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(54) **Blank and box with security elements**

(57) In a single-piece blank for a box, comprising a plurality of flaps (1-5) that can be folded and fastened to form a box tubular body (S), from one of the end flaps of the box body there extends a plurality of additional flaps enveloping the box body and forming an additional box

(A) from which the box body can be extracted after a flap portion has been removed. In at least two overlapping flaps of the box body (S) and the additional box (A) there are formed safety blocking means for blocking the box body within the additional box.

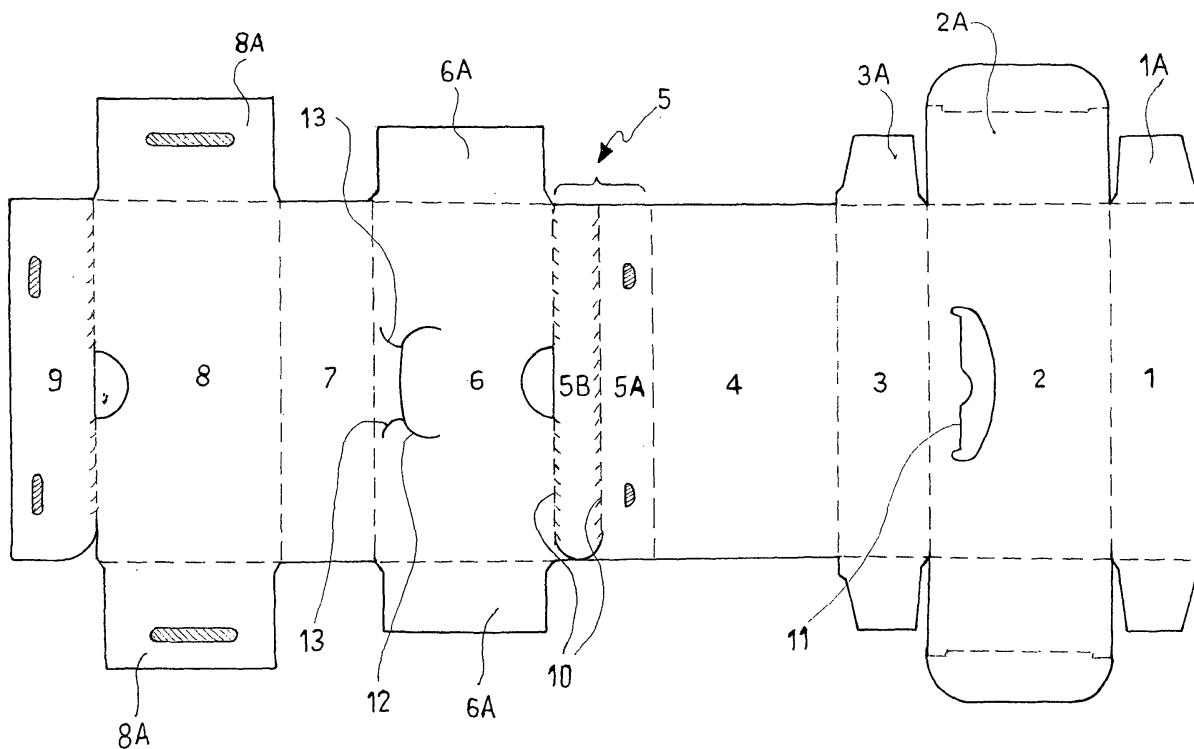


Fig.1

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Description

[0001] The present invention relates to a blank for a box or case, particularly for drugs and paramedical products, having safety elements. More particularly, the invention relates to a case or box being provided with a so-called anti tamper safety element, i.e. an element irreversibly showing whether a box has been opened, and which is also provided with a so-called child-proof safety element, i.e. such an element preventing or stopping a child from opening it.

[0002] Boxes for drugs and paramedical products are known that are provided with additional portions, besides those required for forming the box, which are fixed to box body and can be removed by means of a tear off line.

[0003] Patent EP-B-0430013 in the name of Grafiche Eikon, describes a box being equipped with at least one additional flap projecting from one of the closed sides of the box and being provided with that type of information which is normally printed on the information slip generally provided within the box. To open the box, the flap is to be torn off along the preset breaking line: thereby, the opening is promptly visible. To close the box, a tab is used that engages a slot being provided on the underlying side of the box.

