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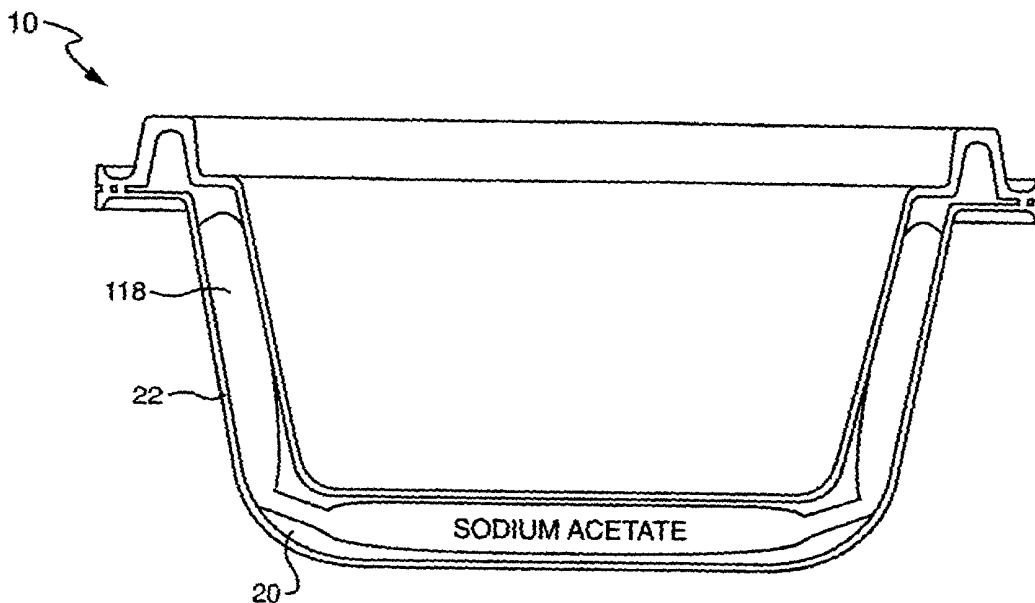
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[Continued on next page]

(54) Title: APPARATUS, SYSTEMS, AND METHODS FOR WARMING MATERIALS



(57) Abstract: Apparatus, systems and methods are provided for the warming of materials. In an embodiment, the heat for warming the materials is provided by an activatable heating substance, such as a supercooled salt solution. In an embodiment, an apparatus maintains fluid at a preselected temperature for prolonged durations. In an embodiment, an apparatus may be sterilized for deployment in a sterile surgical field. In an embodiment, an apparatus may be reused. In an embodiment, an apparatus is adapted for easy pouring of contents.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

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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 7 A61F F24J F28D

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 practical, 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 549 959 A (C. CRONENBERG, VON SZCZAWINSKI) 19 November 1895 (1895-11-19)	1-4, 10, 15-17, 19, 26-29, 37-41
Y	page 1, line 36 -page 2, line 4; figures 1, 2, 6	4-8
Y	GB 2 158 936 A (EDECO HOLDINGS LTD) 20 November 1985 (1985-11-20) page 1, line 80-94 page 2, line 94-122; figure 5	4-8



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents:

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- *E* earlier document but published on or after the international filing date
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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
- *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

21 March 2002

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- 9. 04. 2002

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/22694

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 935 486 A (COPELAND ROBERT J ET AL) 10 August 1999 (1999-08-10) column 10, line 66 -column 11, line 4 column 12, line 19-21 column 20, line 24-67 column 22, line 41-48; figure 7 ---	1,3,9, 15,17, 19-21, 24,26, 27,29, 30,37-40
X	US 2 220 777 A (OTHMER DONALD F) 5 November 1940 (1940-11-05) page 1, right-hand column, line 4-20 page 2, left-hand column, line 23-59 page 4, left-hand column, line 13-20; figures 5,6,11 ---	1-3, 10-12, 15,19, 26-28, 37-41 20-23
A	US 3 685 507 A (DONNELLY WILLIAM R) 22 August 1972 (1972-08-22) column 3, line 2-5,51-53; figure 1 ---	1-3,10, 15,26, 37-40
X	US 5 628 304 A (FREIMAN ROBERT) 13 May 1997 (1997-05-13) column 4, line 14-49 column 5, line 29-31; figure 1 ---	1,3,9, 19,24, 26,37-40
X	US 3 970 068 A (SATO SHOTARO) 20 July 1976 (1976-07-20) column 2, line 30-38; figure 10 ---	1,3,15, 17,19, 26,27, 37-40
X	US 6 029 651 A (DORNEY PETER) 29 February 2000 (2000-02-29) column 2, line 12-40 column 3, line 42-47; figure 4 ---	1-3, 10-12, 17,19, 24,26, 27,37-40
X	DE 87 09 387 U (NEUGEBAUER THOMAS) 24 September 1987 (1987-09-24) page 3, line 6-12 page 7, line 32 -page 8, line 30; figure 1 ---	31-36
A	US 4 503 838 A (ARRHENIUS GUSTAF O ET AL) 12 March 1985 (1985-03-12) column 1, line 11-18,45-50; figures 1,2 ---	2,20,21, 26-28, 40,41
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II INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/22694

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 1 920 853 A (FERGUSON RALPH S) 1 August 1933 (1933-08-01) page 1, left-hand column, paragraph 1 page 1, right-hand column, line 64-75; claim 1; figure 3 ---	8,22,23
A	US 5 378 337 A (KIYOMURA MASAHIRO) 3 January 1995 (1995-01-03) column 6, line 1-12,36-57; figures 3-5 -----	13,14

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 01/22694

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 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 fee, this Authority did not invite payment of any additional fee.
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.
- ☒ 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: 1-8, 10, 15-21, 24-29, 37-41

Rigid warming container with an activatable heating substance in a chamber about the container, said substance being activated by a plunger system

2. Claim : 9

Calcium chloride heating system with initiator for use in a rigid warming container

3. Claims: 11-14

Non-plunger initiators for a warming container with an activatable heating substance.

4. Claims: 22, 23

Specific composition and design of a sodium acetate solution element, for use in a warming container.

5. Claim : 30

Warming container comprising a bag containing an activatable heating substance.

6. Claims: 31-36

System with resistive heater for warming surgical fluids

II INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/22694

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