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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))*

*[Continued on next page]*

(54) Title: MEDICAL VIAL ACCESS DEVICE WITH PRESSURE EQUALIZATION AND CLOSED DRUG TRANSFER SYSTEM AND METHOD UTILIZING SAME

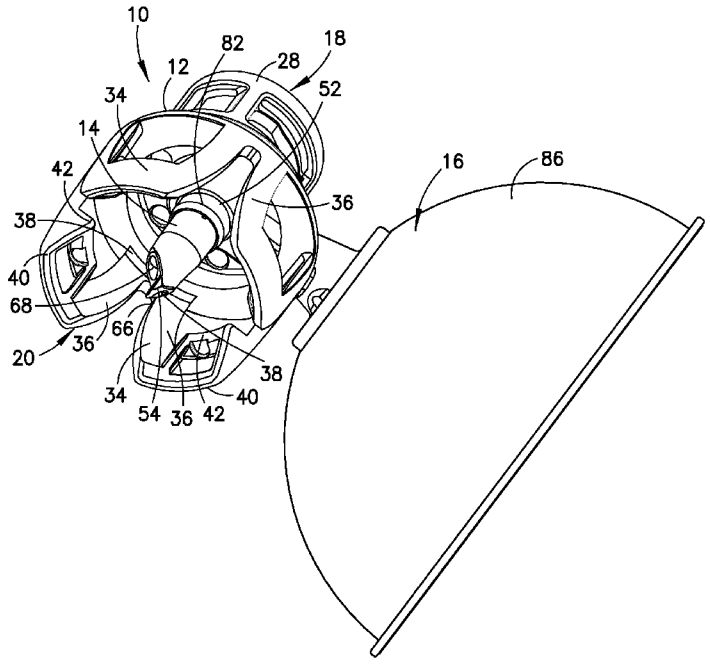


FIG.1

(57) Abstract: A vial access device includes a housing having first and second connectors. The first connector is configured to be secured to a first container and the second connector is configured to be secured to a second container. The vial access device further includes a spike member extending from the housing and having a proximal end and a distal end. The spike member defines a vent lumen and a fluid lumen spaced from the vent lumen with each of the vent lumen and the fluid lumen having a distal opening. A shape defined by a circumference of the spike member is only symmetric about one axis at a position between the proximal end of the spike member and the distal opening of the fluid lumen.

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# INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
INV. A61J1/20
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)
A61J 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<br><br>Y | FR 1 600 153 A (LABORATOIRES LABAZ)<br>20 July 1970 (1970-07-20)<br><br>figures 1,3,4,5,7 | 1,5-8,<br>19,20,<br>23-26<br>3,4,<br>9-14,21,<br>22,27-32 |
| | ----- | |
| Y | US 4 296 786 A (BRIGNOLA DOMINIC J)<br>27 October 1981 (1981-10-27)<br>column 4, lines 5-8; figures 4,5 | 9,10,27,<br>28 |
| | ----- | |
| Y | US 2002/169426 A1 (TAKAGI HIROSHI [JP])<br>14 November 2002 (2002-11-14)<br>paragraph [0037]; figures 2a,2b | 3,4,21,<br>22 |
| | ----- | |
| | -/-- | |

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

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| Date of the actual completion of the international search | Date of mailing of the international search report |
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| 3 October 2013 | 23/05/2014 |

| Name and mailing address of the ISA/ | Authorized officer |
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| European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040,<br>Fax: (+31-70) 340-3016 | Birlanga Pérez, J |

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International application No
PCT/EP2013/064847

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 2008/067511 A1 (MEDI PHYSICS INC [US]; REED JAY [US]; HELLE KEVIN [US])<br>5 June 2008 (2008-06-05)<br>figures 2,4,6 | 1,19 |
| A | US 4 834 744 A (RITSON CARL [US])<br>30 May 1989 (1989-05-30)<br>figures 1,2 | 5,20,23 |
| Y | US 2010/147402 A1 (TORNQVIST HAKAN [SE])<br>17 June 2010 (2010-06-17)<br>cited in the application<br>figures 1,2 | 11-14,<br>29-32 |

# INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2013/064847

**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.:

1-14, 19-32

**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: 1-14, 19-32

   Vial access device comprising a housing having first and second connectors, a spike member extending from the housing, the spike member defining a vent lumen and a fluid lumen, wherein a shape defined by a circumference of the spike member is only symmetric about one axis at a position between the proximal end of the spike member and the distal opening of the fluid lumen.

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2. claims: 15-18, 33, 34

   A vial access device comprising a housing having first and second connectors, a spike member extending from the housing, the spike member defining a vent lumen and a fluid lumen, wherein an outer portion of the top edges of the vent lumen and the fluid lumen are smooth and configured to substantially prevent coring of a stopper when penetrating the stopper with the spike member.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2013/064847

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| FR 1600153 A | 20-07-1970 | NONE | |
| US 4296786 A | 27-10-1981 | NONE | |
| US 2002169426 A1 | 14-11-2002 | JP 2002336355 A | 26-11-2002 |
| | | US 2002169426 A1 | 14-11-2002 |
| WO 2008067511 A1 | 05-06-2008 | EP 2101711 A1 | 23-09-2009 |
| | | US 2010076397 A1 | 25-03-2010 |
| | | WO 2008067511 A1 | 05-06-2008 |
| US 4834744 A | 30-05-1989 | IT 1226785 B | 07-02-1991 |
| | | JP 2773875 B2 | 09-07-1998 |
| | | JP H01148272 A | 09-06-1989 |
| | | US 4834744 A | 30-05-1989 |
| US 2010147402 A1 | 17-06-2010 | NONE | |