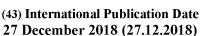
(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau







(10) International Publication Number WO 2018/236846 A3

(51) International Patent Classification:

A61M 39/26 (2006.01) **A61M 5/168** (2006.01) A61M 39/10 (2006.01)

(21) International Application Number:

PCT/US2018/038248

(22) International Filing Date:

19 June 2018 (19.06.2018)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

15/629,000 21 June 2017 (21.06.2017) US 15/628,990 21 June 2017 (21.06.2017) US

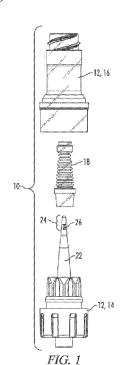
15/901,741

21 February 2018 (21.02.2018) US

- (71) Applicant: FRESENIUS KABI DEUTSCHLAND GMBH [DE/DE]; Else-Kroner-Strasse 1, D-61352 Bad Homburg (DE).
- (72) Inventors: RYAN, Dana Wm.; 2208 Chadwick Court, Mt. Juliet, Tennessee 37122 (US). RYHERD, Anthony E.; 185 Wellington Drive, Austin, Texas 78737 (US). KAISER, James M.; 6613 Alberta Cove, Austin, Texas 78739 (US).

- (74) Agent: KOLOMAYETS, Andrew, G.; COOK ALEX LTD, 200 West Adams Street, Suite 2850, Chicago, IL 60606 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, 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, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, 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, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, 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).

(54) Title: NEEDLELESS IV INJECTION PORT



(57) **Abstract:** An injection port assembly comprises a body having a first mating structure and a second mating structure coupled together. A resilient barrier is received within the body and compressible between a less compressed first position in which fluid flow through the injection port assembly is blocked, to a more compressed second position in which fluid flow through the injection port assembly is permitted. A hollow cannula is coupled to the first mating structure. The hollow cannula has a distal end portion configured to extend through the resilient barrier when the resilient barrier is in the more compressed second position. The hollow cannula is opaque and both the second mating structure and the resilient barrier are transparent, so that any fluid leakage into the internal cavity of the resilient barrier is visible through the resilient barrier and the second mating structure against an opaque background provided by the opaque cannula.



Published:

- with international search report (Art. 21(3))
 before the expiration of the time limit for 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))
- (88) Date of publication of the international search report: 25 April 2019 (25.04.2019)

INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

A61M 39/26(2006.01)i, A61M 5/168(2006.01)i, A61M 39/10(2006.01)i

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)
A61M 39/26; A61M 39/22; A61M 39/24; A61M 5/158; A61M 5/32; F16K 51/00; F16L 29/00; A61M 5/168; A61M 39/10

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) eKOMPASS(KIPO internal) & Keywords: connector, barrier, transparent, opaque, cannula

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 7530546 B2 (RYMED TECHNOLOGIES, INC.) 12 May 2009 See claim 1; fig. 1, 2, 21.	1-21
Y	ICU Medical, Inc., Investor Presentation (NASDAQ:ICUI), 2016, [retrieved on 2019-02-20]. Retriedved from the Internet: <url. 23e38cdf-1888-4fe4-9246-852a61f03ed3="" https:="" ir.icumed.com="" static-files=""> See internal page 8.</url.>	1-21
A	US 2011-0282302 A1 (ICU MEDICAL, INC.) 17 November 2011 See the whole document.	1-21
A	CN 106031807 A (LILY MEDICAL CORPORATION) 19 October 2016 See the whole document.	1-21
A	ICU Medical Inc., RE: MicroClave & Y-Clave Housing Component Enhancement, 2016, [retrieved on 2019-02-19]. Retriedved from the Internet: <url. https:="" microclave+housing+change+notification+2018.pdf="" msd+images="" msd-web="" product+updates="" s3.amazonaws.com="" userfiles=""> See the whole document.</url.>	1-21

	Further docu	nents are listed	in the cont	inuation 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 05 March 2019 (05.03,2019)

Date of mailing of the international search report 05 March 2019 (05.03.2019)

Name and mailing address of the ISA/KR



International Application Division Korean Intellectual Property Office 189 Cheongsa-ro, Seo-gu, Daejeon, 35208, Republic of Korea

Facsimile No. +82-42-481-8578

Authorized officer

HAN, Inho

Telephone No. +82-42-481-3362



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2018/038248

S 7530546 B2			Publication date
	12/05/2009	AU 2005-206874 A1 AU 2005-206874 B2 BR PI0506841 A CA 2552084 A1 CA 2552084 C EP 1704355 A2 EP 1704355 B1 EP 1977149 A2 IL 176221 A IL 176221 B JP 2007-517631 A US 2005-0151105 A1 US 2006-0118749 A1 US 2009-0200504 A1 US 2012-0109077 A1 US 6994315 B2 US 8096525 B2 WO 2005-069832 A2 WO 2005-069832 A3 WO 2007-087500 A2 WO 2007-087500 B1	04/08/2005 17/03/2011 12/06/2007 04/08/2005 20/03/2012 27/09/2006 07/11/2018 08/10/2008 15/04/2010 15/04/2010 05/07/2007 14/07/2005 08/06/2006 13/08/2009 03/05/2012 07/02/2006 17/01/2012 04/08/2005 11/05/2006 02/08/2007 02/08/2007 21/08/2008
S 2011-0282302 A1	17/11/2011	US 10195413 B2 US 2015-0013809 A1 US 2015-0105737 A1 US 2016-0317798 A1 US 2018-050184 A1 US 8758306 B2 US 9192753 B2 US 9205243 B2	05/02/2019 15/01/2015 16/04/2015 03/11/2016 22/02/2018 24/06/2014 24/11/2015 08/12/2015
N 106031807 A	19/10/2016	US 9750926 B2 TW 201628671 A TW 1584837 B US 2016-0228687 A1	05/09/2017 16/08/2016 01/06/2017 11/08/2016