



(51) International Patent Classification:

A61L 9/015 (2006.01) A61L 2/24 (2006.01)
A61L 2/20 (2006.01)

(21) International Application Number:

PCT/IB2010/054319

(22) International Filing Date:

24 September 2010 (24.09.2010)

(25) Filing Language:

Italian

(26) Publication Language:

English

(30) Priority Data:

VI2009A000232 24 September 2009 (24.09.2009) IT

(71) Applicant (for all designated States except US): **ASLAN S.R.L.** [IT/IT]; Corso Stati Uniti, 18/B, I-35127 Padova (IT).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **GOLDIN, Luca** [IT/IT]; Corso Stati Uniti, 18/B, I-35127 Padova (IT).

(74) Agent: **MAROSCIA, Antonio**; Maroscia & Associati S.r.l., Contrà Porti, 21, I-36100 Vicenza (IT).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(54) Title: APPARATUS FOR THE DISINFECTION/STERILIZATION TREATMENT OF ENVIRONMENTS BY OZONE

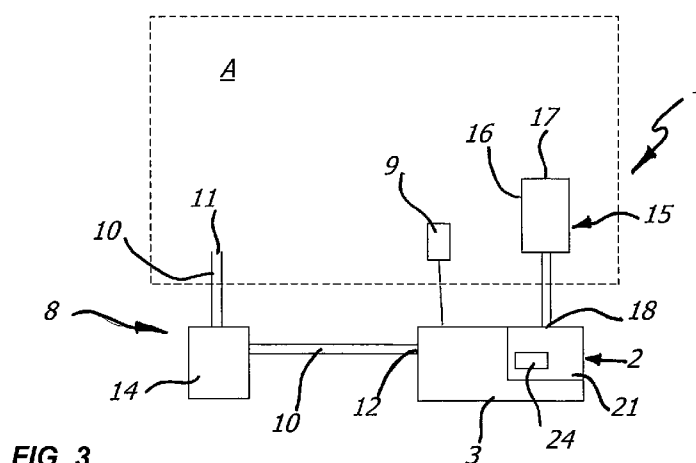


FIG. 3

(57) Abstract: An ozone room disinfection/sterilization apparatus (A) comprises an ozonizer machine (2) with a housing frame (3) for an ozone generator (6) having an inlet (4) for a fluid to be ozonized and an outlet (7) for an ozone-containing fluid, which is designed to be put in fluid communication with the room to be treated (A), means (8) for feeding a fluid to be ozonized to be conveyed to the generator (6), sensor means (9) designed to be located in the room to be treated (A) to measure ozone concentration therein. The feeding means (8) and the sensor means (9) are located outside the frame (3) of the machine (2) and are adapted for removable connection thereto so that the machine (2) can be placed outside the room (A) to be treated and the fluid to be ozonized can be directly drawn out of the room (A) to be treated.

APPARATUS FOR THE DISINFECTION/STERILIZATION TREATMENT OF ENVIROMENTS BY OZONE

Field of the invention

5

The present invention generally finds application in the field of room sanitation systems and particularly relates to an ozone room disinfection/sterilization apparatus.

10

Background art

Ozonizer machines are known, which are designed to be placed in a closed space, draw air out of it, and convert a predetermined amount thereof into ozone to reintroduce it into the space as ozonized air.

15

Typically, currently available ozonizer machines are designed to introduce relatively low ozone concentrations into the room, which can adequately sanitize small to medium rooms, such as kitchens, hotel rooms or the like, but are certainly insufficient to disinfect and/or sterilize large rooms.

20

Furthermore, most prior art machines do not provide safety systems, but indicate a maximum decay time (typically 30 minutes) after which users can access the treated room.

25

Nevertheless, in case of high ozone concentrations, this time may be insufficient, as it depends on ambient parameters, such as ambient temperature and/or humidity, that cannot be controlled by prior art machines.

30

High ozone concentrations in a room may be a hazard to humans, and even cause intoxication, permanent visual impairment or even death by pulmonary edema.

For this purpose ozone disinfection devices have been provided, which comprise a load bearing frame with the ozonizer proper housed therein, and also incorporating one or more sensors for detecting ozone concentration.

