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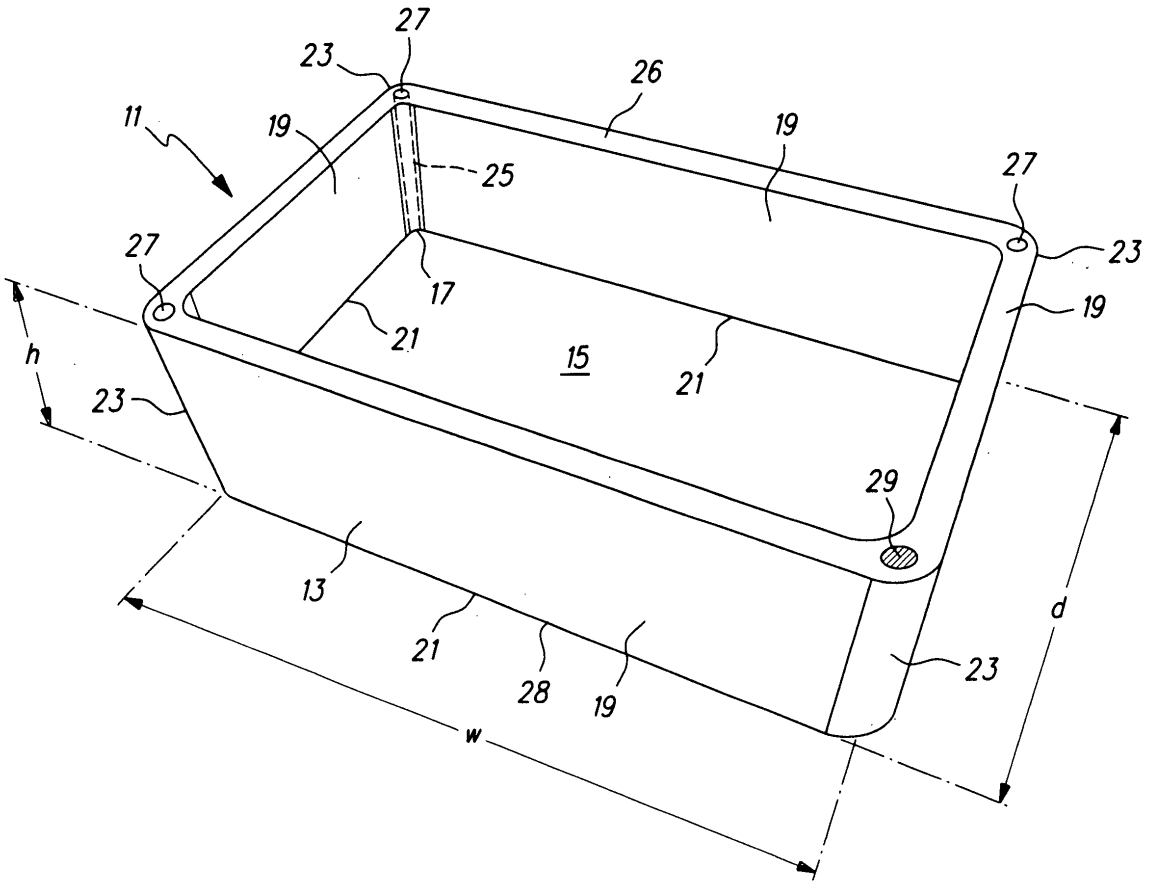
(54) Container for storage and transport

(57) The present invention refers to a container (11) for storage and/or transport of food, preferably fish or meat, comprising an essentially cuboidal box (13) made of foamed plastic material, this box (13) comprising vertical side walls (19) connected to each other at vertical edges (23). In order to provide a solid foam container (11) which can be easily arranged in piles and which can be easily and cost-efficiently manufactured it is suggested that the box (13) be provided at least at one of its vertical edges (23) with a vertical hole (25), in which a wood stick (29) is inserted.



