

UTILITY PATENT APPLICATION TRANSMITTAL <i>(Only for new nonprovisional applications under 37 CFR 1.53(b))</i>		Attorney Docket No. 35196-713.201	
		First Named Inventor Adam Bowen	
		Title NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF	
		Express Mail Label No. Submitted via EFS 5-6-2014	

APPLICATION ELEMENTS <i>See MPEP chapter 600 concerning utility patent application contents.</i>	Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450
<ol style="list-style-type: none"> 1. ☐ Fee Transmittal Form (PTO/SB/17 or equivalent) 2. ☐ Applicant asserts small entity status. See 37 CFR 1.27 3. ☐ Applicant certifies micro entity status. See 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent. 4. ☒ Specification [Total Pages 100] Both the claims and abstract must start on a new page. (See MPEP § 608.01(a) for information on the preferred arrangement) 5. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets 8] 6. ☐ Inventor's Oath or Declaration [Total Pages _____] (including substitute statements under 37 CFR 1.64 and assignments serving as an oath or declaration under 37 CFR 1.63(e)) <ol style="list-style-type: none"> a. ☐ Newly executed (original or copy) b. ☐ A copy from a prior application (37 CFR 1.63(d)) 7. ☒ Application Data Sheet * See note below. See 37 CFR 1.76 (PTO/AIA/14 or equivalent) 8. CD-ROM or CD-R in duplicate, large table, or Computer Program (Appendix) ☐ Landscape Table on CD 9. Nucleotide and/or Amino Acid Sequence Submission (if applicable, items a. – c. are required) <ol style="list-style-type: none"> a. ☐ Computer Readable Form (CRF) b. ☐ Specification Sequence Listing on: <ol style="list-style-type: none"> i. ☐ CD-ROM or CD-R (2 copies); or ii. ☐ Paper c. ☐ Statements verifying identity of above copies 	ACCOMPANYING APPLICATION PAPERS <ol style="list-style-type: none"> 10. ☐ Assignment Papers (cover sheet & document(s)) Name of Assignee _____ 11. ☐ 37 CFR 3.73(c) Statement ☐ Power of Attorney (when there is an assignee) 12. ☐ English Translation Document (if applicable) 13. ☐ Information Disclosure Statement (PTO/SB/08 or PTO-1449) ☐ Copies of citations attached 14. ☐ Preliminary Amendment 15. ☐ Return Receipt Postcard (MPEP § 503) (Should be specifically itemized) 16. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed) 17. ☐ Nonpublication Request Under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent. 18. ☐ Other: _____ _____ _____ _____

***Note:** (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 **must** be included in an Application Data Sheet (ADS).
 (2) For applications filed under 35 U.S.C. 111, the application must contain an ADS specifying the applicant if the applicant is an assignee, person to whom the inventor is under an obligation to assign, or person who otherwise shows sufficient proprietary interest in the matter. See 37 CFR 1.46(b).

19. CORRESPONDENCE ADDRESS			
☒ The address associated with Customer Number: 21971 OR ☐ Correspondence address below			
Name			
Address			
City	State	Zip Code	
Country	Telephone	Email	

Signature	/Kristin Havranek/	Date	05-06-2014
Name (Print/Type)	Kristin Havranek	Registration No. (Attorney/Agent)	58789

This collection of information is required by 37 CFR 1.53(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	35196-713.201
		Application Number	
Title of Invention	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.</p> <p>This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
--

Inventor Information:

Inventor 1					Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Adam		Bowen			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						
City	San Francisco	State/Province	CA	Country of Residence i	US	
Mailing Address of Inventor:						
Address 1		660 Alabama St. 2nd Floor				
Address 2						
City	San Francisco	State/Province	CA			
Postal Code	94110	Country i	US			
Inventor 2					Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Chenyue		Xing			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						
City	San Francisco	State/Province	CA	Country of Residence i	US	
Mailing Address of Inventor:						
Address 1		660 Alabama St. 2nd Floor				
Address 2						
City	San Francisco	State/Province	CA			
Postal Code	94110	Country i	US			
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button. <div style="text-align: right;">Add</div>						

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	35196-713.201
		Application Number	
Title of Invention	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF		

☐ An Address is being provided for the correspondence information of this application.

Customer Number	21971		
Email Address	patentdocket@wsgr.com	<input type="button" value="Add Email"/>	<input type="button" value="Remove Email"/>

Application Information:

Title of the Invention	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF		
Attorney Docket Number	35196-713.201	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	8	Suggested Figure for Publication (if any)	

Filing By Reference :

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	21971		

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	35196-713.201
		Application Number	
Title of Invention	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the application number blank.

Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Claims benefit of provisional	61820128	2013-05-06
Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Claims benefit of provisional	61912507	2013-12-05

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

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Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) ⁱthe information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ^j (if applicable)

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	35196-713.201
		Application Number	
Title of Invention	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF		

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.

NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices

If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing this Authorization.

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	35196-713.201
		Application Number	
Title of Invention	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF		

Applicant 1				Remove	
<p>If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.</p>					
Clear					
☒ Assignee		☐ Legal Representative under 35 U.S.C. 117		☐ Joint Inventor	
☐ Person to whom the inventor is obligated to assign.			☐ Person who shows sufficient proprietary interest		
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:					
Name of the Deceased or Legally Incapacitated Inventor : <input type="text"/>					
If the Applicant is an Organization check here. ☒					
Organization Name		Ploom, Inc.			
Mailing Address Information:					
Address 1		660 Alabama St. 2nd Floor			
Address 2					
City		San Francisco	State/Province		CA
Country ⁱ		US	Postal Code		94110
Phone Number			Fax Number		
Email Address					
Additional Applicant Data may be generated within this form by selecting the Add button. Add					

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Assignee 1	
<p>Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.</p>	
Remove	
If the Assignee or Non-Applicant Assignee is an Organization check here. ☐	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	35196-713.201
		Application Number	
Title of Invention	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF		

Prefix	Given Name	Middle Name	Family Name	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		State/Province	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications

Signature	/Kristin Havranek/		Date (YYYY-MM-DD)	2014-05-06
First Name	Kristin	Last Name	Havranek	Registration Number
				58789

Additional Signature may be generated within this form by selecting the Add button.

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

NON-PROVISIONAL PATENT APPLICATION
NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS
THEREOF

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Entity: a LARGE business concern



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FILED ELECTRONICALLY ON MAY 6, 2014

NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF

CROSS REFERENCE

[0001] This application claims the benefit of U.S. Provisional Patent Application Serial No. 61/820,128, filed May 6, 2013, and U.S. Provisional Patent Application Serial No. 61/912,507, filed December 5, 2013, which are incorporated herein by reference in their entireties.

SUMMARY OF THE INVENTION

[0002] Provided herein is a method of delivering nicotine to a user comprising operating an electronic cigarette to a user wherein the electronic cigarette comprises a nicotine salt formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C, and inhaling an aerosol generated from the nicotine salt formulation heated by the electronic cigarette.

[0003] Provided herein is a method of delivering nicotine to a user comprising operating an electronic cigarette to a user wherein the electronic cigarette comprises a nicotine salt formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C, and inhaling an aerosol generated from the nicotine salt formulation heated by the electronic cigarette.

[0004] Provided herein is a method of delivering nicotine to a user comprising operating an electronic cigarette wherein the electronic cigarette comprises a nicotine salt formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point, and inhaling an aerosol generated from the nicotine salt formulation heated by the electronic cigarette.

[0005] Provided herein is a method of delivering nicotine to a user comprising providing an electronic cigarette to a user wherein the electronic cigarette comprises a nicotine salt formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein

an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point, and inhaling an aerosol generated from the nicotine salt formulation heated by the electronic cigarette.

[0006] Provided herein is a method of delivering nicotine to the blood of a user, said method comprising providing an aerosol that is inhaled by the user from an electronic cigarette that comprises a nicotine salt formulation wherein providing the aerosol comprises the electronic cigarette heating the formulation thereby generating the aerosol, wherein the aerosol is effective in delivering a level of nicotine in the blood of the user that is at least 5ng/mL at about 1.5 minutes after a first puff of ten puffs of the aerosol, each puff taken at 30 second intervals.

[0007] Provided herein is a nicotine salt liquid formulation in an electronic cigarette for generating an inhalable aerosol upon heating in the electronic cigarette, the formulation in the cigarette comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C.

[0008] Provided herein is a nicotine salt liquid formulation in an electronic cigarette for generating an inhalable aerosol upon heating in the electronic cigarette, the formulation in the cigarette comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C.

[0009] Provided herein is a nicotine salt liquid formulation in an electronic cigarette for generating an inhalable aerosol upon heating in the electronic cigarette, the formulation in the cigarette comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point.

[0010] Provided herein is a nicotine salt liquid formulation in an electronic cigarette for generating an inhalable aerosol upon heating in the electronic cigarette, the formulation

in the cigarette comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point.

[0011] Provided herein is a nicotine salt liquid formulation for generating an inhalable aerosol upon heating in the electronic cigarette, the nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C.

[0012] Provided herein is a nicotine salt liquid formulation for generating an inhalable aerosol upon heating in the electronic cigarette, the nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C.

[0013] Provided herein is a nicotine salt liquid formulation for generating an inhalable aerosol upon heating in the electronic cigarette, the nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point.

[0014] Provided herein is a nicotine salt liquid formulation for generating an inhalable aerosol upon heating in the electronic cigarette, the nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point.

[0015] Provided herein is a nicotine salt liquid formulation for use in an electronic cigarette the nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C.

- [0016] Provided herein is a nicotine salt liquid formulation for use in an electronic cigarette the nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C.
- [0017] Provided herein is a nicotine salt liquid formulation for use in an electronic cigarette the nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point.
- [0018] Provided herein is a nicotine salt liquid formulation for use in an electronic cigarette the nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point.
- [0019] Provided herein is a use of a nicotine salt formulation for delivery of nicotine to a user from an electronic cigarette wherein the nicotine salt formulation comprises a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C, and the nicotine salt formulation is heated by the electronic cigarette to generate an aerosol inhalable by the user.
- [0020] Provided herein is a use of a nicotine salt formulation for delivery of nicotine to a user from an electronic cigarette wherein the nicotine salt formulation comprises a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C, and the nicotine salt formulation is heated by the electronic cigarette to generate an aerosol inhalable by the user.
- [0021] Provided herein is a use of a nicotine salt formulation for delivery of nicotine to a user from an electronic cigarette wherein the nicotine salt formulation comprises a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine

salt is further characterized by a melting point $<160^{\circ}\text{C}$, a boiling point $>160^{\circ}\text{C}$, and at least a 50-degree difference between the melting point and the boiling point, and the nicotine salt formulation is heated by the electronic cigarette to generate an aerosol inhalable by the user.

[0022] Provided herein is a use of a nicotine salt formulation for delivery of nicotine to the blood of a user from an electronic cigarette, wherein the nicotine salt formulation in the electronic cigarette is heated to form an aerosol which delivers a level of nicotine in the blood of the user that is at least 5 ng/mL at about 1.5 minutes after a first puff of ten puffs of the aerosol, each puff taken at 30 second intervals.

[0023] Provided herein is a use of a nicotine salt formulation for delivery of nicotine to a user from an electronic cigarette wherein the nicotine salt formulation comprises a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point, and the nicotine salt formulation is heated by the electronic cigarette to generate an aerosol inhalable by the user.

[0024] Provided herein is a cartomizer for an electronic cigarette comprising:

- a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200°C ;
- an atomizer comprising a heating element in fluid communication with the nicotine salt liquid formulation; and
- a fluid storage compartment that stores the nicotine salt liquid formulation.

[0025] Provided herein is a cartomizer for an electronic cigarette comprising:

- a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200°C ;
- an atomizer comprising a heating element in fluid communication with the nicotine salt liquid formulation; and

a fluid storage compartment that stores the nicotine salt liquid formulation.