5

For instance, US2008/0310992 discloses a similar ozonizer apparatus which is designed to be located in the room to be sanitized and has ozone detection sensors and a control panel, both integrated in the same apparatus.

10

The panel is also able to interact with a LED indicator device located outside the room to be sanitized to indicate whether ozone concentration in the latter is below a minimum safe level. A similar apparatus is also known from WO 2008/103715.

15

A first drawback of these prior art apparatus is that they are designed to be located in the environment to be sanitized.

Therefore, the control panel integrated in the load bearing frame is also placed in the room to be sanitized, whereby the operator is not allowed to directly operate the apparatus in an emergency.

20

Furthermore, this configuration requires connection between the ozone level sensor and the indicator device to occur by wireless technology which, in addition to having a costly and difficult implementation, are not always reliable and/or may not be implemented everywhere.

25

An additional drawback of this particular configuration is poor flexibility of use of these apparatus, that can be only used in rooms adapted to allow stable positioning thereof, as well as access by the operator.

30

Disclosure of the invention

The object of the present invention is to at least partially overcome the above drawbacks, by providing an ozone room disinfection/sterilization apparatus that ensures high safety to users.

5

A particular object is to provide a room disinfection/sterilization apparatus that allows prompt intervention of the operator anytime, without requiring the latter to enter the room being sanitized.

- 10 A further object of the present invention is to provide a room disinfection/sterilization system that is particularly cost-effective and reliable.

- 15 Yet another object of the present invention is to provide a room disinfection/sterilization system that is versatile and can be also used to sanitize rooms inaccessible to people, such as food silos and the like.

These and other objects, as better explained hereafter, are fulfilled by a room disinfection/sterilization apparatus according to claim 1.

20

This combination of characteristics allows intervention on the machine anytime, without requiring the ozone level to decrease below a safe threshold and thus preventing risks of intoxication or more serious injuries.

- 25 Furthermore, an operator may constantly monitor the operation of the system and intervene on it anytime to solve emergency situations or condition such operation.

- 30 As used herein, the term "sterilization" and derivatives thereof shall be intended to designate a treatment complying with the standard UNI EN 556-1.

As used herein, the term "disinfection" and derivatives thereof shall be intended to designate a treatment designed to reduce by killing, inactivation and/or removal, the amount of microorganisms (bacteria, viruses, mycetes, protozoa) at least one hundred thousand times the initial amount.

5

Advantageous embodiments of the invention are defined in accordance with the dependent claims.

Brief description of the drawings

10

Further characteristics and advantages of the invention will become more apparent upon reading of the detailed description of a few preferred, non exclusive embodiments of a system of the invention, which are described as non limiting examples with the help with the accompanying drawings in which:

15

FIGS. 1 to 3 are diagrammatic views of an apparatus of the invention in three different operating configurations;

FIG. 4 is a schematic view of the ozonizer machine 2 of an apparatus of the invention.

20

Detailed description of a preferred embodiment

Referring to the above figures, the apparatus of the invention, generally designated by numeral 1, is particularly useful for effective disinfection/sterilization of rooms A, such as hotel rooms, food silos, hospital operating rooms, means of transport or the like.

25

The apparatus 1 may comprise a ozonizer machine 2 for introducing ozonized air into the room to be disinfected/sterilized A.

30

In a preferred, non limiting embodiment, the ozonizer machine 2, as shown in diagrammatic form in Fig. 4, may include a box-like housing frame 3 with

an inlet 4 for an oxygen-containing fluid to be ozonized, e.g. air drawn from outside, possibly a dryer device 5 for drying inflowing air to prevent the formation of nitric acid, an ozone generator 6 for enriching the inflowing fluid with ozone, and an outlet 7 for ozonized fluid.

5

The outlet 7 of the generator 6 will be put in fluid communication with the room A to be treated, for introducing a predetermined amount of ozone therein.

- 10 The amount of ozone to be introduced into the room may allow disinfection/sterilization of the room.

In a first operating configuration, as shown in Fig. 1, the machine 2 may be placed in the room A, whereas in the configuration of Fig. 3 it is placed
15 outside, but still with the outlet 7 in fluid connection with the interior of the room A.

