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Remarks:
Amended claims in accordance with Rule 137(2) EPC.

(54) Container with self opening lid and latch mechanism

(57) Box which opens by changing its shape, and a locking mechanism for that. The invention improves ease-of-use.
The box opens when pressed from determined points (4). Closing happens by pushing the box in and assisting the box with hand to a locked state.
These boxes can be used to contain different kinds of products and goods.

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Description

[0001] The target of this invention is the box introduced in patent claim 1, which opens by changing its shape, and the locking mechanism for that.

[0002] Ways of opening box by changing its shape are previously not known. Boxes can be practical, but their ease-of-use can be enhanced. To this, a mechanism of opening and closing the box by a little finger movement, brings the needed usability.

[0003] This can be achieved, as stated in invention, by attaching elastic sheet of material, sheets of material (6), fiber(s) or similar inside the box. When pressed from points (4), the lid or lids (7) open automatically. For example, when pressing the box from the front side (4) in picture (A), the lid of the box opens.

[0004] The locking system as in invention is made by attaching hooks or similar mechanism (3) as in figures (F, G, H1 and H2) to the lids. When pressed from points (4), the box will quickly open. When pressed with fingers, the sides of the box will bend slightly, which will unlock the locking mechanism which causes the lids to separate from each other (F1 and G1) and raises them up (F2 and G2). The locking mechanism as in invention can be attached to all boxes, which are opened by changing its shape.

[0005] The hooks (3) to be attached to the box during manufacturing don't significantly slow down the known manufacturing processes.

[0006] The sheet of material or fiber(s) as in invention are flexible, elastic and the shape can be made of multiple pieces. The material and thickness of the the sheet of material or fiber(s) (6) depends on the size and material of the box.

[0007] More accurately, typical for a box which opens by pressing, and for its locking system, is what is stated on the description of patent claim 1.

[0008] In the following the invention is described in detail by referencing to the attached cross-section like pictures. The first picture (A) shows the box and the sheet of material attached inside it, from the side, box being closed. The second picture (B) shows the same invention from the side, box being open. The third picture (C) shows the box from above and the fourth picture (D) from behind. Should fiber(s) be used, they are attached in the same direction as the sheet of material (6), providing the the necessary elastic potential energy.

[0009] Elastic sheet of material, fiber(s) or similar part (6) is attached inside the box as seen on the figures, where the sheet of material is drawn in thicker line. An elastic sheet of material like this is attached either to the lid or to the box itself. For example, if sheet of material (6) is attached to the box, the lid-end of the sheet of material remains unattached, allowing it to move freely. The sheet of material, fiber(s) or similar part is attached inside the box, and when pressed from points (4), the front bends inside a bit. Thus, if one of the hooks is attached to inside of the front side of the box (2), the hook pushes slightly backwards and releases the locking system. Being able to move freely the lid then opens by the force of the elastic sheet of material.

[0010] The figures (F, G, H1 and H2) illustrate the locking system of the invention from the side, the box being locked. Thicker lines represent the important parts of the invention. The next figures (I from the side, J from the front) are illustrated examples of the installation of the lock system to flip-top box, that is, to a box which opens a lid by changing the box shape. The three following figures (L from above, M and N from the sides) illustrate the the installing of the locking mechanism and the elastic sheets of material (6) to an open-top box opened by changing its shape. The latter are typical packagings for example spread. The figure (K) illustrates how how the elastic sheet of material can be attached to different parts of boxes of different sizes and shapes. For example to corners of the box, where a spout or other kind of opening is located. When pressing a flip-top box, the opening happens automatically by the elastic force of the elastic sheet of material, fiber(s) or other similar object. When the locking system is opened on the spot indicated by arrows, the side of the box bends backwards and the lid opens.

