



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
20.06.2012 Bulletin 2012/25

(51) Int Cl.:
B65D 5/42 (2006.01)

(21) Application number: **11192779.4**

(22) Date of filing: **09.12.2011**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(71) Applicant: **BSH Bosch und Siemens Hausgeräte GmbH**
81739 München (DE)

(72) Inventors:
• **Cokicli, Seniz**
34535 Istanbul (TR)
• **Erbay, Metin**
59510 Cerkezköy (TR)
• **Usta, Mehmet Ulas**
59500 Tekirdag (TR)

(30) Priority: **15.12.2010 TR 201010463**

(54) **A packing box with a flexible section**

(57) The present invention relates to a packing box (10). The packing box is characterized by comprising a lateral bending line (143a) which begins from a bending point (142) and which extends between the upper surface (15) and the lower surface (16); another lateral bending line (143b) which extends between the upper and the lower surface (15, 16) so that there is a certain angle

between it and said lateral bending line (143a); an intermediate bending line (145) which begins from the bending point (142) and which extends between the upper and the lower surfaces (15, 16) so as to remain between the lateral bending lines (143a, 143b); and a lower bending line (144) which extends along the lower surface (16) between the ends of said lateral bending lines (143a, 143b).

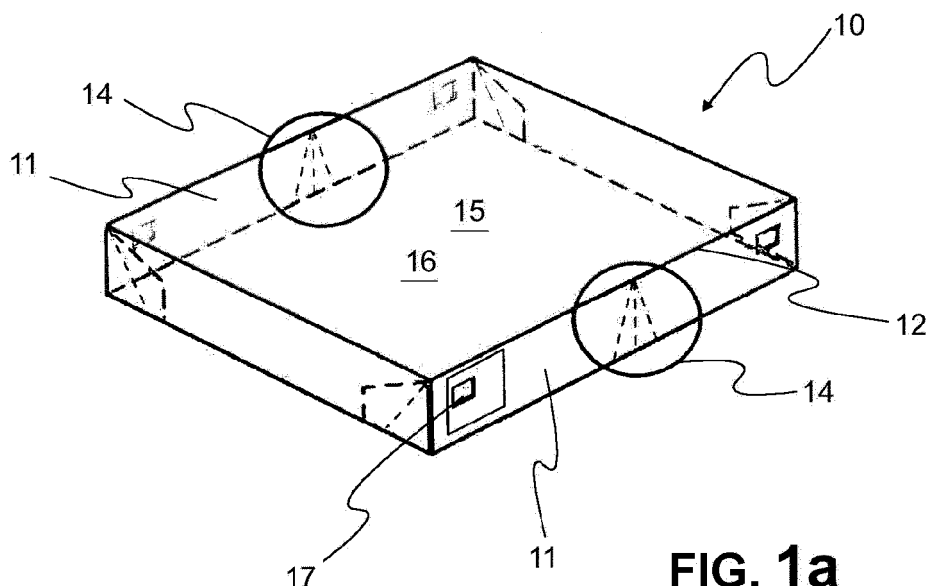


FIG. 1a

Description

[0001] The present invention relates to packing boxes with a flexible region and particularly relates to a packing box comprising an upper surface, a lower surface, and two mutual lateral surfaces with a barcode region thereon.

KNOWN STATE OF THE ART

[0002] Packing boxes, made of materials like carton, are used in the transportation of equipment like white goods. In order for packing boxes to occupy less space and in order for packing boxes to be transported in an easier manner, pluralities of packing boxes are designed so as to be slightly bigger than the products which are to be carried therein. However, since the dimension difference between the package and the product is small, it is difficult to place the products into the packing boxes. In order to prevent this drawback, the dimension of the packing box is increased; however, in this case, there are some problems in the transportation of the box. In more details, while a big-dimensioned packing box, which is made of carton, is being carried to the forklift, the forklift may press the box, and as a result of this, the box may become wrinkled and thereby the box may be deformed. This leads to barcode tags, existing on the packing box, to change the place thereof, thus, the barcode tag can not be read in the related stations. Moreover, since the packing boxes, which have product therein, are placed one above the other, this leads to wrinkling and as a result of this, the barcodes can not be read.

[0003] The packing box disclosed in the patent WO2010060808 comprises a bellows which provides folding of the box when the box is not in use. Thus, the box is prevented from occupying much space. Moreover, the box may bend in case of pressure, and the deformation thereof is prevented. In the patent JP5308898, a container for fruit and vegetable transportation is disclosed. Said container comprises a bellow at a part of the side wall thereof, the bellow being expandable when lifted. With this solution, the wrinkling problem of the package can be partially eliminated, however, the fixation of the position of the barcode tag can not be provided. Since, in case the box is pressed, the widths of the packages in both of the patents change because of the closing of the bellows region, thus, the position of the barcode tag changes.

