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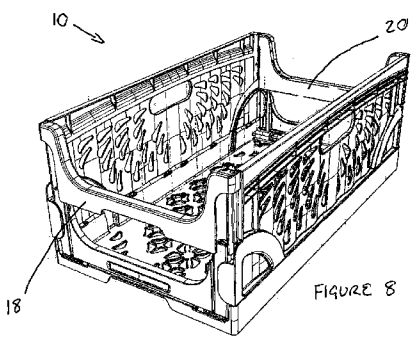

FIGURE 8

(57) Abstract: The present invention relates to a container comprising a base (12), a pair of opposed side walls (14, 16) and a pair of opposed end walls (18, 20). At least one of the end walls in configured to be lowered.

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CONTAINER

The present invention relates to a container, and, more particularly, to a container for consumer-products that is used for the transport of such products, and their display in a retail outlet.

Cardboard and nesting containers are widely used for the bulk transport of consumer-products, such as foodstuffs, and it is often convenient for a retail outlet to utilise the containers in displaying the product for purchase by customers. Typically, such containers have a fixed configuration, so that the retailer must design or adapt the display shelving to accommodate the configuration of the containers. Moreover, once the consumer-products within the containers have been sold, cardboard containers must be folded and stored for disposed. Such cardboard containers may be bulky, even when folded for disposal, and create considerable waste packaging. Reusable nesting container must be nested empty, after use, and may take up valuable space within the retail premises. In addition, the nesting containers must be transported back to a supplier/distributor for a re-use, and, during transport, also take up valuable space within the transporting vehicle.

Accordingly, an improved container is desired, which overcomes some or all of the above-mentioned disadvantages.

In the first aspect, the present invention provides a container comprising a base, a pair of opposed sidewalls, and a pair of opposed end walls, wherein at least one of the end walls is configured to be lowered.

The lowering of an end wall of the container, relative to the side walls, allows consumers to easily access the contents of the container, when placed on

display in a retail outlet, whilst ensuring that the contents are retained between the side walls, within the container.

In some embodiments, the at least one end wall comprises an upper section and a lower section, and the upper section is movable between a first, raised position and a second, lowered position.

In one embodiment, the at least one end wall comprises an upper section and a lower section, wherein the upper section is movable between a first position in which the upper section is above the lower section, and a second position in which the upper section overlies the lower section so as to reduce the height of the end wall. In this embodiment, the at least one end wall is typically mounted on guides on the sidewalls, and is adapted to slide between the first position and the second position.

In another embodiment, at least one end wall comprises an upper section and a lower section, and the upper section is pivotally mounted with respect to the lower section, so as to pivot from a first position, in which the upper section is above the lower section, to a second position, in which the upper section lies adjacent to the lower section, so as to reduce the height of the end wall.

In some embodiments, both end walls are arranged to be lowered.

In some embodiments, the at least one end wall is pivotally mounted to the base. In one such embodiment, the at least one end wall further comprises sliding edges, at each end thereof, for sliding within arcuate recesses formed within the first and second sidewalls, when the at least one end wall is pivotally rotated inwardly. This enables the container to be collapsed, when empty. Typically, the container has means to prevent the container from collapsing until pressure is applied. For example, in some embodiments, the at least one sliding edge of the at least one end wall may include a resiliently

deformable member, which, when deformed, allows engagement of the sliding edge with an arcuate recess, but which prevents such engagement in its usual, non-deformed configuration.

In a preferred embodiment, the container is adapted to be fully collapsible to a substantially flat configuration.

Other preferred and optional features and advantages of the present invention will be apparent from the following description and accompanying claims.

Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

Figures 1A to 1E are perspective views of a container forming a preferred embodiment of the present invention, in different configurations of use;

Figure 2 is a perspective view of the interior of a corner of the container of the preferred embodiment of the present invention, in the configuration shown in Figure 1B;

Figures 3A and 3B are schematic longitudinal and lateral cross sections of an end wall of the container of the preferred embodiment of the present invention, illustrating the position of a spring mechanism associated therewith in operation at the position of the container as shown in Figure 2;

Figure 4 is an perspective view of the interior of the corner of a container, equivalent to that shown in Figure 2, in a configuration when pressure is applied to collapse the end wall;

Figures 5A and 5B are cross sections, similar to those of Figures 3A and 3B, illustrating the position of the spring mechanism in operation in a configuration when pressure is applied to collapse the end wall as in Figure 4;

Figure 6 is an perspective view of the interior of a corner of the container, equivalent to that shown in Figure 2, in a configuration during the collapsing of the end wall;

Figure 7 is a lateral cross section of the end wall, illustrating the position of the spring mechanism during the collapsing of the end wall as in Figure 6;

Figure 8 is a perspective view of a container forming a second embodiment of present invention, and

Figures 9 and 10 are perspective views of a container forming a third embodiment of the present invention, in different configurations of use.

Figures 1A to 1E illustrate a container 10 in accordance with a preferred embodiment of the present invention. As shown in Figure 1A, the container 10 comprises a rectangular base 12, a pair of opposed sidewalls 14 and 16, and a pair of opposed end walls 18 and 20. Sidewalls 14 and 16, and end walls 18 and 20, are each pivotally mounted by hinges, at their lower edges, to the base 12. The lower edges of the base 12 and the upper edges of the side walls 14 and 16 and end walls 18 and 20 have a complementary formation to enable multiple containers 10 to be stacked, one on top of the other. In particular, the edge of the base 12 is provided with a downwardly extending peripheral rib 22 (shown in Figures 3A and 3B, for example) which is positioned, spaced slightly inwardly form the edge of the base 12, to be accommodated within the upper rim 24 of the container 10, i.e. to locate within the upper edges of sidewalls 14 and 16 and end walls 18 and 20, when stacked. Alternative complementary formations, in the top and bottom of the

container 10, to enable stacking of containers 10, will be apparent to a person skilled in the art.

