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(54) Title: PACKAGING AND METHOD FOR PACKAGING ONE OR MORE SUB-PACKAGES

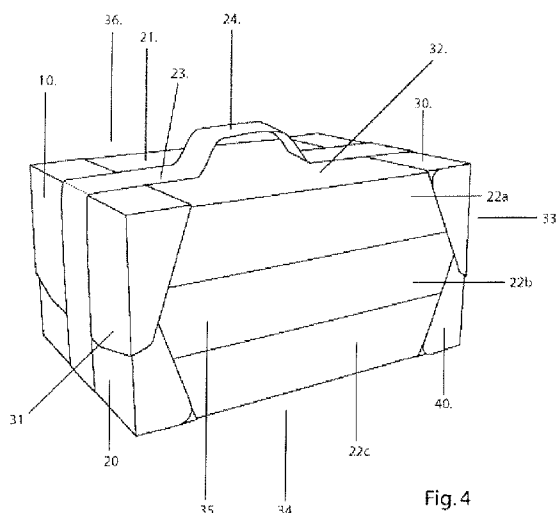


Fig. 4

(57) Abstract: The present invention relates to a packaging for collecting one or more sub-packages (22a-c) into a stack (21) having at least six side surfaces (31, 32, 33, 34, 35, 36) which packaging comprises four members (10, 20, 30, 40), wherein each member (10, 20, 30, 40) is provided with four wall portions (14, 15, 16, 17) adapted to abut four side surfaces of a stack (21), which four wall portions (14, 15, 16, 17) define a geometrical line adapted to extend along a corner edge of the stack (21). The first member (10) and the second member (20) are adapted to overlap and be movable in relation to each other along the first surface (31) of the stack (21), and wherein the third member (30) and the fourth member (40) are adapted to overlap and be movable in relation to each other along the third surface (33) of the stack (21). The present invention further relates to a method for packaging one or more sub-packages (22a-c) into a stack (21) having at least six side surfaces (31, 32, 33, 34, 35, 36).

PACKAGING AND METHOD FOR PACKAGING ONE OR MORE SUB-PACKAGES

Field of the invention

The present invention relates to a packaging for collecting one or more sub-packages into a stack having at least six side surfaces. The packaging comprises four members wherein each member is provided with four wall portions adapted to abut four side surfaces of the stack. The present invention further relates to a method for packaging one or more sub-packages into a stack.

Technical background

Sheet-like material, like office paper, is often packaged in a simple paper wrapping, enclosing a bundle of papers. In order to facilitate the handling of the paper bundles, to improve the strength of the bundles and to further protect the bundles, it is common to arrange a plurality of bundles into a packaging unit.

WO 95/00399 discloses a conventional packaging unit for packaging sheet-like material, such as paper, comprising a box with a lid, both having rectangular shape. This type of packaging allows a limited flexibility, but the packaging is only flexible in one direction. Furthermore, the consumption of materials is large for this type packaging.

EP 1 781 551 discloses a group package for sheet material, such as office paper. A protective wrap is wrapped around the office papers to be packaged, and is folded at two sides of the package. The protective wrap completely encloses the group package with no open sides. If the protective wrap is flexible, the wrap must be thin, thereby, the protection offered by the wrap is poor. On the contrary, if the protection obtained by the wrap is good, the wrap must comprise a thick layer of protective material, thereby, the wrap can not be flexible.

GB 2 122 160 discloses a solution for packaging a different type of product, namely a package for a stack of tiles, protecting the corners of the tiles. The package has two tray members which are fitted over opposed sides of the stack. Each tray member covers two corners of respective tile and abuts five side surfaces of the stack of tiles. The package is arranged to contain a fixed numbers of piles forming the stack, since the dimensions of the tray member define a maximum number of piles.

US 4,759,495 discloses a variable volume package made from two package halves having increased stack strength. The two package halves enclose the objects to be packaged and completely cover at least two side surfaces of the objects. The package is flexible in one direction and fixed in two dimensions, thus allowing the packaged objects to vary in one direction. Each package half abuts five side surfaces of the objects. This package is designed with the aim of increasing the stack strength by integral corner posts which increase the stack strength in a direction where the dimension of the package is fixed.

10 **Summary of the invention**

It is an object of the present invention to provide an improvement over the above described techniques and prior art.

A further object is to provide a packaging for collecting one or more sub-packages into a stack having at least six side surfaces which packaging is flexible, such that the number of sub-packages may be varied and such that the packaging is adapted to adjust to variances in height of the sub-packages, for instance due to the thickness or the number of sheets in a sub-package in the form of a paper ream, or the like.