[0004] The boxes described above are of an anti tamper type, because the presence of the tear off portion makes the box opening visible and irreversible. However, like all known cardboard boxes for medicines, they are not childproof: in fact, these boxes can be easily opened even by little children.

[0005] Childproof medicine boxes are known, but, such as in US-A-3788517, they are at least partially made in plastic and cannot be used on automated packaging lines in the pharmaceutical industry.

[0006] An object of the present invention is to provide a single-piece blank that, by means of additional flaps, provides a box with childproof safety closure, that is inexpensive to manufacture and that can be used on high-speed packaging lines.

[0007] A further object of the invention is to provide a box with an anti tamper element.

[0008] These objects are achieved by means of the present invention, which relates to a single-piece blank for a box or similar package, comprising a plurality of flaps (1-5) and closing tabs (1A-3A) that can be folded to form a box body (S) having a first (1) and a second (5) end flaps being fastened to each other, characterized by comprising a plurality of additional closing flaps (6-9) and tabs extending from said second flap (5) externally to the above-mentioned box body (S) and around thereto to form an additional box (A), one of said additional flaps (9) being fastened to said box body by means of at least one tear off portion, and in that at least one (2) of the flaps of said box body (S) and at least one of the flaps (6) of the additional box (A) have blocking means (11,12) for blocking the box body within said additional box.

[0009] According to a preferred embodiment, the

blocking means comprise a tab (12) on a flap (6) and a slot (11) that can be engaged by said tab (12) on the underlying flap (2), the orientation of the tab being such as to prevent the box body (S) from coming off the additional box (A) when the tab engages said slot.

[0010] According to a further embodiment of the invention, the second end flap (5) has a removable portion (5B) defined by two tear off lines and a fixed portion (5A) glued to the first end flap (1) when the box is formed, the removable portion being glued to the third end flap (9) when the box is formed, and being removable therewith.

[0011] Preferably, on the flaps of the box body and/or the flaps of the additional box there is provided information concerning the contents of the box, particularly that information being normally provided on the information slip, as well as information concerning the operation of the safety blocking system.

[0012] A further object of the invention is the box as obtainable from the above-mentioned blank.

[0013] The present invention has a number of advantages. In fact, the box obtained from the blank is entirely made of cardboard, such as the cases that are normally used for the packaging of medicines, and hence it is less expensive than the known safety boxes that are at least partially made of plastic. Furthermore, the box can be packed on high-speed lines.

[0014] Another advantage is that, though starting from a single-piece blank, the finished box, after it has been opened, actually consists of a "conventional" box being inserted in an outer box. Thereby, three walls of the outer box and four walls of the inner box, plus the pairs of closing tabs on both outer and inner boxes are available. It is thus possible to print (for example on the inner box) the information being normally provided on the information slip, thereby saving on the manufacture and packaging of the box.

[0015] These and other advantages will be understood from the following detailed description of the invention, with reference to the enclosed non-limiting drawings, in which:

- figure 1 is a plan view of a blank according to the invention;
- figure 2 is a plan view of the blank from figure 1 being partially folded and provided with a glue point;
- figure 3 is a plan view of the blank from the preceding figures in a further step of the folding process;
- figure 4 is a plan view of the blank being further folded and glued;
- figure 5 is a perspective view of the box when opened;
- figure 6 is an enlarged top view of the safety blocking means on the box side in operation; and
- figure 7 is a partial sectional enlarged view taken along the axis A-A of the safety blocking means from figure 6.

[0016] With reference to figure 1, the blank according

to the invention comprises a plurality of flaps 1-5 that can be folded along folding lines to form a box tubular body S (fig.5) after the first end flap 1 has been fastened to the second end flap 5. There are also provided a plurality of tabs 1a-3a either for embedded or glued closure of the box.

[0017] According to the invention, from the second end flap 5 there extends a plurality of additional flaps 6-9 that (fig. 5) externally envelop the box body S to form an additional box A containing the box body S. In order to obtain a closed and anti tamper box, and at the same time an easily openable box, one of said additional flaps 9 is fastened to the box body S by means of at least one tear off portion. In order to have the required safety blocking system, at least one (2) of the flaps of said box body S and at least one of the flaps (6) of the additional box A formed by the additional flaps 6-9, have blocking means for the box body within said additional box.