Preferably, the ozone generator 6 may be of the DBD (Dielectric Barrier Discharge) type, with plates, preferably ceramic plates, to generate a cold
20 gas-plasma, and may be configured to provide a sufficient ozone flow rate in the fluid introduced through the inlet 4, to disinfect/sterilize the room A being treated.

The skilled person will be able to select from time to time the most
25 appropriate concentration and/or that required by the standards in force. The sterilization of sanitary products is regulated by standard UNI EN ISO 14937:2002.

Advantageously, this flow rate may be not less than 2 g/hour, preferably not
30 less than 4 g/hour and more preferably not less than 8 g/hour.

Such flow rate of ozone in the inflowing fluid will provide such an ozone

concentration in the outflowing fluid as to ensure effective disinfection/sterilization of the room being treated. The skilled person will be able to select and/or configure the machine 2 to obtain such flow rates.

- 5 The flow of fluid to be ozonized from the exterior to the interior of the generator 6 will be assisted by oxygen-containing fluid feeding means 8, connected to the inlet 4 of the generator 6.

- 10 The apparatus 1 may further comprise sensor means 9, for instance one or more concentration sensors, which are designed to be placed within the room A to be disinfected/sterilized to measure ozone concentration.

- 15 According to a peculiar characteristic of the invention, the feeding means 8 are located outside the machine 2 and are adapted to be removably connected to the inlet 4 of the generator 6.

- The sensor means 9 may be located inside the ozonizer machine 2, i.e. integrated therein, but they are preferably located outside, like in the example of Fig. 1.

- 20 By this arrangement, the placement of the ozonizer machine 2 may be independent of that of the feeding means 8 and possibly also of the sensor means 9, for instance with the machine 2 being located outside the room A to be treated, and the fluid to be ozonized directly drawn out of the same room A.

- 25 This configuration is particularly advantageous for disinfection/sterilization of rooms such as silos or the like and generally for any room that is not easily accessed both by the operator and by the machine 2.

- 30 Furthermore, in the case of closed rooms A, such as silos, drawing air out of such a room A prevents the build-up of dangerous overpressures

therein, unlike the case in which outside fluid is introduced.

Nevertheless, it should be understood that, if no overpressure risk exists, the feeding means 8 may be configured to draw air from outside the room
5 A to be treated.

The feeding means 8 may include a main delivery conduit 10 having a suction port 11 adapted to be connected with the outside, e.g. placed inside the room to be treated A, i.e. in fluid communication therewith, e.g.
10 through air vents already provided on a wall that delimits such room.

The delivery conduit 10 also has a delivery port 12, which is designed to be put in fluid communication with the inlet 4 of the generator 6.

15 For instance, the conduit 10 may be simply fitted into the frame 3 at an inlet 13 thereof.

Advantageously, the feeding means 8 may include an oxygen concentrator placed along the delivery conduit 10, which is also located outside the
20 frame 2 to receive air from outside the machine 2 through the suction port 11, possibly by drawing it out of the room A to be treated, and to convey a fluid essentially consisting of oxygen to the delivery port 12.

The oxygen concentrator or the like may be selected among those that are
25 commonly available on the market, with no particular limitation.

Regardless of the particular configuration of the feeding means 8, these may be put in communication with the ozone generator 6 through one or more filters, not shown, possibly arranged within the frame 3, which may be
30 of any type, for instance antibacterial filters.

The feeding means 8 may also include a compressor, not shown, or

another system for forced supply of fluid, which may be integrated in the concentrator 14 to promote the flow of the fluid to be ozonized into the generator 6.

- 5 The pressure generated by the feeding means 8 may be sufficient to ensure fluid circulation from the inlet 4 to the outlet 5 of the generator 6.

Nevertheless, the apparatus 1 may comprise diffusion means 15 for diffusing the ozonized fluid from the outlet 5 of the generator into the room
10 A to be treated.

For example, the diffusion means 15 include a suction device 16, such as a fan, a pump or the like, which may be advantageously located inside the room A.

15

The device 16 has an opening 17 in fluid connection with the outlet 5 of the generator 6 for the inflow of ozonized fluid and a discharge therefor, which is designed to be located in the room A to be treated.

