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(54) **TOP-GRIPPING BEVERAGE CAN CARRIER, AND ASSEMBLY**

(57) The invention relates to a top-gripping beverage can carrier comprising a main panel of cardboard sheet material having at least one can receiving aperture (3). The main panel is provided with a series of locking tabs (4) hingedly connected to the main panel by means of a respective fold line (5), and disposed around the can receiving aperture. Each locking tab extends from the respective fold line towards a retaining edge for engaging an underside of a radially protruding portion of a beverage can to be received in the can receiving aperture. The retaining edge is located more inwardly with respect to the can receiving aperture than said fold line. Each locking tab can pivot about the respective fold line from an initial position of the respective locking tab, in which said respective locking tab lies substantially in line with the main panel, towards a folded up position in which said locking tab is under an angle with the main panel. The main panel includes a series of neck support sections (20) being integral parts of the main panel and defining neck support edges being located more inwardly with respect to the can receiving opening than the fold lines of the locking tabs. At least in the initial position of the locking tabs, the retaining edges of the locking tabs extend more inwardly with respect to the can receiving opening than the neck support edges.

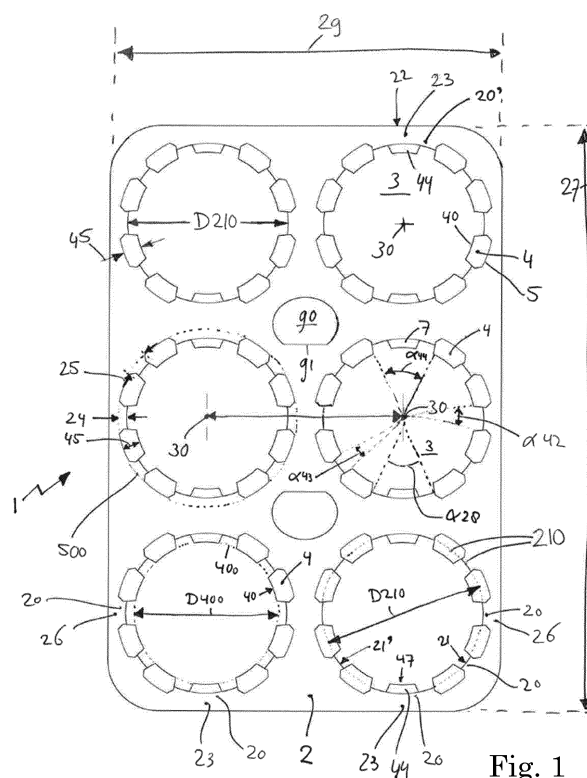


Fig. 1

Description

[0001] The invention relates to beverage can carriers, in particular can carriers for carrying multiple beverage cans.

[0002] Different can carriers are known, and they are often used to form multipacks, such as six-packs of beverage cans or so-called drink cans.

[0003] A first known type of beverage can carriers is formed by plastic six-pack rings, which comprises six interconnected flexible plastic rings. A first disadvantage of such plastic six-packs ring may lie in their environmental impact, for instance as animals may become entrapped in the plastic rings when they are not properly disposed. Another disadvantage may lie in that such plastic six-pack rings do not provide much space for printing, such as for marketing or promotional purposes.

[0004] Also relatively hard, injection molded plastic multipack can carriers are known, such as for instance marketed by the company PakTech. A disadvantage may lie in that such carriers comprise relatively large amounts of plastic material, and do still not provide relatively large surfaces for branding or the like.

[0005] Further it is known to pack multiple beverage cans together by means of plastic shrink-filled overwraps. Although such shrink wrapped packs of cans can provide relatively much space for printing, a disadvantage may lie in that they are made of plastic, which may have a relatively large environmental impact and/or a relatively bad image.

[0006] Also cardboard beverage can carriers or so-called multipack cartons are known. For example, paperboard basket type can carriers are known. Applying such basket type carriers for packing multiple beverage cans may be relatively costly, for instance as they may be relatively complex to manufacture and/or relatively difficult to fill with beverage cans. Further, such basket type may include relatively much cardboard material, which may not be beneficial to their environmental impact.

[0007] Another type of known can carriers is formed by paperboard overwraps. Although they may provide for relatively much surface space for branding or other printing, they may also use relatively much cardboard material. Besides, the paperboard overwraps may be relatively difficult to manufacture and/or to assemble around a multiplicity of cans.

[0008] Further, paper-based top-gripping beverage can carriers are known. A known paper-based top-gripping beverage can carrier has a main panel with substantially round can receiving apertures with a so-called crown style attachment mechanism including a series of locking tabs arranged around the periphery of the receiving aperture and radially extending towards the center of the receiving aperture. When a can is inserted into such a so-called sunburst type of can receiving opening, the locking tabs are deflected upwards and engage an underside of the lid or the so-called end of the can. A disadvantage of such paper-based top-gripping beverage

can carriers may lie in that they may require extremely narrow aperture-to-can tolerances. Additionally or alternatively, a disadvantage may lie in that such a sunburst type of can receiving opening may not always retain the cans securely, as a result of which beverage cans may accidentally fall out of the carrier.

[0009] For instance thereto, the can carrier may be adhered to the cans, for instance by means of hot melt. It is also possible to glue the bodies of multiple cans onto each other by means of hot melt or other adhesives. However, using such hot melt or other adhesives may be undesirable from environmental point of view. Additionally or alternatively, a disadvantage of using an adhesive may lie in that, after releasing a beverage can, the hot melt or other adhesive may stay behind on the beverage can, for instance at or near an area of the can lid at which a drinking opening or pouring opening is to be formed, which may be disadvantageous, for example in view of hygiene and/or taste perception.

[0010] It is an object of the invention to provide an alternative beverage can multipack and/or an alternative beverage can carrier. In particular, it can be an object of the invention to provide a beverage can carrier, wherein at least one of the disadvantages of a prior art beverage can carrier is counteracted. More in particular, the invention may aim to provide a beverage can carrier, wherein at least one of the disadvantages mentioned above is counteracted. In embodiments, the invention aims at providing an alternative paper-based top-gripping beverage can carrier, especially an alternative paper-based top-gripping beverage can carrier which may facilitate that cans can be retained therein relatively well.

[0011] Thereto, the invention provides for a top-gripping beverage can carrier, comprising a main panel of cardboard sheet material having at least one, and preferably multiple, can receiving apertures, wherein the main panel is provided with a series of locking tabs hingedly connected to the main panel by means of a respective fold line, and disposed around the can receiving aperture, wherein each locking tab extends from the respective fold line towards a retaining edge for engaging an underside of a radially protruding portion of a beverage can to be received in the can receiving aperture, wherein said retaining edge is located more inwardly with respect to the can receiving aperture than said fold line, wherein each locking tab can pivot about the respective fold line from an initial position of the respective locking tab, in which said respective locking tab lies substantially in line with the main panel, towards a folded up position in which said locking tab is under an angle with the main panel, wherein the main panel includes a series of neck support sections being integral parts of the main panel and defining neck support edges being located more inwardly with respect to the can receiving opening than the fold lines of the locking tabs, and wherein, at least in the initial position of the locking tabs, the retaining edges of the locking tabs extend more inwardly with respect to the can receiving opening than the neck support edges.

