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(71) Applicant: **Jadimo Holding B.V.**
2690 AH 's-Gravenzande (NL)

(72) Inventor: **Moerman, Jan Jacob**
2690 AH 's-Gravenzande (NL)

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(74) Representative: **Assendelft, Jacobus H.W.**
Maartensweer 13
2265 DH Leidschendam (NL)

(54) **Package, package stack, method for producing said package, method of filling said package and method of distributing products**

(57) Method for distributing products of which one or several are brought in a package and a plurality of those filled packages are brought into a stack, said stack is brought to a delivery position where the packages are removed from the stack substantially individually, said packages being of the self supporting, stackable type and standing on each other in the stack and preferably containing fresh products, like mushrooms, strawberries, sweet peppers, tomatoes, apples, pears, and they

have a contents that is adapted to the consumer needs, such that they will typically buy the package with contents in one time; stack comprising packages preferably filled with fresh products, to carry out said method; package of the self supporting stackable type adapted to make said stack and having a size such that it can preferably be held in one adult hand; method for filling a package having a stacking flange, wherein only after filling said stacking flange is brought in its active position; and method for producing said package.

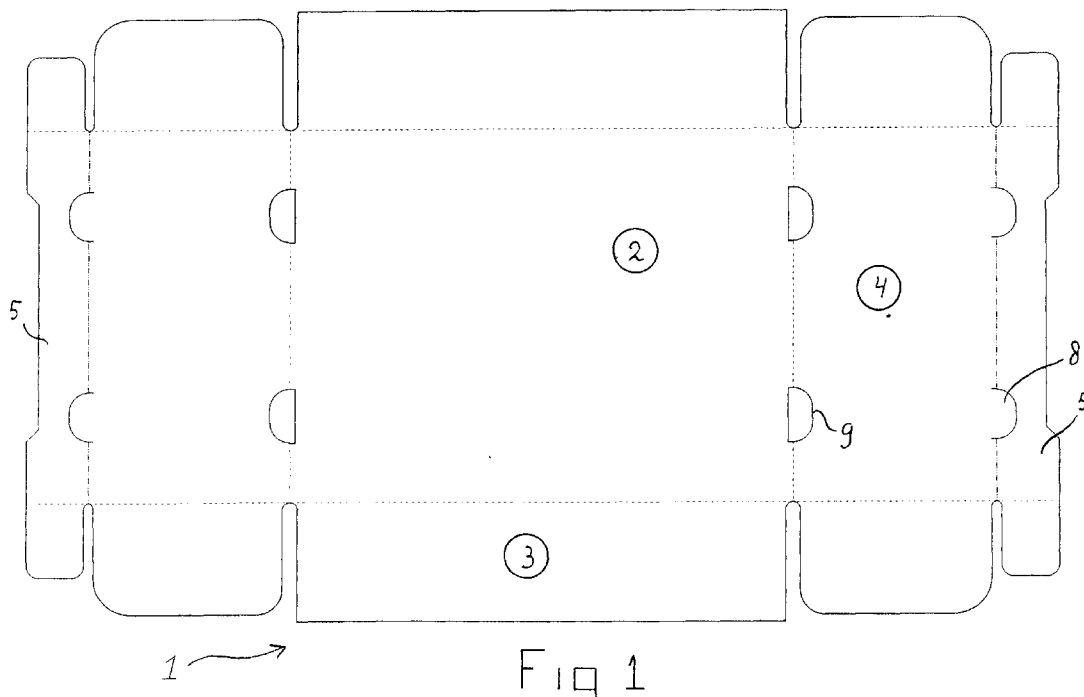


Fig 1

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Description

The invention is concerned with consumer small-packages, in particular, though not exclusively, to consumer small-packages containing fresh products, like vegetables and/or fruit.

However they can contain e.g. sweets or bulbs as well. The meaning of consumer small-packages is here that the weight or the volume of the contents is adapted to the mean needs of the consumer per buy, such that said consumer typically will not open the consumer small-package in the store to take out only a part of the contents, but will take the complete small-package, its contents inclusive, with him.

