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(54) **DEFORMABLE CONTAINER WHICH IS STABLE WHEN STACKED VERTICALLY AND HORIZONTALLY**

(57) The container of the invention has a polygonal form plan projection with flat side faces that are used for stable placement of the container when laid flat, while the vertices of the plan projection of the container take the form of chamfers whose cant edges serves as elements for reinforcing the container in face of the vertical loads that have to be withstood by the actual container.

This container has enhanced characteristics for horizontal stacking, as well as container grouping improvements, as these groupings take up less space and are more resistant to coming apart.

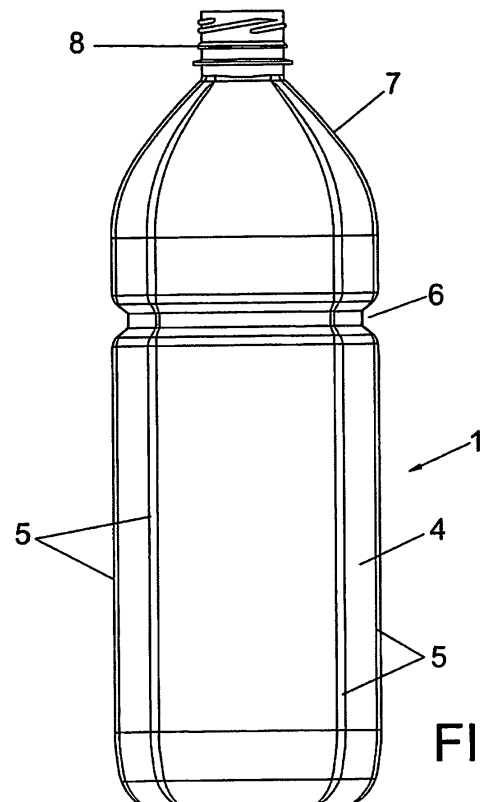


FIG. 2

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Description

OBJECT OF THE INVENTION

[0001] The object of the present invention consists of a container or pack made from a deformable material such as plastic, of the type used as a container for beverages suitable for food use, such as PET or the like, which offers fundamental advantages in both vertical and horizontal stacking in relation to traditional containers.

[0002] This container has a polygonal plan projection with flat side faces that are used for a stable placement of the container when laid on its side, while the plan view projection vertices of the container take the form of chamfers whose cant edges act as elements of reinforcement of the container in face of the vertical loads to be borne by the container itself.

BACKGROUND OF THE INVENTION

[0003] Beverage containers of different materials are already known. The most common of these are rigid materials such as glass, with which the most fanciful geometrical forms may be obtained, predominantly square and circular sections and other highly varied forms. These containers also adopt fanciful elevational forms, for which they benefit from being made of rigid materials that withstand perfectly any product contained in said container.

[0004] These containers have the drawback of being highly fragile to impacts with the consequent risk entailed, which means that their use may prove absolutely inadvisable in many cases. Likewise, these containers have the disadvantage of their excessive weight, as they have to be made with thick walls that will withstand the possible impacts between containers or against objects without the risk of their breaking.

[0005] In view of these problems, influenced by these drawbacks and the cost of manufacturing and recycling containers, the containering industry has gradually been inclining more and more towards the use of such plastic materials as polyethylene, PVC and other plastic suitable for food use, such as PET for instance, for the containering of beverages and other types of products.

[0006] These containers are usually manufactured by means of the initial execution of a preform consisting of a receptacle of small dimensions and thick walls which has the mouth of the final container to be made already executed. This preform is heated to convert the plastic into an easily deformable product, which is blown from the inside in a mould with the shape of the final container to be obtained, said container taking on the form of the mould.

[0007] These containers made of deformable plastic material usually have very thin walls, which makes them highly deformable, so said containers are made with thicker walls, which gives rise to an increase in the cost of the raw material of the container, which, not being re-

cyclable, has an impact on the price of the product to be sold, or else what is usually done is to provide the actual container with perimeter grooves with fancy forms and developments that considerably enhance the strength of these containers.

[0008] What these containers do adopt unanimously is the circular straight section form, as it is what has been shown to be of easier manufacture and greater container strength.

[0009] These circular section forms of the containers do not normally attain suitable strength, while also representing a serious problem when the bottles are laid flat, as they tend to roll, besides giving trouble when assembling containers for transport and sale, since the space between adjoining bottles is very considerable, so in common parlance a lot of air is said to be transported, i.e. the volume occupied by these groupings is high and, furthermore, since they only have one linear contact edge between every two containers the tendency to lose this grouping is rather high.