[0012] By providing the neck support sections that are integral parts of the main panel, and which during use of the can carrier are located more inwardly with respect to the can receiving opening than the fold lines about which the locking tabs are pivoted upwards, a drink can having its protruding end edge supported by said locking tabs at a height level above the main panel can at the height level of the main panel be additionally supported by said neck support sections. In particular, the neck support sections can rest against a neck of the can and may counteract that the can can shift sidewardly within the receiving opening. Therefore, it may be facilitated that the can may be secured relatively well in the top-gripping can carrier.

[0013] Advantageously, at least the main panel and the series of locking tabs, and preferably substantially the entire carrier, are formed out of a sheet of corrugated fiberboard.

[0014] By arranging the carrier such that the locking tabs are spread over the perimeter of the can receiving aperture such that the largest angle between two adjacent locking tabs of the series of locking tabs is less than 120° , it can be counteracted that a can, once held by the locking tabs, may move sidewardly without encountering a locking tab.

[0015] By arranging the carrier such that the neck support sections are spread over the perimeter of the can receiving aperture in such a manner that the largest angle between two adjacent locking tabs of the series of locking tabs is less than 120° , it can be counteracted that the can may move in radial or sideward direction at the height level of the main panel, thereby facilitating that the can may be secured relatively well.

[0016] At least in embodiments, the fold lines are formed as prefabricated fold lines, for instance by means of one or more scores, slits, and/or embossments, which may facilitate that the locking tabs pivot at the intended location.

[0017] Advantageously, at least one, and preferably multiple, especially each, of the neck support sections may have a depth being smaller than its width, preferably said depth being less than half of said width. As a result, the neck support section may be relatively rigid and it can be counteracted that it may unintentionally bend or fold, for instance when a beverage can, which is held in the aperture confined partly by means of said support section, applies a sideward or radial force onto said neck support section, thereby facilitating that the can may be secured relatively well.

[0018] By arranging the carrier such that at least one of the main panel's neck support sections, and preferably multiple, especially each, of them has a depth, which may be measured in the radial direction, being at most four times as large as the thickness of said neck support section, an preferably even smaller, such as at most three times as large, the neck support sections, which may thus be relatively thick compared to their depth, may be relatively rigid, which may counteract that it may acci-

dently bend or fold, which thus may facilitate that the can may be secured relatively well.

[0019] By arranging that the at least one of the neck support sections of the main panel, and preferably multiple or all of them, have a depth being larger than the thickness of an adjacent locking tab, preferably at least one and a half time as large, such as for instance about twice as large, it can be facilitated relatively easily that the neck support edge defined by the neck support section may be located further inwardly than a can facing side of a bottom end section of a folded up locking tab supporting said can. Hence, the neck support sections may support the neck of the can relatively well.

[0020] In embodiments, at least one of the neck support sections may have a depth being at least a quarter of the depth of at least one locking tab being adjacent to the respective neck support section, preferably wherein said depth of the neck support section is at least a third, such as for instance about half, of the depth of the locking tab.

[0021] In embodiments, the can carrier may hold at least one, and preferably multiple, beverage cans within a respective one of the one or more can receiving apertures of the carrier.

[0022] Advantageously, the can receiving aperture, when the locking tabs are folded away towards their folded up positions, may leave open a passage having a passage diameter being at least substantially equal to, and preferably wider than, the diameter of a lid of the beverage can to be held within said receiving aperture. For instance in case the diameter of the lid of the beverage can is about 53 mm, said passage diameter may be at least about 53 mm, such as for example about 54 mm.

[0023] In advantageous embodiments, the main panel may comprise at least two can receiving apertures, and preferably more, such as for instance four or six, which, in embodiments, may be provided in parallel rows, for instance two parallel rows, which for instance may each have two, three or four can receiving openings.

[0024] In embodiments, the centers of two adjacent can receiving apertures may be spaced apart over an interspace corresponding with the diameter at the widest point of the body of the cans to be held by the carrier. For example, when the said widest point of the body of the can is about 66 mm, said interspace may then for instance also be about 66 mm. As a result, adjacent cans held in the carrier may substantially abut, which may counteract that they may shift and/or which may facilitate that the cans may be held in a relatively compact arrangement.

[0025] Further advantageous embodiments according to the invention are described in the appended claims.

[0026] By way of non-limiting examples only, embodiments of the present invention will now be described with reference to the accompanying figures in which:

Fig. 1 shows a schematic top view of a first embodiment of a top-gripping beverage can carrier accord-

ing to an aspect of the invention in an initial flat state thereof;

Fig. 2 shows a schematic perspective view of the carrier of Fig. 1 in a use state thereof in which it is holding beverage cans;

Fig. 3 shows a schematic partly cut away cross sectional view of a detail of the can holding carrier of Fig. 3;

Fig. 4 shows a schematic top view of a second embodiment of a can carrier; and

Fig. 5 shows a schematic perspective view of the carrier of Fig. 4 in a use state thereof in which it is holding beverage cans.

[0027] It is noted that the figures show merely preferred embodiments according to the invention. In the figures, the same or similar reference signs or numbers refer to equal or corresponding parts.

[0028] Figure 1 shows an embodiment of a top-gripping beverage can carrier 1 according to the invention. Said can carrier 1, which may also be considered to form a so-called neck-through carrier, is intended to hold one or multiple beverage cans 6, for instance such as depicted in Figure 2, which shows an assembly including the can carrier 1 and multiple cans 6. It will be appreciated that the carrier 1 may be for forming a multipack, such as a six-pack in the here shown embodiment. However, in alternative embodiments, the carrier 1 may be arranged to hold another number of beverage cans 6 or so-called drink cans 6, which may contain a drink or beverage, such as for instance soft drink, in particular carbonated soft drink, an alcoholic drink, such as beer, wine or a mixed drink, such as for instance an alcopop, fruit juice, water, tea, herbal tea, energy drink, etc.

[0029] In the here shown embodiments, a main panel 2 of the carrier 1 is provided with six can receiving apertures 3. However, in other embodiments the main panel 2 may have another number, preferably a multiple number, of can receiving apertures 3 or so-called receiving openings 3, such as for instance one, two, three, four or eight can receiving apertures 3.

[0030] Further, the main panel 2 is provided with a series of locking tabs 4 hingedly connected to the main panel 2 by means of a respective fold line 5, in particular a prefabricated fold line. Here, the prefabricated fold line 5 is formed by a score. However, it may be formed in any other suitable manner, for instance by means of multiple scores and/or one or more slits, and/or embossments or the like. The locking tabs 4 can thus be formed from the same sheet of material, in particular corrugated fiberboard material, as the panel to which they are connected.

[0031] Each of the locking tabs 4, which are intended and arranged for retaining a can 6 in the receiving aperture 3, extends from the respective fold line 5 towards a retaining edge 40. In particular, the fold line 5 is located at a first or proximal end of the locking tab 4, while the retaining edge 40 is located at an opposite second end of the locking tab 4. Said retaining edge 40 is for engaging

an underside of a radially protruding portion 60 of a beverage can 6 to be received in the can receiving aperture 3, as for instance can be seen in the schematic partly cut away cross sectional view of Figure 3. In particular, the radially protruding portion 60 of the can 6 may be formed by a lid 61, usually called an end 61, of the can 6, which may be attached to a main body 62 of said can 6.