Prior art

From e.g. fresh strawberries, grapes, kiwis, other soft or hard fruit or mushrooms it is known to pack them in typically non-selfsupporting and non-stackable (because typically nestable), fully open topped small-packages frequently made from plastics or paper pulp and measuring 250 or 125 gram. These small-packages must be packed as clusters of several small-packages next and behind each other into a stackable, thus higher than the small-package, surrounding box or tray of e.g. solid paper board or wood or plastics serving as logistic transport means. The stackable surrounding box or tray has a relatively large bottom format of 300 * 400 mm. (rarely 300 * 200 mm.) as a minimum. Such stackable surrounding boxes or trays are, if made from solid paper board, made with devices adapted for a bottom format of 300 * 200 mm. at a minimum, and they are produced one by one. A drawback of this prior art is the doubling of the use of packaging material, the emptying of the surrounding packages in the store, that have to be removed as a consequence, and the possible return costs for re-usable surrounding packages. Another disadvantage is because of expensive flowpacker devices necessary for filling and closing these known small-packages. A further disadvantage is the extra space requirement as a result of the stackable tray or surrounding box.

Object of the invention

The object of the invention is to solve one or more of the above disadvantages by providing a consumer small-package that is fully self supporting and stackable and thus eliminates the need for clustering several small-packages next and behind each other while packaging such cluster into a self supporting stackable surrounding package, and that can be conveniently filled as well. The object of the invention is a method and device to produce several of such small-packages in one work stroke at once as well, such as to be economically attractive compared to low priced alternatives.

To meet the object, the invention provides a consumer small-package according to enclosed claim 5, a

preferably conveyable stack of those packages, possibly wound with tape, according to claim 2, a method for producing such consumer small products according to claim 10, a method for filling of such a consumer small-package according to claim 9 and a method for distributing of products according to claim 1. The invention is based on the appreciation that making the consumer small-package self supporting and/or stackable provides the possibility to eliminate the surrounding package. The consumer small-package can now be directly stacked in layers on e.g. a pallet. Such pallet can e.g. be placed in a store and consumers can pick products therefrom without the need for them or a store servant to remove the tray or other surrounding package typically present according to the prior art each time one begins to take away products from a further layer. With "self supporting" it is meant here that the package has bearing capacity to, if filled, be stackable without collapsing.

Delimiting the invention from the accidental anticipations

As such it is known in the field of fresh products, to loosely pack several kilos, e.g. 10 kilo of e.g. apples or pears directly into a stackable open topped crate with a bottom size of 300 * 400 mm. or more. However, the consumer or the retailer weighs only a small part each time, to make a consumer small-package therefrom. By way of exception a batch of fresh products is offered in the store as metered quantities of e.g. several kilos mandarins in a stackable, wooden, open topped, crate. The consumer has to buy such crate with contents as a whole. By its character and contents, this type of package clearly differs from the typical purchasing behaviour of the consumer, and can therefore not be compared viewed as consumer small-packages as meant here. Furthermore, it is typical to offer potatoes in sacks of 2.5 kg, 5 kg or 10 kg, stacked to a heap in a container. This makes a messy impression. The product has enough bearing capacity of its own to allow high stacks without the need for self supporting, stackable packages. It is known as well to stack stackable boxes of chocolate chips, flour, etc, that are typically held next to each other by low, non-stackable trays. The boxes of this type are much higher than the biggest dimension of their bottom size and by virtue of this however not stable if standing alone. They are fully closed and all walls are made of solid card board, firmly connected to each other by circumferential continuous seals, such that none of their contents is visible, and the package can not be opened for a while to check the contents without severely damaging the package and so affecting or even destroying its bearing capacity. Finally it is typical to sell 1 kg of sugar or flour packed in flexible paper "from the heap". In this package, the bearing capacity is given by closely surrounding the contents by tension proof paper.

Further illustration of the invention

Fig. 1 and 2 show two different blanks 1 as an illustrative and non-limiting example of the package according to the invention. From such blank 1, made of flexible sheet material, e.g. solid card board with a weight of between e.g. about 600 and about 800, preferably about 700 gr/m², or corrugated card board, e.g. with a weight of between about 250 and 350 gr/m², preferably about 300 gr/m² (three plies), a self supporting, stackable box can be produced with a bottom 2, upright side walls 3,4 and stacking flanges 5 directed towards the centre of the box and extending along the upper edge of the short side wall 4 (i.e. substantially parallel to the bottom) and supporting the bottom of a further box placed on top of it.

