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(54) **CARTON BLANK WITH ERECTABLE KEEL**

KARTONZUSCHNITT MIT AUFRICHTBAREM ABSTANDHALTER

FLAN DE CARTON AVEC STRUCTURES EN FORME DE QUILLE APTES A ETRE ERIGÉES

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(56) References cited:
**EP-A- 0 541 334 EP-A- 0 541 385
WO-A-94/12403 FR-A- 2 698 616**

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Description

[0001] The invention relates to keel structures used for separating adjacent articles and/or helping retain such articles in a carton. Typically, keels are used in canons for packaging foodstuffs held within a primary package such as yoghurt within pots or tubs which can be made of plastics. A keel can help immobilise an article thereby to help to prevent any damage hereto which might occur through movement.

[0002] Known canons of this type are disclosed in EP 0541334A1 and EP 0541385A1. Both these patent specifications disclose keel constructions suitable for retaining and/or separating articles. However, the keels are somewhat complex to set up from a collapsed form in the carton blank. In the case of the former several different embodiments of keels are shown and described, however, each keel which acts to separate two articles in adjacent rows is formed from at least two separate tabs which are struck from the base of a carton which panels are required to be interlocked for example at a cooperating tab and aperture in order to form an erected keel. In some embodiments the base of the carton is formed from two overlapping base panels which are also required to be interlocked and accordingly the formation of the canon and keel structures is fairly complex. In EP 0541385 individual keels are disclosed for use with individual articles. Each keel comprises a U-shaped tab struck from a base panel and held in position partly by the action of an associated article and also flaps hinged to the U-shaped keel which act to restrict the movement thereof. However, since the individual keels are not linked to one another they do not derive any structural benefit or rigidity from neighbouring keels

[0003] WO 94/12403 shows a keel structure comprising a bridge structure connecting two upstanding members. Such a design is subject to a tendency to fold back.

[0004] The invention seeks to avoid or at least mitigate these and other problems of the prior art. Accordingly, in one form of the invention there is provided a keel structure for separating two adjacent and/or retaining articles in a carton, the keel structure being struck from and integral with a base panel of the carton and comprising in opposed relationship first and second upright members having opposite ends at which they are hingably connected to the panel. The invention further comprises a bridge structure hingably connected with each of a downwardly facing edge of the first upright member and a downwardly facing edge of the second upright member, each of which downwardly facing edges is located intermediate the opposite ends of its respective upright member.

[0005] According to an optional feature of this aspect of the invention the bridge structure may comprise a first foldable panel hingably connected at one edge to the first upright member and hingably connected at an opposite edge to a connecting member.

[0006] According to another optional feature of this aspect of the invention the bridge structure may consist of the first foldable panel, the connecting member to which the first foldable panel is hingably connected, and a second foldable panel to which the connecting member is hingably connected and which is in turn hingably connected to the second upright member.

[0007] According to another optional feature of this aspect of the invention the keel structure may resiliently separate two adjacent articles.

[0008] According to another optional feature of this aspect of the invention the connecting member may comprise a region which can be shaped to be complementary in shape to a proximal portion of an article. Preferably, part of a foldable portion is positioned to be between said shaped region of the connecting member and an associated article.

[0009] According to another optional feature of this aspect of the invention the first upright member may comprise a recess for receiving part of an associated article.

[0010] According to a further optional feature of this aspect of the invention the second upright member may comprise a recess for receiving part of an associated article.

[0011] According to yet another optional feature of this aspect of the invention there may be a partition panel for separating tiers or articles in a multi-tier carton comprising a keel structure.

[0012] A second aspect of the invention provides a method for forming a keel structure, comprising providing a carton blank or partition panel blank from which a panel has been struck to form the members of the future keel structure in the plane of the panel, and moving the connecting member out of the plane of the panel thereby to cause the other members of the structure out to move of the plane of the panel, until the keel structure is in an upright position.

[0013] Preferably the method also comprises the step of maintaining the keel in an upright position until an article is loaded adjacent the keel.

[0014] The invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

FIGURE 1 is a plan view of a canon blank for forming a canon according to the invention;

FIGURE 2 is a schematic perspective view of a keel structure according to the invention; and

FIGURE 3 is a schematic perspective representation of three stages in the process of forming a keel according to the invention.

[0015] Referring to Figure 1 there is shown a canon blank 10 comprising a top panel 12 hingably connected to side panel 14 which in turn is hingably connected to a

heel anchor strip or bevel strip 16 Blank 10 can be used for forming a canon for packaging six articles such as tubs of yoghurt and according comprises three article retaining means along each side. Top panel 12 and side panel 14 comprise article top retaining slits 32 whilst bevel strip 16 comprises heel retaining apertures 34. Of course, blank 10 can be adapted to accommodate any number of articles in any number of rows.