[0032] The locking tabs 4 can pivot about their respective fold lines 5 from an initial position of the respective locking tab 4, in which said respective locking tab 4 lies substantially in line with the main panel 2, towards a folded up position in which said locking tab is under an angle with the main panel 2, as for instance can be seen in Figure 3. In the initial position of the locking tab 4, it may thus be substantially flush with the main panel 2. Preferably, the locking tab 4, for instance at least after folding up to a certain extent, may be biased in a direction substantially back to its initial position.

[0033] As for instance can be seen in Fig. 1, at least in the initial position of the locking tab 4, the retaining edge 40 is located more inwardly with respect to the can receiving aperture 3 than said fold line 5. In other words, at least in its initial position, the locking tab 4 can extend from the fold line 5 into the can receiving aperture 3, preferably in a substantially radial direction.

[0034] Further, the main panel 2 includes a series of neck support sections 20, which may be for supporting against the neck of the beverage can. These neck support sections 20 form sections 20 or areas 20 of the main panel 2 and are integral parts of the main panel 2. Contrary to the locking tabs 4, the neck support sections are here thus not formed as tabs hingedly connected to the main panel 2, but are integral parts of said main panel 2. In particular, the neck support sections 20 may be intended and/or arranged for supporting against a neck 63 of the beverage can 6. The neck support sections 20 define neck support edges 21, which are for supporting against the neck 63 of the can 6, and which during use may abut the neck 63 or so-called neck portion 63 of the can held within the respective can receiving aperture 3 of the carrier 1.

[0035] Advantageously, the neck support edges 21 may be curved, in particular concave, more preferably substantially arc-shaped, such as to facilitate a proper fit with the neck 63 of the can 6. In particular, multiple neck support edges 21, preferably all neck support edges 21, defining parts of the boundary of a respective can receiving aperture 3, may be located substantially on a virtual circle 210.

[0036] The can receiving aperture 3, when the locking tabs 4 are folded away towards their folded up positions, leaves a passage open for letting pass at least an upper part of a can 6. Said passage and/or the vertical circle 210 on which the neck support edges 21 may be located may have a passage diameter D₂₁₀ being at least substantially equal to, and preferably wider than, the diameter D₆₀ of the lid 61 of the beverage can 6 to be held within said receiving aperture 3, such that the lid 61 or

so-called end 61 of the can 6 can be inserted into the can receiving aperture 3 without substantially folding up or flexing the neck support sections 20 of the main panel 2. In particular, especially as beverage cans 6 often have an end 61 or lid 61 with a diameter D60 of about 52 mm or about 53 mm, said passage diameter D210 may be at least about 52 mm, preferably at least about 53 mm, such as about 54 mm.

[0037] As for instance can be seen in Figure 1, the neck support edges 21 are located more inwardly with respect to the can receiving opening 3 than the fold lines 5 of the locking tabs 4.

[0038] At least in the initial position of the locking tabs 4, the retaining edges 40 of the locking tabs 4, which retaining edges 40 may be curved, in particular concave, more preferably substantially arc-shaped, for instance such as to facilitate a proper fit with the end 61 of the can 6. In particular, multiple retaining edges 40, preferably all retaining edges 40, may be located substantially on a virtual circle 400.

[0039] At least in the initial position of the locking tabs 4, the retaining edges 40 of the locking tabs 4, extend more inwardly with respect to the can receiving opening 3 than the neck support edges 21. In particular, when the locking tabs 4 are in their initial positions, the area of the can receiving aperture 3 not blocked by the locking tabs 4 then extending into said aperture 3, which unblocked area at least in embodiments may be considered as the area enclosed by the virtual circle 400 on which the respective retaining edges 40 are substantially located, may have a diameter D400 smaller than the outer diameter D60 of the lid 61 or so-called end 61 of the beverage can 6 to be held within said receiving aperture 3. At least in the initial position of the locking tabs 4, in particular in case the diameter D60 of the lid 61 of the beverage can 6 is about 53 mm and/or in particular in case the passage diameter D210 is at least 53 mm, the diameter D400 of said unblocked area may in embodiments be smaller than 53 mm, preferably smaller than 51 mm, such as about 50 mm, about 49 mm, about 48 mm, about 47 mm or about 46 mm.

[0040] It will be appreciated that the locking tabs 4 may be disposed around the can receiving aperture 3, in particular in a manner in which the locking tabs 4, at least in their initial positions in which they lie substantially flush with the main panel 2, are spaced apart from each other. More in particular, the locking tabs 4 can be entirely spaced apart from each other, both at their first, outer ends at which their fold lines 5 are located, as well as at their opposite, second ends that form the retaining edges 40, as well as at any other portion of the side edges of the locking tabs 4.

[0041] In embodiments, the locking tabs 4 may be substantially evenly distributed along the periphery of said can receiving aperture 3. However, as can be seen in the here shown embodiment, at certain positions 23, such as for instance relatively near an edge 22 of the main panel 2, a relatively large part of the perimeter of

the aperture 3 may be free of such locking tab 4. This may be considered as that at such position 23, a locking tab 4 may be omitted, in particular to counteract that otherwise the main panel 2 could be weakened to a relatively large extent by an incision extending which would otherwise extend relatively close to the edge 22 of the panel. This means that at such locations 23, the respective neck support section 20' of the main panel 2 may thus be relatively wide.

[0042] In embodiments, as is the case in the here shown exemplary embodiments, for instance at such locations 23, one or more additional tabs 44 may be hingedly connected to the main panel. In embodiments, contrary to the here shown embodiments, the inner edges 47 of such additional tabs 44 may extend more inwardly with respect to the can receiving aperture 3 than the retaining edges 40 of the locking tabs 4 do. For example, the additional tab 44 may have a depth which is arranged such that the inner edge 44 of the additional tab 44 forms an additional retaining edge engaging the radially protruding portion 60 of the can 6 be formed by a lid 61.

[0043] In the here shown embodiment, eight locking tabs 4, and also two additional tabs 44, are provided at each aperture 3. However, in alternative embodiments, another number of locking tabs 4 may be provided at one or more of the can receiving apertures 3. Preferably, at least three locking tabs 4 are provided at the respective can receiving aperture 3, especially in order to counteract movements of the can in radial direction, and more preferably at least four locking tabs 4, such as for instance between five and twenty locking tabs 4 can be provided.

[0044] In embodiments, each neck support section 20 may extend between two adjacent locking tabs 4, and/or each locking tab 4 may extend between two adjacent neck support sections 20. It will be appreciated by the person skilled in the art that the number of neck support sections 20 may correspond with the number of locking tabs 4, and may, as is the case in the here shown embodiments, be eight. However, in alternative embodiments, other numbers of neck support sections 20 are possible, for instance at least three, at least four, and/or between five and twenty neck support sections 20 at a respective can receiving aperture 3.

