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(81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, 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, ZW.

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(54) **Title:** BLOOD SEQUESTRATION DEVICE AND METHOD

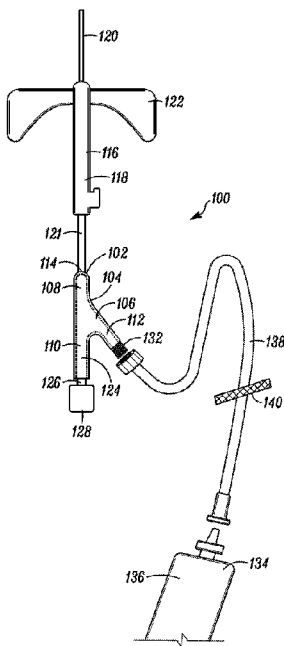


FIG. 1A

(57) **Abstract:** A blood sequestration device configured to isolate an initial, potentially contaminated portion of blood from the flow of blood of a patient, prior to directing the flow of blood to an outlet port where the blood can be accessed. The blood sequestration device including a body member having an interior wall defining a fluid conduit having a distal portion, a first proximal portion, and a second proximal portion, wherein the first proximal portion defines a sequestration chamber configured to isolate an initial portion of blood of a flow of blood, a vent path configured to enable the escape of gas initially trapped within the sequestration chamber.



**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:**

30 January 2020 (30.01.2020)

**A. CLASSIFICATION OF SUBJECT MATTER****A61B 5/155(2006.01)i, A61B 5/15(2006.01)i**

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)

A61B 5/155; A61B 010/00; A61B 5/15; A61M 25/00; A61M 25/06; A61M 39/04; A61M 5/32; A61M 5/36

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) &amp; Keywords: blood, sequestration, chamber, inlet, outlet, angle, restricted, elastomeric, valve

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                   | Relevant to claim No. |
|-----------|--|-----------------------|
| X         | US 2017-0020428 A1 (CALLIOPE SOLUTIONS, INC.) 26 January 2017<br>paragraphs [0048]-[0093]; and figures 1-15C         | 1-10                  |
| A         |  | 11-24                 |
| A         | US 2004-0068202 A1 (HANSSON et al.) 08 April 2004<br>claims 1-28; and figures 1-2C                                   | 1-24                  |
| A         | WO 2011-162772 A1 (CLEARVIEW PATIENT SAFETY TECHNOLOGIES, LLC)<br>29 December 2011<br>paragraph [0062]; and figure 9 | 1-24                  |
| A         | US 2009-0227953 A1 (TAN et al.) 10 September 2009<br>the whole document  | 1-24                  |
| DA        | US 9545495 B2 (GORAL et al.) 17 January 2017<br>the whole document   | 1-24                  |

 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

"D" document cited by the applicant in the international application

"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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

16 December 2019 (16.12.2019)

Date of mailing of the international search report

**17 December 2019 (17.12.2019)**

Name and mailing address of the ISA/KR

International Application Division

Korean Intellectual Property Office

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**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:

Group I. Claims 1-24 drawn to a blood sequestration device, characterized in that the device device configured to isolate an initial, potentially contaminated portion of blood form a flow of blood from vasculatruue of a patient.

Group II. Claims 25-48 drawn to a blood sequestration device, characterized in that the device configured to automatically retract and safely house a sharpened distal tip of a needle following the isolation of an initial portion of blood and collection of a subsequent sample of blood from a flow of blood of a patient.

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 any 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.: 1-24

**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.

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

**PCT/US2019/035978**

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