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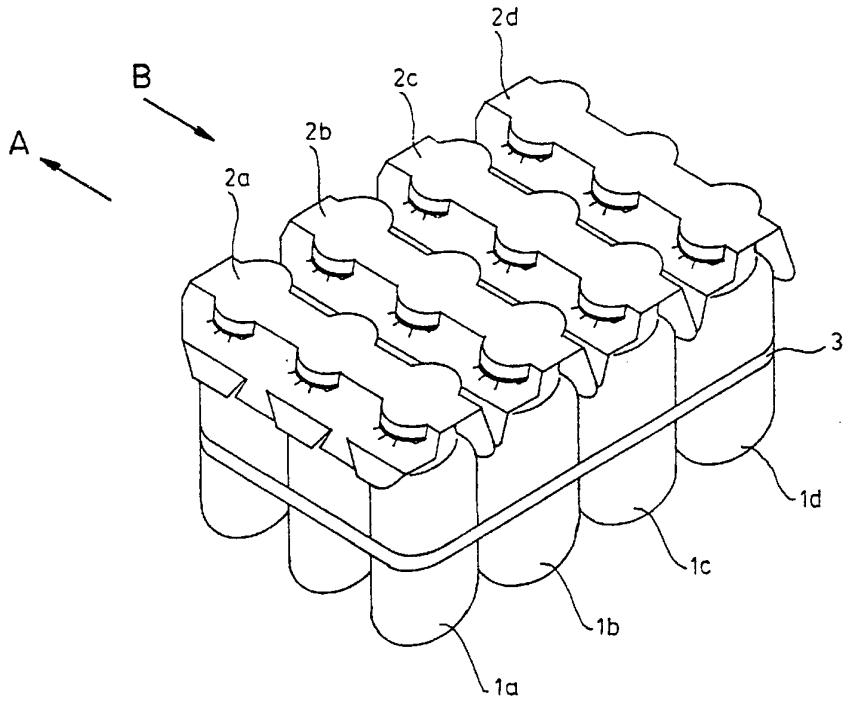
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Published
With international search report.
With amended claims.

(54) Title: PACKAGE AND METHOD FOR PRODUCING SAID PACKAGE



(57) Abstract

To prevent honeycombing of containers (1a-1d) of adjacent multi-packs each having a top-carrier (2a-2d) and which are combined together by means of a strapping band (3), cardboard or other material(s) is/are placed between the juxtaposed surfaces of the cylindrical containers in each group before the strapping band (3) is applied. Good package stability and minimal waste result.

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Title: Package and method for producing said package

Field of the invention:

The invention relates to a package as defined in the preamble of claim 1 and to a method for producing such a package.

Background to the invention

In today's packaging industry, foodstuffs and other articles in bottles, jars, pots, tins and other cylindrical walled containers are often distributed using cardboard boxes or containers with or without the addition of plastic films (e.g. shrink-wrapping). In an effort to reduce the amount of cardboard/plastics required and thus the packaging waste, certain packaging combinations have a simple, folded outer layer of corrugated cardboard which acts as a support base for a plurality of containers and as a lateral support by means of its sides. A tensioned strapping band may also be stretched around the cardboard and container group to provide more stability.

Whilst such packaging offers a partial solution to low wastage, the solution is designed for individual containers which will be separated after removal of the band, e.g. for filling shelves of a supermarket. Thus, the cardboard packaging which supports the containers will have to be removed and thrown away in the supermarket.

Additionally, such packs which have more than two rows of containers are formed generally using a honeycomb formation of containers, since the forces acting on the containers due to the tensioned strapping band will make the containers adopt this formation. The disadvantage with such a formation is however that the pack will have "dead"

corner and/or end portions which take up a large amount of storage space, which is of importance especially on shop shelves. Even those packages which are originally formed from a plurality of containers arranged in rectangular groups (i.e. not honeycombed) can have the problem that the containers will tend to assume their natural position and will tend to honeycomb during transport. This can lead to instability and the promotion of relative vertical movement on lifting the packages which may lead to package collapse.

A further requirement which must be met, in order to increase sales and to provide a convenient handling means, is the supply of containers as a multi-pack, i.e. containing two or more packs held together, e.g. by a cardboard carrier, after the removal of the unsightly strapping band. An example of such a multi-pack carrier is shown in EP-A-496 807 for example, the subject matter of which is incorporated herewith by reference.

The object of the present invention is thus to provide a solution for strapping together multi-packs of containers (i.e. rows or packs which each comprise a plurality of containers held together at their upper ends normally by a cardboard carrier) in such a way which prevents honeycombing and which results in a minimum of waste.

A previous attempt at solving the problem of containers sliding against each other and thus to avoid inter-container damage is known from DE-A-3 739 574. This discloses a U-shaped cardboard piece which is positioned around the bottom of two containers of a single consumer six-pack held together with a strapping band. Whilst the containers are better protected by the intermediate cardboard the problem of honeycombing is not in fact prevented and the tensioned strapping band can easily loosen and result in package collapse with consequent

container damage. Also, the package is severely limited in its application since the U-shaped piece must surround a middle row, requiring thus always an uneven number of rows and a large functionless cardboard U-piece, which must be thrown away as soon as the strapping band is broken.

Summary of the invention

The above object is solved by a package and a method having the features of claim 1 and claim 6 respectively.

Preferred features of the invention are defined in the dependent claims.

