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(54) **STACKING TRAY FOR BOTTLES**

ZWISCHENLAGE ZUM STAPELN VON FLASCHEN

PLATEAU PERMETTANT L'EMPILAGE DE BOUTEILLES

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(73) Proprietor: **Oy Hartwall Ab**
00390 Helsinki (FI)

(72) Inventor: **PETERSEN, Roar**
N-7048 Trondheim (NO)

(74) Representative: **Peltonen, Antti Sakari et al**
Kolster Oy Ab, Iso Roobertinkatu 23, P.O. Box
148
00121 Helsinki (FI)

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WO-A-82/01536 WO-A-94/07758

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Description

[0001] Stacking tray, particularly for bottles, more specifically a stacking tray as described in the introductory part of claim 1.

Background of the invention

[0002] From WO-application No. 94/07758 a stacking tray for bottles is known. This stacking tray has protruding, hollow tray tops which can be engaged on the bottle tops, so that the inside bottom of the tray tops engage with the upper side of the bottle tops. Additionally an annular rib on the bottle neck beneath the threads for the cap provides a guide for the inner sides of the tray tops.

[0003] The prior art stacking tray requires a diagonal arrangement of the bottles, as the rows of depressions are in juxtaposition. Further, the engagement against the bottom of the tray tops requires the lower side of the tray to extend over the upper, narrow part of the bottle neck. Consequently, this prior art stacking tray can not adapt packs of two or more bottles which are connected by a carrying handle, e.g. of cardboard, of a type where holes engage over the bottle caps to engage under the annular ribs.

Objects

[0004] The main object of the invention is to provide a stacking tray in which a part of the load from an upper stacking tray is applied to the annular rim. A further object is to provide a stacking tray which provides a stable stack when several layers of bottles are arranged one above the other.

The invention

[0005] The invention is stated in the characterizing part of claim 1. With this stacking tray, it is possible to stack bottle packs, e.g. 4-packs and 6-packs, with a handle of cardboard or plastic, in stacks of up to six layers.

[0006] The side walls of the tray tops will merge into the side walls of the depressions at four sectors for each tray top. For each sector, a sickle shaped indent is formed in the tray tops, said indents providing an engagement as stated in claims 2 and 3.

[0007] Further features of the invention are described in claims 4-6.

Example

[0008] The invention is described in more detail with reference to the drawings, in which

Fig. 1 is a plan view from above, of a stacking tray according to the invention, with room for 88 bottles in one layer,

Fig. 2 is a vertical longitudinal section through two layers of bottles stacked with a stacking tray according to the invention,

Fig. 3 is a part of a section like in Fig. 2, but in a transverse direction,

Fig. 4 is a plan view from below on a somewhat larger scale of a part of the stacking tray of Fig. 1,

Fig. 5 is a side view of a bottle arranged between an upper and a lower stacking tray, and showing part of the neighbouring bottles and stacking trays, Fig. 6 is an enlarged part of Fig. 5, to illustrate the support grooves for the annular rims of the bottle necks,

Fig. 7 is a part of Fig. 1 shown on a larger scale, Fig. 8 is a vertical section through two neighbouring depressions in the stacking tray of Fig. 1-7, but in the larger scale of Fig. 7,

Fig. 9 is a part bottom plan view of an alternative embodiment of the novel stacking tray,

Fig. 10 is a part of a side view of the stacking tray according to Fig. 9, used for stacking with engagement against the lower side of the tray depressions, and

Fig. 11 is a part of a vertical section of an alternative embodiment of the transition between the depressions, to provide a firmer engagement with the bottle caps.

[0009] Fig. 1 shows a stacking tray 11 having eight rows of eleven tray depressions 12 each and a corresponding number of rows of tray tops 13, as illustrated in Figs. 6-8. The rows of tray depressions and tray tops respectively are arranged juxtaposed in an offset manner, the rows of tray tops being offset half a pitch relative to the rows of tray depressions. The tray tops 13 are oriented upwardly relative to the tray depressions 12 and each is arranged symmetrically adjacent to four neighbouring tray depressions, and outside two neighbouring tray depressions at opposite of the tray sides. The tray depressions are dimensioned to accommodate the bottom part of a bottle of a certain size, e.g. a PET-bottle with the volume 0,5 - 2 Liter, while the tray tops are suited to engage with the top of a bottle. This will be described in more detail below.

[0010] Fig. 2 and 3 show a stacking tray 11, used for stacking two layers 15 and 16 of upright bottles 14. A lower layer 15 of bottles is arranged on a stacking tray 11 on a support (not shown) e.g. a pallet. Over the lower layer 15 of bottles a first stacking tray 11A is arranged, with the tray tops 13 engaging on the bottle tops 18, as shown in Figs. 5 and 6. The stacking tray will stabilize the lower layer 15 of bottles and provide a base for an upper, second layer 16 of bottles, in which the bottles 14 are arranged with their lower parts in the tray depressions in the lower stacking tray 11A. The second layer 16 of bottles is correspondingly covered by a second stacking tray 11B which acts both as a stabilizer and also as a base for further layers of bottles.

