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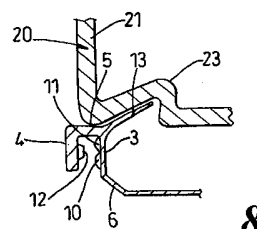
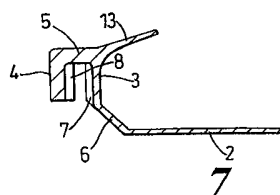
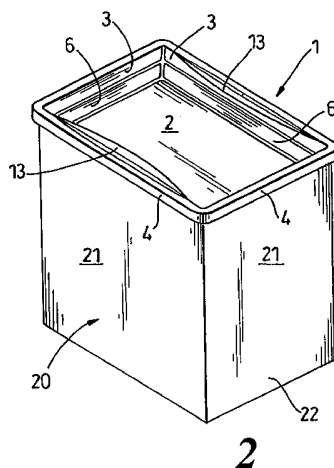
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[Continued on next page]

(54) Title: BEAMS, THEIR FORMATION AND THEIR USE AS A TRACKWAY



(57) Abstract: A container comprises a fibre board container body (20) comprising a container base and upstanding container side-walls (21), and an upper end of the container body is closed by a plastics closure (1), the closure (1) comprising peripheral inner (3) and outer (4) walls between which is received the upper margin of the body sidewalls. A container closure (1) comprises a closure panel (2) surrounded by and integral with a peripheral inner flange (3) upstanding from a margin of the panel (2), the inner flange (3) being integrally connected with an outer downward flange (4) by way of an elongate bridge (5), a downwardly-facing slot being defined between the inner and outer flanges (3, 4) of a dimension to receive as an interference fit the margin of the container body. The inner and outer flanges are provided with protrusions (7, 8; 10, 12) which grip the upper margin of the container body sidewall to improve the retention of the closure on the body.



WO 03/013966 A1

**Published:**

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

FIBRE BOARD CONTAINER WITH PLASTIC CLOSURE

The present invention relates to containers and container closures. The containers are primarily for food items but could have other uses.

According to one aspect of the invention a container comprises a fibre
5 board container body comprising a container base and upstanding
container sidewalls, and the upper end of the body is closed by a plastics
closure, the closure comprising peripheral inner and outer walls between
which is received the upper margin of the body sidewalls.

The container body is preferably formed of waxed fibre board and is
10 conveniently of similar construction to conventional waxed board drinks
containers, such as milk cartons, except that instead of a gabled upper
end, the sidewalls terminate in a substantially straight upper edge. An
advantage of this is that the container bodies may be handled on existing
machines intended for handling conventional waxed board container
15 bodies.

According to a second aspect of the invention a container closure
comprises a closure panel integral with a peripheral inner flange
upstanding from the margin of the panel, the inner flange being integrally
connected with an outer downturned flange by way of an elongate bridge,
20 a downwardly-facing slot being defined between the inner and outer
flanges of a dimension to receive as an interference fit the margin of a
container body of fibre board or the like.

Thus, the inner and outer flange together with the annular bridge define a
downwardly-opening peripheral slot to receive the upper margin of the
25 container sidewalls. Although the interference fit may be arranged to be
airtight, it will sometimes be desirable to provide a foil seal across the

mouth of the container body to make the container airtight. The foil seal will be pierced or removed in use to provide access to the contents.

Although the closure may be intended to be removable from and possibly replaceable on the container, the closure may be provided with an
5 openable dispensing aperture for dispensing contents of the container, or the container body may be perforated to allow removal of the upper margin of the sidewalls whilst attached to the closure, or the container body may be provided with a dispensing outlet, such as a spout attachment.

10 At least one of said inner and outer flanges may be provided with one or more protrusions which are directed towards the other flange for enhancing the gripping action exerted on the upper margin of the container body and/or to improve sealing of the closure with the sidewalls where this is desired.

15 In one embodiment a plurality of protrusions is provided, spaced-apart around the closure margin, some of said protrusions being provided on the inner flange and others being provided on the outer flange.

Preferably protrusions on the inner flange are staggered from the protrusion on the outer flange in order to provide an increased gripping
20 action on the body margin.

