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(54) CRATE WITH PARTITIONING GRID FOR SLANTING BEVERAGE CONTAINERS

KASTEN MIT TEILUNGSGITTER FÜR SCHRÄGSTEHENDE GETRÄNKEBEHÄLTER

**CAISSE DOTÉE D'UNE GRILLE DE SEPARATION PERMETTANT D'INCLINER DES RÉCIPIENTS
DE BOISSONS**

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EP-A- 413 245 **CH-A- 462 035**
DE-A- 3 504 908 **DE-U- 9 114 021**
US-A- 4 538 742

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Description

The invention relates to a crate with a bottom and vertical outer sidewalls and a partitioning grid disposed in the crate, dividing the interior of the crate into compartments in which cylinder formed containers are to be accommodated, and wherein supporting sidewall parts of at least one compartment define an imaginary cylinder whose axis diverge from vertical and slants by an angle relative to the bottom of the crate.

The object of the present invention is to provide a crate of the above mentioned type which is suitable for a firm and reliable accommodation and transportation of cylinderformed containers in the compartments of the crate.

A great variety of crates to be used for the above mentioned purpose is known. All of these crates comprise bottlesupporting sidewall parts of the compartments which extend vertically to the bottom of the crate. The crates furthermore comprise a lot of different complicated clamping devices or features in the compartments with the aim of securing bottles of different diameters in the compartments. These clamping features make the crates difficult and expensive to produce. In fact a very odd number of these crates is known to be used commercially.

There is therefore a longfelt need for a crate for the above mentioned use which is simple and inexpensive to produce and which at the same time gives a firm and secure accommodation of cylinderformed containers of different diameters especially during transportation.

CH-A 462 035 discloses a crate where two bottlesupporting sidewalls of rectangular compartments diverge from vertical to the bottom of the crate and slants by an angle relative to the bottom. The crate is disclosed for the use of storing wine bottles in an inclined position to horizontal. Furthermore the crate is only disclosed for the use of accommodation of wine bottles with the largest diameter which can be inserted during sufficient clamping action in the compartment. Due to the rectangular cross section of the crate compartments, support of the large diameter wine bottles is only given in a few points or lines where the cylindrical bottles touch the primarily planar sides of the compartment. Should one try to place a bottle with a smaller diameter in the compartment, the bottle will try to raise or upright itself as much as possible in the compartment. Due to the mainly planar sidewalls of the compartments, support will only be given to the small bottle at two points, namely one at the bottom and one at the top of the bottle at the diagonally opposite sides of the bottle. The position of the small bottle will for certain be instable as the bottle will tilt towards one of the sidewalls of the compartment at every small movement of the crate. During transportation the result will be deteriorating to the bottles especially if these are made of glass as neckparts of the bottles would be allowed to smash into each other.

A person skilled within the art of constructing crates would therefore never consider the above mentioned crate to be used for safe and reliable accommodation and transportation of cylinderformed containers with different diameters.

The crate according to the invention is characterized in that the sidewall parts of the compartment, which define an imaginary cylinder, are at least partially formed by guide ribs connected to at least one sidewall of the compartment, said sidewall being non-parallel with the slanting axis of the imaginary cylinder.

Hereby is provided a crate which in a very surprising way can be used for safe and reliable accommodation and transportation of cylinderformed containers with different diameters.

A cylinderformed container whose diameter is essentially the same as the diameter of the imaginary cylinder defined by the sidewall parts of the compartment of this novel design assumes a slanting position in the crate at an angle which is the same as the angle at which the axis of the imaginary cylinder slants relative to the bottom. A cylinderformed container of smaller diameter assumes a less slanting or so to say more upright position in the compartment of the crate, said smaller container being supported at the bottom at one side and at the top at the diagonally opposite side by the above mentioned sidewall parts of the compartment. Containers placed in the crate which have a diameter lying between a maximum and a minimum diameter determined by the shape of the compartment thus always assume a firm position in the compartment due to the support by the ribs.

It should be emphasized that the containers of smaller diameter in a very surprising way still assume a firm position in the compartment, though they are accommodated with greater play in the compartments than in the case of the larger containers.

A long filled need is therefore being met by the novel crate of the invention as it can be used with a special advantage for safe and firm accommodation and transportation of cylinderformed containers of different diameters such as the well-known glass bottles for beer and soft drinks and PET-bottles for mineral water and soft drinks.

By a preferred embodiment according to the invention the angle between the axis of the imaginary cylinder and the bottom of the crate lies between 85° and 89°. Use of the novel crate has shown that this interval of the angle is very expedient when using the crate for accommodation and transportation of the above mentioned well-known bottles with diameters between 58 mm and 65 mm.

Further preferred embodiments of a crate according to the invention are claimed in the sub-claims.

The invention also relates to use of the crate according to the invention as defined in claim 10.