[0011] Fig. 2 shows that the bottles in each layer are arranged side by side and that stacked layers of bottles are mutually disposed by a distance equal to half a bottle. The edge of the stacking tray is provided with a depending rim (see Fig. 8 and 11) to avoid bending.

[0012] Fig. 4 shows the area of engagement of the bottle tops 18 from below. In the bottom 19 of each tray depression 13 there is provided a sickle shaped indent or support groove 20 which extends over a sector of approximately 15° facing each adjacent tray top 12. Each bottom 19 has two respectively four indents 20 as shown in more detail in Fig. 6.

[0013] Fig. 5 shows how each bottle 14 is arranged relative to lower and upper stacking trays 11A and 11B. The relationship between the tray depressions 12 and 13 results in the stacking tray 11 engaging only the upper part of the bottle necks and the lower part of each bottle in an upper layer of bottles. This leaves free space for a handle 21, which is shown in outline in Fig. 5 and 6, and which abuts the upper part of the bottle neck 22.

[0014] Fig. 6 shows in more detail how the bottle tops 18 are engaged by the tray tops 13. The bottom 23 of each tray top 13 has an opening 23A. The upper part of each tray top 13 may be cylindrical and merge into a diverging part integrated with the adjoining tray depressions 11. The bottom 19 of each tray depression 12 has an indent 20 adjacent to the tray top as shown in Fig. 4. Each tray top 13 located between four tray depressions 12 will thus face four indents 20 in a circle at right angles. The indents 20 are provided in the wall of each tray depression 19, but do not penetrate the wall.

[0015] The bottle top 18 has an annular rim 25 located under and at a distance from a bottle cap 24. Rim 25 is integral formed with the bottle neck. Between the bottle cap 24 and the annular rim 25 may be incorporated a sealing ring (not shown), which is broken when the bottle cap is initially opened. The bottle cap 24 in the example shown engages with the walls inside the tray top 13, but is spaced a distance from the bottom 23. This incurs no stress or transfer of vertical forces on the bottle cap 24, from the superposed stacking tray 11B.

[0016] Fig. 6 shows how the annular rim 25 engages the indents 20 to transfer weight forces from a superposed stacking tray 11B. The annular rims 25 will transfer the weight of the superposed stacking tray 11B to the bottle necks 22. The bottle necks are however exposed because the bottom 26 of the stacking tray 11B is arranged over the upper end 27 of the conical part of the bottle neck. A stacking tray according to the invention will thus leave space for a gripping handle 21. The gripping handle 21 may be formed in various ways, e.g. of plastic or cardboard, for lowering on to the bottle tops 18 of two or more bottles in a group.

[0017] Fig. 7 shows a corner of a stacking tray 11 with a depending outer rim or skirt 28, illustrating the location of a tray top 13 between four tray depressions 12. Centrally in the bottom of each tray depression 11 there is a circular opening 29. This opening is surrounded by

four evenly distributed ribs 30 defining intervening drainage grooves 31. The purpose of the ribs 30 is to engage the depressions at the bottom of each bottle, as illustrated in Fig. 6 and 8, to support the bottles and contribute to the force transfer, to provide the bottles a small clearance or an engagement without force transfer on the side, against the walls of the tray depressions.

[0018] Fig. 8 shows the design of the stacking tray at the edge and at the transition between two tray depressions. The height of the tray depressions 12 is lower than the height of the tray tops 13. This will leave necessary height for the bottle caps 24 to avoid engagement.

[0019] Fig. 9 shows a view from the bottom of an alternative embodiment, in which the tray depression 32 has a narrower opening 33, inhibiting the entrance of the bottle cap 24. The stacking tray thus can be used as shown in Fig. 2 and 5, for stacking the trays with a 180° twist, and additionally as shown in Fig. 10, with the trays arranged directly one above the other, for stacking with a high stacking tray, with the bottle caps of one layer engaging the bottoms of the tray depressions 32 of an upper tray. This is particularly advantageous for transporting filled bottles joined with handles in multipacks. For the return of empty bottles from a sales outlet, the tray will be twisted 180° to avoid engagement on the mouths of the open bottles.

[0020] The stacking tray 11 may be manufactured of a suitable plastics material, e.g. PP, by extrusion or another known method of manufacture. Several empty stacking trays may be stacked with mating lower and upper parts. In use, the stacking trays need to be located in alternating 180° orientations so that the tray depressions mate the tray tops, to introduce the bottle tops into the tray tops 13. As will appear from the description below, the tray may also be used for "high" stacking, without 180° twist, the bottle tops then engaging the bottom of the tray depressions 12, see Fig. 10.