[0018] In order to form an outer additional box A, the additional flaps 6-9 have a size being substantially equal to, and slightly greater, than the corresponding flaps 1-5 of the inner box body S.

[0019] More particularly, in the preferred embodiment shown, the blocking means comprise a tab 12 obtained from a corresponding cutting, i.e. die-cutting line, that is provided on additional flap 6 and a slot 11 being formed on flap 2 and engageable by the tab 12 when the box is formed. The tab 12 is directed towards the flap 8, i.e. so as to prevent that the box body S may come off the additional box A when the tab engages the slot 11. As can be seen in figure 4 and in figures 6 and 7, once the box is formed, the flap 6 is both overlapped and external to the flap 2, and the tab 12 is partially overlapped to slot 11. Thereby, it will be sufficient to press on the tab 12 for the latter to bend within the box and engage the slot 11, fitting therein. To hold the tab 12 in engagement with the slot 11, the latter is provided with a curved portion or a projecting portion 14. As may be seen in figure 6 and in figure 7, when the tab 12 is pushed towards the inside of the box, it causes the curved or projecting portion 14 of the edge of slot 11 obtained in the flap 2 to bend and to position itself below the latter; the projecting portion 14 can be elastically bent and the engagement system is substantially snap operated.

[0020] The tab 12 is directed towards the bottom of the box, i.e. towards the flap 3 (and the corresponding additional flap 7); thereby, when one attempts to remove the box body S from the additional box A, the tab 12 abuts against the box body bottom wall, which is formed by the flap 3, thus preventing that the inner box S may be extracted and opened. In figure 5, the box according to the invention is shown such a position.

[0021] As stated above, the flap 6 carrying the blocking tab 12 has die-cutting lines 13 being arranged adjacent the tab 12 and extending in the opposite direction therefrom. The purpose of the lines 13 is to form a flexible portion that may be pressed towards the inside of the box body S in order to have the projecting portion 14

brought again under the tab 12 and to have tab (12) disengaged from the underlying slot (11).

[0022] Identical and symmetrical tabs, slot and blanking lines may be provided on the flaps 8 and 4.

[0023] The blank according to the present invention forms, once packaged, a single, anti tamper box. To the purpose, the additional box A is fastened to the second end flap 5 of box body S by means of a third end flap 9 of the additional box; as may be seen in the figures, the third end flap is fastened to the adjacent flap 8 by means of a tear off line 15. When the box is formed, the flap 10 is fastened to the flap 5. More particularly, the flap 5 is formed by two portions 5A and 5B. The portion 5B is a removable portion being defined by two tear off lines 10, whereas portion 5A is fixed and glued to the first end flap 1 in order to maintain the inner box body formed. The third end flap 9 is glued to the portion 5B of the second end flap 5 and can be removed therewith. In other words, to open the box the flap 9 is removed and, due to the tear off lines 10, also the portion 5B of the flap 5 is removed therewith, without this causing the inner box body S to collapse

[0024] According to the present invention, at least one of the additional flaps 6-9 and of the flaps 2-4 of box body S provides information concerning the contents of the box that can be obtained from the blank and its operation. For example, the outer, i.e. additional box A provides the information being normally provided on a standard box or case, whereas the flaps of the inner box body S provide the information being normally provided on the information slip. Thereby, the presence of an information slip is made unnecessary for a packaging adopting a box according to the invention.

[0025] The operation of the blank portions described above will be understood from the following description of the folding process of the blank providing a box according to the invention.

[0026] At first, some glue is applied on the area 5A of the second end flap 5 of the blank, as shown in fig. 1. The blank is then folded at the folding line between the flap 2 and the flap 3, such that the first end flap 1 overlaps the flap 4, as shown in fig. 2.

[0027] Subsequently, the already folded blank is folded again in order to bring the outer side of flap 1 in contact with the glue points of portion 5A of flap 5 and to overlap flap 2 to flap 6 and slot 11 to the tab 12 (fig.3).

[0028] The subsequent step provides (fig. 4) that the already folded blank be folded again along the folding line between flap 6 and flap 7, such that the flaps 3 and 4 are overlapped to flaps 7 and 8, respectively, and then to glue the flap 9 to portion 5B of flap 5.