[0004] As a result, because of the abovementioned problems, an improvement is required on said packing boxes.

BRIEF DESCRIPTION OF THE INVENTION

[0005] The present invention relates to a novel packing box, in order to eliminate the drawbacks in the present systems mentioned above and in order to bring new advantages to the related technical field.

[0006] An object of the invention is to prevent the formation of wrinkling which are parallel to the direction of pressing of the packing box by the forklift, during the transfer of the packing boxes by the forklift.

[0007] Another object of the invention is to provide a packing box which can be designed so as to have dimensions which are greater than the dimensions of the product therein and by means of this, which provides the products to be placed inside in a more rapid and simpler manner and without the product being torn in mass production.

[0008] In order to realize the abovementioned objects and the objects to be obtained from the detailed description below, the present invention relates to a packing box comprising an upper surface; a lower surface; two mutual lateral surfaces with a barcode region thereon; and a flexible section provided on said upper, lower and lateral surfaces. Said packing box is characterized by comprising an upper bending line extending between two lateral surfaces along said upper surface so that said flexible section defines a bending point on the upper edge of the lateral surfaces; a lateral bending line which begins from said bending point and which extends between the upper surface and the lower surface; another lateral bending line which begins from the bending point and which extends between the upper and the lower surface so that there is a certain angle between it and said lateral bending line; an intermediate bending line which begins from the bending point and which extends between the upper and the lower surfaces so as to remain between the lateral bending lines; and a lower bending line which extends along the lower surface between the ends of said lateral bending lines. Thus, when said packing box is pressed, the packing box can be bended without any change in the total length of the upper edge of said lateral surfaces.

[0009] In a preferred embodiment of the present invention, said flexible section also comprises an upper bending line which extends between two lateral surfaces along the upper surface so as to define said bending point.

[0010] In a preferred embodiment of the present invention, said upper and lower bending lines have a linear extending cross section.

[0011] In another preferred embodiment of the present invention, said lateral and intermediate bending lines have a linear extending cross section.

[0012] In a preferred embodiment of the present invention, two lateral bending lines are provided which extend in a linear manner with a certain angle between the lower and the upper surface of the packing box; and an intermediate bending line is provided which extends between the lower and the upper surface so as to be between said two lateral bending lines.

[0013] In another preferred embodiment of the present invention, some part of said lower bending line extends between the lateral bending line on one side and the intermediate bending line; and the other part of said lower bending line extends between the lateral bending line on

the other side and the intermediate bending line.

[0014] In another preferred embodiment of the present invention, a narrow angle is provided between two lateral bending lines.

[0015] In another preferred embodiment of the present invention, the cross sections of the related parts of the lateral bending line, intermediate bending line and lower bending line on one side define a right-triangular form on the lateral surface.

[0016] In another preferred embodiment of the present invention, the cross sections of the related parts of the other lateral bending line, intermediate bending line and lower bending line define a right-triangular form on the lateral surface.

[0017] In another preferred embodiment of the present invention, said lateral, intermediate and lower bending lines are formed by crushing the related surfaces of the packing box by a cutting tool.

[0018] In another preferred embodiment of the present invention, the upper bending line is formed by crushing the related surfaces of the packing box by means of a cutting tool.

[0019] In another preferred embodiment of the present invention, the subject matter packing box is in the form of a rectangular prism.

[0020] In another preferred embodiment of the present invention, said packing box is made of carton.

[0021] In another preferred embodiment of the present invention, the packing box has dimensions so that the home appliance can be placed.

[0022] In another preferred embodiment of the present invention, said packing box is a flat box whose height is shorter than the width and length thereof.

[0023] In another preferred embodiment of the present invention, the packing box is a flat box wherein a stove can be placed.

[0024] The present invention also relates to a production method of a packing box comprising an upper surface; a lower surface; two mutual lateral surfaces with a barcode region thereon; and a flexible section provided on said upper, lower and lateral surfaces. Said production method comprises the formation steps of the following items on the packing box, where each of the steps is realized by crushing the related surfaces of the packing box by a cutting tool:

- a) A lateral bending line which begins from a bending point on the upper edge of said lateral surfaces and which extends between the upper surface and the lower surface,
- b) Another lateral bending line which begins from a bending point and which extends between the upper surface and the lower surface so that there is a certain angle between it and said lateral bending line,
- c) An intermediate bending line which begins from the bending point and which extends between the upper surface and the lower surface so as to remain between the lateral bending lines,

d) A lower bending line which extends along the lower surface and between the ends of said lateral bending lines.