[0021] In an alternative embodiment (not shown), an annular rib or series of axial ribs may extend from the bottom 23 or a step with a lesser diameter may be provided at the inner end of the tray tops. Even though this may require a more complicated manufacturing procedure and a higher consumption of material, it will enable a corresponding arrangement of the stacking tray as described above. By having the tray tops support by an engagement under the bottom, i.e. the end of the cap, any load on the top of the bottle cap is avoided. Thus, wearing off of any printing on the top of the bottle cap is avoided. Additionally, leakage due to an offset load on the bottle cap is avoided.

Claims

1. Stacking tray (11), particularly for bottles, to stack the bottles (14) upright in two or more layers (15, 16), one above the other, said stacking tray com-

prising juxtaposed rows of tray depressions (12) for accommodating the lower part of the bottles, and tray tops (13) to engage bottle tops (18) in a lower layer (15) of bottles, which stacking trays are to be used with no twist and with 180° twist, between consecutive stacking trays, **characterized in that** the tray tops (13) in a transition area to the adjoining parts of the stacking tray (11) are provided with indents (20) provided to engage and transfer force in a vertical direction with an annular rim (25) or step protruding from the bottle neck (22) at its upper part, and **in that** the tray tops (13) support the stacking tray (11) with engagement in a position under the bottom (23) of the tray tops (13) at the transition into the tray depressions (12) to enable the stacking tray to be arranged with the lower side at the upper part of the bottle neck.

2. Stacking tray according to claim 1 **characterized in that** the indents (20) provide sickle shaped grooves in the bottom part (19) of adjoining tray depressions (12).
3. Stacking tray according to claim 1 or 2, **characterized in that** the indents (20) are non-penetrating recesses in the wall of the stacking tray.

Patentansprüche

1. Stapelplatte (11), insbesondere für Flaschen, um die Flaschen (14) aufrecht in zwei oder mehr Lagen (15, 16), eine über der anderen, zu stapeln, wobei die Stapelplatte umfasst: nebeneinander angeordnete Reihen von Plattenvertiefungen (12) zur Aufnahme des unteren Teils der Flaschen und Plattenköpfe (13) zur Ineingriffnahme von Flaschenköpfen (18) in einer unteren Lage (15) von Flaschen, welche Stapelplatten mit keiner Drehung und mit einer 180°-Drehung zwischen aufeinanderfolgenden Stapelplatten zu verwenden sind, **dadurch gekennzeichnet, dass** die Plattenköpfe (13) in einem Übergangsbereich zu den angrenzenden Teilen der Stapelplatte (11) mit Kerben (20) versehen sind, die zum Eingriff mit einem vom Flaschenhals (22) an seinem oberen Teil vorstehenden ringförmigen Rand (25) oder Stufe und zur Übertragung von Kraft in einer vertikalen Richtung damit vorgesehen sind, und dadurch, dass die Plattenköpfe (13) die Stapelplatte (11) mit einem Eingriff in einer Position unter dem Boden (23) der Plattenköpfe (13) am Übergang in die Plattenvertiefungen (12) tragen, um zu ermöglichen, dass die Stapelplatte mit der Unterseite am oberen Teil des Flaschenhalses angeordnet ist.
2. Stapelplatte nach Anspruch 1, **dadurch gekennzeichnet, dass** die Kerben (20) im Bodenteil (19)

von angrenzenden Plattenvertiefungen (12) sichelförmige Nuten liefern.

3. Stapelplatte nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Kerben (20) nichtdurchdringende Vertiefungen in der Wand der Stapelplatte sind.

Revendications

1. Plateau (11) d'empilement, notamment pour des bouteilles, pour empiler les bouteilles (14) verticalement en deux couches (15, 16) ou plus, l'une au-dessus de l'autre, le plateau d'empilement comportant des rangées juxtaposées de dépressions (12) de plateau pour recevoir les parties inférieures des bouteilles, et des dessus (13) de plateau pour coopérer avec des dessus (18) de bouteilles dans une couche (15) inférieure de bouteilles, ces plateaux d'empilement étant destinés à être utilisés sans torsion ou avec une torsion à 180°, entre des plateaux d'empilement consécutifs, **caractérisé en ce que** les dessus (13) de plateau dans une zone de transition aux parties adjacentes du plateau (11) d'empilement sont munies d'indentations (20) prévues pour coopérer avec un rebord (25) annulaire et transmettre une force dans une direction verticale à un rebord (25) annulaire ou à un échelon faisant saillie du goulot (22) de bouteille à sa partie supérieure, et **en ce que** les dessus (13) de plateau supportent le plateau (11) d'empilement avec coopération dans une position sous le fond (23) des dessus (13) de plateau à la transition avec les dépressions (12) de plateau pour permettre au plateau d'empilement d'être disposé avec le côté inférieur à la partie supérieure du goulot de bouteille.
2. Plateau d'empilement suivant la revendication 1, **caractérisé en ce que** les indentations (20) fournissent des rainures en forme de faucilles dans la partie (19) de fond de dépressions (12) de plateaux adjacentes.
3. Plateau d'empilement suivant la revendication 1 ou 2, **caractérisé en ce que** les indentations (20) sont des évidements non pénétrants dans la paroi du plateau d'empilement.