[0029] The product is now inserted in the inner box body S and the latter is closed by first folding the tabs 1A and 3A, then folding together the tabs 6A and 2A until the tabs 2A engage tabs 1A and 3A. The last step provides that the tabs 8A be glued on the tabs 6A to close the box.

[0030] In order to open the box, the flap 9, entraining

portion 5B of flap 5 therewith, is removed: thereby, the box body S can be removed from the additional box A by pulling in the direction of the arrow F in fig. 5 and 7.

[0031] After one has gained access to the contents of the box body, which can be closed again, the box body inserted back into the additional box A. The openable sides of the box body S are now protected by the closed and glued sides of the box A, formed by tabs 6A and 8A being glued to each other. To prevent that the box body may be extracted again by a child, tab 12 is pressed until it snap engages slot 11 such as described above: now the box body cannot be removed any longer until the flap portion 6 being defined by the cutting lines 13 is pressed again to bring the portion 14 of flap 2 back below the tab 12.

two tear off lines and a fixed portion (5A) glued to said first end flap (1) when the box is formed, said removable portion being glued to said third end flap (9) when the box is formed, and being removable therewith.

7. The blank according to one of preceding claims, wherein at least one of said additional flaps (6-9) and of said flaps (2-4) of the box body (S) provides information on the contents of the box obtainable from the blank and on the operation thereof.
8. A box as obtainable from a blank according to any of the previous claims.

Claims

1. A single-piece blank for a box or similar package, comprising a plurality of flaps (1-5) and of closing tabs (1A-3A) that are foldable to form a box body (S) having a first (1) and a second (5) end flaps fastened to each other, **characterized by** comprising a plurality of additional flaps (6-9) and of closing tabs extending from said second flap (5) externally of said box body (S) and thereabout to form an additional box (A), one of said additional flaps (9) being fastened to said box body by means of at least one tear off portion, and in that at least one (2) of the flaps of said box body (S) and at least one of the flaps (6) of said additional box (A) have blocking means (11,12) for blocking the box body inside said additional box.
2. The blank according to claim 1, wherein said blocking means comprise a tab (12) on a flap (6) and a slot (11) that can be engaged by said tab (12) on the underlying flap (2), the orientation of the tab being such as to prevent that the box body (S) comes off the additional box (A) when the tab engages said slot.
3. The blank according to claim 2, wherein said flap (6) carrying said blocking tab (12) has blanking lines 13 adjacent to said tab (12) to allow a flap portion to disengage said tab (12) from the underlying slot (11).
4. The blank according to claim 2 or 3, wherein said slot has a projecting and elastically flexible portion.
5. The blank according to one of preceding claims, wherein said additional box (A) is fastened to said second end flap (5) of the box body (S) by means of a third end flap (9) of the additional box, said third end flap being fastened to the adjacent flap by means of a tear off line.
6. The blank according to claim 5, wherein said second end flap (5) has a removable portion (5B) defined by