[0045] Advantageously, the locking tabs 4 may be spread over the perimeter of the can receiving aperture 3 in such a manner that the largest angle α_{44} between two adjacent locking tabs 4 of the series of locking tabs 4 is less than 120° . Said angle α_{44} , which may be measured from the facing ends of the retaining edges 40, may preferably be smaller than 90° .

[0046] Additionally or alternatively, the largest angle α_{28} over which a neck support edge 21, in particular the widest one of the neck support edges 21, extends may be less than 120° , preferably less than 90° . In this context, it is noted that such neck support edge 21, which may be formed by a cut line 21', may in embodiments be formed by a folded edge, or may be formed by one or more cut lines 21" and one or more folded edges 21'"

together.

[0047] Further, it is noted that the neck support sections 20 may be spread over the perimeter of the can receiving aperture 3 in such a manner that the largest angle α_{28} between two neck support sections of the series of neck support sections is less than 120° . In particular, said angle α_{28} , which may be measured from a first lateral end of the respective neck support edge 21 up to its opposite, second later end, may preferably be smaller than 90° .

[0048] It is noted that a respective one of the neck support sections 20, in circumferential direction of the can receiving aperture 3, can be located between two adjacent locking tabs 4, and that the fold lines 5 of said two adjacent locking tabs 4 may be substantially located on a virtual circle 500 extending around the center 30 of the can receiving aperture 3. Said respective one of the neck support sections 20 can then have a depth 24 which extends, seen in the radial direction of the can receiving aperture 3, from the neck support edge 21 of the respective neck support section 2 up to said virtual circle 500 on which the fold lines 5 of said two adjacent locking tabs 4 substantially are located.

[0049] It is noted that, at least one, and preferably multiple, especially each, of the neck support sections 20 may have a depth 24 being smaller than its largest width 25 and/or said width 25 measured at the location between the two adjacent fold lines 5, preferably said depth 24 being less than half of such width 25. As a result, the neck support section 20 may be relatively rigid and it can be counteracted that it may unintentionally bend or fold, for instance when a beverage can 6, which is held in the aperture 3 confined partly by means of said support section 20, applies sideward or radial forces onto said neck support section 20, thereby facilitating that the can 6 may be secured relatively well.

[0050] Additionally or alternatively, at least one of the neck support sections 20 can have a depth 24 which is at least a quarter of the depth 45 of at least one of the locking tabs 4 adjacent to the respective neck support section 20. Preferably, said depth 24 of the neck support section 20 can be at least a third, such as for instance about half, of the depth 45 of the locking tab 4.

[0051] It is noted that said depth 45 of the locking tab 4 may be measured in the radial direction of the can receiving aperture 3, and may be measured from the fold line 5 up to the retaining edge 40, and may for instance be measured between the outermost virtual circle 500 and the innermost virtual circle 400.

[0052] Furthermore, it is noted that the central virtual circle 210, on which the neck support edges 21 may substantially lie, may be located between the outermost virtual circle 500 and the innermost virtual circle 400. In particular, the radial distance between the central virtual circle 210 and the outermost virtual circle 500 may not be more than 50% larger or smaller than the radial distance between said central virtual circle 210 and the innermost virtual circle 400. For example, both radial dis-

tances between the two respective virtual circles 210, 400; 210, 500 may be substantially equal, for instance both about 3 mm.

[0053] In embodiments, the radial distance between the central virtual circle 210 and the outermost virtual circle 500 may for instance be between 1.5 mm and 5 mm, such as about 2 mm, about 4 mm or in particular about 3 mm. Additionally or alternatively, the radial distance between the central virtual circle 210 and the innermost virtual circle 400 may for instance be between 1.5 mm and 5 mm, such as about 2 mm, about 4 mm or in particular about 3 mm.

[0054] Furthermore, at least one, and preferably multiple or each, of the neck support sections 20 of the main panel 2 may have a depth 24 being larger than the thickness of an adjacent locking tab 4, which may be measured in a direction transverse to the drawing in Figure 1. Preferably, said depth 24 may be at least one and a half time as large, such as for instance about twice as large, as said thickness. For example, the main panel 2 may have a thickness of about 1.5 mm and the neck support section 20 may have a depth 24 of about 3 mm. Since the locking tab 4 may advantageously only comprise a single layer of sheet material, which may be the same sheet material from which the main panel 2 is made, and since the sheet of material may be substantially equally thick over substantially the entire surface of the main panel 2, this may mean that the neck support section 20 may have a depth 24 being larger than its thickness. When the locking tab 4 is in its folded up position, the neck support section 20 may thus, at the height level of the main panel 2, extend, in a direction towards the can 6, beyond the locking tab 4, as can be seen in Figure 3. In other words, during use, when the locking tab 4 is in its folded up position, the neck support section 20 may thus extend inwardly beyond a lower portion of the locking tab 4.

[0055] Additionally or alternatively, the depth 24 of the neck support section 20 may be such that it is at most four times as large as the thickness of said neck support section 20. Preferably, said depth 24 of the neck support section 20 may be no more than three times its thickness, such as for instance about twice as large.

[0056] As mentioned above, the main panel 2 may comprise multiple receiving apertures 3. Advantageously, the centers 30 of two adjacent can receiving apertures 3 can then be spaced apart over an interspace 33 which corresponds with the diameter at the widest point of the body 62 of the cans 6 to be held by the carrier 1. In particular, for instance as many more or less standardly sized drink cans 6 have a widest body diameter of about 66 mm, said interspace 33 may for example be about 66 mm. As a result, adjacent cans 6 held by the carrier 1 can abut each other, as for instance is the case in the embodiments shown in Figure 2 and Figure 5.

[0057] In embodiments, one or more dimensions of the main panel 2 and/or one more dimensions of the carrier 1, such as for instance the respective length 27 and/or

the respective width 29, may be chosen such that it does not exceed, and/or substantially corresponds with, the combined length or width of the cans held in that direction. Hence, it may be facilitated that the carriers 1 do not prevent that cans 6 of two adjacently placed carriers 1 cannot be placed next to each other in an abutting manner and/or it can counteract that the carrier 1 prevents placement of the cans in a certain box, a certain compartment of a shelf display, etc., in which the cans would have fitted when they would be placed in the same formation, but without the carrier.

[0058] For example, in case the carrier comprises two can receiving apertures 3, or two rows of can receiving apertures 3, next to each other, the respective dimension of the carrier 1, e.g. its width 29, may be such that it not substantially exceeds 132 mm, and preferably is substantially 132 mm. Additionally or alternatively, in case of three apertures 3, or three rows of apertures 3, the respective dimension of the carrier 1, e.g. its length 27, may in embodiments be no larger than about 198 mm or may be about 198 mm.

[0059] For instance in such case in which only a relatively small border section 23, 26 of the main panel 2 extends between the can receiving aperture 3 and the edge 22 of the main panel 2, the locking tabs 4 may be disposed in a manner in which no locking tab is located at a position 23, 26 where the distance, between the main panels outer edge 22 and the virtual circle 210 on which the neck support edges 21 may be located, is the smallest, as for instance can be seen in Figure 1, where there, both in the width direction and the length direction a respective neck support section of the main panel 2 is present.