[0026] Provided herein is a cartomizer for an electronic cigarette comprising:

a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point $<160^{\circ}\text{C}$, a boiling point $>160^{\circ}\text{C}$, and at least a 50-degree difference between the melting point and the boiling point;

an atomizer comprising a heating element in fluid communication with the nicotine salt liquid formulation; and

a fluid storage compartment that stores the nicotine salt liquid formulation.

[0027] Provided herein is a cartomizer for an electronic cigarette comprising:

a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point;

an atomizer comprising a heating element in fluid communication with the nicotine salt liquid formulation; and

a fluid storage compartment that stores the nicotine salt liquid formulation.

[0028] Provided herein is an electronic cigarette for generating an inhalable aerosol comprising:

a fluid storage compartment;

a heater; and

a nicotine salt liquid formulation in the fluid storage compartment, the liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure $>20\text{ mmHg}$ at 200°C ;

a battery; and

a mouthpiece.

[0029] Provided herein is an electronic cigarette for generating an inhalable aerosol comprising:

a fluid storage compartment;

a heater; and

a nicotine salt liquid formulation in the fluid storage compartment, the liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C;

a battery; and

a mouthpiece.

[0030] Provided herein is an electronic cigarette for generating an inhalable aerosol comprising:

a fluid storage compartment;

a heater; and

a nicotine salt liquid formulation in the fluid storage compartment, the liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point;

a battery; and

a mouthpiece.

[0031] Provided herein is an electronic cigarette for generating an inhalable aerosol comprising:

a fluid storage compartment;

a heater; and

a nicotine salt liquid formulation in the fluid storage compartment, the liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point;

a battery; and

a mouthpiece.

[0032] Provided herein is a cartridge in an electronic cigarette comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein

an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C.

[0033] Provided herein is a cartridge in an electronic cigarette comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C.

[0034] Provided herein is a cartridge in an electronic cigarette comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point.

[0035] Provided herein is a cartridge in an electronic cigarette comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point.

[0036] Provided herein is a kit comprising:

- (a) an electronic cigarette for generating an inhalable aerosol comprising
 - i. a device body comprising a cartridge receptacle;
 - ii. a cartridge comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C;
 - iii. a heater;
 - iv. a battery; and
 - v. a mouthpiece; and

(b) instructions for using the electronic cigarette to generate an inhalable aerosol.

[0037] Provided herein is a kit comprising:

- (a) an electronic cigarette for generating an inhalable aerosol comprising
 - i. a device body comprising a cartridge receptacle;
 - ii. a cartridge comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C;
 - iii. a heater;
 - iv. a battery; and
 - v. a mouthpiece; and

(b) instructions for using the electronic cigarette to generate an inhalable aerosol.

[0038] Provided herein is a kit comprising:

- (a) an electronic cigarette for generating an inhalable aerosol comprising
 - i. a device body comprising a cartridge receptacle;
 - ii. a cartridge comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point;
 - iii. a heater;
 - iv. a battery; and
 - v. a mouthpiece; and

(b) instructions for using the electronic cigarette to generate an inhalable aerosol.

[0039] Provided herein is a kit comprising:

- (a) an electronic cigarette for generating an inhalable aerosol comprising
 - i. a device body comprising a cartridge receptacle;
 - ii. a cartridge comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a

nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point;

- iii. a heater;
- iv. a battery; and
- v. a mouthpiece; and

(b) instructions for using the electronic cigarette to generate an inhalable aerosol.

INCORPORATION BY REFERENCE

[0040] All publications, patents and patent applications mentioned in this specification are herein incorporated by reference to the same extent as if each individual publication, patent or patent application was specifically and individually indicated to be incorporated by reference.

BRIEF DESCRIPTION OF THE DRAWINGS

[0041] A better understanding of the features and advantages of the present invention will be obtained by reference to the following detailed description that sets forth illustrative embodiments, in which the principles of the invention are used, and the accompanying drawings of which:

[0042] Figure 1 illustrates results of heart rate data measured for six minutes from start of puffing. Y-axis is heart rate (bpm) and X-axis represent duration of the test (-60 to 180 seconds);

[0043] Figure 2 illustrates results of heart rate data measured for ten minutes from start of puffing. Y-axis is heart rate (bpm) and X-axis represents duration of the test (0 to 10 minutes);

[0044] Figure 3 illustrates the calculated vapor pressures of various acids relative to nicotine;

[0045] Figure 4 illustrates the pharmacokinetic profiles for eight test articles in a blood plasma study;

- [0046] **Figure 5** illustrates the comparison of $C_{\max}$ and $T_{\max}$ for eight test articles in a blood plasma study;
- [0047] **Figure 6** illustrates the comparison of $C_{\max}$ and AUC for eight test articles in a blood plasma study;
- [0048] **Figure 7** depicts an example embodiment of an electronic cigarette having a fluid storage compartment comprising an embodiment nicotine salt formulation described herein; and
- [0049] **Figure 8** depicts an example embodiment of an electronic cigarette cartomizer having a fluid storage compartment, a heater, and comprising an embodiment nicotine salt formulation described herein.

DETAILED DESCRIPTION OF THE INVENTION

- [0050] Nicotine is a chemical stimulant and increases heart rate and blood pressure when provided to an individual or animal. Nicotine transfer to an individual is associated with a feeling of physical and/or emotional satisfaction. Conflicting reports have been published regarding the transfer efficiency of free base nicotine in comparison to mono- or di-protonated nicotine salts. Studies on the transfer efficiency of free base nicotine and nicotine salts are complex and have yielded unpredictable results. Further, such transfer efficiency studies have been performed under extremely high temperature conditions, comparable to smoking; therefore, they offer scant guidance on the transfer efficiency of free base nicotine and nicotine salts under low-temperature vaporization conditions. Some reports have posited that nicotine free base should give rise to a greater satisfaction in a user than any corresponding nicotine salt.
- [0051] It has been unexpectedly discovered herein that certain nicotine salt formulations provide satisfaction in an individual superior to that of free base nicotine, and more comparable to the satisfaction in an individual smoking a traditional cigarette. The satisfaction effect is consistent with an efficient transfer of nicotine to the lungs of an individual and a rapid rise of nicotine absorption in the plasma as shown, for non-limiting example, in Example 8, at least. It has also been unexpectedly discovered herein that certain nicotine salt formulations provide greater satisfaction than other nicotine salt formulations, and such effect has been shown in blood plasma levels of example nicotine salt formulations

herein, for non-limiting example, in Example 8, at least. These results show a difference in rate of nicotine uptake in the blood that is higher for some nicotine salt formulations aerosolized by an electronic cigarette than for other nicotine salt formulations, and likewise higher than nicotine freebase formulations, while the peak concentration of the nicotine in the blood and total amount of nicotine delivered appears comparable to a traditional cigarette, and do not appear to vary significantly between the various nicotine formulations. Therefore, described herein are nicotine salt formulations for use in an electronic cigarette, or the like, that provide a general satisfaction effect consistent with an efficient transfer of nicotine to the lungs of an individual and a rapid rise of nicotine absorption in the plasma. Provided herein, therefore, are devices, formulation of nicotine salts, systems, cartomizers, kits and methods that are used to inhale an aerosol generated from a nicotine salt liquid formulation through the mouth or nose as described herein or as would be obvious to one of skill in the art upon reading the disclosure herein.

[0052] Consistent with these satisfaction effects, it has unexpectedly been found herein that there is a difference between the $C_{\max}$ (maximum concentration) and $T_{\max}$ (time at which the maximum concentration is measured) when measuring blood plasma nicotine levels of freebase nicotine formulations inhaled using a low temperature vaporization device, i.e. electronic cigarette, as compared to the $C_{\max}$ and $T_{\max}$ (similarly measuring blood plasma nicotine levels) of a traditional cigarette. Also consistent with these satisfaction effects, it has unexpectedly been found herein that there is a difference between the $C_{\max}$ (maximum concentration) and $T_{\max}$ (time at which the maximum concentration is measured) when measuring blood plasma nicotine levels of freebase nicotine formulations inhaled using a low temperature vaporization device, i.e. electronic cigarette, as compared to the $C_{\max}$ and $T_{\max}$ (similarly measuring blood plasma nicotine levels) of nicotine salt formulations inhaled using a low temperature vaporization device, i.e. electronic cigarette. Additionally, it has unexpectedly been found that there is a difference between the rate of nicotine uptake in the plasma of users inhaling freebase nicotine formulations using a low temperature vaporization device, i.e. electronic cigarette, as compared to the rate of nicotine uptake in the plasma of users inhaling smoke of a traditional cigarette. Furthermore, it has unexpectedly been found that there is a difference between the rate of nicotine uptake in the plasma of users inhaling

freebase nicotine formulations using a low temperature vaporization device, i.e. electronic cigarette, as compared to the rate of nicotine uptake in the plasma of users inhaling nicotine salt formulations using a low temperature vaporization device, i.e. electronic cigarette.

[0053] Thus, looking at freebase nicotine as a source of nicotine in compositions used in e-cigarettes, freebase nicotine compositions' delivery of nicotine to blood when inhaled using is not necessarily comparable in blood plasma levels ($C_{\max}$ and $T_{\max}$) to a traditional cigarette's nicotine delivery to blood when inhaled. Freebase nicotine compositions' delivery of nicotine to blood when inhaled using is not necessarily comparable in blood plasma levels ($C_{\max}$ and $T_{\max}$) to nicotine salt formulations' nicotine delivery to blood when inhaled. Freebase nicotine compositions' delivery of nicotine to blood when inhaled using is not necessarily comparable in blood plasma levels when measuring the rate of nicotine uptake in the blood within the first 0-5 minutes to a traditional cigarette's nicotine delivery to blood when inhaled. Freebase nicotine compositions' delivery of nicotine to blood when inhaled using necessarily is not comparable in blood plasma levels when measuring the rate of nicotine uptake in the blood within the first 0-5 minutes to nicotine salt formulations' nicotine delivery to blood when inhaled.

[0054] Also consistent with these satisfaction effects, it has unexpectedly been found herein that while there appears to be comparable $C_{\max}$ and $T_{\max}$ values (measuring blood plasma nicotine levels) of nicotine salt formulations inhaled using a low temperature vaporization device, i.e. electronic cigarette, as compared to the $C_{\max}$ and $T_{\max}$ (similarly measuring blood plasma nicotine levels) of a traditional cigarette, there is a demonstrable difference between the rate of nicotine uptake in the plasma of users inhaling certain nicotine salt formulations using a low temperature vaporization device, i.e. electronic cigarette, as compared to the rate of nicotine uptake in the plasma of users inhaling other nicotine salt formulations using a low temperature vaporization device, i.e. electronic cigarette. It is also unexpected that while the $C_{\max}$ and $T_{\max}$ values are comparable to those of a traditional cigarette, (or are approaching that of a traditional cigarette), the rate of nicotine uptake in the plasma of blood of users is higher in certain nicotine salt formulations than that of the traditional cigarette. The nicotine salt formulations which demonstrate the quickest rate of nicotine uptake in the plasma were more preferred in

satisfaction evaluations, and were rated more equivalent to cigarette satisfaction than the nicotine salt formulations showing the slowest rates of rise of nicotine in the subjects' blood plasma. In addition, doubling the concentration of the nicotine salt in the formulation may not necessarily impact the rate of absorption of nicotine in the blood (see, for non-limiting example Example 8, nicotine benzoate tested in 4% and 2% concentrations).

