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(54) Title: FLUID DELIVERY ASSEMBLY FOR A SPRAY GUN

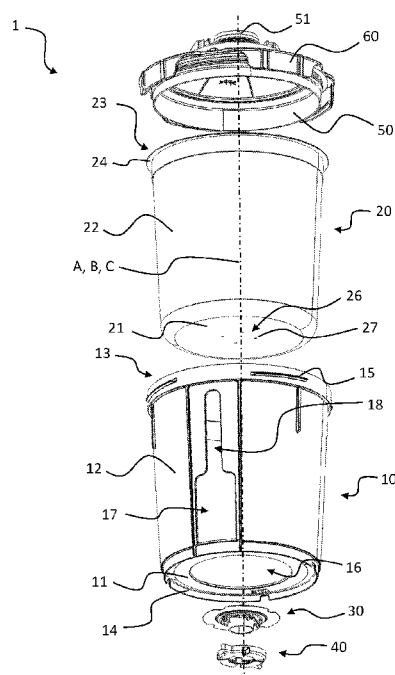


Fig. 1

(57) Abstract: The invention relates to a fluid delivery assembly (1) for a spray gun, the assembly comprising a container (20) for holding paint. The container is self-supporting and configured to collapse as fluid is dispensed via the spray gun, wherein the container comprises at least one vent (26). The invention further relates to a spray gun including such fluid delivery assembly, a method of forming the container and a thermo/vacuum forming tool to be used in such method.



UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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))*
- *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*

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A. CLASSIFICATION OF SUBJECT MATTER INV. B05B7/24 B05B9/08 B29C51/00 B29C51/10 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 B29C		
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	FR 2 982 250 A1 (CAMILLERI MICHEL [FR]; GUARINO JOSEPH [FR]) 10 May 2013 (2013-05-10)	1-3, 5-10,43, 44,47
Y	page 3, line 4 - line 7; figures 1-2	11-21,
A	page 4, line 14 - line 22	23-36,39 22,37, 38,45,46
X	----- WO 97/03758 A2 (MINNESOTA MINING & MFG [US]) 6 February 1997 (1997-02-06) page 21, paragraph 30 - paragraph 31; figures 5,14	1,2,4,9, 10,40-42
Y	----- US 2015/203259 A1 (MULVANEY CLAUDIA M [US] ET AL) 23 July 2015 (2015-07-23) cited in the application	11-21, 23-36,39
A	page 9, line 19 - line 225; figures 3-11 page 11, line 27 - line 29; claim 3 ----- -/-	22,37,38
☒ 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 16 January 2019		Date of mailing of the international search report 28/01/2019
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 Sodtke, Christof

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International 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.
A	WO 2013/134182 A1 (3M INNOVATIVE PROPERTIES CO [US]; JOSEPH STEPHEN C P [US]; GULLICKS SC) 12 September 2013 (2013-09-12) figure 3	45,46
A	WO 02/085533 A1 (3M INNOVATIVE PROPERTIES CO [US]; JOSEPH STEPHEN C P [GB]; ADAMS MIKE) 31 October 2002 (2002-10-31) figure 16	45,46
X	US 2015/090614 A1 (JOSEPH STEPHEN C P [US] ET AL) 2 April 2015 (2015-04-02)	48
Y	paragraph [0081] paragraph [0069]	49-52
Y	US 2015/151902 A1 (WOODWARD ADRIAN MICHAEL [GB]) 4 June 2015 (2015-06-04) paragraph [0023]	49,50
Y	WO 94/19172 A1 (KHASHOGGI E IND [US]; ANDERSEN PER JUST [US]; HODSON SIMON K [US]) 1 September 1994 (1994-09-01) figures 17, 21	51,52
X	US 2011/214803 A1 (HOMBURG JR FREDERICK J [US] ET AL) 8 September 2011 (2011-09-08)	66-71, 75-79, 90,91, 97-105
A	paragraphs [0017] - [0021]; figure 1	53-65, 72-74, 80-89, 92-96, 106-111
X	WO 2008/143945 A2 (UMAGINATION LABS LP [US]; DAYTON DOUGLAS C [US]; DUNCANSON DAVID [US];) 27 November 2008 (2008-11-27) figures 71B, 82	48
A	US 4 496 408 A (HAHN GRANVILLE J [US]) 29 January 1985 (1985-01-29) the whole document	48-111
A	US 6 007 884 A (NITTEL CORNELIUS [DE]) 28 December 1999 (1999-12-28) the whole document	66-111
A	WO 2017/069029 A1 (YACHIYO IND CO LTD [JP]) 27 April 2017 (2017-04-27) the whole document	66

