



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
18.02.2004 Bulletin 2004/08

(51) Int Cl.7: **B65D 21/06**

(21) Application number: **02078335.3**

(22) Date of filing: **12.08.2002**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
IE IT LI LU MC NL PT SE SK TR**
Designated Extension States:
AL LT LV MK RO SI

(74) Representative: **'t Jong, Bastiaan Jacobus et al
Arnold & Siedsma,
Sweelinckplein 1
2517 GK The Hague (NL)**

(71) Applicant: **Beekenkamp Verpakkingen B.V.
2676 ZG Maasdijk (NL)**

Remarks:

A request for correction of the description has been filed pursuant to Rule 88 EPC. A decision on the request will be taken during the proceedings before the Examining Division (Guidelines for Examination in the EPO, A-V, 3.).

(72) Inventor: **Rodriguez, Alberto Azcue
Aguadulce(Roquetas de Mar 04720 (ES)**

(54) **Stackable and nestable crate**

(57) The invention relates to a nestable crate comprising a base. Side walls (3,4,5,6) stand transversely of the base. These side walls have a free upper edge (7). The crate comprises at least a first stacking member (12) which is arranged close to the base and which can support on a second stacking member (13) when the crates are stacked, which second member is arranged

close to the upper edge in the line of the first stacking member. The second member is provided with a support means for stackably supporting crates in a stacked state and nestably receiving crates in a nested state. The invention is characterized by support means which is movable substantially parallel to the plane of the side wall.

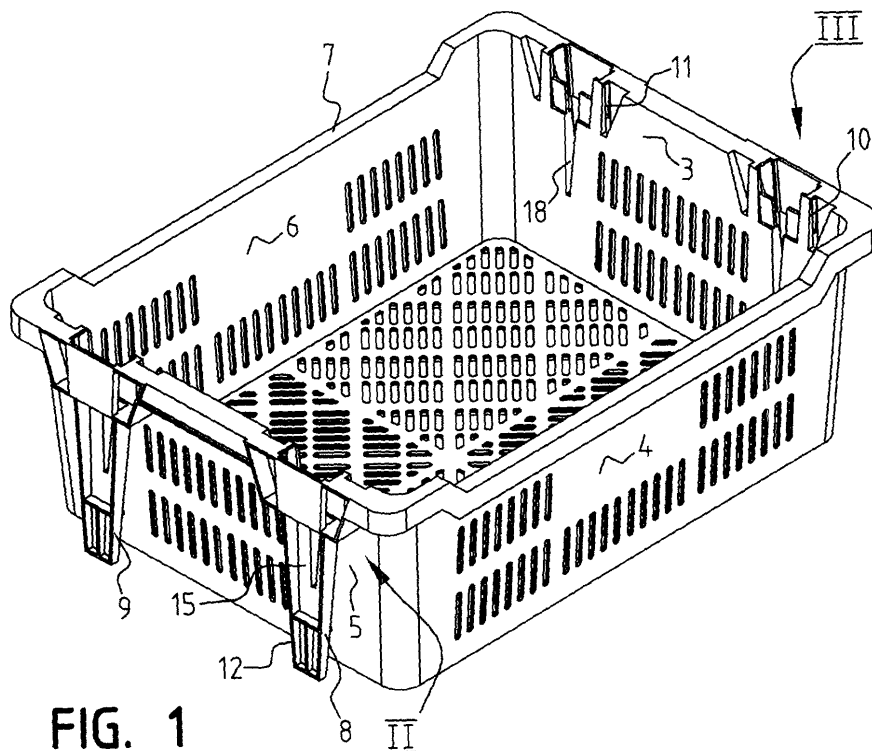


FIG. 1

Description

[0001] The invention relates to a nestable crate comprising a base, side walls standing transversely of the base and having a free upper edge, at least a first stacking member which is arranged close to the base and which can support on a second stacking member when the crates are stacked, which second member is arranged close to the upper edge in the line of the first stacking member and is provided with a support means for stackably supporting crates in a stacked state and nestably receiving crates in a nested state.

