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Description

This invention relates to crates, and more particularly to a substantially rectangular crate for a plurality of articles such as bottles, and having a base and side wall means and being provided with an internal partitioning grid.

It is a requirement that such crates be strong and are able to be stacked in a stable manner.

It is known to employ side walls with double skinned portions, particularly corner portions, to provide increased structural strength. However, this has the disadvantage of reducing the useful interior cross-sectional area of the crate for a given external cross-sectional area. This disadvantage is particularly significant where an increase in the external side dimensions of the crate is undesirable, for example because the crates are required to be stackable on a pallet of given dimensions. German Offenlegungsschrift 2432881 discloses a substantially rectangular bottle crate having a base and side wall means and provided with an internal partitioning grid, the side wall means including a double skinned corner portion which defines with the adjacent mutually perpendicularly extending portions of the partitioning grid connected to the corner portion a bottle compartment and the corner portion comprising an outer skin having mutually perpendicular portions and an inner skin spaced from the outer skin. The inner skin of the corner portion is formed with a channel shaped rib extending away from the outer skin and perpendicularly relative to the base where one of the two mutually perpendicular partitioning grid portions is connected to the inner skin. The crate illustrated in Offenlegungsschrift 2432881 is constructed so that it can only be stacked one upon the other in vertical columns, which results in unstable stacking.

An object of the present invention is to provide a crate which utilizes double-skinned corner and side wall portions in a way in which reduction of the useful cross-sectional area of the crate is minimised and which can be stacked other than in vertical columns.

The invention provides a substantially rectangular crate for a plurality of articles having cylindrical body portions, said crate having a base and side wall means and being provided with an internal partitioning grid, said side wall means including double-skinned corner portions, each of which defines with adjacent mutually perpendicularly extending portions of the partitioning grid connected thereto a compartment for one of said articles and comprises an outer skin having mutually perpendicular portions and an inner skin spaced from said outer skin characterised in that the inner skin of each corner portion is formed with a respective channel shaped rib extending away from the outer skin and perpendicularly relative to the base where each of the mutually perpendicularly extending partitioning grid portions is connected to the inner skin; in that said side

wall means includes double-skinned side wall portions which comprise spaced outer and inner skins, and extend between said corner portions, further portions of said grid extending perpendicularly towards the inner skins of said side wall portions, each of at least the longer side wall portions having its inner skin formed adjacent at least one of said further grid partitioning portions with a channel shaped rib extending away from the outer skin thereof and perpendicularly relative to the base; in that said side wall means define an upper rim of the crate of substantially uniform thickness and said base is provided with a plurality of downwardly extending formations defining therebetween channels for locating the rims of adjacent side wall portions of the side wall means of two similar crates arranged side-by-side and in stacked relationship with said crate; and in that the channel shaped ribs of the side walls means are located in or adjacent said channels such that rims of adjacent side wall portions of two similar crates arranged side-by-side located in any one of said channels extend close to or directly under a channel shaped rib at each end of such a channel.

It will be appreciated that these channel shaped ribs of both the corner portions and the side wall portions of the side wall means by being formed adjacent portions of the partitioning grid can be dimensioned so as to be spaced from the cylindrical body portions of the articles in the compartments of the crate and strengthen the side wall means so that the spacing apart of the inner and outer skins other than adjacent the grid partitioning portions referred to can be correspondingly reduced. Furthermore, it will be appreciated that not only does the provision of the channels in the base of a crate for locating the rims of adjacent side wall portions of two similar crates arranged side-by-side in stacked relationship therewith enable a stable stack to be formed in which the crates are staggered vertically, but also the location of the channel shaped ribs of the side wall means such that when the crates are so stacked, the rims of adjacent side wall portions of the two similar crates located in such a channel will extend close to or directly under a channel shaped rib at each end of such a channel assists distribution of the load of the stack through the layers thereof, enabling the lowest layer to carry the load of the stack better.

Preferably, the channel shaped ribs of each corner portion are connected to the outer skin at their remote edge portions only so that the corner portions are completely hollow.