[0016] Bevel strip 16 is in turn hingably connected to a base panel 18 comprising a first side portion 20, a central portion 22 and a second side portion 24. Central portion 22 is hingably connected along fold lines 56 and 58 to side portions 20 and 24 respectively. However, the fold lines are interrupted by keel structures 36 which, when erected in the completed carton, act to separate two adjacent articles. Base panel 18 is in turn hingably connected to bevel strip 26 comprising heel anchor devices 34. Bevel strip 26 is in turn hingably connected to a second side panel 28 which is hingably connected to a top panel joining strip 30 which can be attached to top panel 12 for example by using adhesive or cooperating locking means such as a locking tab and cooperating apertures

[0017] In this embodiment each keel structure 36 comprises an article abutting panel 40 which is hingably connected to the base panel 18 along fold line 58 and operably struck out of the plane of the carton panel to a substantially upright position. The first upright panel 40 is cut from base side portion 24 along cut line 62 and is hingably connected to a foldable panel 44 along fold line 42. Foldable panels 44 and 50, and upper panel 48, are struck from base panel 18 by cut line 64 and thereby form a connecting web between the upright panels 40 and 54. The upper panel 48 is thereby partially cut away from foldable panels 44 and 50 by curved cut lines 46. However, upper panel, or connecting member 48 is hingably connected to both foldable panels 44 and 50 along relatively short fold lines 66 at the end of cut lines 46. The second foldable panel 50 is in turn hingably connected to a second upright member 54 along fold line 52. Second upright number 54 is struck from base panel 18 along cut line 62 and hingably connected thereto along fold line 56.

[0018] Figure 2 shows a schematic perspective view of one of the keel structures 36 in a set up or upright position whereby it acts to help retain an article A. Additionally, keel 36 acts to separate article A from an adjacent article (not shown) in an adjacent row

[0019] In order to form the keel structure from the flat position shown in part A of Figure 3, upper panel 48 and/or upright members 40 and 54 can be raised out of the plane of the base panel 18. For example, by moving upper panel 48 in the direction of arrow X in part B of Figure 3, upright panels 40 and 54 are caused to rotate about fold lines 58 and 56 respectively. By continuing to apply a force in the direction of arrow X panels 40 and 54 reach upright positions and at some stage foldable panels 44 and 50 start to rotate about fold lines 42 and

52 respectively. The foldable panels thereby extend the height of upper panel 48 above both the base panel 18 and the uppermost part of upright panels 40 and 54. As well as extending the height of keel structure 36, the use of foldable panels 44 and 50 also provides useful recesses defined in pan by cut line 64 which can be used to retain the heel of an associated article Usefully also, because the upright portions 40 and 54 are anchored to base panel 18 at two separated folding positions, the upright panel is somewhat flexible between these two points and thus provide, to some extent, resilient retention of the associated article which can of course be useful in order not to damage the article. This resilience is also provided to some extent by the curved shape of cuts 46 in upper panel 48 and the use of two separated fold lines 66 to join foldable panels 44 and 50 to upper panel 48. As can be seen in Figure 2, parts of the foldable panels 44 and 50 extend above the upper panel 48 in the vicinity of the curved region 46 thereof and thus also provide some form of resilience against an abutting article. Preferably, the fold line 46 is shaped to correspond with the shape of the adjacent portion of the article such as the side of article A shown in Figure 2

[0020] Naturally a keel structure according to the invention could be provided in a panel used to separate different tiers of articles in a multi-tiered package. Also, the angle subtended between an upright panel such as 40 or 54 and the associated main carton panel such as base panel 18 is not critical but is preferably in the region of 50° to 130° and more preferably 80° to 100° but, of course, can be adapted to suit the shape of a packaged article

Claims

1. A keel structure (36) for separating two adjacent and/or retaining articles in a canon, the keel structure (36) being struck from and integral with a base panel (18) of the carton and comprising in opposed relationship first and second upright members (40, 54) having opposite ends at which they are hingably connected to the panel (18), wherein said keel structure further comprises a bridge structure (44, 48, 50) hingably connected with said upright members, characterised in that each upright member comprises a downwardly facing edge each of which downwardly facing edges is located intermediate the opposite ends of its respective upright member (40 or 54), and is connected to the bridge structure.
2. A keel structure according to claim 1 wherein the bridge structure comprising a first foldable panel (44) hingably connected at one edge to the first upright member (40) and hingably connected at an opposite edge to a connecting member (48).