With the individual multi-packs (i.e. with top carrier/top uniting element which holds each of the containers firmly at the upper end) arranged adjacent one another and by adopting the addition of an amount of intermediate material between the containers' juxtaposed surfaces, the honeycombing effect can be substantially eliminated when a strapping band is applied.

Brief description of the figure

The invention will now be described in more detail with reference to certain embodiments and the accompanying drawings, in which

Fig.1 shows a side view of four individual multi-packs joined together by a single strapping band,

Fig.2 shows a perspective view of four individual multi packs, similar to those of Fig.1, joined together as in Fig.1,

Fig.3 and Fig.4 show respective side and perspective views of two multi-packs containing six containers per pack,

Fig.5 shows a view of five multi-packs containing four containers per pack, and

Fig.6 shows the arrangement of Fig.1 with various possible alternative adhesive locations marked thereon.

Detailed description of a preferred embodiment

The package shown in Fig.1 and Fig.2 comprises twelve containers 1a-d arranged in four rows. The first row has three cans 1a, the second row has three cans 1b etc. Each row of containers is thus joined in a multi-pack of three containers by means of a folded cardboard carrier blank 2a-2d respectively. Whilst three containers are shown, any number of containers greater than one may be used with the invention, e.g. two containers in each multi-pack row. Similarly, many rows of multi-packs are possible (e.g. four rows of 2-packs or four rows of 3-packs etc.) or a multi-pack having packs arranged in two or more rows joined by one folded carrier element, or two carrier elements joined by adhesive so as to form a larger single joined multi-pack.

A single strapping band 3, suitably of polypropylene, is tensioned around the four rows of containers to hold them together. The forces in the strapping band in its fixed state and the forces arising during its method of application during strapping would normally force the four rows to adopt a honeycomb formation as discussed above. However, to avoid this, the invention provides means for preventing the sideways movement of one pack with respect to the next, without adding significant amounts of extra material.

One or both of the flaps 4 and 5 on the sides of the containers facing each other may be longer than the flaps

6 and 7 on the outer sides. The juxtaposed flaps 4 and 5 thus extend down into the region of contact of the cylindrical containers of each row. In this way, due to the presence of the cardboard between juxtaposed containers, the frictional resistance to movement between said containers after application of the tensioned strapping band will normally be high enough to prevent side slip of one multi-pack container group with respect to the other (i.e. one in direction A, the other in direction B) due to the combined presence of the band, the frictional contact of the cardboard and the connection of the cans by the multi-pack carrier. The actual extent of the cardboard required between the two rows of containers is something which can be arrived at by experimentation and depends on the type and weight of container, the thickness of cardboard etc.

A suitable dimension for the strapping band would normally be up to about 50mm, although larger dimensions could be used. Even with such narrow bands (50mm or under) the invention still provides a honeycomb-preventing solution.

Although Fig.1 shows a gap between the containers at their lower ends, this large gap is of course not present in reality since the tensioned band 3 will bunch the cans together. Similarly, whilst the cardboard flaps 4 and 5 are not shown as being in contact with one another, they will be since the band 3 is under tension.

As a second embodiment of the invention (not shown), the cardboard provided by flaps 4 and 5 (as denoted in figures 1 to 4 and 6) between the containers can be separate from the carrier elements 2a-d. Thus, a separate strip or separate strips of cardboard could be inserted between the adjacent rows of multi-packs instead of these strips being joined to the carriers 2a-2d. In an adaptation of this, the

insert does not necessarily have to be between all the containers, but only some, although being between all containers would be the most preferred solution from many aspects. The important feature to be achieved is the adequate amount of frictional resistance between the containers at this particular location.

Figs. 3 and 4 show respective side and perspective views of two multi-packs each having two rows of three containers 1e and 1f (or 1g and 1h) per multi-pack, said multi-packs being joined together by means of the tensioned band 3 with the flaps 8 and 9 in compressed contact. In this case also the figure is only a schematic representation and the container rows 1f and 1g would of course normally be in contact at least at their lower ends.

A third embodiment of the invention is, instead of any cardboard insert or extension between the containers, to use a small area of suitable adhesive, e.g. hot melt, between the containers of each row in order to obtain the required effect. However it is also possible that the adhesive could be used in addition to said cardboard. When adhesive and cardboard are used in combination, a suitable placement of the adhesive is between the container cylindrical surface and the cardboard flap which fixes the containers positionally with respect to each other. In such a case, the additional advantages are obtained that the consumer pack (i.e. each of the multi-packs) provides its own tamper-evident/tamper-preventing seal whilst at the same time preventing rotation of each of the containers (which leads to improved package appearance).

Alternatively adhesive may be placed at any other suitable location between the cylindrical surfaces of adjacent cans or adjacent multi-packs. The various alternative locations for the adhesive will be outlined with reference to Fig.6.

The adhesive should be such that the strength and adhesion in the longitudinal shear direction (i.e. direction A/B) should be significant whilst the strength in a lateral direction should be relatively insignificant so as to allow consumers to easily separate the multi-packs from each other or cans from their upper cardboard carrier when desired, yet still prevent sideways slipping.

In order to prevent honeycombing of the containers during packaging together using the band 3, the package according to the invention should be assembled as follows. When using cardboard or the like as the frictional resistance producer between the containers, the cardboard will be unable to produce any resistance effect until the band 3 becomes taught. Thus, when the multi-packs have been positioned side-by-side ready for banding together, a frame member or other movement-preventing member (e.g. on the banding machine) must be used to prevent relative movement of the packages during the banding operation.

