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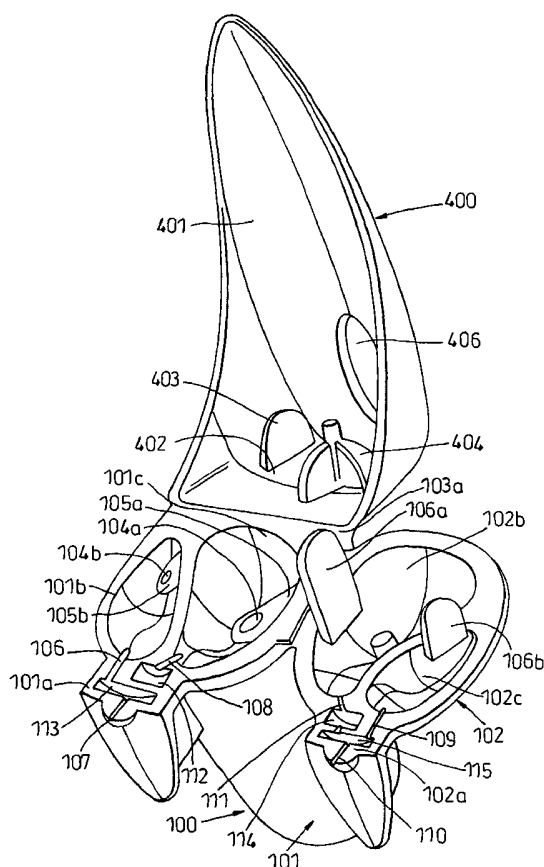
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[Continued on next page]

(54) Title: DUAL CHAMBER DISPENSER PUMP



(57) Abstract: This invention relates to pump-action nozzle devices and methods of making the same. The dispenser nozzles of the invention comprises a body which defines two or more internal chambers, both having outlets and at least one of which has an inlet (104a, 104b) through which fluid may be drawn into said chamber. The inlet comprises an inlet valve and the outlet comprises an outlet valve. Fluid is dispensed from the dispenser nozzles by applying pressure to an actuator member (400) which in turn engages a resiliently deformable/displacable portion of the body of the device that defines the chamber, thereby compressing the chamber and actuating the dispensing of fluid. The additional chamber(s) may contain further liquids or gaseous substance (e.g. air). In preferred embodiments, the actuator is an over cap or a trigger actuator.

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INTERNATIONAL SEARCH REPORT

International Application No
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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B05B11/00

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)
IPC 7 B05B

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 ^o	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 751 077 A (GUALA SPA) 2 January 1997 (1997-01-02) column 3, line 2 - column 4, line 19; figures ----- -/--	1-6,10, 17, 23-31, 33,34, 39-49, 51-55, 57, 60-63, 70,75

Further documents are listed in the continuation of box C. Patent family members are listed in annex.

^o Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

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"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

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"&" document member of the same patent family

Date of the actual completion of the international search 30 June 2004	Date of mailing of the international search report 03 SEP 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 Brévier, F
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INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB2004/000620

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 351 862 A (WEAG ERNST) 4 October 1994 (1994-10-04) column 5, line 22 - line 52 column 7, line 3 - line 12 column 7, line 41 - column 8, line 26 column 9, line 7 - line 35; figures -----	1-6,10, 17,23, 25, 27-31, 33,39, 40, 44-50, 54,55, 57-63, 70,75
X	US 5 462 208 A (LUND MARK T ET AL) 31 October 1995 (1995-10-31) column 4, line 51 - line 57 column 6, line 26 - line 40 column 6, line 49 - line 55 column 7, line 5 - line 36 column 7, line 51 - line 68; figures -----	1-6, 11-14, 18, 23-25, 27-31, 33-37, 39,41, 43-48, 57-59, 70,75
X	WO 97/27121 A (UNILEVER PLC ; UNILEVER NV (NL)) 31 July 1997 (1997-07-31) page 12, line 12 - line 21 page 13, line 1 - line 7 page 14, line 14 - page 15, line 7; figures -----	1-6,10, 17, 23-25, 27-31, 33-36, 39-50, 54,55, 57,75
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X	US 4 182 465 A (BENNETT ROBERT A) 8 January 1980 (1980-01-08) column 2, line 32 - line 40; figures 7,8 -----	70-74

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INTERNATIONAL SEARCH REPORT

Int: nal Application No
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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.
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Y	US 5 884 845 A (NELSON PHILIP L) 23 March 1999 (1999-03-23) column 6, line 16 - line 48 column 8, line 42 - line 55; figures 1,2,5-7 -----	1,7-9
A	DE 93 02 196 U (SCHUCKMANN ALFRED VON) 16 June 1994 (1994-06-16) page 9, last paragraph page 10, last paragraph - page 11, paragraph 1; figures -----	32,56
A	EP 0 253 577 A (METAL BOX PLC) 20 January 1988 (1988-01-20) column 8; figure 3 -----	32,38,56
A	US 5 147 087 A (FUCHS KARL H) 15 September 1992 (1992-09-15) abstract; figures -----	18-22

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2004/000620

Box 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. 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 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:

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.:

1-14, 17-75

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: 1-14,17-75

A pump-action nozzle device adapted to enable fluid stored in a fluid source to be dispensed through said nozzle during use, said nozzle having a body which defines a first chamber having an inlet through which fluid may be drawn into said chamber and an outlet through which fluid present in the chamber may be expelled from the nozzle, said inlet comprising an inlet valve adapted to only permit fluid to flow into the chamber through the inlet when the pressure within the chamber falls below the pressure within the fluid source by at least a minimum threshold amount and said outlet comprising an outlet valve configured to only permit fluid to flow out of the chamber and be expelled from the nozzle when the pressure therein exceeds the external pressure at the outlet by at least a minimum threshold amount, and a second chamber which comprises at least an outlet and an outlet valve, wherein at least a portion of the body which defines said first and second chambers is configured to:

- (i) resiliently deform/be displaceable from an initial resiliently biased configuration to a distended or deformed configuration in response to the application of a pressure, whereby the volume of said chamber defined by said portion of the body is reduced as said portion of the body is deformed from said initial configuration to said distended or deformed configuration, said reduction in volume causing the pressure within the chamber to increase and fluid to be ejected through the outlet valve; and
- (ii) subsequently return to its initial resiliently biased configuration when the applied pressure is removed, thereby causing the volume of the chambers to increase and the pressure therein to fall such that further fluid is at least drawn into the first chamber through the inlet valve.

2. claims: 15, 16

Pump-action nozzle with two chambers, wherein the fluid contained in the second chamber is air and wherein said air is drawn back into the second chamber through the outlet when it expands.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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