[0002] Such a device is known from NL-1006349. The known crates are stackable in that a stacking member of a first crate supports on a second crate. The crates can be nested when they are held upside down because the force of gravity carries a hinged support part from a stacking state to a nesting state. By the crate the hinge is arranged parallel to the side wall. The hinged flap pivots about the pivot axis and therefore in a plane perpendicular to the side wall. The pivot shaft arranged parallel to the side wall is very vulnerable since it must take a very thin form so as not to make the crate wider in breadth direction.

[0003] The invention has for its object to provide a nestable crate which is less vulnerable.

[0004] This object is achieved according to the invention with a nestable crate wherein the support means is movable substantially parallel to the plane of the side wall. More space hereby becomes available, allowing the support means to be embodied in a stronger, for instance larger, form. The support means is for instance slidable substantially parallel to the plane of the side wall.

[0005] The support means is preferably movable, in a placed-upright position of the crate, under the influence of gravity to the stacked state and, when the crate is turned over, movable under the influence of gravity to the nested state. The choice between stacking or nesting of the crates can hereby be readily determined for the user. There is only one significant condition for stacking of the crates, viz. that the filling side of the crate faces upward. This is a position of the crate which is naturally adhered to, since otherwise the load would fall out of the crates. For nesting of the crates it is only necessary to ensure that the filling side of the crate is directed downward. Due to the action of gravity the support means hereby drops into the position in which the crate can be nested.

[0006] The support means preferably comprises a hinged flap pivotable about a pivot axis directed substantially perpendicularly of the side wall. An efficient support means is hereby obtained which is not subject to wear, or hardly so.

[0007] In the preferred embodiment the nestable crate comprises a stacking part comprising a wall portion which is offset transversely of the plane of the side wall and in which the first and second stacking members

are received. Hereby obtained is a stacking part which is continuous when crates are stacked and which provides the necessary strength. The stacking parts lie mutually in line when stacked, so that a stable column of crates is formed.

[0008] The stacking part is preferably situated on an external surface of the side wall. The largest possible smooth inner side of the crate is hereby formed.

[0009] The stacking part preferably comprises a receiving space for a stacking part of a second nested crate. The stacking parts of respective crates can hereby be nested in each other.

[0010] The nestable crate preferably comprises a rigid material and the support means comprises relatively heavy material, in order to obtain a readily movable action as a result of gravity.

[0011] It is noted that a crate according to the invention can also be manufactured in a more efficient manner. The crate can be injection moulded together with the hinged flaps substantially in a single run.

[0012] The advantages and features of the present invention will be further elucidated hereinbelow with reference to the annexed figures, in which:

Figure 1 shows a perspective view of a nestable crate according to the invention,
 Figure 2 shows a perspective view of a detail as according to II of the crate of figure 1,
 Figure 3 is a perspective view of a detail as according to III of the crate of figure 1,
 Figure 4a shows a partly cut-away view of the preferred embodiment of the nestable crate, and
 Figure 4b shows a partly cut-away perspective view of a nestable crate according to the preferred embodiment of the invention.

[0013] Figure 1a shows nestable crate 1 provided with a base 2 and four side walls 3-6 standing transversely of base 2. Nestable crate 1 is manufactured by injection moulding with a curable material in a mould.

[0014] The nestable crate defines a free upper edge 7. Crate 1 can be used as a vegetable container, for instance for tomatoes.

[0015] Four support parts 8-11 are connected to the outer surfaces of side walls 3,5. Support part 8, shown in more detail in figure 2, and support part 11, shown in more detail in figure 3, each comprise a first stacking member 12 in the form of a leg which can support on an upper side 7, or a supporting member arranged there, of an underlying second crate. Support parts 8-11 form outwardly offset wall parts placed symmetrically close to the corners of crate 1.

[0016] A second stacking member 13 is arranged close to the upper edge 7 of nestable crate 1. This stacking member 13 is arranged partly in the upper edge and defines a profile provided with recess 14 in which a support means (not shown in figure 1) can be received. In a nested state the first stacking member 12 can be re-

ceived as according to arrow 16 in the receiving space 15 defined by stacking part 8, whereby the crates are mutually nestable. In this open position the opening to receiving space 15 is not blocked.