The protrusions may be in the form of vertical ribs. Alternatively, or in addition, one or more ribs extending horizontally on the inner or outer flange may be provided.

The container body and the closure are preferably of rectangular outline in plan. Accordingly they may be of square shape in plan or of oblong-rectangular shape.

5 Opposite sides of the closure are preferably provided with tabs which extend generally from the bridge towards the centre of the panel and are positioned above the panel. Such tabs can be engaged by a pick-and-place mechanism in handling of the closures. This means that the central region of the panel may carry raised identification material such as a word or logo. Normally this cannot easily be accommodated because a
10 pick-and-place mechanism employing a suction head cannot easily seal with the central region of the panel.

Alternatively, or in addition, the tabs may be used as handles for assisting in removal of the closure from the container body.

In order to facilitate stacking of closed containers, the closure may be
15 provided with one or more upstanding walls that are adapted to engage with the lower part of the sidewalls of the overlying container body.

In one preferred construction the closure is provided with a pair of upstanding walls depending from the opposite sides of the closure that are not provided with said tabs, and the bases of the container bodies are
20 provided with additional folds that are adapted to engage with the tabs in order to locate a stacked container in the direction parallel to the closure margins provided with said upstanding walls.

Some container closures in accordance with the invention will now be described, by way of example only, with reference to the accompanying
25 drawings in which:-

Figure 1 is a plan view of a first closure in accordance with the invention, the closure being of oblong-rectangular shape in plan;

Figure 2 is a perspective view of the closure of **Figure 1**, as seen from above and secured on a waxed fibre board container body;

5 **Figure 3** is an underplan view of the closure of **Figure 1**;

Figure 4 is a side-elevation of the closure of **Figure 1**;

Figure 5 is a section on the line 5-5 of **Figure 1**;

Figure 6 is a section on the line 6-6 of **Figure 1**;

10 **Figure 7** is a schematic enlargement of the left hand portion of **Figure 6**;

Figure 8 is a view similar to **Figure 7** but of a modification having a different configuration of ribs, and showing the location of a folded container base on tabs of the closure;

15 **Figure 9** is a perspective view similar to **Figure 2** but of a modification which includes a pair of stacking walls; and

Figure 10 is a cross-sectional partial view on the line 10-10 of **Figure 9**.

20 As shown in **Figures 1 to 7**, an injection-moulded plastics closure 1 is of oblong-rectangular plan shape, and comprises a rectangular base panel 2 surrounded by an inner vertical flange 3, and an outer vertical peripheral flange 4, a bridging strip 5 connecting the upper edges of flanges 3 and

4, and a sloping lower wall band 6 interconnecting the inner flange 3 with the base panel 2.

The outer wall of the inner flange 3 is formed with a plurality of spaced-apart vertical ribs 7, and the inner wall of the outer flange 4 is similarly
5 provided with a plurality of horizontally spaced-apart vertical ribs 8, the ribs 7 and 8 alternating with one another around the margin of the closure.

The horizontal spacing-apart of the flanges 3, 4 corresponds to the thickness of the waxed fibreboard of a body 20, Figure 2, of the
10 container, whereby the closure is a tight fit onto the upper margin of the container sidewalls, the ribs 7, 8 digging into the sidewalls to enhance the tightness of the connection.

Container body 20 is of similar construction to a conventional waxed board drinks container except for the lack of a gabled upper end.

15 This arrangement of the closure 1 can enable the upper edge of the sidewalls 21 of the body 20 to be a plain edge, i.e. without a terminal reinforcement such as a metal band.

Figure 8 shows a modified rib arrangement in which the outer wall of the inner flange 3 is formed with a pair of vertically-spaced horizontal ribs
20 10, 11, and the inner wall of the outer flange 4 is formed with a single horizontal rib 12, the ribs 10, 11, 12 each extending continuously around the margin of the closure 1. The purpose of this rib-arrangement is to improve the air-tightness of the engagement between the closure and the container body.

It will be appreciated that the rib arrangement of the closure of Figure 7 will generally enable the closure to be removed, and then re-applied if desired, whereas the rib arrangement of Figure 8 may make it more difficult to remove and re-apply the lid, but with potentially improved
5 sealing.

