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(72) Inventors:  
• **PONTI, Giuseppe**  
**06011 Cerbara - Citta' Di Castello (Perugia) (IT)**  
• **PONTI, Francesco**  
**06011 Cerbara - Citta' Di Castello (Perugia) (IT)**

(74) Representative: **Dall'Olio, Christian et al**  
**INVENTION S.r.l.**  
**Via delle Armi, 1**  
**40137 Bologna (IT)**

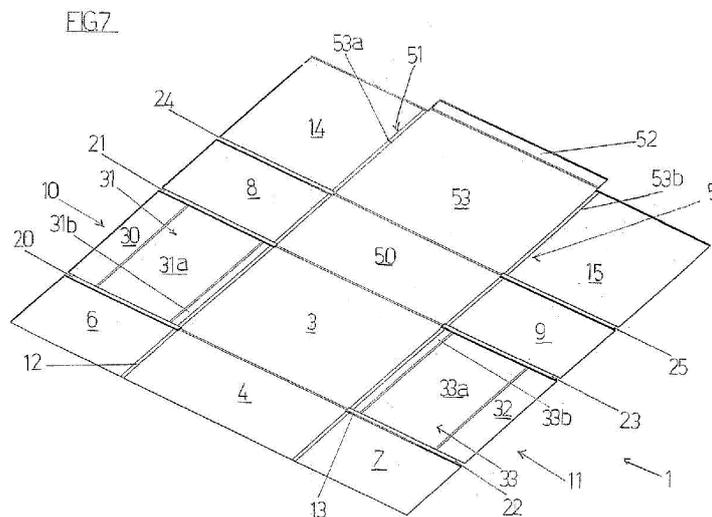
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(71) Applicant: **F.L. Auto S.r.l.**  
**00187 Roma (RM) (IT)**

**(54) A CARDBOARD SHEET FOR PACKING AN ARTICLE AND A METHOD FOR PACKING AN ARTICLE USING SAID CARDBOARD SHEET**

(57) A cardboard sheet for packing an article, and a relative method. The cardboard sheet comprises: a central portion comprising in turn a first portion (3), a second portion (4) and a third portion (5); the first portion (3) being interposed between the second portion (4) and the third portion (5) and being dimensioned such as to restingly receive an article to be packed; a first reinforcing flap (6) and a second reinforcing flap (7) hinged to the second portion (4); a third reinforcing flap (8) and a fourth reinforcing flap (9) hinged to the third portion (5); a first closing flap (10) hinged to the first portion (3) and dimensioned and foldable for covering the third flank of the article; a

second closing flap (11) hinged to the first portion (3) and dimensioned and foldable for covering the fourth flank of the article. The second portion (4) is dimensioned and foldable so as to cover at most entirely the first flank of the article. The third portion (5) is dimensioned and foldable so as to cover the second flank of the article, the upper face of the article and at least partially or at most entirely the first flank of the article. The second portion (4) and the third portion (5) are reciprocally dimensioned so that when they are folded they superpose on one another at the first flank of the article.



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**Description**FIELD OF THE INVENTION

**[0001]** The present invention relates to the technical sector relating to packing articles, such as for example books, DVDs and reams of paper.

**[0002]** In particular, the invention relates to a cardboard sheet for packing an article, and a method for packing an article using the cardboard sheet.

DESCRIPTION OF THE PRIOR ART

**[0003]** An article to be packed generally has a first flank, a second flank opposite the first flank, a third flank comprised between the first flank and the second flank, a fourth flank comprised between the first flank and the second flank and opposite the third flank, a bottom and an upper face opposite the bottom.

**[0004]** Document WO2014/033624 discloses a cardboard sheet for packing (see figures 1 and 2). The cardboard sheet (100) of known type comprises a central portion (2) comprising in turn a first portion (3), a second portion (4) and a third portion (5).

**[0005]** The first portion (3) is interposed between the second portion (4) and the third portion (5) and is dimensioned so as to restingly receive an article to be packed at the position of the bottom of the article.

**[0006]** The second portion (4) is dimensioned and foldable so as to cover the first flank and partially the upper face of the article, when the article is resting on the first portion (3). The cardboard sheet (100) further comprises a first reinforcing flap (6) hinged to a first end (4a) of the second portion (4) and foldable against the second portion (4) and a second reinforcing flap (7) hinged to a second end (4b) of the second portion (4), opposite the first end (4a) of the second portion (4), and foldable against the second portion (4).

**[0007]** The third portion (5) is dimensioned and foldable so as to cover the second flank of the article and at least partially the upper face of the article, when the article is resting on the first portion (3). The cardboard sheet (100) further comprises a third reinforcing flap (8) hinged to a first end (5a) of the third portion (5) and foldable against the third portion (5) and a fourth reinforcing flap (9) hinged to a second end (5b) of the third portion (5), opposite the first end (5a) of the third portion (5), and foldable against the third portion (5).

**[0008]** The second portion (5) and the third portion (4) are reciprocally dimensioned so that when they are folded the third portion (5) superposes on the second portion (4) at the position of the upper face of the article (figure 2).

**[0009]** Further, the cardboard sheet (100) comprises a first closing flap (10) and a second closing flap (11) which are respectively hinged to a first end (3a) of the first portion (3) and a second end (3b) of the first portion (3) opposite the first end (3a) of the first portion (3). The first closing flap (10) and the second closing flap (11) are

dimensioned and foldable so as respectively to cover at least the third flank of the article and the fourth flank of the article, when the article is resting on the first portion (3).

**[0010]** Therefore, with reference to figures 1 and 2, once the article has been packed a superposing is included between the third portion (5) and the second portion (4) at the upper face of the article.

**[0011]** The superposing necessarily determines, in the pack a creating of a slot between the third portion (5) and the first closing flap (10) and a slot between the third portion (5) and the second closing flap (11). The dimensions of the slots depend on the thickness of the cardboard sheet: in particular, the thickness of the slots tends to increase with the increase of the thickness of the cardboard sheet.

**[0012]** The presence of the slots does not enable guaranteeing with certainty the integrity of the packed article since it might be visible or reachable from the outside, without opening the packing.

**[0013]** Further, the superposing between the third portion (5) and the second portion (4) at the upper face of the article does not enable stable stacking of a plurality of packs. For example, this prevents optimisation of space during transport of a plurality of packs.

SUMMARY OF THE INVENTION

**[0014]** The aim of the present invention consists in obviating the above-mentioned drawbacks.

**[0015]** The above aim has been obtained by means of a cardboard sheet for packing an article according to claim 1 and a method for packing an article according to claim 12.

**[0016]** The cardboard sheet for packing an article and the relative method according to the invention advantageously enable obtaining an optimal pack from the point of view of the integrity of the packed articles.

**[0017]** The cardboard sheet of the invention in fact includes a dimensioning of the second portion and the third portion such as to enable the superposing thereof at a first flank of the article. This superposing therefore does not determine a creation of any slot in the pack, independently of the thickness of the cardboard sheet. This guarantees the integrity of the packed article as it is neither visible nor reachable without opening the pack.

**[0018]** Further, the superposing between the third portion and the second portion at the first flank of the article enables obtaining a pack a bottom and an upper face of which are perfectly flat. This guarantees the possibility of stably stacking a plurality of packs. Consequently, for example with reference to transport of a plurality of packs, it will be possible to optimise the space occupied thereby.

BRIEF DESCRIPTION OF THE DRAWINGS

**[0019]** Specific embodiments of the invention will be described in the following part of the present description,

according to what is set down in the claims and with the aid of the appended tables of drawings, in which:

- figures 1 and 2 each illustrate a perspective view of a cardboard sheet for packing according to the prior art respectively in a flat configuration and in a folded configuration;
- figures 3-7 each illustrate a perspective view of a different embodiment of a cardboard sheet for packing an article, in a flat configuration according to the present invention;
- figure 8 illustrates a perspective view of a cardboard sheet, in a flat configuration according to the present invention;
- figures 9A-9F each illustrate a perspective view of different steps of closure of the cardboard sheet of figure 7.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

**[0020]** With reference to figures 3-9F reference numeral (1) denotes in its entirety a cardboard sheet for packing an article according to the present invention.