[0017] In the stacked state a support means is situated in the space between upper edge 7 and receiving space 15. This support means then blocks the passage according to arrow 16 through the second stacking member 13 to the receiving space 15 below this stacking member 13. The blocking then also provides the support of the first stacking member 12 arranged as according to arrow 16 when this is arranged in or on second stacking member 13 as according to arrow 16. The first stacking member 12 can support on the support means of the second stacking member 13.

[0018] The support means is moved parallel to side surface 5 out of recess 14 as according to arrow 17, so that stacking parts 8-11 cannot nest. The action of the support means will be further described hereinbelow.

[0019] Arranged in side wall 3 is a recess 18 running parallel to stacking part 10, which enables nesting of stacking parts 8-11. Without recess 18 the stacking parts could not be firmly connected to the side walls of the crate.

[0020] Figure 4a shows crate 20 held in an upside down position, wherein base 21 lies at the top and upper edge 22 at the bottom. For the user it will always be apparent that the crate must not be filled in this position.

[0021] Shown are a first stacking member 23 and a second stacking member 24 which form part of support part 25, which lies substantially in a plane parallel to the surface of side wall 26. The second supporting member comprises two hinged flaps 27,28, provided with studs 29,30 forming the pivot axis of hinged flaps 27,28. The studs are held in place by a lip of the crate. Other receiving means can also be arranged in the crate for receiving the studs.

[0022] The pivot axis is perpendicular to the side wall, whereby the hinged flaps can pivot according to arrows 31,37. This motion takes place in the plane parallel to the surface of side wall 26. The size of the hinged flaps is largely determined by the size of the space 35,36 in which hinged flaps 27,28 are received.

[0023] In the upside down, nestable state according to figure 2a, a stacking part 25 can be received in receiving space 32 when the stacking part 38 of a second crate has been moved with the first stacking member first into receiving space 32 as according to arrow 33. Hinged flaps 27,28 are moved such that receiving space 32 is accessible.

[0024] Figure 4b shows the upright crate 21 situated in the stackable position, with hinged flaps 28,27 in the stacking state, wherein arranging a stacking part 38 by means of a first stacking member as according to arrow 34 has the result that hinged flaps 28,27 will support the first stacking member, whereby the crates are stacked.

[0025] In both the nested state and the stacked state, the stacking parts form a continuous column which gives

the stacked or nested crates a great stability.

[0026] In a preferred embodiment the hinged flaps 27,28 are manufactured, in contrast to the material from which the crate is manufactured (for instance polypropylene), from relatively heavy material such as for instance metal or plastic with a high density, such as ABS.

[0027] Under the influence of gravity the support means will move toward the stacked state in the placed-upright position of the crate and, when the crate is turned over, will move under the influence of gravity toward the nested state.

[0028] In figure 4a the hinged flaps 27,28 are received in receiving cavity 35,36 arranged on either side of receiving space 32. In the upright position the hinged flaps 27,28 move out of receiving cavity 35,36 into a situation wherein receiving space 32 is not accessible via arrow 34.

20 Claims

1. Nestable crate comprising a base, side walls standing transversely of the base and having a free upper edge, at least a first stacking member which is arranged close to the base and which can support on a second stacking member when the crates are stacked, which second member is arranged close to the upper edge in the line of the first stacking member and is provided with a support means for stackably supporting crates in a stacked state and nestably receiving crates in a nested state, **characterized in that** the support means is movable substantially parallel to the plane of the side wall.
2. Nestable crate as claimed in claim 1, **characterized in that** in a placed-upright position of the crate the support means moves under the influence of gravity to the stacked state and, when the crate is turned over, moves under the influence of gravity to the nested state.
3. Nestable crate as claimed in claim 1 or 2, **characterized in that** the support means comprises a hinged flap arranged pivotally about a pivot axis directed substantially perpendicularly of the side wall.
4. Nestable crate as claimed in any of the claims 1-3, **characterized in that** the crate comprises a stacking part which is formed by at least the first and the second stacking member and which comprises a wall portion which is offset transversely of the plane of the side wall.
5. Nestable crate as claimed in claim 4, **characterized in that** the stacking part is situated on an external surface of the side wall.
6. Nestable crate as claimed in claim 4 or 5, **charac-**

terized in that the stacking part comprises a receiving space for a stacking part of a second nested crate.