The position of the grips is indicated with 7. Those can be eliminated in view of the small dimensions of the package. The blank according to fig. 2 provides additional in plane view triangular shaped and inwards of the box protruding corner reinforcements for the box. The blanks further have tabs 8 and recesses 9. With a box made from the blank, the tabs protrude from the upper side, to penetrate in the recesses 9 in the bottom of a next box placed on top of this box, to get acceptable stability for the stack. Of course, other provisions are feasible to give stability to a stack of boxes stacked on top of each other, e.g. wherein the tabs 8 are active over a larger length of the respective side (e.g. larger number, or longer) and do not penetrate through recesses in the bottom of the next box placed on top of it, but clamp the bottom between them. By way of alternative the blanks can be provided with convenient inclined fold lines in the side walls, such that a so called "ready box" can be made. The shape and structure of both blanks is known as such, however the dimensions can be adapted to the object according to the invention. The position of the cut- and fold lines is indicated in the drawings in a way known to the expert. The bottom 2 has a dimension that is derived from so called Euro standard sizes (e.g. 600 * 400 mm. or 800 * 1000 mm. or 800 * 1200 mm. or 1000 * 1200 mm.), such that the size of the bottom measures e.g. 300 * 200 or 200 * 250 or 200 * 200 or 150 * 200 or 100 * 200 or 150 * 150 or 125 * 150 or 100 * 150 mm. The contents is such that, once filled, the consumer will buy the filled package in once, such that this is concerned with a consumer small-package within the meaning of this invention. This consumer small-package is e.g. convenient for 250 or 500 gr. strawberries or mushrooms, or for 500 gr. or 1 kilo grapes, or for 1 to 2 kilo apples, pears, oranges, mandarins or kiwis. Once filled, the package can be provided with a foil envelope (e.g. shrink foil). By way of alternative merely the top can be covered with a, preferably clear, foil. After filling and possibly wrapping or covering preferably a plurality of packages is placed in at least two superpositioned layers (preferably more than four layers, e.g. ten, fifteen or twenty layers) next and behind each other on a pallet or other convenient store and transport sup-

port, wherein the packages on top of each other rest on each other and wherein there are possibly several, e.g. 5, packages next to each other in one layer combined in a cluster and wrapped with e.g. plastic foil to get quantities that can be effectively handled during distribution. The complete stack can be wrapped in foil as a whole to increase the stability.

Possibly several packages next to each other can be placed on a relatively low tray (e.g. substantially lower than the small-packages) or flat plate, that does not have to contribute to the bearing capacity of the package, but is e.g. convenient if the store manager e.g. chooses to place one layer or a part thereof in a store rack each time. The stack can be placed in the store such that the consumer himself can pick packages from the stack as well. The dimensions of the package are preferably such that they can be stacked with "mutual engagement", i.e. in which the packages are next to and behind each other in each layer while the pattern between two succeeding layers is staggered. In each case it is preferred that the size of the bottom surface of the stack corresponds to the typical standard Euro sizes, or is derived therefrom.

In view of filling it is preferable to produce the package from the blank such that the stacking flange 5 is only brought in its active position after the package is filled such that filling is minimally obstructed. Furthermore it is preferable to mechanically erect the blanks, wherein the erecting machine is preferably provided with at least two, preferably four, concurrently acting parallel blank feed, fold, glue and package withdrawal stations, such that with a minimum of investments a maximum production of packages can be provided. It will be appreciated that the packages are preferably filled and stacked at a central site whereafter the stacks are distributed over remote locations, like stores. The filling can be carried out both centrally direct in line with the erecting machine, but also on the basis of erected packages (e.g. nested in stacks or fed as "ready" type) distributed over remote locations, e.g. where small producers/packers are present, that don't have the need for expensive foilform and seal apparatuses (e.g. so called flowpackers).

Although it is preferred in view of recycling and saving the environment to make the package from paper or card board, it is perhaps possible as well to produce this from another material, e.g. plastics. It is of course possible too, that the stack contains one or more layers or parts thereof comprised from consumer small-packages according to the invention while there are furthermore other packages or products present in the stack. The preferably open topped, i.e. tray or box shaped package can possibly be covered with a convenient lid of e.g. card board after filling. The lid can be completely loose or only provisionally provided to the package, i.e. not or hardly contributing to the bearing capacity or stackability of the package. However it is possible as well, to have a very strong connection between the lid and the package, e.g. by integrally providing the blank with a conven-

ient flap as an extension of one of the side walls that will be folded to the opposite side wall and connected thereto after filling, such that the lid indeed contributes to the stackability of the package. The stacking flanges 5 can e.g. be eliminated when using a lid. In view of consumption of raw material it is however preferred to use a package without lid that is completely open at the top, except for possible stacking flanges or other stacking elements projecting inwards from the upper side. The lid, but also one or more of the side walls or the bottom (refer to holes 10 in fig. 2) of the package can be provided with holes, e.g. for ventilation or for giving the consumer the opportunity to inspect the contents. Each package can be provided with an indication, e.g. about its contents or price, e.g. a bar code such that the price can be automatically fed in at the counter. The small-package is preferably stable enough if standing on its own, for which reason it has preferably a height that is smaller than the longest side of the bottom or preferably a height that is about the same as or smaller than the shortest side of the bottom, in particular not higher than about 15 cm. By way of further alternative the height of the package is about the same as about half the length of the short side of the bottom, or measures between about 1/3 and about 2/3 of the length of the short side of the bottom.

