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(81) **Designated States** (*unless otherwise indicated, for every
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 AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
 CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
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 HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP,
 KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME,
 MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
 OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,
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(54) Title: DISPENSE TIP AND DISPENSER APPARATUS

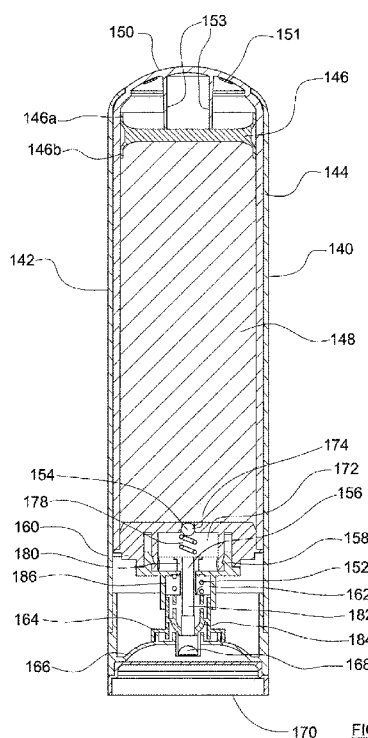


FIG. 21

(57) **Abstract:** There is disclosed a retractable or self-closing dispense tip, particularly suited for dispensing viscous liquid. A retractable dispense tip is disclosed which comprises a hollow tube configured to collapse inwards under a resilient bias to close the tube. Also disclosed is a self-closing dispense tip comprising a hollow tube, wherein an end region of the tube is configured to close the tube under a resilient bias, the end region being responsive to positive pressure internal to said hollow tube to open the tube against the resilient bias. Other proposals comprise a mesh for controllably dispensing a viscous liquid, wherein the mesh is configured to inhibit the passage through the mesh of a viscous liquid incident on the mesh under ambient pressure, and to permit the passage of the liquid through the mesh responsive to a positive pressure on the liquid. Also disclosed are dispenser apparatuses comprising such dispensing tips.

Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report (Art. 21(3))*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

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International application No
PCT/EP2017/080105

A. CLASSIFICATION OF SUBJECT MATTER INV. B05B11/00 B05B11/04 B65D47/20 B65D1/32 ADD.		
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) B05B 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 practicable, search terms used) EPO-Internal, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 951 295 B1 (GAUS DAVID J [US] ET AL) 4 October 2005 (2005-10-04) the whole document	1-4
X	WO 2007/104327 A1 (SEAQUIST LOEFFLER KUNSTSTOFFWERK GMBH [DE]; LENZ FRANZ [DE]; ZAVARELLA) 20 September 2007 (2007-09-20) the whole document	1-4
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X	WO 2012/171708 A1 (UNILEVER PLC [GB]; UNILEVER NV [NL]; UNILEVER HINDUSTAN [IN]; BUNCE MA) 20 December 2012 (2012-12-20) the whole document ----- -/-	1-4
☒ Further documents are listed in the continuation of Box C. ☒ See patent family 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 application or patent 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 2 July 2018		Date of mailing of the international search report 06/07/2018
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Rente, Tanja

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/080105

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2011/115484 A1 (VAN DER MOLEN PETER JAN [NL]; TUIL JOHANNES WILHELMUS VAN [NL]; TER HO) 22 September 2011 (2011-09-22) the whole document -----	3,4
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X	EP 2 952 446 A1 (NIPPON CLOSURES CO LTD [JP]) 9 December 2015 (2015-12-09) the whole document -----	5,6
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X	US 6 464 107 B1 (BRUGGER ANTON [DE]) 15 October 2002 (2002-10-15) figures 6a, 6b -----	7-10,12, 13 11
X	US 3 405 843 A (WATSON JR CORNELIUS B) 15 October 1968 (1968-10-15) the whole document -----	7-10,12, 13 11

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2017/080105

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. ☐ 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 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:

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 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 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.:

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

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

1. claims: 1-4

retractable, self-closing dispense tip

2. claims: 5, 6

Dispense head with a mesh

3. claims: 7-13

Dispenser with an outer and inner bottle

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2017/080105

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2017/080105

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