The invention will be explained in greater detail in the description which follows of an exemplary embodi-

ment with reference to the drawing, in which:

Fig. 1 is a very diagrammatic view in perspective of a crate provided with a partitioning grid;

Fig. 2 shows diagrammatically a vertical section of a crate according to the invention of the type shown in Fig. 1, along the line II-II in Fig. 1;

Fig. 3 shows the position of bottles of large diameter and of small diameter placed in the same compartment;

Fig. 4 is a vertical section along the line IV-IV in Figs. 5-7 of half of the crate according to the invention; and

Figs. 5-7 are horizontal sections along the lines V-V, VI-VI and VII-VII respectively in Fig. 4 of the two crate compartments shown in Fig. 4.

Fig. 1 shows very diagrammatically a crate for the accommodation of bottleformed containers. The crate consists of a bottom 1 and vertical side walls 3 to 6. The side walls can be provided with grip openings 7 and 8. The crate contains a partitioning grid 9, dividing the interior of the crate into compartments 10, in which bottles or similar containers can be placed. The partitioning grid 9, together with the side walls 3 to 6, forms the side walls of the compartments 10.

Fig. 2 shows diagrammatically a vertical compartment of a crate of the type shown in Fig. 1, having a partitioning grid 9 which divides the interior of the crate into compartments 10.

The crate is symmetrical relative to the centre plane 11. Each compartment 10 has opposing sidewall parts 12, 13; 14, 15, which are designed for laterally supporting a container, such as a bottle 16 or 17, placed in a compartment 10. Said sidewall parts define an imaginary cylinder whose axis A slants at a certain angle α relative to the bottom 1 of the crate. Said angle lies, for example, between 85° and 89°, and preferably between 86° and 87°.

The axes A of the imaginary cylinders slant towards the centre plane 11.

Bottles of different diameters can be accommodated and held firmly in the compartments of the crate during transportation.

Fig. 2 shows a bottle 16 placed in a compartment 10, which bottle has a diameter which is essentially the same as the diameter of the imaginary cylinder defined by the side wall parts 12 and 13. The bottle is therefore the largest bottle which can be accommodated in the compartment. In Fig. 2 is also shown a bottle 17 of smaller diameter placed in a compartment 10. The bottle 17 is in fact the smallest bottle which can still be accommodated in a firm position in a compartment 10.

As can be seen in Fig. 2, the bottle 17 of small

diameter stands in a vertical position with its full bottom on the bottom 1 of the crate and is supported laterally at the bottom at one side by the sidewall part 15 and at the top by the diagonally opposite sidewall part 14. There is a remaining space left at the bottom between the sidewall part 14 and the bottle 17.

The bottle 16 of large diameter rests at the bottom side with its bottom edge on the bottom 1 of the crate, and is supported laterally both at the top and at the bottom by the opposing sidewall parts 12 and 13. The above means that bottles having a diameter greater than that of the smallest bottle 17 slants at an angle in the compartment, the angle at which the bottle slants increases with increasing diameter of the bottle, until the maximum accommodatable bottle diameter is reached together with slanting angle α .

The above is illustrated in greater detail in Fig. 3, in which two bottles 16 and 17 are shown as if they had been placed in the same compartment. The imaginary cylinder defined by the sidewall parts is indicated by dashed lines 18.

Figs. 4-7 show the design of the compartments of the crate according to the invention.

Two compartments 21 and 22 are shown in Figs. 4-7. The compartment 21 adjoins the sidewall 6 of the crate, and the compartment 22 adjoins the centre plane 11 of the crate.

The sidewall parts of the compartment 21 which define a slanting imaginary cylinder in this compartment are the slanting wall part 23 of the partitioning grid 9, which wall part is curved in the plane of Figs. 5-7, and the guide ribs 24 and 25 connected to said wall part 23, on the one hand, and the guide ribs 27, 28 and 29 connected to side wall 6 and hollow reinforcement columns 26, on the other.

The sidewall parts of the compartment 22 which in this compartment define a slanting imaginary cylinder are the slanting curved wall part 23 and the guide ribs 30 and 31 connected thereto, on the one hand, and the guide ribs 33, 34 and 35 connected to the upright middle wall 32 of the partitioning grid 9, on the other.

The wall part 23 and the guide ribs 24 and 25 are connected at the bottom side, near bottom 1 of the crate, to a foot lobe 36 curved in the plane of Figs. 5-7.

The guide ribs 33, 34, 35 are connected at the bottom side, near the bottom 1 of the crate to a foot lobe 37 curved in the plane of Figs. 5-7.

The foot lobes 36 and 37 provide better stability of the guide ribs, but they are not a determining factor for the diameter of the imaginary cylinder in a compartment. It is also possible to omit the foot lobes 36 and 37 and to make the wall part 23 and the guide ribs run through to the bottom 1 of the crate.

In order to prevent protruding edges from occurring in a compartment of the crate and possibly preventing a bottle from being placed correctly in a compartment the edges of the wall part 23 coming into contact with the bottles and the guide ribs 24, 25 and 33, 34, 35 merge

smoothly into the side of the foot lobe 36, 37 facing the inside of a compartment 21, 22 respectively, as can be seen in Figs. 4-7.