These and other objects and advantages that will be apparent from the description has been achieved by a packaging for collecting one or more sub-packages into a stack having at least six side surfaces. The packaging comprises four members, wherein each member is provided with four wall portions adapted to abut four side surfaces of a stack, which four wall portions define a geometrical line adapted to extend along a corner edge of the stack, wherein a first member is adapted to define a first corner edge, a second member is adapted to define a second corner edge, a third member is adapted to define a third corner edge, and a fourth member is adapted to define a fourth corner edge. The first corner edge and the second corner edge are opposing corner edges of a first surface of the stack, wherein the first corner edge and the third corner edge are opposing corner edges of a second surface of the stack, wherein the third corner edge and the fourth corner edge are opposing corner edges of a third surface of the stack, wherein the fourth corner edge and the second corner edge are opposing corner edges of a fourth surface of the stack. The first member and the second member are adapted to overlap and be movable in relation to each other along the first surface of the stack, and wherein the third member and

the fourth member are adapted to overlap and be movable in relation to each other along the third surface of the stack.

An advantage of the inventive packaging is that the distance between all four members is variable. Therefore, the number of sub-packages
5 collected in the packaging is variable due to the telescopic function of the packaging, thus providing a flexible packaging. The packaging is suitable for sub-packages comprising sheet like material, such as office paper of standard sizes (A3, A4, etc.), or the like. The number of sheets in the sub-packages may also be varied, and the flexibility of the packaging further admits
10 adjustment to varied heights of the sub-package. The packaging is not only flexible in a non-load carrying direction but is also flexible in a load-carrying direction, due to the two members (first and second member and third and fourth member, respectively) arranged on the opposite side surfaces of the packaging which are continuously adjustable in relation to each other in the
15 load-carrying direction. During distribution, the packaging is flexible in order to adjust to variance in height of the sub-packages due to the fact that the sub-packages may collapse during distribution.

The packaging is flexible in order to adjust to different number of papers in a sub-package as well as to different number of sub-packages. In
20 most cases, the full potential of the inventive concept is deployed when used to collect a plurality of sub-packages.

A further advantage is that the package is efficient in material consumption, since the side surfaces of the stack are only partly covered by the members forming the packaging. Since the sub-packages usually are
25 protected by a protective wrapping, there is no need to completely cover the sub-packages. Instead, the packaging is required in order to improve the load carrying capability and provide additional protection at some especially exposed parts of the stack. Due to the saving of material, the packaging is cost effective.

30 A further advantage is that the overlapping portions of the members provide support for the sub-packages and improve the stability of the packaging, simultaneously as the telescopic function is maintained. Additionally, the overlapping portions reduce torsional movements of the packaging and, thereby, deformation of the content of the packaging.

35 The inventive concept can be used in two ways. In the first way, the packaging is movable during distribution. In the second way, the inventive concept is used during mounting of the packaging. In the second way, the

packaging is flexible and the members are movable in relation to each other during mounting. The members are then adhered to each other. In this way, the inventive concept is thus used during mounting, even though not used during distribution.

5 The first member and the third member may be arranged at a distance from each other along the second surface of the stack, and wherein the second member and the fourth member may be arranged at a distance from each other along the fourth surface of the stack. The packaging is therefore continuously adjustable to different dimensions of the sub-packages in a
10 horizontal direction.

 The first member and the second member may be adapted to overlap and be movable in relation to each other along a fifth surface and along a sixth surface of the stack, and the third member and the fourth member may be adapted to overlap and be movable in relation to each other along the fifth
15 surface and along the sixth surface of the stack. The overlapping portions of the members along the fifth and sixth surfaces additionally increases the stability of packaging and the ability to withstand torsional movements.

 Each member may be adhered to the stack, still allowing relative movability between the first and second members along the first side surface, and between the third and fourth members along the third side surface,
20 respectively. The adherence of the members to the stack firmly attaches the members to the stack in order to improve the stability of the packaging. Alternatively, or as a complement, the members may also be adhered to each other.

25 A strip may be adapted to be wrapped around the four members and the stack along the first, second, third and fourth surface of the stack. The strip holds the members even more firmly to the sub-packages and increases the stability of the packaging.

 The strip may comprises a handle. The handle facilitates the handling
30 of the packaging.

 Each member may be formed of a blank having at least six portions forming two blank panels and four blank flaps, which portions are folded relative each other about fold lines, and wherein the blank flaps are adhered to each other two and two, such that the two blank panels form two wall
35 portions and the four blank flaps form two wall portions. Forming the members from blanks is a simple and cost effective method for manufacturing the packaging.