In order that the invention may be better understood, an embodiment thereof, which is given by way of example only, will now be described, reference being had to the accompanying drawings in which:

Figure 1 shows a bottle crate, the right hand side of the Figure being a bottom plan view and the left hand side of the Figure being a part-

sectioned top plan view, the section being taken along the line A—A of Figure 3;

Figure 2 is a part-sectioned side elevation of the same crate, the section being taken along the line B—B of Figure 1;

Figure 3 is a part-sectioned end elevation of the same crate, the section being taken along the line C—C of Figure 1.

In the drawings there is illustrated a substantially rectangular crate 1 for a plurality of bottles (not shown) having cylindrical body portions. The crate 1 has a base 2 and side wall means 3 formed with a double-skin extending upwardly from the base to an upper rim 4 around the open top of the crate. An internal partitioning grid 5 is provided to define compartments 6 within the crate, a separate compartment being provided for each bottle.

The side wall means 3 includes double-skinned corner portions 7, best shown in the section in Figure 1, each of which comprises an outer skin 8 having mutually perpendicular portions 9 and 10, which are interconnected in the illustrated crate by a curved portion 11, and an inner skin 12 spaced from the outer skin 8. Each corner portion 7 defines with adjacent mutually perpendicularly extending portions 13 of the partitioning grid 5 connected thereto a corner compartment 6a for one of the bottles and the inner skin 12 is formed with respective channel shaped ribs 14 extending away from the outer skin 8 and perpendicularly relative to the base 2 where the partitioning grid portions 13 are connected to the inner skin. The ribs extend from the base 2 and terminate short of the upper rim 4. The ribs 14 are interconnected with the outer skin 8 to form hollow columns 14a extending perpendicularly from the base 2. In the illustrated crate, the ribs 14 of each corner portion are connected to the outer skin by stay members 24 at their remote edge portions only so that the corner portion is completely hollow. As can be seen by the circles 15 drawn in Figure 1 to represent the cross-section of the body portions of two bottles, the provision of the ribs 14 adjacent the grid portions 13 whilst strengthening the corner portions does not decrease the effective size of the compartments since the ribs occupy space in the compartments which would be otherwise free. The strengthening effect of the ribs enables the spacing of the inner and outer skins of the corner portions to be reduced without affecting the overall strength of the corner portions, and thus the size of the compartment to be increased.

Whilst it may be advantageous to have the inner skin diverge from the outer skin away from the upper rim 4 in order to provide a more rigid structure and to facilitate moulding, the distance between adjacent corner portions available for division into compartments, may be increased, for given external crate dimensions, by making the inner skin parallel, or substantially parallel, to the outer skin at at least

central vertical planes of the corner compartments. It may, however, only be required to provide this increase in one direction only, for example the direction of the longer sides of the crate, and as shown in the illustrated crate this can be achieved by making the inner skin parallel to the outer skin at the central vertical plane extending through the shorter sides of the crate only — the plane D—D of compartment 6a in Figure 1.

The strength of the corner portions can advantageously be further increased as shown in the illustrated crate by curving the inner skin 12 opposite the curved portion 11 of the outer skin with a greater radius and over a greater extent than the portion 11 to increase the spacing of the skins. Again, it will be appreciated that this does not decrease the effective size of the corner compartments.

The side wall means include double-skinned side wall portions which extend between the corner portions 7, the longer and shorter side wall portions being referenced 16 and 17 respectively in the drawings. These side wall portions comprise outer and inner skins 18 and 19 respectively. The partitioning grid 5 includes portions 20 which extend towards the side wall portions and in view of the foregoing description it will be appreciated that the side wall portions may be strengthened by the formation of channel shaped ribs, similar to ribs 14, adjacent one or more of the grid portions 20. In the illustrated embodiment one such rib 21 is formed in each of the longer side wall portions 16 midway therealong.