**[0021]** The article (not illustrated) has a first flank, a second flank opposite the first flank, a third flank comprised between the first flank and the second flank, a fourth flank comprised between the first flank and the second flank and opposite the third flank, a bottom and an upper face opposite the bottom, the cardboard sheet.

**[0022]** The cardboard sheet (1) (see figure 3) comprises: a central portion (2) comprising in turn a first portion (3), a second portion (4) and a third portion (5); the first portion (3) being interposed between the second portion (4) and the third portion (5) and being dimensioned so as to restingly receive an article to be packed at the bottom of the article; a first reinforcing flap (6) hinged to a first end (4a) of the second portion (4) and foldable against the second portion (4); a second reinforcing flap (7) hinged to a second end (4b) of the second portion (4), opposite the first end (4a) of the second portion (4), and foldable against the second portion (4); a third reinforcing flap (8) hinged to a first end (5a) of the third portion (5) and foldable against the third portion (5); a fourth reinforcing flap (9) hinged to a second end (5b) of the third portion (5), opposite the first end (5a) of the third portion (5), and foldable against the third portion (5); a first closing flap (10) hinged to a first end (3a) of the first portion (3), which first closing flap (10) is dimensioned and foldable so as to cover at least the third flank of the article, when the article is resting on the first portion (3); a second closing flap (11) hinged to a second end (3b) of the first portion (3), opposite the first end (3a) of the first portion (3), which second closing flap (11) is dimensioned and foldable so as to cover at least the fourth flank of the article, when the article is resting on the first portion (3).

**[0023]** The second portion (4) is dimensioned and foldable so as to cover at most entirely the first flank of the article, when the article is resting on the first portion (3), and the third portion (5) is dimensioned and foldable so as to cover the second flank of the article, the upper face of the article and at least partially or at most entirely the first flank of the article, when the article is resting on the first portion (3). The second portion (4) and the third portion (5) are reciprocally dimensioned so that when they are folded they superpose on one another at the first flank of the article.

**[0024]** Further, the cardboard sheet (1) is such that: the first reinforcing flap (6) and the first closing flap (10) are separated by a first window (20); the first closing flap (10) and the third reinforcing flap (8) are separated by a second window (21); the second reinforcing flap (7) and the second closing flap (11) are separated by a third window (22); the second closing flap (11) and the fourth reinforcing flap (9) are separated by a fourth window (23).

**[0025]** This conformation of the cardboard sheet (1) advantageously enables folding the first reinforcing flap (6) and the second reinforcing flap (7) against the second portion (4) in a simple and easy way. Likewise, this conformation of the cardboard sheet (1) advantageously enables folding the third reinforcing flap (8) and the fourth reinforcing flap (9) against the third portion (5) in a simple and easy way.

**[0026]** Consequently also the first closing flap (10) and the second closing flap (11) can be folded against the third flank of the article and the fourth flank of the article, in a simple and easy way.

**[0027]** The above-described cardboard sheet (1) is in a flat configuration and is foldable for packing the article.

**[0028]** The second portion (4) is dimensioned for covering at most entirely the first flank of the article, i.e. the second portion (4) can either partially cover the first flank of the article or entirely cover the first flank of the article. In any case, the second portion (4) can cover nothing beyond the first flank of the article.

**[0029]** The cardboard sheet (1) is preferably a single body.

**[0030]** The cardboard sheet (1) can have a first fold line (12) and a second fold line (13). The first fold line (12) can be at the first end (3a) of the first portion (3), at the first end (4a) of the second portion (4) and at the first end (5a) of the third portion (5). The second fold line (13) can be at the second end (3b) of the first portion (3), at the second end (4b) of the second portion (4) and at the second end (5b) of the third portion (5).

**[0031]** The first reinforcing flap (6) and the second reinforcing flap (7) can be hinged to the second portion (4) respectively by means of the first fold line (12) and the second fold line (13). It is advantageously easier to fold the first reinforcing flap (6) and the second reinforcing flap (7) against the second portion (4).

**[0032]** The third reinforcing flap (8) and the fourth reinforcing flap (9) can be hinged to the third portion (5) respectively by means of the first fold line (12) and the

second fold line (13). It is advantageously easier to fold the third reinforcing flap (8) and the fourth reinforcing flap (9) against the third portion (5).

**[0033]** The first closing flap (10) and the second closing flap (11) can be hinged to the first portion (3) respectively by means of the first fold line (12) and the second fold line (13). It is advantageously easier to fold the first closing flap (10) and the second closing flap (11).

**[0034]** The first fold line (12) and the second fold line (13) can be parallel to one another. This simplifies realisation thereof.

**[0035]** The central portion (2) of the cardboard sheet (1) can be strip-conformed and preferably has a rectangular shape: the central portion (2) extends along a first larger dimension than the extension thereof along a second direction perpendicular to the first direction (i.e., preferably, the central portion (2) has a length that is greater than the width). In the following part of the present description, the term length will refer to the parallel dimension to the central portion (2) along the first direction and the term width will refer to the dimension that is perpendicular to the extension of the central portion (2) along the first direction.

**[0036]** The first portion (3) can have a square or a rectangular shape. The second portion (4) can have a square or a rectangular shape. The third portion (5) can have a square or a rectangular shape.

**[0037]** The central portion (2) is preferably continuous, i.e. lacking in fold lines along an extension thereof: the broken lines in the figures are merely for the sake of illustration to indicate the portions of cardboard sheet (1) which will be discussed in the following and do not represent fold lines.

**[0038]** The first reinforcing flap (6) and the second reinforcing flap (7) when folded against the second portion (4), can be either superposed or not on one another, either partially superposed or completely superposed on one another. On the basis of the dimensions of the first reinforcing flap (6) and of the second reinforcing flap (7), a reinforced zone of the second portion (4) will be obtained that is more or less large.

**[0039]** The third reinforcing flap (8) and the fourth reinforcing flap (9) when folded against the third portion (5), can be either superposed or not on one another, either partially superposed or completely superposed on one another. On the basis of the dimensions of the third reinforcing flap (8) and of the fourth reinforcing flap (9), a reinforced zone of the third portion (5) will be obtained that is more or less large.

**[0040]** The second portion (4) is preferably dimensioned so as to cover at most entirely the first flank of the article. This means that the length of the second portion (4) is preferably equal to the height of the first flank of the article.

**[0041]** The third portion (5) is preferably dimensioned so as to entirely cover the second flank of the article, the upper face of the article and for partially covering the first flank of the article.

**[0042]** The first reinforcing flap (6) and the second reinforcing flap (7) are preferably identical and symmetrically arranged with respect to the central portion (2).

**[0043]** The first closing flap (10) and the second closing flap (11) are preferably identical and symmetrically arranged with respect to the central portion (2).

**[0044]** The third reinforcing flap (8) and the fourth reinforcing flap (9) are preferably identical and symmetrically arranged with respect to the central portion (2).

**[0045]** The first reinforcing flap (6) and the first closing flap (10) are separated by the first window (20), i.e. by an opening that is preferably rectangular. The first closing flap (10) and the third reinforcing flap (8) are separated by the second window (21), i.e. by an opening that is preferably rectangular. The second reinforcing flap (7) and the second closing flap (11) are separated by the third window (22), i.e. by an opening that is preferably rectangular. The second closing flap (11) and the fourth reinforcing flap (9) are separated by the fourth window (23), i.e. by an opening that is preferably rectangular.

**[0046]** The following is a description, with reference to figures 4 and 7, of preferred specific embodiments of the cardboard sheet (1).

**[0047]** With reference to figure 4, preferably, the cardboard sheet (1) is such that: the third portion (5) in turn comprises a fourth portion (50) and a fifth portion (51), the fourth portion (50) being interposed between the first portion (3) and the fifth portion (51); the third reinforcing flap (8) is hinged to a first end (50a) of the fourth portion (50) and is foldable against the fourth portion (5), the first end (50a) of the fourth portion (50) being part of the first end (5a) of the third portion (5); the fourth reinforcing flap (9) is hinged to a second end (50b) of the fourth portion (50) and is foldable against the fourth portion (5), the second end (50b) of the fourth portion (50) being part of the second end (5b) of the third portion (5); the fifth portion (51) comprises a contact strip (52) which extends substantially parallel to a free end (4c) of the second portion (4) and which entirely contacts the second portion (4) when the third portion (5) and the second portion (4) are folded and superposed on one another.