7. Nestable crate as claimed in any of the foregoing claims, **characterized in that** the nestable crate comprises a rigid material and the support means comprises relatively heavy material.

10

15

20

25

30

35

40

45

50

55

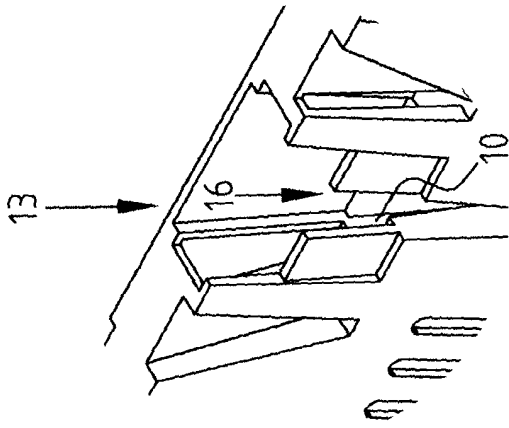


FIG. 3

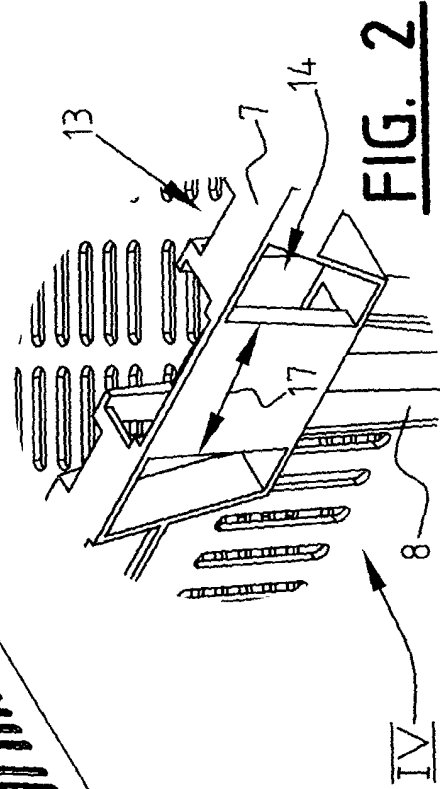


FIG. 2

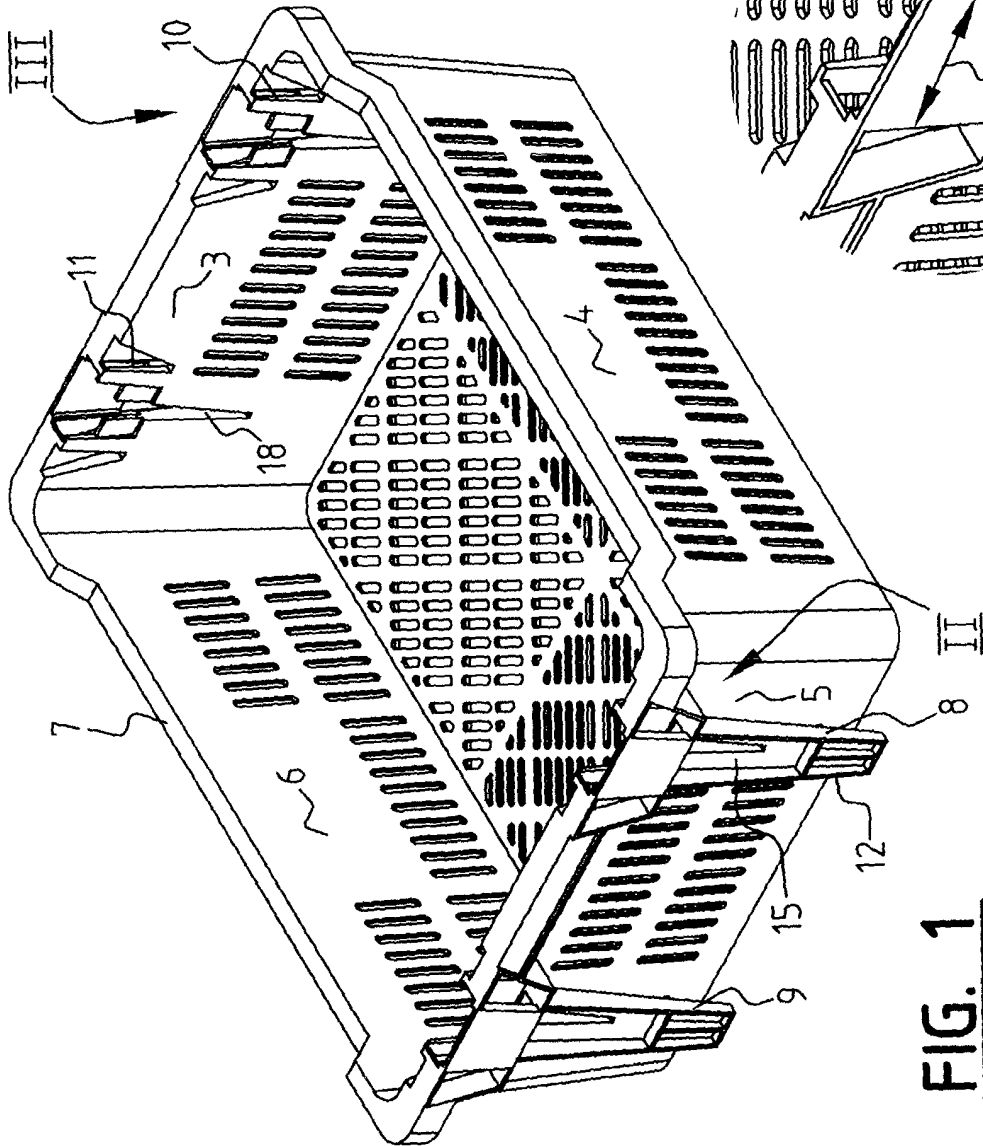


FIG. 1



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 07 8335

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	DE 44 38 983 A (THYSSEN POLYMER GMBH) 2 May 1996 (1996-05-02) * column 1, line 3 - line 6 * * column 1, line 37 - line 54; figure 1 * ---	1,4-6	B65D21/06
D,Y	NL 1 006 349 C (BEEKENKAMP VERPAKKINGEN B V) 5 January 1999 (1999-01-05) * page 2, line 1 - line 21; figures 1-5 * ---	1-3,7	
Y	GB 2 320 015 A (LIN PAC MOULDINGS) 10 June 1998 (1998-06-10) * abstract; figures 1-4 * ---	1-3,7	
A	DE 20 07 788 A (WESTFORM PLASTIKWERKE GMBH) 26 August 1971 (1971-08-26) * figure 1 * ---		
A	NL 9 301 566 A (BEEKENKAMP TUINBOUWTECH BV) 3 April 1995 (1995-04-03) * page 2, line 10 - line 31; figures 1-3 * -----		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B65D
Place of search	Date of completion of the search	Examiner	
THE HAGUE	22 January 2003	Kamerbeek, M	
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

EPO FORM 1503 03/92 (P04001)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 02 07 8335

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

22-01-2003

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 4438983	A	02-05-1996	DE 4438983 A1	02-05-1996
NL 1006349	C	05-01-1999	NL 1006349 C2	05-01-1999
GB 2320015	A	10-06-1998	NONE	
DE 2007788	A	26-08-1971	DE 2007788 A1	26-08-1971
NL 9301566	A	03-04-1995	NONE	

EPO FORM P0459

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