[0060] As is the case in the here shown embodiments, the carrier 1 can be provided with one or more, e.g. two, finger holes 9. For example, the main panel 2 may be provided with finger hole tabs 90, which may be hingedly connected to the main panel 2 by a prefabricated fold line 91. The finger hole tabs 90, which initially may lay substantially flush with the main panel 2, may facilitate that printing, for instance for marketing or promotional purposes, may initially extend over the finger holes 9, for instance until a user pushes these finger hole tabs 90 downwards to a position such as shown in Figure 2.

[0061] In the embodiment of Figures 1-3, the top-gripping carrier 1 does not cover the top sides of the lids 61 of the cans 6. This may for instance facilitate that the bottoms of other cans 6, for instance the cans of a further multipack, may be nested into said lids 61. Besides, such a design may require relatively few material.

[0062] However, in other embodiments, the carrier 1 may further comprise at least one cover panel 7 for covering at least a part of at least one of the cans 6 to be held by the carrier 1. In particular, such cover panel 7 may cover one or multiple can lids 61 at least partly, and preferably substantially entirely. It is noted that such a cover panel 7 may be advantageously. For example, the cover panel 7 may counteract contamination on the lids

61, in particular at the location 66 at which a drinking opening or pouring opening is to be formed by the user, for instance by means of a pop-tab mechanism 67. Hence, the cover panel 7 may provide for relatively hygienically embodiments.

[0063] An exemplary embodiment of such an alternative can carrier 1 design is shown in Figures 4 and 5. Figure 4 shows a blank of such a carrier in its initial flat state. Figure 5 shows the carrier 1 during use.

[0064] Advantageously, the cover panel 7 may be hingedly connected to the main panel 2, and formed out of the same sheet of cardboard material as the main panel. For example, the cover panel 7 may be hingedly connected to the main panel 2 via an intermediate panel 81, here formed as a strip 81, which may extend in the length direction of the main panel 2. The intermediate panel 81 may be hingedly connected to the main panel 2 by means of a first fold line 811 and may be hingedly connected to the cover panel 7 by means of a second fold line 812. Said first fold line 811 and/or said second fold line 812 may preferably be formed as a prefabricated fold line, in particular by means of slits 83 and/or scores 84, such as for instance a scored perforated line 811, 812.

[0065] In advantageous embodiments, the cover panel 7 may be provided with a connector to lock the cover panel 7 in its position in which it covers one or more lids 61 at least partly. For example, as is the case in the here shown exemplary embodiment, a connector panel 82 may be hingedly connected to the cover panel 7, in particular by means of a third fold line 813, which may be located at substantially the opposite side of the cover panel 7 as at which the second fold line 812 is located. The connector panel 82 may be provided with a connector edge 83, which may be formed by a slit 83 or cut 83 in the sheet material at between said connector panel 82 and the cover panel 7. Preferably, said cut or slit may be curved, for instance substantially arc-shaped, such that the formed connector edge 83 may correspond with the size of the lid 61 of the can, and can be clicked or clamped beneath the protruding edge 60 of said lid 61 in order to lock the cover panel 7 in its covering position.

[0066] As can be seen in Figures 4 and 5, the connector panel 82 may be provided with preformed openings or cut-outs 94 which during use may be positioned substantially above the finger holes 9 in the main panel 2, as can be seen in Figure 5.

[0067] Although the cover panel 7 can thus be held in place by means of the connector panel 82 that may snap below one or more can lids 61, the cover panel 7 may alternatively, or additionally, be held in place by other means. For example, one or more lock tabs may be provided, which may for instance be hingedly connected to the cover panel 7, and/or which may for instance can be locked in one or more slots or openings which may be provided in the carrier 1, in particular in its main panel 2. Alternatively or additionally, the cover panel 7 may be adhered or glued to be held in place, for example by gluing it to the main panel 2, for instance by means of

hot melt. However, for instance from an environmental point of view, it may be preferred to refrain from using hot melt, or other glue. In particular, a design wherein one or more connector edges 83 of one or more cover panels 7 can engage beneath one or more can lid edges 60 may be relatively advantageously. Such designs may not only facilitate omitting using an adhesive, but may additionally, or alternatively, have the advantage that the one or more cover panels 7 can be mounted in their covering positions relatively easily, for instance in contrast to designs in which pivotable locking tabs need to be neatly inserted into slot-shaped openings.

[0068] It is noted that the can carrier 1, in different embodiments, may comprise a main panel 2 of cardboard sheet material, preferably died, especially die cut, from a sheet cardboard sheet material. Advantageously, the entire carrier 1 may be made of cardboard, preferably cardboard sheet material, more preferably corrugated fiberboard material. Although different kinds of cardboard sheet material may be used, such as for instance paperboard, especially compressed paperboard material, it has been found that it may advantageous to form at least the main panel 2 out of corrugated fiberboard material, preferably single sheet of corrugated fiberboard. In particular, the corrugated fiberboard may have a thickness of between 0.8 mm and 2.0 mm, for instance about 1.5 mm, or less.

[0069] It is noted that for the purpose of clarity and a concise description features are described herein as part of the same or separate embodiments, however, it will be appreciated that the scope of the invention may include embodiments having combinations of all or some of the features described.

[0070] Further, it is noted that the invention is not restricted to the embodiments described herein. It will be understood that many variants are possible.

[0071] For example, the can carrier may be provided with printing, for instance at least at a surface facing upwards and/or outwards during use.

[0072] As another example, the can carrier may be provided with one or more handles, which can be used to carry the can carrier, and which preferably can be made from the same sheet of cardboard material as its main panel.

[0073] As yet another example, the can carrier, in particular its main panel, may be provided with one or more perforation lines, that can form part of a zip release or pull tab, which may allow a user to tear off a part of the main panel in a relatively easy manner in order to break the can receiving aperture into an opening which is open at one of its sides, and no longer enclosed by the main panel, thereby enabling that the beverage can be removed relatively easily by sliding it substantially side-wardly out of the opening in the remaining part of the main panel.

[0074] Such and other variants will be apparent for the person skilled in the art and are considered to lie within the scope of the invention as formulated in the following

claims.

Claims

1. Top-gripping beverage can carrier, comprising a main panel of cardboard sheet material having at least one can receiving aperture, wherein the main panel is provided with a series of locking tabs hingedly connected to the main panel by means of a respective fold line, and disposed around the can receiving aperture, wherein each locking tab extends from the respective fold line towards a retaining edge for engaging an underside of a radially protruding portion of a beverage can to be received in the can receiving aperture, wherein said retaining edge is located more inwardly with respect to the can receiving aperture than said fold line, wherein each locking tab can pivot about the respective fold line from an initial position of the respective locking tab, in which said respective locking tab lies substantially in line with the main panel, towards a folded up position in which said locking tab is under an angle with the main panel, **characterized in that** the main panel includes a series of neck support sections being integral parts of the main panel and defining neck support edges being located more inwardly with respect to the can receiving opening than the fold lines of the locking tabs, and **in that**, at least in the initial position of the locking tabs, the retaining edges of the locking tabs extend more inwardly with respect to the can receiving opening than the neck support edges.
2. Carrier according to claim 1, wherein at least the main panel and the series of locking tabs are formed out of a sheet of corrugated fiberboard.
3. Carrier according to claim 1 or 2, wherein the locking tabs are spread over the perimeter of the can receiving aperture such that the largest angle between two adjacent locking tabs of the series of locking tabs is less than 120°.
4. Carrier according to one of the preceding claims, wherein the neck support sections are spread over the perimeter of the can receiving aperture such that the largest angle between two neck support sections of the series of neck support sections is less than 120°.
5. Carrier according to one of the preceding claims, wherein the fold lines are formed as prefabricated fold lines, for instance by means of one or more scores, slits, and/or embossments.
6. Carrier according to one of the preceding claims,

wherein at least one of the neck support sections has a depth being smaller than its width, preferably said depth being less than half of said width.