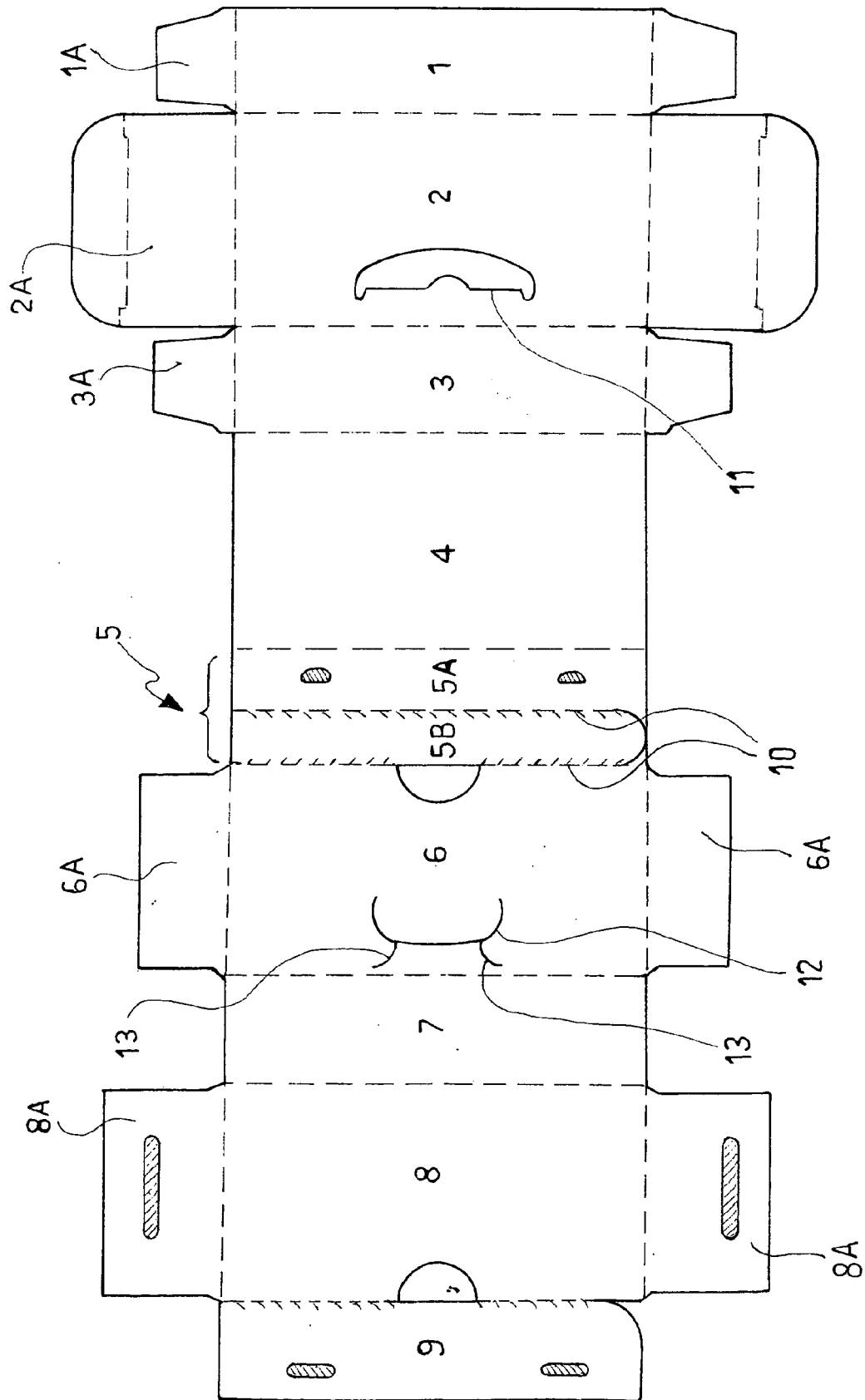


Fig. 1

