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(54) Title: CARTRIDGE FOR A VAPORIZER DEVICE

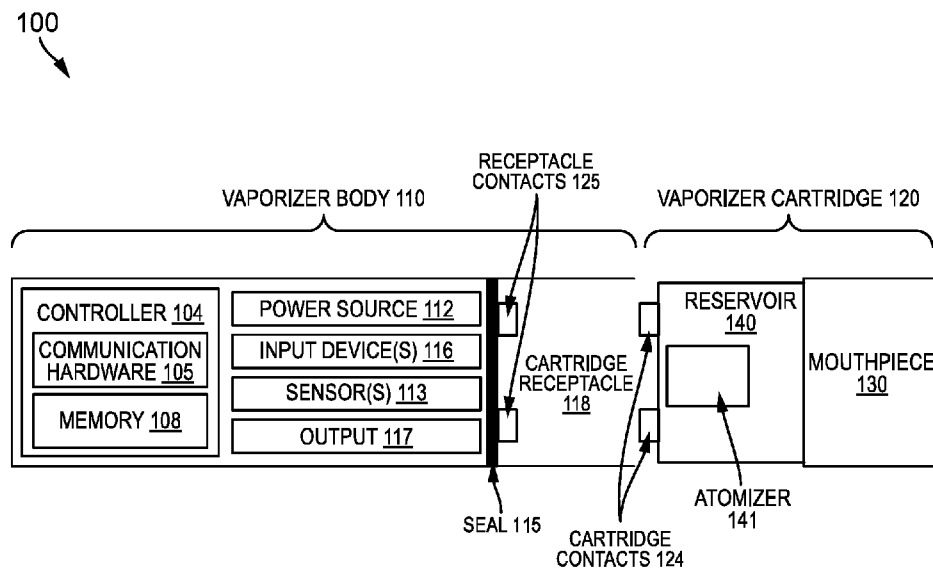


FIG. 1

(57) Abstract: A vaporization device includes a cartridge (1320) for a vaporizer device. For example, the vaporizer cartridge and/or features thereof may improve management of leaks of vaporizable material (1302) from the vaporizer cartridge, control of airflow within and/or near the vaporizer cartridge, heating of vaporizable material in the vaporizer cartridge, management of condensate in the vaporizer cartridge, and/or other assembly features of the vaporizer cartridge. Related systems, methods, and articles of manufacture are also described.



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, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2020/020536

A. CLASSIFICATION OF SUBJECT MATTER
INV. A24F40/10 A24F40/46
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
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, 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 2017/093535 A1 (JT INT S A [CH]) 8 June 2017 (2017-06-08)	1
A	page 9, line 8 - line 28; figures 3-5 -----	2
A	US 2017/367402 A1 (LAU RAYMOND [US] ET AL) 28 December 2017 (2017-12-28) paragraph [0104] - paragraph [0120]; figures 2A-2C -----	1,2
A	CN 108 158 039 A (CHINA TOBACCO YUNNAN IND CO LTD) 15 June 2018 (2018-06-15) the whole document -----	1,2

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	"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
"E" earlier application or patent but published on or after the international filing date	"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
"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)	"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
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 30 June 2020	Date of mailing of the international search report 31/08/2020
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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 Caballero Martínez
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2020/020536

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.:

1, 2

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

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

1. claims: 1, 2

A microfluidic gate for controlling flow of liquid vaporizable material between a storage chamber and an adjoining overflow volume in a vaporizer, the microfluidic gate comprising a plurality of openings connecting the storage chamber and the collector, the plurality of openings comprising a first channel and a second channel, wherein the first channel has a higher capillary drive than the second channel; and a pinch-off point between the plurality of openings.

2. claims: 3-62, 93-106

A collector configured for insertion into a vaporizer cartridge and comprising a capillary structure configured to retain a volume of the liquid vaporizable material in fluid contact with a storage chamber of the vaporizer cartridge, the capillary structure comprising a microfluidic feature configured to prevent air and liquid from bypassing each other during filling and emptying of the collector.

3. claims: 63-72

A collector component of a vaporizer for use with a liquid vaporizable material, the collector component comprising a fluid passage; an outer port disposed at a first end of the fluid passage and configured to be in fluid communication with ambient air external to the vaporizer; a control vent disposed at a second end of the fluid passage distal to the first end and configured to manage flow between the fluid passage and a reservoir of the vaporizer configured to contain the liquid vaporizable material, the control vent configured to provide at least a first fluidic resistance to pinching off of an air bubble into the reservoir when air is in the fluid passage adjacent to the control vent and a void volume within the reservoir is at a lower pressure than the ambient air external to the vaporizer; and a second fluidic resistance to allowing the liquid vaporizable material to pass the control vent into the fluid passage when the void volume within the reservoir is at a higher pressure than the ambient air external to the vaporizer; and at least a first wick feed implemented in form of a first channel to allow for the vaporizable material stored in a storage chamber to flow toward a wick placed in a wick housing positioned in an overflow volume, the control vent maintaining an equilibrium state in the storage chamber to prevent pressure in the storage chamber to increase to a point that would cause the vaporizable material to flood the wick housing.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

4. claims: 73-92

A cartridge for a vaporizer device, the cartridge comprising a reservoir including a reservoir chamber defined by a reservoir barrier, the reservoir being configured to contain a vaporizable material in the reservoir chamber; a vaporization chamber in communication with the reservoir and including a wicking element configured to draw the vaporizable material from the reservoir chamber to the vaporization chamber to be vaporized by a heating element; an airflow passageway that extends through the vaporization chamber; and at least one capillary channel adjacent the airflow passageway, each capillary channel of the at least one capillary channel configured to receive a fluid and direct the fluid from a first location toward a second location via capillary action.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2020/020536

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