Container 10 is typically formed by injection moulding from a suitable plastics material, such as polypropylene, with a pattern of openings 26 in the base 10 and walls 14 to 20 to minimize the weight of the unfilled container 10. A handle 28 is provided in the form of an opening in a central, upper area of each side wall 14 and 16, for use in carrying the container 10. As the skilled person will appreciate, the dimensions of the container 10, including the relative proportions and thicknesses of the base 12 and walls 14 to 20 are chosen according to the design requirements. The illustrated configuration is designed to accommodate packaged eggs. The base 12 and walls 14 to 20 of container 10, are typically moulded as separate parts and assembled together by snap-fit connection or otherwise.

Container 10 has three possible configurations, which are illustrated in Figures 1A to 1E.

A first configuration, as shown in Figure 1A, is the normal configuration for use when loading and transporting consumer-products. In this configuration, the sidewalls 14 and 16 and end walls 18 and 20 are secured to extend substantially vertically with respect to the base 12, and end wall 18 is in a first, raised position, whereby an upper portion 30 of the end wall 18 is located to prevent consumer goods contained therein from spilling out through the end of the container 10.

A second configuration, as shown in Figure 1B, is a configuration for use when merchandising the consumer-products in a retail outlet, for example. In this configuration, the sidewalls 14 and 16 and end walls 18 and 20 are secured in place (e.g. by releasable snap-fit clips) to extend substantially vertically with respect to the base 12, and the end wall 18 is in a second, lower

position, whereby the upper portion 30 of the end wall 18 is lowered to be substantially level with a lower portion 32 of the end wall 18. In particular, in this embodiment, the upper portion 30 and lower portion 32 have a complementary configuration such that the upper portion 30 can be moved downwardly, towards the base 12, to telescopically overlie the lower portion 32, thereby reducing the height of the end wall 18.

As illustrated in Figures 1A and 1B, the lower portion 32 is typically half the height of the end wall 18, and, in the second position, the lower portion 32 is completely recessed within the upper portion 30, so that the overall height of the end wall 18 is reduced by about a half. The skilled person will appreciate that in other embodiments the lower 32 and upper 30 portions of the end wall 18 may have other dimensions and configurations, and the lower portion 32 need not be fully recessed within the upper portion 30. Thus, in the second position illustrated in Figure 1B, the height of the end wall 18 is substantially reduced to enable ease of access by consumers to the contained consumer-products, when the container 10 is situated on shelving in a retail outlet with end wall 18 at the front.. In addition, as shown in Figures 1A to 1E, the upper 30 and lower 32 portions of end wall 18 are each shaped with a cut-out central section 34, further enabling ease of access in the second position.

When container 10 is in the second position, the upper 30 and lower 32 portions of the end wall 18 are secured in place, as described in more detail below in relation to Figures 2, 3A and 3B.

The container 10 of this embodiment is, furthermore, completely collapsible to a third, collapsed position, as illustrated in Figure 1E, in which the container 10 is substantially flat. Figure 1C shows a first stage of collapsing the container 10 from the second position, as shown in Figure 1B, and Figure 1D shows a second stage of collapsing the container 10. During the first stage, end walls 18 and 20 are released (as described in more detail below)

and folded inwardly, towards each other and the upper surface of the base 12, about their respective lower hinges, so as to lie flat against the base 12. In the second stage, side walls 14 and 16 are folded inwardly, about their respective lower hinges, towards each other to overlie the folded end walls 18 and 20. This results in the fully folded, collapsed third position shown in Figure 1E. In this collapsed configuration, multiple containers 10 can be stacked, with the peripheral rib 22 of one container being accommodated within corresponding recesses in the external surface of the collapsed side walls 18 and 20.

Figure 2 shows an interior perspective view of the corner of end wall 18 and side wall 14 in the second, merchandising position. The upper portion 30, which is slidingly mounted on a guide 26 at each end of the wall 18, overlies the lower portion 32 (not shown) of end wall 18, which is fully recessed therein. The upper portion 30 is retained in position along guide 26 by interference between the surfaces thereof, and in a vertical orientation by the action of a resiliently deformable member or spring 40, which is integrally moulded on top of the lower portion 32 of end wall 18 as shown in Figures 3A and 3B, and which prevents it from rotating inwardly. Flanges 39 extending orthogonally from the bottom outer edges of side walls 14 and 14, prevent the end wall 18 from rotating outwardly. In particular, as shown in Figures 3A and 3B, the spring 40 projects upwardly above the level of the upper edge of arcuate recess 46, so as to prevent engagement of the sliding edges 42 of the upper and lower portions of end wall 18 therewith, so that the end wall 18 is unable to collapse inwardly when, for example, it is knocked by customers reaching within the container 10.

Figure 4 shows an interior perspective view of the corner of end wall 18 and side wall 14 immediately prior to the first stage of collapsing the container 10, as illustrated in Figure 1C. In particular, in order to collapse end wall 18, downward pressure is applied to the upper portion 30 of end wall 18, to

compress the spring 40 and resiliently deform the upper portion 30 to contact the lower portion 32 of the end wall 18. This enables the sliding edges 42 of the end wall 18, situated at each end of upper portion 30, and lower portion 32 contained therein, to engage in an end of arcuate recesses 46 formed in adjacent side walls 14 and 16, as shown in Figures 5A and 5B. Sliding edges 42 are adapted to slide within arcuate recess 46, so as to rotate the end wall 18 about its lower hinge, as is shown in Figures 6 and 7. It will be appreciated that the sliding edges 42, which engage the arcuate recesses 46, could be formed from the edges of just one of the upper 30 and lower 32 portions of the end wall 18.

The opposite end wall 20 is released from engagement with sidewalls 14 and 16 by releasing operation of at least one snap-fit fastening (which includes a flange 48 to retain the end wall 20 vertical, in the first position) or other conventional securing mechanism, so that both end walls 18 and 20 may be folded inwardly as shown in Figure 1C. Thereafter, sidewalls 14 and 16 may be folded inwardly, to lie on top of end walls 18 and 20, as shown in Figure 1D.