Openings 22 extending through the side wall means 3 form handles for the crate and apart from these openings 22 and recesses 23 formed above them the exterior of the crate formed by the outer skins 8 and 18 is smooth and continuous. The inner skins 12 of the corner portions 7 are also continuous but the inner skins 19 of the side wall portions which are also connected to the outer skins 18 thereof by stay members 24 extending therebetween and strengthening the construction of the side wall portions, are apertured. The inner skins of the longer side wall portions are shown having substantially rectangular apertures 25 extending between top and bottom strips of the side wall portions such that the longer side wall portions are continuously double-skinned at their top and bottom. The inner skins of the shorter side wall portions are provided with apertures 26 shown extending from the bottom of the inner skins and terminating short of openings 22. The formation of apertures 25 and 26 provides a substantial saving in material and is possible without weakening the construction of the side wall portions a significant amount.

The base 2 of the crate is also apertured and shown as a lattice grid which is provided with a plurality of downwardly extending formations 27 shown as arranged in three rows and four columns, adjacent rows and columns of the

formations defining therebetween respective channels 28 (Figure 3) and 29 (Figure 2). Each channel is of a width such that the upper rims 4, which as will be noted from Figure 1 are of substantially uniform thickness, of adjacent side wall portions of two similar crates arranged side-by-side and in stacked relationship with the crate can be located therein. This provision enables the crates to be stacked other than in direct vertical alignment and provides for stable stacking.

As can be best appreciated from Figure 1, the ribs 14 of corner portions are adjacent the sides of channels 28 and the outer ones of channels 29 and the ribs 21 of the longer side wall portions are located centrally in the intermediate channel 29. Accordingly when stacked in the manner described above the adjacent upper rims of side-by-side lower crates located in a channel 28 or 29 extend close to or directly under a rib 14 or 21 at each end of the channel. This provision enables the crates in the lowest layer of a stack to carry the load of the stack better.

The illustrated crate is injection moulded in a plastics material with the partitioning grid 5 integral with the side wall means.

Claims

1. A substantially rectangular crate (1) for a plurality of articles having cylindrical body portions, said crate having a base (2) and side wall means (3) and being provided with an internal partitioning grid (5), said side wall means (3) including double-skinned corner portions (7), each of which defines with adjacent mutually perpendicularly extending portions (13) of the partitioning grid connected thereto a compartment (6a) for one of said articles and comprises an outer skin (8) having mutually perpendicular portions (9, 10) and an inner skin (12) spaced from said outer skin (8) characterised in that the inner skin (12) of each corner portion (7) is formed with a respective channel shaped rib (14) extending away from the outer skin (8) and perpendicularly relative to the base (2) where each of the mutually perpendicularly extending partitioning grid portions (13) is connected to the inner skin (12); in that said side wall means (3) includes double-skinned side wall portions (16, 17) which comprise spaced outer and inner skins (18, 19) and extend between said corner portions (7), further portions (20) of said grid (5) extending perpendicularly towards the inner skins (19) of said side wall portions (16, 17), each of at least the longer side wall portions (16) having its inner skin (19) formed adjacent at least one of said further grid partitioning portions (20) with a channel shaped rib (21) extending away from the outer skin (18) thereof and perpendicularly relative to the base (2); in that said side wall means (3) define an upper rim (4) of the crate of substantially uniform thickness and said base (2) is provided with a

plurality of downwardly extending formations (27) defining therebetween channels (28, 29) for locating the rims (4) of adjacent side wall portions of the side wall means (3) of two similar crates (1) arranged side-by-side and in stacked relationship with said crate; and in that the channel shaped ribs (14, 21) of the side wall means (3) are located in or adjacent said channels (28, 29) such that rims (4) of adjacent side wall portions (3) of two similar crates (1) arranged side-by-side located in any one of said channels (28, 29) extend close to or directly under a channel shaped rib (14, 21) at each end of such a channel.

2. A crate as claimed in claim 1, wherein the channel shaped ribs (14) of each corner portion (7) are connected to the outer skin (8) at their remote edge portions only so that said corner portions (7) are completely hollow.

3. A crate as claimed in claim 1 or 2, wherein the inner skin (12) of each corner portion (7) is substantially parallel to the outer skin (8) thereof at at least one of the central vertical planes (D—D) of each compartment (6a) associated with said corner portion (7).

