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(54) **Bottle crate with movable bottom plate**

Flaschenkiste mit beweglicher Bodenplatte

Caisse à bouteilles avec panneau de fond mobile

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(73) Proprietor: **D.W. Plastics NV**
3740 Bilzen (BE)

(72) Inventor: **Isenborghs, Francis**
1350 Jauche (BE)

(74) Representative: **Benech, Frédéric**
146-150, Avenue des Champs-Élysées
75008 Paris (FR)

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Description

[0001] The present invention is related to a bottle crate comprising a bottom wall and lateral walls, in accordance with the preamble of claim 1, and a movable bottom plate having traversing holes, guided within said bottle crate lateral walls.

[0002] It is also related to a method for producing an injection moulded bottle crate in accordance with the preamble of claim 15.

[0003] The invention is more particularly but not exclusively related to a bottle crate used by breweries proposing four, six and/or eight bottles packs to sell their beers to the customers.

[0004] Existing bottle crates for transporting packs present several draw backs.

[0005] One is due to the fact that the empty bottles, when returned individually cannot be transported in the same bottle crate than the one used for the packs.

[0006] It is because, if these bottles are not separated by dividers, they will touch each other and therefore can easily be broken.

[0007] But the mere existence of such dividers bars the possibility to transport packs.

[0008] BE 101 6429 discloses a bottle crate with pivoting dividers, but this prior art also presents drawbacks.

[0009] It is therefore a main object of the present invention to provide an improved crate and method which allows the transport of different packs of bottles and which, when such bottles are returned to the brewery, can also provide the transport of such bottles without any risk of breaking.

[0010] Another object of the invention is to provide a bottle crate which allows the transport of several different types of packs (four, six or even eight bottle packs) in the same bottle crate.

[0011] With the crate of the invention it will therefore be possible to carry the bottles of beer when they are under the form of a pack and to carry the bottles of beer when they are one by one.

[0012] For these purposes the invention mainly proposes a bottle crate comprising a bottom wall and lateral walls, characterized in that it comprises a separate internal bottom plate having traversing holes, movable and guided within said bottle crate lateral walls between a first position for packs of bottles wherein the bottom plate is in a low position close to or in contact with the bottom wall and a second position for separate bottles wherein the bottom plate is in an upper high position to form with its holes dividers for said bottles, and in that it comprises spring means arranged to be compressed in the first position and to automatically bring back the bottom plate to its second position in the absence of a sufficient predetermined weight on said bottom plate.

[0013] By sufficient predetermined weight it should be understood at least the partial weight of a pack of beers,

such as a pack of four bottles of beer, i.e. for instance five hundred grams, one kilogramme or two kilogrammes.

[0014] Such disposition will authorize the crate to contain at least one pack, the weight of such pack keeping the bottom plate down.

[0015] In such position, there are no dividers, so all types of packs can be placed inside the crate.

[0016] When the packs have been taken out, the bottom plate rises up to the required level and forms the dividers for the separate empty bottles which are then placed into the holes of the divider to be safely returned to the brewery.

[0017] Advantageously, the spring means comprise at least one spring coil.

[0018] More advantageously, it comprises two or four spring coils centrally disposed in each quarter of the crate and/or in diagonal.

[0019] In another advantageous embodiment each spring coil is supported by the bottom wall top face and is maintained in its upper position by an up standing inner rod or a guide rigidly connected at its base to the bottom wall top face and slidably connected to the bottom plate through a cylinder or semi cylinder shape element, a traversing hole.

[0020] Advantageously, such rods or guides have an upper part above the top side of the bottom plate, when such plate is in the low position, to serve as fixing pins for the pack of beer which is placed inside the crate, the bottom face of the pack in paperboard, or in plastic being inserted in or beside said upper part.

[0021] In another advantageous embodiment the spring means comprise at least one leaf spring.

[0022] Advantageously the leaf spring is placed in the bottom of the crate, along one lateral wall, and the bottom plate is placed on top of the leaf spring, i.e the leaf spring is placed between the top face of the bottom wall and the lower face of the bottom plate.

[0023] Advantageously it comprises two opposed lateral leaf springs, and/or such spring means are placed in the inner space delimited by the lateral walls of the bottle crate.

[0024] In an advantageous embodiment the bottle crate further comprises abutment(s) blocking the motion of the bottom plate caused by the spring in its high position, said abutment(s) being formed at the end of a corresponding rod or guide.

[0025] Advantageously, the bottle crate comprises an abutment blocking the motion of the bottom plate caused by the spring in its high position, said abutment being formed by a projection from an inner part of at least one of the lateral walls.

[0026] In an advantageous embodiment, the bottom wall is formed by a bottom tray, both bottom tray and bottom plate having a section of a rectangular shape, the bottom tray being subdivided in a number of compartments corresponding to related holes in the bottom plate.

[0027] Advantageously the distance between the low

position and the high position of the bottom plate is comprised between 5 cm and 20 cm, for instance 12 cm.

[0028] Advantageously the spring stiffness is arranged to be sufficiently strong to push the plate back in position, but not too much to be easily compressed when a pack of bottles is placed on it, for instance depending of the bottles weight, it can be comprised between 300 g and 3 kg for instance 500 g or 1 kg.

[0029] In an advantageous embodiment the compartments are formed by interconnected ribs.

[0030] Advantageously compartments have a height less than 3 cm, and are arranged to be inserted within the bottom side of the bottom plate when such bottom plate is in its first position.

[0031] In an advantageous embodiment the bottle crate is in plastic made by injection moulding.

[0032] The invention further proposes a method for producing an injection moulded bottle crate, comprising the steps of:

- injecting a first thermoplastic material in an injection mould for forming a first injected crate having a bottom wall and lateral walls connected to the bottom and to one another,
- injecting a second material in a second injection mould to form a bottom plate having traversing holes in order to obtain a movable and guided bottom plate,
- positioning spring means, having a lower part and an upper part, on the bottom wall of said first injected crate, said lower part being affixed or in contact with said bottom wall and the upper part being uncompressed (or substantially uncompressed i.e. more than 95% uncompressed) in its extended position at a distance to the bottom wall,
- assembling the bottom plate in the first injected crate on said spring means in order to obtain a movable and guided bottom plate within said bottle crate lateral walls between a first position for packs of bottles wherein the bottom plate is in contact with, or close to, the bottom wall when a sufficient weight is exercised on bottom plate and a second position for separate bottles wherein the bottom plate is in a high upper position to form with its holes dividers for said bottles, when pushed by the spring means uncompressed by any weight on the bottom plate.

[0033] The present invention will be better understood from reading the following description of the particular embodiments given by way of non limiting examples, with reference to the accompanying drawings, wherein :

Figure 1 is a schematic axonometric view of a bottle crate according to a first embodiment of the invention, with the bottom plate in its upper high position. Figure 2 shows schematically the bottle crate of figure 1 with the bottom plate in its low position. Figures 3 and 4 show in perspective the bottom wall and the bottom plate of a second embodiment of the

invention with the bottle plate respectively in its high, upper and low positions.

Figure 5 shows a perspective view of a bottle crate according to an other embodiment of the invention, comprising two packs of six bottles with the bottle plate in a low position.

Figure 6 shows an upper view of the inside of the bottle crate of figure 5 with the bottle plate in the low position.

