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FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL,
PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM,
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Declarations under Rule 4.17:

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

[Continued on next page]

(54) Title: REPLACEABLE COLUMN FOR PRESSURIZED LIQUID EXTRACTION SYSTEM

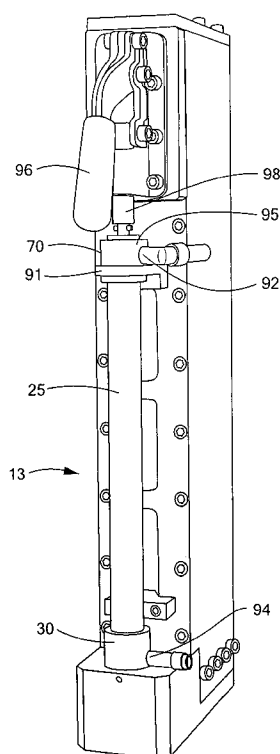


FIG. 10

(57) Abstract: A system for pressurized liquid extraction of solid samples including quick-connect, threadless columns for holding the solid sample is disclosed. A pressurized liquid extraction (PLE) module continuously performs extraction on the solid sample to yield liquid sample. The quick-connect columns include a threadless, cylindrical tube and end cap assemblies, which are structured and arranged to provide a tight interference fit with the inner surface of the annulus of the column portion and with top and bottom cup rings.



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

Published:

— *with international search report*

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27 November 2008

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US07/18466

A. CLASSIFICATION OF SUBJECT MATTER

IPC: **B65D 51/00**(2006.01);**B01D 11/02**(2006.01)

USPC: 422/102;220/803;210/635

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)

U.S. : 422/102, 68.1; 220/803, 804; 210/635

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)

Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,879,634 A (FORD) 09 March 1999 (09.03.1999), see whole document.	1, 3-5, 8-11
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Y		2, 6-7 12, 14-17
Y	US 4,861,561 A (PRITCHARD) 29 August 1989 (29.08.1989), col. 7, lines 38-54.	1
Y	US 6,783,668 B2 (SHIRKHAN) 31 August 2004 (31.08.2004), see whole document.	2, 12-19
Y	US 5,361,921 A (BURNS) 08 November 1994 (08.11.1994), see figure 2, column 3, lines 60-65.	6, 7



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:		"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
"A"	document defining the general state of the art which is not considered to be of particular relevance	"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
"E"	earlier application or patent published on or after the international filing date	"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
"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)	"&"	document member of the same patent family
"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		

Date of the actual completion of the international search

30 July 2008 (30.07.2008)

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US07/18466

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:
Please See Continuation 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 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.:

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/US07/18466

BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claims 1-11, drawn to a quick-connect replaceable column, including the technical features of a quick connect replaceable column having end caps at the ends of a hollow column portion.

Group II, claims 12-19, drawn to a system for PLE of a solid sample, including the technical features of a PLE module, a heating element, a pressure regulator, and a quick connect replaceable column.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the common technical feature of the groups is the quick connect column; however, such is known in the prior art of Pritchard (U.S. 4,861,561) or Ford (U.S. 5,879,634). See col. 7, lines 38-54. Therefor, this technical feature is not a *special* technical feature and unity is lacking.

Continuation of B. FIELDS SEARCHED Item 3:

EAST

search terms: column, cap, stopper, gripping, extraction