[0025] In a preferred application of the subject matter method, there is the process step of forming an upper bending line extending between two lateral surfaces along the upper surface so as to define said bending point.

BRIEF DESCRIPTION OF THE FIGURES

[0026] In Figure 1a, the representative perspective view of the subject matter packing box in non-pressed form is given.

[0027] In Figure 1 b, the zoomed view of the flexible section is given.

[0028] In Figure 2, the representative perspective view of the subject matter packing box in pressed form is given.

THE DETAILED DESCRIPTION OF THE INVENTION

[0029] In this detailed explanation, the subject matter packing box (10) is explained with references to examples without forming any restrictive effect in order to make the subject more understandable. A preferred exemplary embodiment of the subject matter invention is used for stoves. Accordingly, in the detailed description below, the subject matter invention is assumed to be used in the transportation of the products and/or components of home appliances.

[0030] With reference to Figure 1a, the subject matter packing box (10) is preferably made of carton which is adhered from four points and again it is preferably in the form of a rectangular prism. On the packing box (10), there are preferably four barcode regions (17) which are close to the corners.

[0031] As an improvement of the subject matter invention, the packing box (10) has a flexible section (14). Said flexible section (14) is formed in the intermediate section of the packing box (10). As in Figure 1, when the packing box (10) does not apply any pressure, said flexible section (14) has a triangular-like cross section on the lateral surface (11). With reference to Figure 1b, in more details, there is an upper bending line (141) extending along the upper surface (15) so as to define a bending point (142) at the intermediate point of the upper edge (12). Two lateral bending lines (143a, 143b) extend in an angled and mutual manner between the upper and the lower surface (16) of the packing box (10). Between said two lateral bending lines (143), there is an intermediate bending line (145) extending preferably orthogonally. In the form of the packing box (10) illustrated in Figure 1, the cross section of each of said lateral bending lines is a straight line defining the hypotenuse of a right triangle. On the lower surface (16) of the packing box (10), a lower bending line (144) extends between two lateral bending lines (143a, 143b) and it is separated into two parts (144a,

144b) by said intermediate bending line (145). Again in the case in Figure 1, said lower bending line (144) is in the form of a straight line which extends along a part of the lower edge (13) of the packing box and which defines the base of a triangle.

[0032] Said flexible section (14) is preferably formed by crushing the packing box (10) by a cutting tool like a knife along the upper, lower and lateral bending lines. However, in alternative embodiments, the flexible section (14) can be formed by a weaker material or the flexible section (14) can be weakened.

[0033] During transportation, when the packing box (10) is pressed in the pressing directions (A, B), which are opposite directions, from two sides thereof, the packing box (10) takes the form illustrated in Figure 2. Accordingly, when the packing box (10) is pressed by the forklift, the packing box (10) is bended so that the upper bending line (141) will form the bending axis. According to the amount of pressing, the bending angle can increase until the lower bending line (144) becomes non-linear and until the lateral bending lines contact with each other.

[0034] As a result, by means of this structure, even if the packing box (10) is pressed, the total length of the upper edge (12) does not change; thus, the displacement of the position of the barcode regions is minimum. Thus, during the transportation of the packing box (10) by the forklifts, there is no problem during the reading of the barcodes in the stations in the production areas.

REFERENCE NUMBERS

[0035]

10 Packing box
11 Lateral surface
12 Upper edge
13 Lower edge
14 Flexible section
141 Upper bending line
142 Bending point
143 Lateral bending line
144 Lower bending line
145 Intermediate bending line
15 Upper surface
16 Lower surface
17 Barcode region
A: Pressing direction
B: Pressing direction

Claims

1. A packing box (10) comprising an upper surface (15); a lower surface (16); two mutual lateral surfaces (11) with a barcode region (17) thereon; and a flexible section provided on said upper, lower and lateral surfaces (11), **characterized by** comprising a lateral

bending line (143a) which begins from a bending point (142) on the upper edge (12) of said lateral surfaces (11) and which extends between the upper surface (15) and the lower surface (16); another lateral bending line (143b) which begins from the bending point (142) and which extends between the upper and the lower surface (15, 16) so that there is a certain angle between it and said lateral bending line (143a); an intermediate bending line (145) which begins from the bending point (142) and which extends between the upper and the lower surfaces (15, 16) so as to remain between the lateral bending lines (143a, 143b); and a lower bending line (144) which extends along the lower surface (16) between the ends of said lateral bending lines (143a, 143b).