Figure 7 and 8 are perspective lateral views of the bottle crate of figures 5 and 6 with the bottom plate respectively in its low position and in its high, upper position.

Figure 9 is a view from above of the bottle crate of figure 8 in its high, upper position.

Figure 10 is the bottle crate of figure 9 with bottles inside the holes of the bottom plate in its high position.

Figure 11 is a flow chart of the method of producing an injection moulded bottle crate according to one embodiment of the invention.

[0034] Figure 1 shows schematically a bottle crate 1 comprising a bottom wall 2 and four rectangular lateral walls 3 and 4, i.e. two opposite small rectangular walls 3 between two large rectangular opposite walls 4 built by injecting moulding in a way known per se by the man skilled in the art.

[0035] According to the embodiment more particularly described here of the invention, the bottle crate 1 comprises a bottom plate 5 having traversing holes 6, said bottom plate being movable and guided between the lateral walls 3 and 4, between a first position (see figure 2) for packs of bottles where the bottom plate 5 is in a low position (plane 7), said low position putting the rectangular bottom plate 5 close to/or in contact with the bottom wall 2 and a second position (see figure 1) for separate bottles to be inserted within the hole 6, where the bottom plate 5 is in a high position (plane 8) to form with its holes, dividers for said bottles, and spring means 9 arranged to be compressed (see figure 2) in the first position 7 and to automatically bring back the bottom plate 5 to a upper second position (plane 8) in the absence of a sufficient predetermined weight (see arrow 10) on the bottom plate 5.

[0036] In the embodiment of figures 1 and 2, the spring means is a spring coil 11, being supported by the top face 12 of the bottom wall 2 and being maintained in its upper position by an upstanding inner rod 13 (see figure 2), for example a cylinder of 2 cm of diameter, said inner rod 13 being connected at its base 14 to the bottom wall top face 12 and slidably connected to the bottom plate 5 through a traversing hole 15, the rod 13 comprising an abutment 16, blocking the motion of the bottom plate 5 caused by the spring 11 in its high position, said abutment being formed by a tronconical projection at the end of said rod.

[0037] Other embodiments can be provided to assure

such blocking i.e. for instance a projection from the inner lateral walls (not shown on the figures).

[0038] On the embodiment of figure 1 the bottom wall 2 is formed by a bottom tray T of a slightly broader rectangular shape section than the shape of the bottom plate, said bottom tray being subdivided in a number of compartments 17 corresponding to the related hole 6 in the bottom plate 5 for the bases of the bottles.

[0039] Such compartments are for instance of a square section with small lateral rectangular walls 18 of 1 mm of thickness.

[0040] In the following description of the text the same or similar elements will be designated by the same numbers of reference.

[0041] Figure 3 and 4 show schematically a bottom plate 5 and a bottom tray T separated by spring means formed by a leaf spring 19, such leaf spring being, for instance a metallic spring which is bent with an elasticity between an extended position (see figure 3) and a compressed position (see figure 4).

[0042] Such spring is disposed within the inner space 20 of a lateral wall 4 of the bottle crate in order to be correctly connected to the upper face of the bottom wall and sufficiently guided for movement between its high position and its low position as seen on the figures. Advantageously the height of the compartment partitions is of between 2 and 5 mm and can be inserted in a space or recess arranged in the bottom face of the bottom plate 5.

[0043] Another embodiment of the invention will now be described in reference to figures 5 to 10.

[0044] These figures show a bottle crate 21 having a bottom wall 22 and two sets of opposite lateral walls 23 and 24, for instance with handles 25 which allow the lifting of the box by a user. According to this embodiment of the invention, the bottle crate, when the bottom plate 26 is in its low position (see figure 5, 6 and 7), allows the storage of packs 27, for instance four packs 27 of six bottles 28.

[0045] In this embodiment four coil springs 29 are provided, which are guided within guide tubes 30 which go through the bottom plate 26 through related holes 31 (see more particularly figures 6 and 7). Such guide tube 30 are for instance not complete and are formed by a portion of a cylinder in plastic injected while manufacturing the first crate.

[0046] Each coil spring 29 comprises an upper part which is for instance formed by a finger 32 which is fixed at the upper part 33 of the coil spring and which is guided within the guide tube 30 with the coils and which is extending above the top face of the plate when the bottom plate is in its high position (see figure 8).

[0047] Such guide tube 30 is arranged to be inserted within the bottom part of the pack therefore allowing a fixation of a pack within the bottle crate without being for instance obliged to put four packs within the crate to avoid their movement during transport.

[0048] This also allows the possibility of placing, in the

same bottle crate, packs of either 4, 6, 8 or even 12 bottles, as such guide tubes will play the role of fixing pins for the packs within the bottle crate.

[0049] When the packs are removed, the bottom plate is pushed to its high position by the spring coils as shown on figure 8 therefore liberating the tray T, and advancing the holes of the bottom plate which can be used for placing the bottles 28 as shown on figure 10.

[0050] The transport of the bottles can then be ensured without any risk of breaking by shocks between the bottles.

[0051] The compartments in the bottom tray such as the ones described in reference to figures 1-4, further ameliorate the fixation of the bottles within the corresponding holes of the bottom plate.

[0052] The method of producing such an injection moulded bottle crate will now be described with reference to figure 1. This method comprises a first step of injection (block 35) of a first thermoplastic material in an injection mould corresponding to the precise shape of the crate as required in order to form a first injected crate, in a way known per se, having a bottom wall and lateral walls connected to the bottom and to one another.

[0053] Then a second step 36 of injection is performed, consisting of injecting a second material in a second injection mould to form the bottom plate 5 or 26, having traversing holes.

[0054] In order to obtain a movable and guided bottom plate step 37 is then provided, i.e. positioning spring means on the bottom wall of said first crate within their guide or on their tube or in the lateral walls, the lower part of such spring means being affixed or in contact with the bottom wall and the upper part being uncompressed at a distance of the bottom wall.

[0055] Then step 38 consisting of assembling the bottom plate in the first injected crate on the spring means in order to obtain the movable and guided bottom plate is undertaken.

[0056] A final step 39, of testing the functioning of the bottle crate is then performed.

[0057] The functioning of a bottle crate according to the invention will now be described.

[0058] When a user wants to provide to his customers packs of bottles of beers he puts directly such packs (at least one of them) within the bottle crate.

[0059] The weight of such pack will compress the bottom plate, which goes down until reaching his low position.

[0060] The transport can then be provided towards the customer facility.

[0061] The customer can then remove the packs from the bottle crates and sell them to his clients.

[0062] When the last pack is removed from the crate, the bottom plate will adopt automatically its high position, as shown on figure 8 for instance due to the pushing effort of the spring means upwards.

[0063] This will render the bottle crate ready to receive the empty bottles, the crate being filled progressively.

[0064] When the crate is completely filled by empty bottles it can then be returned to the brewery through convenient transportation means.

[0065] Additional advantages and modifications will readily occur to the man skilled in the art. The present invention, in this respect, is not limited to the specific details, representative device and illustrated examples shown and described here above. The present invention is limited by the scope of the claims.

[0066] For instance it also includes the use of two different types of thermoplastic for the first crate and the bottom plate, as well as the use of different shape of spring means, which can also, for instance not be limited to heat spring or coil spring, but any other elastic material arranged to push the bottom plate between one position and the other.