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Description

[0001] The present invention refers to a container for storage and/or transport of food, preferably fish or meat, comprising an essentially cuboidal box made of foamed plastic material, this box comprising vertical side walls connected to each other at vertical edges.

[0002] In order to use storage space efficiently, multiple containers are arranged in one or multiple piles and bundled to a pallet. Due to the weight of the goods that reside within the containers, the containers are exposed to quite large vertical forces. In order to avoid the containers be deformed or even destroyed when put together to a pallet, each container comprises reinforcement elements to absorb at least a part of the vertical forces.

[0003] This problem is critical in view of the fact that the framed plastic material, of which the containers are made, can only withstand rather limited loads without damage.

[0004] Thus, only a relatively small load can be applied to the foam material of the container.

[0005] The patent application DE 199 32 068 A1 discloses a solid foam container for storage and transport comprising reinforcement elements made of plastic. However, manufacturing of this solid foam container is complex because special retention means are required to fixate the reinforcement elements while molding the solid foam container.

[0006] Object of the present invention is to provide a solid foam container which does not have these disadvantages and which can be easily arranged in piles on pallets and which can be easily and cost-efficiently manufactured as well.

[0007] According to the present invention, this object is achieved by a container of the above-mentioned kind, wherein the box is provided at least at one of its vertical edges with a vertical hole, in which a wood stick is inserted.

[0008] According to the present invention, the box of the container can be produced independently from the wood stick, i.e. without special retention means. In addition, the box and the wood stick can be shipped separately to a user. The user can insert the wood stick into the hole of the box on-site i. e at the places where it is used before filling the container with goods - such as fish, meat, or other kinds of food - and combining multiple containers to a pallet. In case that only a small pallets or even no pallet is built, the wood stick sometimes may not be needed. Then, the user may omit inserting the wood stick or sticks. Consequently, the present invention provides a solid foam container which can be easily and cost-efficiently manufactured and can be reinforced by means of the wood stick on-site if required.

[0009] According to a preferred embodiment of the present invention, it is suggested that the vertical hole extend completely from an upper side of the box to a lower side of the box. Thus, the hole may have two openings at the two opposite ends of the vertical edge. The wood stick and the hole may be cylindrical. When arranging multiple containers in a vertical pile, the vertically extending wood sticks are positioned directly adjacent to each other. Consequently, the load put on the box is reduced and pallets can be built without damaging the containers.

[0010] The box preferably consists of expandable polystyrene (EPS) or expanded polypropylene.

[0011] A preferred embodiment and further advantages of the present invention are shown in the figure and described in detail hereinafter.

[0012] The only figure shows a perspective view of a container 11 for storage and transport according to the present invention. The container 11 comprises a box 13 the shape of which corresponds essentially to a cuboidal tray. The box 13 consists of expanded polystyrene (EPS).

[0013] The box 13 comprises a base plate 15. In a top view, the base plate 15 is rectangular. The corners 17 of the base plate 15 are rounded off. The box 13 of the container 11 has four sidewalls 19 each of them extending from a horizontal edge 21 of the base plate 15 and orthogonally oriented with respect to the base plate 15. Each pair of adjacent sidewalls 19 is connected by a vertical edge 23. All parts of the box 13 of the container 11, i.e. the base plate 15, the sidewalls 19, and the vertical edges 23 are built in one solid foam piece.

[0014] Each vertical edge 23 comprises a cylindrical hole 25 that extends vertically and therefore is oriented orthogonally with respect to the base plate 15 of the box 13 and runs in parallel with the sidewalls 19. The hole 25 runs through the whole vertical edge 23, i.e., the hole 25 extends from an upper side 26 of the box 13 to a lower side 28 of the box 13. Thus, the hole 25 is delimited by two opposing circular openings 27 of each vertical edge 23. For illustration purposes, a wood stick 29 is positioned in only one hole 25. However, the container according to the preferred embodiment comprises four wood sticks 29 positioned in each of the four holes 25 of the four vertical edges 23. In the shown embodiment, the wood stick 29 is cylindrical. The shape of the hole 25 also being cylindrical, the shape of the wood stick 29 is adapted to the shape of the hole 25.

