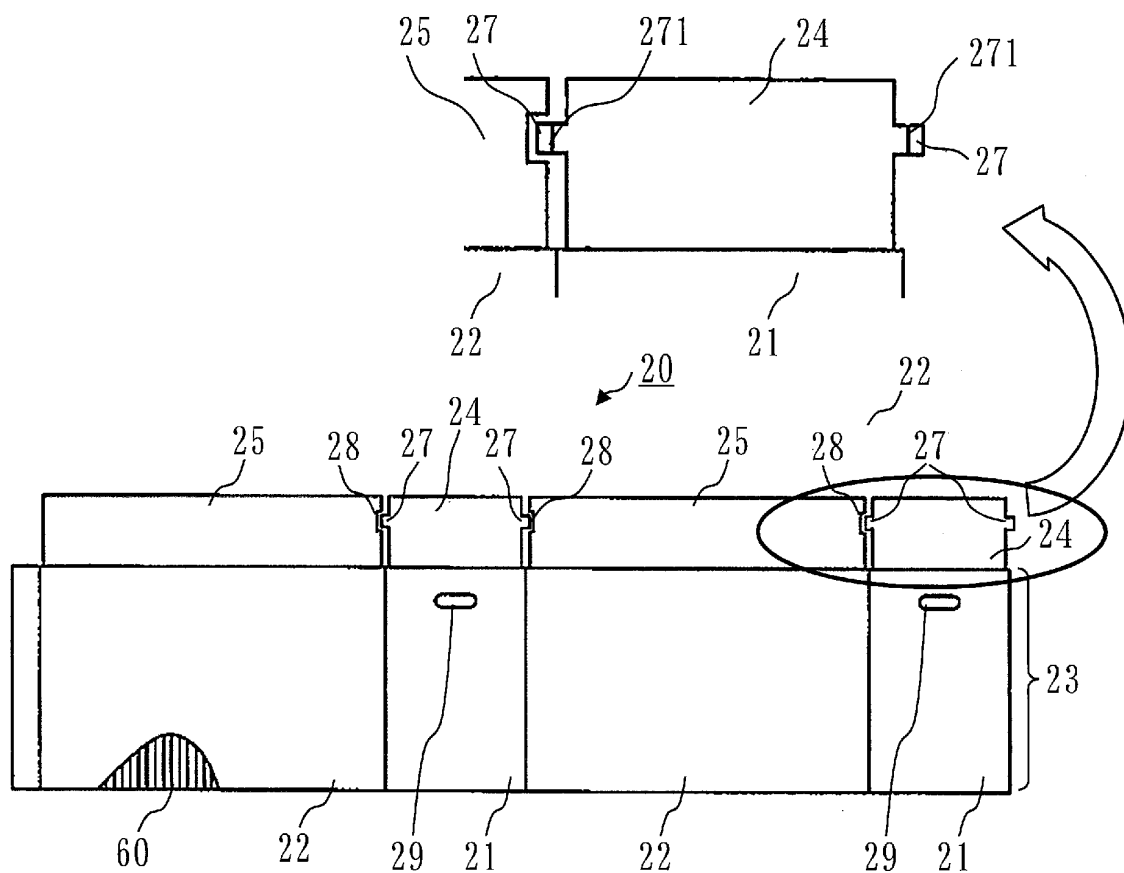


Fig. 11

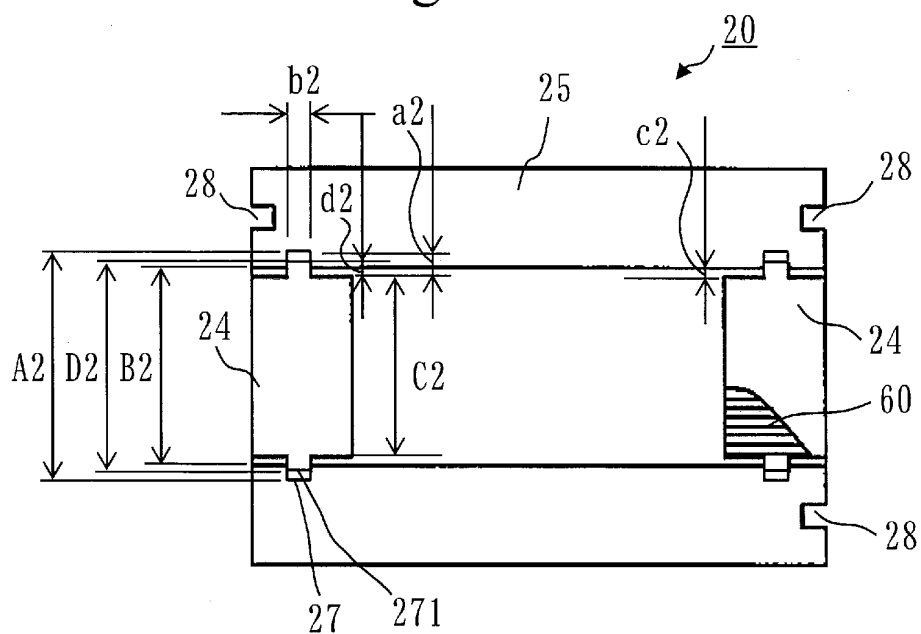


Fig. 12

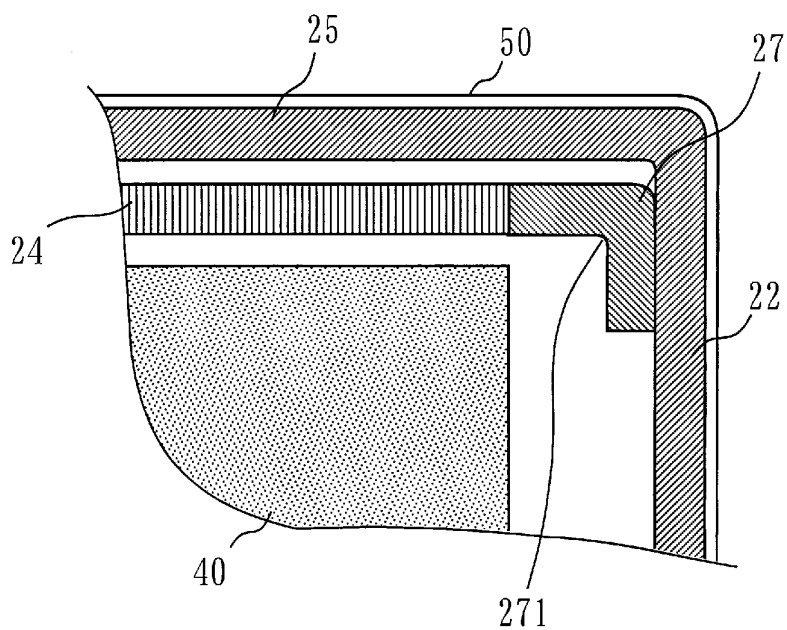


Fig. 13

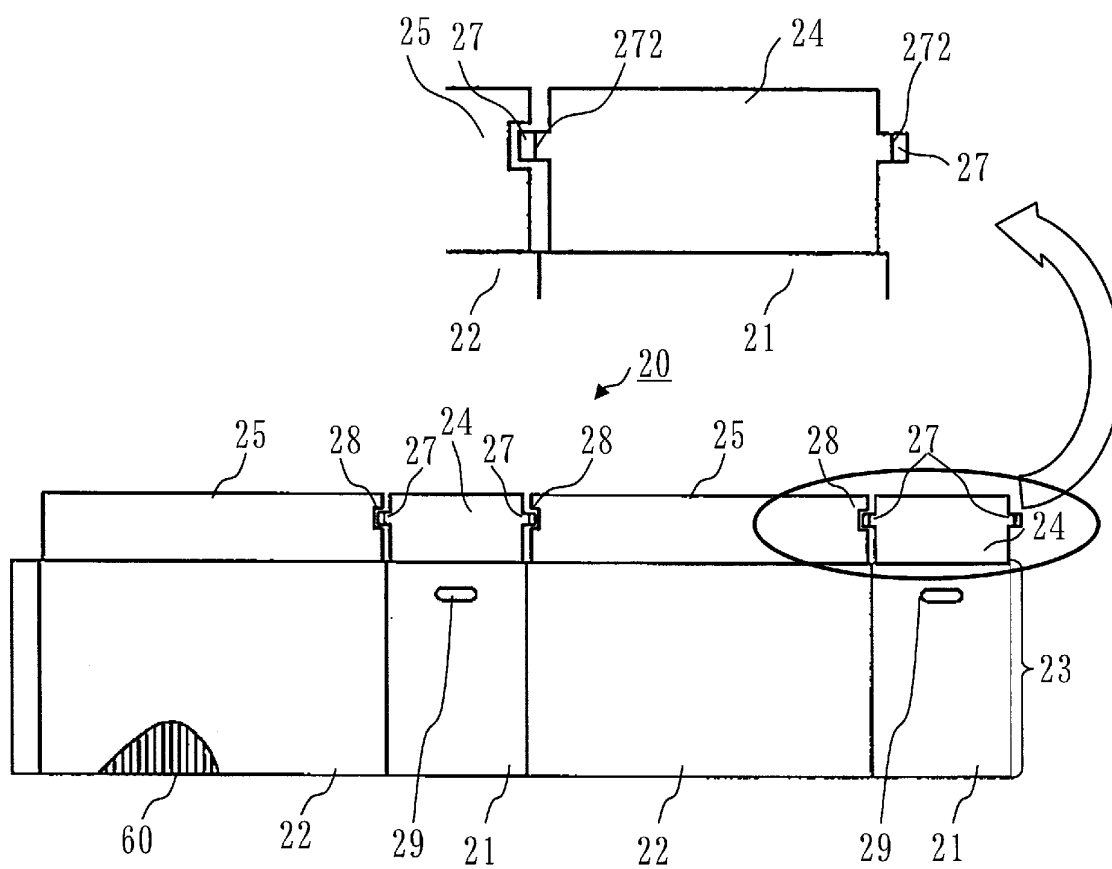


Fig. 14

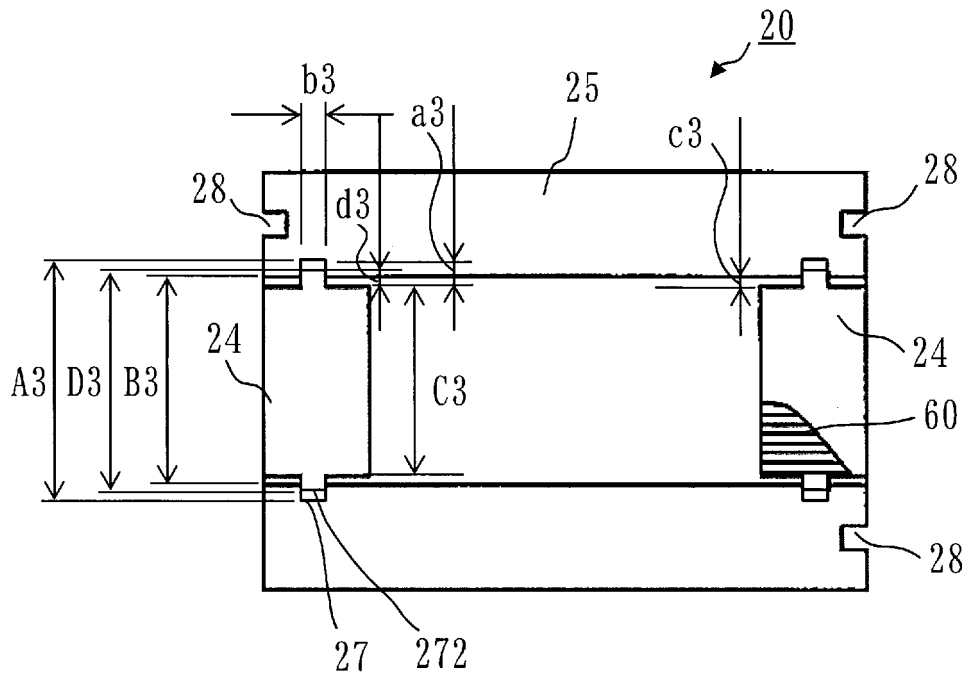
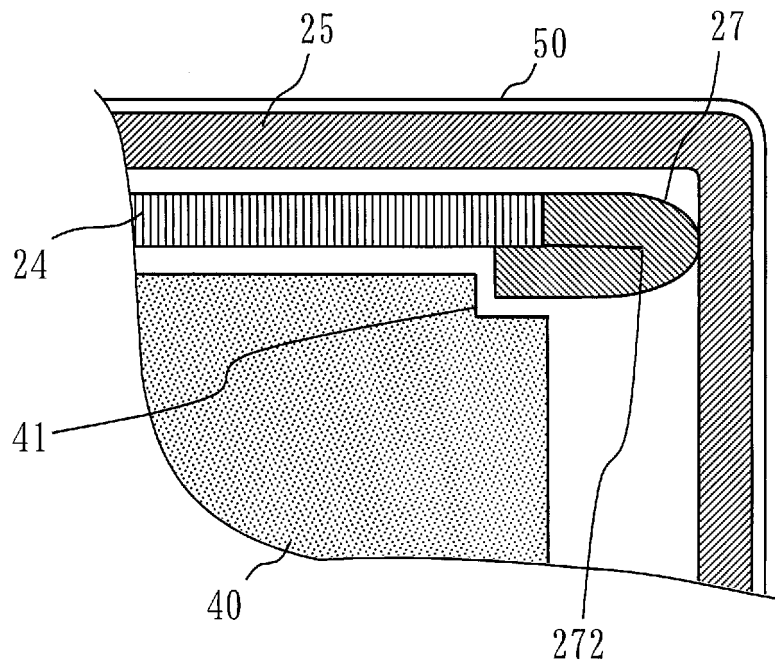


Fig. 15



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2015/063574

A. CLASSIFICATION OF SUBJECT MATTER

B65D81/02(2006.01) i, B65D5/02(2006.01) i, B65D5/44(2006.01) i, B65D85/68 (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)

B65D81/02, B65D5/02, B65D5/44, B65D85/68

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

Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2015

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 9-12161 Y1 (Koshichiro NISHIDA),	1-6
Y	11 September 1934 (11.09.1934), entire text; all drawings (Family: none)	7
Y	JP 2003-237877 A (Fujitsu General Ltd.), 27 August 2003 (27.08.2003), claims; fig. 1, 6 (Family: none)	7

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search
10 August 2015 (10.08.15)

Date of mailing of the international search report
18 August 2015 (18.08.15)

Name and mailing address of the ISA/
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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2006282258 A [0004]