Claims

1. A bottle crate (1, 21) comprising a bottom wall (2, 22) and lateral walls (3, 4 ; 23, 24), **characterised in that** it comprises a separate internal bottom plate (5, 26) having traversing holes (6), movable and guided within said bottle crate lateral walls (3, 4; 23, 24) between a first position for packs (27) of bottles wherein the bottom plate is in a low position (7) close to or in contact with the bottom wall (2, 22) and a second position for separate bottles (28) wherein the bottom plate (5, 26) is in an upper high position (8) to form, with its holes (6), dividers for said bottles, and **in that** it comprises spring means (9, 19, 29) arranged to be compressed in the first position (7) and to automatically bring back the bottom plate (5, 26) to its upper second position (8) in the absence of a sufficient predetermined weight (10) on said bottom plate.
2. A bottle crate according to claim 1, **characterised in that** the spring means (9) comprise at least one coil spring (11).
3. A bottle crate according to claim 2, **characterised in that** the spring means (9) comprises four coil springs (29) centrally disposed in each quarter of the crate.
4. A bottle crate according to claim 2 or 3, **characterised in that** the or each coil spring (11, 29) is supported by the bottom wall top face (12) and is maintained in its upper position by an upstanding inner rod (13) or a guide (30, 31) rigidly connected at its base to the bottom wall top face (12) and slidably connected to the bottom plate.
5. A bottle crate according to claim 1, **characterised in that** the spring means (29) comprise at least one leaf spring.
6. A bottle crate according to claim 5, **characterised in that** the leaf spring is placed in the bottom of the crate, along one lateral wall, and the bottom plate is placed on top of the leaf spring, such leaf spring staying between the top face of the bottom wall (12) and the lower face of the bottom plate.
7. A bottle crate according to any of the claims 2 to 4, **characterised in that**, the bottle crate further comprises an abutment (16) blocking the motion of the bottom plate caused by the spring in its high position, said abutment being formed at the end of a corresponding rod or guide.
8. A bottle crate according to any of the preceding claims **characterised in that** the bottle crate comprises an abutment blocking the motion of the bottom plate (5, 26) caused by the spring in its high position, said abutment being formed by a projection from an inner part of at least one of the lateral walls.
9. Bottle crate according to any of the preceding claims, **characterised in that** the spring means are comprised in the inner space of the crate within the lateral walls.
10. A bottle crate according to any of the preceding claims, **characterised in that** the bottom wall (2, 22) is formed by a bottom tray (T), **in that** both bottom tray (T) and bottom plate (5, 26) have a section of a rectangular shape and **in that** the bottom tray (T) is subdivided in a number of compartments (17) corresponding to related holes (6) in the bottom plate.
11. Bottle crate according to any of the preceding claims, **characterised in that** the stiffness of the spring means is such that the sufficient predetermined weight results from a mass of between 300g and 1kg on the bottom plate (5).
12. Bottle crate according to claim 10 **characterised in that** the compartments are formed by interconnected ribs (18).
13. Bottle crate according to claims 10 or 12 **characterised in that**, the compartments have a height less than 2 cm, and are arranged to be inserted within the bottom side of the bottom plate when such bottom plate is in its first position (7).
14. Bottle crate according to any of the preceding claims, **characterised in that** the bottle crate (1, 21) is in plastic made by injection moulding.
15. A method for producing an injection moulded bottle crate (1, 21), comprising the steps of:
 - injecting a first thermoplastic material in an in-

jection mould for forming a first injected crate having a bottom wall (2) and lateral walls (3, 4) connected to the bottom and to one another,
 - injecting a second material in a second injection mould to form a bottom plate (5, 26) having traversing holes (6) in order to obtain a movable and guided bottom plate,
 - positioning spring means (9, 19, 29), having a lower part and an upper part, on the bottom wall (2) of said first injected crate section, said lower part being affixed or in contact with said bottom wall (2) and the upper part being uncompressed in its extended position at a distance to the bottom wall,
 - assembling the bottom plate (5, 26) in the first injected crate on said spring means (9, 19, 29) in order to obtain a movable and guided bottom plate (5, 26) within said bottle crate lateral walls between a first position (7) for packs (27) of bottles wherein the bottom plate is in contact with, or close to, the bottom wall when a sufficient weight is exerted on said bottom plate and a second position (8) for separate bottles (28) wherein the bottom plate is in a high, upper position to form, with its holes (6), dividers for said bottles, when pushed by the spring means (9, 19, 29) uncompressed by any weight on the bottom plate (5, 26).

Patentansprüche

1. Flaschenkiste (1, 21) mit einer Bodenwandung (2, 22) und seitlichen Wandungen (3, 4; 23, 24),
dadurch gekennzeichnet,
dass sie eine separate innere Bodenplatte (5, 26) mit durchgehenden Löchern (6) aufweist, die innerhalb der seitlichen Wandungen (3, 4; 23, 24) der Flaschenkiste beweglich und geführt ist zwischen einer ersten Position für Packungen (27) von Flaschen, in welcher die Bodenplatte in einer unteren Position (7) benachbart zu oder in Kontakt mit der Bodenwandung (2, 22) steht, und einer zweiten Position für einzelne Flaschen (28), in welcher die Bodenplatte (5, 26) in einer oberen hohen Position (8) steht, um mit ihren Löchern (6) Gefache für die Flaschen zu bilden,
 und **dass** sie eine Federeinrichtung (9, 19, 29) aufweist, die so aufgebaut ist, dass sie in der ersten Position (7) zusammengedrückt ist, und dass sie die Bodenplatte (5, 26) automatisch in ihre obere zweite Position (8) bei einem Fehlen eines hinreichenden vorbestimmten Gewichts (10) auf die Bodenplatte (5, 26) zurückführt.
2. Flaschenkiste nach Anspruch 1,
dadurch gekennzeichnet,
dass die Federeinrichtung (9) zumindest eine

Sprungfeder (11) aufweist.

3. Flaschenkiste nach Anspruch 2,
dadurch gekennzeichnet,
dass die Federeinrichtung (9) vier Sprungfedern (29) aufweist, die mittig in Jedem Viertel der Kiste angeordnet sind.
4. Flaschenkiste nach Anspruch 2 oder 3,
dadurch gekennzeichnet,
dass die oder jede Sprungfeder (11, 29) durch die Oberseite (12) der Bodenwandung unterstützt wird und in ihrer oberen Position durch eine nach oben ragende innere Stange (13) oder eine Führung (30, 31) gehalten wird, die an ihrem Fuß mit der Oberseite (12) der Bodenwandung steif verbunden ist und gleitfähig mit der Bodenplatte (5, 26) verbunden ist.
5. Flaschenkiste nach Anspruch 1,
dadurch gekennzeichnet,
dass die Federeinrichtung (29) zumindest eine Blattfeder aufweist.
6. Flaschenkiste nach Anspruch 5,
dadurch gekennzeichnet,
dass die Blattfeder im Boden der Kiste längs einer Seitenwandung platziert ist, und
dass die Bodenplatte auf der Oberseite der Blattfeder platziert ist, welche Blattfeder zwischen der Oberseite der Bodenwandung (12) und der Unterseite der Bodenplatte verbleibt.
7. Flaschenkiste nach einem der Ansprüche 2 bis 4,
dadurch gekennzeichnet,
dass die Flaschenkiste außerdem eine Stoßkante (16) aufweist, welche die Bewegung der Bodenplatte (5, 26) in ihrer oberen Position blockiert, wobei die Stoßkante an dem Ende einer entsprechenden Stange oder Führung ausgebildet ist.
8. Flaschenkiste nach einem der vorstehenden Ansprüche,
dadurch gekennzeichnet,
dass die Flaschenkiste eine Stoßkante aufweist, welche die von der Feder verursachte Bewegung der Bodenplatte (5, 26) in ihrer oberen Position blockiert, wobei die Stoßkante durch einen Vorsprung von einem inneren Abschnitt von zumindest einer der seitlichen Wandungen gebildet wird.
9. Flaschenkiste nach einem der vorstehenden Ansprüche,
dadurch gekennzeichnet,
dass die Federeinrichtung in dem inneren Raum der Kiste innerhalb der seitlichen Wandungen gebildet wird.
10. Flaschenkiste nach einem der vorstehenden An-