[0055] Thus, looking at nicotine salt formulations used in e-cigarettes, nicotine salt formulations delivered using an e-cigarette appear comparable in $C_{\max}$ and $T_{\max}$ values (measuring blood plasma nicotine levels), however, not all nicotine salts perform similarly to each other or to a traditional cigarette with respect to the rate of nicotine uptake in the blood at early time periods (0-1.5 minutes). These results are unexpected. Nicotine salt formulations made using acids having a Vapor Pressure between 20 – 300 mmHg @ 200 °C, or Vapor Pressure > 20 mmHg @ 200 °C, or a Vapor Pressure from 20 to 300 mmHg @ 200 °C, or a Vapor Pressure from 20 to 200 mmHg @ 200 °C, a Vapor Pressure between 20 and 300 mmHg @ 200 °C appear to have a higher rate of nicotine uptake in the blood at early time periods (0-1.5 minutes, 0-3 minutes, 0-2 minutes, 0-4 minutes for non-limiting example) than other nicotine salt formulations, however, they also provide satisfaction comparable to a traditional cigarette or closer to a traditional cigarette (as compared to other nicotine salt formulations or as compared to nicotine freebase formulations). For non-limiting example, acids that meet one or more criteria of the prior sentence include salicylic acid, sorbic acid, benzoic acid, lauric acid, and levulinic acid. Nicotine salt formulations made using acids that have a difference between boiling point and melting point of at least 50 °C, and a boiling point greater than 160 °C, and a melting point less than 160 °C appear to have a higher rate of nicotine uptake in the blood at early time periods (0-1.5 minutes, 0-3 minutes, 0-2 minutes, 0-4 minutes for non-limiting example) than other nicotine salt formulations, however, they also provide satisfaction comparable to a traditional cigarette or closer to a traditional cigarette (as compared to other nicotine salt formulations or as compared to nicotine freebase formulations). For non-limiting example, acids that meet the criteria of the prior sentence include salicylic acid, sorbic acid, benzoic acid, pyruvic acid, lauric acid, and levulinic acid. Nicotine salt formulations made using acids that have a difference between boiling point and melting

point of at least 50 °C, and a boiling point at most 40 °C less than operating temperature, and a melting point at least 40 °C lower than operating temperature appear to have a higher rate of nicotine uptake in the blood at early time periods (0-1.5 minutes, 0-3 minutes, 0-2 minutes, 0-4 minutes for non-limiting example) than other nicotine salt formulations, however, they also provide satisfaction comparable to a traditional cigarette or closer to a traditional cigarette (as compared to other nicotine salt formulations or as compared to nicotine freebase formulations). Operating temperature can be 100 °C to 300°C, or about 200°C, about 150°C to about 250°C, 180C to 220°C, about 180°C to about 220°C, 185°C to 215°C, about 185°C to about 215°C, about 190°C to about 210°C, 190°C to 210°C, 195°C to 205°C, or about 195°C to about 205°C. For non-limiting example, acids that meet the criteria of the prior sentence include salicylic acid, sorbic acid, benzoic acid, pyruvic acid, lauric acid, and levulinic acid. Combinations of these criteria for preference of certain nicotine salt formulations are contemplated herein.

[0056] Other reasons for excluding certain acids from formulations may be unrelated to the rate of nicotine uptake, however. For example, an acid may be inappropriate for use with the device materials (corrosive or otherwise incompatible). Sulfuric acid is an example of this, which may be inappropriate for the e-cigarette device. An acid may be inappropriate for use in inhalation or for toxicity reasons – thus not be compatible for human consumption, ingestion, or inhalation. Sulfuric acid again is an example of this, which may be inappropriate for a user of an e-cigarette device, depending on the embodiment of the composition. An acid that is bitter or otherwise bad-tasting may also provide a reason for exclusion, such as acetic acid in some embodiments. Acids that oxidize at room temperature or at operating temperature may be inappropriate for certain embodiments, for example, sorbic acid, as this indicates a decomposition or reaction or instability that may be undesirable in the formulation. Decomposition of acids at room or operating temperatures may also indicate that the acid is inappropriate for use in the embodiment formulations. For example, citric acid decomposes at 175°C, and malic acid decomposes at 140°C, thus for a device operating at 200°C, these acids may not be appropriate. Acids that have poor solubility in the composition constituents may be inappropriate for use in certain embodiments of the compositions herein. For example, nicotine bitartrate with a composition of nicotine and tartaric acid as 1:2 molar ratio will

not produce a solution at a concentration of 0.5%(w/w) nicotine or higher and 0.9%(w/w) tartaric acid or higher in propylene glycol (PG) or vegetable glycerin (VG) or any mixture of PG and VG at ambient conditions. As used herein, weight percentage (w/w) refers to the weight of the individual component over the weight of the total formulation.

[0057] As used in this specification and the claims, the singular forms “a,” “an,” and “the” include plural referents unless the context clearly dictates otherwise.

[0058] The term “organic acid” as used herein, refers to an organic compound with acidic properties (e.g., by Brønsted-Lowry definition, or Lewis definition). A common organic acid is the carboxylic acids, whose acidity is associated with their carboxyl group – COOH. A dicarboxylic acid possesses two carboxylic acid groups. The relative acidity of an organic is measured by its pK_a value and one of skill in the art knows how to determine the acidity of an organic acid based on its given pK_a value. The term “keto acid” as used herein, refers to organic compounds that contain a carboxylic acid group and a ketone group. Common types of keto acids include alpha-keto acids, or 2-oxoacids, such as pyruvic acid or oxaloacetic acid, having the keto group adjacent to the carboxylic acid; beta-keto acids, or 3-oxoacids, such as acetoacetic acid, having the ketone group at the second carbon from the carboxylic acid; gamma-keto acids, or 4-oxoacids, such as levulinic acid, having the ketone group at the third carbon from the carboxylic acid.

[0059] The term “electronic cigarette” or “e-cigarette” or “low temperature vaporization device” as used herein, refers to an electronic inhaler that vaporizes a liquid solution into an aerosol mist, simulating the act of tobacco smoking. The liquid solution comprises a formulation comprising nicotine. There are many electronic cigarettes which do not resemble conventional cigarettes at all. The amount of nicotine contained can be chosen by the user via the inhalation. In general, an electronic cigarette contains three essential components: a plastic cartridge that serves as a mouthpiece and a reservoir for liquid, an “atomizer” that vaporizes the liquid, and a battery. Other embodiment electronic cigarettes include a combined atomizer and reservoir, called a “cartomizer” that may or may not be disposable, a mouthpiece that may be integrated with the cartomizer or not, and a battery.

- [0060] As used in this specification and the claims, unless otherwise stated, the term “about” refers to variations of 1%, 2%, 3%, 4%, 5%, 10%, 15%, or 25%, depending on the embodiment.
- [0061] Suitable carriers (e.g., a liquid solvent) for the nicotine salts described herein include a medium in which a nicotine salt is soluble at ambient conditions, such that the nicotine salt does not form a solid precipitate. Examples include, but are not limited to, glycerol, propylene glycol, trimethylene glycol, water, ethanol and the like, as well as combinations thereof. In some embodiments, the liquid carrier comprises 0% to 100% of propylene glycol and 100% to 0% of vegetable glycerin. In some embodiments, the liquid carrier comprises 10% to 70% of propylene glycol and 90% to 30% of vegetable glycerin. In some embodiments, the liquid carrier comprises 20% to 50% of propylene glycol and 80% to 50% of vegetable glycerin. In some embodiments, the liquid carrier comprises 30% propylene glycol and 70% vegetable glycerin.
- [0062] The formulations described herein vary in concentration. In some formulations, a dilute concentration of the nicotine salt in the carrier is utilized. In some formulations, a less dilute concentration of the nicotine salt in the carrier is utilized. In some formulations the concentration of nicotine in the nicotine salt formulation is about 1% (w/w) to about 25% (w/w). In some formulations the concentration of nicotine in the nicotine salt formulation is about 1% (w/w) to about 20% (w/w). In some formulations the concentration of nicotine in the nicotine salt formulation is about 1% (w/w) to about 18% (w/w). In some embodiments the concentration of nicotine in the nicotine salt formulation is about 1% (w/w) to about 15% (w/w). In some formulations the concentration of nicotine in the nicotine salt formulation is about 4% (w/w) to about 12% (w/w). In some formulations the concentration of nicotine in the nicotine salt formulation is about 4% (w/w). In some embodiments the concentration of nicotine in the nicotine salt formulation is about 2% (w/w). In some formulations the concentration of nicotine in the nicotine salt formulation is 1% (w/w) to 25% (w/w). In some formulations the concentration of nicotine in the nicotine salt formulation is 1% (w/w) to 20% (w/w). In some formulations the concentration of nicotine in the nicotine salt formulation is 1% (w/w) to 18% (w/w). In some formulations the concentration of nicotine in the nicotine salt formulation is 1% (w/w) to 15% (w/w). In some formulations the concentration of nicotine in the nicotine

salt formulation is 4% (w/w) to 12% (w/w). In some formulations the concentration of nicotine in the nicotine salt formulation is 4% (w/w). In some formulations the concentration of nicotine in the nicotine salt formulation is 2% (w/w). In some formulations, a less dilute concentration of one nicotine salt is used in conjunction with a more dilute concentration of a second nicotine salt. In some formulations, the concentration of nicotine in the first nicotine salt formulation is about 1% to about 20%, and is combined with a second nicotine salt formulation having a concentration of nicotine therein from about 1% to about 20% or any range or concentration therein. In some formulations, the concentration of nicotine in the first nicotine salt formulation is 1% to 20%, and is combined with a second nicotine salt formulation having a concentration of nicotine therein from 1% to 20% or any range or concentration therein. As used with respect to concentrations of nicotine in the nicotine salt formulations, the term “about” refers to ranges of 0.05% (i.e. if the concentration is about 2%, the range is 1.95%-2.05%), 0.1 (i.e. if the concentration is about 2%, the range is 1.9%-2.1%), 0.25 (i.e. if the concentration is about 2%, the range is 1.75%-2.25%), 0.5 (i.e. if the concentration is about 2%, the range is 1.5%-2.5%), or 1 (i.e. if the concentration is about 4%, the range is 3%-5%), depending on the embodiment.

[0063] Nicotine salts are formed by the addition of a suitable acid, including organic or inorganic acids. In some formulations provided herein, suitable organic acids are carboxylic acids. Examples of organic carboxylic acids disclosed herein are monocarboxylic acids, dicarboxylic acids (organic acid containing two carboxylic acid groups), carboxylic acids containing an aromatic group such as benzoic acids, hydroxycarboxylic acids, heterocyclic carboxylic acids, terpenoid acids, sugar acids; such as the pectic acids, amino acids, cycloaliphatic acids, aliphatic carboxylic acids, keto carboxylic acids, and the like. In some formulations provided herein, the organic acids used herein are monocarboxylic acids. Nicotine salts are formed from the addition of a suitable acid to nicotine. In some formulations provided herein, the stoichiometric ratios of the nicotine to acid (nicotine:acid) are 1:1, 1:2, 1:3, 1:4, 2:3, 2:5, 2:7, 3:4, 3:5, 3:7, 3:8, 3:10, 3:11, 4:5, 4:7, 4:9, 4:10, 4:11, 4:13, 4:14, 4:15, 5:6, 5:7, 5:8, 5:9, 5:11, 5:12, 5:13, 5:14, 5:16, 5:17, 5:18, or 5:19. In some formulations provided herein, the stoichiometric ratios of the nicotine to acid are 1:1, 1:2, 1:3, or 1:4 (nicotine:acid).