In the exemplary embodiment the invention is explained for a crate in which the compartments are arranged in straight rows (for example, four across the width and six along the length of the crate). However, the principle of the "slanting" compartments can also be used in crates of a different type with rows which are staggered relative to each other.

The axes of the imaginary cylinders in the compartments can also slant towards both centre planes of the crate.

Claims

1. Crate with a bottom and vertical, outer sidewalls (3-6), and a partitioning grid (9) disposed in the crate (1), dividing the interior of the crate into compartments (10, 21, 22) in which cylinderformed containers (16, 17) is to be accommodated, and wherein supporting sidewall parts (12, 13; 14, 15) of at least one compartment (10) define an imaginary cylinder whose axis (A) diverge from vertical and slants by an angle (α) relative to the bottom (1) of the crate, **characterized in that** the sidewall parts of the compartment which define an imaginary cylinder are at least partially formed by guide ribs (24, 25; 27-29; 33-35) connected to at least one sidewall of the compartment, said sidewall being non-parallel with the slanting axis of the imaginary cylinder.
2. Crate according to claim 1, **characterized in that** the angle (α) between the axis of the imaginary cylinder and the bottom of the crate lies between 86° and 89°.
3. Crate according to claim 1, **characterized in that** the sidewall parts of the compartment comprises two axially extending guide ribs which is connected to the same wall of the grid or sidewall of the crate, and which guide ribs are offset symmetrically in distance from the middle of the compartment and towards the adjacent sides of the compartment.
4. Crate according to claim 3, **characterized in that** the sidewall parts of the compartment comprises a third axially extending guide rib which is connected to the same wall as the two other ribs and is placed symmetrically in-between these two ribs.
5. Crate according to claim 1, **characterized in that** the sidewall parts of a compartment which define an imaginary cylinder are at least partially formed by a slanting curved wall part of the partitioning grid.
6. Crate according to claim 1, **characterized in that**

the sidewall parts of a compartment which define an imaginary cylinder are at least partially formed by hollow reinforcement columns (26).

7. Crate according to claim 1, **characterized in that** the wall part (23) and the guide ribs (24, 25) are connected at the bottom side, near the bottom of the crate to a foot lobe (36) curved in the plane of the bottom (1).
8. Crate according to claim 1, **characterized in that** the axis of the imaginary cylinder of the at least one compartment slants towards at least one (11) of the two center planes of the crate.
9. Crate according to claim 1, **characterized in that** the crate is symmetrical relative to one of the two center planes (11).
10. Use of crate according to any of claims 1-9 for accommodation and transportation of cylinderformed containers of less diameters than that of the imaginary cylinder in the compartment.
11. Use of a crate according to claim 10 for accommodation and transportation of cylinderformed containers of different diameters in the compartment.
12. Use of a crate according to claim 10 for accommodation and transportation of bottles or cans for beverage.
13. Use of a crate according to claim 10 for accommodation and transportation of PET-bottles, or glass bottles for softdrinks or beer.

Patentansprüche

1. Kasten mit einem Boden und vertikalen äußeren Seitenenden (3 bis 6) und einem Teilungsgitter (9), das im Kasten (1) angeordnet ist und das Innere des Kastens in Abteile (10,21,22) unterteilt, in denen zylinderförmige Behälter (16,17) untergebracht werden sollen, und in der tragende Seitenwandteile (12,13;14,15) wenigstens eines Abteils (10) einen imaginären Zylinder definieren, dessen Achse (A) von der Vertikalen abweicht und um einen Winkel (α) relativ zum Boden (1) des Kastens schräg steht, dadurch gekennzeichnet, daß die Seitenwandteile des Abteils, die einen imaginären Zylinder definieren, wenigstens teilweise durch Führungsrippen (24,25;27 bis 29;33 bis 35) gebildet sind, die mit wenigstens einer Seitenwand des Abteils verbunden sind, wobei die Seitenwand nicht mit der schräg stehenden Achse des imaginären Zylinders parallel ist.
2. Kasten nach Anspruch 1, dadurch gekennzeichnet,

daß der Winkel (α) zwischen der Achse des imaginären Zylinders und dem Boden des Kastens zwischen 85° und 89° liegt.