sprüche,

dadurch gekennzeichnet,

dass die Bodenwandung (2, 22) durch einen Bodenkasten (T) gebildet wird, dass sowohl der Bodenkasten (T) als auch die Bodenplatte (5, 26) einen Abschnitt in einer rechtwinkligen Form besitzt, und **dass** der Bodenkasten (T) in eine Anzahl von Abteilungen (17) entsprechend den diesbezüglichen Löchern (6) in der Bodenplatte unterteilt ist.

11. Flaschenkiste nach einem der vorstehenden Ansprüche,

dadurch gekennzeichnet,

dass die Steifigkeit der Federeinrichtung so ist,

dass das hinreichende vorbestimmte Gewicht aus einer Masse von zwischen 300 g und 1 kg auf der Bodenplatte (5) resultiert.

12. Flaschenkiste nach Anspruch 10,

dadurch gekennzeichnet,

dass die Abteilungen durch miteinander verbundene Rippen (18) gebildet werden.

13. Flaschenkiste nach einem der Ansprüche 10 oder 12,

dadurch gekennzeichnet,

dass die Abteilungen eine Höhe von weniger als 2 cm besitzen und so angeordnet sind, dass sie innerhalb der Bodenseite der Bodenplatte eingefügt werden können, wenn diese Bodenplatte sich in ihrer ersten Position (7) befindet.

14. Flaschenkiste nach einem der vorstehenden Ansprüche,

dadurch gekennzeichnet,

dass die Flaschenkiste (1, 21) aus Kunststoff besteht, hergestellt durch Spritzguss.

15. Verfahren zum Herstellen einer spritzgegossenen Flaschenkiste (1, 21), mit folgenden Schritten:

- Einspritzen eines ersten thermoplastischen Materials in eine Spritzgussform zum Bilden einer ersten gespritzten Kiste mit einer Bodenwandung (2) und seitlichen Wandungen (3, 4), die mit dem Boden und miteinander verbunden sind,

- Einspritzen eines zweiten Materials in eine zweite Spritzgussform zum Bilden einer Bodenplatte (5, 26) mit durchgehenden Löchern (6), um eine bewegliche und geführte Bodenplatte (5, 26) zu erhalten,

- Positionieren einer Federeinrichtung (9, 19, 29) mit einem unteren Abschnitt und einem oberen Abschnitt auf der Bodenwandung (2) des ersten spritzgegossenen Kistenabschnitts, wobei der untere Abschnitt an der Bodenwandung (2) befestigt wird oder mit der Bodenwandung

(2) in Kontakt ist und der obere Abschnitt sich ungepresst in seiner ausgedehnten Position in einem Abstand von der Bodenwandung (2) befindet,

- Einbauen der Bodenplatte (5, 26) in der ersten spritzgegossenen Kiste auf der Federeinrichtung (9, 19, 29), um eine bewegliche und geführte Bodenplatte (5, 26) innerhalb der seitlichen Wandungen der Flaschenkiste zwischen einer ersten Position (7) für Packungen (27) von Flaschen zu erhalten, wobei die Bodenplatte sich in Kontakt mit oder benachbart zu der Bodenwandung (2) befindet, wenn ein hinreichendes Gewicht auf der Bodenplatte ausgeübt wird und eine zweite Position (8) für einzelne Flaschen (28), in welcher die Bodenplatte in einer höheren, oberen Position ist, um mit ihren Löchern (6) Gefache für die Flaschen zu bilden, wenn sie durch die Federeinrichtung (9, 19, 29) geschoben wird, ohne durch irgend ein Gewicht auf der Bodenplatte (5, 26) zusammengedrückt zu sein.

25 Revendications

1. Caisse à bouteilles (1, 21) comprenant une paroi de fond (2, 22) et des parois latérales (3, 4 ; 23, 24), **caractérisée en ce qu'elle** comprend un panneau de fond interne séparé (5, 26) comportant des trous traversants (6), mobile et guidé à l'intérieur desdites parois latérales de la caisse à bouteilles (3, 4 ; 23, 24) entre une première position pour des lots (27) de bouteilles, dans laquelle le panneau de fond est dans une position basse (7) à proximité de ou en contact avec la paroi de fond (2, 22), et une seconde position pour des bouteilles séparées (28), dans laquelle le panneau de fond (5, 26) est dans une position élevée supérieure (8) pour former, avec ses trous (6), des séparateurs pour lesdites bouteilles, **et en ce qu'elle** comprend des moyens de ressort (9, 19, 29) conçus pour être comprimés dans la première position (7) et pour ramener automatiquement le panneau de fond (5, 26) vers sa seconde position supérieure (8) en l'absence d'un poids prédéterminé suffisant (10) sur ledit panneau de fond.
2. Caisse à bouteilles selon la revendication 1, **caractérisée en ce que** les moyens de ressort (9) comprennent au moins un ressort hélicoïdal (11).
3. Caisse à bouteilles selon la revendication 2, **caractérisée en ce que** les moyens de ressort (9) comprennent quatre ressorts hélicoïdaux (29) disposés au centre dans chaque quart de la caisse.
4. Caisse à bouteilles selon la revendication 2 ou 3, **caractérisée en ce que** le ou chaque ressort héli-