The longest sides of the closure of Figures 1 to 7 are provided with integral tabs 13 which are inclined upwards at a small angle to the horizontal and lie above the panel 2. The tabs 13 are of arcuate shape in plan. Tabs 13 can be used as finger grips for assisting removal of the
10 closure, and also can be engaged by lugs of a pick-and-place mechanism for handling of the closures.

In the modification of Figures 9 and 10, upstanding location walls 14 depend from the corner connection between strip 5 and outer flange 4, the location walls 14 being positioned to abut the lower sidewall 22 of an
15 overlying container body, when one container is stacked upon another. Location of the overlying container in the direction parallel to walls 14 may be provided by engagement of the tabs 13 with additional folds that can be provided in the base of the container body for that purpose, as indicated at 23 in Figure 8.

CLAIMS

1. A container comprising a fibre board container body (20) comprising a container base and upstanding container sidewalls (21), characterised in that an upper end of the container body is closed by a plastics closure (1), the closure (1) comprising peripheral inner and outer walls between which is received an upper margin of the body sidewalls (21).
2. The container of claim 1 wherein the container body is formed of waxed fibre board.
3. The container of claim 1 or claim 2 wherein the sidewalls terminate in a substantially straight upper edge.
4. The container of any one of claims 1 to 3 wherein the container body is perforated to allow removal of the upper margin of the sidewalls whilst attached to the closure.
5. The container of any one of claims 1 to 3 wherein the container body is provided with a dispensing outlet.
6. A container closure (1) characterised in that the container closure (1) comprises a closure panel (2) integral with a peripheral inner flange (3) upstanding from a margin of the panel (2), the inner flange (3) being integrally connected with an outer downward flange (4) by way of an elongate bridge (5), a downwardly-facing slot being defined between the inner and outer flanges (3, 4) of a dimension to receive as an interference fit the margin of a container body of fibre board or the like.

7. The container closure (1) of claim 6 wherein the inner and outer flange (3, 4) together with the elongate bridge (5) define a downwardly-opening peripheral slot to receive the upper margin of the container sidewalls.
- 5 8. The container closure (1) of claim 6 or claim 7 wherein the interference fit is arranged to be airtight.
9. The container closure (1) of any one of claims 6 to 8 further comprising a foil seal across the mouth of the container body to make the container airtight, the arrangement being such that, in use, the foil seal is
10 pierced or removed to provide access to the contents of the container.
10. The container closure (1) of any one of claims 6 to 9 wherein the closure (1) is provided with an openable dispensing aperture for dispensing contents of the container.
11. The container closure (1) of any one of claims 6 to 10 wherein at
15 least one of said inner and outer flanges (3, 4) is provided with one or more protrusions (7, 8) which are directed towards the outer flange (4) for enhancing the gripping action exerted on the upper margin of the container body and/or to improve sealing of the closure (1) with the sidewalls.
- 20 12. The container closure (1) of any one of claims 6 to 12 provided with a plurality of protrusions (7, 8) spaced-apart around the closure margin, some of said protrusions (7, 8) being provided on the inner flange (3) of the closure (1) and some of said protrusions (7, 8) being provided on the outer flange (4) of the closure (1).

13. The container closure (1) of claim 12 wherein the protrusions (7, 8) on the inner flange (3) are staggered from the protrusions (7, 8) on the outer flange (4).

14. The container closure (1) of claim 12 or claim 13 wherein the
5 protrusions are in the form of vertical ribs (7, 8).

15. The container closure (1) of any one of claims 6 to 14 further comprising one or more ribs (10, 11) extending horizontally on the inner or outer flange (3, 4).

