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(81) Designated States (unless otherwise indicated, for every
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CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP,
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EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
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TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
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(54) Title: GAS SENSING FOR AN AEROSOL DELIVERY DEVICE

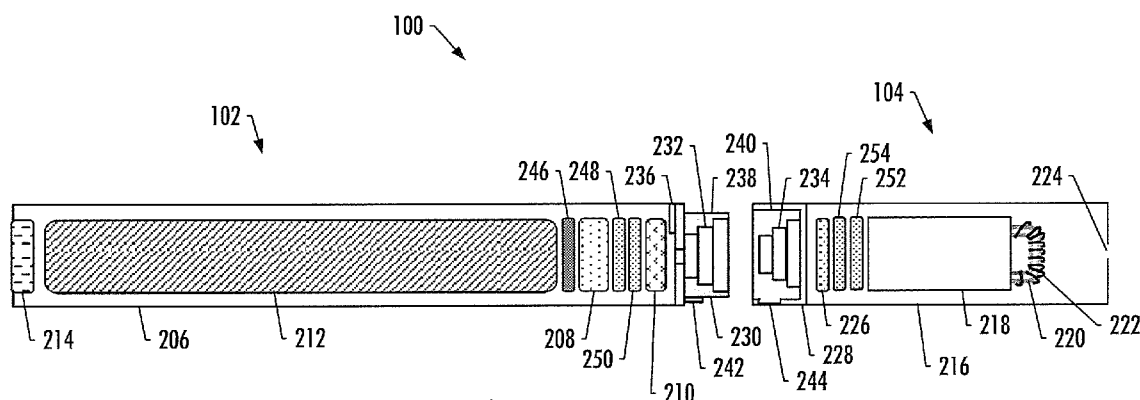


FIG. 2

(57) Abstract: A control body (102) is coupled or coupleable with a cartridge (104) that is equipped with a heating element (222) and contains an aerosol precursor composition, the control body and cartridge forming an aerosol delivery device (100). The control body includes a control component (208) to control the heating element to activate and vaporize components of the aerosol precursor composition. The control body also includes a gas sensor (252) configured to detect a presence of gas in an environment of the control body, and the gas sensor or control component are further configured to control operation of at least one functional element of the aerosol delivery device in response to the presence of gas so detected.

**Declarations under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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))*

(88) Date of publication of the international search report:

15 March 2018 (15.03.2018)

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2017/054020

A. CLASSIFICATION OF SUBJECT MATTER
INV. A24F47/00 A61M11/04
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)
A24F 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)

EP0-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	WO 2016/062786 A1 (PHILIP MORRIS PRODUCTS SA [CH]) 28 April 2016 (2016-04-28)	1,3,5,7-11,13,15,17-20
Y	page 11 - page 12; claims 7,8,15; figure 1 -----	1-20
Y	WO 2016/094225 A1 (REYNOLDS TOBACCO CO R [US]) 16 June 2016 (2016-06-16) the whole document -----	1,3,5,7-11,13,15,17-20
X,P	WO 2016/187107 A1 (CAMERON JOHN [US]) 24 November 2016 (2016-11-24) paragraphs [0049], [0051], [0058], [0059]; figure 1 ----- -/--	1,3,5,7,8,10,11,13,15,17,18,20

☒ 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

"&" document member of the same patent family

Date of the actual completion of the international search

23 January 2018

Date of mailing of the international search report

01/02/2018

Name and mailing address of the ISA/

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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.
Y	US 2005/263160 A1 (UTLEY DAVID S [US] ET AL) 1 December 2005 (2005-12-01) paragraph [0025] paragraph [0027]	1,2,6, 11,12,16
Y	----- US 2016/106936 A1 (KIMMEL JOSH [US]) 21 April 2016 (2016-04-21) paragraph [0043] paragraph [0045] paragraph [0024] -----	1,4,11, 14

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2017/054020

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:

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.:

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.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2017/054020

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2016062786 A1	28-04-2016	CA 2954820 A1 CN 106793836 A EP 3209150 A1 JP 2017537610 A KR 20170072878 A US 2017224024 A1 WO 2016062786 A1	28-04-2016 31-05-2017 30-08-2017 21-12-2017 27-06-2017 10-08-2017 28-04-2016
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US 2005263160 A1	01-12-2005	EP 1768503 A2 US 2005263160 A1 WO 2005117621 A2	04-04-2007 01-12-2005 15-12-2005
US 2016106936 A1	21-04-2016	NONE	

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 3, 5, 7-10, 13, 15, 17-20(completely); 1, 11(partially)

A control body/cartridge coupled or coupleable with a cartridge/control body to form an aerosol delivery device wherein gas concentration is processed by band-pass filter

2. claims: 2, 6, 12, 16(completely); 1, 11(partially)

A control body/cartridge coupled or coupleable with a cartridge/control body to form an aerosol delivery device with a photoionization sensor and transimpedance amplifier for amplifying a detected ionic current.

3. claims: 4, 14(completely); 1, 11(partially)

A control body/cartridge coupled or coupleable with a cartridge/control body to form an aerosol delivery device with a control component configured to alter a locked state of the device based on gas detection