3. Kasten nach Anspruch 1, dadurch gekennzeichnet, daß die Seitenwandteile des Abteils zwei sich axial erstreckende Führungsrippen aufweisen, die mit derselben Wand des Gitters oder der Seitenwand des Kastens verbunden sind, und welche Führungsrippen symmetrisch in einem Abstand von der Mitte des Abteils und zu den benachbarten Seiten des Abteils versetzt sind. 5
4. Kasten nach Anspruch 3, dadurch gekennzeichnet, daß die Seitenwandteile des Abteils eine dritte sich axial erstreckende Führungsrippe aufweisen, die mit derselben Wand wie die beiden anderen Rippen verbunden ist und symmetrisch zwischen diesen beiden Rippen angeordnet ist. 10 15
5. Kasten nach Anspruch 1, dadurch gekennzeichnet, daß die Seitenwandteile eines Abteils, das einen imaginären Zylinder definiert, wenigstens teilweise durch einen schräg stehenden gekrümmten Wandteil des Teilungsgitters gebildet sind. 20 25
6. Kasten nach Anspruch 1, dadurch gekennzeichnet, daß die Seitenwandteile eines Abteils, das einen imaginären Zylinder definiert, wenigstens teilweise durch hohle Verstärkungssäulen (26) gebildet sind. 30
7. Kasten nach Anspruch 1, dadurch gekennzeichnet, daß der Wandteil (23) und die Führungsrippen (24,25) an der Unterseite nahe dem Boden des Kastens mit einer Fußerhöhung (36) verbunden sind, die in der Ebene des Bodens (1) gekrümmt ist. 35
8. Kasten nach Anspruch 1, dadurch gekennzeichnet, daß die Achse des imaginären Zylinders des wenigstens einen Abteils zu wenigstens einer (11) der beiden Mittelebenen des Kastens geneigt. 40
9. Kasten nach Anspruch 1, dadurch gekennzeichnet, daß der Kasten in Bezug auf eine der beiden Mittelebenen (11) symmetrisch ist. 45
10. Verwendung eines Kastens nach einem der Ansprüche 1 bis 9 für Unterbringung und Transport von zylinderförmigen Behältern von geringeren Durchmessern als denjenigen des imaginären Zylinders im Abteil. 50
11. Verwendung eines Kastens gemäß Anspruch 10 zum Unterbringen und Transportieren von zylinderförmigen Behältern von unterschiedlichen Durchmessern im Abteil. 55
12. Verwendung eines Kastens gemäß Anspruch 10

zum Unterbringen und Transportieren von Flaschen oder Dosen für Getränke.

13. Verwendung eines Kastens gemäß Anspruch 10 zum Unterbringen und Transportieren von PET-Flaschen oder Glasflaschen für Softdrinks oder Bier.

Revendications

1. Caisse à claire-voie comportant un fond et des parois de côté externes verticales (3 à 6), et une grille de séparation (9) disposée dans la caisse à claire-voie (1), divisant l'intérieur de la caisse à claire-voie en compartiments (10, 21, 22) dans lesquels des conteneurs en forme de cylindre (16, 17) sont logés, et dans laquelle des parties de paroi de côté-supports (12, 13 ; 14, 15) d'au moins un compartiment (10) définissent un cylindre imaginaire dont les axes (A) divergent de la verticale en s'inclinant d'un angle (α) par rapport au fond (1) de la caisse à claire-voie, caractérisée en ce que les parties de paroi de côté du compartiment qui définissent un cylindre imaginaire sont au moins partiellement formées par des nervures de guidage (24, 25 ; 27 à 29 ; 33 à 35) reliées à au moins une paroi de côté du compartiment, ladite paroi de côté n'étant pas parallèle à l'axe incliné du cylindre imaginaire.
2. Caisse à claire-voie selon la revendication 1, caractérisée en ce que l'angle (α) entre l'axe du cylindre imaginaire et le fond de la caisse à claire-voie se situe entre 85° et 89° .
3. Caisse à claire-voie selon la revendication 1, caractérisée en ce que les parties de paroi de côté du compartiment comprennent deux rainures de guidage s'étendant axialement reliées à la même paroi de la grille ou la même paroi de côté de la caisse à claire-voie, lesquelles rainures de guidage sont décalées symétriquement en distance depuis le milieu du compartiment et en direction des côtés adjacents du compartiment.
4. Caisse à claire-voie selon la revendication 3, caractérisée en ce que les parties de paroi de côté du compartiment comprennent une troisième rainure de guidage s'étendant axialement qui est reliée à la même paroi que les deux autres rainures et qui est placée symétriquement entre ces deux rainures.
5. Caisse à claire-voie selon la revendication 1, caractérisée en ce que les parties de paroi de côté d'un compartiment qui définissent un cylindre imaginaire sont au moins partiellement formées par une partie de paroi courbe inclinée de la grille de séparation.
6. Caisse à claire-voie selon la revendication 1, caractérisée en ce que les parties de paroi de côté d'un compartiment qui définissent un cylindre imaginaire sont au moins partiellement formées par des nervures de guidage (24, 25 ; 27 à 29 ; 33 à 35) reliées à au moins une paroi de côté du compartiment, ladite paroi de côté n'étant pas parallèle à l'axe incliné du cylindre imaginaire.

térisée en ce que les parties de paroi de côté d'un compartiment qui définissent un cylindre imaginaire sont au moins partiellement formées par des colonnes de renforcement creuses (26).