When an adhesive is used as the means for preventing honeycombing, no frame member is required on the banding machine since the adhesive is able to perform this function as well. However, depending on the forces applied during banding it may be convenient to also use a frame member in this case also.

A fourth embodiment is also possible, where shock absorbing properties (as described later) might be required. In this embodiment the banding function and the shock absorbing properties can be provided in one complete cardboard strip which can be supplied in rolls. The cardboard band is merely tensioned around the cylindrical containers and the ends glued together (or otherwise suitably joined). Where a purely cardboard solution is used (i.e. no plastic band or adhesive) significant recycling advantages are obtained.

A further embodiment as shown in Fig. 5 involves the use of a shock absorbing protective layer for the containers (such as if the retailer requires glass containers to be especially protected). In such a case, additional shock absorbing material 15 may be used which, in the shown example is in the form of an open ended (at one end) underlay to protect the lower and most vulnerable surfaces of the containers from damage (e.g. with glass containers). The underlay for the five multi packs 10 - 14 is held in position in the shown embodiment by the band 3 which is fastened around two extended portions 16 of the underlay. Also in this embodiment the band 3 may be made shock-absorbing if this is required.

Since no cardboard extends down between the contacting container surfaces of each row, either separate strips must be used or adhesive (not shown) as previously described between e.g. the lower ends of the containers.

Fig.6 is a similar view to that of Fig.1, although adhesive (suitably hot-melt adhesive) is shown as applied in various alternative locations. In some cases a combination of certain locations could obviously be used however. Locations C, D, and E are shown as schematic representations of possible glue locations and thus the glue thickness at these locations can obviously vary within large limits.

Location C shows, for example glue which is placed between the cardboard flaps of adjacent rows of containers. The glue of course, as in accordance with that aforementioned, has the purpose of obtaining a shear force resistance, but must naturally be weak in the direction which allows the rows to be separated from one another. A further application of this could be where it is desired to form a combined multi-pack between two or more rows such that the

individual carrier elements would be attached together as a single pack.

Location D is between the cardboard flap and the container itself, thus providing the particular advantage of a tamper-evident connection.

Location E is between the adjacent cylindrical surfaces of the containers and serves not only to provide the required shear resistance at this location, but also provides a damage protection barrier between containers. Clearly the distance from the bottom of the containers of this glue location is not of the utmost importance, but it should be below the strapping band 3 for the best results when adhesive is indeed used.

The packages which result from the invention are thus readily stackable with further packaging units on a pallet. A further strapping band may then be placed around one or several of the complete pallet layers if increased stability is required (e.g. for transport). For shelf stacking in a supermarket or the like, the package merely needs to be put into the shelf, before or after severing the strapping bands. As will be apparent, all the available shelf space can then be used to best effect by appropriate stacking of the individual multi-packs which are ready for consumer purchase.

Thus without requiring any type of under-tray support for the containers, a stable and economic package has been produced which involves particularly low wastage. This is a particular advantage compared to the previously known container packages mentioned in the introduction since the only cardboard (or similar) which need be present with this invention is that having a specific after-purchase consumer function as a functional carrier (i.e. as a multi-pack

carrier) whilst at the same time providing, in combination with the strapping band, good stability.

The packaging idea of the invention may also be extended further to the joining together of multi-packs of containers each of which is in itself a honeycomb formation of containers (by virtue of the carrier element itself providing such an arrangement). This would be achieved by the containers in adjacent outer rows of each multi-pack being placed in a juxtaposed relationship (i.e. non-honeycombed with respect to each other) and friction enhancing material being placed between the containers of the multi-packs, said material either being part of and/or separate from the top carrier elements. In this way a more stable grouping is obtained.

In certain cases with e.g. glass containers, it may be desirable to improve the shock absorbing properties of the outer sides of the package. This can be achieved simply with this invention by making the strapping band with a combined shock absorbing layer (e.g. hot melt outer layer on the band) which will also help to increase the frictional resistance of the strapping band to the containers.

The invention is not limited to the embodiments described above but may be varied to a large extent within the scope of the claims appended hereto. In particular, the choice of materials, the size of the cardboard inserts or adhesive zones as well as the strapping band tension and location may all be varied depending on the type of container multi-packs in question. For example, long containers in a large multi-pack will require more frictional resistance to be achieved than those of a small group with small containers and a solution to this may be larger strips of cardboard for example.

Claims

1. Package comprising a plurality of containers each having a curved outer wall surface, said containers being united together as a multi-pack by a folded blank of cardboard or the like attached at the upper parts of each of said containers, **characterized in that** said multi-pack is combined with at least one adjacent multi-pack by means of a tensioned band encircling said multi-packs, and in that means is provided between containers of adjacent packs for substantially preventing said containers from forming a honeycomb structure with the containers of the adjacent multi-pack.

2. Package according to claim 1, **characterized in that** said means preventing a honeycomb structure being formed is formed as a flat piece of cardboard or the like, placed between the juxtaposed curved surfaces of containers of adjacent multi-packs.

3. Package according to claim 1, **characterized in that** said means preventing a honeycomb structure being formed comprises an area of adhesive, for example an area of hot-melt adhesive.

