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(71) **Applicant: BECTON, DICKINSON AND COMPANY**
[US/US]; One Becton Drive, Franklin Lakes, NJ 07417
(US).

(72) **Inventors:** **GROSKOPF, Roger, W.**; 5 Susan Lane, Saddle Brook, NJ 07663 (US). **VEDRINE, Lionel**; 332 James Street, Ridgewood, NJ 07450 (US). **RATIGAN, Michael, C.**; 1435 York Street, Mahwah, NJ 07430 (US).

(74) **Agents:** HIGHTET, David, W. et al.; Becton, Dickinson and Company, One Becton Drive, Franklin Lakes, NJ 07417 (US).

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BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP,
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ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI,
NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU,
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(54) Title: DRUG DELIVERY DEVICE FOR DRUG SUSPENSIONS

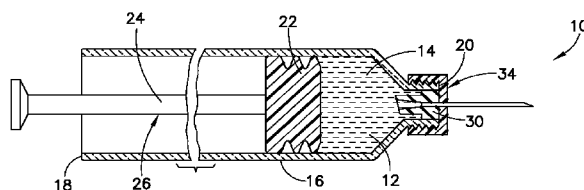


FIG. 1

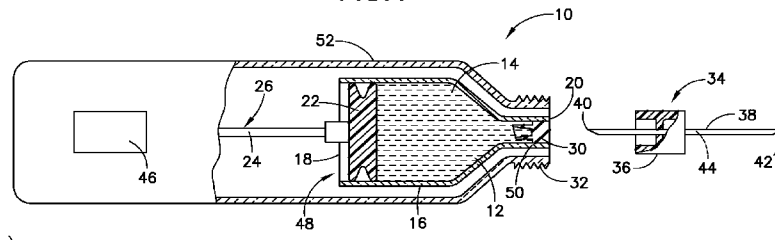


FIG. 2

(S7) Abstract: In one aspect of the subject invention, a drug delivery device is provided which includes a reservoir for containing a medicament and has a proximal end and a distal end, the medicament including a suspension of solids in a liquid carrier. Further, the drug delivery device includes a needle in fluid communication with the reservoir and having a distal end for injection into a patient, and a proximal end in the reservoir. An accumulation surface is defined at least partially about the needle, distally of the proximal end of the needle. The accumulation surface defines a distally-extending indentation which is sized and shaped to collect, during use, solids that come out of suspension. Advantageously, with the subject invention, the accumulation surface allows for solids to accumulate at a location spaced from the proximal end of the needle, thereby minimizing the possibility of clogging the needle.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/032829

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61M5/24 A61M5/28
ADD. A61M5/34

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

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	WO 2005/102423 A1 (IMPRINT PHARM LTD [GB]; CROCKER PETER JOHN [GB]; LITTLE MERVYN AUBREY) 3 November 2005 (2005-11-03)	1,3,5,6
Y	page 13, line 18 - line 24 claim 18; figures 2, 3a, 3b	4,7,8
X	----- US 5 554 125 A (REYNOLDS DAVID L [CA]) 10 September 1996 (1996-09-10) figure 10	1-3
X	----- GB 430 263 A (CHARLES WALTER BARTON) 17 June 1935 (1935-06-17) page 2, line 115 - line 125 figures 1, 2, 4	1-3
	----- -/-	



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

30 July 2013

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Name and mailing address of the ISA/

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NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Sedy, Radim

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2013/032829

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 2009/092084 A1 (BECTON DICKINSON CO [US]; GROSKOPF ROGER [US]; MOTTAHED BEHZAD D [US]) 23 July 2009 (2009-07-23)	1-3
Y	figure 2 -----	4,7,8
A	EP 1 266 669 A1 (NIPRO CORP [JP]) 18 December 2002 (2002-12-18) figure 1 -----	5,6
A	US 5 017 191 A (YAMADA HIDEO [JP] ET AL) 21 May 1991 (1991-05-21) figure 4 -----	7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/032829

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.:

1-8

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: 1-8

Drug delivery device having

a) a reservoir

b) a needle

c) an accumulation surface

(purpose: reducing the risk of clogging of needle opening)

2. claims: 9-19

Drug delivery device having

d) a barrel defining a reservoir

b) a needle

e) a plunger

f) at least one agitator

(purpose: reducing the risk of non-homogenous suspensions)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2013/032829

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2005102423	A1	03-11-2005	NONE
US 5554125	A	10-09-1996	NONE
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