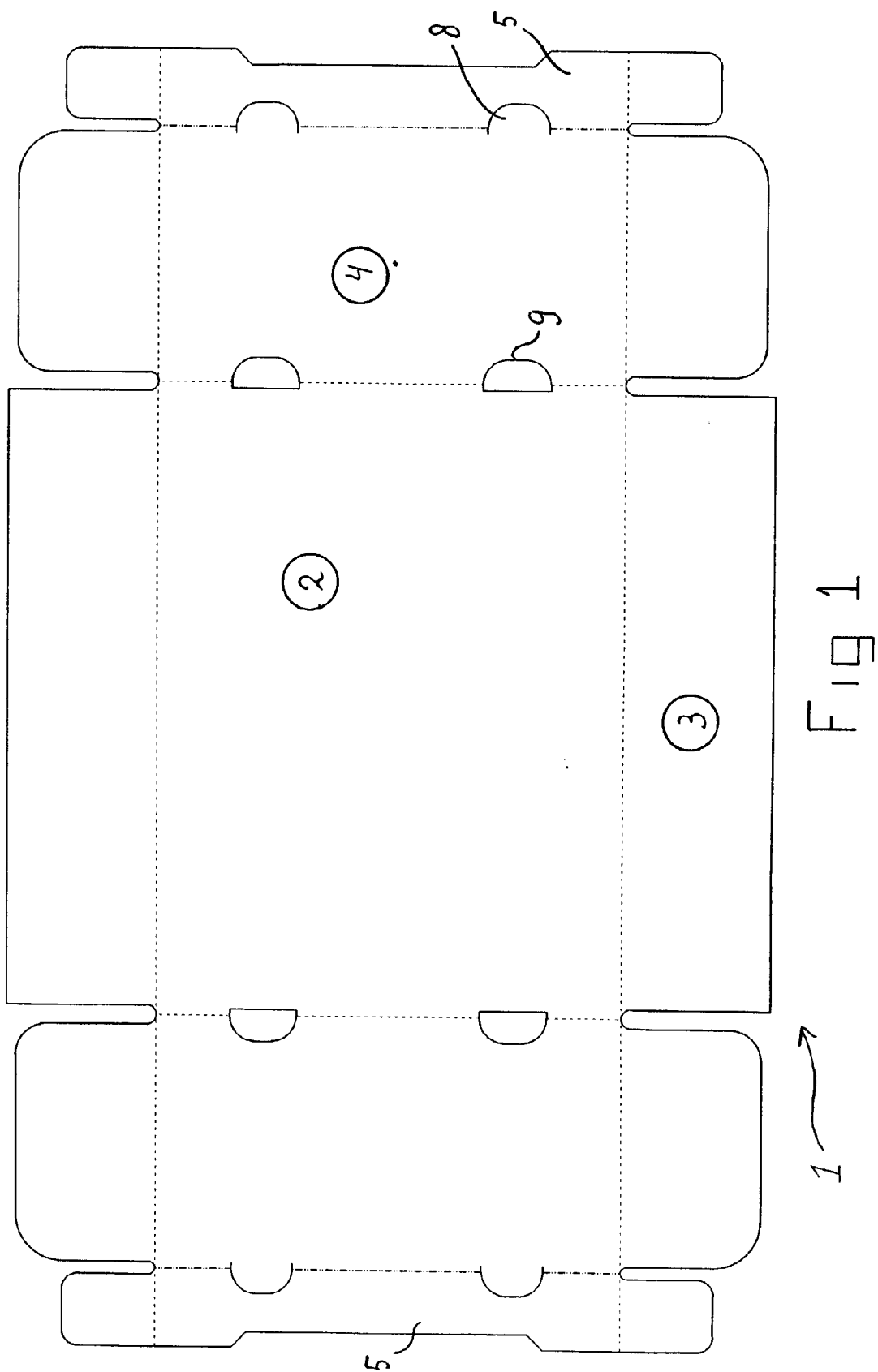
The stacking flanges 5 can e.g. be eliminated if there are other convenient stacking elements, like inwards extending corner reinforcements in the corner points of the package, that are e.g. extended beyond the upper edge of the package to e.g. provide stacking poles. Stacking poles can be provided differently as well, and then the stacking flanges can be eliminated as well. It is not absolutely necessary to produce the package from a single blank, but it is preferable for meeting the production advantage or the strength. Separate corner reinforcements can e.g. be added, extending inside or outside the package.