2. A packing box (10) according to claim 1, wherein said flexible section also comprises an upper bending line (141) which extends between two lateral surfaces (11) along the upper surface (15) so as to define said bending point (142).

3. A packing box (10) according to any one of the preceding claims, wherein said upper and lower bending lines (141, 144) have a linear extending cross section.

4. A packing box (10) according to any one of the preceding claims, wherein said lateral and intermediate bending lines (143, 144) have a linear extending cross section.

5. A packing box (10) according to any one of the preceding claims, wherein some part (144a) of said lower bending line (144) extends between the lateral bending line (143a) on one side and the intermediate bending line (145); and the other part (144b) of said lower bending line (144) extends between the lateral bending line (144b) on the other side and the intermediate bending line (145).

6. A packing box (10) according to any one of the preceding claims, wherein a narrow angle is provided between two lateral bending lines (143a, 143b).

7. A packing box (10) according to any one of the preceding claims, wherein the cross sections of the related parts (144a) of the lateral bending line (143a), intermediate bending line (145) and the lower bending line on one side define a right-triangular form on the lateral surface (11).

8. A packing box (10) according to any one of the preceding claims, wherein the cross sections of the related parts (144b) of the other lateral bending line (143b), intermediate bending line (145) and lower bending line define a right-triangular form on the lateral surface (11).

9. A packing box (10) according to any one of the preceding claims, wherein said lateral, lower and intermediate bending lines (143, 144, 145) are formed by crushing the related surfaces of the packing box (10) by means of a cutting tool. 5
10. A packing box (10) according to any one of the preceding claims, wherein the upper bending line (141) is formed by crushing the related surfaces of the packing box (10) by a cutting tool. 10
11. A packing box (10) according to any one of the preceding claims, wherein the subject matter packing box is in the form of a rectangular prism. 15
12. A packing box (10) according to any one of the preceding claims, wherein said packing box (10) is made of carton. 20
13. A packing box (10) according to any one of the preceding claims, wherein the packing box (10) has dimensions so that the home appliance can be placed. 25
14. A packing box (10) according to any one of the preceding claims, wherein said packing box (10) is a flat box. 30
15. A packing box (10) according to Claim 1, wherein the packing box is a flat box wherein a stove can be placed. 35
16. A packing box (10) according to any one of the preceding claims, wherein the packing box (10) is a flat box whose height is shorter than the width and length thereof. 40
17. A production method of a packing box (10) comprising an upper surface (15); a lower surface (16); two mutual lateral surfaces (11) with a barcode region (17) thereon; and a flexible section provided on said upper, lower and lateral surfaces (11), **characterized by** comprising the formation steps of the following items on the packing box, where each of the steps is realized by crushing the related surfaces of the packing box (10) by a cutting tool: 45
- a) A lateral bending line (143a) which begins from a bending point (142) on the upper edge (12) of said lateral surfaces (11) and which extends between the upper surface (15) and the lower surface (16), 50
 - b) Another lateral bending line (143b) which begins from a bending point (142) and which extends between the upper surface (15) and the lower surface (16) so that there is a certain angle between it and said lateral bending line (143a), 55
 - c) An intermediate bending line (145) which begins from the bending point (142) and which extends between the upper surface (15) and the lower surface (16) so as to remain between the lateral bending lines (143a, 143b),
 - d) A lower bending line (144) which extends along the lower surface (16) and between the ends of said lateral bending lines (143a, 143b).
18. A production method according to Claim 13, wherein there is the process step of forming an upper bending line (141) extending between two lateral surfaces (11) along the upper surface (15) so as to define said bending point (142).