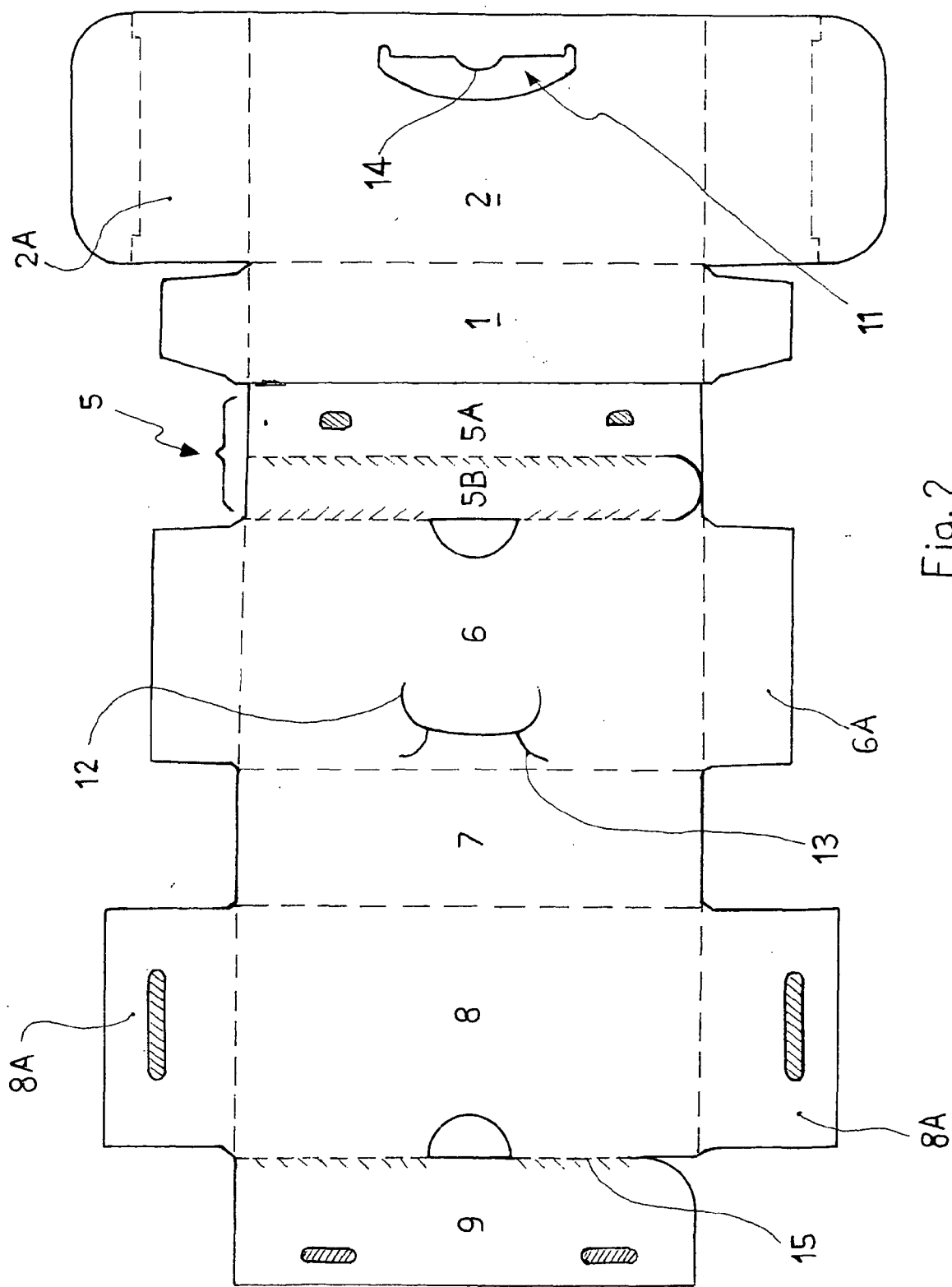
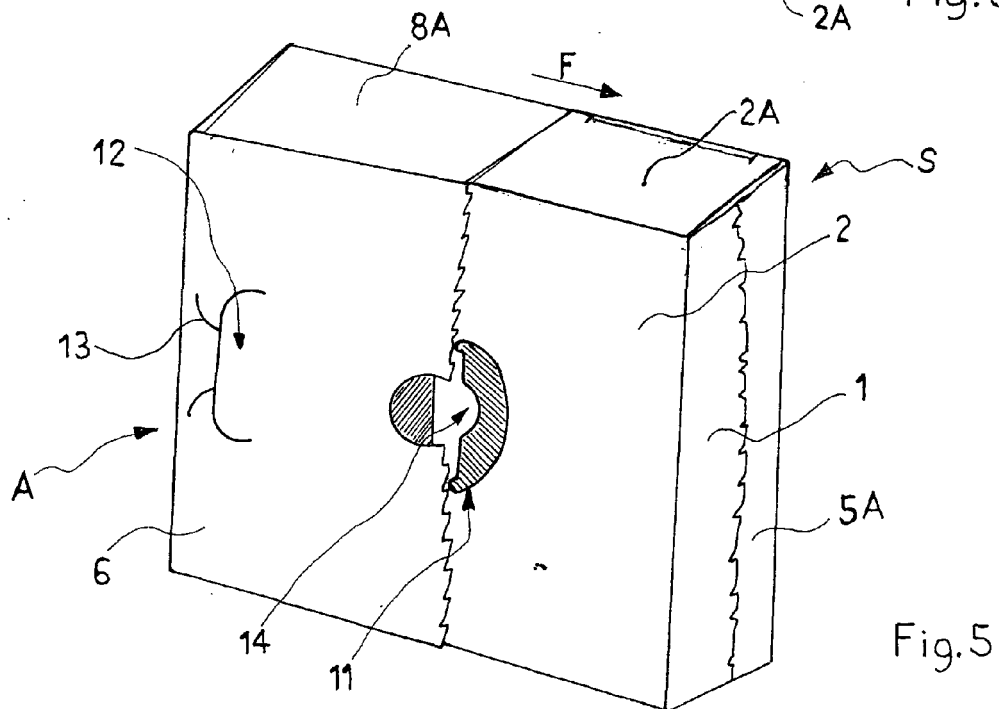