7. Carrier according to one of the preceding claims, wherein at least one of the neck support sections has a depth being at least a quarter of the depth of at least one locking tab being adjacent to the respective neck support section, preferably wherein said depth of the neck support section is at least a third, such as for instance about half, of the depth of the locking tab. 10
8. Carrier according to one of the preceding claims, wherein at least one of the neck support sections of the main panel has a depth being larger than the thickness of an adjacent locking tab, preferably at least one and a half time as large, such as for instance about twice as large. 15 20
9. Carrier according to one of the preceding claims, wherein at least one of the neck support sections of the main panel has a depth being at most four times as large as the thickness of said neck support section, preferably wherein the depth of the neck support section is at most three times as large as its thickness, such as for instance about twice as large. 25
10. Carrier according to one of the preceding claims, wherein, when the locking tabs are in their initial positions, the area of the can receiving aperture not blocked by the locking tabs has a diameter smaller than the diameter of a lid of the beverage can to be held within said receiving aperture. 30 35
11. Carrier according to one of the preceding claims, wherein the can receiving aperture, when the locking tabs are folded away towards their folded up positions, leaves a passage open which has a passage diameter being at least substantially equal to, and preferably wider than, the diameter of a lid of the beverage can to be held within said receiving aperture. 40
12. Carrier according to claim 11, wherein said passage diameter being at least about 52 mm, preferably at least about 53 mm, such as about 54 mm. 45
13. Carrier according to one of the preceding claims, wherein the main panel comprises at least two can receiving apertures, wherein the centers of two adjacent can receiving apertures are spaced apart over an interspace corresponding with the diameter at the widest point of the body of the cans to be held by the carrier, preferably said interspace for instance being about 66 mm. 50 55
14. Carrier according to one of the preceding claims, fur-

ther comprising at least one cover panel for covering at least a part of at least one of the cans to be held by the carrier.

- 5 15. Assembly, comprising a carrier according to one of the preceding claims, and at least one beverage can held within a respective can receiving aperture of the carrier.

