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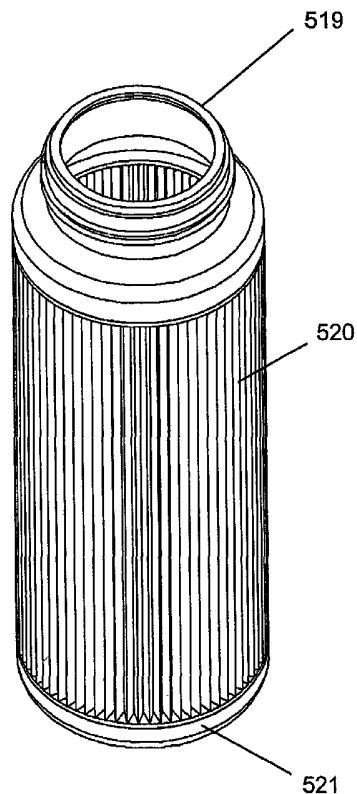
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- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK (utility model), SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

[Continued on next page]

(54) Title: PERVAPORATIVELY COOLED CONTAINERS



(57) Abstract: Disclosed are beverage and liquid containers that use pervaporation to cool a liquid or material residing in the container. The pervaporative cooling is preferably achieved by use of porous matrices (520) which allow for the passage through the matrix of small quantities of volatile components from a liquid or beverage, such as water or alcohol, the evaporation of which cools the container by virtue of the latent heat of evaporation of the liquid. Alternatively, a pervaporative sleeve (524, 525) may be used to cool a container residing within or in contact with the sleeve.

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- *with international search report*
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Declaration under Rule 4.17:

- *of inventorship (Rule 4.17(iv)) for US only*

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INTERNATIONAL SEARCH REPORT

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| International Application No PCT/US 03/17544 |
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A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 F25D7/00 B65D81/18 A41D13/005

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 F25D F25B A41D

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 | US 4 368 766 A (NOMI HARUO) 18 January 1983 (1983-01-18) column 2, line 19 - line 65; claim 1; figures 1-5 | 1-4 |
| X | ----- US 5 946 931 A (LOMAX CURTIS ET AL) 7 September 1999 (1999-09-07) cited in the application | 1,4 |
| A | abstract; figure 1 | 2,3 |
| X | ----- DE 39 02 233 A (KOECHER WALTER DR) 2 August 1990 (1990-08-02) | 1,4 |
| A | column 1, line 59 - column 2, line 2 column 2, line 44 - line 54 | 2,3 |
| | ----- -/-- | |

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 |
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| Date of the actual completion of the international search 23 September 2003 | Date of mailing of the international search report 13. 02. 2004 |
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| Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016 | Authorized officer Segerer, H |
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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/17544

| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT | | |
|--|--|-----------------------|
| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| A | US 4 380 157 A (CHRISTIANI PETER) 19 April 1983 (1983-04-19) column 2, line 52 - column 3, line 27; figures 1-3 ----- | 1,4 |
| A | CH 658 901 A (ANTOINE DUBAS) 15 December 1986 (1986-12-15) abstract; claim 1; figure 1 page 2, right-hand column, lines 27-29 ----- | 1,4 |
| A | US 2001/018096 A1 (KLARE ROBERT JOHN) 30 August 2001 (2001-08-30) abstract page 2, paragraph 29 - page 3, paragraph 31 page 8, paragraph 73 - paragraph [0074] ----- | 2,3 |

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/17544

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.:

1-4

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: 1-4

Pervaporatively cooled container with oleophobic coating

2. claims: 1,5

Cooled container with base

3. claims: 1,6

Absorbent outer layer for a cooled container

4. claims: 1,7-9

Container with pervaporative matrix comprising three layers

5. claims: 1,10

Cooled container with support ribs

6. claims: 1,11

Porous matrix made of particles

7. claims: 1,12-14

Container with insulating sleeve

8. claims: 15-20

Cooling jacket for containers

9. claims: 21-28

Cooling garment

10. claims: 29-31

Self-cooling straw

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/17544

| Patent document cited in search report | A | Publication date | Patent family member(s) | Publication date |
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