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13 November 2014

(54) Title: DELIVERY OF A THERAPEUTIC FLUID

(57) Abstract: Systems, methods and devices for delivering a therapeutic fluid into tissue are disclosed. The system includes an infusion set having a catheter for delivery of a dose of therapeutic fluid into a tissue via an infusion tube, a treatment element that applies treatment to the tissue proximate to the catheter, a catheter adaptor having a first transponder, a pump adaptor, in communication with the catheter adaptor, having a second transponder that communicates with the first transponder, and an infusion detection sensor that detects an infusion of the therapeutic fluid. Upon detection of an infusion of the therapeutic fluid by the infusion detection sensor, the second transponder communicates a signal indicative of the detected infusion to the first transponder causing the catheter adaptor to apply treatment using the treatment element. At least one of a strength and a duration of the treatment corresponds to a dose of the infused therapeutic fluid.
INTERNATIONAL SEARCH REPORT

INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A61 M 5/168 (2014.01)
USPC - 604/246

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)

IPC8 : A61M 5/168 (2014.01)
USPC : 604/246

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

IPC8 : A61M 5/30, 5/14, 5/142 (2014.01)
USPC : 604/19, 30, 31, 48, 65, 66, 67, 93.01, 247

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PatBase, Google Patent, Google Scholar: infuse, inject, pump, adjunct, second, coordinate, simultaneous, therapy, therapeutic, treatment, stimulation, flow, sensor, detect, monitor, wireless, rf, radio, transmit, transponder, transceiver, electrode, initiate, begin, start

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>US 2010/0152844 A1 (PESACH et al) 17 June 2010 (17.06.2010) see especially para [0015], [0022], [0023], [0147], [0150], [0168-1.0170], [0172], [0184], fig 6</td>
<td>1-3, 29-31</td>
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<td>Y</td>
<td>US 2011/0172633 A1 (ALI et al) 14 July 2011 (14.07.2011) see especially para [0029]-[0032], [0037], [0042], [0043], [0046], [0087], fig 1, 2, 4, 7</td>
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<td>A</td>
<td>US 2007/0179534 A1 (FIIRLIK et al) 02 August 2007 (02.08.2007) see whole document</td>
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<tr>
<td>A</td>
<td>WO 2012/040543 A1 (NORKUNAS) 29 March 2012 (29.03.2012) see whole document</td>
<td>1-3, 29-31</td>
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</table>

Further documents are listed in the continuation of Box C.

* 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
  "V" 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
  "Z" document member of the same patent family

Date of the actual completion of the international search
18 June 2014 (18.06.2014)

Date of mailing of the international search report
30 JUL 2014

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Authorized officer:
Lee W. Young
PCT Help Desk: 571-272-4300
PCT OSP: 571-272-7774

Form PCT/ISA/2 10 (second sheet) (July 2009)
INTERNATIONAL SEARCH REPORT

<table>
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<th>Box No. II</th>
<th>Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)</th>
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<td>This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:</td>
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<td>1.</td>
<td>☐ Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:</td>
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<td>2.</td>
<td>☐ 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:</td>
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<tr>
<td>3.</td>
<td>☒ Claims Nos.: 4-28 because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).</td>
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<th>Observations where unity of invention is lacking (Continuation of item 3 of first sheet)</th>
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<td>This International Searching Authority found multiple inventions in this international application, as follows:</td>
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<tr>
<td>1.</td>
<td>☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims</td>
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<tr>
<td>2.</td>
<td>☒ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.</td>
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<tr>
<td>3.</td>
<td>☐ 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.:</td>
</tr>
<tr>
<td>4.</td>
<td>☒ 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.:</td>
</tr>
</tbody>
</table>

**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.