[0015] The diameter of the wood stick 29 is adapted to the diameter of the hole 25. As a consequence, an outer surface of the wood stick 29 comes into contact with an inner surface of the hole 25. Due to the comparatively high surface roughness of the surface of the wood stick 29 there is a rather high static friction between the wood stick 29 and the hole 25 preventing the wood stick 29 from being accidentally removed from the hole 25.

[0016] In the shown embodiment, the length of the wood stick 29 corresponds to a height h of the vertical edge 23, i.e., the height of the box 13. The wood stick 29 can be inserted into the hole 25 such that it is vertically offset with respect to the hole 25, a part of the wood stick 29 vertically projecting out of one of the sides 26, 28 of the box 13. When stacking up multiple containers 11, the part of the wood stick 29 of a certain container 11 will be

inserted in the hole 25 of another container 11 preventing the stacked containers 11 from being laterally displaced from each other.

[0017] As described above, the box 13 and the wood stick 29 of the container 11 are separate parts, which are held together by static friction. Therefore, the box 13 and the wood stick 29 can be manufactured in separate production steps. As an alternative, the wood stick 29 and the box 13 can be put together in an additional production step separate from the production of the box 13 and the wood stick 29.

[0018] The wood stick 29 serves to absorb vertical forces which typically occur when the containers are arranged to a vertical pile. Thus, the solid foam box 13 is subjected to a comparatively small vertical load.

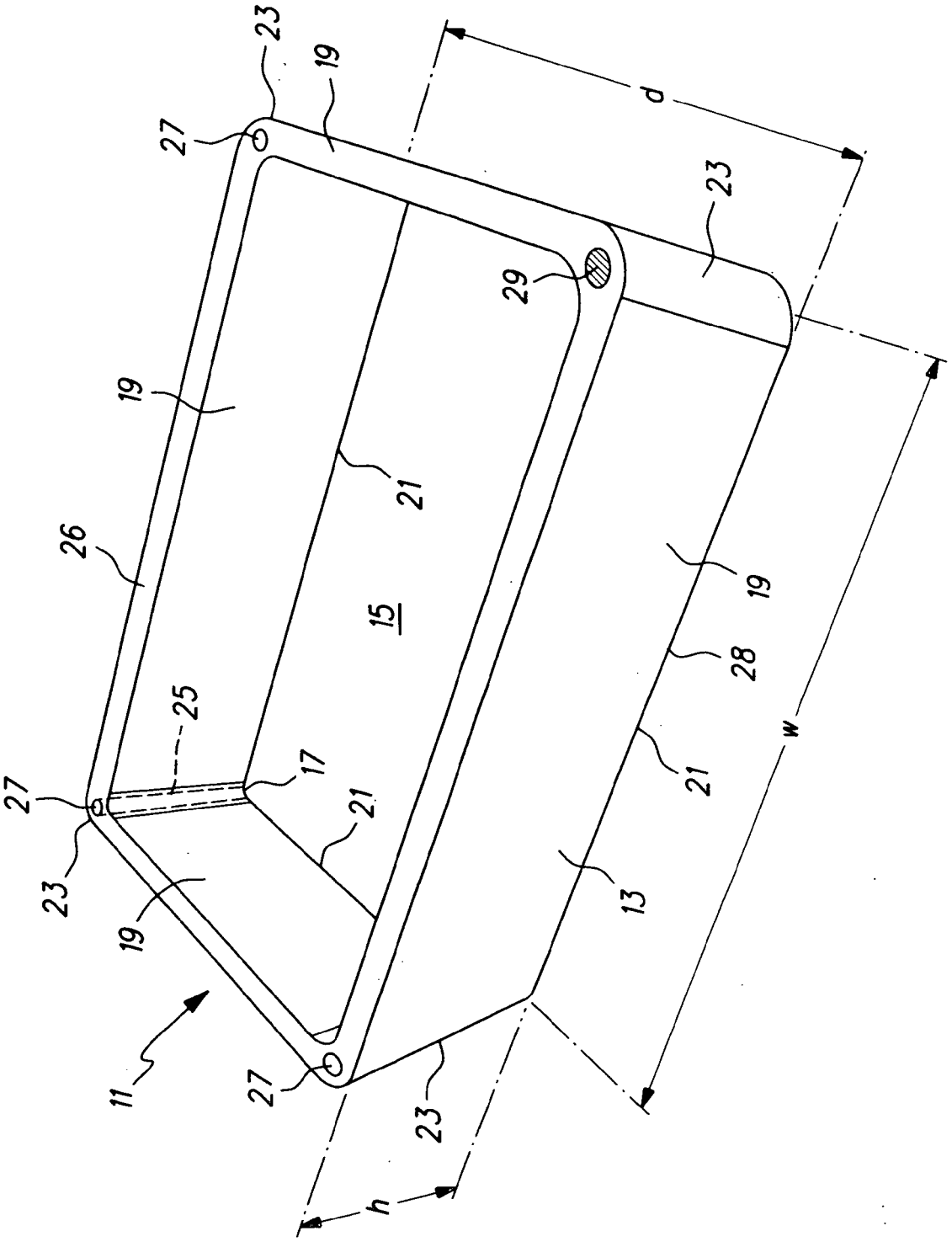
[0019] In the shown embodiment, a width w of the container 11 is 300 mm - 700 mm, preferably w = 500 mm, a depth of the container 11 is 200 mm - 400 mm, preferably d = 300 mm, and the height h is 100 mm - 200 mm, preferably h = 150 mm. A diameter of the wood stick 29 is about 9 mm and a diameter of the hole 25 is about 10 mm. The thickness of the sidewalls 29 and the base plate 15 is about 18 mm. However, the present invention can also be applied in conjunction with containers 11 that have different dimensions or even have a different shape. In addition, in different embodiments, the shape of the hole 25 and the wood stick 29 differs from the cylindrical shape applied in the shown embodiment. Furthermore, the number of holes 25 or wood sticks 29 can be varied according to various requirements such as the shape and the dimensions of the container 11.