4. Package according to either of claims 1 or 2, **characterized in that** said cardboard or the like is an extension of one flap of the folded blank uniting the containers together as a multi-pack, said extension passing between juxtaposed surfaces of containers of adjacent groups.

5. Package according to any of claims 1, 2 or 4 **characterized in that** an area of adhesive, e.g. hot-melt adhesive, is applied between the adjacent multi-packs in addition to said cardboard or the like.

6. Method of producing a package according to claim 1, **characterized in that,** said multi-packs are positioned adjacent each other for banding together and a frame member or other movement-preventing member is placed so as to prevent relative movement of one multi-pack with respect to the next whilst the adjacent multi-packs are banded together.

7. Method according to claim 6, **characterized in that** said movement preventing member comprises adhesive placed between juxtaposed containers of the adjacent multi-packs.

AMENDED CLAIMS
[received by the International Bureau on 31 January 1995 (31.01.95); original claims 1,3 and 5 amended; remaining claims unchanged (2 pages)]

1. Package comprising a plurality of containers each having a curved outer wall surface, said containers being united together as a single-row multipack by a folded blank of cardboard or the like attached at the upper parts of each of said containers, characterized in that said multi-pack is combined with at least one adjacent multi-pack by means of a tensioned band encircling said multi-packs, and in that means is provided between containers of adjacent packs for substantially preventing said containers from forming a honeycomb structure with the containers of the adjacent multi-pack.

2. Package according to claim 1, characterized in that said means preventing a honeycomb structure being formed is formed as a flat piece of cardboard or the like, placed between the juxtaposed curved surfaces of containers of adjacent multi-packs.

3. Package according to claim 1, characterized in that said means preventing a honeycomb structure being formed comprises an area of adhesive, for example an area of hot-melt adhesive, placed on the container surface between containers of adjacent packs. (D or E).

4. Package according to either of claims 1 or 2, characterized in that said cardboard or the like is an extension of one flap of the folded blank uniting the containers together as a milti-pack, said extension passing between juxtaposed surfaces of containers of adjacent groups.

5. Package according to any of claims 1, 2, or 4 characterized in that, an area of adhesive, e.g. hot-melt adhesive, is applied between the adjacent multi-packs between said cardboard or the like, in order to form a two-row consumer-multi-pack.(C)

6. Method of producing a package according to claim 1, characterized in that, said multi-packs are positioned adjacent each other for banding together and a frame member or other movment-preventing member is placed so as to prevent relative movment of one multi-pack with respect to the next whilst the adjacent multi-packs are banded together.

7. Method according to claim 6, charaterized in that said movment preventing member comprises adhesive placed between juxtaposed containers of the adjacent multi-packs.