- 20 Advantageously, the suction device 16 is external to the frame 3 and the diffusion means 15 also include a conduit 19 for fluid connection of the generator 6 with the suction device 16.

The conduit 19 is conveniently sized to allow the diffusion device 16 to be
25 located in the room A to be treated with the machine 2 located outside.

In a preferred, non limiting embodiment, the ozonizer machine 2 may comprise means 20 for remote on/off control thereof, which may be integrated in a control panel 21 or in a separate remote control 22, to allow
30 a user to safely switch the machine on/off, only from outside the room A to be sanitized.

The control panel 21 may be integrated either in the frame 3 of the machine 2, like in the configurations of Figs. 1 and 3, or in a load-bearing structure 23 or secondary frame, separate from the housing frame 3, like in Fig. 2.

5

The control means 20 are advantageously connected to the sensor means 9 and the control panel 21 may preferably include a display screen for real-time display of the ozone level in the room A.

- 10 The connection of the sensor means 9 to the machine 2, i.e. the control means 20 may be obtained through any cable or wireless technology.

Advantageously, the ozonizer machine 2 may include a microprocessor unit, e.g. a PLC, to program the operation of the ozonizer machine.

15

The PLC may be used, for instance, to program the operation times of the machine 2 and/or automatic switch-off thereof after a maximum operation time.

- 20 In a particular configuration, the apparatus 1 may also include an indicator device 24, preferably of optical type, which will interact with the sensor means 9 to automatically indicate to the user that ozone concentration in the room A is below a predetermined safe value.

- 25 For instance, the control means may include an electronic control unit, not shown and known per se, which can be preset with such predetermined safe value and be designed to turn on the lights of the indicator device 24, that may be, for instance, LEDs of different colors.

- 30 The safe value may be a concentration that causes no injury to humans. For instance, such value may be 0.1 mg/m^3 or $120 \text{ } \mu\text{g/m}^3$.

Advantageously, the indicator device 24 may be located outside the room to be disinfected/sterilized, so that the user may be advised about the possibility of safely accessing the disinfected/sterilized room A.

- 5 For instance, the indicator device 24 may be integrated in the control panel 21.

Thus, the user will only access the sterilized/disinfected room A when ozone concentration therein is below the safe value, and when there is
10 certainly no risk for his/her health.

In a preferred non limiting embodiment, the optical indicator device 24 may be configured to assume a first color, e.g. red, when the ozone concentration detected by the sensor means 9 in the room A is higher than
15 the safe concentration, and a second color, e.g. green, when the ozone concentration detected in the room A is lower than said safe concentration.

Visual indication, and particularly colored light alternation, is very clear to users. Red/green alternation is particularly familiar to users, as it recalls city
20 lights. This will further increase the safety level.

In order to further improve the safety of the system, the ozonizer machine 2 may include an ozone scrubber, not shown and known per se, that may be possibly remotely actuated by the remote control 22, or by commands
25 integrated in the control panel 21.

Thus, while the user is still outside the room to be disinfected/sterilized, he/she can actuate the ozone scrubber device in case of emergency, for more quickly eliminating ozone from the room A.

30

The above disclosure clearly shows that the apparatus 1 fulfils the intended objects and particularly meets the requirement of ensuring high safety for

its user.

The apparatus of this invention is susceptible of a number of changes and variants, within the inventive principle disclosed in the appended claims. All
5 the details thereof may be replaced by other technically equivalent parts, and the materials may vary depending on different needs, without departure from the scope of the invention.

While the apparatus has been described with particular reference to the
10 accompanying figures, the numerals referred to in the disclosure and claims are only used for the sake of a better intelligibility of the invention and shall not be intended to limit the claimed scope in any manner.

CLAIMS

1. An ozone room disinfection/sterilization apparatus (A) comprising:

- 5 - an ozonizer machine (2) with a housing frame (3) for an ozone generator (6) having an inlet (4) for an oxygen-containing fluid to be ozonized and an outlet (7) for an ozone-containing fluid, said outlet (7) being designed to be put in fluid communication with the room to be treated (A), for introducing said ozone-containing fluid therein;
- 10 - means (8) for feeding a fluid to be ozonized, which are configured to draw the fluid from outside and convey it to said inlet (4) of said generator (6);
- sensor means (9) designed to be located in the room to be treated (A) to measure ozone concentration therein;
- 15 characterized in that said feeding means (8) and said sensor means (9) are located outside said frame (3) of said machine (2) and are adapted for removable connection thereto so that said machine (2) can be placed outside the room (A) to be treated and said fluid to be ozonized can be directly drawn out of the room (A) to be treated.