According to another aspect of the invention, a method for packaging one or more sub-packages into a stack is provided. The method for packaging one or more sub-packages into a stack having at least six side surfaces, with a packaging comprising four members, wherein each member

5 is provided with four wall portions abutting four side surfaces of the stack, which four wall portions define a geometrical line adapted to extend along a corner edge of the stack, the method comprises arranging a first member along a first corner edge of the stack, arranging a second member along a second corner edge of the stack, opposing the first member on a first surface

10 of the stack, arranging a third member along a third corner edge of the stack, opposing the second member on a second surface of the stack, arranging a fourth member along a fourth corner edge of the stack, opposing the third member on a third surface of the stack, wherein the first and second members are arranged to be overlapping and be movable in relation to each

15 other along the first surface of the stack, and the third and fourth member are arranged to be overlapping and be movable in relation to each other along the third surface of the stack.

The method may comprise wrapping a strip around the four members and the stack along the first, second, third and fourth surface of the stack.

20 The method incorporates all the advantages of the packaging, which previously have been discussed. Whereby, the previous discussion is applicable also for the inventive method.

Brief description of the drawings

The invention will by way of example be described in more detail with

25 reference to the appended schematic drawings, which show a presently preferred embodiment of the invention.

Fig. 1 shows a perspective view of a member forming a part of the packaging.

Fig. 2A shows a schematic view of a blank.

30 Fig. 2B shows a schematic view of a blank according to another embodiment .

Fig. 3 shows a side view of two members slidably assembled.

Fig. 4 shows a perspective view of the packaging collecting a plurality of sub-packages, the packaging comprising four members and a wrapping.

Detailed description of preferred embodiments

With reference to fig. 1, a member 10 forming a part of the packaging will be described. The member 10 is formed from a blank 100 as shown in fig. 2A. With reference to fig. 1 and 2, the blank 100 comprises six portions
5 divided by creased fold lines 7, 8, 9, 10, 11. The creased fold line 7 forms a division of the blank 100 into a first blank panel 1 and a second blank panel 2. On opposite sides of the first blank panel 1, the creased fold line 8 and the creased fold line 9 form a division of the first blank panel 1 into a first blank flap 3 and a second blank flap 4. On opposite sides of the second blank panel
10 2, the creased fold line 10 and the creased fold line 11 form a division of the second blank panel 2 into a third blank flap 5 and a fourth blank flap 6. The blank 100 is punched from large sheets or webs of packaging material. The packaging material may be paper, paper board or any other fibre based material or polymer based material or a laminate thereof.

15 The first blank panel 1 and the second blank panel 2 are folded about the fold line 7. The first blank flap 3 is folded about the fold line 8 from the first blank panel 1. The second blank flap 4 is folded about the fold line 9 from the first blank panel 1. The third blank flap 5 is folded about the fold line 10 from the second blank panel 2. The fourth blank flap 6 is folded about the fold line
20 11 from the second blank panel 2. The first blank flap 3 and the third blank flap 5 are adhered, for instance glued, to each other, the third blank flap 5 being attached to the inside of the first blank flap 3. The second blank flap 4 and the fourth blank flap 6 are adhered to each other similarly. Other methods for attaching the blank flaps to each other may be used, such as stapling,
25 taping, or inter-locking.

A free edge 12 of the first blank panel 1 has a shape as a truncated triangle. This shape is preferable since it reduces the bulge of the edges 12. Thereby, the edges 12 do not hook into the edges of an adjacent packaging as easily when the packaging is being stacked during distribution.

30 The blank 101 in fig. 2 B corresponds to the blank 100 in fig 2 A and is formed in the same way as the blank 100, with the only difference that the free edge 13 of the first blank panel 1 is formed as a straight line, parallel with the creased fold line 7.

Preferably, the panels 3 and 4 have shapes as triangles. In this way,
35 the bulge of the wall portions 16 and 17 of the members is reduced whereby the hooking into wall portions of adjacent packaging is prevented.

Now referring to fig. 1, the member 10 has four wall portions 14, 15, 16, 17 adapted to abut four side surfaces of sub-packages which the packaging collects. A first wall portion 14 is formed by the first blank panel 1 and extends in a vertical direction.

5 A second wall portion 15 is formed by the second blank panel 2 and extends in a horizontal direction.

A third wall portion 16 is formed by the first blank flap 3 and the third blank flap 5, which are attached to each other. An outer surface of the third wall portion 16 is essentially formed of the first blank flap 3, since the third
10 blank flap 5 is attached to the inside of the first blank flap 3, together forming an inside surface of the third wall portion 16.

A fourth wall portion 17 is formed by the second blank flap 4 and the fourth blank flap 6, which are attached to each other. An outer surface of the fourth wall portion 17 is essentially formed of the second blank flap 4, since
15 the fourth blank flap 6 is attached to the inside of the second blank flap 4, together forming an inside surface of the fourth wall portion 17.