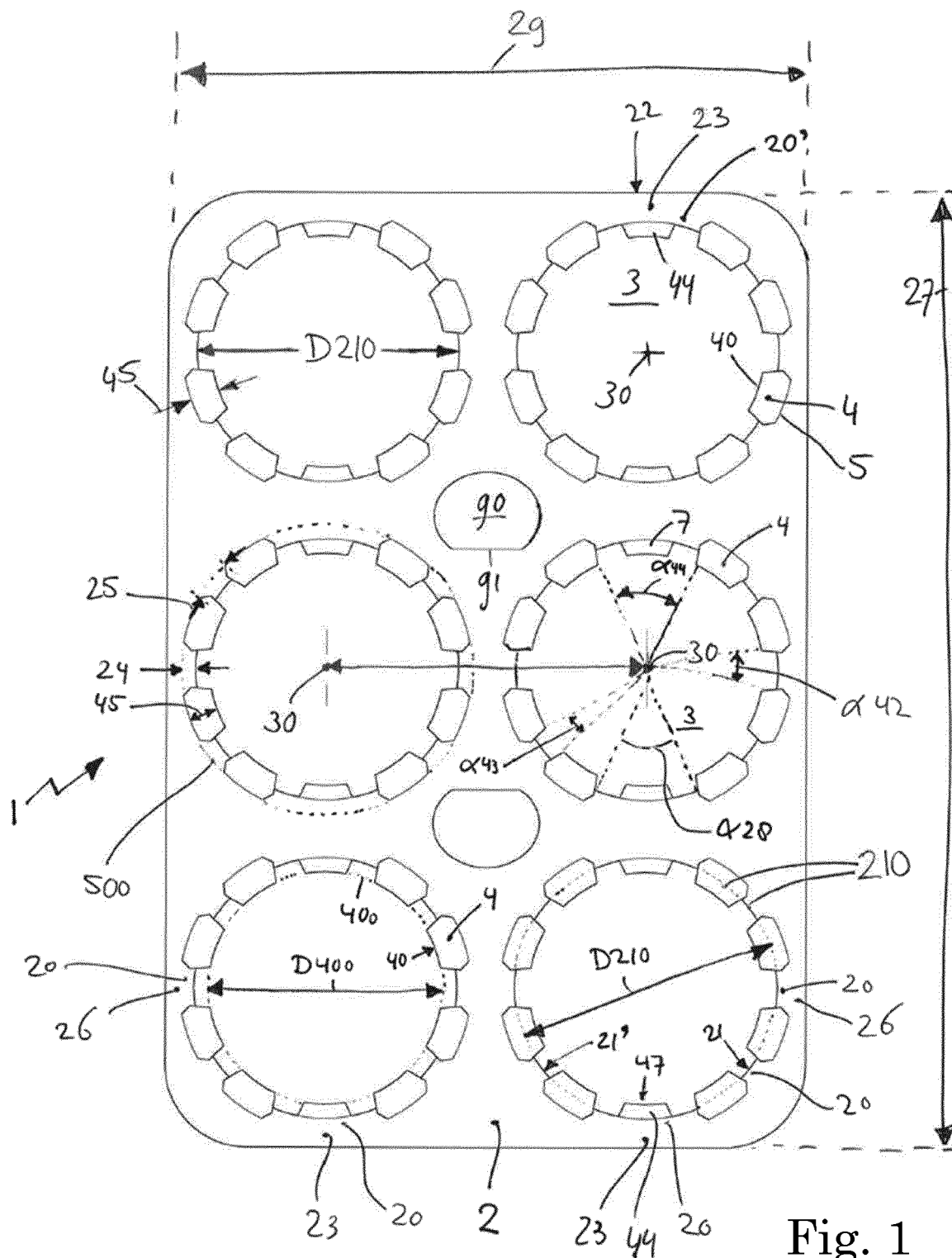


Fig. 1

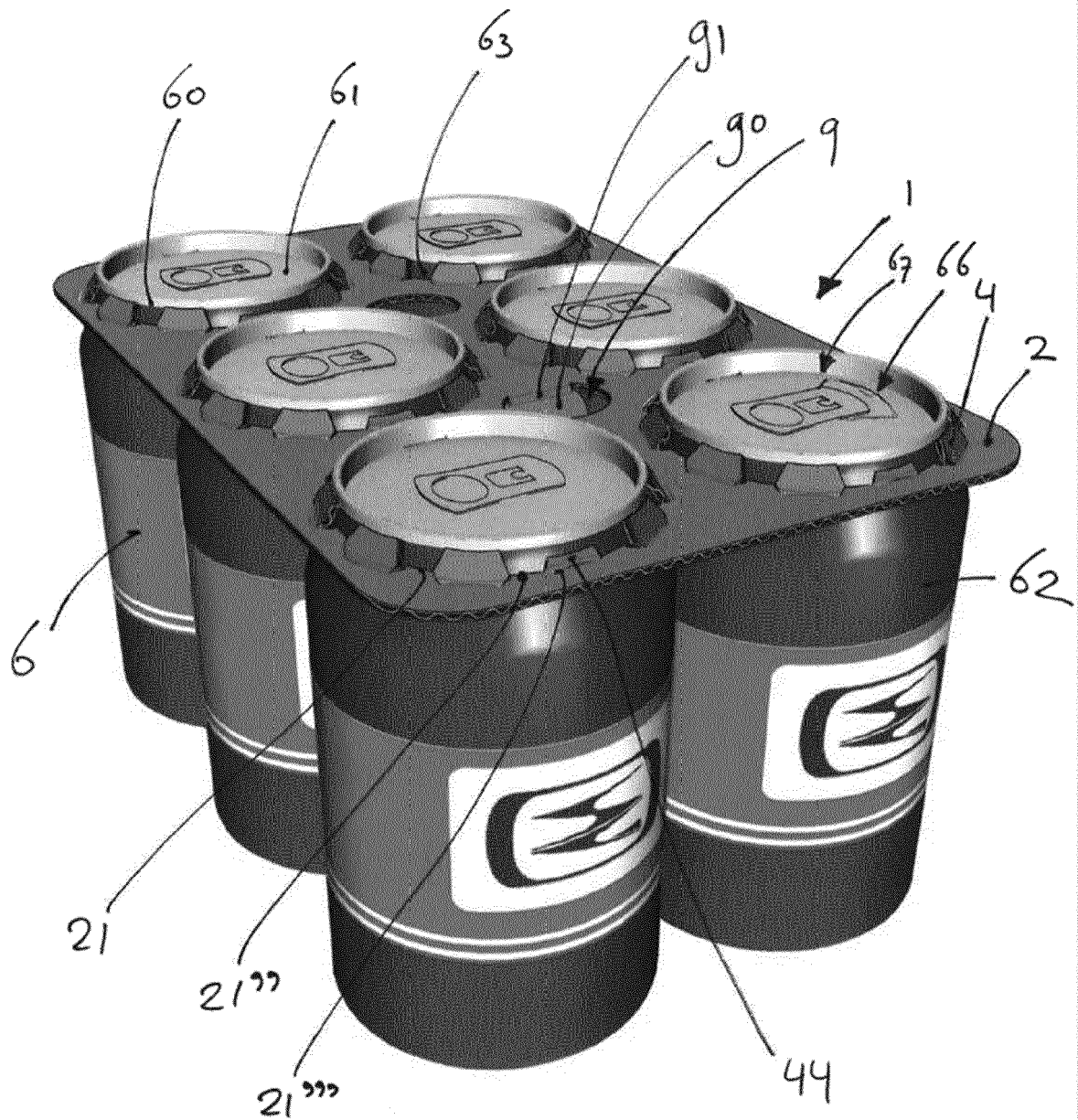


Fig. 2

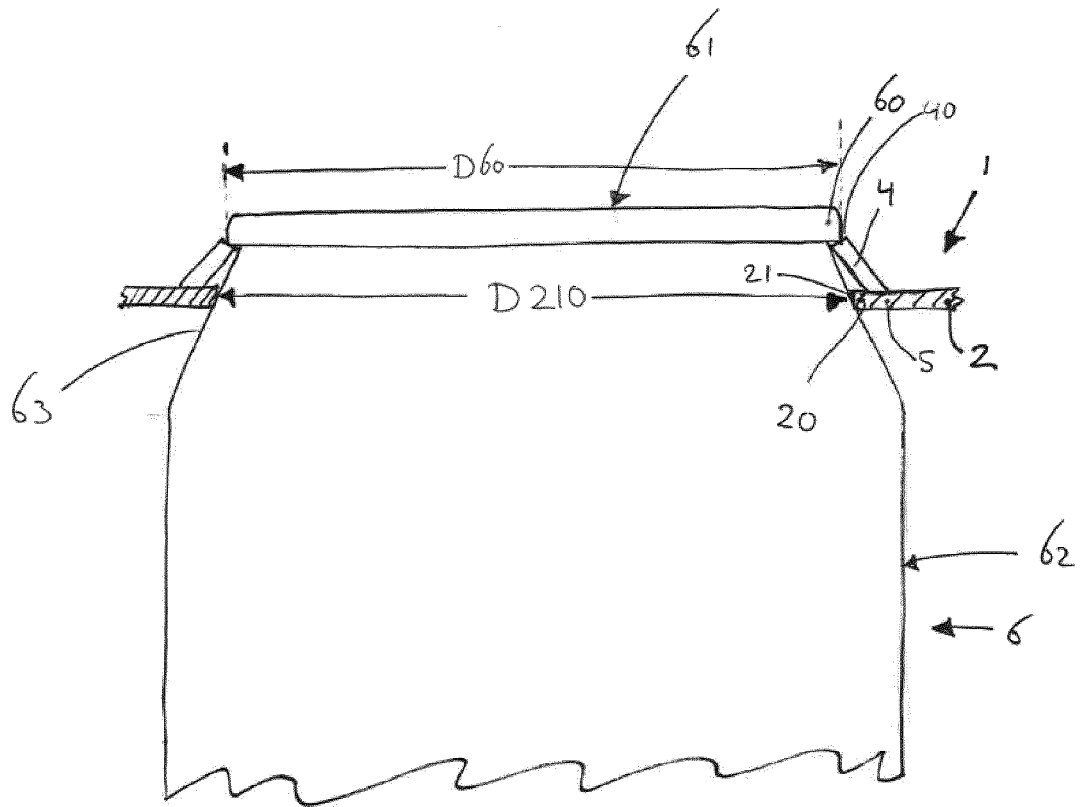


Fig. 3

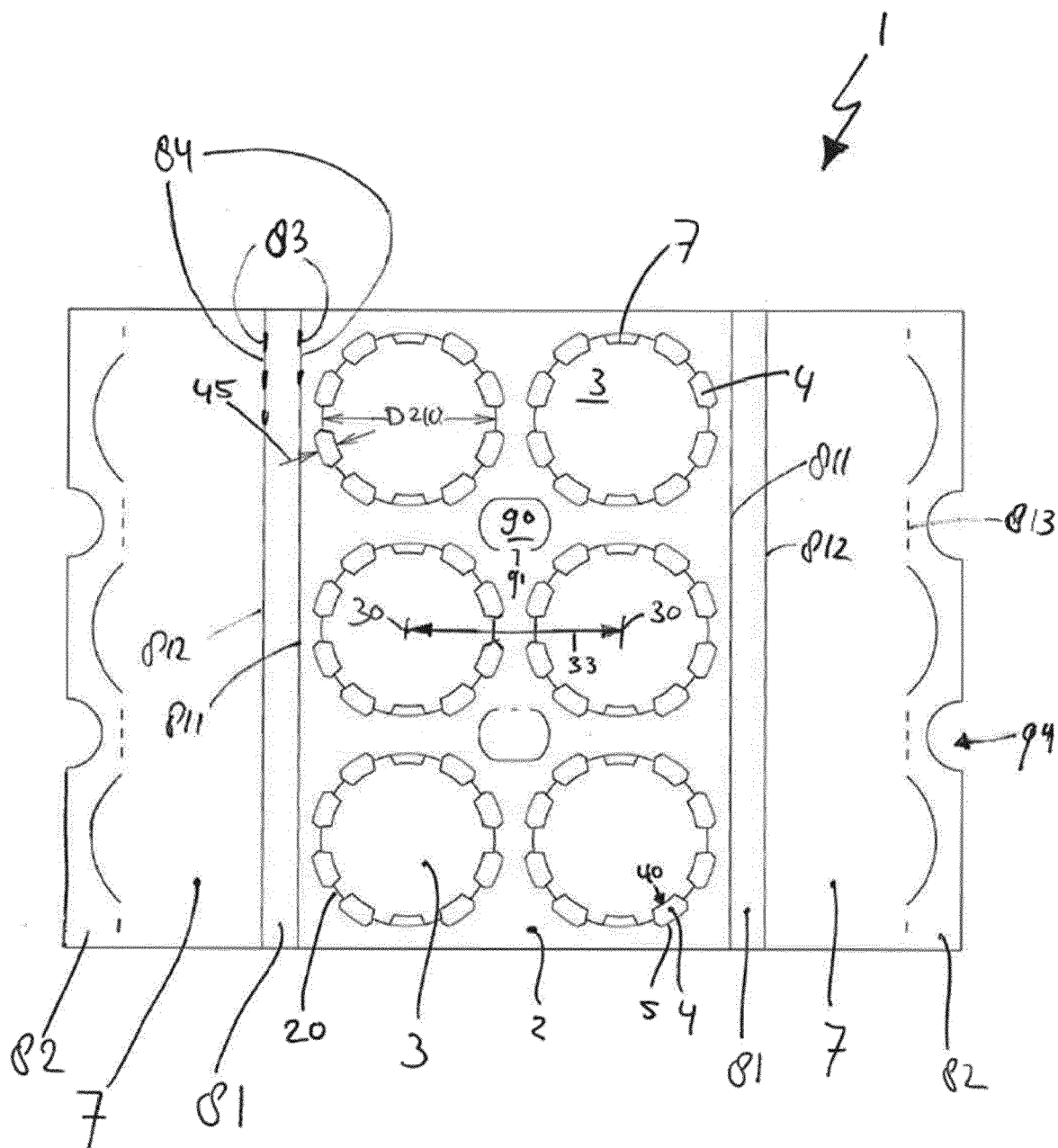


Fig. 4