3. A keel structure according to claim 2 wherein the bridge structure consists of the first foldable panel (44), the connecting member (48) to which the first foldable panel is hingably connected, and a second foldable panel (50) to which the connecting member is hingably connected and which is in turn hingably connected to the second upright member (54). 5
4. A keel structure (36) according to any of claims 1 to 3 which resiliently separates two adjacent articles. 10
5. A keel structure according to claim 4, wherein the connecting member (48) comprises a region (46) which is shaped to be complementary in shape to a proximal portion of an article. 15
6. A keel structure according to claim 5, wherein part of a foldable portion (44 or 50) is positioned to be between said shaped region (46) of the connecting member (48) and an associated article. 20
7. A keel structure according to any of claims 1 to 6, wherein the first upright member (40) comprises a recess for receiving part of an associated article. 25
8. A keel structure according to any of claims 1 to 6, wherein the second upright member (54) comprises a recess for receiving part of an associated article. 30
9. A partition panel for separating tiers or articles in a multi-tier carton comprising a keel structure according to an one of claims 1 to 8.
10. A carton comprising a keel structure according to any one of the claims 1 to 8. 35
11. A method for forming a keel structure according to any one of claims 1 to 8, comprising providing a carton blank or partition panel blank from which a panel (18) has been struck to form the members of the future keel structure in the plane of the panel (18), and moving the connecting member (48) out of the plane of the panel (18) thereby to cause the other members of the structure to move out of the plane of the panel, until the keel structure is in an upright position. 40 45
12. The method according to claim 11 further comprising the step of maintaining the keel in an upright position until an article is loaded adjacent the keel. 50
- Patentansprüche**
1. Kielstruktur (36) zum Abgrenzen und/oder Halten zweier benachbarter Gegenstände in einer Schachtel, wobei die Kielstruktur (36) aus einer Bodenwandfläche (18) der Schachtel ausgestanzt und damit einstückig ist und in gegenüberliegender Beziehung erste und zweite aufrechte Elemente (40, 54) umfaßt, die gegenüberliegende Enden aufweisen, an denen sie gelenkig mit der Wandfläche (18) verbunden sind, wobei die Kielstruktur weiter eine Brückenstruktur (44, 48, 50) umfaßt, die gelenkig mit den aufrechten Elementen verbunden ist, dadurch gekennzeichnet, daß jedes aufrechte Element eine nach unten stehende Kante aufweist, wobei jede der nach unten stehenden Kanten zwischen den gegenüberliegenden Enden ihres jeweiligen aufrechten Elements (40 oder 54) angeordnet und mit der Brückenstruktur verbunden ist.
2. Kielstruktur gemäß Anspruch 1, wobei die Brückenstruktur eine erste faltbare Wandfläche (44) umfaßt, die gelenkig an einer Kante mit dem ersten aufrechten Element (40) und gelenkig an einer gegenüberliegenden Kante mit einem Verbindungselement (48) verbunden ist.
3. Kielstruktur gemäß Anspruch 2, wobei die Brückenstruktur aus der ersten faltbaren Wandfläche (44) besteht sowie dem Verbindungselement (48), mit dem die erste faltbare Wandfläche gelenkig verbunden ist, und einer zweiten faltbaren Wandfläche (50), mit der das verbindende Element gelenkig verbunden ist und die wiederum gelenkig mit dem zweiten aufrechten Element (54) verbunden ist.
4. Kielstruktur (36) gemäß einem der Ansprüche 1 bis 3, die zwei benachbarte Gegenstände elastisch abgrenzt.
5. Kielstruktur gemäß Anspruch 4, wobei das Verbindungselement (48) einen Bereich (46) umfaßt, der so geformt ist, daß seine Form komplementär zu einem angrenzenden Abschnitt eines Gegenstands ist.
6. Kielstruktur gemäß Anspruch 5, wobei ein Teil eines faltbaren Abschnitts (44 oder 50) so angeordnet ist, daß er sich zwischen dem geformten Bereich (46) des Verbindungselements (48) und einem dazugehörigen Gegenstand befindet.
7. Kielstruktur gemäß einem der Ansprüche 1 bis 6, wobei das erste aufrechte Element (40) eine Aussparung zur Aufnahme eines Teils eines dazugehörigen Gegenstands umfaßt.
8. Kielstruktur gemäß einem der Ansprüche 1 bis 6, wobei das zweite aufrechte Element (54) eine Aussparung zur Aufnahme eines Teils eines dazugehörigen Gegenstands umfaßt.
9. Trennwandfläche zum Abgrenzen von Lagen oder Gegenständen in einer mehrlagigen Schachtel, die

eine Kielstruktur gemäß einem der Ansprüche 1 bis 8 umfaßt.