Fig 1

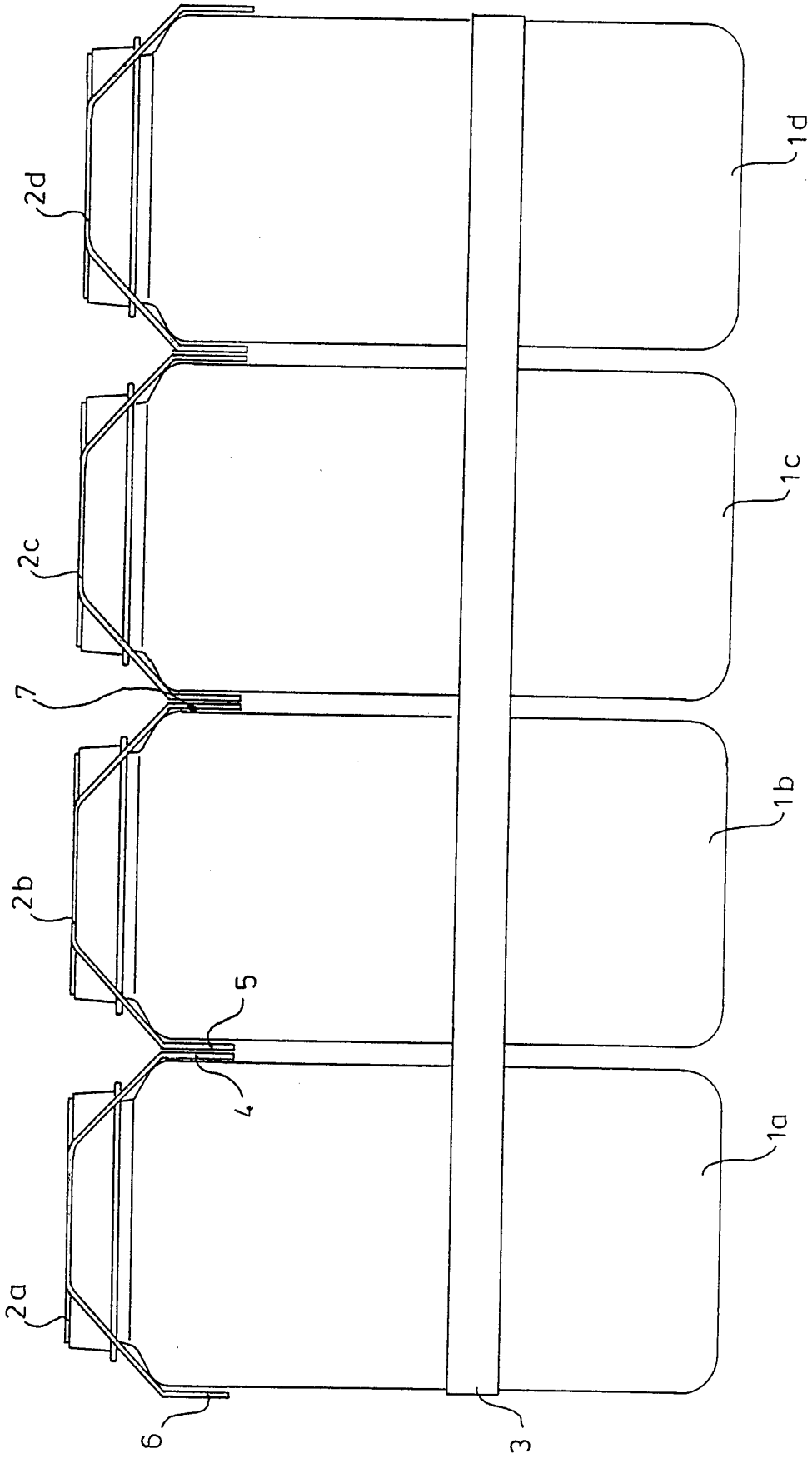


Fig 2