[0011] The sheet of material, fiber(s) or similar parts (6) can be attached to boxes of different size and shape. Figures (F, G, H1 and H2) illustrate how two pair of lids close, overlapping each other. Opening happens by pressing on both sides as indicated by arrows (4), making the sides bend a bit inside, releasing the locking mechanism with the help of elastic potential energy by raising the sides a bit. The closing happens by pushing the sides a bit inside and slightly lowering the lids by hand. Figures (F and G) are alternative options for locking mechanism, as are the following figures (H1 and H2). Figure (L) shows where the locking mechanism takes place in an open box. The hooks (3) can be of different shape, model and structure, as long as they attach to close the lids. This kind of hooks (F, G, H1 and H2) are placed on boxes as figures (I, J, K, L, M and N) show.

[0012] Hooks or closers (3) are placed to lids so as the lids close overlapping each other and can be locked by assisting a little by hand. When the box is then pushed inside from the determined area (4), it bends inside and lids open.

[0013] The according boxes and locking mechanisms can be placed to different kinds of boxes that are opened by change of shape by designing the lids according to the invention.

[0014] These boxes can be used to contain different kinds of products and goods.

Claims

1. A box opened by changing its shape and a locking system for that, consisting of:

    - a box, and/or

- sheet of material, fiber(s) or similar (6) with elastic potential energy, and/or
- a hook or similar in the first half of the lid (3), and
- a counterpart or similar (3) for the hook in the actual box

known for that pressing from points (4), makes the lid (7) or lids (1) of the box open. Similarly when pressed from points (4) the lid (7) or lids (1) can be locked when slightly helped by hand.

2. The invention stated in patent claim 1 is known for that there is a sheet of material or string-like fiber(s) with elastic potential energy going from the upper rear side of the box towards the upper front side and from the upper rear side towards the bottom.

3. The invention stated in patent claims 1 and 2 is known for that it has a sheet of material, fiber(s) or similar (6) that are attached to either to the lid (7 and 1) or to the box itself, but not both.

4. The invention stated in patent claims 1, 2 and 3 is known for that its sheet of material, string-like fiber (s) or similar (6) with elastic potential energy can be of different shape, thickness and size.

5. The invention stated in patent claims 1, 2, 3 and 4 is known for that its sheet of material, string-like fiber (s), or similar (6) can be attached to different parts of boxes of different size or shape that have a lid (7, 1), spout, or other opening (K).

6. The invention stated in patent claim 1 is known for it has a hook or similar part (3) in the first half of the lid and a counterpart or similar (3) for that in the box itself.

7. The invention stated in patent claims 1 and 7 is known for that the hooks (3) can be of different width, shape and style.

8. The invention stated in patent claims 1 and 7 is known for that its hooks (3) can be placed to the ends of the lids (7), as parts of the lid, above the lids or below the lids.

9. The invention stated in patent claims 1, 2, 3, 4 and 5 is known for that when pressed from point-like area (4), the lid (7) or lids (1) can be unlocked.

10. The invention stated in patent claims 1, 6, 7 and 8 is known for its ability of the lids (1) or lid (7) locking by pressing from points (4) and slightly helping by hand.

Amended claims in accordance with Rule 137(2) EPC.

1. A Carton box opened by changing its shape and a locking system for that, consisting of

- a box, and
- sheet of material, fiber(s) or similar with elastic potential energy, and
- a hook or similar in the first half of the lid, and
- a counterpart or similar for the hook in the actual box

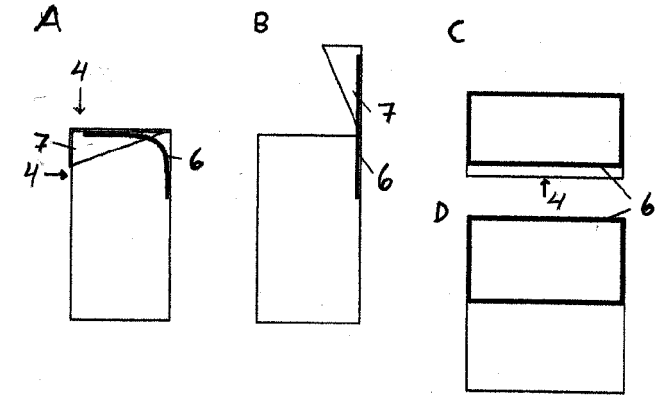
is known for that by pressing the box from front of the actual box, potential elastic energy makes the lid or lids of the box open. Similarly when pressed from the front of the box, the lid or lids can be locked when slightly helped by hand.