- [0064] Nicotine is an alkaloid molecule that comprises two basic nitrogens. It may occur in different states of protonation. For example, if no protonation exists, nicotine is referred to as the “free base.” If one nitrogen is protonated, then the nicotine would be “mono-protonated.”
- [0065] Nicotine salt formulations may be formed by adding a suitable acid to nicotine, stirring the neat mixture at ambient temperature or at elevated temperature, and then diluting the neat mixture with a carrier mixture, such as a mixture of propylene glycol and glycerin. In some embodiments, the suitable acid is completely dissolved by the nicotine prior to dilution. The suitable acid may not completely dissolved by the nicotine prior to dilution. The addition of the suitable acid to the nicotine to form a neat mixture may cause an exothermic reaction. The addition of the suitable acid to the nicotine to form a neat mixture may be conducted at 55 °C. The addition of the suitable acid to the nicotine to form a neat mixture may be conducted at 90 °C. The neat mixture may be cooled to ambient temperature prior to dilution. The dilution may be carried out at elevated temperature.
- [0066] Nicotine salt formulations may be prepared by combining nicotine and a suitable acid in a carrier mixture, such as a mixture of propylene glycol and glycerin. The mixture of nicotine and a first carrier mixture is combined with a mixture of a suitable acid in a second carrier mixture. In some embodiments, the first and second carrier mixtures are identical in composition. In some embodiments, the first and second carrier mixtures are not identical in composition. In some embodiments, heating of nicotine/acid/carrier mixture is required to facilitate complete dissolution.
- [0067] In some embodiments, nicotine salt formulations may be prepared and added to a solution of 3:7 ratio by weight of propylene glycol (PG)/vegetable glycerin (VG), and mixed thoroughly. While described herein as producing 10g of each of the formulations, all procedures noted *infra* are scalable. Other manners of formulation may also be employed from the formulations noted *infra*, without departing from the disclosure herein, and as would be known to one of skill in the art upon reading the disclosure herein.
- [0068] The optimal nicotine salt formulation may be determined by the vapor pressure of the constituent acid. In some embodiments, the nicotine salt formulations comprise an acid with a vapor pressure that is similar to the vapor pressure of free base nicotine. In some

embodiments, the nicotine salt formulations are formed from an acid with a vapor pressure that is similar to the vapor pressure of free base nicotine at the heating temperature of the device. Figure 3 illustrates this trend. Nicotine salts formed from nicotine and benzoic acid; nicotine and salicylic acid; or nicotine and levulinic acid are salts that produce a satisfaction in an individual user consistent with efficient transfer of nicotine and a rapid rise in nicotine plasma levels. This pattern may be due to the mechanism of action during heating of the nicotine salt formulation. The nicotine salt may disassociate at, or just below, the heating temperature of the device, resulting in a mixture of free base nicotine and the individual acid. At that point, if both the nicotine and acid have similar vapor pressures, they may aerosolize at the same time, giving rise to a transfer of both free base nicotine and the constituent acid to the user.

[0069] The nicotine salt liquid formulation for generating an inhalable aerosol upon heating in an electronic cigarette may comprise a nicotine salt in a biologically acceptable liquid carrier; wherein the acid used to form said nicotine salt is characterized by a vapor pressure between 20 – 4000 mmHg at 200 °C. In some embodiments, the acid used to form the nicotine salt is characterized by vapor pressure between 20 – 2000 mmHg at 200 °C. In some embodiments, the acid used to form the nicotine salt is characterized by vapor pressure between 100 – 300 mmHg at 200 °C.

[0070] Unexpectedly, different nicotine salt formulations produced varying degrees of satisfaction in an individual. In some embodiments, the extent of protonation of the nicotine salt affected satisfaction, such that more protonation was less satisfying as compared to less protonation. The nicotine salt formed may be monoprotonated. The nicotine salt formed may be diprotonated. The nicotine salt may exist in more than one protonation state, e.g., an equilibrium of mono-protonated and di-protonated nicotine salts. The extent of protonation of the nicotine molecule may be dependent upon the stoichiometric ratio of nicotine:acid used in the salt formation reaction. The extent of protonation of the nicotine molecule may be dependent upon the solvent. The extent of protonation of the nicotine molecule may be unknown. In some embodiments, monoprotonated nicotine salts produced a high degree of satisfaction in the user. For example, nicotine benzoate and nicotine salicylate are mono-protonated nicotine salts and all produce a high degree of satisfaction in the user. The reason for this trend may be

explained by a mechanism of action wherein the nicotine is first deprotonated prior to transfer to the vapor with the constituent acid and then retained and stabilized after re-protonated by the acid going down stream to the lungs of the user. It may be easier to remove one proton versus two protons, thus resulting in better transfer efficiency. In addition, the lack of satisfaction of free base nicotine indicates that a second factor may be important. A nicotine salt may be best performing when it is at its optimal extent of protonation, depending on the salt. For example, nicotine pyruvate is a nicotine salt with 1:2 nicotine:acid ratio. The formulation containing nicotine pyruvate (1:2) may deliver more satisfaction to the user than the one containing same amount of nicotine but only half amount of pyruvic acid, i.e. nicotine pyruvate (1:1). This may be explained as 1 mole of nicotine produces a salt with 2 moles of pyruvic acid. When there is not enough pyruvic acid to associate with all nicotine molecules, the free base nicotine left unprotonated in the formulation may reduce the satisfaction the formulation provides.

[0071] The flavor of the constituent acid used in the salt formation may be a consideration in choosing the acid. A suitable acid may have minimal or no toxicity to humans in the concentrations used. A suitable acid may be compatible with the electronic cigarette components it contacts or could contact at the concentrations used. That is, such acid does not degrade or otherwise react with the electronic cigarette components it contacts or could contact. The odor of the constituent acid used in the salt formation may be a consideration in choosing a suitable acid. The concentration of the nicotine salt in the carrier may affect the satisfaction in the individual user. In some embodiments, the flavor of the formulation is adjusted by changing the acid. In some embodiments, the flavor of the formulation is adjusted by adding exogenous flavorants. In some embodiments, an unpleasant tasting or smelling acid is used in minimal quantities to mitigate such characteristics. In some embodiments, exogenous pleasant smelling or tasting acid is added to the formulation. Examples of salts which can provide flavor and aroma to the mainstream aerosol at certain levels include nicotine acetate, nicotine oxalate, nicotine malate, nicotine isovalerate, nicotine lactate, nicotine citrate, nicotine phenylacetate and nicotine myristate.

[0072] Nicotine salt formulations may generate an inhalable aerosol upon heating in an electronic cigarette. The amount of nicotine or nicotine salt aerosol inhaled may be user-

determined. The user may, for example, modify the amount of nicotine or nicotine salt inhaled by adjusting his inhalation strength.

[0073] Formulations are described herein comprising two or more nicotine salts. In some embodiments, wherein a formulation comprises two or more nicotine salts, each individual nicotine salt is formed as described herein.

[0074] Nicotine salt formulations, as used herein, refer to a single or mixture of nicotine salts with other suitable chemical components used for e-cigarette, such as carriers, stabilizers, diluents, dispersing agents, suspending agents, thickening agents, and/or excipients. In certain embodiments, the nicotine salt formulation is stirred at ambient conditions for 20 minutes. In certain embodiments, the nicotine salt formulation is heated and stirred at 55C for 20 minutes. In certain embodiments, the nicotine salt formulation is heated and stirred at 90C for 60 minutes. In certain embodiments, the formulation facilitates administration of nicotine to an organism (e.g., lung).

[0075] The nicotine of nicotine salt formulations provided herein is either naturally occurring nicotine (e.g., from extract of nicotineous species such as tobacco), or synthetic nicotine. In some embodiments, the nicotine is (-)-nicotine, (+)-nicotine, or a mixture thereof. In some embodiments, the nicotine is employed in relatively pure form (e.g., greater than about 80% pure, 85% pure, 90% pure, 95% pure, or 99 % pure). In some embodiments, the nicotine for nicotine salt formulation provided herein is "water clear" in appearance in order to avoid or minimize the formation of tarry residues during the subsequent salt formation steps.

[0076] Nicotine salt formulations used for e-cigarettes described herein, in some embodiments, have a nicotine concentration of about 0.5% (w/w) to about 20% (w/w), wherein the concentration is of nicotine weight to total solution weight, i.e. (w/w). In certain embodiments, nicotine salt formulations provided herein have a nicotine concentration of about 1% (w/w) to about 20% (w/w). In certain embodiments, nicotine salt formulations provided herein have a nicotine concentration of about 1% (w/w) to about 18% (w/w). In certain embodiments, nicotine salt formulations provided herein have a nicotine concentration of about 1% (w/w) to about 15% (w/w). In certain embodiments, nicotine salt formulations provided herein have a nicotine concentration of about 4% (w/w) to about 12% (w/w). In certain embodiments, nicotine salt formulations provided herein

have a nicotine concentration of about 1% (w/w) to about 18% (w/w), about 3% (w/w) to about 15% (w/w), or about 4% (w/w) to about 12% (w/w). In certain embodiments, nicotine salt formulations provided herein have a nicotine concentration of about 0.5% (w/w) to about 10% (w/w). In certain embodiments, nicotine salt formulations provided herein have a nicotine concentration of about 0.5% (w/w) to about 5% (w/w). In certain embodiments, nicotine salt formulations provided herein have a nicotine concentration of about 0.5% (w/w) to about 4% (w/w). In certain embodiments, nicotine salt formulations provided herein have a nicotine concentration of about 0.5% (w/w) to about 3% (w/w). In certain embodiments, nicotine salt formulations provided herein have a nicotine concentration of about 0.5% (w/w) to about 2% (w/w). In certain embodiments, nicotine salt formulations provided herein have a nicotine concentration of about 0.5% (w/w) to about 1% (w/w). In certain embodiments, nicotine salt formulations provided herein have a nicotine concentration of about 1% (w/w) to about 10% (w/w). In certain embodiments, nicotine salt formulations provided herein have a nicotine concentration of about 1% (w/w) to about 5% (w/w). In certain embodiments, nicotine salt formulations provided herein have a nicotine concentration of about 1% (w/w) to about 4% (w/w). In certain embodiments, nicotine salt formulations provided herein have a nicotine concentration of about 1% (w/w) to about 3% (w/w). In certain embodiments, nicotine salt formulations provided herein have a nicotine concentration of about 1% (w/w) to about 2% (w/w). In certain embodiments, nicotine salt formulations provided herein have a nicotine concentration of about 2% (w/w) to about 10% (w/w). In certain embodiments, nicotine salt formulations provided herein have a nicotine concentration of about 2% (w/w) to about 5% (w/w). In certain embodiments, nicotine salt formulations provided herein have a nicotine concentration of about 2% (w/w) to about 4% (w/w). Certain embodiments provide a nicotine salt formulation having a nicotine concentration of about 0.5%, 0.6%, 0.7%, 0.8%, 0.9%, 1.0%, 1.1%, 1.2%, 1.3%, 1.4%, 1.5%, 1.6%, 1.7%, 1.8%, 1.9%, 2.0%, 2.1%, 2.2%, 2.3%, 2.4%, 2.5%, 2.6%, 2.7%, 2.8%, 2.9%, 3.0%, 3.1%, 3.2%, 3.3%, 3.4%, 3.5%, 3.6%, 3.7%, 3.8%, 3.9%, 4.0%, 4.5%, 5.0%, 5.5%, 6.0%, 6.5%, 7.0%, 7.5%, 8.0%, 8.5%, 9.0%, 9.5%, 10%, 11%, 12%, 13%, 14%, 15%, 16%, 17%, 18%, 19%, or 20% (w/w), or more, including any increments therein. Certain embodiments provide a nicotine salt formulation having a nicotine concentration of about

5% (w/w). Certain embodiments provide a nicotine salt formulation having a nicotine concentration of about 4% (w/w). Certain embodiments provide a nicotine salt formulation having a nicotine concentration of about 3% (w/w). Certain embodiments provide a nicotine salt formulation having a nicotine concentration of about 2% (w/w). Certain embodiments provide a nicotine salt formulation having a nicotine concentration of about 1% (w/w). Certain embodiments provide a nicotine salt formulation having a nicotine concentration of about 0.5% (w/w).

[0077] The formulation further may comprise one or more flavorants.