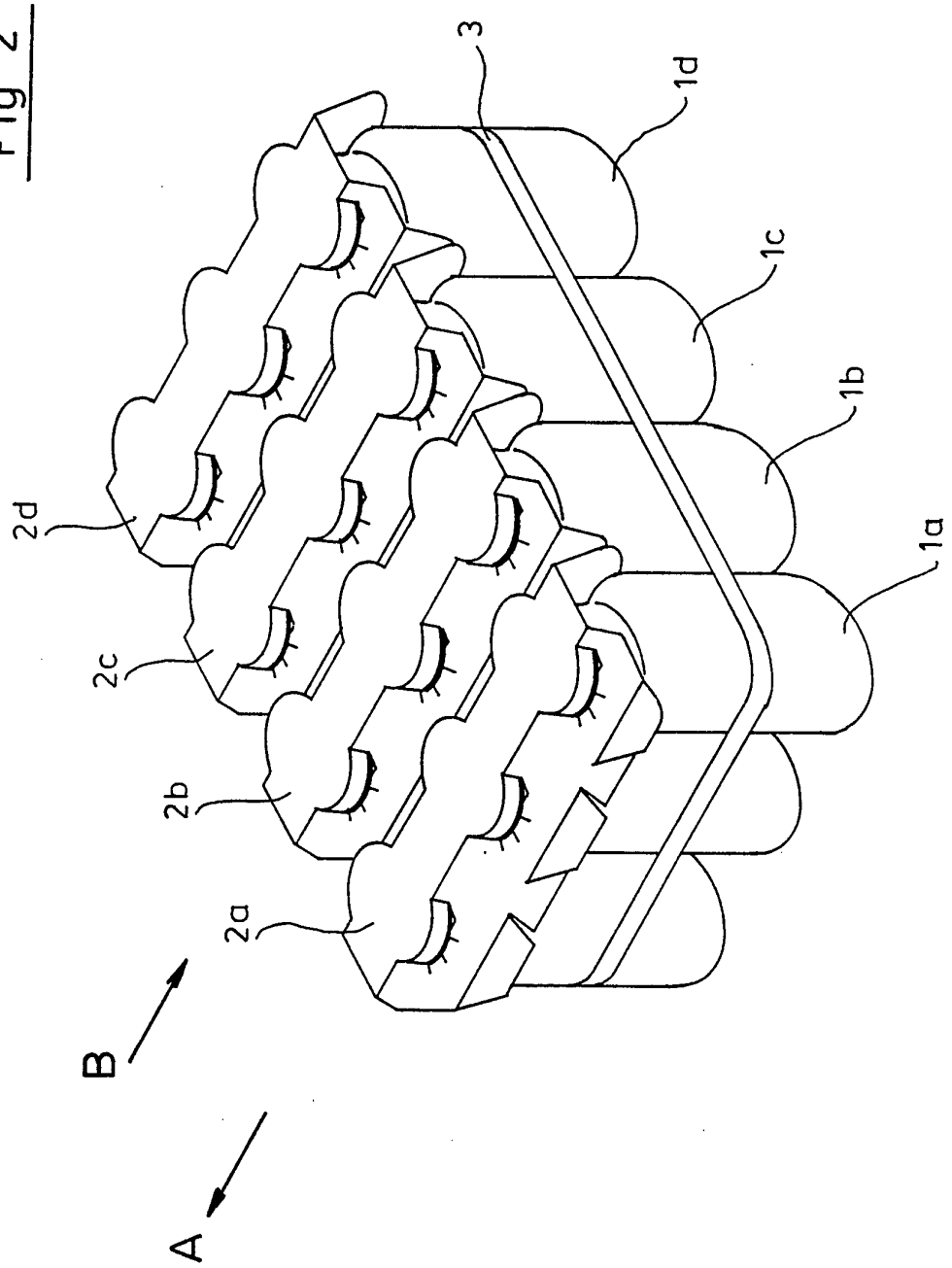


Fig 3