**[0048]** Therefore, the whole contact strip (52) can contact either the entire second portion (4) or part of the second portion (4).

**[0049]** Supposing that for the closure of the pack, glue, for example, will be sprayed on the contact strip (52) or on the part of the second portion (4) which is destined to be reciprocally superposed with the contact strip (52), an excellent gluing will be obtained of the second portion (4) and the third portion (5). This optimal gluing is enabled by the fact that the contact strip (52) is advantageously conformed for entirely contacting the second portion (4).

**[0050]** The third reinforcing flap (8) and the fourth reinforcing flap (9) can be hinged to the fourth portion (50) respectively by means of the first fold line (12) and the second fold line (13). It is advantageously easier to fold the third reinforcing flap (8) and the fourth reinforcing flap (9) against the fourth portion (50).

**[0051]** The contact strip (52) preferably has a rectangular shape with a smaller length than a width thereof.

**[0052]** With reference to figure 7, the fifth portion (51) preferably comprises, apart from the contact strip (52), a sixth portion (53) interposed between the fourth portion (50) and the contact strip (52) and the cardboard sheet (1) comprises: a fifth reinforcing flap (14) hinged at a first end (53a) of the sixth portion (53) and foldable against the sixth portion (53), the first end (53a) of the sixth portion (53) being a part of the first end (5a) of the third portion (5); a sixth reinforcing flap (15) hinged to a second end (53b) of the sixth portion (53) and foldable against the sixth portion (53), the second end (53b) of the sixth portion (53) being part of the second end (5b) of the third portion (5).

**[0053]** This embodiment advantageously has all the third portion (5) reinforced apart from only the contact strip (52). Further, this embodiment enables having good flexibility as well as strong reinforcement.

**[0054]** The fifth reinforcing flap (14) and the sixth reinforcing flap (15) can be hinged to the sixth portion (53) respectively by means of the first fold line (12) and the second fold line (13). It is advantageously easier to fold the fifth reinforcing flap (14) and the sixth reinforcing flap (15) against the sixth portion (53).

**[0055]** The sixth portion (53) can have a square or a rectangular shape.

**[0056]** The fifth reinforcing flap (14) and the sixth reinforcing flap (15) when folded against the sixth portion (53), can be either superposed or not on one another, either partially superposed or completely superposed on one another. On the basis of the dimensions of the fifth reinforcing flap (14) and of the sixth reinforcing flap (15), a reinforced zone of the sixth portion (53) will be obtained that is more or less large.

**[0057]** The fifth reinforcing flap (14) and the sixth reinforcing flap (15) are preferably identical and symmetrically arranged with respect to the central portion (2).

**[0058]** The third reinforcing flap (8) and the fifth reinforcing flap (14) are separated by a fifth window (24), i.e. by an opening that is preferably rectangular.

**[0059]** The fourth reinforcing flap (9) and the sixth reinforcing flap (15) are separated by the sixth window (25), i.e. by an opening that is preferably rectangular.

**[0060]** The fourth portion (50) is preferably dimensioned so as to cover the second flank of the article, the sixth portion (53) is dimensioned so as to cover the upper face of the article and the contact strip (52) is dimensioned so as to at least partly or at most entirely cover the first flank of the article and so as to be superposed reciprocally on the second portion (4), when the third portion (5) and the second portion (4) are folded (figure 7).

**[0061]** The following is a description, with reference to figures 5 and 6, of preferred specific embodiments of the cardboard sheet (1) that are alternative to those of figures 4 and 7.

**[0062]** With reference to figure 5, the cardboard sheet (1) is preferably such that: the third portion (5) in turn

comprises a fourth portion (500) and a fifth portion (510), the fourth portion (500) being interposed between the first portion (3) and the fifth portion (510); the third reinforcing flap (8) is hinged to a first end (500a) of the fourth portion (500) and is foldable against the fourth portion (500), the first end (500a) of the fourth portion (500) being part of the first end (5a) of the third portion (5); the fourth reinforcing flap (9) is hinged to a second end (500b) of the fourth portion (500) and is foldable against the fourth portion (500), the second end (500b) of the fourth portion (500) being part of the second end (5b) of the third portion (5); the cardboard sheet further comprises a fifth reinforcing flap (140) hinged to a first end (510a) of the fifth portion (510) and foldable against the fifth portion (510), the first end (510a) of the fifth portion (510) being part of the first end (5a) of the third portion (5); the cardboard sheet further comprises a sixth reinforcing flap (150) hinged to a second end (510b) of the fifth portion (51) and foldable against the fifth portion (51), the second end (510b) of the fifth portion (51) being part of the second end (5b) of the third portion (5).

**[0063]** This embodiment of the cardboard sheet (1) advantageously includes excellent resistance combined with a high degree of flexibility given by the third reinforcing flap (8), the fifth reinforcing flap (140), the fourth reinforcing flap (9) and the sixth reinforcing flap (150).

**[0064]** The third reinforcing flap (8) and the fourth reinforcing flap (9) can be hinged to the fourth portion (500) respectively by means of the first fold line (12) and the second fold line (13). It is advantageously easier to fold the third reinforcing flap (8) and the fourth reinforcing flap (9) against the second portion (4).

**[0065]** The fifth reinforcing flap (140) and the sixth reinforcing flap (150) can be hinged to the fifth portion (510) respectively by means of the first fold line (12) and the second fold line (13). It is advantageously easier to fold the fifth reinforcing flap (140) and the sixth reinforcing flap (150) against the fifth portion (510).

**[0066]** The fourth portion (500) can have a square or a rectangular shape. The fifth portion (510) can have a square or a rectangular shape.

**[0067]** The third reinforcing flap (8) and the fourth reinforcing flap (9) when folded against the fourth portion (500), can be either superposed or not on one another, either partially superposed or completely superposed on one another. On the basis of the dimensions of the third reinforcing flap (8) and of the fourth reinforcing flap (9), a reinforced zone of the fourth portion (500) will be obtained that is more or less large.

**[0068]** The fifth reinforcing flap (140) and the sixth reinforcing flap (150) when folded against the fifth portion (510), can be either superposed or not on one another, either partially superposed or completely superposed on one another. On the basis of the dimensions of the fifth reinforcing flap (140) and of the sixth reinforcing flap (150), a reinforced zone of the fifth portion (510) will be obtained that is more or less large.

**[0069]** The fifth reinforcing flap (140) and the sixth re-

inforcing flap (150) are preferably identical and symmetrically arranged with respect to the central portion (2).

**[0070]** The third reinforcing flap (8) and the fifth reinforcing flap (140) are separated by a fifth window (240), i.e. by an opening that is preferably rectangular. The fourth reinforcing flap (9) and the sixth reinforcing flap (150) are separated by a sixth window (250), i.e. by an opening that is preferably rectangular.

**[0071]** With reference to figure 6, the cardboard sheet (1) is preferably such that: the fifth portion (510) in turn comprises a sixth portion (520) and a seventh portion (530), the sixth portion (520) being interposed between the fourth portion (500) and the seventh portion (530); the fifth reinforcing flap (140) is hinged to a first end (520a) of the sixth portion (520) and is foldable against the sixth portion (510), the first end (520a) of the sixth portion (520) being part of the first end (510a) of the fifth portion (510); the sixth reinforcing flap (150) is hinged to a second end (520b) of the sixth portion (520) and is foldable against the sixth portion (520), the second end (520b) of the sixth portion (520) being part of the second end (510b) of the fifth portion (510); the cardboard sheet further comprises a seventh reinforcing flap (160) hinged to a first end (530a) of the seventh portion (530) and foldable against the seventh portion (530), the first end (530a) of the seventh portion (530) being part of the first end (510a) of the fifth portion (510); the cardboard sheet further comprises an eighth reinforcing flap (170) hinged to a second end (530b) of the seventh portion (530) and foldable against the seventh portion (530), the second end (530b) of the seventh portion (530) being part of the second end (510b) of the fifth portion (510).