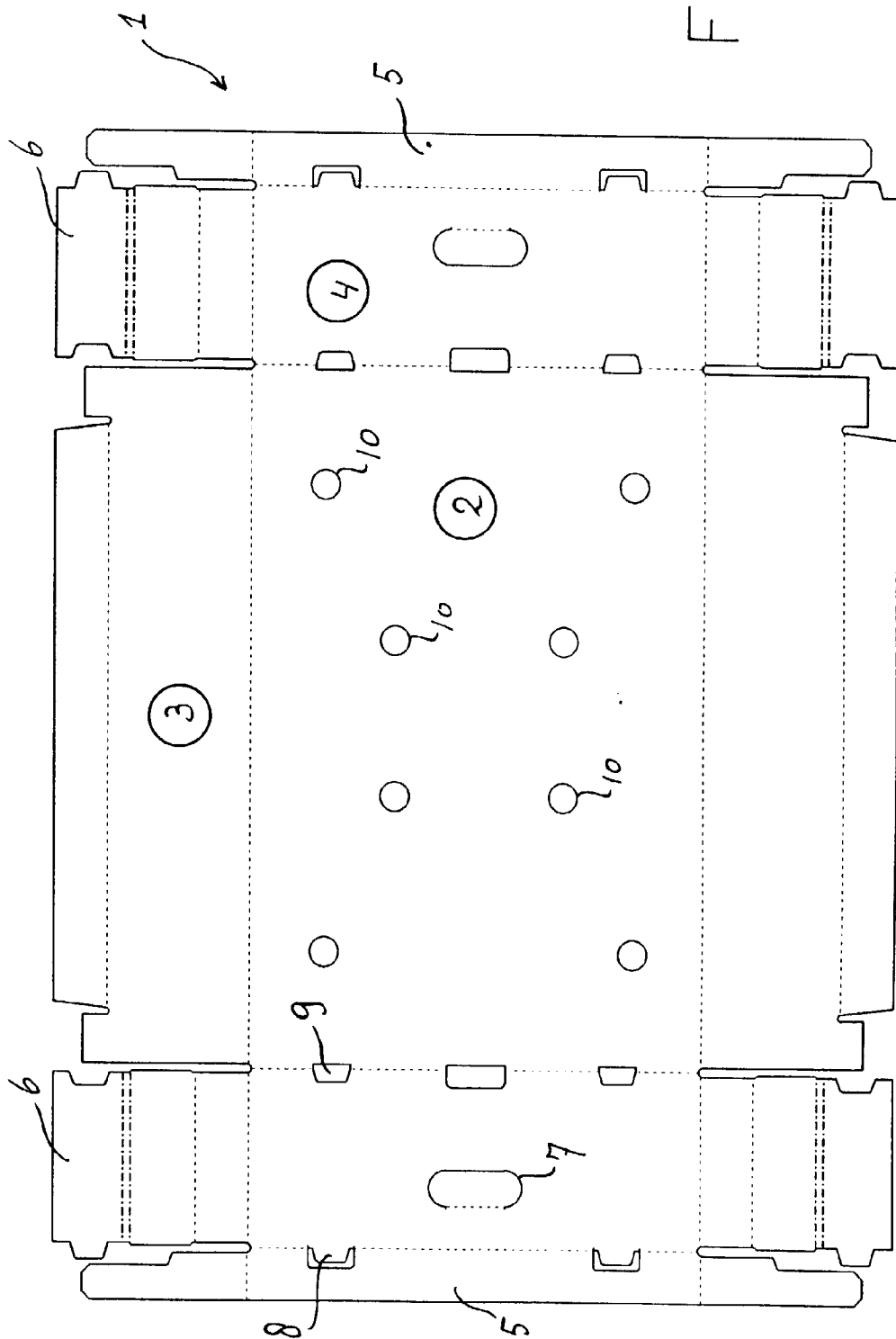
Claims

1. Method for distributing products of which one or several are brought in a package and a plurality of those filled packages are brought into a stack, preferably next, behind and above each other, said stack possibly containing different packages of products, said stack is brought to a delivery position where the packages are removed from the stack substantially individually, said packages being of the self supporting, stackable type and standing on each other in the stack and preferably containing fresh products, like mushrooms, strawberries, sweet peppers, tomatoes, apples, pears, and they have a contents that is adapted to the consumer needs, such that they will typically buy the package with contents in one time.
2. Stack comprising packages preferably filled with fresh products, e.g. to carry out the method according to claim 1, wherein said packages are of the self supporting, stackable type standing on each other in the stack and one layer contains preferably several of those packages next to and/or behind each other and the stacking pattern is preferably such that the layers are mutually engaging wherein the adjacent layers have staggered patterns of packages, and said packages have a contents that is adapted to the consumer needs, such that they will typically buy the package with contents in one time.
3. Stack according to claim 2, with substantially parallelepipedic shape and a size of the basis that is substantially the same as Euro standard size of e.g. 600 * 400 mm. or 800 * 1000 mm. or 800 * 1200 mm. or 1000 * 1200 mm.
4. Stack according to any of the claims 2 or 3, the packages of the self supporting stackable type are in a cluster of a number of those packages enclosed at the most by an envelope keeping the cluster together and having a bearing capacity substantially lower than the bearing capacity of such package, the height of said enclosure is preferably lower than the height of said package.
5. Package adapted to make a stack according to claims 2, 3 or 4, of the self supporting stackable type and having a contents that is adapted to the consumer needs, such that they can typically buy such a package with contents in one time, and wherein said package has a size such that it can preferably be held in one adult hand.
6. Package according to claim 5, with a bottom size deducted from Euro standard sizes and measuring e.g. about 300 * 200 or about 200 * 250 or about 150 * 250 or about 125 * 250 or about 100 * 250 or about 200 * 200 or about 150 * 200 or about 100 * 200 or about 150 * 150 or about 125 * 125 or about 100 * 150 and preferably not larger than about 300 * 200 mm.