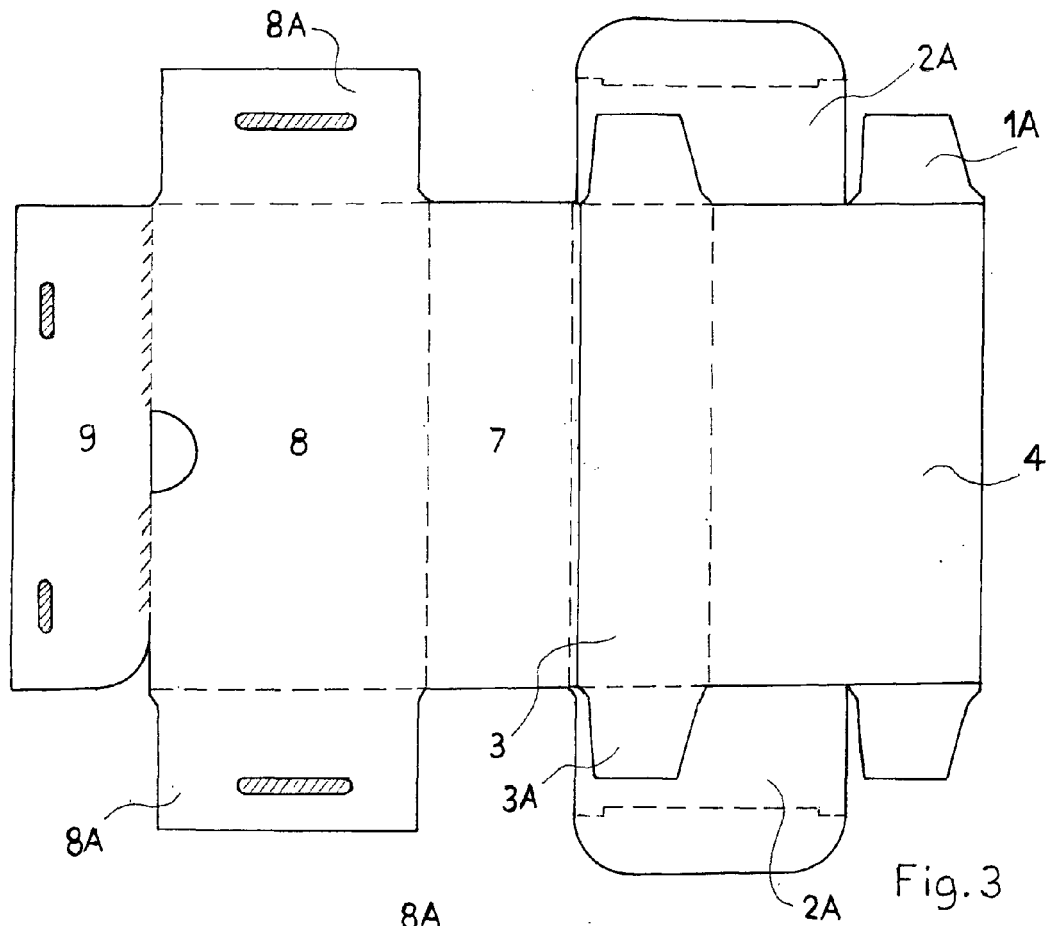