20

2. An apparatus as claimed in claim 1, characterized in that said feeding means (8) include a delivery conduit (10) with a suction port (11) adapted for connection with the outside, and a delivery port (12) adapted for fluid connection to said inlet (4) of said generator (6).

25

3. An apparatus as claimed in claim 2, characterized in that said feeding means (8) include an oxygen concentrator (14) placed along said delivery conduit (10) outside said frame (3) to receive outside air from said suction port (11) and convey a fluid essentially consisting of oxygen to said

30 delivery port (12).

4. An apparatus as claimed in any one of the preceding claims,

characterized in that it comprises diffusion means (15) for diffusing ozonized fluid from said outlet (7) of said generator (6) to the room to be treated.

- 5 5. An apparatus as claimed in claim 4, characterized in that said diffusion means (15) comprise a suction device (16) with an opening (17) in fluid connection with said outlet (7) of said generator (6) for the inflow of ozonized fluid and a discharge (18) for the ozonized fluid, which is designed to be located in the room (A) to be treated.

10

6. An apparatus as claimed in claim 5, characterized in that said suction device (16) is located outside said frame (3), said diffusion means (15) further comprising a conduit (19) for fluid connection of said generator (6) with said diffusion device (16), said connection conduit (19) being
15 appropriately sized to allow said diffusion device (16) to be located in the room (A) to be treated, with said machine (2) located outside

7. An apparatus as claimed in one or more of the preceding claims, characterized in that it comprises means for remote on/off control
20 (10) of said machine (2), to allow a user to switch it on/off from outside the room (A) to be treated.

8. An apparatus as claimed in claim 7, characterized in that said control means (20) include an electronic control panel (21) for manually
25 switching said ozone generator (6) on/off.

9. An apparatus as claimed in one or more of the preceding claims, characterized in that it comprises an signaling device (24) interacting with said sensor means (9) for automatically indicating to the
30 user that ozone concentration in the room (A) is either below or above a predetermined safe value.

10. An apparatus as claimed in claim 9, characterized in that said signaling device (24) is of optical type, to assume a first color, when the ozone concentration detected by the sensor means (9) in the room (A) is higher than said safe concentration, and a second color, when the ozone concentration detected in the room (A) is lower than said safe concentration.

11. An apparatus as claimed in one or more of claims 8 to 10, characterized in that said control panel (21) is integrated in said frame (3) of said ozonizer machine (2).

12. An apparatus as claimed in one or more of claims 8 to 10, characterized in that said control panel (21) is integrated in a load-bearing structure (23) separate from said frame (3) of said ozonizer machine (2).

13. An apparatus as claimed in claim 11 or 12, characterized in that said indicator device (24) is integrated in said control panel (21).

14. An apparatus as claimed in one or more of the preceding claims, characterized in that said ozone generator (6) is of the Dielectric Barrier Discharge type with plates, to generate a cold gas plasma.

15. An apparatus as claimed in one or more of claims 7 to 14, characterized in that said ozonizer machine (2) comprises an ozone scrubber device that can be actuated by said remote control means (20) to allow a user to switch it on/off from outside the room (A) to be treated.