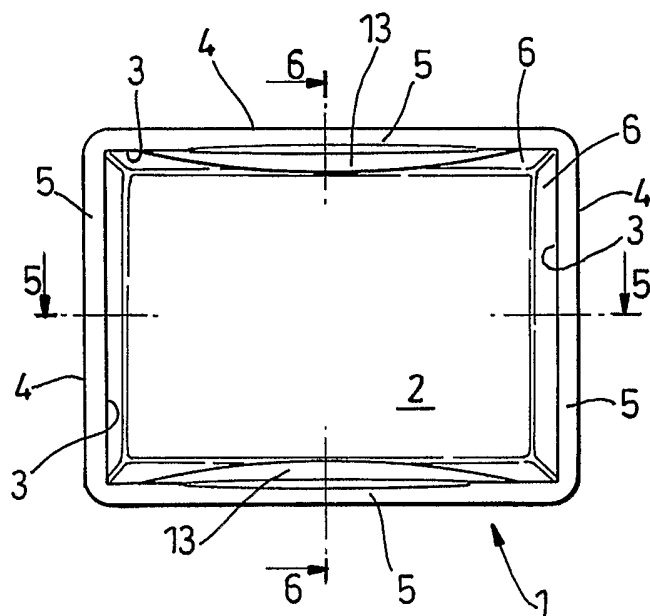
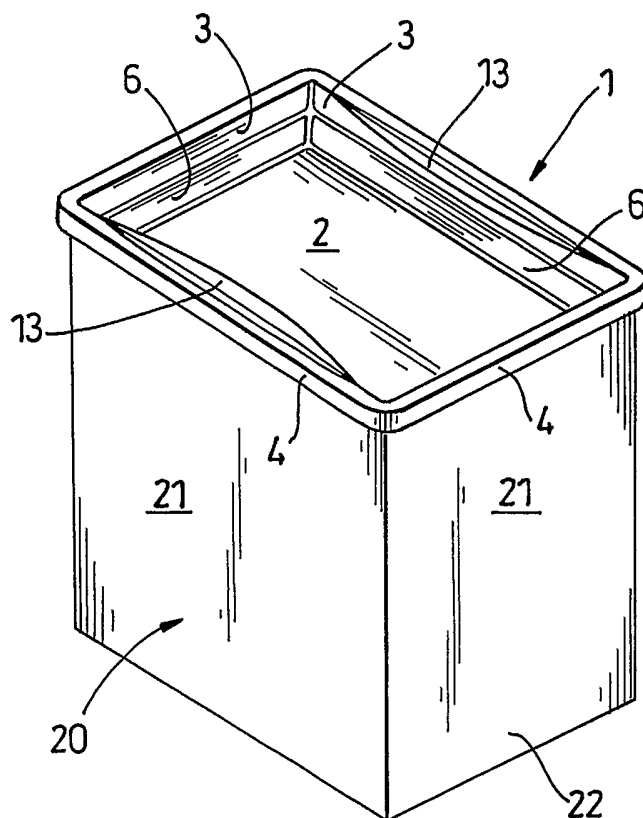
16. The container closure (1) of any one of claims 6 to 15 wherein the
10 container body and the container closure are of rectangular outline in plan.