Fig. 2



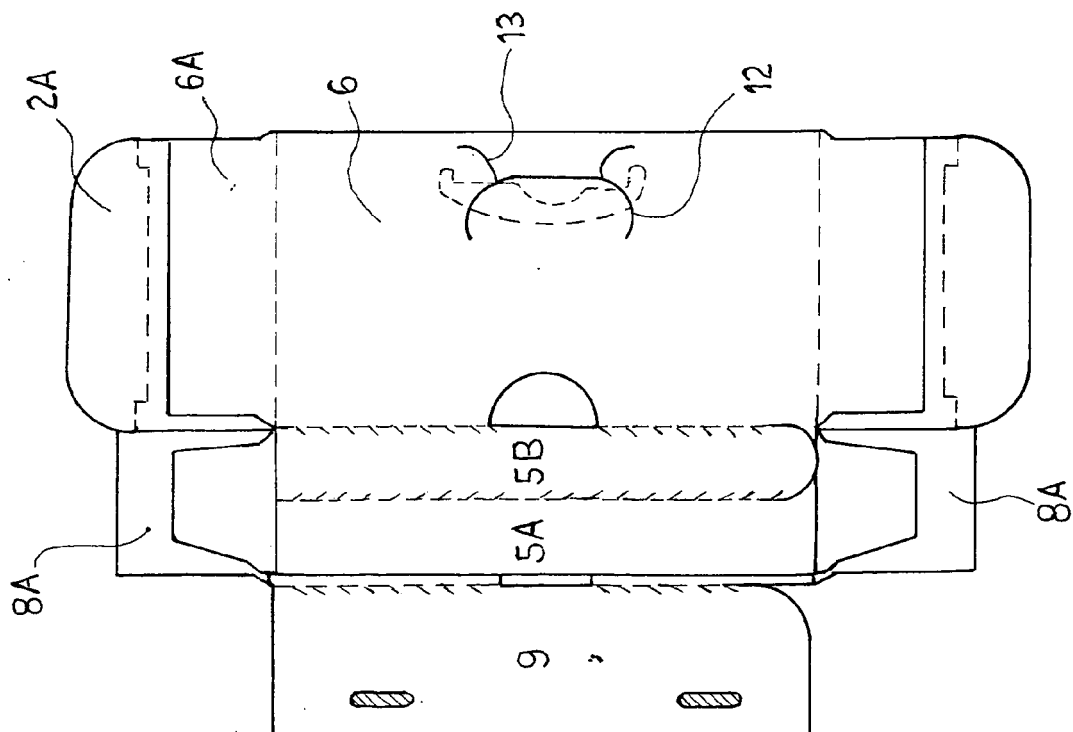


Fig. 4

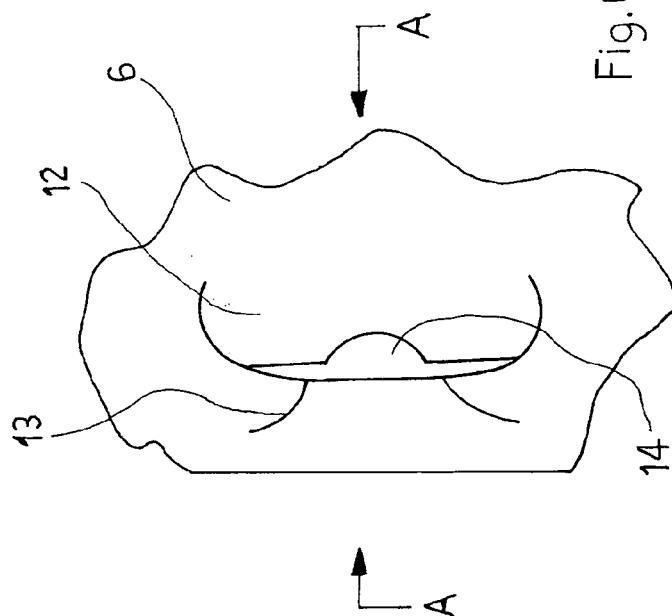


Fig. 6

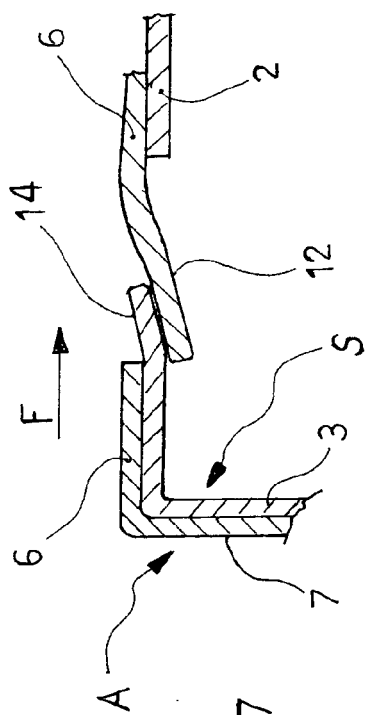


Fig. 7



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Application Number
EP 04 42 5828

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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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 7 March 2005	Examiner Cazacu, C
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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