Figure 8 shows a second embodiment of the present invention, which is identical to the first embodiment, illustrated in Figures 1 to 7, except that both end walls 18 and 20 are constructed with the drop down configuration of end wall 18 of the first embodiment. In this way, in the second, merchandising position, access can be gained to the contents of the container 10 from both ends. Thus, the mechanism for dropping the upper portion 30 to overlie lower portion 32 of each of end walls 18 and 20, is as described above, as is the mechanism for collapsing the end walls 18 and 20.

Figures 9 and 10 show a third embodiment of the present invention. The container 10 of this embodiment is similar to the second embodiment, illustrated in Figure 8, such that both end walls may be lowered, but with a

modification in the mechanism for lowering the end wall from the first position to the second position.

In particular, in the first position, shown in Figure 9, and upper portion 30 of each end wall 18 and 20, is situated between sidewalls 14 and 16 above a corresponding lower portion 32. The end walls 18 and 20 are secured in place with sidewalls 14 and 16 by conventional snap-fit fastening (not shown) or other suitable mechanism. The upper portion 30 is hinged by hinge(s) 52 to pivot outwardly about the lower portion 32, as shown by the arrow in Figure 10, so that in the illustrated, second position, the upper portion 30 is folded outwardly over the lower portion 32 to lie flush therewith. As with the other embodiments, from the second position, each end wall 18, 20, comprising the folded upper 30 and lower 32 portions, can be pushed downwardly, so that formations are engaged to slide within arcuate recesses 14 in the sidewalls 14 and 16, to enable the container 10 to be collapsed, as previously described. In the illustrated embodiment, each end wall 18, 20 has a central cut-out 34' so that, in the second position, the central portion of the upper edge of each end wall 18, 20 is lower, to enable ease of access to the contents of the container 10. Other alternative designs, such as the relative proportions of the upper and lower portions of the end wall, discussed above in relation to the first embodiment, may be used in conjunction with this embodiment.

As the skilled person will appreciate, many variations and modifications can be made to the described embodiments. For example, whilst in the described embodiments the container is collapsible from the second position, in which the end wall is in a lowered position, it would be equally possible for the container to be collapsible from the first position, in which the end walls are in a raised position. In this case, the arcuate recesses would extend along the sidewalls in an arc having a larger radius of curvature and from a higher location, corresponding to the path of sliding edges of the upper portion of the end wall, when rotating about its lower hinge.

Other modifications will be readily apparent to the skilled person. It is intended to include all such variations, modifications and equivalents which fall within the scope of the present invention, as defined in the accompanying claims.

CLAIMS:

1. A container comprising a base, a pair of opposed sidewalls, and a pair of opposed end walls, wherein at least one of the end walls is configured to be lowered.

2. A container as claimed in claim 1, wherein the at least one end wall comprises an upper section and a lower section, wherein the upper section is movable between a first, raised position and a second, lowered position.

3. A container as claimed in claim 1 or claim 2, wherein in the first position, the upper section is above the lower section, and in the second position the upper section overlies the lower section.

4. A container as claimed in claim 3, wherein the at least one end wall is mounted on guides on the sidewalls and is adapted to slide between the first position and the second position.

5. A container as claimed in any one of claims 1 to 4, wherein the upper section is pivotally mounted with respect to the lower section, so as to pivot from the first position, in which the upper section is above the lower section, to a second position, in which the upper section lies adjacent to the lower section.

6. A container as claimed in any one of claims 1 to 5, wherein the at least one end wall comprises both end walls.

7. A container as claimed in any one of claim 1 to 6, wherein the at least one end wall is pivotally mounted to the base.

8. A container as claimed in claim 5, wherein the at least one end wall further comprises sliding edges, at each end thereof, for sliding within arcuate recesses formed within the first and second sidewalls when the at least one end wall is pivotally rotated inwardly.

9. A container as claimed in claim 8, wherein at least one sliding edge of the at least one end wall comprises a resiliently deformable member, which, when deformed, allows engagement of the sliding edge with an arcuate recess, but which prevents such engagement in its usual, non-deformed configuration.

10. A container as claimed in any preceding claim, wherein the container is collapsible to a substantially flat configuration.

11. A container as claimed in any preceding claim, wherein the container is formed from a plastics material.

12. A container substantially as hereinbefore described, with reference to, and as illustrated in, Figures 1 to 7, Figure 8 or Figures 9 and 10 of the accompanying drawings.