OBJECT OF THE INVENTION

[0010] The object of the present invention is to obtain a container made of deformable material such as plastic or the like, the most suitable for food use being PET plastic, a container that takes on flat side faces that make it easily supportable when laid down without it rolling, whilst the container is also stackable when laid flat.

[0011] The purpose of the invention is that, despite not adopting a circular section, said container should be high strength.

[0012] It is also an aim of the invention that it should be an easily groupable container, avoiding empty spaces between the bottles when carrying out this grouping, thereby achieving that the volume occupied by such groupings should be as small as possible.

[0013] Lastly, it is also an aim of the invention that the container should be easy to label by any means, such as heat-shrink plastics, paper or plastics affixed to the body of the container with adhesives.

[0014] The container that is the subject of the invention has been developed in such a way that it has a polygonal plan form with at least four of its sides substantially straight, whose lateral projections are flat or substantially flat faces that permit the easy support of such containers when laid on any of these sides in a stable manner.

[0015] These forms made from deformable plastic material have always proved to have a lack of strength and high deformability.

[0016] Surprisingly, it has been shown that if amongst them at least four substantially straight sides are chamfered the cant edges produced by such chamfers become strongly reinforcing elements, thereby achieving a container with a considerable resistance to vertical loads, which endows it with high strength. For instance, through not having these defining edges, a rounded instead of a straight chamfer has proved ineffective and therefore not

suitable for withstanding vertical loads.

[0017] On high capacity containers, if we want to increase the strength of same, following traditional practice, grooves may be included in ring or any other fancy form that will increase the strength of the container considerably and which thanks to the surprising characteristic of the defining edges due to the lateral chamfers, they are already highly resistant in themselves.

[0018] The perimeter groove also forms an element for affixing the container label, labels such as those made with heat-shrink plastics, with the outer edge of the shrinkable label occupying the afore-mentioned groove, so that accidental detachment or removal from it is thereby prevented.

[0019] This same groove may be suitable for the attachment of other types of labels, such as those that are stuck with glue, although in this case, since such material has adhesive, said groove already performs a secondary function in preventing the removal of the label, as it is the actual adhesive that fulfils this function.

[0020] One of the benefits of the use of this type of container with this form with a polygonal plan projection, with at least four substantially straight sides, is the advantage that it offers when it comes to grouping. It is increasingly more common for these containers to be dispensed in group form, i.e. made up of groupings of two, four, six or more containers. These groupings have two main advantages compared with groupings of circular section bottles, namely the minimal space between grouped containers, whereby empty spaces are avoided, so that air is not transported in such groupings and as a result the volume occupied with these groupings is substantially smaller than with traditional containers, and secondly, the great advantage of same is that adjoining containers rest on the side faces of the containers themselves instead of on lines as happens with traditional circular section bottles, so that the risk of dispersal of the containers is minimal due to inter-face instead of on-line contact.

DESCRIPTION OF THE FIGURES

[0021] In order to complete the present description of the invention a series of figures are provided on an illustrative but non-restrictive basis that show a preferred mode of practical embodiment.

Figure 1 shows the lower plan view of the representation of a container including the main features of the invention.

Figures 2 and 3 each represent elevational and profile views of the representation of a container that includes the features of the container.

Figure 4 represents an upper plan view of this same container.

Figure 5 represents a grouping of six containers suitable for transportation.

DESCRIPTION OF A PREFERRED MODE OF EMBODIMENT

[0022] A container with the features of the invention is shown in the above-mentioned figures, a container (1) which is represented as a bottle made by means of a deformable material such as PET plastic if this container is going to be container for food use.

[0023] As shown in figures 1 and 4, which each represent lower and upper plan views, this container adopts a polygonal outline, in this case of four sides in rectangular mode, with their longer (2) and shorter (4) sides, the vertices of which are executed in the form of a straight chamfer(4), whose cant edges (5) act as reinforcing elements for the container in face of vertical loads.

[0024] These cant edges (5) become authentic support pillars for the container, conferring on it a resistance and strength appropriate for its use to a surprising degree.

[0025] If we wanted to increase the strength of the container, a perimeter groove (6) could be included with a fold that would give added strength to the container. Said groove could take the form of that shown in figures 2 and 3 or any other fancy form such as winding grooves, at any distance and of indeterminate number.