The first wall portion 14, the second wall portion 15 and the third wall portion 16 are orthogonal. The third wall portion 16 and the fourth wall portion 17 are arranged on opposite sides of the first and second wall portions 14, 15.
20 Further, the first wall portion 14, the second wall portion 15 and fourth wall portion 17 are orthogonal. The third wall portion 16 is connected to the first and second wall portions 14, 15, and the fourth wall portion 17 is also connected to the first and second wall portions 14, 15.

In figure 3, two members 10, 20 are slidably inserted into each other
25 for forming a first side portion of the packaging. A second member 20 is slidably inserted into a first member 10 on the inside of the first member 10. The distance between the second wall portion 15 of the first member 10 and the second wall portion 19 of the second member 20 is continuously adjustable by moving the first and second members 10, 20 in relation to each
30 other in a vertical direction. The first wall portion 14 of the first member 10 and the first wall portion 18 of the second member 20 are overlapping, forming a support surface for the sub-packages and a load carrying structure. The second member 20, slidably inserted into the first member 10, is formed from the blank 101, and the first member 10 is formed from the blank 100.
35 The truncated triangle of the first member 10 increases the area where the first and second members 10, 20 are overlapping.

In fig. 4, four members 10, 20, 30, 40 forming a packaging are shown. All four members 10, 20, 30, 40 are made from the blank 100 or 101. Preferably, the first member 10 and a third member 30 are formed from the blanks 100 and the second member 20 and a fourth member 40 are formed from the blanks 101. A number of sub-packages 22a-c are arranged to form a stack 21. The second member 20 is slidably inserted into the first member 10, forming the first side portion as shown in fig. 3, and the fourth member 40 is slidably inserted into the third member 30, forming a second side portion in the same way. The thus formed side portions are opposing each other. The distance between the first and second members 10, 20, and the distance between the third and the fourth members 30, 40, respectively, is continuously adjustable in a vertical direction. The first wall portions of the members, extending in a vertical direction, are overlapping each other, forming a first and second support surface for the sub-packages forming the stack 21, respectively. The distance between the first and third members 10, 30, and the distance between the second and fourth members 20, 40, respectively, is also continuously adjustable in a horizontal direction, but the members are not overlapping each other in this direction.

Referring to fig. 3 and fig. 4, the first wall portions 14, 18 of the first and second members 10, 20 are abutting a first surface 31 of the stack 21. The first wall portions of the third and fourth members 30, 40 are abutting a third surface 33 of the stack 21 similarly. The second wall portions 15 of the first and third members 10, 30 are abutting a second surface 32 of the stack 21. The second wall portions 19 of the second and fourth members 20, 40 are abutting a fourth surface 34 of the stack 21. The third and the fourth wall portions 16, 17 of each member are abutting a fifth and sixth surface 35, 36 of the stack 21, respectively.

Since the distance between the members are continuously adjustable, the number of sub-packages may be varied, as well as the number of sheets of each sub-package, by moving the members forming the side portions in relation to each other in a vertical dimension. The dimension of the sub-packages may also be varied in a horizontal direction and the packaging can be adjusted by moving the members in a horizontal direction. When a plurality of packaging is stacked during transport, the ability to adjust in a vertical direction facilitates the load distribution over the packaging.

A strip 23 is wrapped around the packaging for facilitating the handling of the packaging and for assembling the sub-packages with the members and

holding them firmly together. The strip 23 is provided with a handle 24, either as an integrated part of the strip 23 or as a separate part attached to the strip 23.

5 It is contemplated that there are numerous modifications of the embodiments described herein, which are still within the scope of the invention as defined by the appended claims.

10 It is contemplated that the sub-packages may be stacked in a different direction, or that the sub-packages may be stacked in two directions. Further, it is contemplated that the members may be arranged on any sides of the stack. Other shapes of the stack than a parallel epipedic are contemplated. In such an instance, the wall portions may be arranged at angles other than orthogonal to each other.

15 It is contemplated that all four members of the packaging may be formed from blanks all having the same shape and dimensions, not distinguishing between the two different types of blanks as in the above described embodiment. Alternatively, the shape of the members may vary to a higher extent, for instance for increasing the overlapping portion.

20 It is also contemplated that the truncated triangular shape of the free edge is replaced by other shapes, such as rectangular, arc shaped etc. One or more of the members may be provided with one or more perforations facilitating the opening of the packaging and facilitating the dismounting for ultimate disposal or recycling of the packaging.