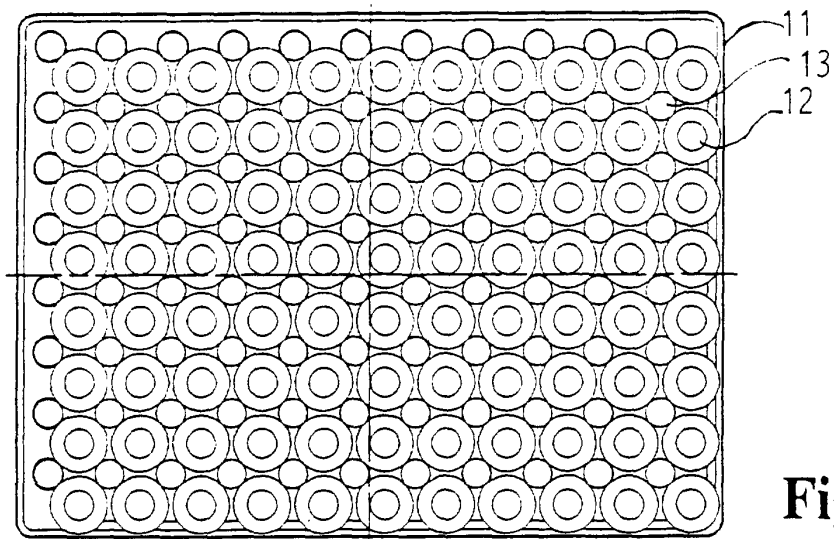


Fig.1

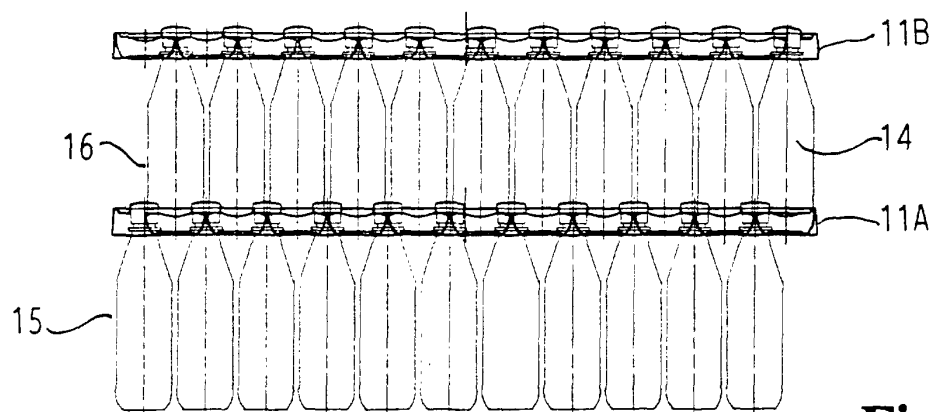


Fig.2

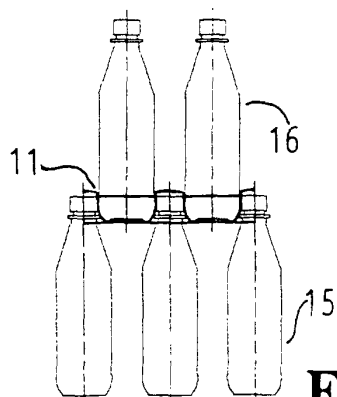


Fig.3

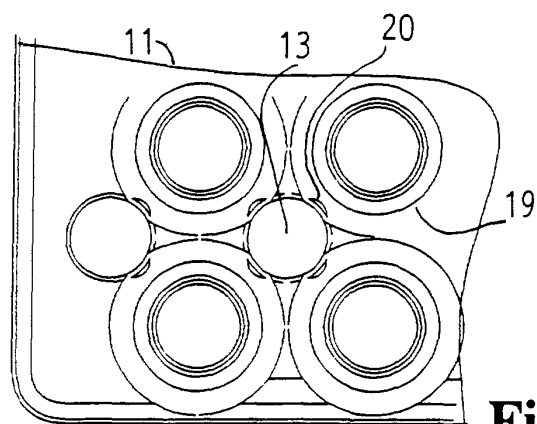


Fig.4

