This invention is directed to a portable intravenous fluid heater that can weight less than 10 oz having an internal power supply internal tubing that is heated by a heating element; a logic assembly; an external power terminal for connecting an external power supply; and computer readable instructions, that when executed by the processor, perform the steps of receiving output temperature from the fluid output heat sensor, removing power from the heating element if the output temperature is above a predetermined temperature to reduce the temperature of fluid exiting the tubing and delivering power to the heating element when the output temperature is below a predetermined temperature.
Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(H))
— as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(Hi))
— of inventorship (Rule 4.17(iv))

Published:
— with international search report (Art. 21(3))
(88) Date of publication of the international search report: 15 May 2014

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(H))
— as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(Hi))
— of inventorship (Rule 4.17(iv))
### A. CLASSIFICATION OF SUBJECT MATTER

**IPC(8)** - A61 F 7/12 (2012.01)

**USPC** - 604/1 14

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):** A61 F 7/12 (2012.01)

**USPC:** 604/1 14

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

**IPC(8):** A61F 7/12 (2012.01); **USPC:** 604/1 13, 114; 392-978, 481-485 (keyword limited; see terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PubWest(PGPB,USPT,USOC,EPAB,JPAB); Google Patents; Google Scholar. Terms: warm, heat, radiate, dissipate, transfer, generate, element, box, block, sensor, intravenous, IV, internal, body, infusion, fluid, blood, power, supply, source, battery, internal, embed, imbed, contained, tube, pipe, line, flow, convey, path, way, etc.

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>Fildes et al., &quot;High Speed Blood and Fluid Transfusion Equipment&quot; [online]. Report date 07 June 2010 (07.06.2010) (see last page). Retrieved on 18 September 2012 (18.09.2012). Retrieved from the Internet at URL: <a href="http://oal.dtic.mil/oal/oai?verb=getRecord&amp;metadataPrefix=html&amp;identifier=ADA521781">http://oal.dtic.mil/oal/oai?verb=getRecord&amp;metadataPrefix=html&amp;identifier=ADA521781&gt;</a>, entire document especially Fig. 1, 3, 4; page 1, para 2-4; page 2, para 5; page 4, para 4; page 6, para 1, 3, 4; page 7, para 4, 5; page 9, para 1; page 10, para 1, 3, 4, 6; page 11, para 2; page 12, para 1; page 21, para 2; pages A-2, A-3</td>
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<td>Y</td>
<td>US 2008/0154197 A1 (Derrico et al.) 26 June 2008 (26.06.2008), entire document especially Fig. 4, 6; para [0005], [0025], [0032], [0034], [0036], [0038]</td>
<td>1-24</td>
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<tr>
<td>Y</td>
<td>US 6,641,556 B1 (Shigezawa) 04 November 2003 (04.1 1.2003), especially Fig. 6; col. 4, In 52</td>
<td>2, 3</td>
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<tr>
<td>Y</td>
<td>US 6,142,974 A (Kistner et al.) 07 November 2000 (07.1 1.2000), especially col. 2, In 14-17, 31-33; col. 4, In 46; col. 7, In 15-30</td>
<td>8, 9, 15, 16, 22</td>
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<tr>
<td>A</td>
<td>US 6,229,957 B1 (Baker) 08 May 2001 (08.05.2001), entire document</td>
<td>1-24</td>
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* Special categories of cited documents:
  * "A" document defining the general state of the art which is not considered to be of particular relevance
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  * "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
  * "S" document member of the same patent family

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**Date of the actual completion of the international search**

18 September 2012 (18.09.2012)

**Date of mailing of the international search report**

05 OCT 2012

**Name and mailing address of the ISA/US**

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PCT OSP: 571-272-7774