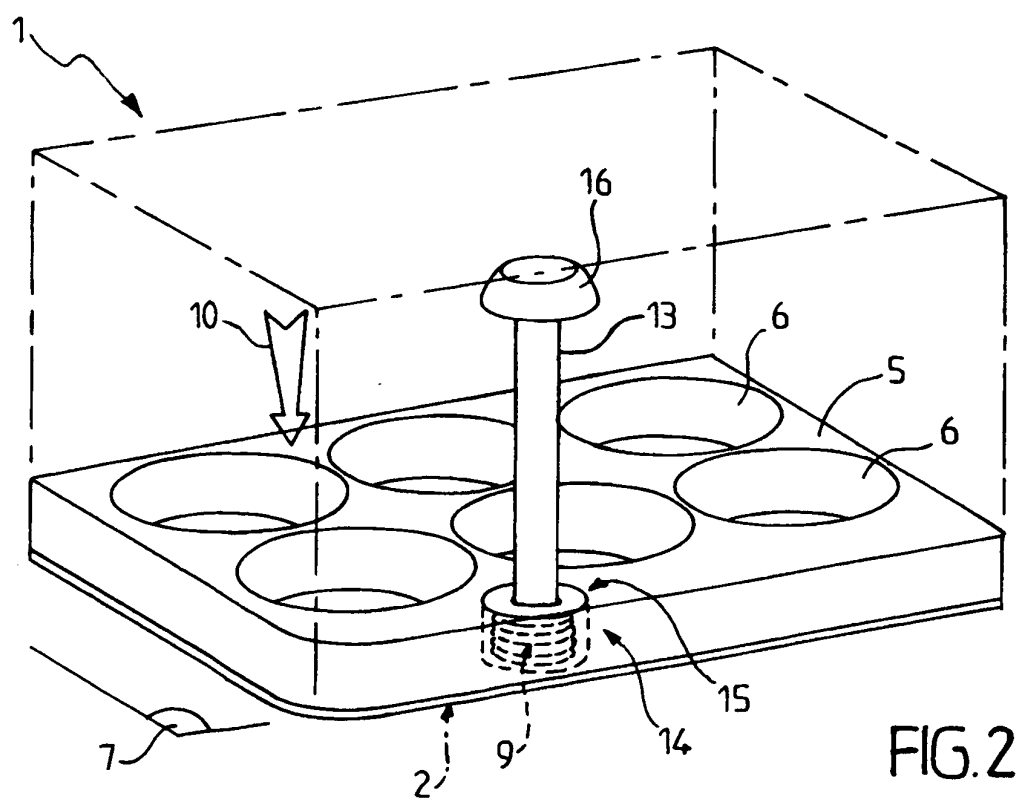
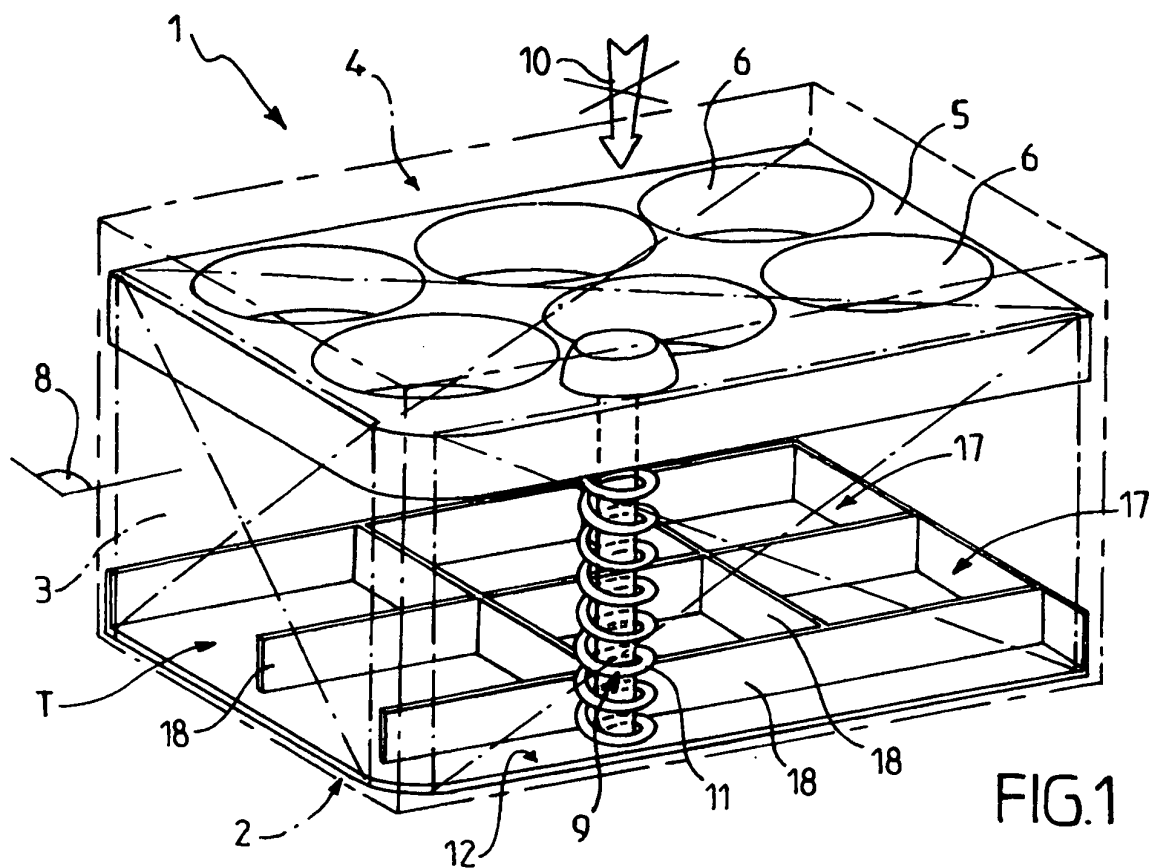
coïdal (11, 29) est supporté par la face haute de la paroi de fond (12) et est maintenu dans sa position supérieure par une tige interne verticale (13) ou un guide (30, 31) relié de façon rigide au niveau de sa base à la face haute de la paroi de fond (12) et relié de façon coulissante au panneau de fond.

5. Caisse à bouteilles selon la revendication 1, **caractérisée en ce que** les moyens de ressort (29) comprennent au moins un ressort à lame. 5
6. Caisse à bouteilles selon la revendication 5, **caractérisée en ce que** le ressort à lame est placé dans le fond de la caisse, le long d'une paroi latérale, et le panneau de fond est placé au-dessus du ressort à lame, ledit ressort à lame restant entre la face haute de la paroi de fond (12) et la face inférieure du panneau de fond. 10
7. Caisse à bouteilles selon l'une quelconque des revendications 2 à 4, **caractérisée en ce que** la caisse à bouteilles comprend en outre une butée (16) bloquant le mouvement du panneau de fond provoqué par le ressort dans sa position élevée, ladite butée étant formée au niveau de l'extrémité d'une tige ou d'un guide correspondant(e). 15
8. Caisse à bouteilles selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la caisse à bouteilles comprend une butée bloquant le mouvement du panneau de fond (5, 26) provoqué par le ressort dans sa position élevée, ladite butée étant formée par une saillie à partir d'une partie interne d'au moins l'une des parois latérales. 20
9. Caisse à bouteilles selon l'une quelconque des revendications précédentes, **caractérisée en ce que** les moyens formant ressort sont compris dans l'espace interne de la caisse à l'intérieur des parois latérales. 25
10. Caisse à bouteilles selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la paroi de fond (2, 22) est formée par un plateau de fond (T), **en ce que** le plateau de fond (T) et le panneau de fond (5, 26) ont tous deux une section de forme rectangulaire et **en ce que** le plateau de fond (T) est subdivisé en un certain nombre de compartiments (17) correspondant aux trous associés (6) dans le panneau de fond. 30
11. Caisse à bouteilles selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la rigidité des moyens de ressort est telle que le poids prédéterminé suffisant résulte d'une masse comprise entre 300 g et 1 kg sur le panneau de fond (5). 35
12. Caisse à bouteilles selon la revendication 10, **carac-** 40

térisée en ce que les compartiments sont formés par des arêtes interconnectées (18).