**[0072]** The cardboard sheet (1) advantageously further includes the reinforcement, maintaining a high degree of flexibility given by the third reinforcing flap (8), the fifth reinforcing flap (140), the seventh reinforcing flap (160), the fourth reinforcing flap (9) and the sixth reinforcing flap (150) and the eighth reinforcing flap (170).

**[0073]** The fifth reinforcing flap (140) and the sixth reinforcing flap (150) can be hinged to the sixth portion (520) respectively by means of the first fold line (12) and the second fold line (13). It is advantageously easier to fold the fifth reinforcing flap (140) and the sixth reinforcing flap (150) against the sixth portion (520).

**[0074]** The seventh reinforcing flap (160) and the eighth reinforcing flap (170) can be hinged to the seventh portion (530) respectively by means of the first fold line (12) and the second fold line (13). It is advantageously easier to fold the seventh reinforcing flap (160) and the eighth reinforcing flap (170) against the seventh portion (530).

**[0075]** The sixth portion (520) can have a square or a rectangular shape. The seventh portion (530) can have a square or a rectangular shape.

**[0076]** The fifth reinforcing flap (140) and the sixth reinforcing flap (150) when folded against the sixth portion (520), can be either superposed or not on one another, either partially superposed or completely superposed on

one another. On the basis of the dimensions of the fifth reinforcing flap (140) and of the sixth reinforcing flap (150), a reinforced zone of the sixth portion (520) will be obtained that is more or less large.

**[0077]** The seventh reinforcing flap (160) and the eighth reinforcing flap (170) when folded against the seventh portion (530), can be either superposed or not on one another, either partially superposed or completely superposed on one another. On the basis of the dimensions of the seventh reinforcing flap (160) and of the eighth reinforcing flap (170), a reinforced zone of the seventh portion (530) will be obtained that is more or less large.

**[0078]** The seventh reinforcing flap (160) and the eighth reinforcing flap (170) are preferably identical and symmetrically arranged with respect to the central portion (2).

**[0079]** The fifth reinforcing flap (140) and the seventh reinforcing flap (160) are separated by a seventh window (260), i.e. by an opening that is preferably rectangular.

**[0080]** The sixth reinforcing flap (150) and the eighth reinforcing flap (170) are separated by an eighth window (270), i.e. by an opening that is preferably rectangular.

**[0081]** The fourth portion (500) is preferably dimensioned so as to cover the second flank of the article, the sixth portion (520) is dimensioned so as to cover the upper face of the article and the seventh portion is dimensioned so as at least partly or at most entirely to cover the first flank of the article and so as to be superposed reciprocally on the second portion (4), when the third portion (5) and the second portion (4) are folded (figure 6).

**[0082]** In any embodiment of above-described cardboard sheet (1), the first closing flap (10) can comprise a first part (30) and a second part (31). The second part (31) of the first closing flap (10) is interposed between the first portion (3) and the first part (30) of the first closing flap (10) and being dimensioned and foldable so as to cover at least the third flank of the article. The first part (30) of the first closing flap (10) is dimensioned and foldable so as to at least partly cover the upper face of the article (figure 7).

**[0083]** The second part (31) of the first closing flap (10) in turn preferably comprises a third part (31a) and a fourth part (31b), which third part (31a) of the first closing flap (10) is interposed between the first part (30) of the first closing flap (10) and the fourth part (31b) of the first closing flap (10) and the fourth part (31b) of the first closing flap (10) is interposed between the third part (31a) of the first closing flap (10) and the first portion (3). The fourth part (31) of the first closing flap (10) is foldable against the first portion (3) and the third part (31a) of the first closing flap (10) is dimensioned and foldable so as to cover the third flank of the article.

**[0084]** Like the first closing flap (10), in any embodiment of the above-described cardboard sheet (1), the second closing flap (11) can comprise a first part (32) and a second part (33). The second part (33) of the second closing flap (11) is interposed between the first por-

tion (3) and the first part (32) of the second closing flap (11) and is dimensioned and foldable so as to cover at least the fourth flank of the article. The first part (32) of the second closing flap (11) is dimensioned and foldable so as to at least partly cover the upper face of the article.

**[0085]** The second part (33) of the second closing flap (11) in turn preferably comprises a third part (33a) and a fourth part (33b), which third part (33a) of the second closing flap (11) is interposed between the first part (32) of the second closing flap (11) and the fourth part (33b) of the second closing flap (11) and which fourth part (33b) of the second closing flap (11) is interposed between the third part (33a) of the second closing flap (11) and the first portion (3). The fourth part (33b) of the second closing flap (11) being foldable against the first portion (3); the third part (33a) of the second closing flap (11) is dimensioned and foldable so as to cover the fourth flank of the article.

**[0086]** The present invention further relates to a method for packing an article. The method comprises steps of:

- using a cardboard sheet (1) for packing an article according to any one of the preceding claims;
- arranging an article resting on the first portion (3);
- folding the first reinforcing flap (6) and the second reinforcing flap (7) against the second portion (4);
- folding the third reinforcing flap (8) and the fourth reinforcing flap (9) against the third portion (5);
- folding the first closing flap (10) against at least the third flank of the article;
- folding the second closing flap (11) against at least the fourth flank of the article;
- folding the second portion (4) on the first flank of the article and folding the third portion (5) on the second flank of the article, on the upper face of the article and on the first flank of the article so as to reciprocally between them superpose the second portion (4) and the third portion (5) at the first flank of the article (figure 8).

**[0087]** The steps of folding the second portion (4) on the first flank of the article and folding the third portion (5) on the second flank of the article, on the upper face of the article and on the first flank of the article so as to reciprocally between them superpose the second portion (4) and the third portion (5) at the first flank of the article comprise following steps: folding the second portion (4) on the first flank of the article and folding the third portion (5) on the second flank and on the upper face of the article; thereafter injecting glue onto the part of the second portion (4) and/or onto the part of the third portion (5) which are destined to reciprocally superpose and fold

the third portion (5) on the first flank of the article so that the third portion (5) superposes on the second portion (4); abutting the third portion (5) at the second flank of the article and contemporaneously pressing the third portion (5) against the second portion (4) so as to stabilise the gluing.

**[0088]** The order in which the steps are carried out can be different from what is described in the foregoing.

**[0089]** The step of first folding the first reinforcing flap (6) and the second reinforcing flap (7) against the second portion (4) is preferably carried out before folding the second portion (4) on the first flank of the article.

**[0090]** The step of folding the third reinforcing flap (8) and the fourth reinforcing flap (9) against the third portion (5) is preferably carried out before folding the third portion (5) on the second flank of the article on the upper face of the article and on the first flank of the article.

**[0091]** With reference to figures 9A-9F different folding steps are illustrated of the embodiment of the cardboard sheet (1) of figure 7. Figure 9A illustrates a cardboard sheet (1) in which the steps of folding the first reinforcing flap (6) and the second reinforcing flap (7) against the second portion (4) and folding the third reinforcing flap (8) and the fourth reinforcing flap (9) against the fourth portion (5) have already been carried out. Thereafter the steps are carried out of folding the third part (31 a) of the first closing flap (10) against the third flank of the article, of folding the third part (33a) of the second closing flap (11) against the fourth flank of the article and of folding the second portion (4) on the first flank of the article (figure 9B). Further, and again with reference to figure 9B, the fifth reinforcing flap (14) and the sixth reinforcing flap (15) are folded against the sixth portion (53). With reference to figure 9C, the fourth portion (50) is folded on the second flank of the article. In the following, with reference to figure 9D, the first part (30) of the first closing flap (10) and the first part (32) of the second closing flap (11) are folded against the upper face of the article. Thereafter, the sixth portion (53) is folded on the upper face of the article (figure 9E). Thereafter, glue is injected on the part of the second portion (4) destined to reciprocally superpose with the contact strip (52) (step not illustrated), the contact strip (52) is folded on the first flank of the article so as to superpose on the second portion (4) (figure 9F). Lastly, to stabilise the gluing, the third portion (5) is abutted on the second flank of the article (i.e. the fourth portion (50)) and contemporaneously the contact strip (52) is pressed against the second portion (4) so as to stabilise the gluing (step not illustrated) (see figure 8).