7. Package according to claim 5 or 6, having an open top, like with a box or a tray, possibly covered by a preferably loose or provisionally connected cover, and/or being provided with stack stability increasing means, like tabs extending beyond the upper edge and recesses in the bottom corresponding to those tabs.
8. Package according to claim 5, 6 or 7, with a ratio of height to bottom size such that it can stand stably on its own, preferably having a height that is smaller than the longest side of the bottom, or that is about the same as or smaller than the shortest side of the bottom, or measures about 15 cm., or that is about

the same as half the length of the short side of the bottom, or that ranges between about 1/3 and about 2/3 of the length of the short side of the bottom.

9. Method for filling a self supporting stackable package that is provided along the upper edge of two opposing side walls with a staple flange that is directed to the centre of the package in its active position and possibly being an obstruction during filling in said position, said stacking flange gives support to a further package to be stacked on this package, wherein only after filling said stacking flange is brought in its active position. 5 10
10. Method for producing packages, like those according to any of the preceeding claims 5-8, of the self supporting, stackable type, preferably by reforming and putting in the right position of blanks of preferably paper or card board, wherein blanks are fed to a mechanical device with more than one, preferably 15 20 four, concurrently acting stations, each adapted for the production of packages, and wherein possibly after the production in one line the packages are filled with product, preferably fresh product, and after that they are preferably brought in a stack, like 25
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EUROPEAN SEARCH REPORT

Application Number
EP 98 20 0602

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.6)
X	EP 0 337 840 A (SOFPO) 18 October 1989 * the whole document *	1-10	B65D5/00
X	DE 76 33 554 U (ZEWAWELL) 10 February 1977 * page 5, line 17 - page 8, line 8; figures 1-5 *	1-10	
X	US 5 052 615 A (OTT) 1 October 1991 * column 11, line 53 - column 15, line 49; figures 6-16 *	1-10	
X	FR 2 539 386 A (FABRE) 20 July 1984 * page 11, line 35 - page 12, line 22; figure 6 *	1-8	
X	NL 9 600 004 A (SMURFIT LONA VERPAKKING) 3 June 1996 * the whole document *	1-10	
X	EP 0 446 142 A (KAYSERSBERG PACKAGING) 11 September 1991 * the whole document *	1-10	
A	FR 2 517 641 A (SOCIETE NORMANDE DE CARTON ONDULÉ) 10 June 1983		
A	FR 2 446 231 A (BINI) 8 August 1980		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 26 May 1998	Examiner Martens, L
CATEGORY OF CITED DOCUMENTS 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		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	

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