[0078] The suitable acid for the nicotine salt formulation may have a vapor pressure >20 mmHg at 200 °C and is non-corrosive to the electronic cigarette or is non-toxic to humans. In some embodiments, the suitable acid for nicotine salt formation is selected from the group consisting of salicylic acid, formic acid, sorbic acid, acetic acid, benzoic acid, pyruvic acid, lauric acid, and levulinic acid.

[0079] The suitable acid for the nicotine salt formulation may have a vapor pressure of about 20 to 200 mmHg at 200 °C and is non-corrosive to the electronic cigarette or is non-toxic to humans. In some embodiments, the suitable acid for nicotine salt formation is selected from the group consisting of salicylic acid, benzoic acid, lauric acid, and levulinic acid.

[0080] The suitable acid for the nicotine salt formulation may have a melting point <160 °C, a boiling point >160 °C, at least a 50-degree difference between the melting point and the boiling point, and is non-corrosive to the electronic cigarette or is non-toxic to humans. In some embodiments, the suitable acid for nicotine salt formation has a melting point at least 40 degrees lower than the operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, at least a 50-degree difference between the melting point and the boiling point, and is non-corrosive to the electronic cigarette or is non-toxic to humans; wherein the operating temperature is 200 °C. In some embodiments, the suitable acid for nicotine salt formation is selected from the group consisting of salicylic acid, sorbic acid, benzoic acid, pyruvic acid, lauric acid, and levulinic acid.

[0081] The suitable acid for the nicotine salt formulation does not decompose at the operating temperature of the electronic cigarette. In some embodiments, the suitable acid for nicotine salt formation does not oxidize at the operating temperature of the electronic

cigarette. In some embodiments, the suitable acid for nicotine salt formation does not oxidize at room temperature. In some embodiments, the suitable acid for nicotine salt formation does not provide an unpleasant taste. In some embodiments, the suitable acid for nicotine salt formation has good solubility in a liquid formulation for use in an electronic cigarette.

[0082] Provided herein is an electronic cigarette 2 having a fluid storage compartment 4 comprising an embodiment nicotine salt formulation of any embodiment described herein within the fluid storage compartment described herein. An embodiment is shown in FIG. 7. The electronic cigarette 2 of FIG. 7 includes a mouth end 6, and a charging end 8. The mouth-end 6 includes a mouthpiece 10. The charging end 8 may connect to a battery or a charger or both, wherein the battery is within a body of the electronic cigarette, and the charger is separate from the battery and couples to the body or the battery to charge the battery. In some embodiments the electronic cigarette comprises a rechargeable battery within a body 14 of the electronic cigarette and the charge end 8 comprises a connection 12 for charging the rechargeable battery. In some embodiments, the electronic cigarette comprises a cartomizer that comprises the fluid storage compartment and an atomizer. In some embodiments, the atomizer comprises a heater. In some embodiments the fluid storage compartment 4 is separable from an atomizer. In some embodiments the fluid storage compartment 4 is replaceable as part of a replaceable cartridge. In some embodiments the fluid storage compartment 4 is refillable. In some embodiments, the mouthpiece 10 is replaceable.

[0083] Provided herein is a cartomizer 18 for an electronic cigarette 2 having a fluid storage compartment 4 comprising an embodiment nicotine salt formulation of any embodiment described herein within the fluid storage compartment described herein. The cartomizer 18 embodiment of FIG. 8 includes a mouth end 6, and a connection end 16. The connection end 16 in the embodiment of FIG. 8 couples the cartomizer 14 to a body of an electronic cigarette, or to a battery of the electronic cigarette, or both. The mouth end 6 includes a mouthpiece 10. In some embodiments, the cartomizer does not include a mouthpiece, and in such embodiments, the cartomizer can be coupled to a mouthpiece of an electronic cigarette, or the cartomizer can be coupled to a battery or body of an electronic cigarette, while the mouthpiece is also coupled to the battery or the

body of the electronic cigarette. In some embodiments, the mouthpiece is integral with the body of the electronic cigarette. In some embodiments, including the embodiment of FIG. 8, the cartomizer 18 comprises the fluid storage compartment 4 and an atomizer (not shown). In some embodiments, the atomizer comprises a heater (not shown)

Examples

Example 1: Preparation of Nicotine salt Formulations

[0084] Various nicotine formulations were prepared and added to a solution of 3:7 ratio by weight of propylene glycol (PG)/vegetable glycerin (VG), and mixed thoroughly. The examples shown below were used to make 10g of each of the formulations. All procedures are scalable.

[0085] For example, in order to make nicotine formulations with a final nicotine free base equivalent concentration of 2% (w/w), the following procedures were applied to each individual formulation.

- Nicotine benzoate salt formulation: 0.15g benzoic acid was added to a beaker followed by adding 0.2g nicotine to the same beaker. The mixture was stirred at 55 °C for 20 minutes until benzoic acid was completely dissolved and an orange oily mixture was formed. The mixture was cooled down to ambient conditions. 9.65g PG/VG (3:7) solution was added to the orange nicotine benzoate salt and the mixture was stirred until a visually homogenous formulation solution was achieved.

- Nicotine benzoate salt formulation can also be made by adding 0.15g benzoic acid to a beaker followed by adding 0.2g nicotine and 9.65g PG/VG (3:7) solution to the same beaker. The mixture was then stirred at 55 °C for 20 minutes until a visually homogenous formulation solution was achieved with no undissolved chemicals.

- Nicotine citrate salt formulation was made by adding 0.47g citric acid to a beaker followed by adding 0.2g nicotine and 9.33g PG/VG (3:7) solution to the same beaker. The mixture was then stirred at 90 °C for 60 minutes until a visually homogenous formulation solution was achieved with no undissolved chemicals.

- Nicotine malate salt formulation was made by adding 0.33g L-malic acid to a beaker followed by adding 0.2g nicotine and 9.47g PG/VG (3:7) solution to the same beaker. The

mixture was then stirred at 90 °C for 60 minutes until a visually homogenous formulation solution was achieved with no undissolved chemicals.

- Nicotine succinate salt formulation was made by adding 0.29g succinic acid to a beaker followed by adding 0.2g nicotine and 9.51g PG/VG (3:7) solution to the same beaker. The mixture was then stirred at 90 °C for 60 minutes until a visually homogenous formulation solution was achieved with no undissolved chemicals.

- Nicotine salicylate salt formulation was made by adding 0.17g salicylic acid to a beaker followed by adding 0.2g nicotine and 9.63g PG/VG (3:7) solution to the same beaker. The mixture was then stirred at 90 °C for 60 minutes until a visually homogenous formulation solution was achieved with no undissolved chemicals.

- Nicotine salicylate salt formulation can also be made by adding 0.17g salicylic acid to a beaker followed by adding 0.2g nicotine to the same beaker. The mixture was stirred at 90 °C for 60 minutes until salicylic acid was completely dissolved and an orange oily mixture was formed. The mixture was either cooled to ambient conditions or kept at 90 °C when 9.63g PG/VG (3:7) solution was added. The mixture was then stirred at 90 °C until a visually homogenous formulation solution was achieved with no undissolved chemicals.

- Nicotine free base formulation was made by adding 0.2g nicotine to a beaker followed by adding 9.8g PG/VG (3:7) solution to the same beaker. The mixture was then stirred at ambient conditions for 10 minutes until a visually homogenous formulation solution was achieved.

[0086] For example, in order to make nicotine salt formulations with a final nicotine free base equivalent concentration of 3% (w/w), the following procedures were applied to each individual formulation.

- Nicotine benzoate salt formulation: 0.23g benzoic acid was added to a beaker followed by adding 0.3g nicotine to the same beaker. The mixture was stirred at 55 °C for 20 minutes until benzoic acid was completely dissolved and an orange oily mixture was formed. The mixture was cooled down to ambient conditions. 9.47g PG/VG (3:7) solution was added to the orange nicotine benzoate salt and the blend was stirred until a visually homogenous formulation solution was achieved.

- Nicotine benzoate salt formulation can also be made by adding 0.23g benzoic acid to a beaker followed by adding 0.3g nicotine and 9.47g PG/VG (3:7) solution to the same

beaker. The mixture was then stirred at 55 °C for 20 minutes until a visually homogenous formulation solution was achieved with no undissolved chemicals.

- Nicotine citrate salt formulation was made by adding 0.71g citric acid to a beaker followed by adding 0.3g nicotine and 8.99g PG/VG (3:7) solution to the same beaker. The mixture was then stirred at 90 °C for 60 minutes until a visually homogenous formulation solution was achieved with no undissolved chemicals.

- Nicotine malate salt formulation was made by adding 0.5g L-malic acid to a beaker followed by adding 0.3g nicotine and 9.2g PG/VG (3:7) solution to the same beaker. The mixture was then stirred at 90 °C for 60 minutes until a visually homogenous formulation solution was achieved with no undissolved chemicals.

- Nicotine levulinate salt formulation was made by adding melted 0.64g levulinic acid to a beaker followed by adding 0.3g nicotine to the same beaker. The mixture was stirred at ambient conditions for 10 minutes. Exothermic reaction took place and oily product was produced. The mixture was allowed to cool down to ambient temperature and 9.06g PG/VG (3:7) solution was added to the same beaker. The mixture was then stirred at ambient conditions for 20 minutes until a visually homogenous formulation solution was achieved.

- Nicotine pyruvate salt formulation was made by adding 0.33g pyruvic acid to a beaker followed by adding 0.3g nicotine to the same beaker. The mixture was stirred at ambient conditions for 10 minutes. Exothermic reaction took place and oily product was produced. The mixture was allowed to cool down to ambient temperature and 9.37g PG/VG (3:7) solution was added to the same beaker. The mixture was then stirred at ambient conditions for 20 minutes until a visually homogenous formulation solution was achieved.

- Nicotine succinate salt formulation was made by adding 0.44g succinic acid to a beaker followed by adding 0.3g nicotine and 9.26g PG/VG (3:7) solution to the same beaker. The mixture was then stirred at 90 °C for 60 minutes until a visually homogenous formulation solution was achieved with no undissolved chemicals.

- Nicotine salicylate salt formulation was made by adding 0.26g salicylic acid to a beaker followed by adding 0.3g nicotine and 9.44g PG/VG (3:7) solution to the same beaker. The mixture was then stirred at 90 °C for 60 minutes until a visually homogenous formulation solution was achieved with no undissolved chemicals.

- Nicotine salicylate salt formulation can also be made by adding 0.26g salicylic acid to a beaker followed by adding 0.3g nicotine to the same beaker. The mixture was stirred at 90 °C for 60 minutes until salicylic acid was completely dissolved and an orange oily mixture was formed. The mixture was either cooled to ambient conditions or kept at 90 °C when 9.44g PG/VG (3:7) solution was added. The blend was then stirred at 90C until a visually homogenous formulation solution was achieved with no undissolved chemicals.
- Nicotine free base formulation was made by adding 0.3g nicotine to a beaker followed by adding 9.7g PG/VG (3:7) solution to the same beaker. The mixture was then stirred at ambient conditions for 10 minutes until a visually homogenous formulation solution was achieved.

[0087] For example, in order to make nicotine salt formulations with a final nicotine free base equivalent concentration of 4% (w/w), the following procedures were applied to each individual formulation.

- Nicotine benzoate salt formulation: 0.3g benzoic acid was added to a beaker followed by adding 0.4g nicotine to the same beaker. The mixture was stirred at 55 °C for 20 minutes until benzoic acid was completely dissolved and an orange oily mixture was formed. The mixture was cooled down to ambient conditions. 9.7g PG/VG (3:7) solution was added to the orange nicotine benzoate salt and the blend was stirred until a visually homogenous formulation solution was achieved.

- Nicotine benzoate salt formulation can also be made by adding 0.3g benzoic acid to a beaker followed by adding 0.4g nicotine and 9.7g PG/VG (3:7) solution to the same beaker. The mixture was then stirred at 55 °C for 20 minutes until a visually homogenous formulation solution was achieved with no undissolved chemicals.