[0026] The upper portion of the container (7) continues to be a convergent development until reaching the neck of the bottle (8). This upper area may be suitable for example for affixing a shrinkable plastic label, the bottom edge of which would extend as far as the perimeter groove (6), contracting in this groove and therefore with this shrinkage taking the form of a lower label retaining edge. The top edge of the shrinkable plastic label would come up against to the container sealing cap in the traditional way.

[0027] Figure 5 shows a specimen grouping of six containers, the two most noteworthy features of these groupings being the minimal inter-container spaces, as represented by the central (10) and side (11) spaces compared with groupings of circular section bottles, so that such groups are of smaller volume, and secondly, the inter-container contact in such groupings takes place by way of the flat side faces of the containers (11) providing extremely compact groupings that do not come apart easily as the contact surface between the actual containers is considerable.

Claims

1. Deformable material container, stable in both vertical and horizontal stacking, **characterised in that** its plan projection is a polygonal form with at least four substantially straight sides with chamfered vertices, which act as elements reinforcing the container

against vertical loads by way of their cant edges and whose vertical projection are flat faces.

2. Deformable material container, stable in both vertical and horizontal stacking, as defined in claim 1, **characterised in that** it is provided with at least one perimeter groove for reinforcing the container structure. 5
3. Deformable material container, stable in both vertical and horizontal stacking, as defined in claim 2, **characterised in that** the perimeter groove serves as an element for securing the container label. 10
4. Deformable material container, stable in both vertical and horizontal stacking, as defined in claim 3, **characterised in that** the container label is made of heat-shrink material. 15
5. Deformable material container, stable in both vertical and horizontal stacking, as defined in claim 3, **characterised in that** the container label is made of paper stuck to the container by means of glue. 20
6. Deformable material container, stable in both vertical and horizontal stacking, as defined in claim 3, **characterised in that** the container label is made of plastic material stuck to the container by means of glue. 25
7. Deformable material container, stable in both vertical and horizontal stacking, as defined in claim 3, **characterised in that** the contact points between grouped containers are whole faces of the container. 30

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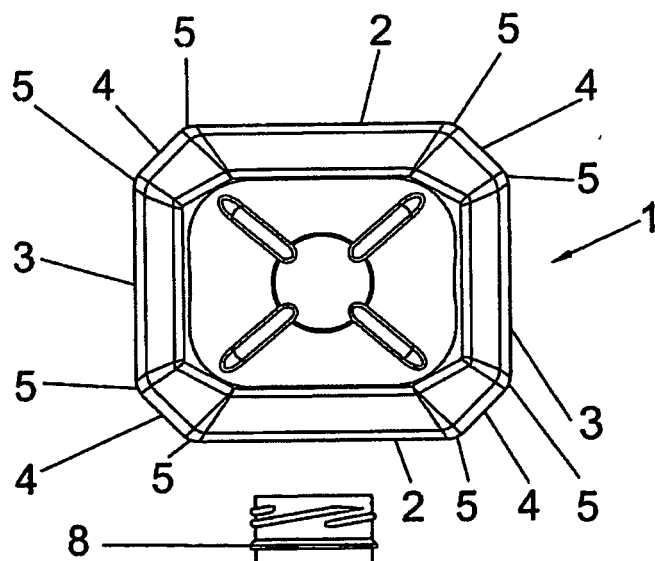