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2018/055211

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2982250	A1	10-05-2013	NONE
WO 9703758	A2	06-02-1997	AU 6176796 A 18-02-1997 BR 9609547 A 02-03-1999 CA 2226753 A1 06-02-1997 CN 1190911 A 19-08-1998 EP 0837737 A2 29-04-1998 JP H11509472 A 24-08-1999 US 5713519 A 03-02-1998 WO 9703758 A2 06-02-1997
US 2015203259	A1	23-07-2015	AU 2013295756 A1 19-02-2015 AU 2016273976 A1 12-01-2017 BR 112015001800 A2 04-07-2017 CA 2880201 A1 30-01-2014 CN 104619424 A 13-05-2015 EP 2877293 A1 03-06-2015 JP 6306584 B2 04-04-2018 JP 2015526283 A 10-09-2015 KR 20150038209 A 08-04-2015 NZ 704144 A 28-04-2017 NZ 730364 A 27-07-2018 RU 2015102044 A 20-09-2016 SG 11201500646W A 28-05-2015 US 2015203259 A1 23-07-2015 WO 2014018710 A1 30-01-2014
WO 2013134182	A1	12-09-2013	AU 2013230170 A1 25-09-2014 CA 2866545 A1 12-09-2013 CN 104284736 A 14-01-2015 EP 2822699 A1 14-01-2015 JP 6185940 B2 23-08-2017 JP 2015512777 A 30-04-2015 KR 20140138258 A 03-12-2014 RU 2014136071 A 27-04-2016 US 2015028131 A1 29-01-2015 WO 2013134182 A1 12-09-2013
WO 02085533	A1	31-10-2002	AT 500898 T 15-03-2011 CA 2445183 A1 31-10-2002 EP 1385632 A1 04-02-2004 ES 2362646 T3 08-07-2011 JP 4927810 B2 09-05-2012 JP 2005506171 A 03-03-2005 JP 2009131845 A 18-06-2009 WO 02085533 A1 31-10-2002
US 2015090614	A1	02-04-2015	US 6820824 B1 23-11-2004 US 2004256484 A1 23-12-2004 US 2004256485 A1 23-12-2004 US 2006151630 A1 13-07-2006 US 2006157589 A1 20-07-2006 US 2008054087 A1 06-03-2008 US 2009166443 A1 02-07-2009 US 2011266368 A1 03-11-2011 US 2012256010 A1 11-10-2012 US 2013256424 A1 03-10-2013 US 2015090614 A1 02-04-2015

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2018/055211

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
US 2015151902	A1	04-06-2015	CN	104507661 A		08-04-2015
			EA	201492107 A1		29-05-2015
			EP	2874796 A1		27-05-2015
			ES	2556908 T3		20-01-2016
			JP	6158326 B2		05-07-2017
			JP	2015524775 A		27-08-2015
			US	2015151902 A1		04-06-2015
			WO	2014012731 A1		23-01-2014
WO 9419172	A1	01-09-1994	AT	223297 T		15-09-2002
			AU	683249 B2		06-11-1997
			BR	9405730 A		28-11-1995
			CA	2156050 A1		01-09-1994
			CN	1099711 A		08-03-1995
			CN	1250736 A		19-04-2000
			CN	1403349 A		19-03-2003
			DE	69431293 D1		10-10-2002
			DE	69431293 T2		30-04-2003
			EP	0686082 A1		13-12-1995
			IL	108671 A		16-08-1998
			JP	H08507035 A		30-07-1996
			KR	100309418 B1		17-12-2001
			NZ	263022 A		24-11-1997
			WO	9419172 A1		01-09-1994
			ZW	2894 A1		04-05-1994
US 2011214803	A1	08-09-2011	FR	2957019 A1		09-09-2011
			US	2011214803 A1		08-09-2011
WO 2008143945	A2	27-11-2008	NONE			
US 4496408	A	29-01-1985	NONE			
US 6007884	A	28-12-1999	AU	726920 B2		23-11-2000
			DE	19618328 A1		13-11-1997
			JP	H1052856 A		24-02-1998
			US	6007884 A		28-12-1999
WO 2017069029	A1	27-04-2017	CN	108136691 A		08-06-2018
			EP	3366459 A1		29-08-2018
			JP	6334070 B2		06-06-2018
			JP	WO2017069029 A1		14-06-2018
			US	2018311885 A1		01-11-2018
			WO	2017069029 A1		27-04-2017

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2018/055211

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: 1-47

Collapsible container with a vent

2. claims: 48-111

Forming Container with a molding tool