FIGURE 1A

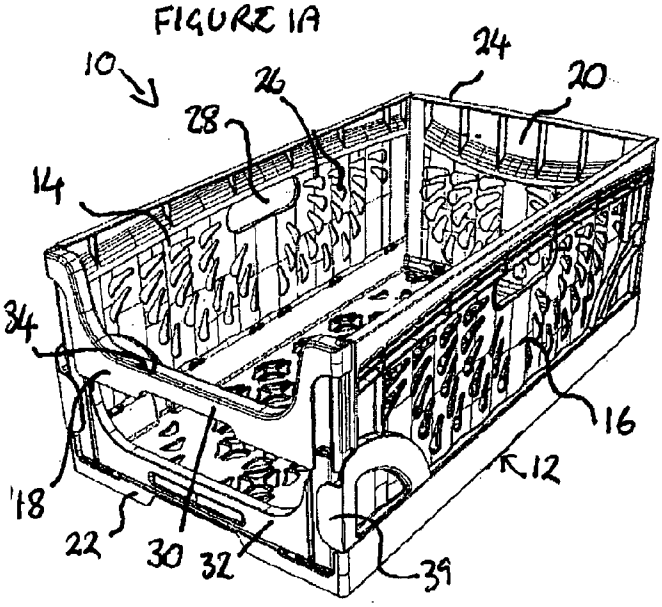


FIGURE 1B

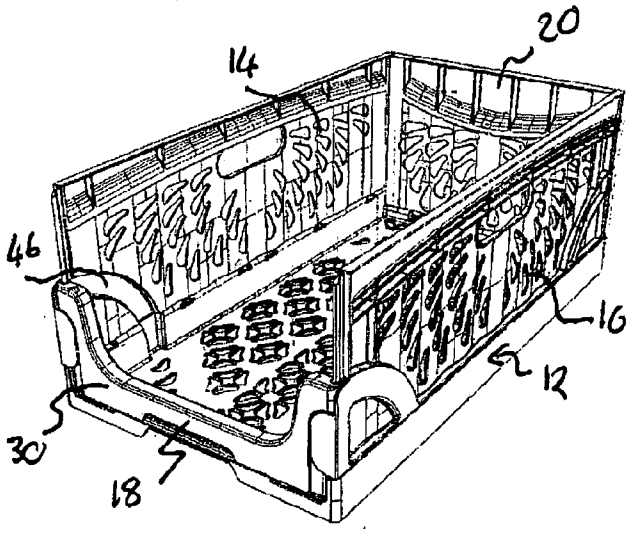


FIGURE 1C

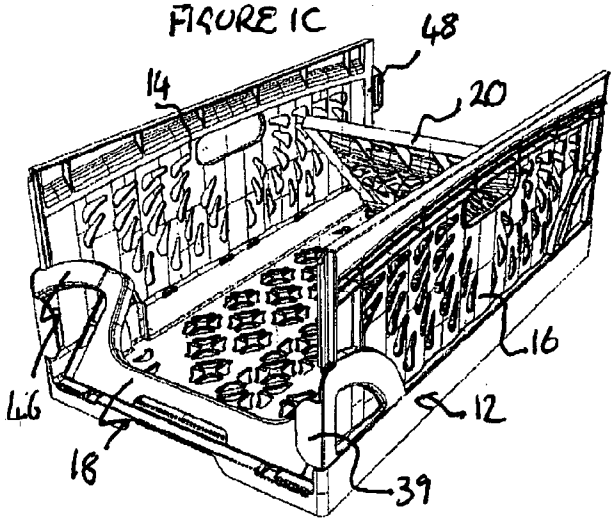


FIGURE 1D

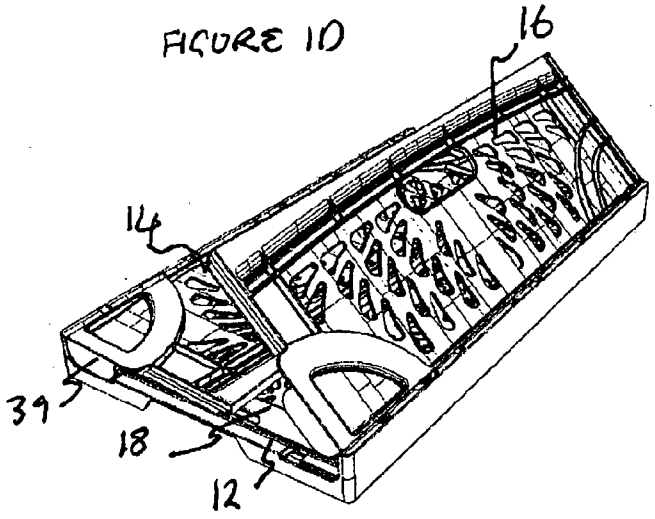


FIGURE 1E