13. Caisse à bouteilles selon les revendications 10 ou 12, **caractérisée en ce que** les compartiments ont une hauteur inférieure à 2 cm, et sont agencés de manière à être insérés à l'intérieur du côté fond du panneau de fond lorsque ledit panneau de fond est dans sa première position (7). 45
14. Caisse à bouteilles selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la caisse à bouteilles (1, 21) est en plastique fabriqué par moulage par injection. 50
15. Procédé pour fabriquer une caisse à bouteilles moulée par injection (1, 21), comprenant les étapes suivantes : 55

- l'injection d'une première matière thermoplastique dans un moule à injection pour former une première caisse injectée comportant une paroi de fond (2) et des parois latérales (3, 4) reliées au fond et les unes aux autres,
- l'injection d'une seconde matière dans un second moule à injection pour former un panneau de fond (5, 26) comportant des trous traversants (6) afin d'obtenir un panneau de fond mobile et guidé,
- le positionnement de moyens de ressort (9, 19, 29), ayant une partie inférieure et une partie supérieure, sur la paroi de fond (2) de ladite première section de caisse injectée, ladite partie inférieure étant fixée ou en contact avec ladite paroi de fond (2) et la partie supérieure étant non comprimée dans sa position étendue à une distance de la paroi de fond,
- l'assemblage du panneau de fond (5, 26) dans la première caisse injectée sur lesdits moyens de ressort (9, 19, 29) afin d'obtenir un panneau de fond mobile et guidé (5, 26) à l'intérieur desdites parois latérales de la caisse à bouteilles entre une première position (7) pour des lots (27) de bouteilles, dans laquelle le panneau de fond est en contact avec, ou à proximité de, la paroi de fond lorsqu'un poids suffisant est exercé sur ledit panneau de fond, et une seconde position (8) pour des bouteilles séparées (28), dans laquelle le panneau de fond est en position élevée supérieure pour former, avec ses trous (6), des séparateurs pour lesdites bouteilles, lorsqu'il est poussé par les moyens de ressort (9, 19, 29) non comprimés par un poids quelconque sur le panneau de fond (5, 26).