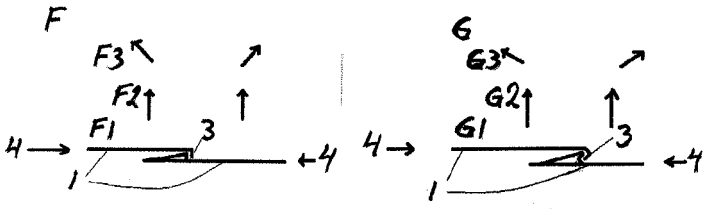
2. The carton box stated in the patent claim 1 is known for that here is a sheet of material or string-like fiber(s) with elastic potential energy going from the upper rear side of the box towards the upper front side and from the upper rear side towards the bottom.

3. The invention stated in patent claims 1 or 2 is known for that it has sheet of material, fiber (s) or similar (6) that are attached to either to the lid (7 and 1) or to the box itself, but not both.

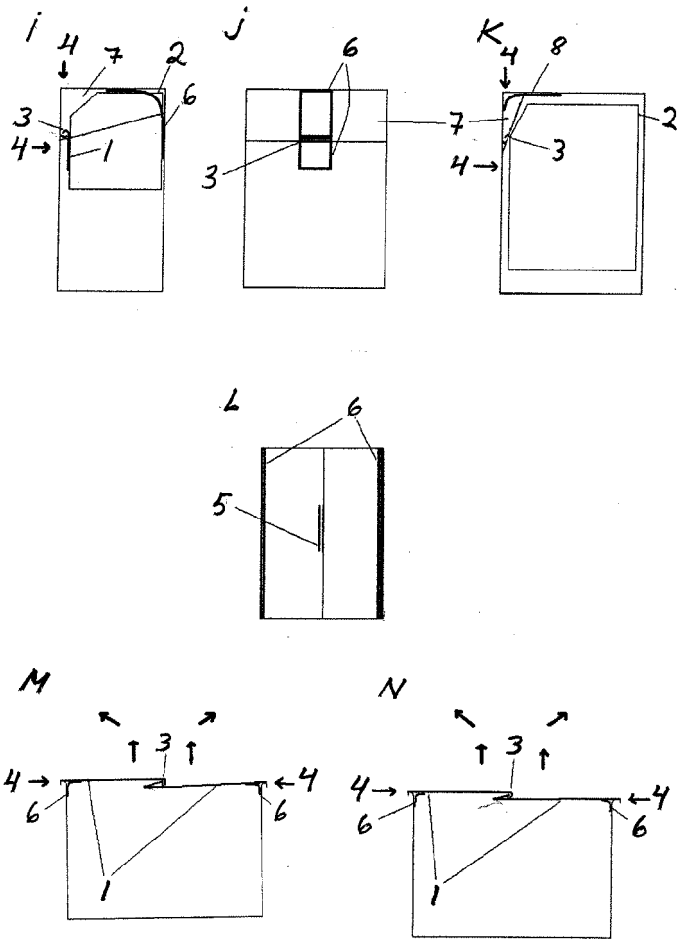
4. The innovation stated in patent claims 1, 2 or 3 is known for that the sheet of material, string-like fiber (s) or similar (6) with elastic potential energy can be of different shape, thickness and size.

5. The innovation stated in patent claims 1 is known for that its hook (3) and counterpart can be placed to the ends of the lids, as parts of the lids (7), above the lids or below the lids.


A
4
7
4
6
B
7
6
C
4
6
D


F
F3
F2
F1
3
4
4
1
G
G3
G2
G1
3
4
4
1


H1
4
3
4
1
H2
4
3
4
1


i
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EUROPEAN SEARCH REPORT

Application Number
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	21 October 2010	Gino, Christophe

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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