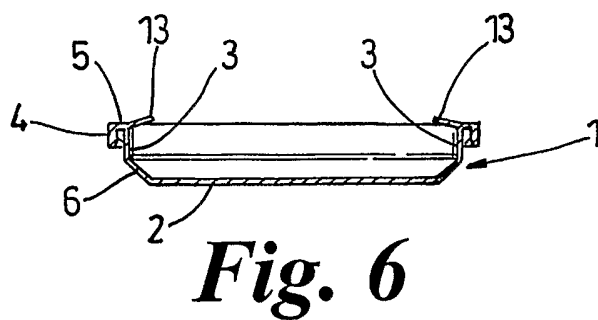
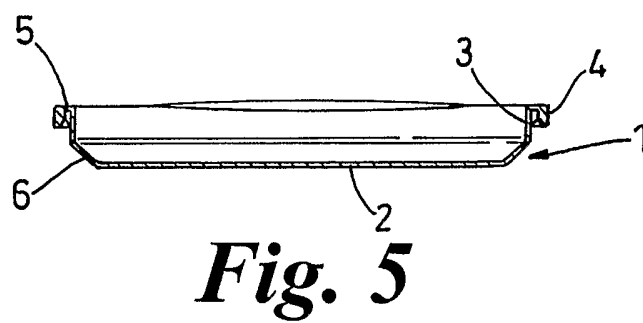
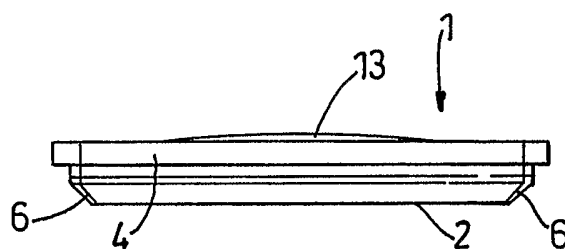
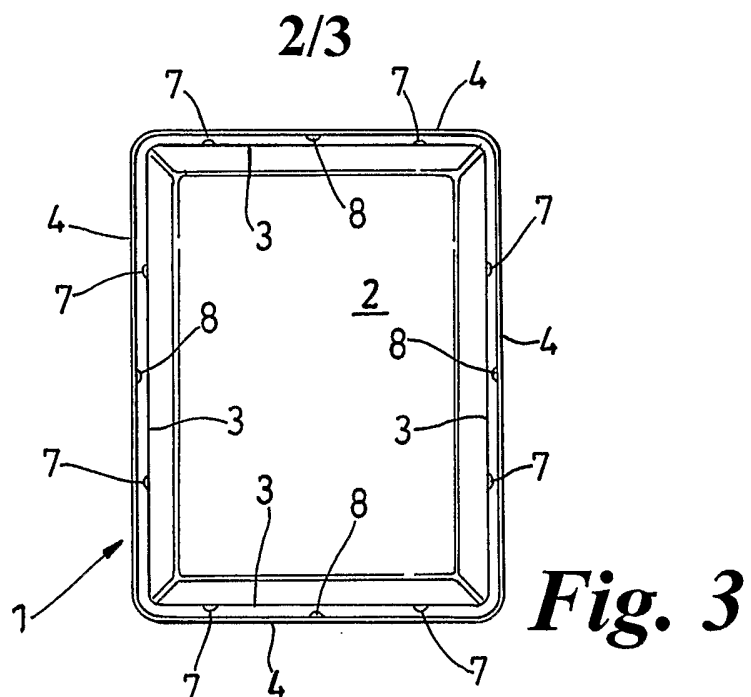
17. The container closure (1) of any one of claims 6 to 16 wherein opposite sides of the closure are provided with tabs (13) which extend generally from the bridge (5) towards the centre of the closure panel (2)
15 and are positioned above the closure panel (2).

18. The container closure (1) of any one of claims 6 to 17 wherein, in order to facilitate stacking of closed containers, the closure (1) is provided with one or more upstanding walls (14) that are adapted to engage with the lower part (22) of the sidewalls of the overlying
20 container body.

19. The container closure (1) of claim 18 as appended to claim 17, wherein the container closure (1) is provided with a pair of said upstanding walls (14) depending from the opposite sides of the container closure that are not provided with said tabs (13), and the bases of the
5 container bodies are provided with additional folds that are adapted to engage with the tabs (13) in order to locate a stacked container in the direction parallel to the container closure margins provided with said upstanding walls (14).