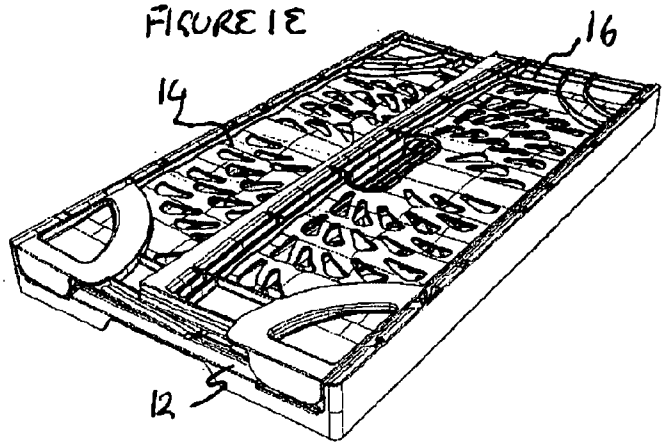


FIGURE 2

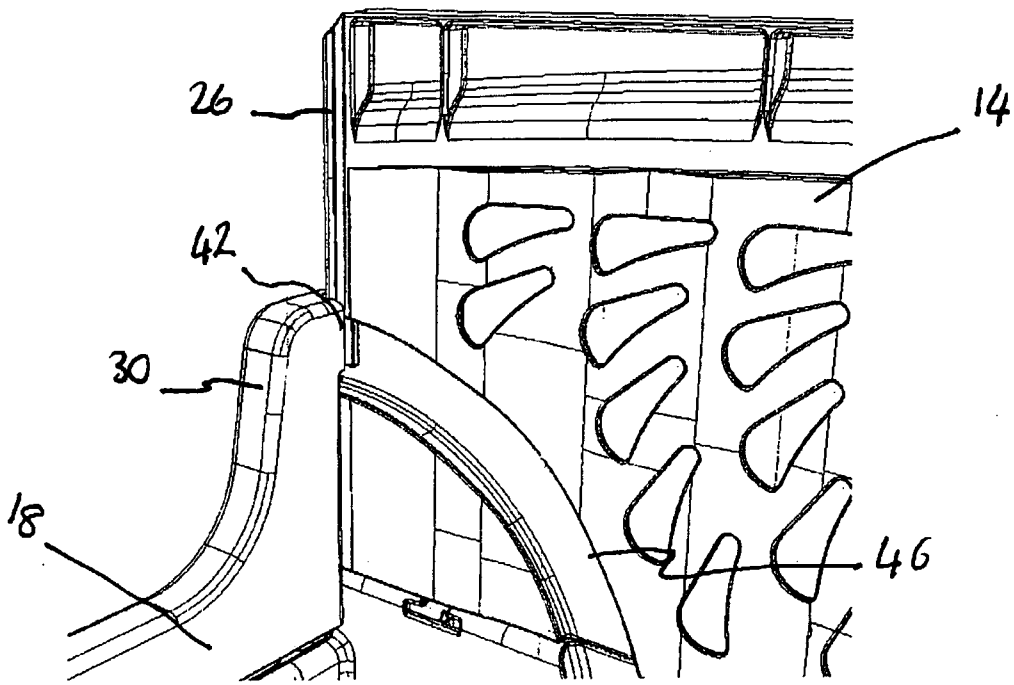


FIGURE 3A

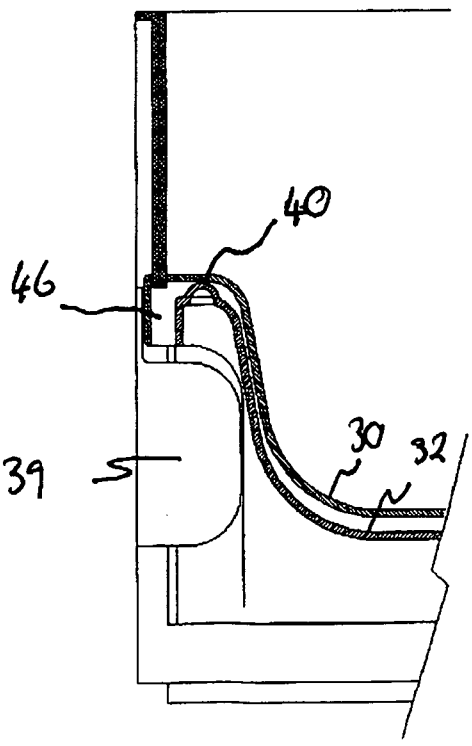


FIGURE 3B

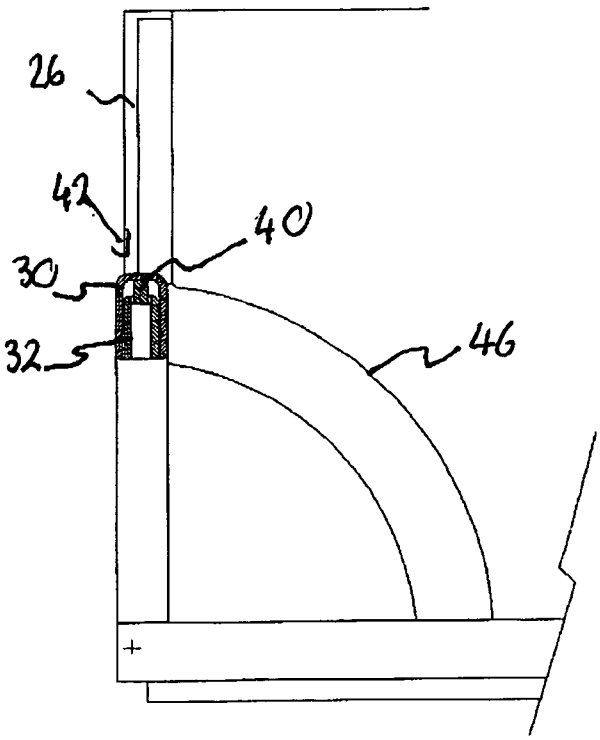


FIGURE 4