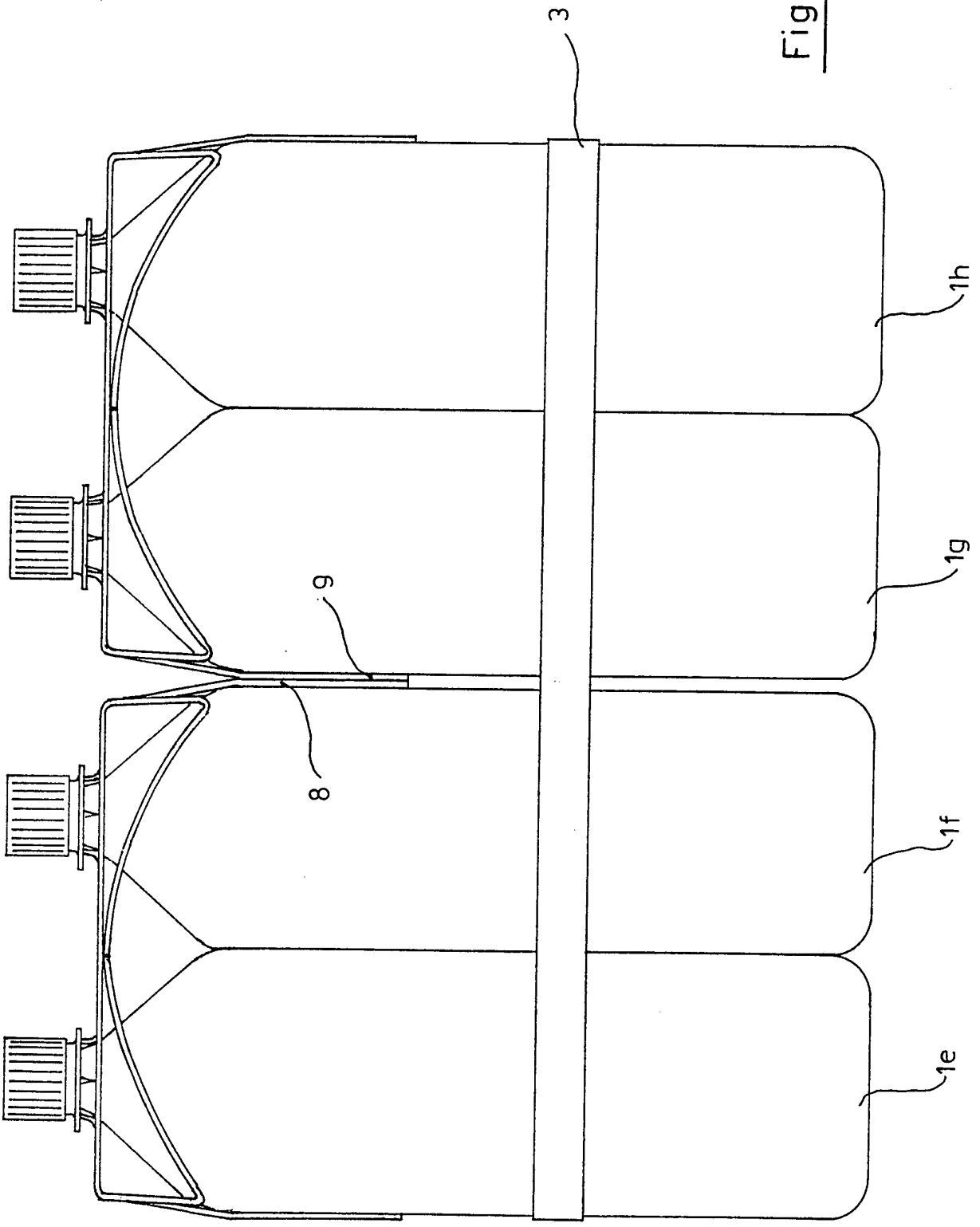
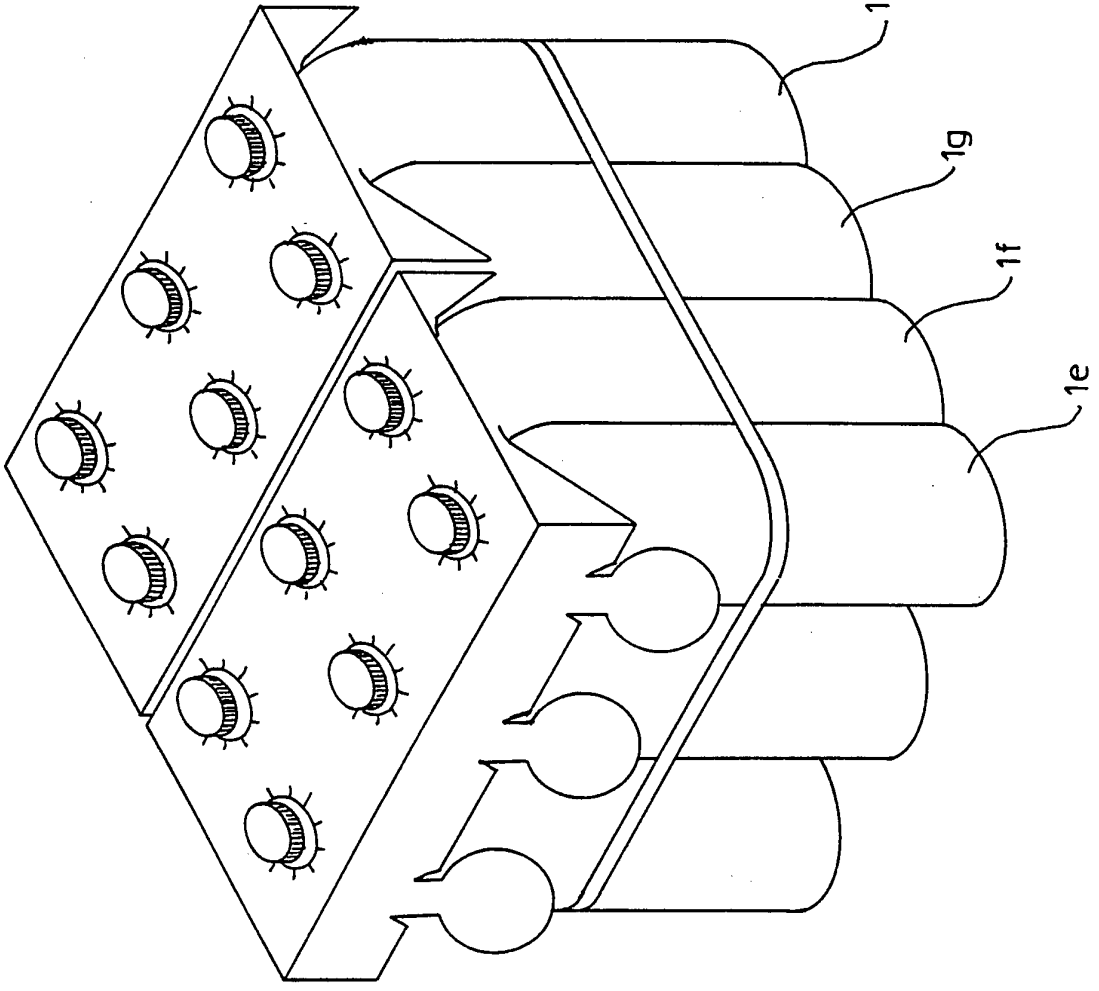