1 / 2

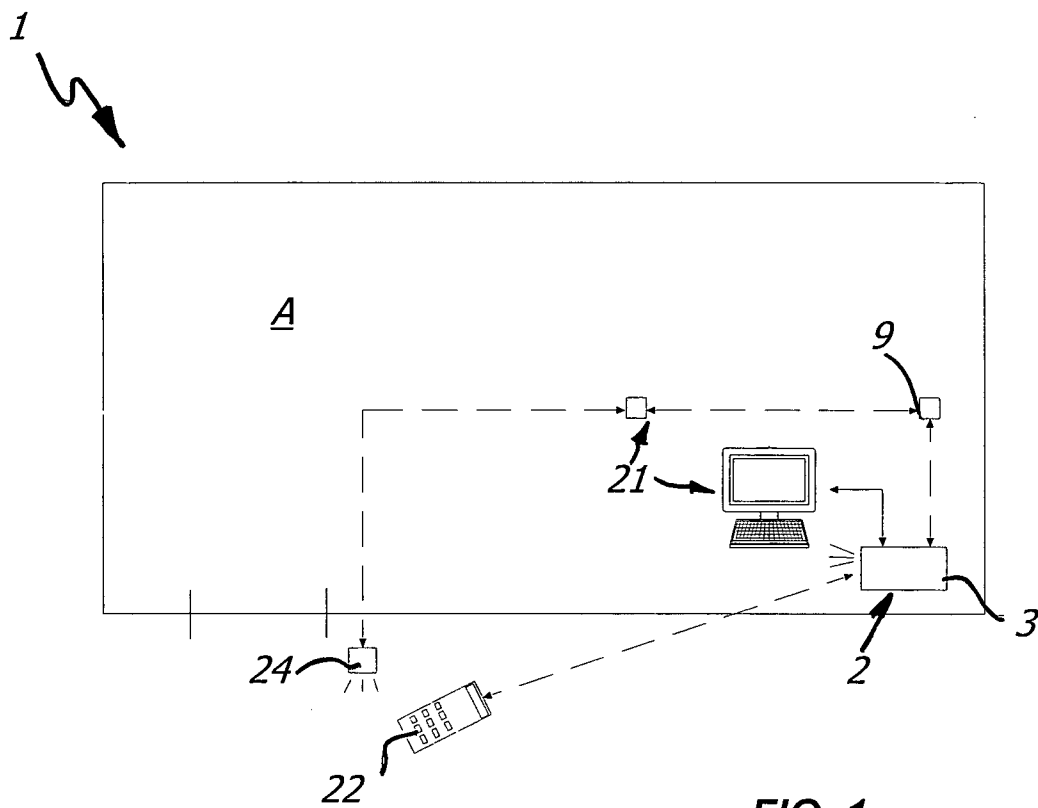


FIG. 1

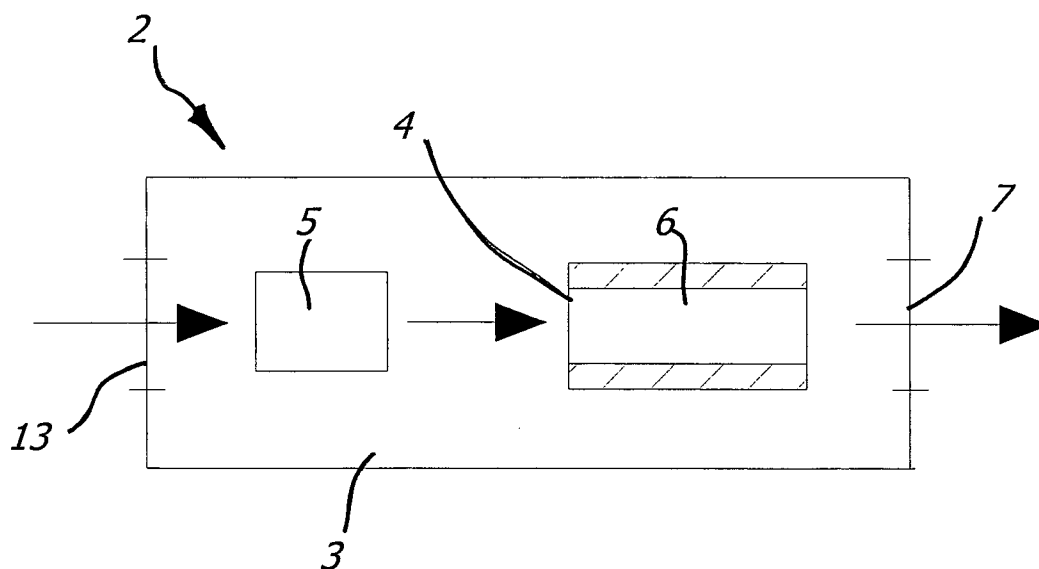


FIG. 4

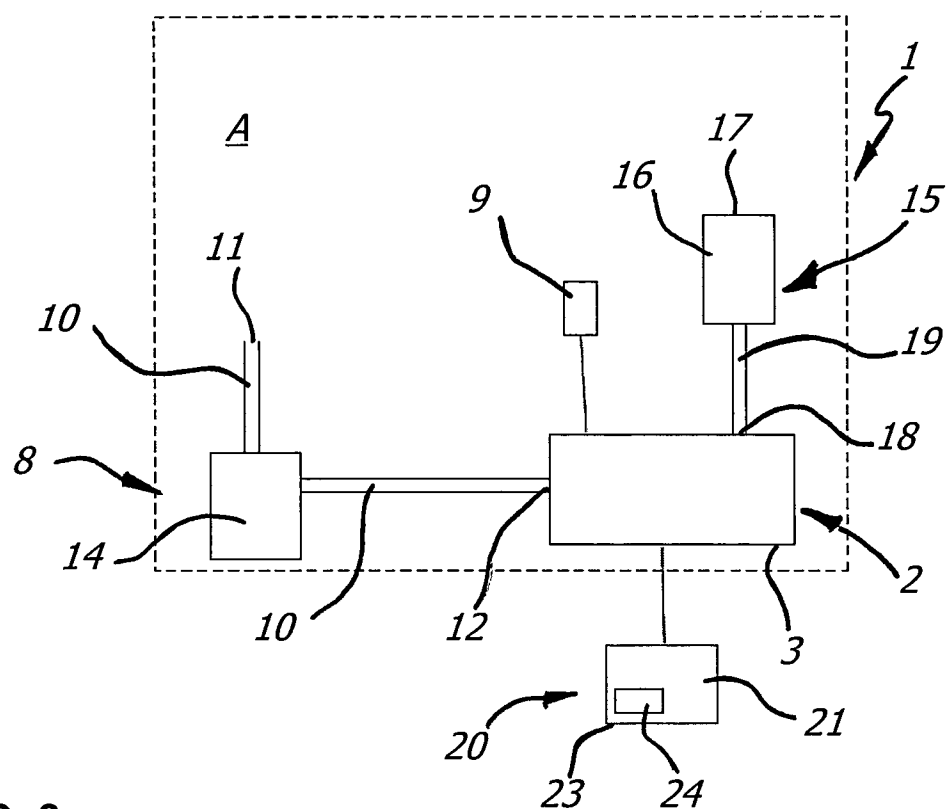


FIG. 2

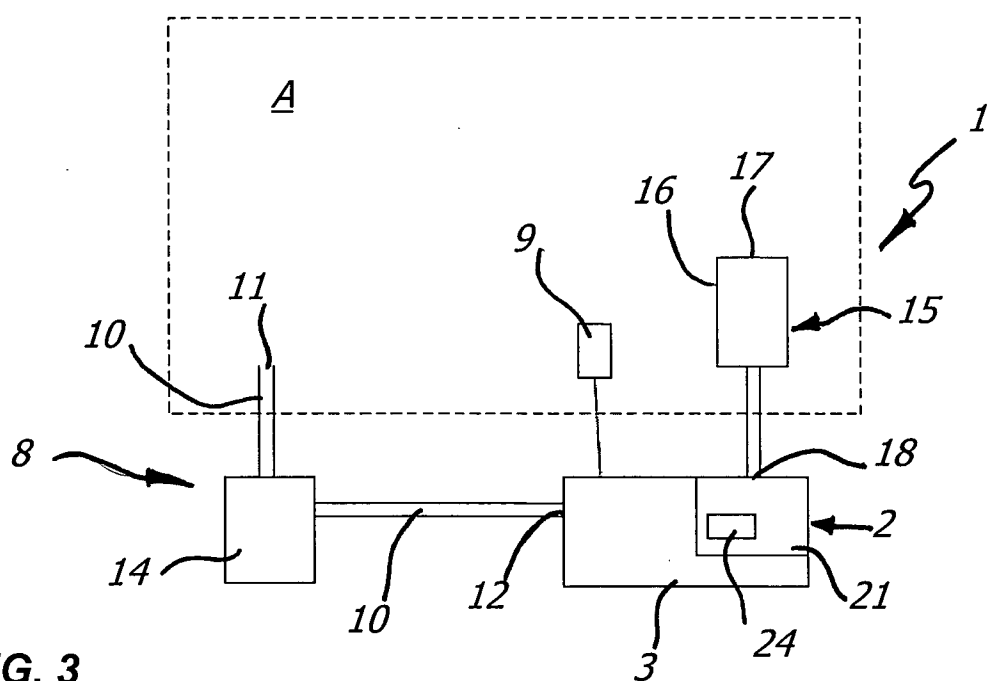


FIG. 3

INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2010/054319

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61L9/015 A61L2/20 A61L2/24
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)

A61L

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2004/146437 A1 (ARTS THEODORE A M [US] ET AL ARTS THEODORE A M [US] ET AL) 29 July 2004 (2004-07-29)	1,2,4-8, 11,12,14
Y	paragraphs [0075] - [0080], [0096], [0097], [0104] - [0111]; figures 10,16 -----	9,10,13, 15
X	US 2004/022679 A1 (ST ONGE BENEDICT B [US] ET AL) 5 February 2004 (2004-02-05)	1,2,4-8, 12,14
Y	paragraphs [0006], [0015], [0016], [0043]; claim 1; figures -----	9,10,13, 15
X,P	EP 2 127 686 A2 (ETHICON INC [US]) 2 December 2009 (2009-12-02)	1,2,4-8, 11,12,14
Y,P	paragraphs [0018] - [0020], [0025], [0027] - [0029], [0034] - [0036]; figures 2,4 ----- -/--	9,10,13, 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 document 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
