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(71) Applicant: **BATTELLE MEMORIAL INSTITUTE**  
[US/US]; 505 King Avenue, Columbus, OH 43201 (US).

(72) Inventors: **ELLIS, Jeffrey L.**; 1060 Bluffpoint Drive,  
Columbus, OH 43235 (US). **TALLARICO, John P.**; 225  
Oakham Court, Powell, OH 43065 (US). **BOYCE, Jeffrey  
J.**; 1380 Wild Horse Drive, Grove City, OH 43123 (US).

(74) Agent: **ROSENBERG, Frank**; 5737 Kanan Road, No.  
190, Agoura Hills, CA 91301 (US).

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HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN,  
KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD,  
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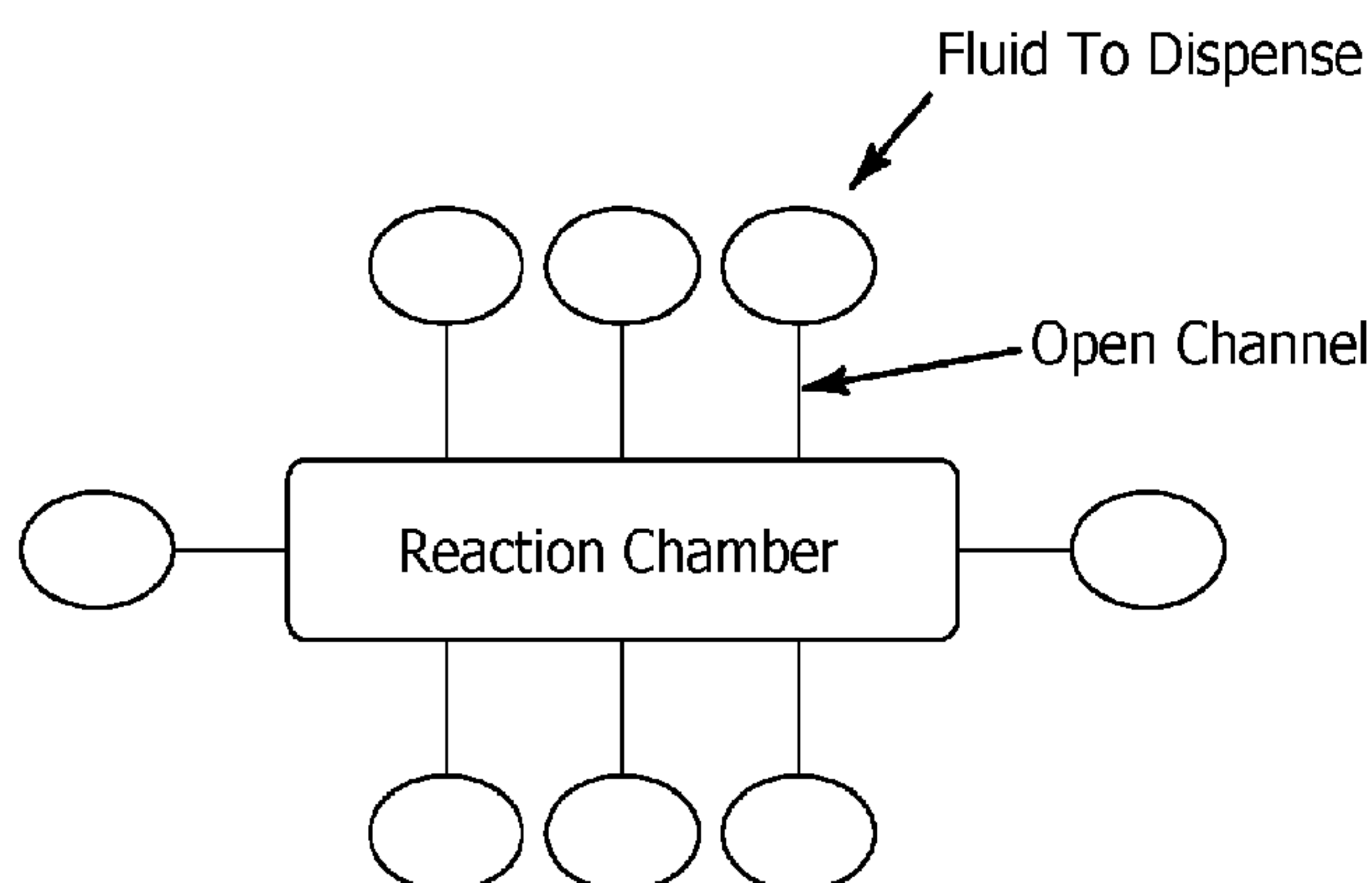
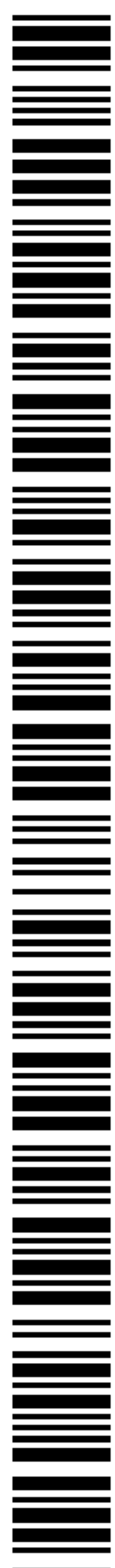