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7. Caisse à claire-voie selon la revendication 1, caractérisée en ce que la partie de paroi (23) et les rainures de guidage (24, 25) sont reliées du côté fond, à proximité du fond de la caisse à claire-voie à un lobe formant pied (36) incurvé dans le plan du fond (1). 10
8. Caisse à claire-voie selon la revendication 1, caractérisée en ce que l'axe du cylindre imaginaire de l'au moins un compartiment s'incline en direction d'au moins un (11) des deux plans centraux de la caisse à claire-voie. 15
9. Caisse à claire-voie selon la revendication 1, caractérisée en ce que la caisse à claire-voie est symétrique par rapport à l'un des deux plans centraux (11). 20
10. Utilisation d'une caisse à claire-voie selon les revendications 1 à 9, pour le logement et le transport de conteneurs en forme de cylindre de diamètres inférieurs à celui du cylindre imaginaire dans le compartiment. 25
11. Utilisation d'une caisse à claire-voie selon la revendication 10, pour le logement et le transport de conteneurs en forme de cylindre de différents diamètres dans le compartiment. 30
12. Utilisation d'une caisse à claire-voie selon la revendication 10, pour le logement et le transport de bouteilles ou de boîtes métalliques pour boissons. 35
13. Utilisation d'une caisse à claire-voie selon la revendication 10, pour le logement et le transport de bouteilles en polyéthylène ou de bouteilles en verre pour boissons non alcoolisées ou de la bière. 40

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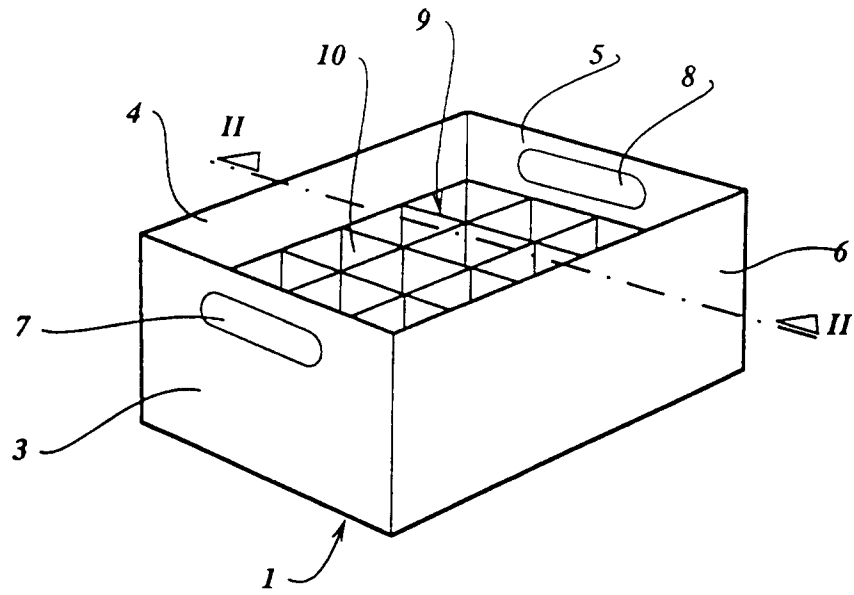