For example, in order to make nicotine salt formulations with a final nicotine free base equivalent concentration of 5% (w/w), the following procedures were applied to each individual formulation.

- Nicotine benzoate salt formulation: 0.38g benzoic acid was added to a beaker followed by adding 0.5g nicotine to the same beaker. The mixture was stirred at 55 °C for 20 minutes until benzoic acid was completely dissolved and an orange oily mixture was formed. The mixture was cooled down to ambient conditions. 9.12g PG/VG (3:7) solution was added to

the orange nicotine benzoate salt and the blend was stirred until a visually homogenous formulation solution was achieved.

- Nicotine benzoate salt formulation can also be made by adding 0.38g benzoic acid to a beaker followed by adding 0.5g nicotine and 9.12g PG/VG (3:7) solution to the same beaker. The mixture was then stirred at 55 °C for 20 minutes until a visually homogenous formulation solution was achieved with no undissolved chemicals.

- Nicotine malate salt formulation was made by adding 0.83g L-malic acid to a beaker followed by adding 0.5g nicotine and 8.67g PG/VG (3:7) solution to the same beaker. The mixture was then stirred at 90 °C for 60 minutes until a visually homogenous formulation solution was achieved with no undissolved chemicals.

- Nicotine levulinate salt formulation was made by adding melted 1.07g levulinic acid to a beaker followed by adding 0.5g nicotine to the same beaker. The mixture was stirred at ambient conditions for 10 minutes. Exothermic reaction took place and oily product was produced. The mixture was allowed to cool down to ambient temperature and 8.43g PG/VG (3:7) solution was added to the same beaker. The mixture was then stirred at ambient conditions for 20 minutes until a visually homogenous formulation solution was achieved.

- Nicotine pyruvate salt formulation was made by adding 0.54g pyruvic acid to a beaker followed by adding 0.5g nicotine to the same beaker. The mixture was stirred at ambient conditions for 10 minutes. Exothermic reaction took place and oily product was produced. The mixture was allowed to cool down to ambient temperature and 8.96g PG/VG (3:7) solution was added to the same beaker. The mixture was then stirred at ambient conditions for 20 minutes until a visually homogenous formulation solution was achieved.

- Nicotine succinate salt formulation was made by adding 0.73g succinic acid to a beaker followed by adding 0.5g nicotine and 8.77g PG/VG (3:7) solution to the same beaker. The mixture was then stirred at 90 °C for 60 minutes until a visually homogenous formulation solution was achieved with no undissolved chemicals.

- Nicotine salicylate salt formulation was made by adding 0.43g salicylic acid to a beaker followed by adding 0.5g nicotine and 9.07g PG/VG (3:7) solution to the same beaker. The mixture was then stirred at 90 °C for 60 minutes until a visually homogenous formulation solution was achieved with no undissolved chemicals.

- Nicotine salicylate salt formulation can also be made by adding 0.43g salicylic acid to a beaker followed by adding 0.5g nicotine to the same beaker. The mixture was stirred at 90 °C for 60 minutes until salicylic acid was completely dissolved and an orange oily mixture was formed. The mixture was either cooled to ambient conditions or kept at 90C when 9.07g PG/VG (3:7) solution was added. The blend was then stirred at 90 °C until a visually homogenous formulation solution was achieved with no undissolved chemicals.
- Nicotine free base formulation was made by adding 0.5g nicotine to a beaker followed by adding 9.5g PG/VG (3:7) solution to the same beaker. The mixture was then stirred at ambient conditions for 10 minutes until a visually homogenous formulation solution was achieved.

[0088] Various formulations comprising different nicotine salts can be prepared similarly, or different concentrations of the above-noted nicotine formulations or other nicotine salt formulations can be prepared as one of skill in the art would know to do upon reading the disclosure herein.

[0089] Various formulations comprising two or more nicotine salts can be prepared similarly in a solution of 3:7 ratio of propylene glycol (PG)/vegetable glycerin (VG). For example, 0.43g (2.5% w/w nicotine) of nicotine levulinate salt and 0.34 g (2.5% w/w nicotine) of nicotine acetate salt are added to 9.23g of PG/VG solution, to achieve a 5% w/w nicotine formulation.

[0090] Also provided is another exemplary formulation. For example, 0.23g (1.33% w/w nicotine) of nicotine benzoate salt (molar ratio 1:1 nicotine/benzoic acid), 0.25g (1.33% w/w nicotine) of nicotine salicylate salt(molar ratio 1:1 nicotine/salicylic acid) and 0.28 g (1.34% w/w nicotine) of nicotine pyruvate salt (molar ratio 1:2 nicotine/pyruvic acid) are added to 9.25g of PG/VG solution, to achieve a 5% w/w nicotine formulation.

Example 2: Heart rate study of nicotine solutions via e-cigarette

[0091] Exemplary formulations of nicotine levulinate, nicotine benzoate, nicotine succinate, nicotine salicylate, nicotine malate, nicotine pyruvate, nicotine citrate, nicotine freebase, and a control of propylene glycol were prepared as noted in Example 1 in 3% w/w solutions and were administered in the same fashion by an electronic cigarette to the same human subject. About 0.5 mL of each solution was loaded into an "eRoll" cartridge atomizer (joyetech.com) to be used in the study. The atomizer was then attached to an

"eRoll" e-cigarette (same manufacturer). The operating temperature was from about 150°C to about 250 °C, or from about 180°C to about 220 °C.

[0092] Heart rate measurements were taken for 6 minutes; from 1 minute before start of puffing, for 3 minutes during puffing, and continuing until 2 minutes after end of puffing. The test participant took 10 puffs over 3 minutes in each case. The base heart rate was the average heart rate over the first 1 minute before start of puffing. Heart rate after puffing started was averaged over 20-second intervals. Puffing (inhalation) occurred every 20 seconds for a total of 3 minutes. Normalized heart rate was defined as the ratio between individual heart rate data point and the base heart rate. Final results were presented as normalized heart rate, shown for the first 4 minutes in FIG. 1.

[0093] FIG. 1 summarizes results from heart rate measurements taken for a variety of nicotine salt formulations. For ease of reference in reviewing FIG. 1, at the 180-second timepoint, from top to bottom (highest normalized heart rate to lowest normalized heart rate), the nicotine formulations are as follows: nicotine salicylate formulation, nicotine malate formulation, nicotine levulinate formulation (nearly identical to nicotine malate formulation at 180 seconds, thus, as a second reference point: the nicotine malate formulation curve is lower than the nicotine levulinate formulation curve at the 160-second time point), nicotine pyruvate formulation, nicotine benzoate formulation, nicotine citrate formulation, nicotine succinate formulation, and nicotine free base formulation. The bottom curve (lowest normalized heart rate) at the 180-second timepoint is associated with the placebo (100% propylene glycol). The test formulations comprising a nicotine salt cause a faster and more significant rise in heart rate than the placebo. The test formulations comprising a nicotine salt also cause faster and more significant rise when compared with a nicotine freebase formulation with the same amount of nicotine by weight. In addition, the nicotine salts (e.g., nicotine benzoate and nicotine pyruvate) prepared from the acids having calculated vapor pressures between 20 - 200 mmHg at 200 °C (benzoic acid (171.66 mmHg), with the exception of pyruvic acid (having a boiling point of 165°C), respectively) cause a faster rise in heart rate than the rest. The nicotine salts (e.g., nicotine levulinate, nicotine benzoate, and nicotine salicylate) prepared from the acids (benzoic acid, levulinic acid and salicylic acid, respectively) also cause a more significant heart rate increase. Thus, other suitable nicotine salts formed by

the acids with the similar vapor pressure and/or similar boiling point may be used in accordance with the practice of the present invention. This experience of increased heart rate theoretically approaching or theoretically comparable to that of a traditional burned cigarette has not been demonstrated or identified in other electronic cigarette devices. Nor has it been demonstrated or identified in low temperature tobacco vaporization devices (electronic cigarettes) that do not burn the tobacco, even when a nicotine salt was used (a solution of 20% (w/w) or more of nicotine salt) as an additive to the tobacco. Thus the results from this experiment are surprising and unexpected.

Example 3: Satisfaction Study of Nicotine salt Solution via e-cigarette

[0094] In addition to the heart rate study shown in Example 2, nicotine formulations (using 3% w/w nicotine formulations as described in Example 1) were used to conduct a satisfaction study in a single test participant. The test participant, an e-cigarette and/or traditional cigarette user, was required to have no nicotine intake for at least 12 hours before the test. The participant took 10 puffs using an e-cigarette (same as used in Example 2) over 3 minutes in each case, and then was asked to rate the level of physical and emotional satisfaction he or she felt on a scale of 0 - 10, with 0 being no physical or emotional satisfaction. The results indicated that the least satisfying compound was the nicotine free base. Nicotine benzoate, nicotine salicylate, and nicotine succinate all performed well, followed by nicotine pyruvate, nicotine citrate, and nicotine pyruvate.

[0095] Based on the Satisfaction Study, the nicotine salts formulations with acids having vapor pressure ranges between >20 mmHg @ 200 °C, or 20-200 mmHg @ 200 °C, or 100 – 300 mmHg @ 200 °C provide more satisfaction than the rest (except the pyruvic acid which has boiling point of 165 °C). For reference, it has been determined that salicylic acid has a vapor pressure of about 135.7 mmHg @ 200 °C, benzoic acid has a vapor pressure of about 171.7 mmHg @ 200 °C, lauric acid has a vapor pressure of about 38 mmHg @ 200 °C, and levulinic acid has a vapor pressure of about 149 mmHg @ 200 °C.

Example 4: Test formulation 1 (TF1):

[0096] A solution of nicotine levulinate in glycerol comprising nicotine salt used: 1.26g (12.6% w/w) of 1:3 nicotine levulinate 8.74g (87.4% w/w) of glycerol - Total weight 10.0g.

[0097] Neat nicotine levulinate was added to the glycerol, and mixed thoroughly. L-Nicotine has a molar mass of 162.2g, and levulinic acid molar mass is 116.1g. In a 1:3 molar ratio, the percentage of nicotine in nicotine levulinate by weight is given by: $162.2\text{g} / (162.2\text{g} + (3 \times 116.1\text{g})) = 31.8\% \text{ (w/w)}$.

Example 5: Test formulation 2 (TF2):

[0098] A solution of free base nicotine in glycerol comprising 0.40g (4.00% w/w) of L-nicotine was dissolved in 9.60g (96.0% w/w) of glycerol and mixed thoroughly.

Example 6: Heart rate study of nicotine solutions via e-cigarette:

[0099] Both formulations (TF1 and TF2) were administered in the same fashion by an electronic cigarette to the same human subject: about 0.6 mL of each solution was loaded into "eGo-C" cartridge atomizer (joyetech.com). The atomizer was then attached to an "eVic" e-cigarette (same manufacturer). This model of e-cigarette allows for adjustable voltage, and therefore wattage, through the atomizer. The operating temperature of the e-cigarette is from about 150°C to about 250 °C, or from about 180°C to about 220 °C.

[00100] The atomizer in both cases has resistance 2.4ohms, and the e-cigarette was set to 4.24V, resulting in 7.49W of power. ($P = V^2 / R$)

[00101] Heart rate was measured in a 30-second interval for ten minutes from start of puffing. Test participants took 10 puffs over 3 minutes in each case (solid line (2nd highest peak): cigarette, dark dotted line (highest peak): test formulation 1 (TF1- nicotine salt formulation), light dotted line: test formulation 2 (TF2 — nicotine formulation). Comparison between cigarette, TF1, and TF2 is shown in FIG. 2.