FIG. 3

(57) Abstract: Processes and devices for delivering a fluid by decomposition of hydrogen peroxide are disclosed. Advantageously, the reaction is very fast and exothermic resulting in a fast ejection and, optionally, heating a fluid as it is ejected from a container. Also disclosed is a fluid flow system powered by a gas-generating reaction that is activated by an electrothermal activation switch.





## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2020/052259

## A. CLASSIFICATION OF SUBJECT MATTER

INV. A61M5/155 A61M5/20 A61M5/142  
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, CHEM ABS Data, 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         | W0 2014/059444 A2 (LILLY CO ELI [US])<br>17 April 2014 (2014-04-17)<br>page 27, line 10 - page 28, line 9<br>page 28, line 24 - page 29, line 16<br>page 32, line 4 - line 16<br>figures 1-19 | 1-8,15                |
| A         | -----<br>US 2008/257915 A1 (WOLD TRUMAN [US])<br>23 October 2008 (2008-10-23)<br>paragraph [0019] - paragraph [0020]<br>paragraph [0030] - paragraph [0033]<br>figures 1-7                    | 1-8,15                |
| A         | -----<br>W0 98/53866 A1 (APEX MEDICAL TECH [US];<br>MCGLOTHLIN MARK W [US] ET AL.)<br>3 December 1998 (1998-12-03)<br>the whole document<br>figures 1-5<br>-----<br>-/-                       | 1-8,15                |



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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

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Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040,  
Fax: (+31-70) 340-3016

Authorized officer

Koch, Kristian



INTERNATIONAL SEARCH REPORT

International application No  
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| 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 5 318 540 A (ATHAYDE AMULYA L [US] ET AL) 7 June 1994 (1994-06-07)<br>column 13, line 8 - column 14, line 12<br>figures 1-6<br>----- | 1-8,15                |



INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2020/052259

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.: 9-14, 16  
because they relate to subject matter not required to be searched by this Authority, namely:  
see FURTHER INFORMATION sheet PCT/ISA/210
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. ☐ 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.:  
1-8, 15

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.



**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

Continuation of Box II.1

Claims Nos.: 9-14, 16

The subject-matter of claims 9-14 and 16 has not been searched, as it effectively defines a method of treatment of the human body by surgery (Rule 39.1(iv) PCT). The "method for delivering a fluid" of claims 9-14 and "process for delivering a high-viscosity fluid" of claim 16 do not refer directly to the injection of a liquid medicament into a human/animal body, however, this is implicitly disclosed since the application relates to the delivery of medicament from an injection device (page 1 line 10 and lines 17-19) such as a manual syringe or auto-injector (page 10 lines 29-30). Therefore, it is considered that "a method of delivering a fluid with a device" and "a process for delivering a high-viscosity fluid by decomposition of hydrogen peroxide with a device" refer implicitly to a method for injecting a fluid medicament into a human/animal body. Consequently, such subject-matter is not searched by the EPO when acting as International Search Authority under PCT (Rule 39.1(iv) PCT).



**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, 15

A device for delivering a fluid by decomposition of hydrogen peroxide comprising a thermally conductive wall/element to transfer heat from the reaction chamber to the liquid chamber.

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2. claims: 17-20

A device for delivering a fluid by decomposition of hydrogen peroxide comprising a solid catalyst chamber having a metal oxide powder catalyst and a soluble catalyst.

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3. claims: 21-31

A fluid flow system comprising a resistive heater adapted to open a pathway in the first and the second chambers.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2020/052259

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
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