Claims

1. Container (11) for storage and/or transport of food, preferably fish or meat, comprising an essentially cuboidal box (13) made of foamed plastic material, this box (13) comprising vertical side walls (19) connected to each other at vertical edges (23), **characterised in that** the box (13) is provided at least at one of its vertical edges (23) with a vertical hole (25), in which a wood stick (29) is inserted.

2. Container (11) in accordance to claim 1, **characterised in that** the vertical hole (25) extends completely from an upper side (26) of the box (13) to a lower side (28) of the box (13).

3. Container (11) in accordance to claim 1 or 2, **characterized in that** the box (13) consists of expanded polystyrene or expanded polypropylene.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EUROPEAN SEARCH REPORT

Application Number
EP 08 00 7017

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	DE 199 32 068 A1 (GEFINEX POLYMERSCHAEUME GMBH [DE]) 25 January 2001 (2001-01-25) * column 6, line 5 - line 10; figure 8 * -----	1-3	INV. B65D1/48 B65D21/02 B65D81/38
A	DE 14 86 302 B1 (KAHMEN KARL) 24 September 1970 (1970-09-24) * column 3, line 41 - column 4, line 9; figures 6,7 * -----	1-3	
A	US 3 489 314 A (SLAPNIK JOSEPH) 13 January 1970 (1970-01-13) * column 1, line 31 - line 46 * * column 2, line 59 - line 68; figure 1 * -----	1-3	

TECHNICAL FIELDS SEARCHED (IPC)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	26 August 2008	Derrien, Yannick

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 00 7017

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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26-08-2008

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 19932068 A1	25-01-2001	NONE	
DE 1486302 B1	24-09-1970	NONE	
US 3489314 A	13-01-1970	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- DE 19932068 A1 **[0005]**