## Claims

1. A cardboard sheet (1) for packing an article, which article has a first flank, a second flank opposite the first flank, a third flank comprised between the first flank and the second flank, a fourth flank comprised between the first flank and the second flank and op-

posite the third flank, a bottom and an upper face opposite the bottom, the cardboard sheet (1) comprising:

a central portion (2) comprising in turn a first portion (3), a second portion (4) and a third portion (5);  
 the first portion (3) being interposed between the second portion (4) and the third portion (5) and being dimensioned so as to restingly receive an article to be packed at the bottom of the article;  
 a first reinforcing flap (6) hinged to a first end (4a) of the second portion (4) and foldable against the second portion (4);  
 a second reinforcing flap (7) hinged to a second end (4b) of the second portion (4), opposite the first end (4a) of the second portion (4), and foldable against the second portion (4);  
 a third reinforcing flap (8) hinged to a first end (5a) of the third portion (5) and foldable against the third portion (5);  
 a fourth reinforcing flap (9) hinged to a second end (5b) of the third portion (5), opposite the first end (5a) of the third portion (5), and foldable against the third portion (5);  
 a first closing flap (10) hinged to a first end (3a) of the first portion (3), which first closing flap (10) is dimensioned and foldable so as to cover at least the third flank of the article, when the article is resting on the first portion (3);  
 a second closing flap (11) hinged to a second end (3b) of the first portion (3), opposite the first end (3a) of the first portion (3), which second closing flap (11) is dimensioned and foldable so as to cover at least the fourth flank of the article, when the article is resting on the first portion (3);  
 the second portion (4) being dimensioned and foldable so as to cover at most entirely the first flank of the article, when the article is resting on the first portion (3);  
 the third portion (5) being dimensioned and foldable so as to cover the second flank of the article, the upper face of the article and at least partially or at most entirely the first flank of the article, when the article is resting on the first portion (3);  
 the second portion (4) and the third portion (5) being reciprocally dimensioned so that when they are folded they superpose on one another at the first flank of the article;  
 the cardboard sheet (1) being **characterised in that:**

the first reinforcing flap (6) and the first closing flap (10) are separated by a first window (20);  
 the first closing flap (10) and the third reinforcing flap (8) are separated by the second

window (21);  
 the second reinforcing flap (7) and the second closing flap (11) are separated by a third window (22);  
 the second closing flap (11) and the fourth reinforcing flap (9) are separated by a fourth window (23).

2. The cardboard sheet (1) of claim 1, wherein: the third portion (5) in turn comprises a fourth portion (50) and a fifth portion (51), the fourth portion (50) being interposed between the first portion (3) and the fifth portion (51);  
 the third reinforcing flap (8) is hinged to a first end (50a) of the fourth portion (50) and is foldable against the fourth portion (5), the first end (50a) of the fourth portion (50) being part of the first end (5a) of the third portion (5);  
 the fourth reinforcing flap (9) is hinged to a second end (50b) of the fourth portion (50) and is foldable against the fourth portion (50), the second end (50b) of the fourth portion (50) being part of the second end (5b) of the third portion (5);  
 the fifth portion (51) comprises a contact strip (52) which extends substantially parallel to a free end (4c) of the second portion (4) and which entirely contacts the second portion (4) when the third portion (5) and the second portion (4) are folded and superposed on one another.
3. The cardboard sheet (1) of the preceding claim, wherein the fifth portion (51) comprises, apart from the contact strip (52), a sixth portion (53) interposed between the fourth portion (50) and the contact strip (52) and wherein the cardboard sheet (1) comprises:
  - a fifth reinforcing flap (14) hinged to a first end (53a) of the sixth portion (53) and foldable against the sixth portion (53), the first end (53a) of the sixth portion (53) being part of the first end (5a) of the third portion (5);
  - a sixth reinforcing flap (15) hinged to a second end (53b) of the sixth portion (53) and foldable against the sixth portion (53), the second end (53b) of the sixth portion (53) being part of the second end (5b) of the third portion (5).
4. The cardboard sheet (1) of claim 3, wherein the fourth portion (50) is dimensioned so as to cover the second flank of the article, the sixth portion (53) is dimensioned so as to cover the upper face of the article and the contact strip (52) is dimensioned so as to at least partly or at most entirely cover the first flank of the article and so as to be superposed reciprocally on the second portion (4), when the third portion (5) and the second portion (4) are folded.
5. The cardboard sheet (1) of claim 1, wherein: the third

- portion (5) comprises in turn a fourth portion (500) and a fifth portion (510), the fourth portion (500) being interposed between the first portion (3) and the fifth portion (510);  
the third reinforcing flap (8) is hinged to a first end (500a) of the fourth portion (500) and is foldable against the fourth portion (5), the first end (500a) of the fourth portion (500) being part of the first end (5a) of the third portion (5);  
the fourth reinforcing flap (9) is hinged to a second end (500b) of the fourth portion (500) and is foldable against the fourth portion (500), the second end (500b) of the fourth portion (500) being part of the second end (5b) of the third portion (5);  
the cardboard sheet (1) comprises a fifth reinforcing flap (140) hinged to a first end of the fifth portion (510) and foldable against the fifth portion (510), the first end (510a) of the fifth portion (510) being part of the first end (5a) of the third portion (5);  
the cardboard sheet (1) comprises a sixth reinforcing flap (150) hinged to a second end (510b) of the fifth portion (510) and foldable against the fifth portion (510), the second end (510b) of the fifth portion (510) being part of the second end (5b) of the third portion (5).
6. The cardboard sheet (1) of the preceding claim, wherein: the fifth portion (510) comprises in turn a sixth portion (520) and a seventh portion (530), the sixth portion (520) being interposed between the fourth portion (500) and the seventh portion (530); the fifth reinforcing flap (140) is hinged to a first end (520a) of the sixth portion (520) and is foldable against the sixth portion (520), the first end (520a) of the sixth portion (520) being part of the first end (510a) of the fifth portion (510);  
the sixth reinforcing flap (150) is hinged to a second end (520b) of the sixth portion (520) and is foldable against the sixth portion (520), the second end (520b) of the sixth portion (520) being part of the second end (510b) of the fifth portion (510);  
the cardboard sheet (1) comprises a seventh reinforcing flap (160) hinged to a first end (530a) of the seventh portion (530) and foldable against the seventh portion (530), the first end (530a) of the seventh portion (530) being part of the first end (510a) of the fifth portion (510);  
the cardboard sheet (1) comprises an eighth reinforcing flap (170) hinged to a second end (530b) of the seventh portion (530) and foldable against the seventh portion (530), the second end (530b) of the seventh portion (530) being part of the second end (510b) of the fifth portion (510).
7. The cardboard sheet (1) of the preceding claim, wherein the fourth portion (500) is dimensioned so as to cover the second flank of the article, the sixth portion (520) is dimensioned so as to cover the upper face of the article and the seventh portion (530) is dimensioned so as to at least partly or at most entirely to cover the first flank of the article and so as to be superposed reciprocally on the second portion (4), when the third portion (5) and the second portion (4) are folded.
8. The cardboard sheet (1) of any one of the preceding claims, wherein the first closing flap (10) comprises a first part (30) and a second part (31); the second part (31) of the first closing flap (10) being interposed between the first portion (3) and the first part (30) of the first closing flap (10) and being dimensioned and foldable so as to cover at least the third flank of the article;  
the first part (30) of the first closing flap (10) being dimensioned and foldable so as to at least partly cover the upper face of the article.
9. The cardboard sheet (1) of the preceding claim, wherein the second part (31) of the first closing flap (10) in turn comprises a third part (31 a) and a fourth part (31 b), which third part (31 a) of the first closing flap (10) is interposed between the first part (30) of the first closing flap (10) and the fourth part (31b) of the first closing flap (10) and the fourth part (31b) of the first closing flap (10) is interposed between the third part (31 a) of the first closing flap (10) and the first portion (3);  
the fourth part (31) of the first closing flap (10) being foldable against the first portion (3); the third part (31 a) of the first closing flap (10) being dimensioned and foldable so as to cover the third flank of the article.
10. The cardboard sheet (1) of any one of the preceding claims, wherein the second closing flap (11) comprises a first part (32) and a second part (33); the second part (33) of the second closing flap (11) being interposed between the first portion (3) and the first part (32) of the second closing flap (11) and being dimensioned and foldable so as to cover at least the fourth flank of the article;  
the first part (32) of the second closing flap (11) being dimensioned and foldable so as to at least partly cover the upper face of the article.
11. The cardboard sheet (1) of any one of the preceding claims, wherein the second part (33) of the second closing flap (11) in turn comprises a third part (33a) and a fourth part (33b), which third part (33a) of the second closing flap (11) is interposed between the first part (32) of the second closing flap (11) and the fourth part (33b) of the second closing flap (11) and the fourth part (33b) of the second closing flap (11) is interposed between the third part (33a) of the second closing flap (11) and the first portion (3);  
the fourth part (33b) of the second closing flap (11) being foldable against the first portion (3); the third

part (33a) of the second closing flap (11) being dimensioned and foldable so as to cover the fourth flank of the article.