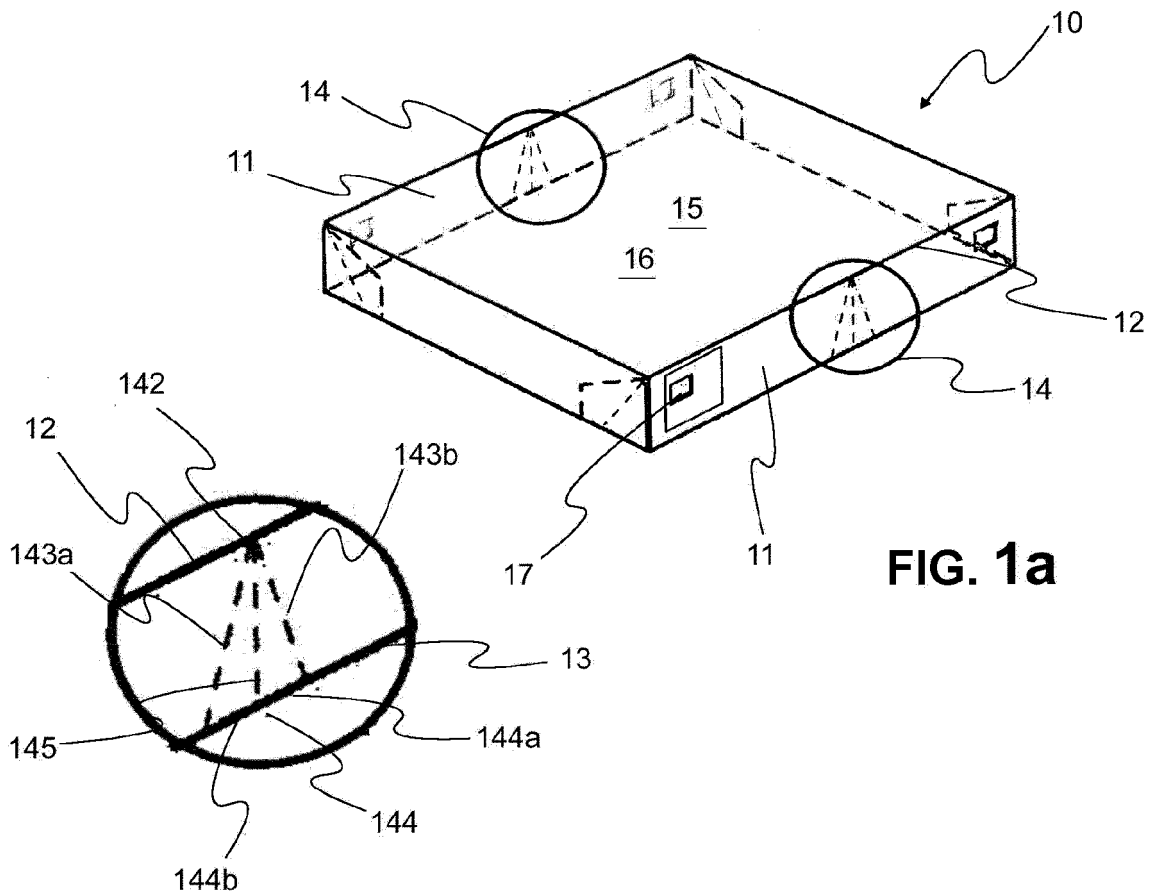


FIG. 1a

FIG. 1b

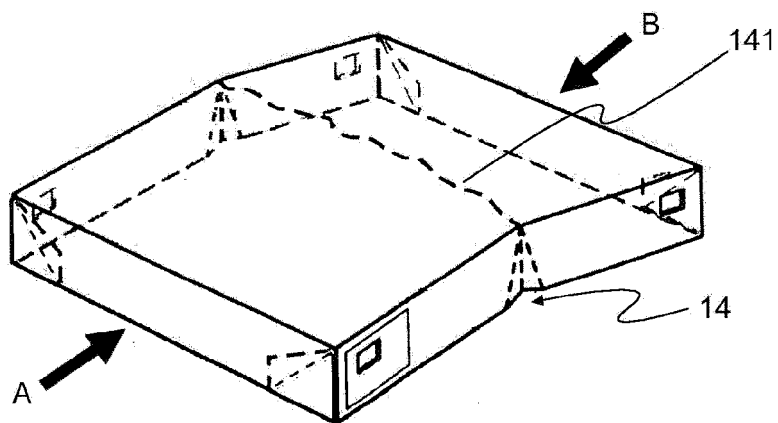


FIG. 2



EUROPEAN SEARCH REPORT

Application Number
EP 11 19 2779

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 1 912 385 A (PETERSON PAUL D) 6 June 1933 (1933-06-06) * pages 1-3; figure 16 *	1-18	INV. B65D5/42
A,D	WO 2010/060808 A1 (ARCELIK AS [TR]; GEBELEIN ARMIN [TR]; GURSES AYLIN [TR]; TANUCA MUHAMM) 3 June 2010 (2010-06-03) * paragraphs [0018] - [0026]; figures 1-4 *	1-18	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 27 February 2012	Examiner Jervelund, Niels
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			

1
EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 19 2779

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

27-02-2012

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 1912385	A	06-06-1933	NONE	

WO 2010060808	A1	03-06-2010	NONE	

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- WO 2010060808 A [0003]
- JP 5308898 B [0003]