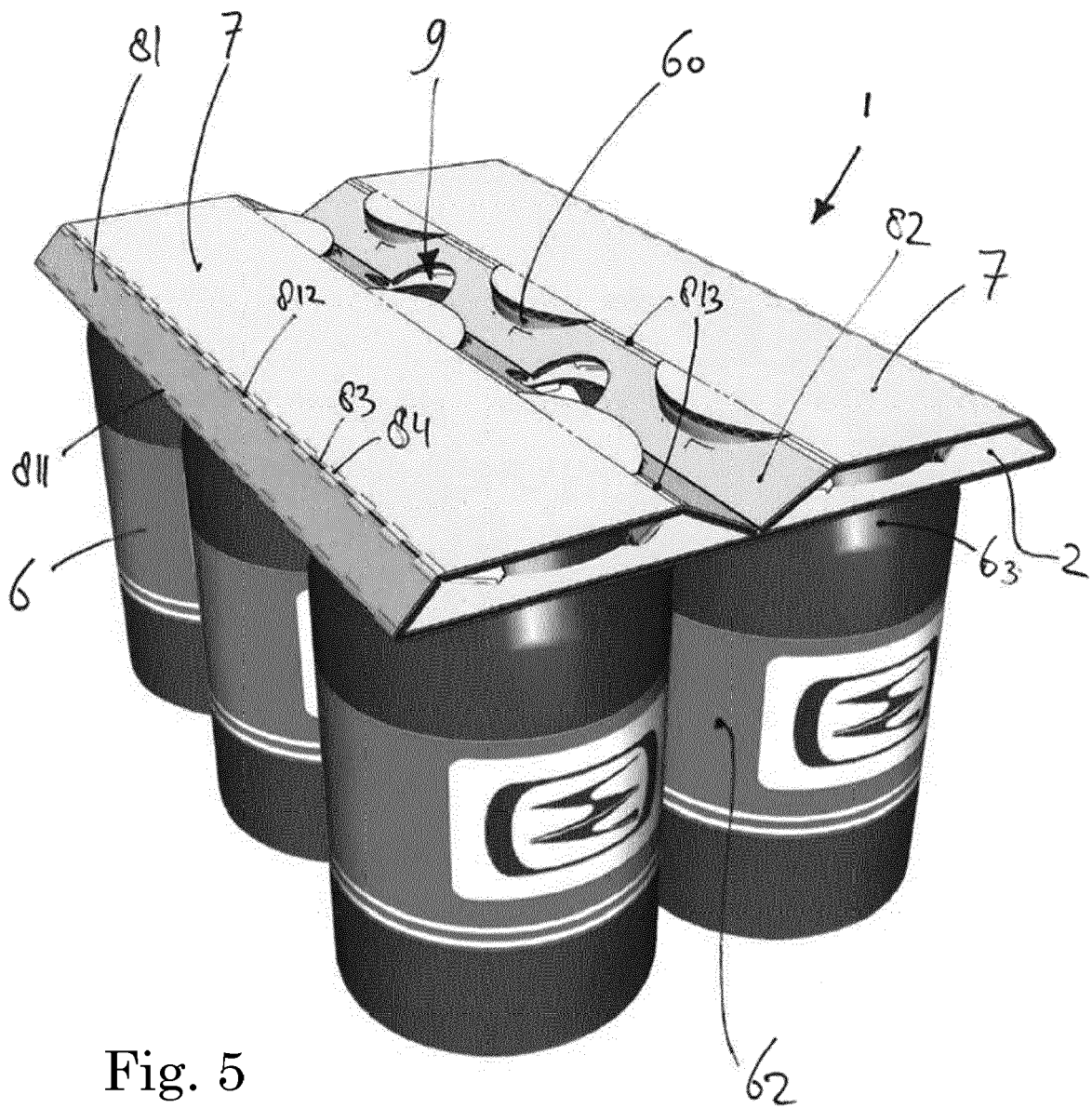


Fig. 5



EUROPEAN SEARCH REPORT

 Application Number
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 16 March 2020	Examiner Bridault, Alain
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