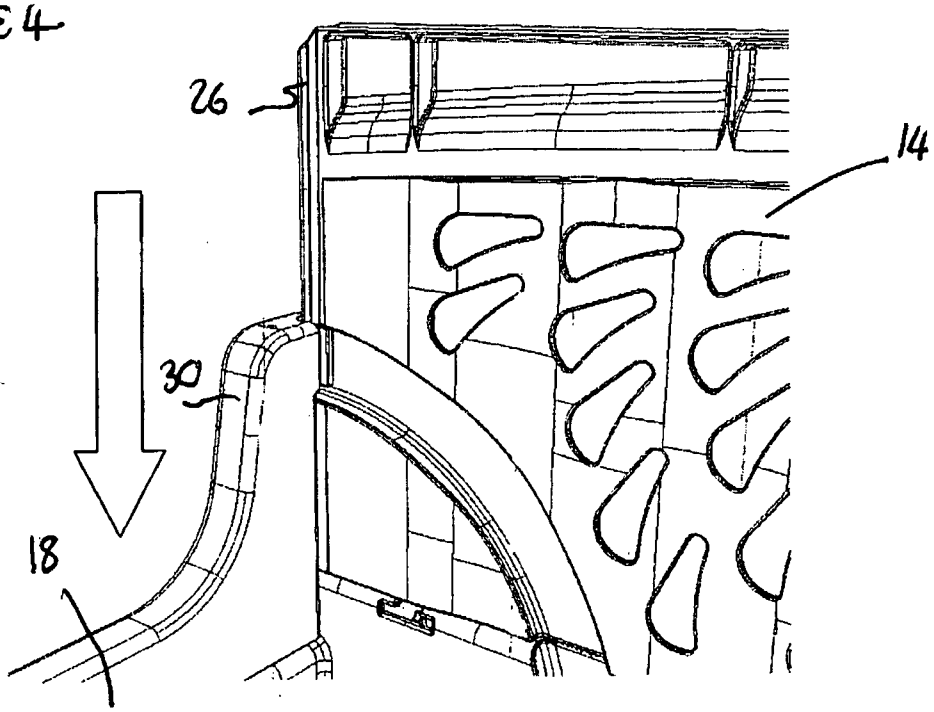


FIGURE 5A

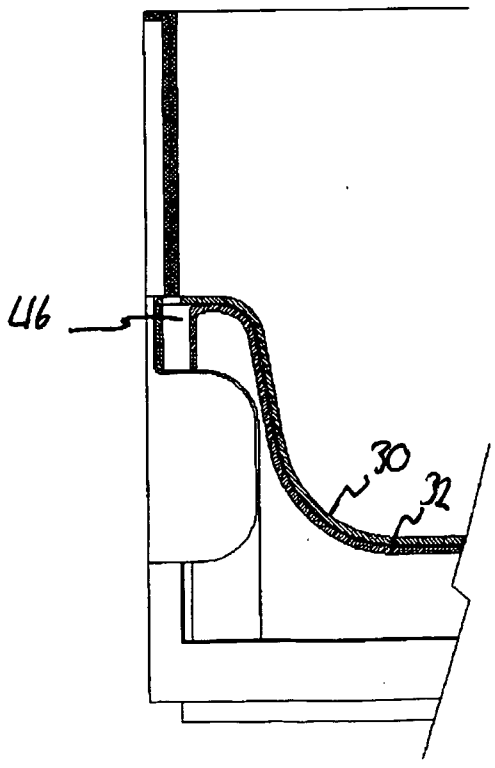


FIGURE 5B

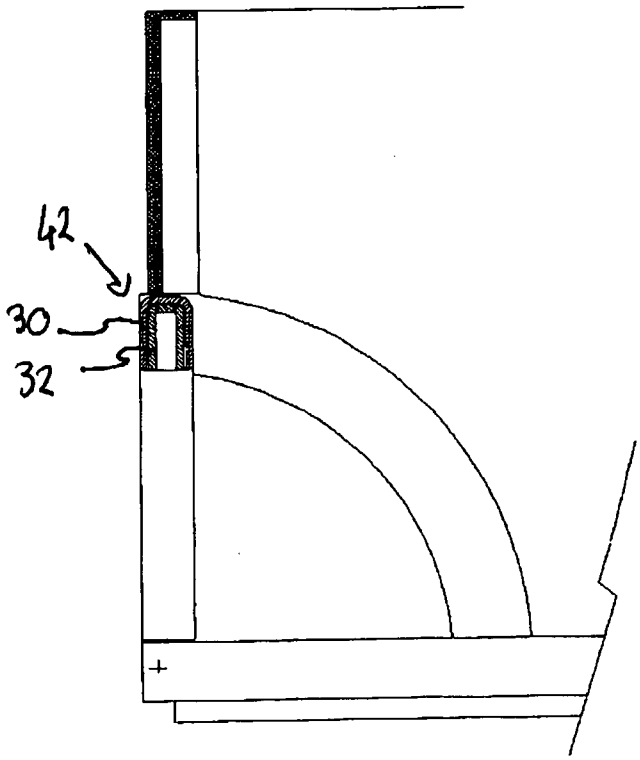


FIGURE 6

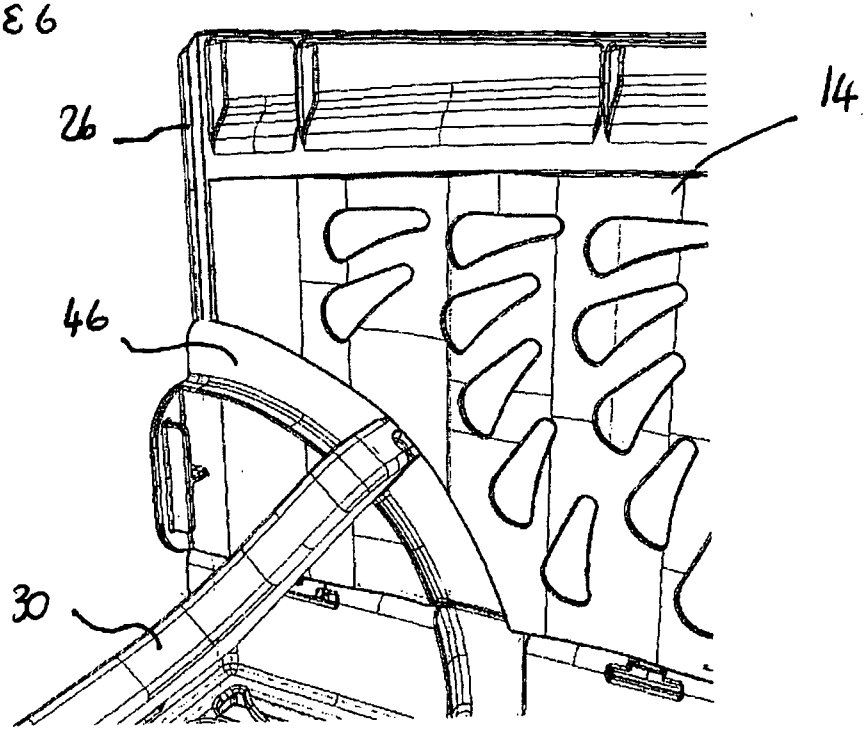
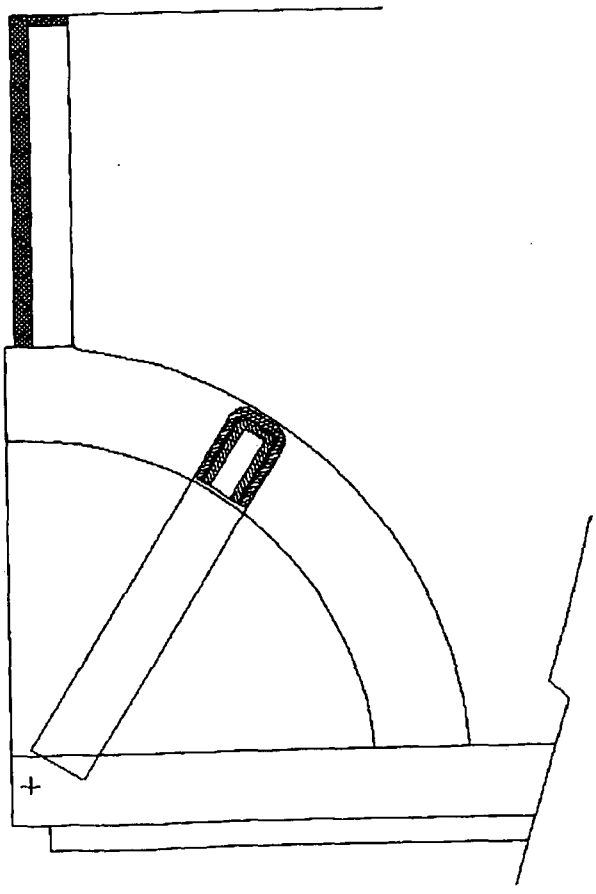