Fig 4



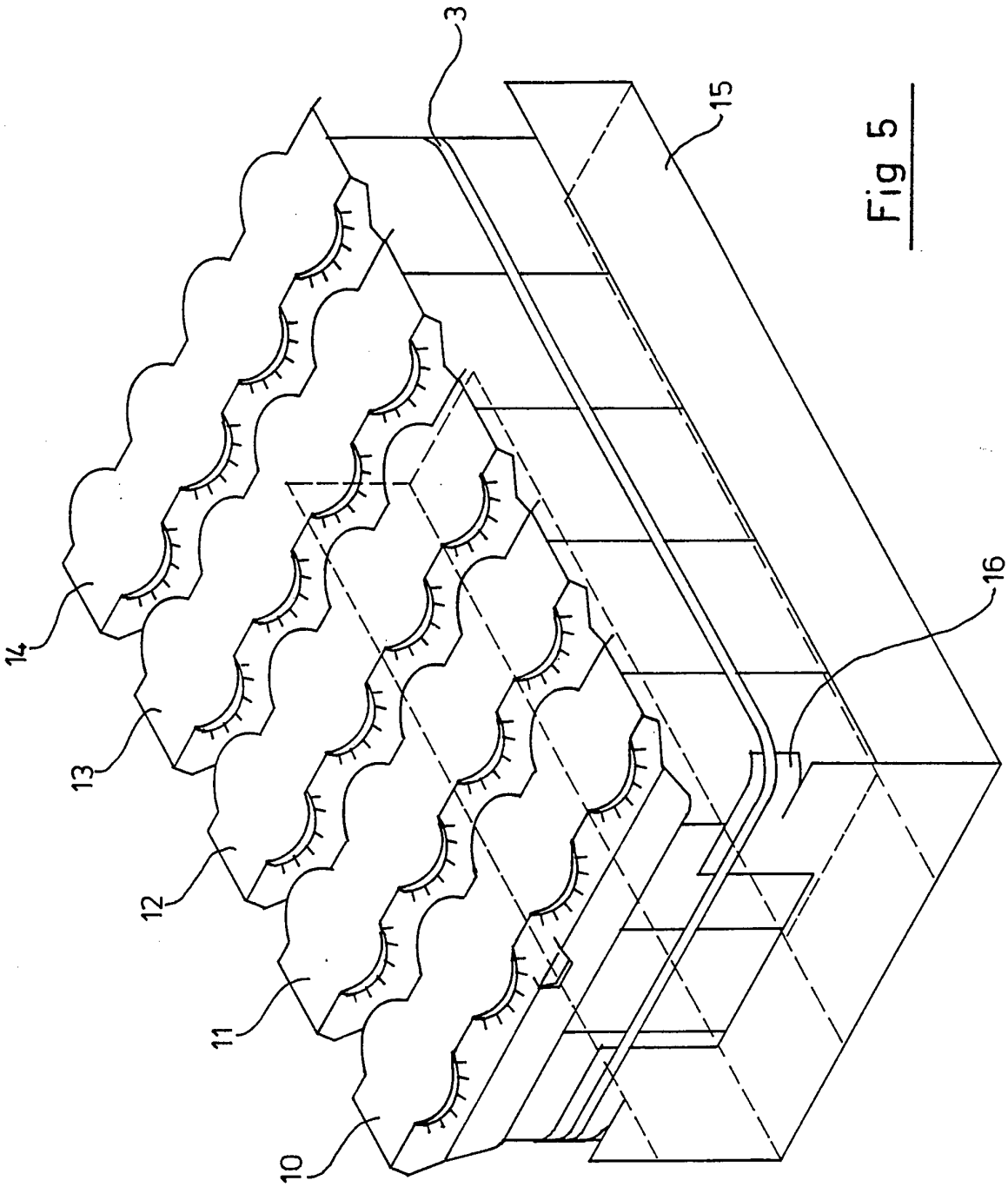
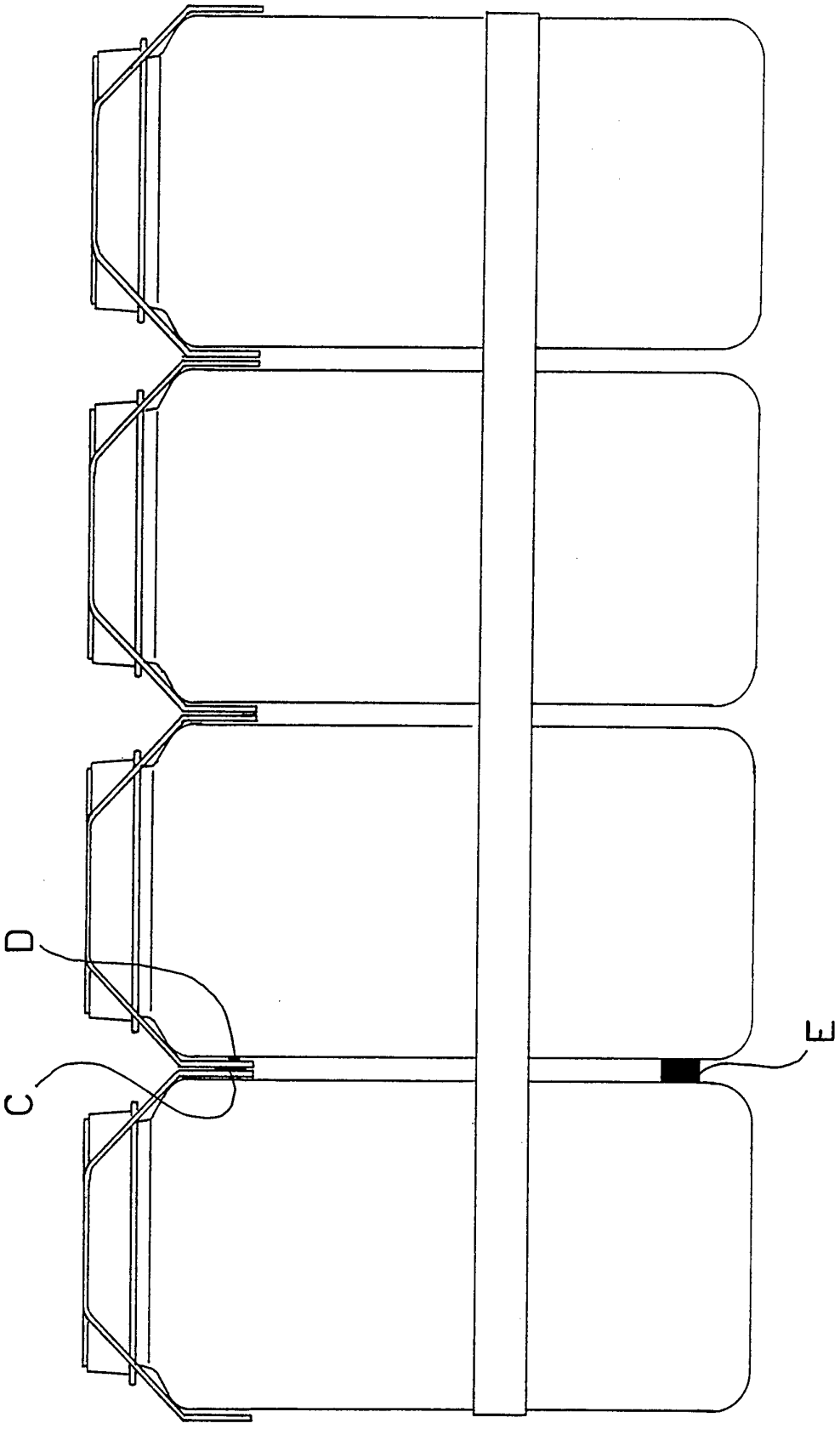


Fig 5

Fig 6



INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 94/00784

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: B65D 71/00
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)

IPC6: B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE, A1, 3711766 (WEIERSMüLLER GMBH + CO), 20 October 1988 (20.10.88), column 3, line 38 - column 4, line 16, figure 1	1-7
A	US, A, 4523676 (BARRASH), 18 June 1985 (18.06.85), column 1, line 44 - line 55, figures 1,2, abstract	1-7
A	DE, A1, 3739574 (GLÖYER, WOLFGANG), 1 June 1989 (01.06.89), figures 3,6, abstract	1-7

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

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15 December 1994	19 -12- 1994
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP, A1, 0454450 (THE MEAD CORPORATION), 30 October 1991 (30.10.91), figure 2, abstract -- --------	1-7

INTERNATIONAL SEARCH REPORT

Information on patent family members

26/11/94

International application No.
PCT/SE 94/00784

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE-A1- 3711766	20/10/88	NONE	
US-A- 4523676	18/06/85	NONE	
DE-A1- 3739574	01/06/89	DE-A- 3804211	24/08/89
EP-A1- 0454450	30/10/91	NONE	