FIG. 1

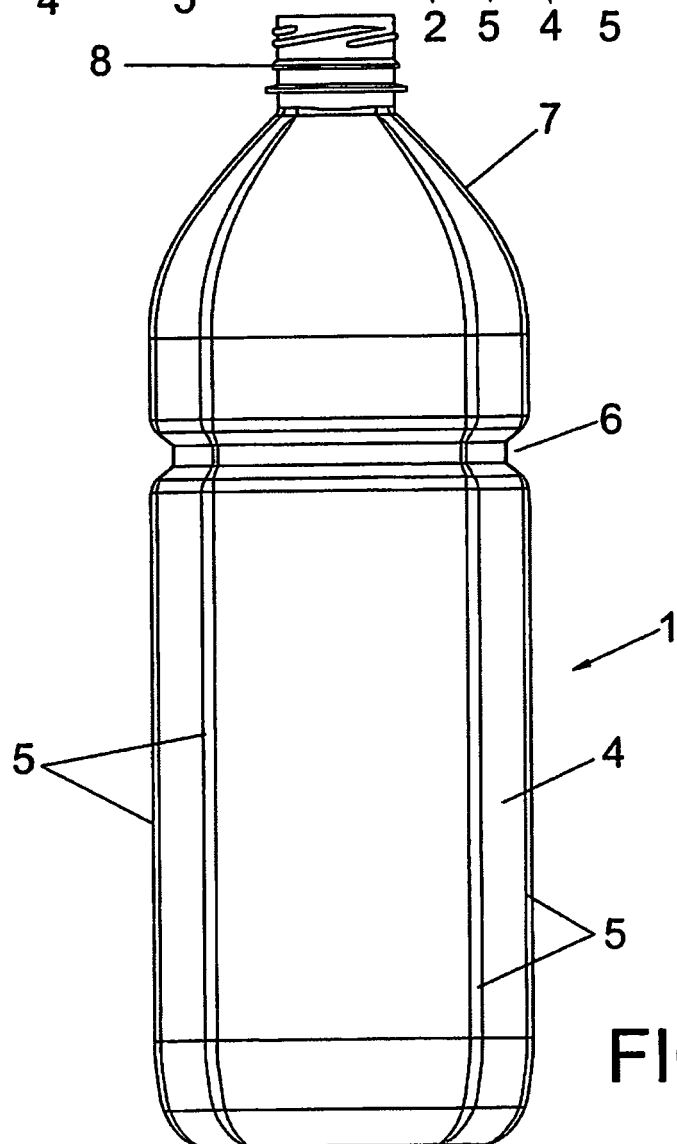


FIG. 2

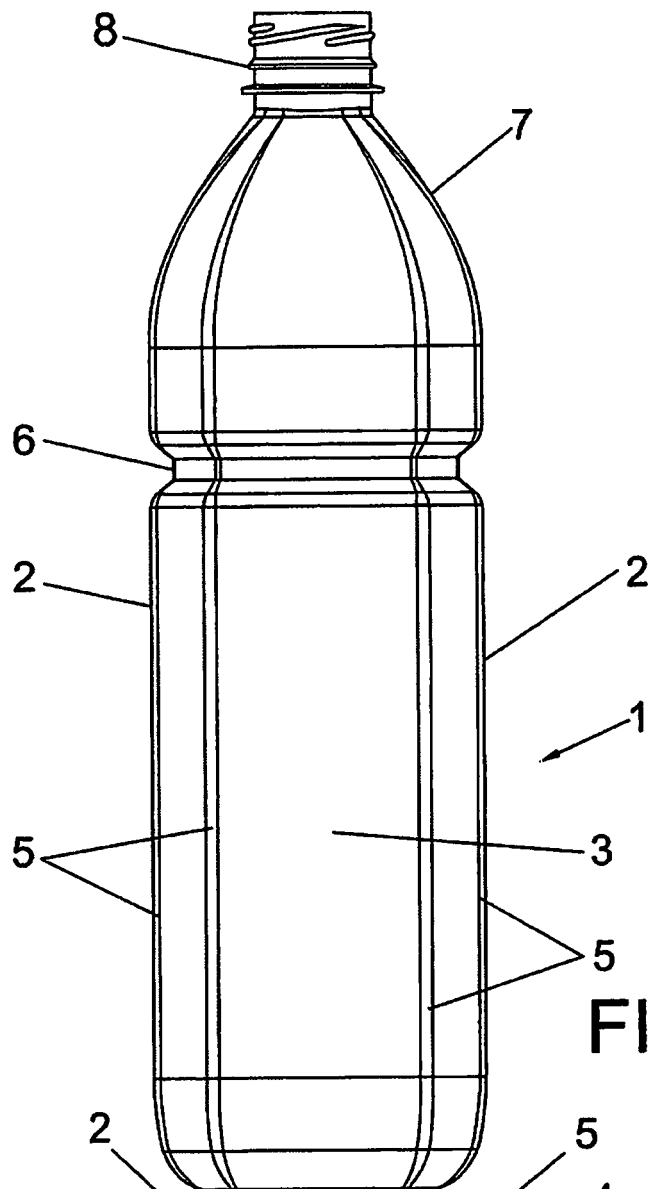


FIG. 3

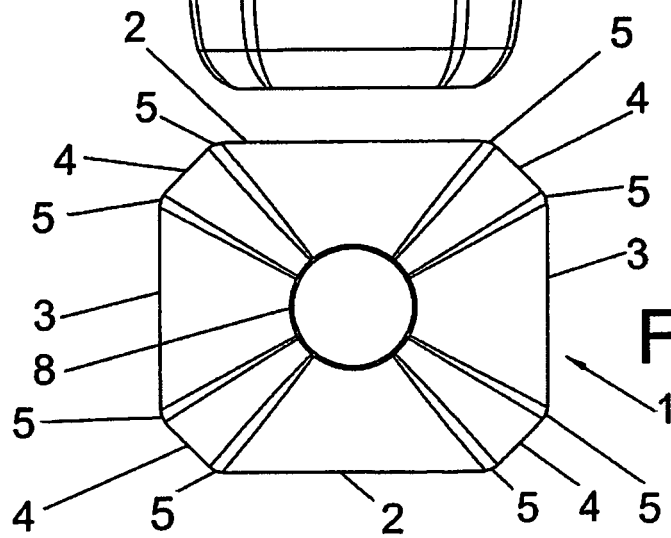


FIG. 4

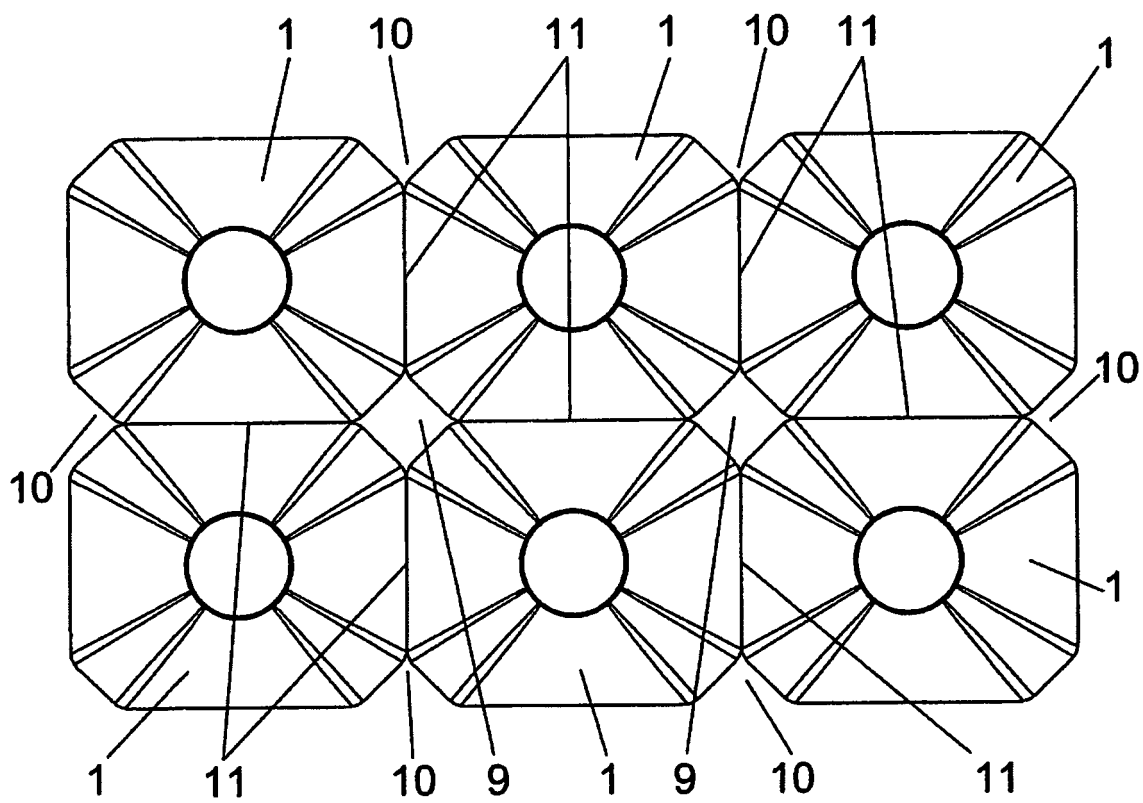


FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES 2004/000236

A. CLASSIFICATION OF SUBJECT MATTER		
IPC7 B65D 1/02		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
IPC7 B65D		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
CIBEPAT, EPODOC, WPI, PAJ		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "B" earlier document but published on or after the international filing date "I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 08 September 2004 (08.09.2004)		Date of mailing of the international search report 21 September 2004 (21.09.2004)
Name and mailing address of the ISA/ S.P.T.O		Authorized officer
Facsimile No.		Telephone No.

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International application No.

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