**12.** A method for packing an article, comprising steps of: 5

using a cardboard sheet (1) for packing an article according to any one of the preceding claims; arranging an article resting on the first portion (3); 10  
folding the first reinforcing flap (6) and the second reinforcing flap (7) against the second portion (4);  
folding the third reinforcing flap (8) and the fourth reinforcing flap (9) against the third portion (5); 15  
folding the first closing flap (10) against at least the third flank of the article;  
folding the second closing flap (11) against at least the fourth flank of the article;  
folding the second portion (4) on the first flank of the article and folding the third portion (5) on the second flank of the article, and on the upper face of the article; 20  
thereafter spraying glue onto the part of the second portion (4) and/or onto the part of the third portion (5) which are destined to reciprocally superpose and folding the third portion (5) on the first flank of the article so that the third portion (5) superposes on the second portion (4); 25  
abutting the third portion (5) at the second flank of the article and contemporaneously pressing the third portion (5) against the second portion (4) so as to stabilise the gluing. 30

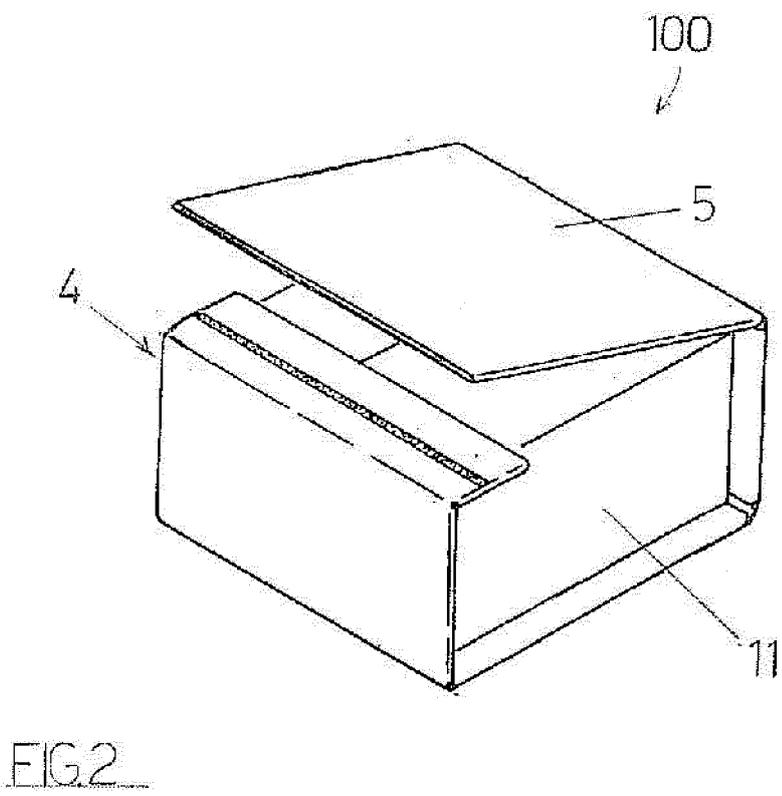
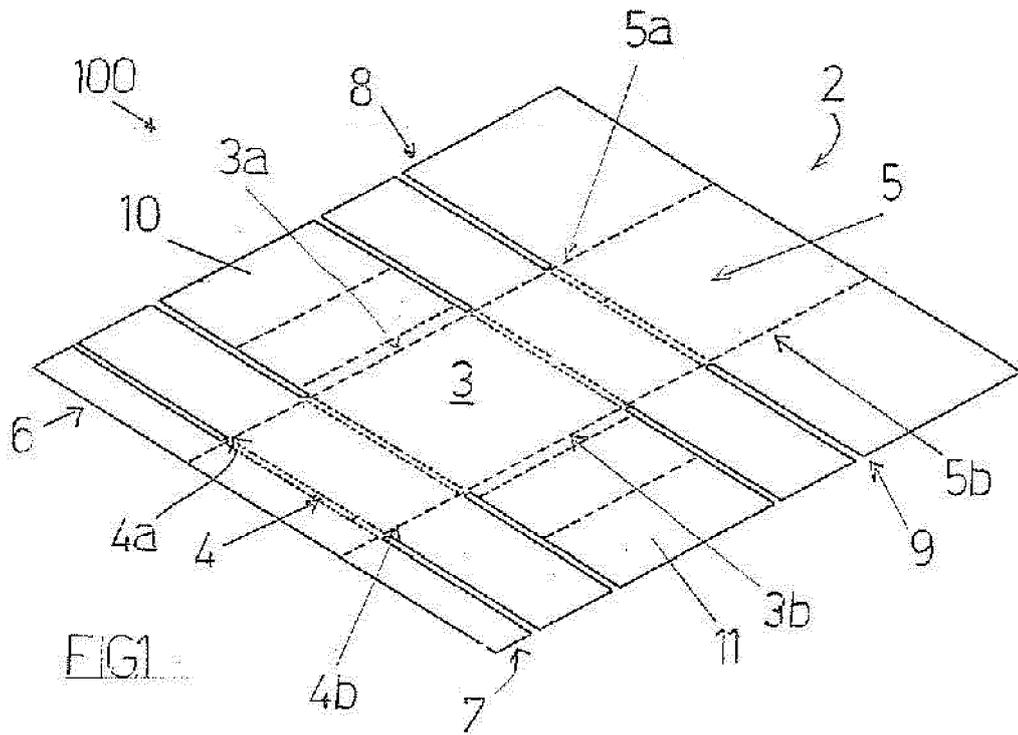
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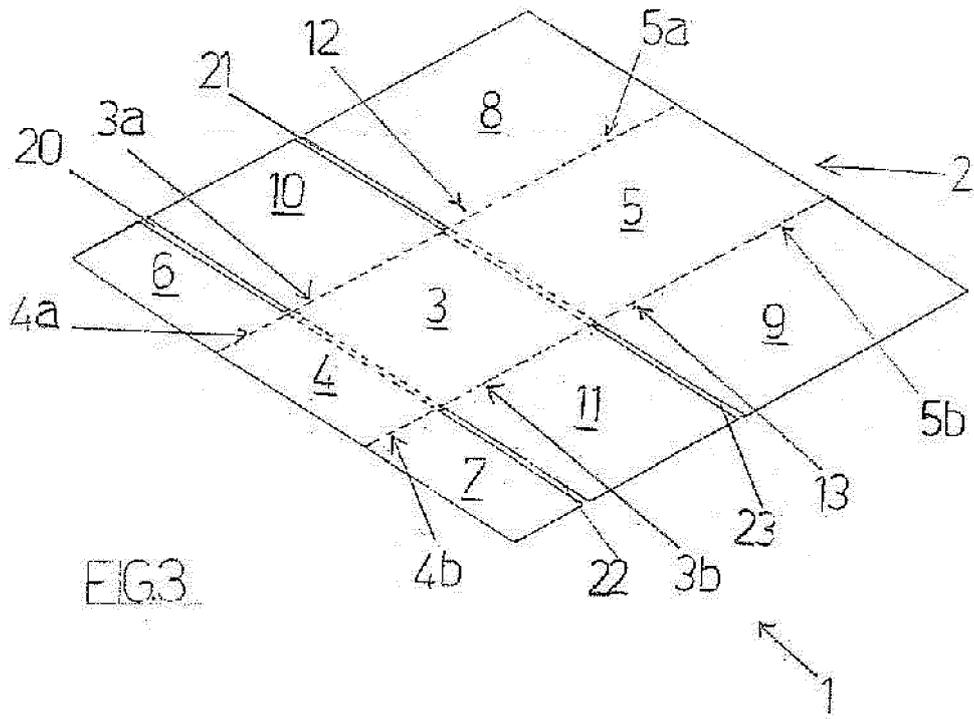


