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HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR,
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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,
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[Continued on next page]

(54) Title: VIAL TRANSFER AND INJECTION APPARATUS AND METHOD

(57) Abstract: Drug delivery system, injection device, transfer apparatus, vial holder and method of administering and transferring are disclosed. The system may include transfer apparatus and an injection device. The transfer apparatus may have receiving stations for a drug source, such as a vial or vial holder, and for an injection device, and fluid flow pathways for transferring drugs from the source into the injection device. The injection device may include an expandable elastic bladder and an injection cannula that is movable between a plurality of positions.

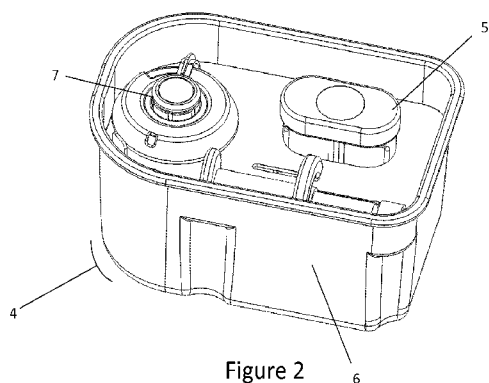


Figure 2

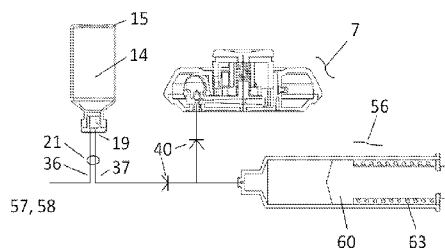


Figure 11



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INTERNATIONAL SEARCH REPORT

International application No

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A. CLASSIFICATION OF SUBJECT MATTER

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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)

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 2012/019641 A1 (HOFFMANN LA ROCHE [CH]; LINTERN RICHARD [GB]; MURRAY EDWARD [GB]; SHER) 16 February 2012 (2012-02-16)	1,23,26, 35,46, 91-93
Y	page 5, line 21 - page 6, line 5 figures 1A-1D, 2-4 page 9, line 1 - line 3	2-25, 27-34, 36-45, 56-78
X	----- GB 2 461 086 A (CILAG GMBH INT [CH]) 23 December 2009 (2009-12-23) page 11, line 11 - page 12, line 10 figures 6-8 ----- -/-	1



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

11 March 2015

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Sedy, Radim

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2014/042627

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 2012/099898 A2 (AKTIVPAK INC [US]; GENOSAR AMIR [US]) 26 July 2012 (2012-07-26)	1
A	page 29, last paragraph figure 4 page 30, last paragraph -----	33
X	WO 2008/047372 A2 (ELCAM MEDICAL AGRICULTURAL COO [IL]; RADAY LIOR [IL]; DAILY DAVID [IL]) 24 April 2008 (2008-04-24)	1
Y	page 32, line 10 - line 23	39-41
A	page 32, line 31 - page 33, line 10 page 33, line 23 - line 27 figures 27A-27K -----	11-14
Y	WO 86/01746 A1 (INFUSION SYSTEMS CORP [US]) 27 March 1986 (1986-03-27) page 2, last paragraph claims 32, 33, 44; figures 1-3 page 25, line 31 - line 33 -----	2-25, 28-34, 36,37, 56-78
Y	WO 2008/135989 A1 (MEDIMOP MEDICAL PROJECTS LTD [IL]; ZINGER FREDDY [IL]; DENENBURG IGOR) 13 November 2008 (2008-11-13) page 9, lines 3-4 figures 4, 13, 14 -----	27,38
Y	US 2004/069044 A1 (LAVI GILAD [US] ET AL) 15 April 2004 (2004-04-15) paragraphs [0108], [0133], [0134]; figures 19A, 19B, 19E, 24A-24C, 27A-27C -----	42-45

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2014/042627

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.: **91, 93**
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.:
1-46, 56-78, 91-93

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: 1-46, 56-78, 91-93

claim 1:
 drug delivery system having:
 a) transfer apparatus
 b) injection device
 claim 2:
 the injection device having
 b1) housing
 b2) arcuate expandable elastomeric bladder
 b3) manifold attached to the bladder
 b4) injection cannula moveable within the housing
 claim 56:
 b1), b2), b3) and b4)
 claim 92: method of transferring an injectable drug
 (purpose: to administer drug to an injection site)
 claim 91, 93: method of administering drug to a subject

2. claims: 47-55, 85-90

transfer apparatus having:
 a1) first receiving station having a first component access member
 a2) second receiving station having a second component access member
 a3) variable volume pressure chamber
 a4) first pathway
 a5) second pathway
 a6) fluid propulsion system
 a7) release mechanism
 claim 85:
 f) first variable volume pressure chamber
 g) second variable volume pressure chamber
 h) first receiving station for receiving a vial holder
 i) second receiving station for receiving an injection device
 j) first pathway
 k) second pathway
 l) third pathway
 m) fourth pathway
 n) volume controller
 o) first propulsion system
 p) second propulsion system
 q) first release mechanism
 r) second release mechanism
 (purpose: to prepare drug components for administration)

3. claims: 79-84

vial holder having

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

c) a housing
d) cavity within the housing
e) top
(purpose: secure positioning of vials)

4. claims: 94, 95

drug delivery system having
s) vial holder
a) transfer apparatus
b) injection device
(purpose: setting up a delivery system)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2014/042627

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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