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(54) Title: PERITONEAL DIALYSIS PATIENT LINE WITH STERILIZING FILTER AND DRAIN BYPASS

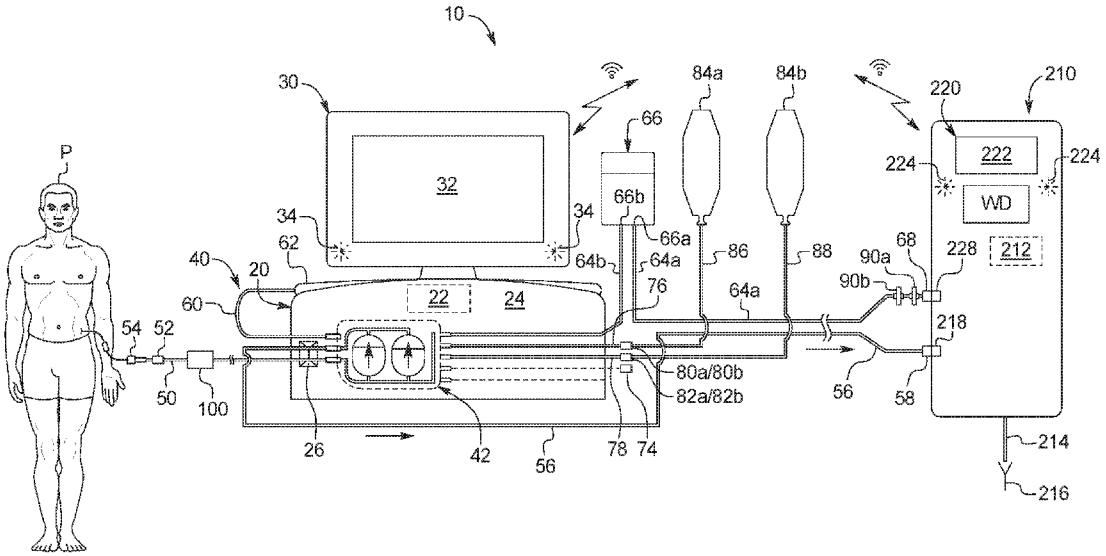


FIG. 1

(57) Abstract: A medical fluid treatment system includes a source of purified water; at least one concentrate for mixing with the water from the source to form a treatment fluid; a disposable set including a pumping portion, a concentrate line in fluid communication with the concentrate source and the pumping portion, and a patient line in fluid communication with the pumping portion, the patient line including a filter having a membrane configured to filter the treatment fluid, the filter configured such that (i) fresh treatment fluid flowing from the pumping portion towards a patient flows through the membrane and (ii) used treatment fluid flowing through the filter from the patient to the pumping portion bypasses the membrane; and a medical fluid delivery machine including a pump actuator operable with the pumping portion of the disposable set.

[Continued on next page]

WO 2020/061166 A3

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).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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 April 2020 (30.04.2020)

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2019/051685

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61M1/28 A61M1/16
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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 311 587 A (NOSE YUKIHIKO ET AL) 19 January 1982 (1982-01-19) figure 1 column 2, last paragraph - column 3, line 13 -----	1-17
A	EP 0 928 615 A1 (A SANGYO CO LTD AS [JP]) 14 July 1999 (1999-07-14) figure 2 paragraph [0012] paragraph [0029] -----	1-17
X	US 6 129 699 A (HAIGHT LEVOY G [US] ET AL) 10 October 2000 (2000-10-10) column 11, line 10 - line 19; figures 11,12 -----	18-30

☐ 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	Date of mailing of the international search report
13 March 2020	24/03/2020

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Mata Vicente, Teresa

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2019/051685

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. [X] Claims Nos.: 31-33(completely); 34-36(partially)
because they relate to subject matter not required to be searched by this Authority, namely:

Claims 31-33 and, as far as they relate to a filtering method taking place during an extracorporeal blood treatment, claims 34-36, are directed to a method of treatment of the human body by therapy and therefore fall under the provisions of Rule 39.1(iv)/Rule 67.1 PCT.

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. [X] 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.:

1-30

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.

[X] 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: 1-17

A medical fluid treatment system comprising: a source of purified water; at least one concentrate for mixing with the water from the source to form a treatment fluid; a disposable set including a pumping portion, a concentrate line in fluid communication with the concentrate source and the pumping portion, and a patient line in fluid communication with the pumping portion, the patient line including a filter having a membrane configured to filter the treatment fluid, the filter configured such that (i) fresh treatment fluid flowing from the pumping portion towards a patient flows through the membrane and (ii) used treatment fluid flowing through the filter from the patient to the pumping portion bypasses the membrane; and a medical fluid delivery machine including a pump actuator operable with the pumping portion of the disposable set. A disposable set for said system.

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2. claims: 18-30

A filter in which fluid is intended to flow in first and second directions, wherein the filter is configured to filter fluid flowing in the first direction and to not filter fluid flowing in the second direction, the filter comprising:a housing; a first fluid pathway provided by the housing for flowing fluid in the first direction;a second fluid pathway provided by the housing for flowing fluid in the second direction;a membrane positioned to filter the fluid flowing in the first direction; and a one-way valve located at an exit end of the first fluid pathway, the one-way valve positioned and arranged to prevent fluid flowing in the second direction from reaching the membrane.

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3. claims: 34-36

A fluid filtering method comprising:enabling fluid flowing from a first port of a filter to a second port of the filter to be filtered; and enabling fluid flowing from the second port of the filter to the first port of the filter to bypass filtration.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2019/051685

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