4. A crate as claimed in claim 1, 2 or 3, wherein the inner skins (18) of said side wall portions (16, 17) have apertures (25, 26).

5. A crate as claimed in any one of the preceding claims, wherein said side wall means (3) includes stay members (24) extending between its outer skins (18) and their respective inner skins (19).

Revendications

1. Caisse sensiblement rectangulaire (1) destinée à recevoir un certain nombre d'articles présentant des parties formant des corps cylindriques, ladite caisse comportant une base (2) ainsi que des moyens (3) formant une paroi latérale et étant pourvue d'une grille de séparation intérieure (5), lesdits moyens (3) formant une paroi latérale présentant des sections de coin à double paroi (7) dont chacune définit avec des sections adjacentes mutuellement perpendiculaires (13) de la grille de séparation, qui lui sont reliées, un compartiment (6a) pour l'un desdits articles et comprend une peau extérieure (8) ayant des parties mutuellement perpendiculaires (9, 10) et une peau intérieure (12) située à distance de ladite peau extérieure (8), caractérisée en ce que la peau intérieure (12) de chaque section de coin (7) présente une nervure respective (14) conformée en canal, qui s'étend depuis la peau extérieure (8), perpendiculairement à la base (2) et où chacune des sections mutuellement perpendiculaires (13) de la grille de séparation est réunie à la peau intérieure (12); en ce que lesdits moyens (3) formant la paroi latérale présentent des sections de paroi latérale à double peau (16, 17) qui comprennent des peaux intérieure et extérieure espacées (18, 19) et s'étendent entre lesdites sections de coin (7), des sections supplémen-

taires (20) de ladite grille (5) s'étendant perpendiculairement vers les peaux intérieures (19) desdites sections de paroi latérale (16, 17), au moins chacune des sections de paroi latérale les plus longues (16) ayant sa peau intérieure (19) formée à proximité d'au moins l'une desdites sections supplémentaires (20) de la grille de séparation avec une nervure (21) conformée en canal qui s'étend à partir de la peau extérieure (18) des sections de paroi latérale et perpendiculairement à la base (2); en ce que lesdits moyens (3) formant la paroi latérale définissent un rebord supérieur (4) de la caisse, ayant une épaisseur sensiblement uniforme et ladite base (2) est pourvue d'un certain nombre de conformations (27) s'étendant vers le bas et délimitant entre elles des canaux (28, 29) pour recevoir les rebords (4) des sections de paroi latérale adjacentes des moyens (3) formant la paroi latérale de deux caisses similaires (1) disposées côte-à-côte et en relation d'empilage avec ladite caisse; et en ce que les nervures conformées en canaux (14, 21) des moyens formant la paroi latérale (3) sont positionnées dans ou à proximité desdits canaux (28, 29) de telle façon que les rebords (4) des sections de paroi latérale adjacentes (3) de deux caisses similaires (1) disposées côte-à-côte, placés dans l'un quelconque desdits canaux (28, 29), s'étendent à proximité de ou directement en-dessous d'une nervure conformée en canal (14, 21) à chaque extrémité d'un tel canal.

2. Caisse selon la revendication 1, dans laquelle les nervures conformées en canaux (14) de chaque section de coin (7) sont reliées à la peau extérieure (8) uniquement à leurs parties de bord éloignées si bien que lesdites sections de coin (7) sont entièrement creuses.

3. Caisse selon la revendication 1 ou 2, dans laquelle la peau intérieure (12) de chaque section de coin (7) est sensiblement parallèle à la peau extérieure (8) de cette dernière, dans au moins une direction parallèle à l'un des plans verticaux médians (D—D) de chaque compartiment (6a) associé à ladite section de coin (7).

4. Caisse selon la revendication 1, 2 ou 3, dans laquelle les peaux intérieures (18) desdites sections de paroi latérale (16, 17) présentent des ouvertures (25, 26).

5. Caisse selon l'une quelconque des revendications précédentes, dans laquelle lesdits moyens (3) formant la paroi latérale comprennent des éléments d'entroulement (24) s'étendant entre leur peau extérieure (18) et leur peau intérieure respective (19).