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**Fig. 1****Fig. 2**



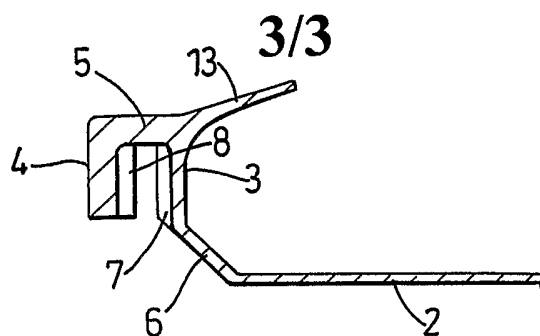


Fig. 7

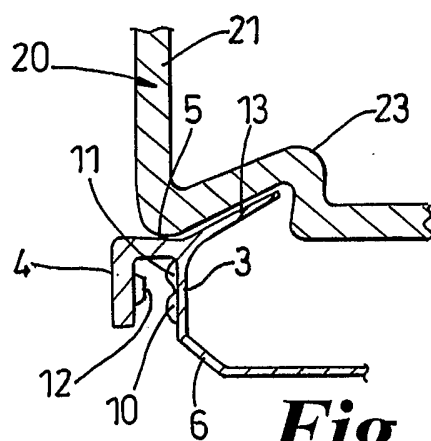


Fig. 8

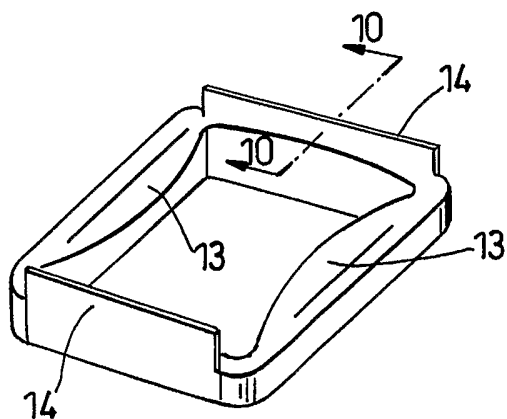


Fig. 9

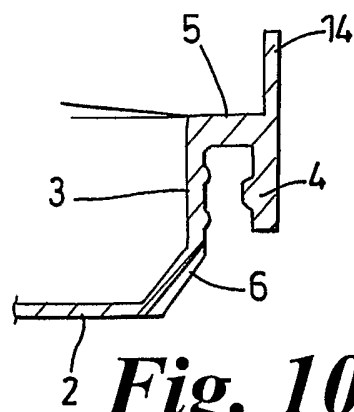


Fig. 10

INTERNATIONAL SEARCH REPORT

PCT/GB 02/03552

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B65D43/02 B65D5/12 B65D21/02 B65D3/26 B65D51/20

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)

IPC 7 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	WO 98 09881 A (C & N PACKAGING INC ;YOUNG CHRISTOPHER J (US); MARKERT BROOKS R (U) 12 March 1998 (1998-03-12) page 5, line 19 -page 6, line 1; claims 1,2,6; figures 1,5 ---	1,2,6,7, 10,16
X	US 3 899 117 A (PEYSER HARRY A ET AL) 12 August 1975 (1975-08-12) column 1, line 44 - line 48; figures 1-3 ---	1,2,6,7, 16
A	FR 1 450 149 A (HESSER AG MASCHF) 6 May 1966 (1966-05-06) page 2, left-hand column, paragraphs 4,5; claim 1; figures 1,2 ---	10
X	FR 1 450 149 A (HESSER AG MASCHF) 6 May 1966 (1966-05-06) page 2, left-hand column, paragraphs 4,5; claim 1; figures 1,2 ---	6,7
A	GB 1 325 802 A (A C I OPERATIONS) 8 August 1973 (1973-08-08) page 1, line 11 - line 20; claim 1 ---	1,2
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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

20 November 2002

Date of mailing of the international search report

29. 01. 03

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INTERNATIONAL SEARCH REPORT

PCT/GB 02/03552

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2 194 767 A (UNILEVER PLC) 16 March 1988 (1988-03-16) page 1, line 84 - line 96 -----	1,2

INTERNATIONAL SEARCH REPORT

PCT/GB 02/03552

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
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:

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 II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

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

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers 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.:

1,2,6,7,10,16

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1,2,6,7,10,16

Fibre board container comprising a plastic closure

2. Claims: 1,4

Container with perforated body

3. Claims: 1,5

Container body with dispensing outlet

4. Claims: 1,3,6,8,11-15

Closure comprising either horizontally extending ribs or vertical protrusions

5. Claims: 6,9

Container with foil seal across the mouth of the container body

6. Claims: 6,17

Container closure with tab portions

7. Claims: 6,18,19

Closure with upstanding wall portions

INTERNATIONAL SEARCH REPORT

Information on patent family members

PCT/GB 02/03552

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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US 3899117	A	12-08-1975	CA 1021289 A1 DE 2510967 A1 GB 1469367 A	22-11-1977 25-09-1975 06-04-1977
FR 1450149	A	06-05-1966	NONE	
GB 1325802	A	08-08-1973	NONE	
GB 2194767	A	16-03-1988	NONE	