CLAIMS

1. Packaging for collecting one or more sub-packages (22a-c) into a stack (21) having at least six side surfaces (31, 32, 33, 34, 35, 36) which
5 packaging comprises four members (10, 20, 30, 40),
wherein each member (10, 20, 30, 40) is provided with four wall portions (14, 15, 16, 17) adapted to abut four side surfaces of a stack (21), which four wall portions (14, 15, 16, 17) define a geometrical line adapted to extend along a corner edge of the stack (21),
10 wherein a first member (10) is adapted to define a first corner edge, a second member (20) is adapted to define a second corner edge, a third member (30) is adapted to define a third corner edge, and a fourth member (40) is adapted to define a fourth corner edge,
wherein the first corner edge and the second corner edge are
15 opposing corner edges of a first surface (31) of the stack (21),
wherein the first corner edge and the third corner edge are opposing corner edges of a second surface (32) of the stack (21),
wherein the third corner edge and the fourth corner edge are opposing corner edges of a third surface (33) of the stack (21),
20 wherein the fourth corner edge and the second corner edge are opposing corner edges of a fourth surface (34) of the stack (21),
wherein the first member (10) and the second member (20) are adapted to overlap and be movable in relation to each other along the first surface (31) of the stack (21), and
25 wherein the third member (30) and the fourth member (40) are adapted to overlap and be movable in relation to each other along the third surface (33) of the stack (21).
2. Packaging according to claim 1, wherein the first member (10) and
30 the third member (30) are arranged at a distance from each other along the second surface (32) of the stack (21), and wherein the second member (20) and the fourth member (40) are arranged at a distance from each other along the fourth surface (34) of the stack (21).
3. Packaging according to any one of claims 1-2, wherein the first
35 member (10) and the second member (20) are adapted to overlap and be

movable in relation to each other along a fifth surface (35) and along a sixth surface (36) of the stack (21), and the third member (30) and the fourth member (40) are adapted to overlap and be movable in relation to each other along the fifth surface (35) and along the sixth surface (36) of the stack (21).

5

4. Packaging according to any one of claims 1-3, wherein each member (10, 20, 30, 40) is adhered to the stack (21), still allowing relative movability between the first and second members (10, 20) along the first side surface (31), and between the third and fourth members (30, 40) along the third side surface (33), respectively.

10

5. Packaging according to any one of claims 1-4, wherein a strip (23) is adapted to be wrapped around the four members (10, 20, 30, 40) and the stack (21) along the first, second, third and fourth surface (31, 32, 33, 34) of the stack (21).

15

6. Packaging according to claim 5, wherein the strip (23) comprises a handle (24).

20

7. Packaging according to any one of claims 1-6, wherein each member (10, 20, 30, 40) is formed of a blank (100; 101) having at least six portions forming two blank panels (1, 2) and four blank flaps (3, 4, 5, 6), which portions are folded relative each other about fold lines (7, 8, 9, 10, 11), and wherein the blank flaps (3, 4, 5, 6) are adhered to each other two and two, such that the two blank panels (1, 2) form two wall portions (14, 15) and the four blank flaps (3, 4, 5, 6) form two wall portions (16, 17).

25

8. Method for packaging one or more sub-packages (22a-c) into a stack (21) having at least six side surfaces (31, 32, 33, 34, 35, 36), with a packaging comprising four members (10, 20, 30, 40), wherein each member (10, 20, 30, 40) is provided with four wall portions (14, 15, 16, 17) abutting four side surfaces of the stack (21), which four wall portions (14, 15, 16, 17) define a geometrical line adapted to extend along a corner edge of the stack (21), the method comprises

35

arranging a first member (10) along a first corner edge of the stack (21),

arranging a second member (20) along a second corner edge of the

stack (21), opposing the first member (10) on a first surface of the stack (21),
arranging a third member (30) along a third corner edge of the stack
(21), opposing the second member (20) on a second surface of the stack
(21),

5 arranging a fourth member (40) along a fourth corner edge of the
stack (21), opposing the third member (30) on a third surface of the stack
(21),

 wherein the first and second members (10, 20) are arranged to be
overlapping and be movable in relation to each other along the first surface
10 (31) of the stack (21), and the third and fourth member (30, 40) are arranged
to be overlapping and be movable in relation to each other along the third
surface (33) of the stack (21).

9. Method according to claim 8, comprising wrapping a strip (23)
15 around the four members (10, 20, 30, 40) and the stack (21) along the first,
second, third and fourth surface (31, 32, 33, 34) of the stack (21).

