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- (71) **Applicant (for all designated States except US):** **UCB PHARMA S.A.** [BE/BE]; Allee De La Recherche 60, B-1070 Brussels (BE).
- (72) **Inventor; and**
- (75) **Inventor/Applicant (for US only):** **MCLOUGHLIN, Martin, J.** [GB/GB]; C/o Ucb Cell Tech, 208 Bath Road, Slough SL 1 3WE, Berkshire (GB).
- (74) **Agents:** **ROPES AND GRAY INTERNATIONAL LLP** et al.; 5 New Street Square, London EC4A 3BF (GB).
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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, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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.

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**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))

- (88) **Date of publication of the international search report:**  
11 April 2013

(54) **Title:** CASSETTE UNIT FOR USE WITH AN AUTO - INJECTOR AND AUTO - INJECTOR

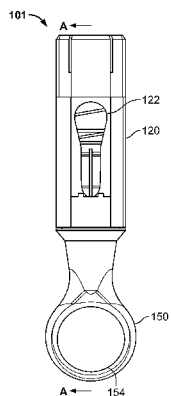


FIG. 4

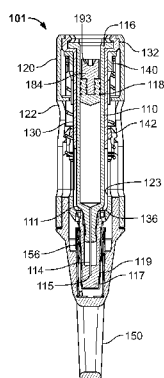


FIG. 5A

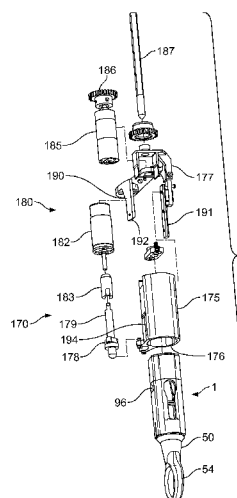


FIG. 33

(57) **Abstract:** Provided is a cassette unit suitable for use with an auto-injector having an electrically powered drive unit. The cassette unit has a housing defining a cassette unit housing cavity and a needle projection aperture. The housing cavity is arranged for receipt of a syringe suitable for use in the injected delivery of drug to a patient. The syringe has a barrel for containing a volume of a liquid drug formulation, the barrel defining an end flange at the rear end thereof and a forward shoulder at the forward end thereof. The cassette unit includes a sleeve form adapter arranged for receipt by the syringe barrel and to fit at least partly over the end flange of the syringe barrel. Accommodation of different syringe sizes within the same cassette unit geometry is achievable by selecting a sleeve form adapter tailored to the particular sizing of the barrel of each different syringe.

WO 2012/164389 A3

## INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2012/001147

A. CLASSIFICATION OF SUBJECT MATTER  
 INV. A61M5/20 A61M5/32  
 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)  
 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 2009/143255 A1 (AVANT MEDICAL CORP [US]; SLATE JOHN B [US]; BURK MICHAEL W [US]; KOERN) 26 November 2009 (2009-11-26)	1-7,10, 11,21-37
Y	paragraphs [0076], [0082] - [0086] figures 9, 11B, 12, 13	8-20
Y	----- WO 2010/147553 A1 (SHL GROUP AB ATT ANTONIO FARIETA [SE]; GIAMBATTISTA LUCIO [US]; BENDEK) 23 December 2010 (2010-12-23) page 4, line 12 - line 16 page 7, line 24 - line 32 figures 1, 3, 5	8-20
A	----- GB 2 438 593 A (CILAG GMBH INT [CH]) 5 December 2007 (2007-12-05) page 7, line 28 - line 29 figure 6	16

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 October 2012

Date of mailing of the international search report

11/02/2013

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

Sedy, Radim

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IB2012/001147

## 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.:

1-37

### 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: 1-37

Claims 1-20, 29-37:

cassette unit having:

a) cassette unit housing having

a1) a cavity and needle projection aperture

b) cassette unit housing cavity arranged (= suitable) for receipt of a syringe

c) sleeve form adapter

Claims 21-28:

Auto-injector having

cassette unit having above features a), b) and c)

d) drive unit having

d1) drive unit housing defining a docking cavity and a needle delivery aperture

d2) one or more electrically powered sources of axial drive

d3) first drive transfer element

d4) second drive transfer element

(purpose: reduce risk of damage to the syringe - especially to the flange at the rear end of syringe - during injection operation)

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## 2. claims: 38-41, 45-63

Claims 38, 39:

method of assembling an injector, having the steps of:

e) selecting a syringe barrel among

e1) plurality of of syringe barrels having different physical dimensions

f) selecting sleeve form adapter

g) interfitting syringe barrel with sleeve form adapter

h) installing syringe barrel and sleeve form adapter within cassette unit

Claims 40, 41:

injection kit having

a) cassette unit housing having

a2) inner surface

e1) plurality of of syringe barrels having different physical dimensions

i) plurality of sleeve form adapters

Claims 45-61

cassette unit having:

l) housing defining a cavity having

l1) inner diameter

m) adapter

Claim 62

l) housing defining a cavity having

l2) an inner length

m) adapter

Claim 63

l) housing means defining a cavity

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

n) adapter means  
(purpose: improving usability of cassette unit in view of different syringe sizes) One problem associated with the use of such an auto-injector having a re-useable drive unit and a separate cassette unit is that of accommodating different syringe sizes within a common (i.e. the same) cassette unit geometry.

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3. claims: 42-44

Auto-injector having  
j) disposable cassette unit  
k) reusable electro-mechanical drive unit having  
k1) a docking cavity  
k2) plunger rod  
(purpose: improve suitability of auto-injector for use by patients whose manual dexterity is so compromised)

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No

PCT/IB2012/001147

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