[00102] It is clearly shown in FIG. 2 that the test formulation with nicotine levulinate (TF1) causes a faster rise in heart rate than just nicotine (TF2). Also, TF1 more closely resembles the rate of increase for a cigarette. Other salts were tried and also found to increase heart rate relative to a pure nicotine solution. Thus, other suitable nicotine salts that cause the similar effect may be used in accordance with the practice of the present invention. For example, other keto acids (alpha-keto acids, beta-keto acids, gamma-keto acids, and the like) such as pyruvic acid, oxaloacetic acid, acetoacetic acid, and the like. This experience of increased heart rate comparable to that of a traditional burned cigarette has not been demonstrated or identified in other electronic cigarette devices, nor has it been demonstrated or identified in low temperature tobacco

vaporization devices that do not burn the tobacco, even when a nicotine salt was used (a solution of 20% (W/W) or more of nicotine salt) as an additive to the tobacco. Thus the results from this experiment are surprising and unexpected.

[00103] In addition, the data appears to correlate well with the previous findings shown in FIG. 2.

[00104] As previously noted in the Satisfaction Study, the nicotine salts formulations with acids having vapor pressures between 20 – 300 mmHg @ 200 °C provide more satisfaction than the rest, with the exception of the nicotine salt formulation made with pyruvic acid, which has a boiling point of 165 °C, as noted in FIG. 3. Based on the findings herein, it was anticipated that these nicotine salt formulations having either:

- a Vapor Pressure between 20 – 300 mmHg @ 200 °C,
- a Vapor Pressure > 20 mmHg @ 200 °C,
- a difference between boiling point and melting point of at least 50 °C, and a boiling point greater than 160 °C, and a melting point less than 160 °C,
- a difference between boiling point and melting point of at least 50 °C, and a boiling point greater than 160 °C, and a melting point less than 160 °C,
- a difference between boiling point and melting point of at least 50 °C, and a boiling point at most 40 °C less than operating temperature, and a melting point at least 40 °C lower than operating temperature, or
- a combination thereof produce one or more of the following effects:

[00105] $T_{\max}$ – Time to maximum blood concentration: Based on the results established herein, a user of an e-cigarette comprising the nicotine salt formulation will experience a comparable rate of physical and emotional satisfaction from using a formulation comprising a mixture of nicotine salts prepared with an appropriate acid at least 1.2X to 3X faster than using a formulation comprising a freebase nicotine. As illustrated in FIG. 1: Nicotine from a nicotine salts formulation appears to generate a heartbeat that is nearly 1.2 times that of a normal heart rate for an individual approximately 40 seconds after the commencement of puffing; whereas the nicotine from a nicotine freebase formulation appears to generate a heartbeat that is nearly 1.2 times that of a normal heart rate for an individual approximately 110 seconds after the commencement of puffing; a 2.75 X difference in time to achieve a comparable initial satisfaction level.

[00106] Again this would not be inconsistent with the data from FIG. 2, where the data illustrated that at approximately 120 seconds (2 minutes), the heart rate of test participants reached a maximum of 105 – 110 bpm with either a regular cigarette or a nicotine salt formulation (TF1); whereas those same participants heart rates only reached a maximum of approximately 86 bpm at approximately 7 minutes with a nicotine freebase formulation (TF2); also a difference in effect of 1.2 times greater with nicotine salts (and regular cigarettes) versus freebase nicotine.

[00107] Further, when considering peak satisfaction levels (achieved at approximately 120 seconds from the initiation of puffing (time =0) and looking at the slope of the line for a normalized heart rate, the approximate slope of those nicotine salt formulations that exceeded the freebase nicotine formulation range between 0.0054 hr_n/sec and 0.0025 hr_n/sec. By comparison, the slope of the line for the freebase nicotine formulation is about 0.002. This would suggest that the concentration of available nicotine will be delivered to the user at a rate that is between 1.25 and 2.7 times faster than a freebase formulation.

[00108] In another measure of performance; C_{max} – Maximum blood nicotine concentration; it is anticipated that similar rates of increase will be measured in blood nicotine concentration, as those illustrated above. That is, it was anticipated based on the findings herein, and unexpected based on the art known to date, that there would be comparable C_{max} between the common cigarette and certain nicotine salt formulations, but with a lower C_{max} in a freebase nicotine solution.

[00109] Similarly, anticipated based on the findings herein, and unexpected based on the art known to date, that certain nicotine salt formulations would have higher rate of nicotine uptake levels in the blood at early time periods. Indeed, Example 8 presents data for multiple salt formulations consistent with these predictions which were made based on the findings and tests noted herein, and unexpected compared to the art available to date.

Example 7: Heart rate study of nicotine solutions via e-cigarette

[00110] Exemplary formulations of nicotine levulinate, nicotine benzoate, nicotine succinate, nicotine salicylate, nicotine malate, nicotine pyruvate, nicotine citrate, nicotine sorbate, nicotine laurate, nicotine freebase, and a control of propylene glycol are prepared as noted in Example 1 and are administered in the same fashion by an electronic cigarette

to the same human subject. About 0.5 mL of each solution is loaded into an "eRoll" cartridge atomizer (joyetech.com) to be used in the study. The atomizer is then attached to an "eRoll" e-cigarette (same manufacturer). The operating temperature of the e-cigarette is from about 150°C to about 250 °C, or from about 180°C to about 220 °C.

[00111] Heart rate measurements are taken for 6 minutes; from 1 minute before start of puffing, for 3 minutes during puffing, and continuing until 2 minutes after end of puffing. The test participant takes 10 puffs over 3 minutes in each case. The base heart rate is the average heart rate over the first 1 minute before start of puffing. Heart rate after puffing started is averaged over 20-second intervals. Normalized heart rate is defined as the ratio between individual heart rate data point and the base heart rate. Final results are presented as normalized heart rate.

Example 8: Blood Plasma testing

[00112] Blood plasma testing was conducted on three subjects (n = 3). Eight test articles were used in this study: one reference cigarette and seven blends used in an e-cigarette device having an operating temperature of the e-cigarette from about 150°C to about 250 °C, or from about 180°C to about 220 °C. The reference cigarette was Pall Mall (New Zealand). Seven blends were tested in the e-cigarette: 2% free base, 2% benzoate, 4% benzoate, 2% citrate, 2% malate, 2% salicylate, and 2% succinate. Except for 2% succinate (n = 1), all other blends have n = 3. The seven blends were liquid formulations prepared as described in Example 1.

[00113] The concentration of nicotine in each of the formulations was confirmed using UV spectrophotometer (Cary 60, manufactured by Agilent). The sample solutions for UV analysis were made by dissolving 20mg of each of the formulations in 20mL 0.3% HCl in water. The sample solutions were then scanned in UV spectrophotometer and the characteristic nicotine peak at 259nm was used to quantify nicotine in the sample against a standard solution of 19.8 µg/mL nicotine in the same diluent. The standard solution was prepared by first dissolving 19.8mg nicotine in 10mL 0.3% HCl in water followed by a 1:100 dilution with 0.3% HCl in water. Nicotine concentrations reported for all formulations were within the range of 95%-105% of the claimed concentrations

[00114] All subjects were able to consume 30-55 mg of the liquid formulation of each tested blend using the e-cigarette.

- [00115] Literature results: C. Bullen et al, Tobacco Control 2010, 19:98-103
 Cigarette (5min adlib, n=9): $T_{max} = 14.3$ (8.8-19.9), $C_{max} = 13.4$ (6.5-20.3)
 1.4% E-cig (5min adlib, n=8): $T_{max} = 19.6$ (4.9-34.2), $C_{max} = 1.3$ (0.0-2.6)
 Nicorette Inhalator (20mg/20min, n=10): $T_{max} = 32.0$ (18.7-45.3), $C_{max} = 2.1$ (1.0-3.1)
- [00116] Estimated C_{max} of 2% nicotine blends:

$$C_{max} = \text{Mass consumed} * \text{Strength} * \text{Bioavailability} / (\text{Vol of Distribution} * \text{Body Weight}) = 40\text{mg} * 2\% * 80\% / (2.6\text{L/kg} * 75\text{kg}) = 3.3 \text{ ng/mL}$$
- [00117] Estimated C_{max} of 4% nicotine blends:

$$C_{max} = \text{Mass consumed} * \text{Strength} * \text{Bioavailability} / (\text{Vol of Distribution} * \text{Body Weight}) = 40\text{mg} * 4\% * 80\% / (2.6\text{L/kg} * 75\text{kg}) = 6.6 \text{ ng/mL}$$
- [00118] Pharmacokinetic profiles of the blood plasma testing are shown in FIG. 4; showing blood nicotine concentrations (ng/mL) over time after the first puff (inhalation) of the aerosol from the e-cigarette or the smoke of the Pall Mall. Ten puffs were taken at 30 sec intervals starting at time =0 and continuing for 4.5 minutes. For ease of reference and review of FIG. 4, at the 5-minute timepoint, the curves on the graph show from top to bottom (highest average blood nicotine concentration to lowest average blood nicotine concentration) are 4% benzoate, 2% succinate, 2% salicylate, 2% citrate, Pall Mall cigarette, 2% benzoate, 2% malate, and 2% free base blend. Although noted as highest to lowest at this time point, this is not to say that there is a statistically significant difference between any of the salt formulations, or between any of the salt formulations and the Pall Mall cigarette. However, it is possible there may be a statistically significant difference between the C_{max} of particular salt formulations, and it is also likely based on the data shown in FIG. 4 and in other studies herein that the freebase formulation is statistically different from salt formulations and/or the Pall Mall with respect to C_{max} , since it appears lower than others tested at several time points. One of skill in the art, upon review of the disclosure herein could properly power a test to determine actual statistically-based differences between one or more formulations and the cigarette, or between the formulations themselves in an e-cigarette. For ease of reference Tables 1 & 2 present the amount of nicotine detected (as an average of all users) for each formulation and the Pall Mall, presented in ng/mL, along with C_{max} and T_{max} and AUC. Data from these tables, along with the raw data therefore, was used to generate FIG. 4, 5, and 6.

Table 1

Time	Pall Mall	2% Freebase	2% Benzoate	4% Benzoate
-2	0.46	0.03	0.09	0.05
0	-0.46	-0.03	-0.09	-0.05
1.5	1.54	0.08	5.67	6.02
3	9.98	1.19	8.60	11.47
5	11.65	1.70	11.44	15.06
7.5	11.34	3.09	6.43	12.12
10	9.24	3.42	5.03	11.08
12.5	8.85	3.35	4.68	10.10
15	8.40	2.81	4.47	8.57
30	5.51	1.74	2.72	5.56
60	3.39	0.79	1.19	3.60
T_{max} (min)	5.17	10.00	6.67	5.83
C_{max} (ng/mL)	11.65	3.42	11.44	15.06
AUC (ng*min/mL)	367.5	106.2	207.8	400.2

Table 2

Time	2% Citrate	2% Malate	2% Salicylate	2% Succinate
-2	0.06	-0.17	-0.19	-0.06
0	-0.06	0.17	0.19	0.06
1.5	4.80	1.09	6.14	2.10
3	8.33	5.30	12.04	10.81
5	12.09	10.02	13.46	13.81
7.5	6.93	5.93	5.21	5.15
10	6.01	4.85	4.60	5.18
12.5	5.34	4.17	3.83	4.17
15	4.72	3.79	3.52	3.41
30	3.40	1.56	2.19	2.01
60	1.70	0.46	0.55	1.00
T_{max} (min)	5.83	5.00	4.33	5.00
C_{max} (ng/mL)	12.09	10.02	13.46	13.81
AUC (ng*min/mL)	238.0	146.1	182.9	179.5

[00119] Comparison of T_{max} and C_{max} of the seven blends and reference cigarette are shown in FIG. 5. Comparison of C_{max} and AUC of the seven blends and reference cigarette are shown in FIG. 6. Due to the time limit of the wash-period, baseline blood

nicotine concentration (at $t=-2$ and $t=0$ min) was higher for samples consumed at a later time on the test day. The data in FIGS. 4-6 show corrected blood nicotine concentration values (i.e. apparent blood nicotine concentration at each time point minus baseline nicotine concentration of the same sample).