FIGURE 7



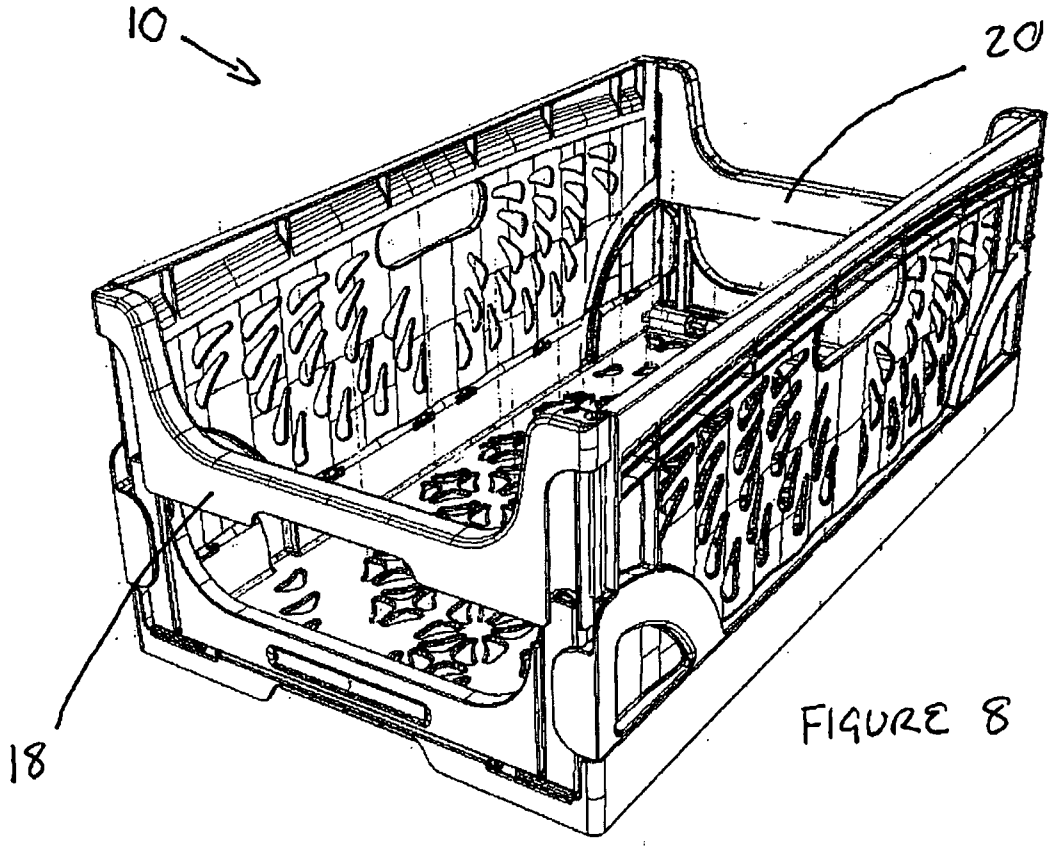


FIGURE 8

FIGURE 9

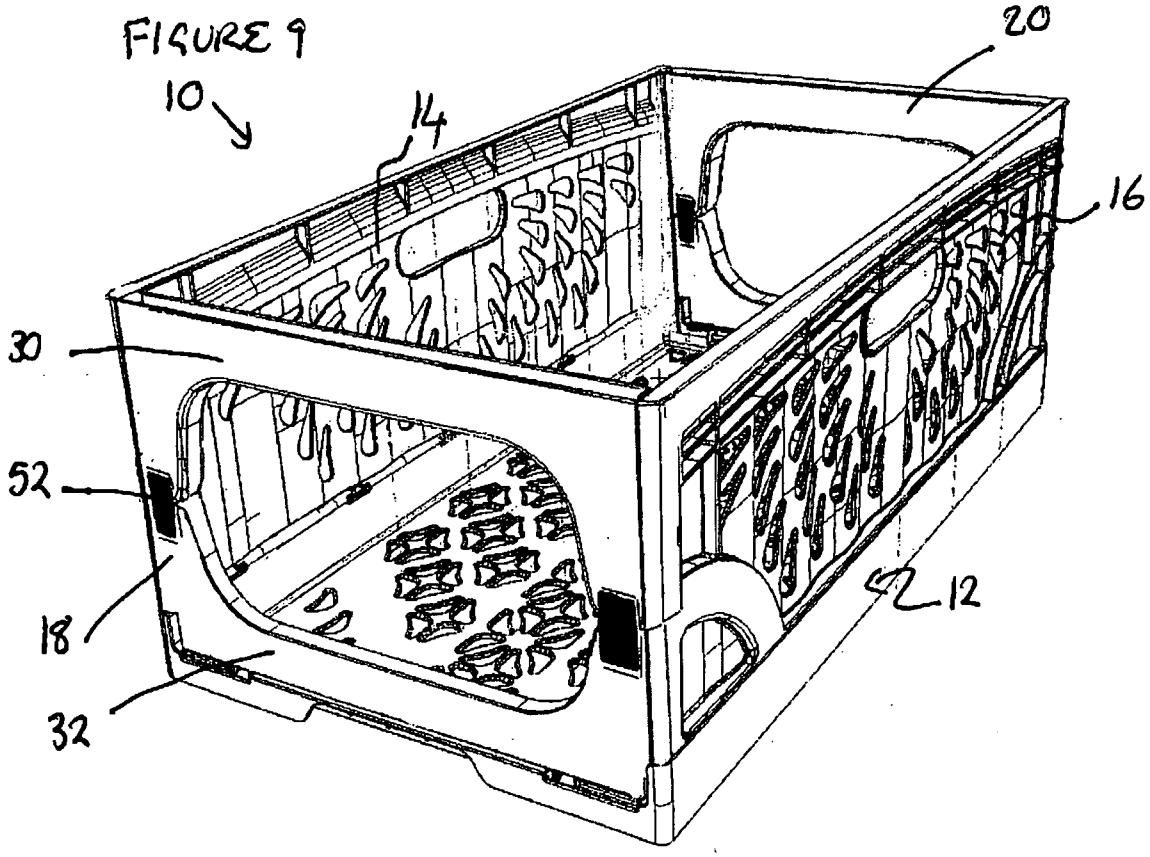
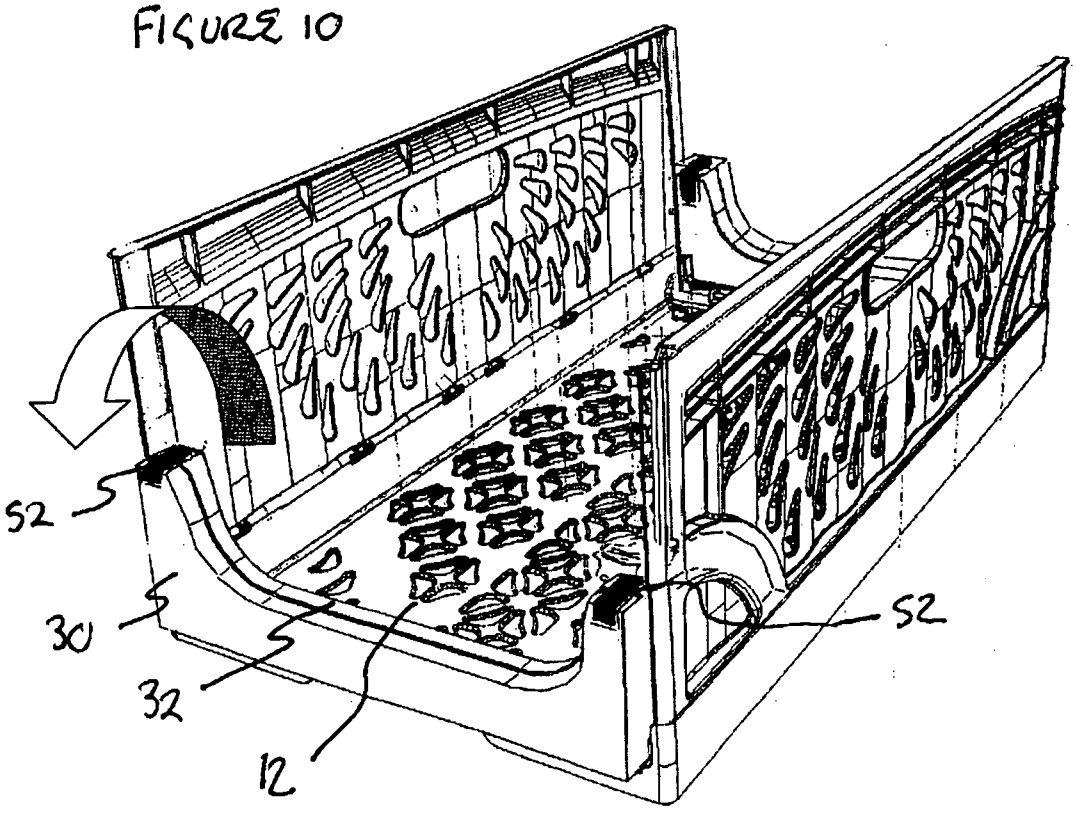


FIGURE 10



INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2008/001777

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D6/18 B65D21/02 B65D25/28

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)
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 practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	EP 1 724 198 A (POLYPLASTIC BV [NL]) 22 November 2006 (2006-11-22) paragraph [0013] - paragraph [0015]; figures 1,4	1-3,5-7, 10 4,8,9
X Y	DE 91 03 975 U1 (GOLD-EI ERZEUGERVERBUND GMBH, 6057 DIETZENBACH, DE) 26 September 1991 (1991-09-26) page 5, paragraph 1 - page 7, paragraph 1; claim 1; figure 1	1,2,6,7, 10,11 4,8,9
X	EP 0 876 963 A (ALLIBERT EQUIPEMENT [FR]) 11 November 1998 (1998-11-11) column 4, line 12 - line 57; figures 1-4	1-3,5-7, 10,11

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
19 September 2008	29/09/2008

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INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2008/001777

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 93 05 904 U1 (SCHAEFER GMBH FRITZ [DE]) 19 August 1993 (1993-08-19) page 4, line 22 - page 5, line 3 page 6, line 33 - page 7, line 9; figures 2,4	1-3,5-7, 10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2008/001777

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. [X] Claims Nos.: 12
because they relate to subject matter not required to be searched by this Authority, namely:

Rule 6.2(a) PCT

2. [X] Claims Nos.: 12
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

see FURTHER INFORMATION sheet PCT/ISA/210

3. [ ] Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. [ ] As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.

2. [ ] As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this international search reportcovers only those claims for which fees were paid, specifically claims Nos.:

4. [ ] No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

[ ] The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

[ ] The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

[ ] No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Claims Nos.: 12

Rule 6.2(a) PCT

Continuation of Box II.2

Claims Nos.: 12

Claim 12 refers to description and figures without defining any structural features of a container (Rule 6.2(a) PCT).

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.2), should the problems which led to the Article 17(2)PCT declaration be overcome.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/GB2008/001777

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1724198 A	22-11-2006	NL 1029082 C2	21-11-2006
DE 9103975 U1	26-09-1991	NONE	
EP 0876963 A	11-11-1998	DE 69826757 D1	11-11-2004
		DE 69826757 T2	02-02-2006
		ES 2226080 T3	16-03-2005
		FR 2762300 A1	23-10-1998
DE 9305904 U1	19-08-1993	DE 4408649 A1	27-10-1994