10. Schachtel, die eine Kielstruktur gemäß einem der Ansprüche 1 bis 8 umfaßt.

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11. Verfahren zum Ausbilden einer Kielstruktur gemäß einem der Ansprüche 1 bis 8, wobei das Verfahren das Bereitstellen eines Schachtelzuschnitts oder eines Trennwandflächenzuschnitts umfaßt, aus dem eine Wandfläche (18) ausgestanzt wurde, um die Elemente der späteren Kielstruktur in der Ebene der Wandfläche (18) auszubilden, und das Bewegen des Verbindungselements (48) aus der Ebene der Wandfläche (18) heraus, um dadurch die anderen Elemente der Struktur zu zwingen, sich aus der Ebene der Wandfläche herauszubewegen, bis sich die Kielstruktur in einer aufrechten Position befindet.

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12. Verfahren gemäß Anspruch 11, das weiter den Schritt des Aufrechterhaltens des Kiels in einer aufrechten Position umfaßt, bis ein Gegenstand angrenzend an den Kiel eingebracht wurde.

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Revendications

1. Structure en forme de quille (36) pour séparer deux articles adjacents et/ou retenir des articles dans un carton, la structure en forme de quille (36) étant frappée à partir d'un panneau de base (18) du carton et étant d'un seul tenant avec celui-ci et comprenant des premier et second éléments de montant (50, 54), qui sont opposés l'un à l'autre et possèdent des extrémités opposées, au niveau desquelles ils sont reliés, d'une manière articulée, au panneau (18), ladite structure de quille comprenant en outre une structure en pont (44, 48, 50) raccordée de manière articulée auxdits éléments de montant, caractérisée en ce que chaque élément de montant comprend un bord tourné vers le bas, chacun des bords tournés vers le bas étant situé entre les extrémités opposées de son élément de montant respectif (40 ou 54) et étant raccordé à la structure en pont.
2. Structure en forme de quille selon la revendication 1, dans laquelle la structure en pont comprend un premier panneau repliable (44) raccordé d'une manière articulée, au niveau d'un bord, au premier élément de montant (40) et raccordé de manière articulée, au niveau d'un bord opposé, à un élément de raccordement (48).
3. Structure en forme de quille selon la revendication 2, dans laquelle la structure en pont est constituée par le premier panneau repliable (44), l'élément de raccordement (48) auquel le premier panneau

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repliable est raccordé de manière articulée, et un second panneau repliable (50), auquel l'élément de raccordement est raccordé de manière articulée et qui, à son tour, est raccordé de manière articulée au second élément de montant (54).

4. Structure en forme de quille (36) selon l'une quelconque des revendications 1 à 3, qui sépare élastiquement deux articles adjacents.

5. Structure en forme de quille selon la revendication 4, dans laquelle l'élément de raccordement (48) comprend une région (46), qui est conformée de manière à avoir une forme complémentaire d'une partie proximale d'un article.

6. Structure en forme de quille selon la revendication 5, dans laquelle une partie d'une partie repliable (44 ou 50) est disposée de manière à être située entre ladite région conformée (46) de l'élément de raccordement (48) et un article associé.

7. Structure en forme de quille selon l'une quelconque des revendications 1 à 6, dans laquelle le premier élément de montant (40) comprend un renforcement destiné à recevoir une partie d'un article associé.

8. Structure en forme de quille selon l'une quelconque des revendications 1 à 6, dans laquelle le second élément de montant (54) comprend un renforcement destiné à recevoir une partie d'un article associé.

9. Panneau de séparation destiné à séparer des étages ou des articles dans un carton à plusieurs étages, possédant une structure en forme de quille selon l'une quelconque des revendications 1 à 8.

10. Carton comprenant une structure en forme de quille selon l'une quelconque des revendications 1 à 8.

11. Procédé pour former une structure en forme de quille selon l'une quelconque des revendications 1 à 8, consistant à fournir un flan en carton ou un flan de panneau de séparation, à partir duquel un panneau (18) a été frappé pour former les éléments de la structure en forme de quille dans le plan du panneau (18), et à déplacer l'élément de raccordement (48) à l'extérieur du plan du panneau (18) de manière à amener les autres éléments de la structure à se déplacer à l'extérieur du plan du panneau, jusqu'à ce que la structure en forme de quille soit dans une position érigée.

12. Procédé selon la revendication 11, comprenant en outre l'étape consistant à maintenir la quille dans

une position érigée jusqu'à ce qu'un article soit chargé adjacent à la quille.

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FIG. 1