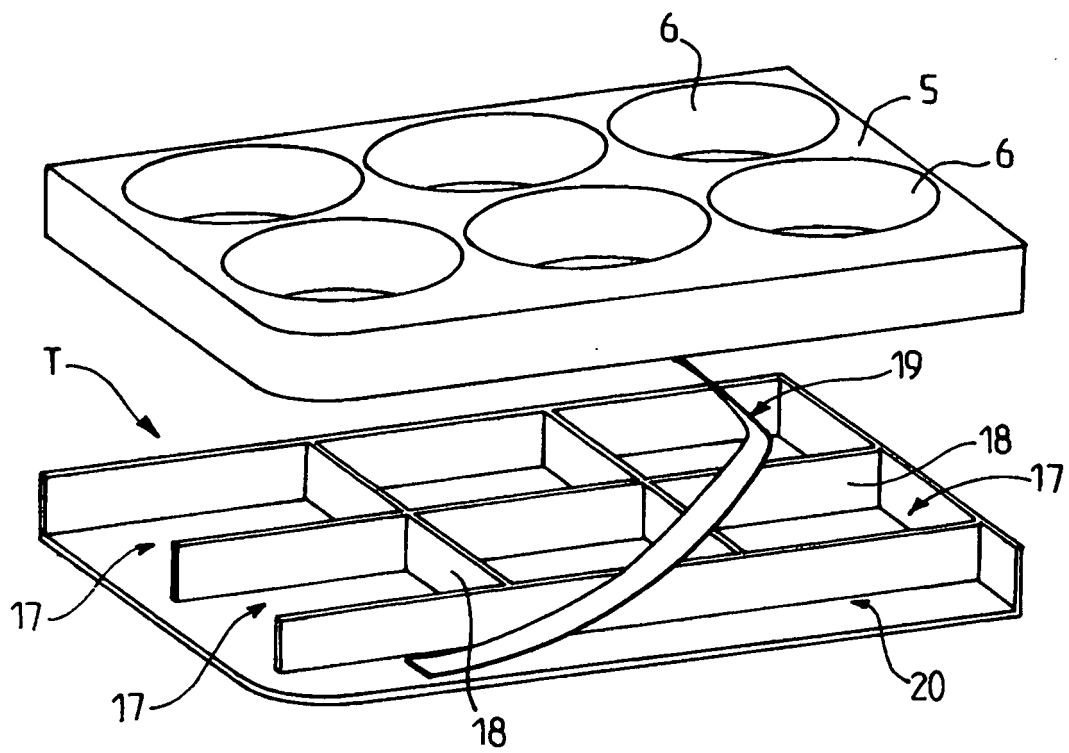


FIG. 3

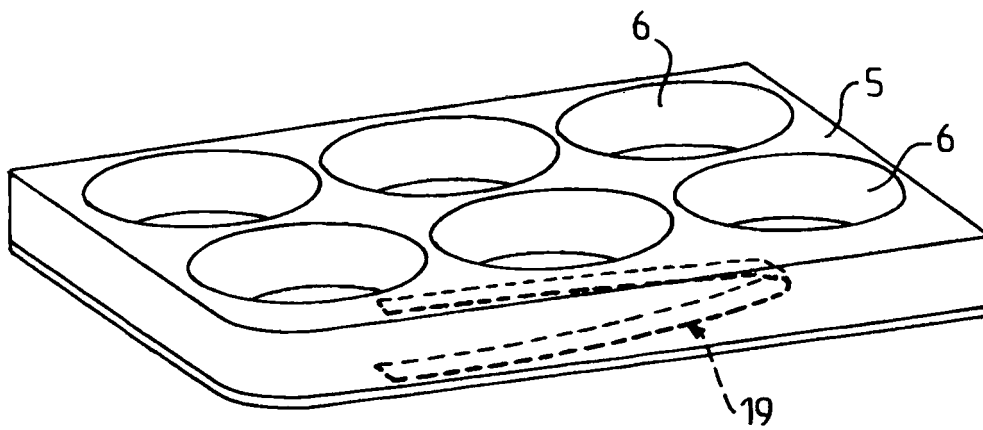
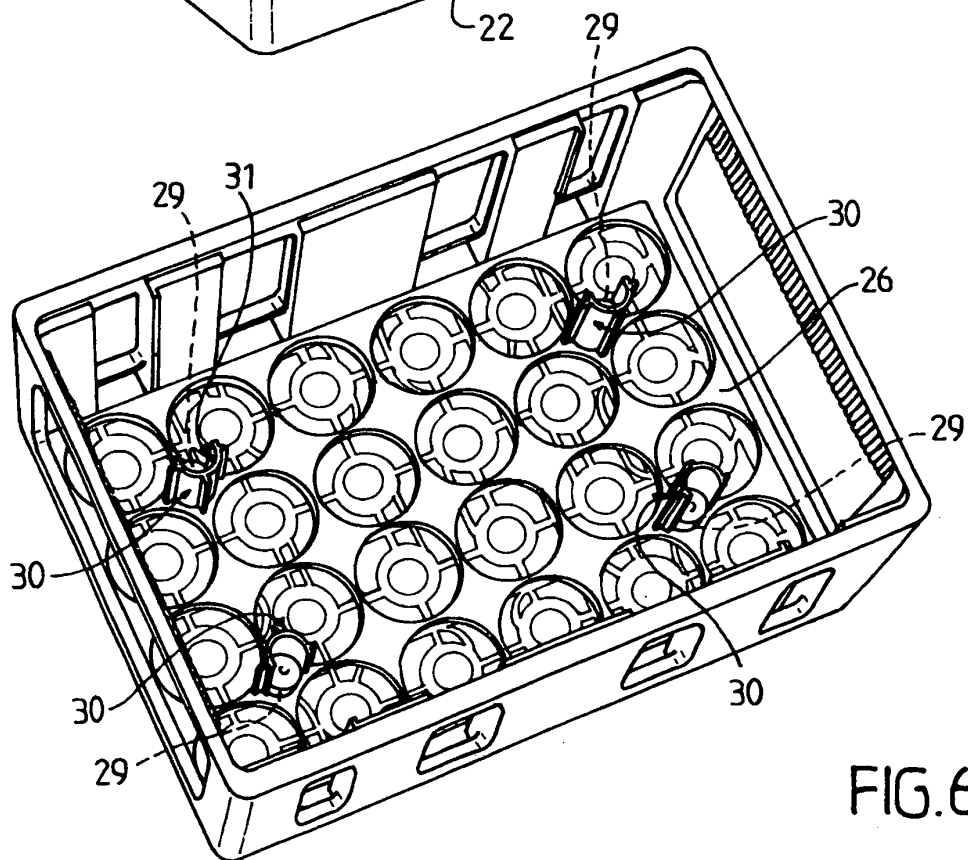
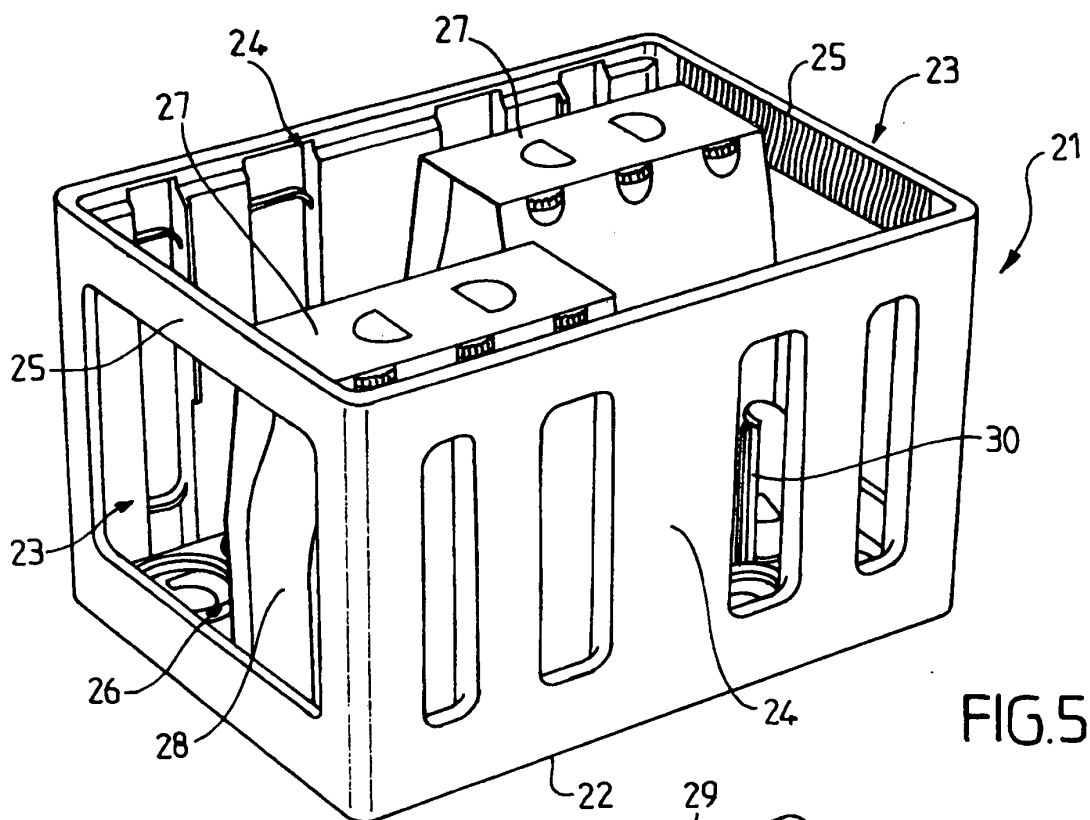