FIG 3

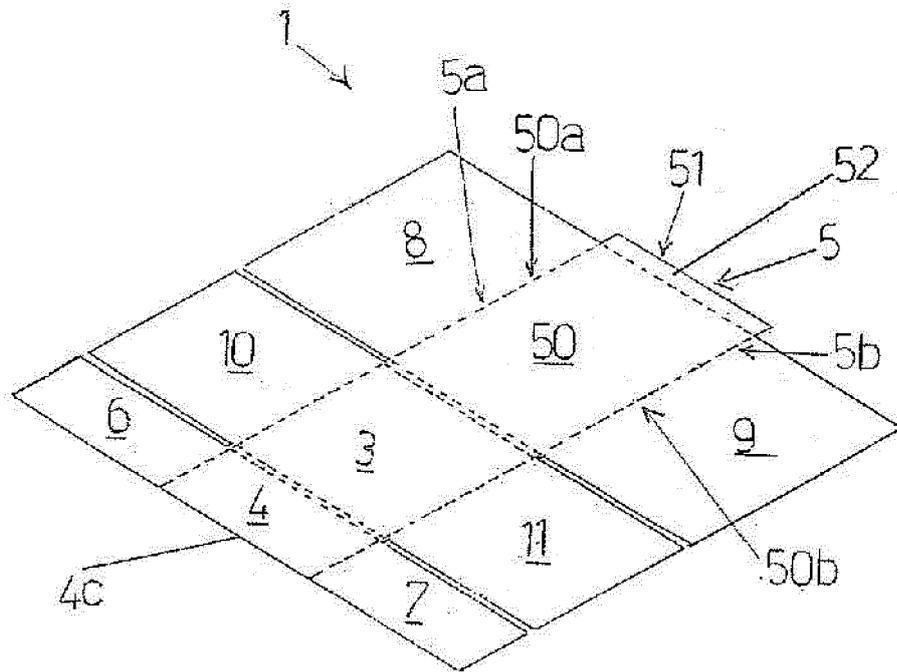


FIG 4

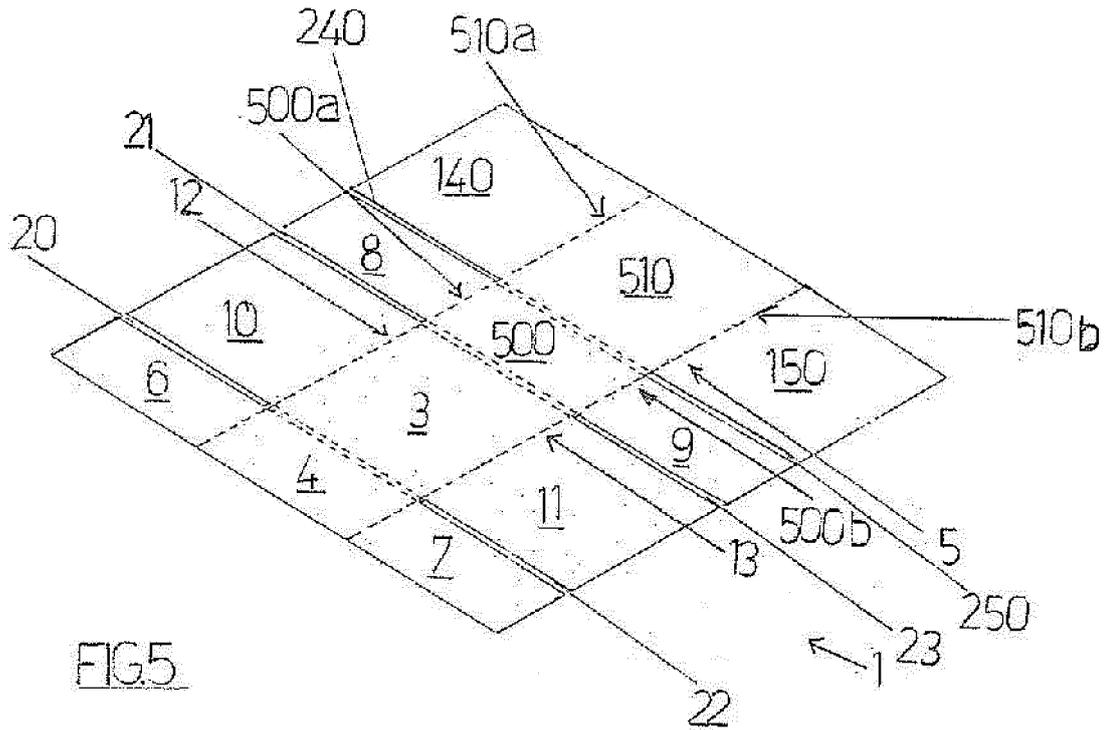
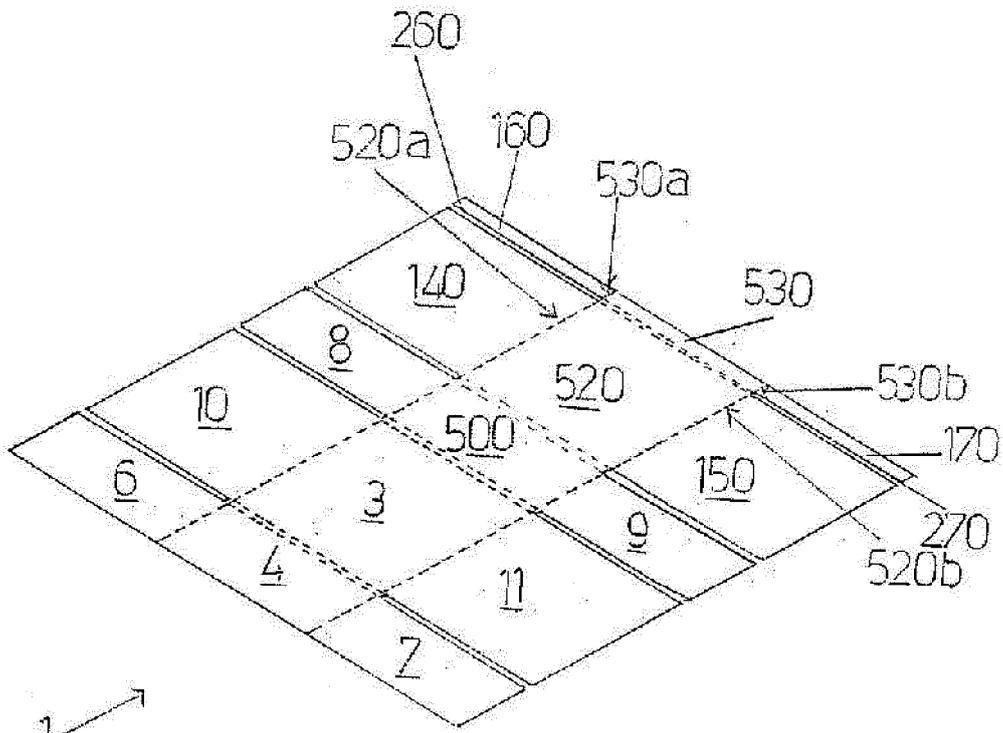
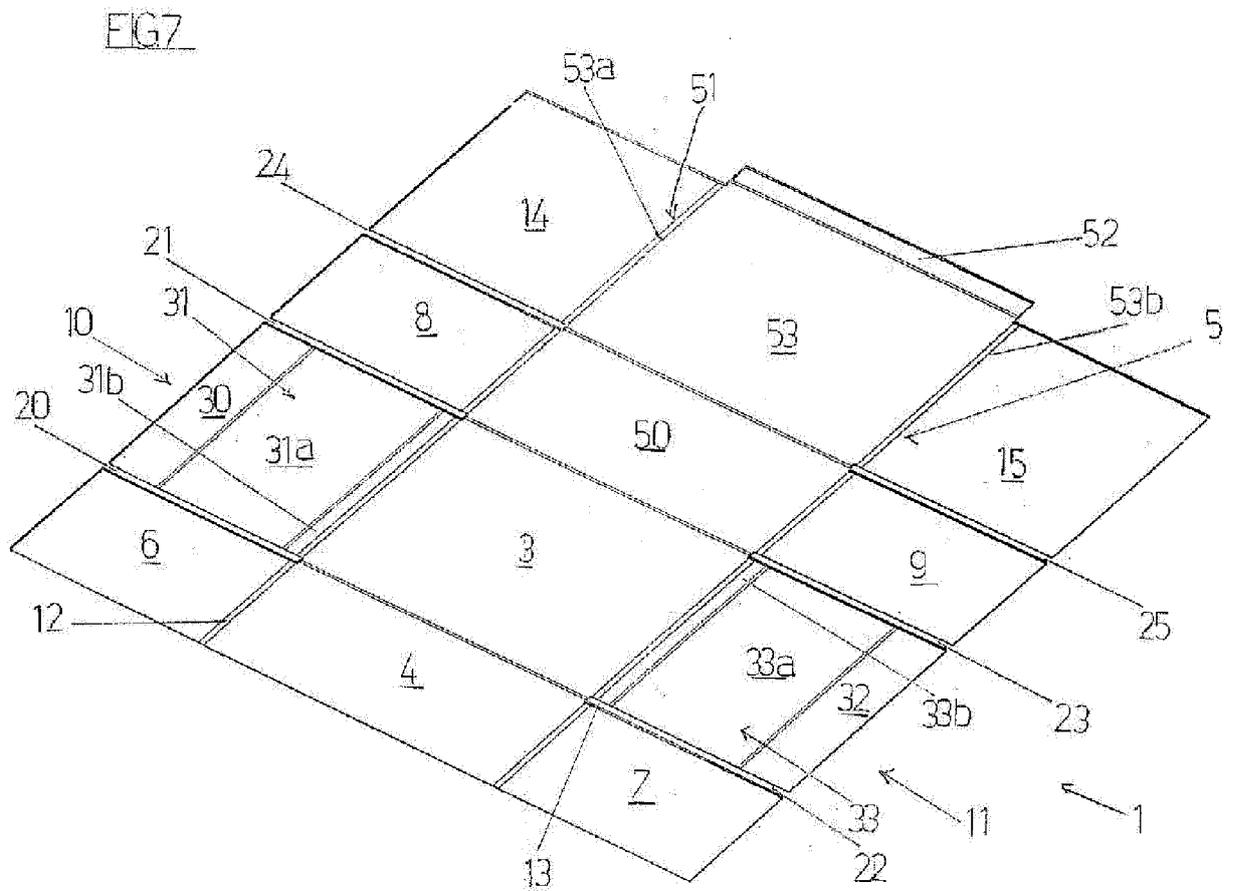


