(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
02 January 2020 (02.01.2020)

WIPO | PCT

(10) International Publication Number
WO 2020/006418 A3

(51) International Patent Classification:
B04B 5/04 (2006.01) *A61M 1/02* (2006.01)
A61M 1/36 (2006.01)

(21) International Application Number:
PCT/US2019/039843

(22) International Filing Date:
28 June 2019 (28.06.2019)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/691,941 29 June 2018 (29.06.2018) US

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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.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,

(54) Title: COMPOSITE FLUID BAG SYSTEM HOLDER

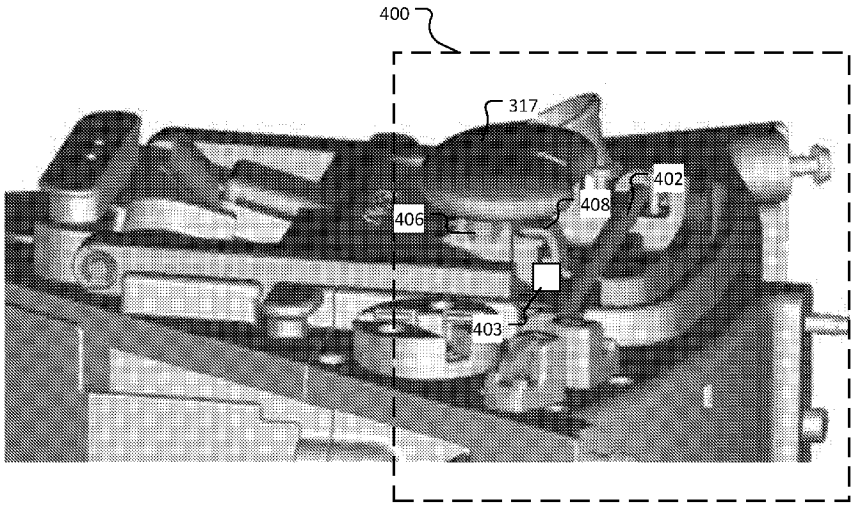


FIG. 3K

(57) Abstract: Embodiments of a system box for holding a container system and methods for separating composite fluids are described. In embodiments, a container system may be a blood container system used to collect blood, separate the blood into components, store the components, and utilize the components in patients. The system box may hold the blood container system. Processes can then be performed to separate components from the blood.

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[Continued on next page]

TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

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:
05 March 2020 (05.03.2020)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2019/039843

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.:

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

International application No
PCT/US2019/039843

A. CLASSIFICATION OF SUBJECT MATTER
INV. B04B5/04 A61M1/36 A61M1/02
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)
B04C A61M B04B B65D E05C E05B B01D

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	US 2009/115199 A1 (DALE JAMES D [US]) 7 May 2009 (2009-05-07) paragraphs 0048, 0050, 0110; figures 1, 2, 3A&E-G, 5A	1-13
X	US 2017/051542 A1 (RESKE CRAIG [US] ET AL) 23 February 2017 (2017-02-23) paragraphs 0038, 0045-0047, figures 1-5	1-13
A	US 6 270 673 B1 (BELT FLETCHER C [US] ET AL) 7 August 2001 (2001-08-07) column 10, lines 25-32; figures 1, 11	1-13
A	US 5 360 542 A (WILLIAMSON IV WARREN P [US] ET AL) 1 November 1994 (1994-11-01) column 14, lines 5-15 & 40-46; figures 21, 22	1-13

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

[X] See patent family annex.

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"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

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
24 January 2020	31/01/2020

Name and mailing address of the ISA/	Authorized officer
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Form PCT/ISA/210 (second sheet) (April 2005)

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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X	US 2016/317727 A1 (HIRABUKI MAKOTO [JP] ET AL) 3 November 2016 (2016-11-03) paragraphs 0034, 0036, 0045, 0046, 0053, 0056, 0058, 0061, 0062, 0071, 0080, 0086, 0091; figures 1-3, 5	14-40
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A	US 2003/176267 A1 (EBERLE GUNTER [DE]) 18 September 2003 (2003-09-18) paragraph 0079; figure 5	14-18
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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-13

A latch system comprising: a shaft comprising a first end and a second end; a bracket connected to the shaft along a length of the shaft; a handle connected to the bracket; a first hook connected to the first end of the shaft; and a second hook connected to the second end of the shaft.

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2. claims: 14-18

A branch connector holder, comprising: a first channel comprising a first bottom surface, wherein the first bottom surface slopes from a first end of the first channel to a second end of the first channel; and a second channel that meets the first channel at an angle, wherein the second channel comprises a second bottom surface.

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3. claims: 19-23

A system box for holding a container system, the system box comprising: an outer wall; a first chamber; a second chamber at least partially defined by the outer wall; a third chamber at least partially defined by the outer wall, wherein the first chamber is closer to an axis of rotation than at least the third chamber; a first guide member comprising a first guide channel and a space for a first valve; the first valve positioned within the space of the first guide member; and a branch connector holder adjacent the first valve and the first guide member, the branch connector holder comprising a first branch connector channel comprising a first end and a second end, wherein the second end of the first branch connector channel has a horizontal level that is substantially the same as a horizontal level of the first guide channel.

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4. claims: 24-34

A system box for holding a container system, the system box comprising: a first chamber; a second chamber at least partially defined by an outer wall, wherein the second chamber is further from the axis of rotation than the first chamber; a third chamber at least partially defined by the outer wall, wherein the third chamber is further from the axis of rotation than the first chamber; and a tubing path that holds a portion of tubing that fluidly connects a first container positioned in the first chamber to a second container positioned in the second chamber, wherein a distance between the axis of rotation and the tubing path varies from a first location of the tubing path to a second

location of the tubing path.

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5. claims: 35-40

A method of separating components from a volume of composite fluid, the method comprising: loading a bag system onto a system box, the loading comprising: positioning a first bag of a bag system into a first chamber of the system box, wherein the first bag comprises a volume of composite fluid; routing a portion of tubing that connects the first bag to the second bag along a tubing path, wherein the tubing path has a varying radius with respect to an axis of rotation, so that a first point in the tubing path has a larger radius than a second point along the tubing path; positioning a second bag of the bag system into a second chamber of the system box; positioning an inlet of the second bag of the bag system in an inlet holder; separating the composite fluid into a plurality of components; and unloading the bag system from the system box, wherein at least one of the plurality of components is stored in the second bag and the unloading comprises: removing the inlet from the inlet holder; and removing the portion of tubing from the tubing path.

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6. claims: 41-45

A system box for holding a container system, the system box comprising: a first chamber comprising a first opening; a second chamber comprising a second opening; and a tubing holder adjacent the first chamber, the tubing holder comprising a proximal end, a distal end, and a side wall defining an interior volume of the tubing holder, wherein at the proximal end, the sidewall flares outwardly away from the interior volume.

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7. claims: 46-50

A system box for holding a container system, the system box comprising: a first chamber; a second chamber at least partially defined by an outer wall, wherein the second chamber is further from the axis of rotation than the first chamber; a third chamber at least partially defined by the outer wall, wherein the third chamber is further from the axis of rotation than the first chamber; and at least one sensor that senses an adaptor positioned in the first chamber.