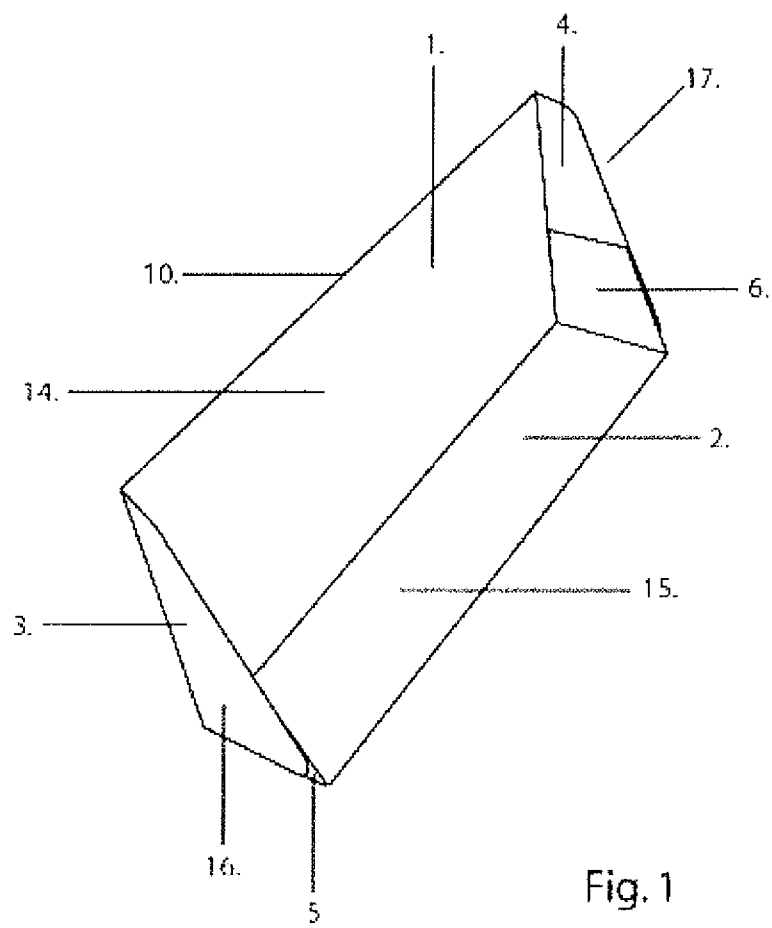


Fig. 1

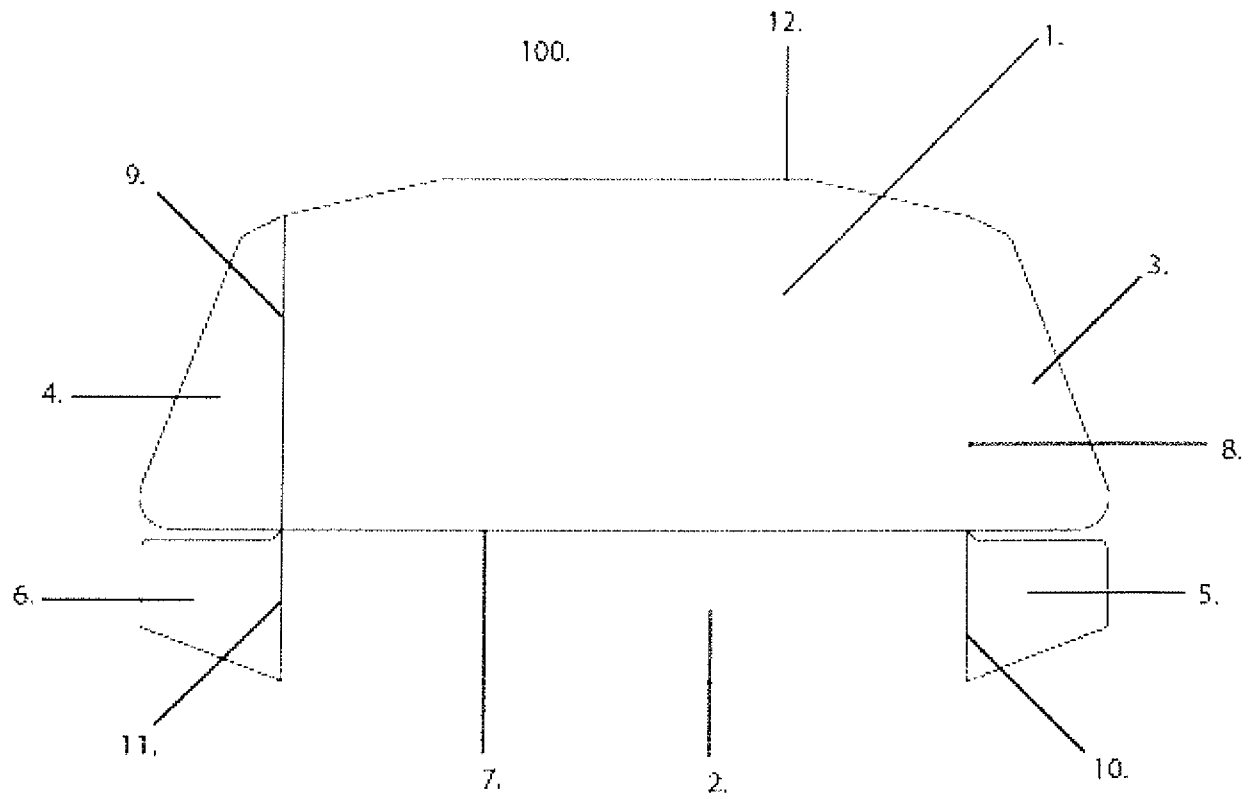


Fig. 2A

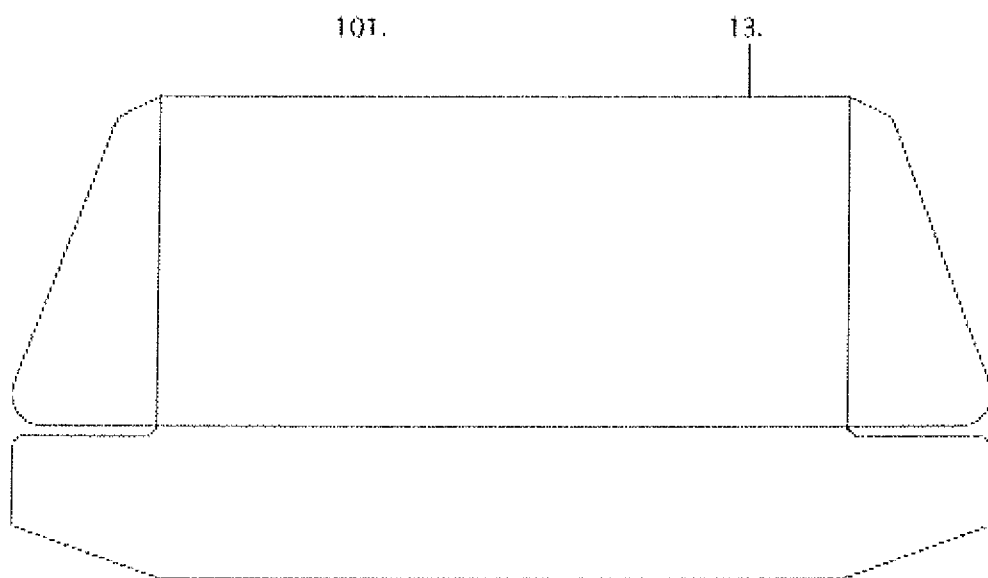


Fig 2B

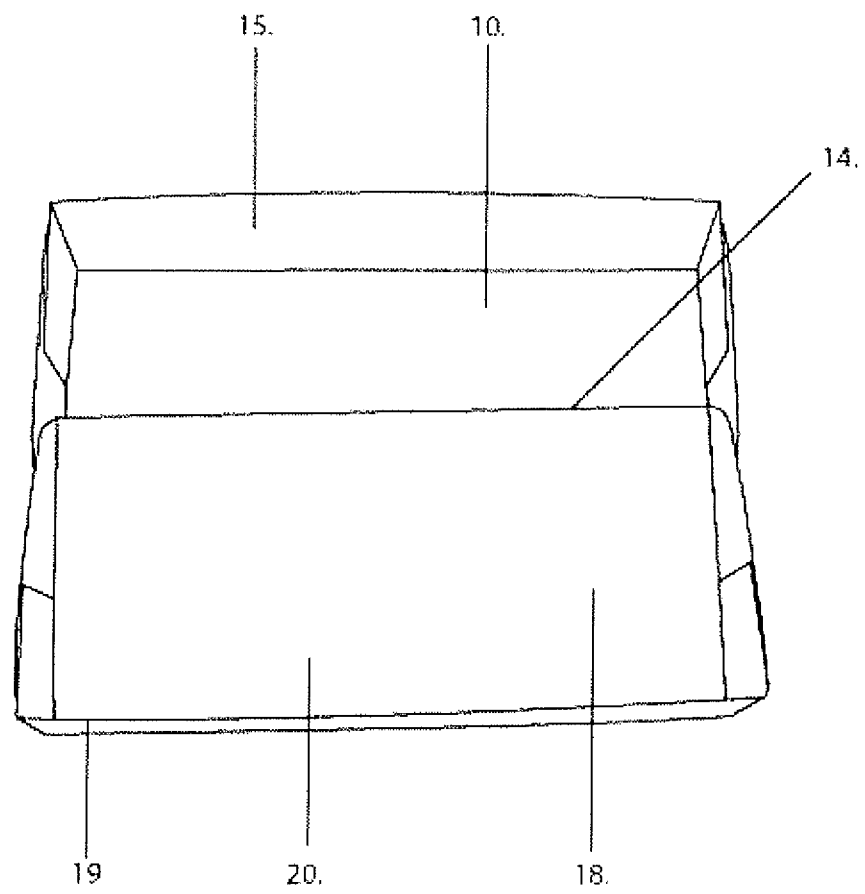


Fig. 3

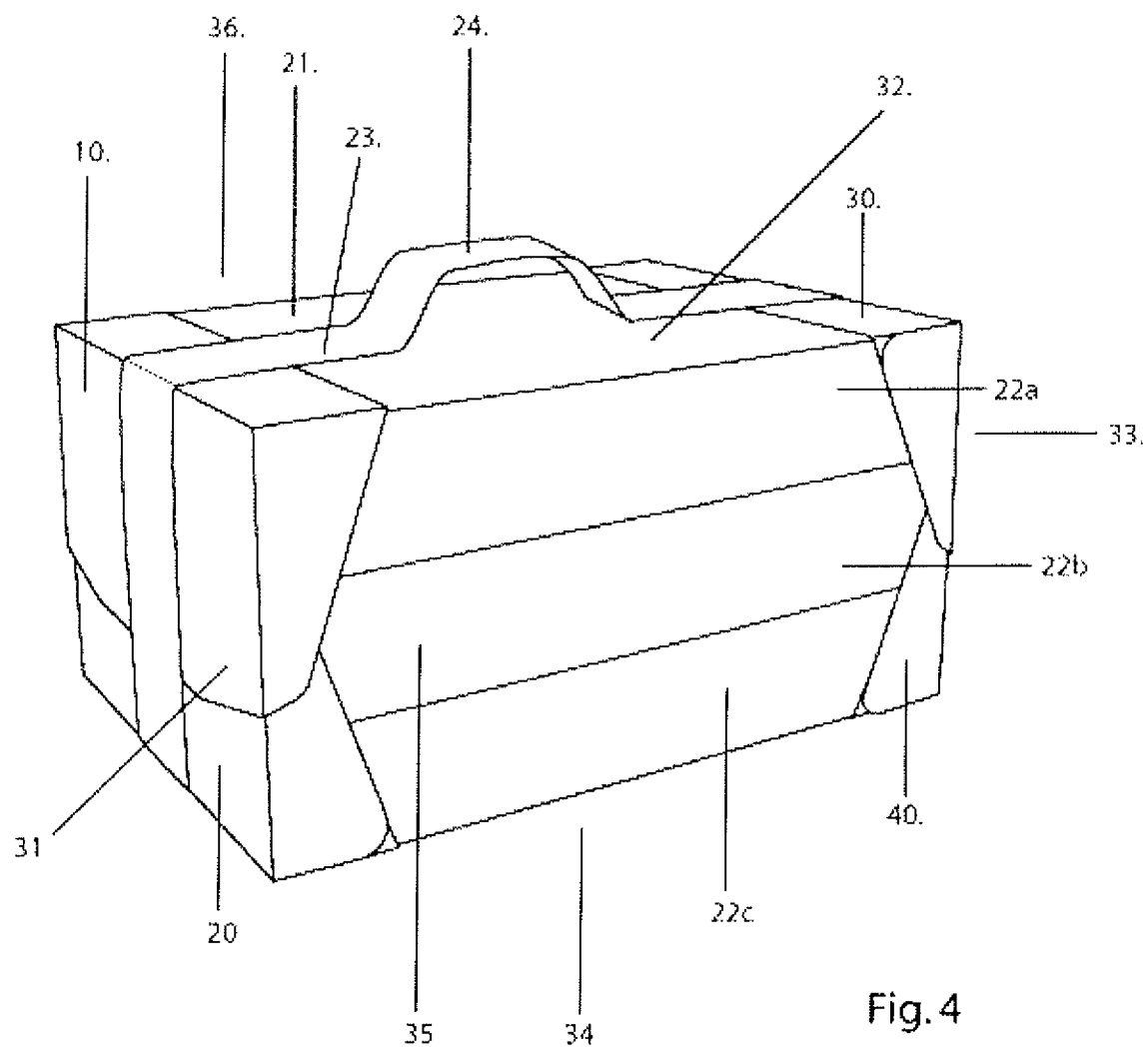


Fig. 4

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE2008/050643

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet

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)

IPC: B65D

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

SE,DK,FI,NO classes as above

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

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4201138 A (C.E. COX), 6 May 1980 (06.05.1980) --	1-9
A	FR 2691435 A1 (GENDRE, J.-R.), 26 November 1993 (26.11.1993) --	1-9
A	US 20040144685 A1 (C. STAPLETON), 29 July 2004 (29.07.2004) --	1-9
A	DE 202006008467 U1 (BRAKEMANN VERPACKUNGEN GMBH & CO. KG), 24 August 2006 (24.08.2006) --	1-9

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

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE2008/050643

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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International patent classification (IPC)**B65D 71/40** (2006.01)**B65D 85/62** (2006.01)**Download your patent documents at www.prv.se**

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Information on patent family members

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