Fig. 1

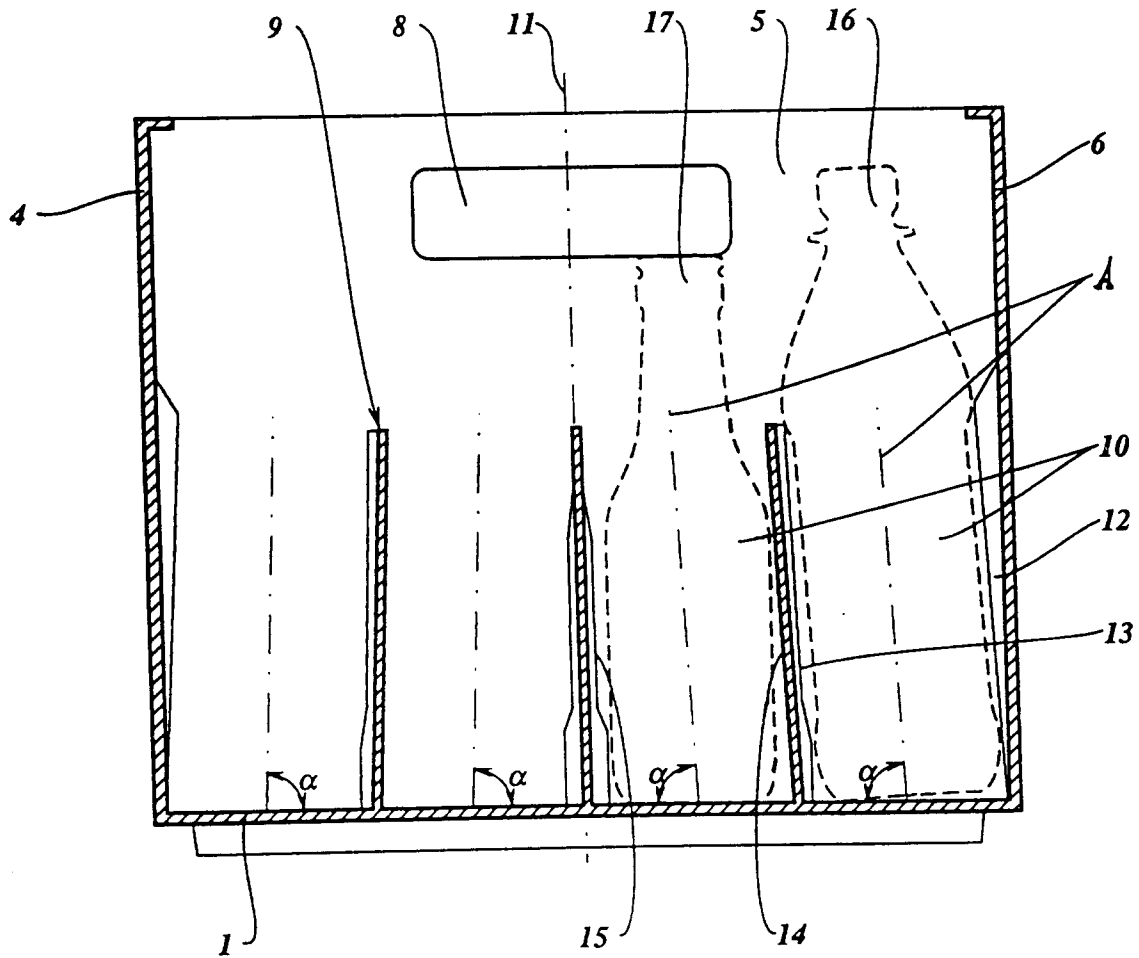


Fig. 2

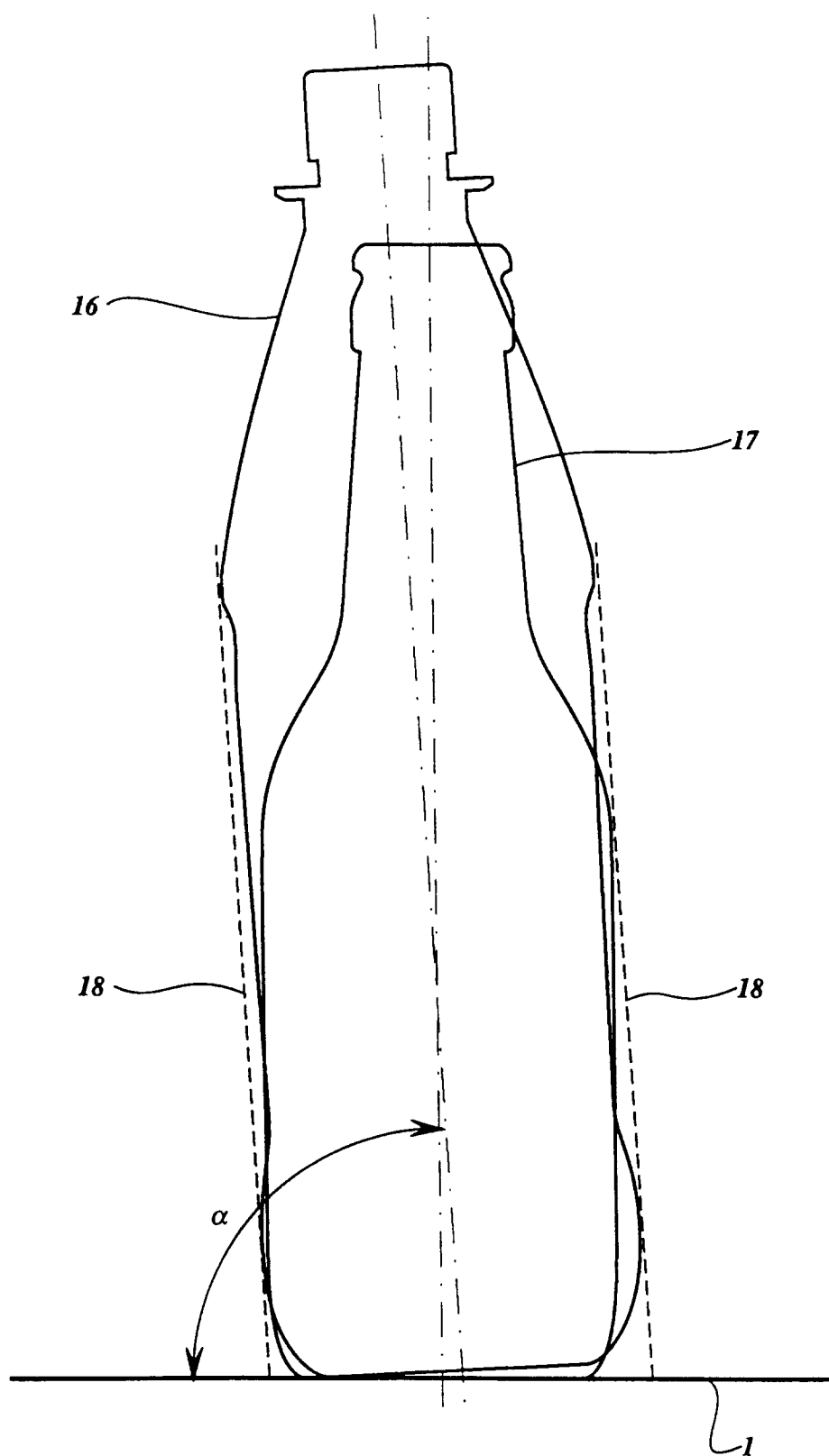


