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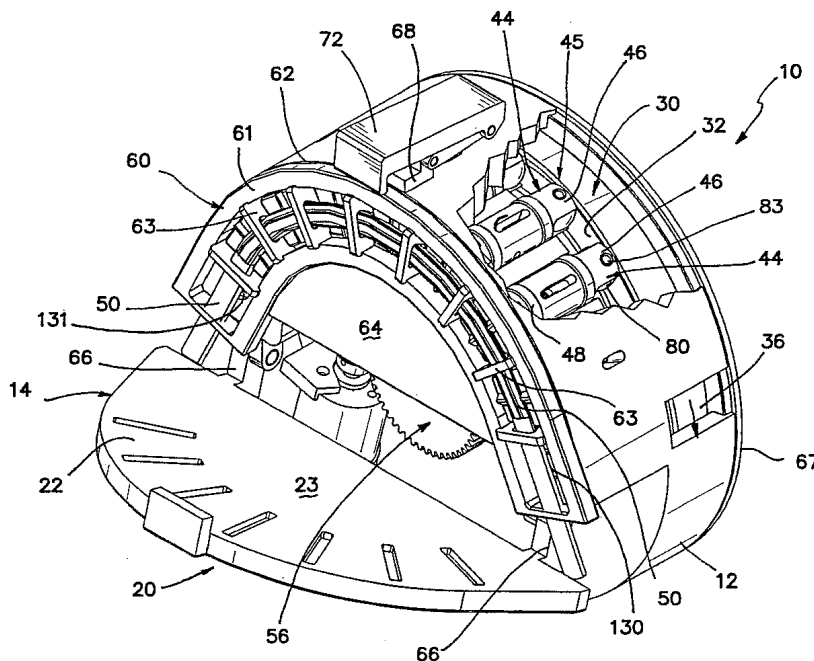
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— with international search report

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8 January 2009

(54) Title: **ROTARY AXIAL PERISTALTIC PUMPS AND RELATED METHODS**



(57) Abstract: Rotary axial peristaltic pumps, related methods and components. The rotary axial peristaltic pump generally comprises a platen having a platen surface, a tube positioned adjacent to the platen surface, cam that rotates about a rotational axis and has a cam surface that is spaced apart from the platen surface and a plurality of tube compressing fingers. The fingers move axially back and forth in sequence to sequentially compress segments or regions of the tube against the platen surface, thereby causing peristaltic movement of fluid through the tube. The fingers move back and forth on axes that are substantially parallel to the axis about which the cam rotates.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 06/33609

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - F04B 45/08 (2007.10) USPC - 417/477.1 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) IPC(8) - F04B 45/08 (2007.10) USPC - 417/477.1 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched IPC(8) - F04B 45/08 (2007.10) (see keyword below) USPC - 29/888.022; 417/477.1, 474, 476, 477.2, 477.3, 477.5, 477.6, 477.7, 477.9; 604/892.1 (see keyword below) Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PubWEST(USPT,PGPB,EPAB,JPAB); DialogPRO(Engineering); Google Scholar		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,371,732 B1 (MOUBAYED et al.) 16 April 2002 (16.04.2002) entire document especially fig 1-14, 17, col 8 ln 1-23, 34-42, 58-67, col 9 ln 1-20, 31-39, 52-65, col 10 ln 26-64, col 11 ln 1-17, col 13 ln 53-67, col 14 ln 1-29, 52-67, col 15 ln 1-30, 54-61, col 17 ln 3-20, 47-67	1-50, 57-79
Y	US 5,733,105 A (BECKETT et al.) 31 March 1998 (31.03.1998) fig 3-4, 7, col 4 ln 58-67, col 5 ln 1-7, 19-32, 46-67, col 7 ln 22-44	1-50, 57-79
Y	US 5,551,850 A (WILLIAMSON et al.) 3 September 1996 (03.09.1996) entire document especially fig 1-9, 12, col 6 ln 40-55, col 7 ln 1-4, 21-27, 50-53, 61-65, col 8 ln 45-57, col 10 ln 29-31, 58-67, col 11 ln 1-7, 32-48, col 12 ln 15-49, col 14 ln 33-59, col 21 ln 1-7, col 22 ln 23-27	2, 6-7, 11-12, 15-22, 49-50, 76-79
Y	US 6,036,459 A (ROBINSON) 14 March 2000 (14.03.2000) fig 1-2, col 3 ln 25-41, 45-50, col 4 ln 1-6, 59-61, col 5 ln 1-2	33, 38, 58
Y	US 6,547,441 B2 (KATO) 15 April 2003 (15.04.2003) fig 1-4, col 7 ln 32-48	34, 39, 59
Y	US 2004/0209724 A1 (AI et al.) 21 October 2004 (21.10.2004) fig 2, 4-5, 7, 10, para [0027], [0029]-[0030], [0036]-[0038]	35, 40, 60
Y	US 3,901,565 A (HAGEN et al.) 26 August 1975 (26.08.1975) fig 16, col 8 ln 44-67, col 9 ln 1-17	36, 41, 61-62
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>		
* 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 25 October 2007 (25.10.2007)		Date of mailing of the international search report 26 JUN 2008
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

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:
Unity is lacking between Groups 1 and 2.

Group 1 (Claims 1-50 and 57-79) is drawn to inventions related to peristaltic pumps that include a cam that rotates about a rotational axis for moving fluid.

Group 2 (Claims 51-56) is drawn to inventions related to a tubing cassette device having a plurality of tube receiving members for use in positioning a tube.

Group 2 does not include the special technical feature of a peristaltic pump having a cam as required by Group 1.

Group 1 does not include the special technical feature of a tubing cassette device having a plurality of tube receiving members for use in positioning a tube as required by Group 2.

The groups do not share a common unknown technical feature that would otherwise provide a unifying contribution over the prior art. Therefore, unity of invention is lacking under Rule 13.1.

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 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.:
1-50 and 57-79

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.