Patentansprüche

1. Im wesentlichen rechteckiger Kasten (1) für eine Mehrzahl von Gegenständen mit zylindrischen Körperbereichen, wobei der Kasten einen Boden (2) und eine Seitenwandung (3) hat und mit einem inneren Unterteilungsgitter (5) versehen ist und wobei die Seitenwandung (3) doppelwandige Eckbereiche (7) aufweist, die

jeweils mit benachbarten, sich zweiseitig senkrecht erstreckenden Bereichen (13) des damit verbundenen Unterteilungsgitters ein Fach (6a) für einen der genannten Gegenstände bilden und eine Außenwand (8) mit sich zweiseitig senkrecht erstreckenden Bereichen (9, 10) und eine zur Außenwand (8) im Abstand angeordnete Innenwand (12) umfassen, dadurch gekennzeichnet, daß die Innenwand (12) eines jeden Eckbereiches (7) mit einer jeweiligen rinnenförmigen Rippe (14) ausgebildet ist, die sich von der Außenwand (8) hinweg und senkrecht zu dem Boden (2) erstreckt, wo jeder der sich zweiseitig senkrecht erstreckenden Unterteilungsgitterbereiche (13) mit der Innenwand (12) verbunden ist; daß die Seitenwandung (3) doppelwandige Seitenwandbereiche (16, 17) aufweist, die im Abstand zueinander angeordnete Außen- und Innenwände (18, 19) umfassen und sich zwischen den Eckbereichen (7) erstrecken, wobei sich weitere Bereiche (20) des Gitters (5) senkrecht zu den Innenwänden (19) der Seitenwandbereiche (16, 17) erstrecken und zumindest jeder der längeren Seitenwandbereiche (16) an seiner Innenwand (19) benachbart zumindest einem der weiteren Gitterunterteilungsbereiche (20) mit einer rinnenförmigen Rippe (21) versehen ist, die sich von dessen Außenwand (18) hinweg und senkrecht zu dem Boden (2) erstreckt; daß die Seitenwandung (3) einen oberen Rand (4) des Kastens von im wesentlichen gleichmäßiger Dicke bildet und der Boden (2) mit einer Mehrzahl von sich nach unten erstreckenden Ausformungen (27) versehen ist, die zwischen sich Rinnen (28, 29) zur Aufnahme der Ränder (4) benachbarter Seitenwandbereiche der Seitenwandung (3) von zwei übereinstimmenden Kästen (1) bilden, die seitlich nebeneinander und im Stapelverhältnis zu dem Kasten angeordnet sind; und daß die rinnenförmigen Rippen (14, 21) der Seitenwandung (3) in oder nahe den Rinnen (28, 29) so angeordnet sind, daß in irgendeiner der Rinnen (28, 29) befindliche Ränder (4) benachbarter Seitenwandbereiche (3) zweier seitlich nebeneinander angeordneter übereinstimmender Kästen (1) sich bis dicht an oder unmittelbar unter eine rinnenförmige Rippe (14, 21) an jedem Ende einer solchen Rinne erstrecken.

2. Kasten nach Anspruch 1, dadurch gekennzeichnet, daß die rinnenförmigen Rippen (14) eines jeden Eckbereiches (7) mit der Außenwand (8) lediglich an ihren abgewandten Randbereichen verbunden sind, so daß die Eckbereiche (7) völlig hohl sind.

3. Kasten nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß in zumindest einer der vertikalen Mittelebenen (D—D) eines jeden dem Eckbereich (7) zugehörigen Faches (6a) die Innenwand (12) eines jeden Eckbereiches (7) im wesentlichen parallel zu dessen Außenwand (8) ist.

4. Kasten nach Anspruch 1, 2 oder 3, dadurch gekennzeichnet, daß die Innenwände (18)

der Seitenwandbereiche (16, 17) Öffnungen (25, 26) aufweisen.

5. Kasten nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß die

Seitenwandung (3) Streben (24) umfaßt, die sich zwischen deren Außenwänden (18) und ihren jeweiligen Innenwänden (19) erstrecken.

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