- *8* document member of the same patent family

Date of the actual completion of the international search

14 January 2011

Date of mailing of the international search report

24/01/2011

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

Maremonti, Michele

INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2010/054319

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 2005/123436 A1 (CUMBERLAND JOHN R [CA]) 9 June 2005 (2005-06-09) paragraphs [0096] - [0108], [0110], [0120], [0134] - [0137], [0150], [0151], [0154], [0158] -----	1-10,12, 14,15
X	EP 1 500 404 A1 (STERITROX LTD [GB]) 26 January 2005 (2005-01-26)	1-14
Y	paragraphs [0002], [0011], [0013], [0016], [0019], [0023], [0030], [0034] - [0037], [0042]; figures -----	15
X	DE 20 2007 013556 U1 (KOCH PETER [AT]) 6 December 2007 (2007-12-06) paragraphs [0005], [0007] - [0011], [0018], [0020] - [0026]; figure -----	1-14
Y	US 2008/310992 A1 (HESELTON DOUGLAS [CA] ET AL) 18 December 2008 (2008-12-18) cited in the application paragraphs [0014] - [0017], [0042] - [0051], [0056] -----	9,10,13, 15

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2010/054319

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2004146437	A1	29-07-2004	AT 427126 T	15-04-2009
			AU 2003269875 A1	16-02-2004
			CA 2486831 A1	05-02-2004
			CN 1655832 A	17-08-2005
			EP 1506023 A2	16-02-2005
			HK 1074589 A1	18-09-2009
			JP 2005526616 T	08-09-2005
			SI 1506023 T1	31-08-2009
			WO 2004011041 A2	05-02-2004
US 2004022679	A1	05-02-2004	AU 2002367894 A1	19-12-2003
			WO 03101498 A2	11-12-2003
EP 2127686	A2	02-12-2009	AU 2009201473 A1	05-11-2009
			BR PI0900738 A2	01-12-2009
			CN 101601864 A	16-12-2009
			JP 2009254832 A	05-11-2009
			US 2009263499 A1	22-10-2009
US 2005123436	A1	09-06-2005	US 2008274012 A1	06-11-2008
			US 2006140817 A1	29-06-2006
EP 1500404	A1	26-01-2005	GB 2404152 A	26-01-2005
			US 2005031486 A1	10-02-2005
DE 202007013556 U1		06-12-2007	EP 2200760 A1	30-06-2010
			WO 2009043559 A1	09-04-2009
US 2008310992	A1	18-12-2008	NONE	