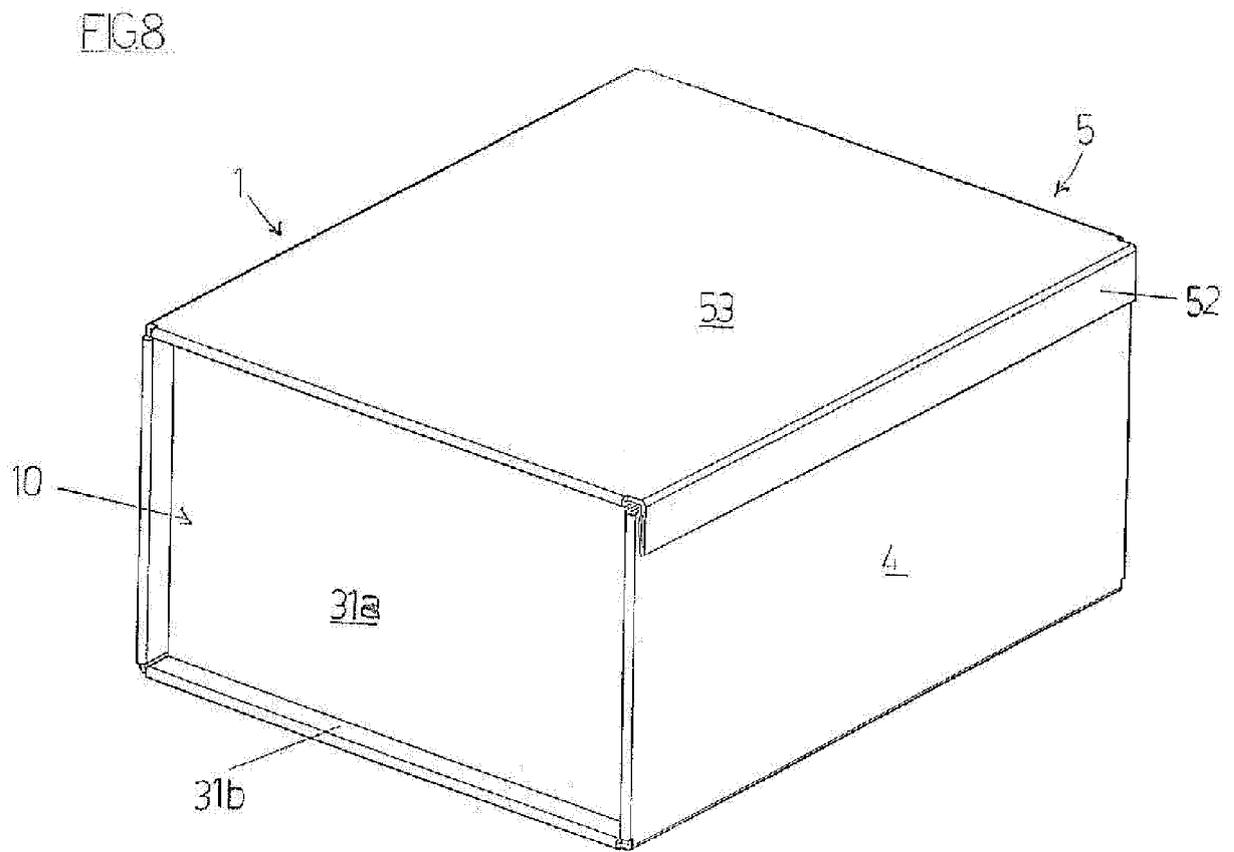
FIG. 5



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FIG. 6





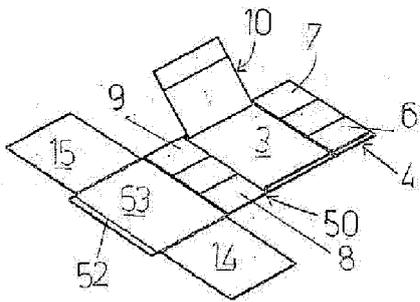


FIG9A

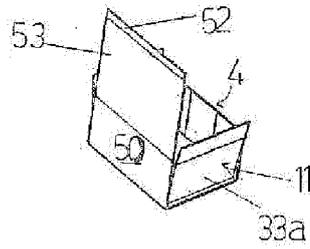


FIG9C

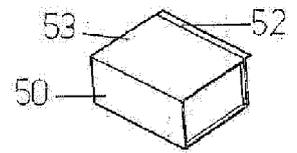


FIG9E

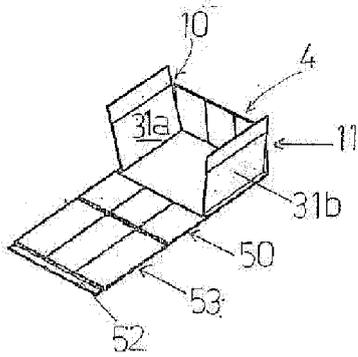


FIG9B

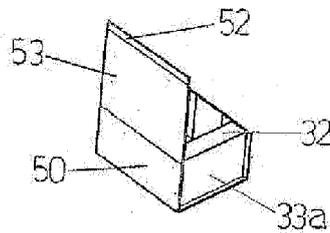


FIG9D

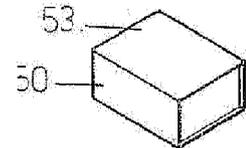


FIG9F



EUROPEAN SEARCH REPORT

Application Number  
EP 16 16 9315

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 19 September 2016	Examiner Grondin, David
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