Fig. 3

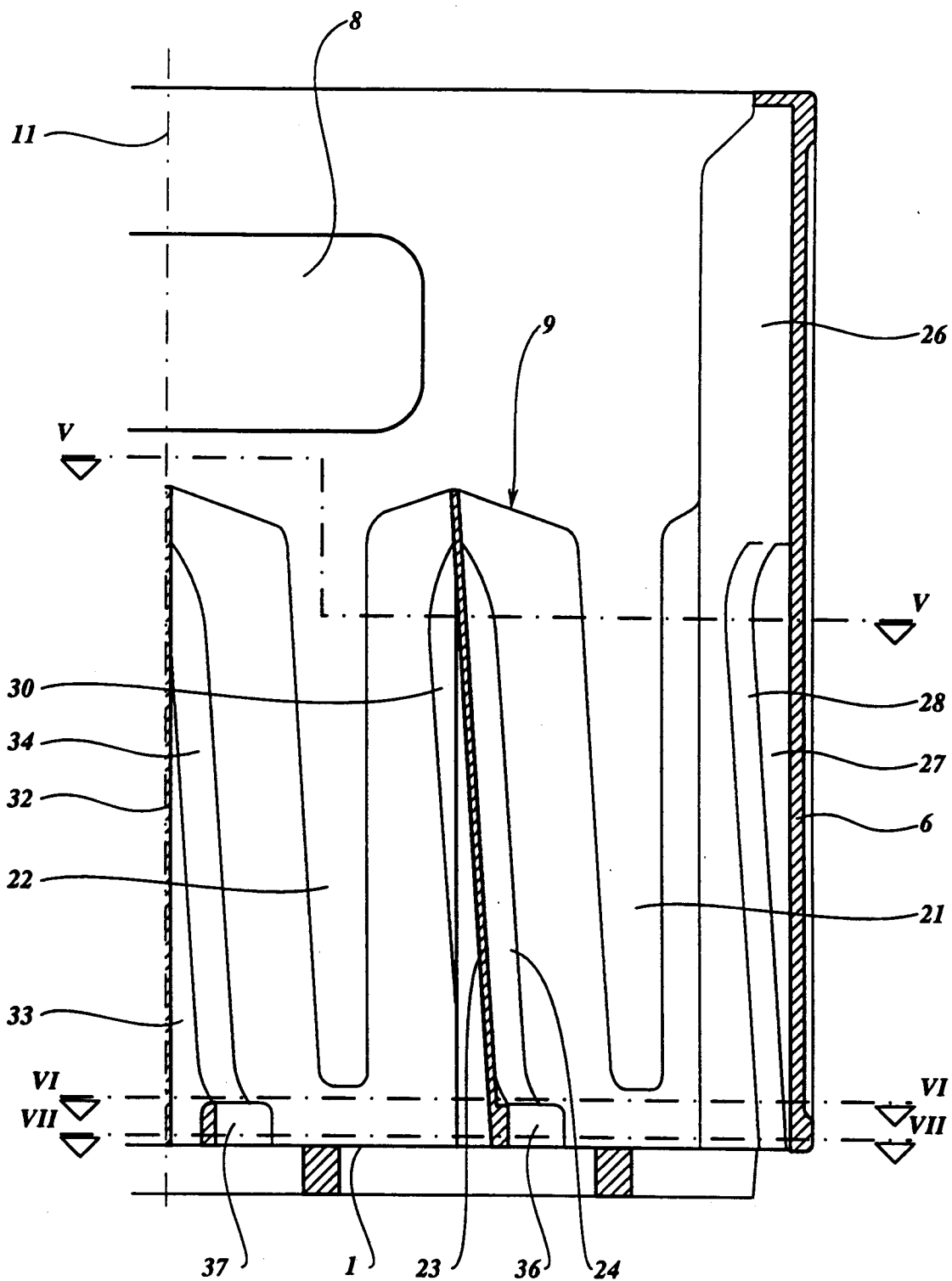


Fig. 4

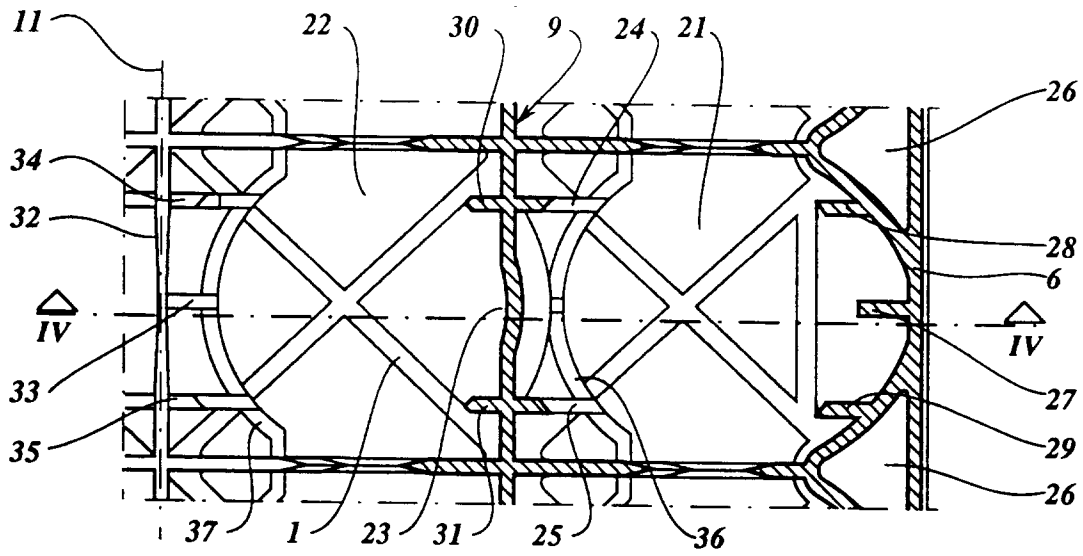