FIG. 4



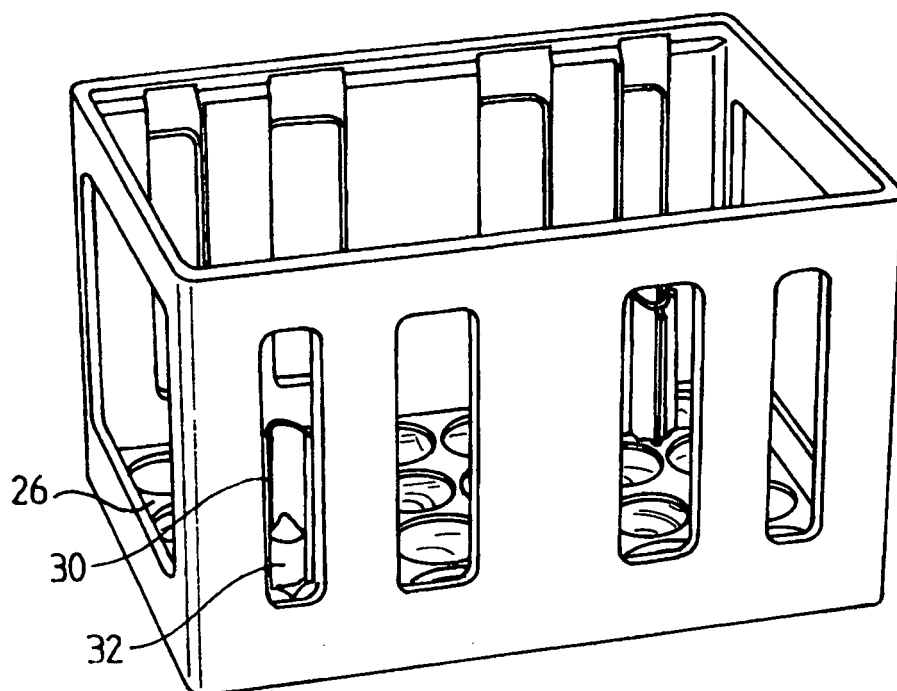


FIG. 7

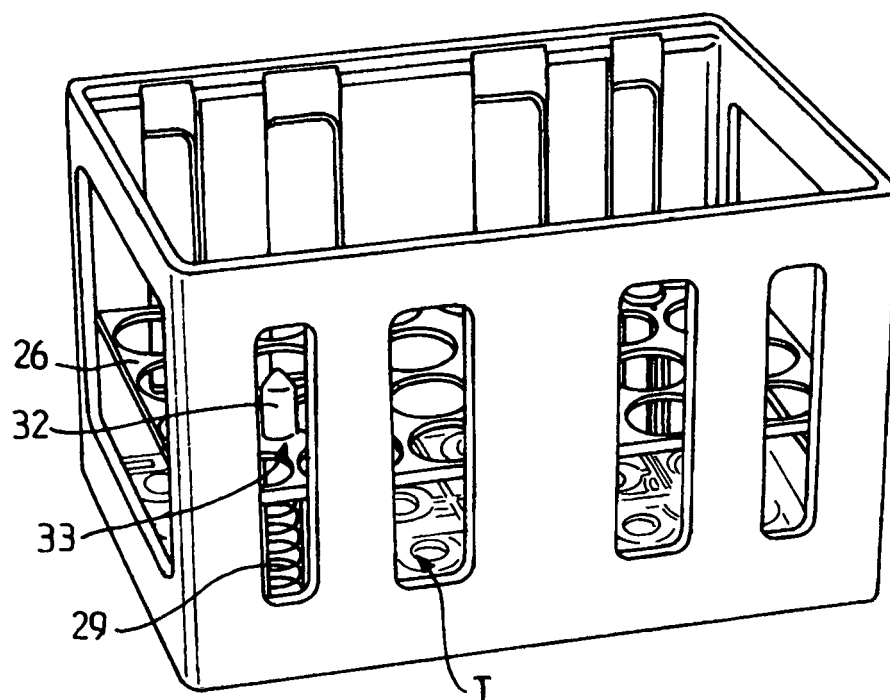


FIG. 8

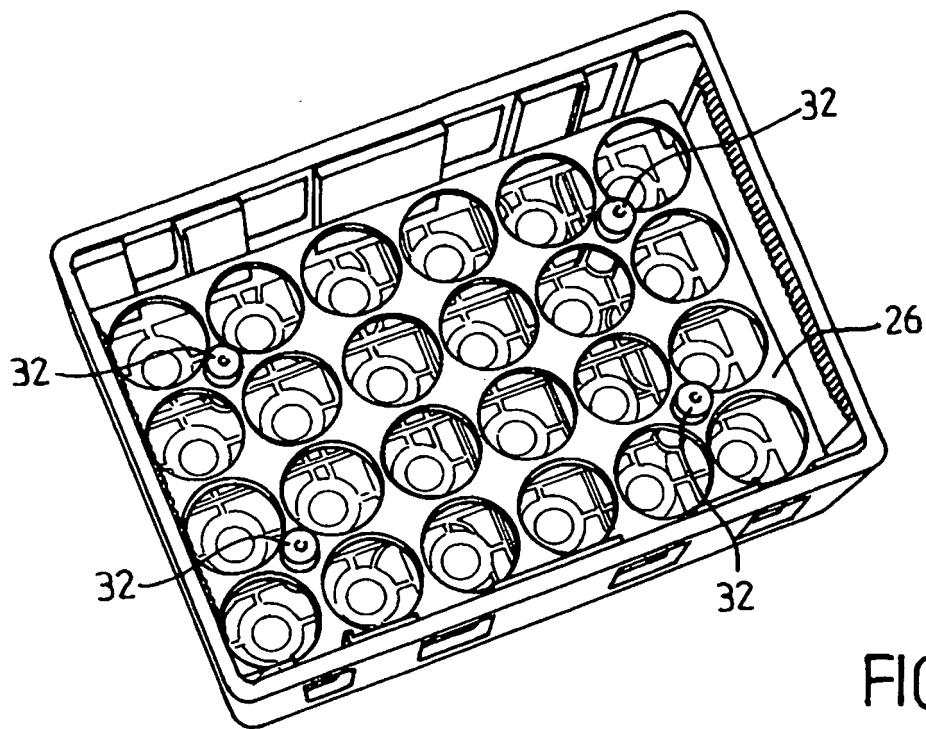


FIG. 9

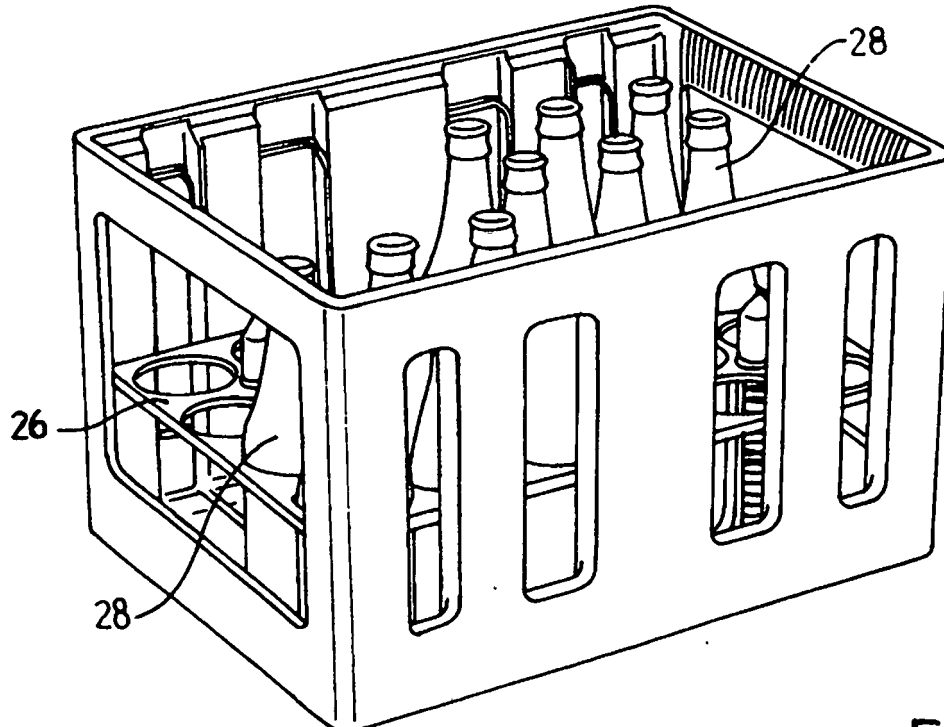


FIG. 10

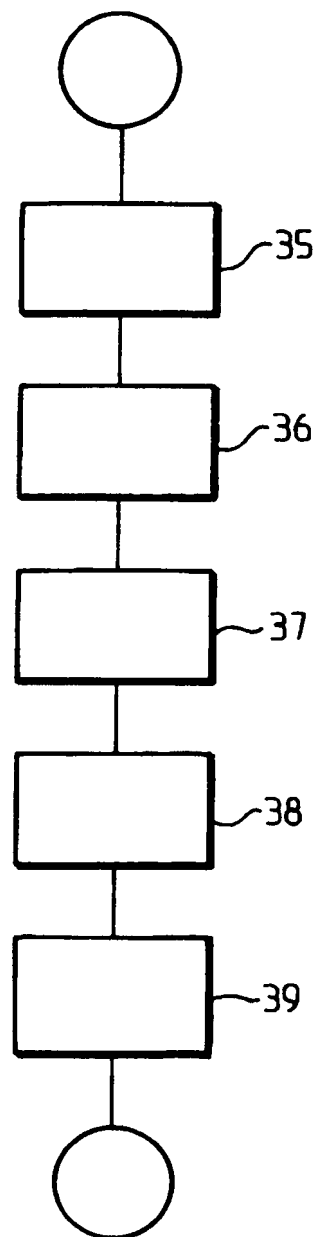


FIG.11

REFERENCES CITED IN THE DESCRIPTION

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