Fig. 5

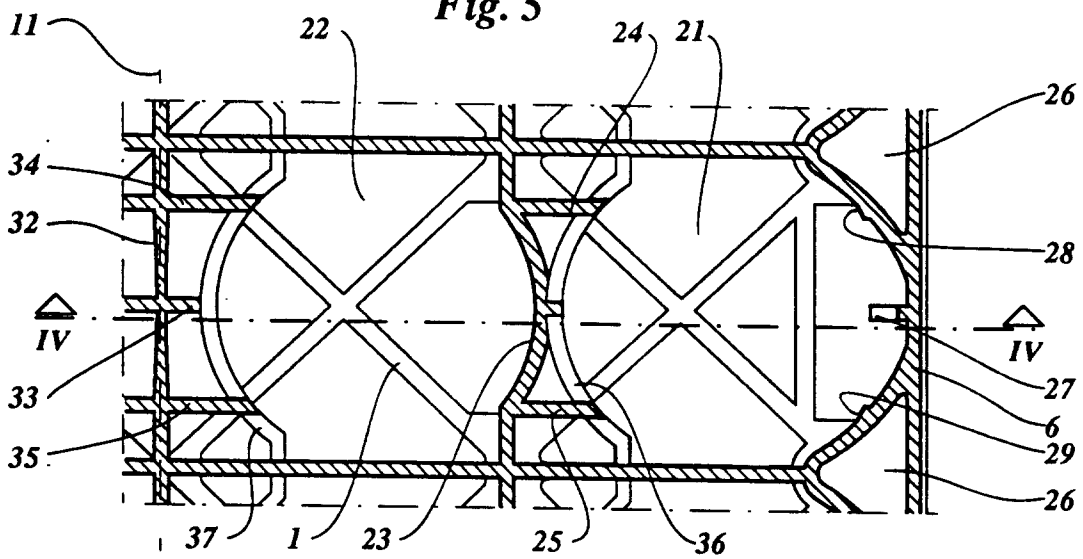


Fig. 6

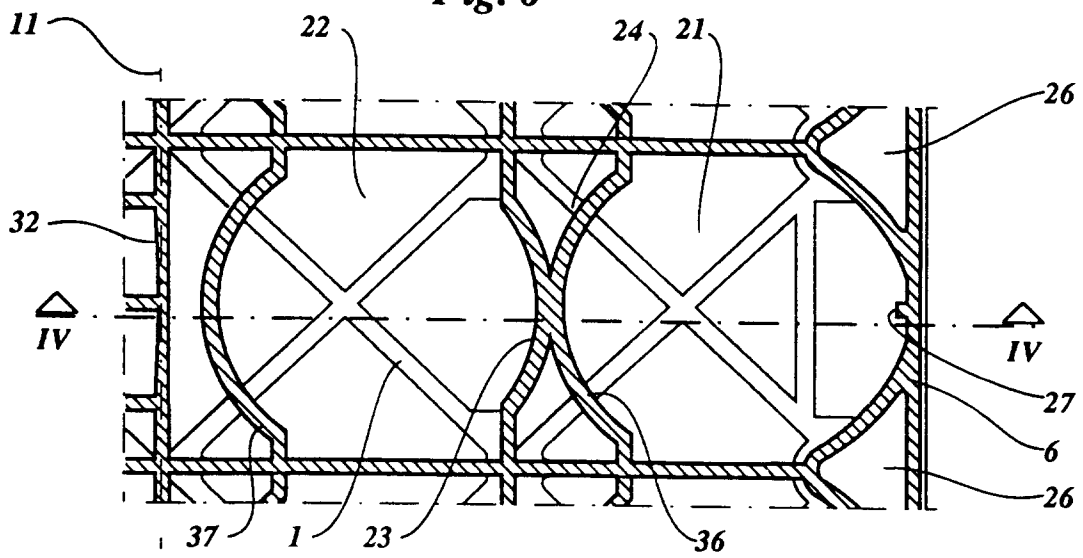


Fig. 7