[00120] Rates of nicotine uptake in the blood of the users of each sample within the first 90 seconds are shown in Table 3.

Table 3

Sample	Rate of nicotine uptake (ng/mL/min)
2% Salicylate	4.09
2% Benzoate	3.78
2% Citrate	3.20
2% Succinate	1.40
Pall Mall (reference)	1.03
2% Malate	0.73
2% Freebase	0.05
4% Benzoate	4.01

[00121] Although the $T_{\max}$ and $C_{\max}$ values are comparable between the tested blends and the reference cigarette (with the exception of the 2% free base blend), the rates of nicotine absorption within the first 90 seconds differed among the test articles. In particular, four blends (2% salicylate, 2% benzoate, 4% benzoate, and 2% citrate) showed markedly higher rates of absorption within the first 90 seconds compared to the other blends and with the reference cigarette. These four blends contain salts (salicylate, benzoate, and citrate) which performed well in the Satisfaction Study of Example 3. Moreover, 2% benzoate and 4% benzoate had comparable rates of absorption, suggesting that a lower concentration of nicotinic salt may not adversely impact the rate of absorption.

Example 9: Blood Plasma testing

[00122] Blood plasma testing is conducted on 24 subjects ($n = 24$). Eight test articles are used in this study: one reference cigarette and seven blends delivered to a user in an e-cigarette as an aerosol. The operating temperature of the e-cigarette is from about 150°C to about 250 °C, or from about 180°C to about 220 °C. The reference cigarette is Pall Mall (New Zealand). Seven blends are tested: 2% free base, 2% benzoate, 4% benzoate, 2% citrate, 2% malate, 2% salicylate, and 2% succinate. The seven blends are liquid

formulations prepared according to protocols similar to that described *infra* and in Example 1.

[00123] All subjects are to consume 30-55 mg of the liquid formulation of each tested blend. Ten puffs are to be taken at 30 sec intervals starting at time =0 and continuing for 4.5 minutes. Blood plasma testing is to occur for at least 60 minutes from the first puff (t=0) . Pharmacokinetic data (e.g., C_{max} , T_{max} , AUC) for nicotine in the plasma of users are obtained at various time periods during those 60 minutes, along with rates of nicotine absorption within the first 90 seconds for each test article.

Example 10: Blood Plasma testing

[00124] Blood plasma testing is conducted on twenty-four subjects (n = 24). Eleven test articles are used in this study: one reference cigarette and ten blends delivered to a user in an e-cigarette as an aerosol. The reference cigarette is Pall Mall (New Zealand). The operating temperature of the e-cigarette is from about 150°C to about 250 °C, or from about 180°C to about 220 °C. Ten blends are tested: 2% free base, 2% benzoate, 2% sorbate, 2% pyruvate, 2% laurate, 2% levulinate, 2% citrate, 2% malate, 2% salicylate, and 2% succinate. The ten blends are liquid formulations prepared according to protocols similar to that described *infra* and in Example 1.

[00125] All subjects are to consume 30-55 mg of the liquid formulation of each tested blend. Ten puffs are to be taken at 30 sec intervals starting at time =0 and continuing for 4.5 minutes. Blood plasma testing is to occur for at least 60 minutes from the first puff (t=0) . Pharmacokinetic data (e.g., C_{max} , T_{max} , AUC) for nicotine in the plasma of users are obtained at various time periods during those 60 minutes, along with rates of nicotine absorption within the first 90 seconds for each test article.

Example 11: Blood Plasma testing

[00126] Blood plasma testing is conducted on twenty-four subjects (n = 24). Twenty-one test articles are used in this study: one reference cigarette and twenty blends delivered to a user in an e-cigarette as an aerosol. The reference cigarette is Pall Mall (New Zealand). The operating temperature of the e-cigarette is from about 150°C to about 250 °C, or from about 180°C to about 220 °C. Twenty blends are tested: 2% free base, 4% free base, 2% benzoate, 4% benzoate, 2% sorbate, 4% sorbate, 2% pyruvate, 4% pyruvate, 2% laurate, 4% laurate, 2% levulinate, 4% levulinate, 2% citrate, 4% citrate, 2% malate, 4% malate,

2% salicylate, 4% salicylate, 2% succinate, and 4% succinate. The twenty blends are liquid formulations prepared according to protocols similar to that described *infra* and in Example 1.

[00127] All subjects are to consume 30-55 mg of the liquid formulation of each tested blend. Ten puffs are to be taken at 30 sec intervals starting at time =0 and continuing for 4.5 minutes. Blood plasma testing is to occur for at least 60 minutes from the first puff ($t=0$). Pharmacokinetic data (e.g., C_{max} , T_{max} , AUC) for nicotine in the plasma of users are obtained at various time periods during those 60 minutes, along with rates of nicotine absorption within the first 90 seconds for each test article.

Example 12: Blood Plasma testing

[00128] Blood plasma testing is conducted on twenty-four subjects ($n = 24$). Twenty-one test articles are used in this study: one reference cigarette and twenty blends delivered to a user in an e-cigarette as an aerosol. The reference cigarette is Pall Mall (New Zealand). The operating temperature of the e-cigarette is from about 150°C to about 250 °C, or from about 180°C to about 220 °C. Twenty blends are tested: 2% free base, 1% free base, 2% benzoate, 1% benzoate, 2% sorbate, 1% sorbate, 2% pyruvate, 1% pyruvate, 2% laurate, 1% laurate, 2% levulinate, 1% levulinate, 2% citrate, 1% citrate, 2% malate, 1% malate, 2% salicylate, 1% salicylate, 2% succinate, and 1% succinate. The twenty blends are liquid formulations prepared according to protocols similar to that described *infra* and in Example 1.

[00129] All subjects are to consume 30-55 mg of the liquid formulation of each tested blend. Ten puffs are to be taken at 30 sec intervals starting at time =0 and continuing for 4.5 minutes. Blood plasma testing is to occur for at least 60 minutes from the first puff ($t=0$). Pharmacokinetic data (e.g., C_{max} , T_{max} , AUC) for nicotine in the plasma of users are obtained at various time periods during those 60 minutes, along with rates of nicotine absorption within the first 90 seconds for each test article.

[00130] Further understanding may be gained through contemplation of the numbered embodiments below.

1. A method of delivering nicotine to a user comprising operating an electronic cigarette to a user wherein the electronic cigarette comprises a nicotine salt formulation comprising a

nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C, and inhaling an aerosol generated from the nicotine salt formulation heated by the electronic cigarette.

2. A method of delivering nicotine to a user comprising operating an electronic cigarette to a user wherein the electronic cigarette comprises a nicotine salt formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C, and inhaling an aerosol generated from the nicotine salt formulation heated by the electronic cigarette.

3. A method of delivering nicotine to a user comprising operating an electronic cigarette wherein the electronic cigarette comprises a nicotine salt formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point, and inhaling an aerosol generated from the nicotine salt formulation heated by the electronic cigarette.

4. A method of delivering nicotine to a user comprising providing an electronic cigarette to a user wherein the electronic cigarette comprises a nicotine salt formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point, and inhaling an aerosol generated from the nicotine salt formulation heated by the electronic cigarette.

5. The method of any one of embodiments 1-3, wherein an operating temperature is from 150 °C to 250 °C.

6. The method of any one of embodiments 1-3, wherein an operating temperature is from 180 °C to 220 °C.

7. The method any one of embodiments 1-3, wherein an operating temperature is about 200 °C.

8. The method of embodiment 4, wherein the operating temperature is from 150 °C to 250 °C.

9. The method of embodiment 4, wherein the operating temperature is from 180 °C to 220 °C.
10. The method of embodiment 4, wherein the operating temperature is about 200 °C.
11. The method any one of embodiments 1-10, wherein the aerosol comprises condensate of the nicotine salt.
12. The method any one of embodiments 1-10, wherein the aerosol comprises condensate of freebase nicotine.
13. The method any one of embodiments 1-10, wherein the aerosol comprises condensate of freebase nicotine and condensate of the carrier.
14. The method any one of embodiments 1-10, wherein the aerosol comprises condensate of freebase nicotine and condensate of the acid.
15. The method any one of embodiments 1-14, wherein the aerosol comprises condensate in particle sizes from about 0.1 microns to about 5 microns.
16. The method any one of embodiments 1-14, wherein the aerosol comprises condensate in particle sizes from about 0.1 microns to about 1 or 2 microns.
17. The method any one of embodiments 1-14, wherein the aerosol comprises condensate in particle sizes from about 0.1 microns to about 0.7 microns.
18. The method any one of embodiments 1-14, wherein the aerosol comprises condensate in particle sizes from about 0.3 microns to about 0.4 microns.
19. The method any one of embodiments 1-18, wherein the acid is a carboxylic acid.
20. The method of any one of embodiments 1-18, wherein the acid used to form said nicotine salt is an organic acid.
21. The method of embodiment 20, wherein the organic acid is monocarboxylic acid, aromatic acid, or keto acid.
22. The method of embodiment 20, wherein the organic acid is formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, citric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, finnaric acid, gluconic acid, saccharic acid, salicylic acid, sorbic acid, malonic acid, or malic acid.

23. The method of any one of embodiments 1-18, wherein the acid used to form the nicotine salt is salicylic acid.

24. The method of any one of embodiments 1-18, wherein the acid used to form the nicotine salt is benzoic acid.

25. The method of any one of embodiments 1-18, wherein the acid used to form the nicotine salt is pyruvic acid.

26. The method of any one of embodiments 1-18, wherein the acid used to form the nicotine salt is sorbic acid.

27. The method of any one of embodiments 1-18, wherein the acid used to form the nicotine salt is lauric acid.

28. The method of any one of embodiments 1-18, wherein the acid used to form the nicotine salt is levulinic acid.

29. The method of any one of embodiments 1-18, wherein said nicotine salt comprises nicotine pyruvate.

30. The method of any one of embodiments 1-18, wherein said nicotine salt comprises nicotine salicylate.

31. The method of any one of embodiments 1-18, wherein said nicotine salt comprises nicotine sorbate.

32. The method of any one of embodiments 1-18, wherein said nicotine salt comprises nicotine laurate.

33. The method of any one of embodiments 1-18, wherein said nicotine salt comprises nicotine levulinate.

34. The method of any one of embodiments 1-18, wherein said nicotine salt comprises nicotine benzoate.

35. The method of any one of embodiments 1-34, wherein the liquid carrier comprises glycerol, propylene glycol, trimethylene glycol, water, ethanol or combinations thereof.

36. The method of any one of embodiments 1-34, wherein the liquid carrier comprises propylene glycol and vegetable glycerin.

37. The method of any one of embodiments 1-34, wherein the liquid carrier comprises 20% to 50% of propylene glycol and 80% to 50% of vegetable glycerin.

38. The method of any one of embodiments 1-34, wherein the liquid carrier comprises 30% propylene glycol and 70% vegetable glycerin.

39. The method of any one of embodiments 1-38, wherein the nicotine salt is in an amount that forms about 0.5% to about 20% nicotine in the inhalable aerosol.

40. The method of any one of embodiments 1-38, wherein the nicotine salt is in an amount that forms about 1% to about 20% nicotine in the inhalable aerosol.

41. The method of any one of embodiments 1-40, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 25% (w/w).

42. The method of any one of embodiments 1-40, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 20% (w/w).

43. The method of any one of embodiments 1-40, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 18% (w/w).

44. The method of any one of embodiments 1-40, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 15% (w/w).

45. The method of any one of embodiments 1-40, wherein the liquid formulation has a nicotine concentration of about 4% (w/w) to about 12% (w/w).

46. The method of any one of embodiments 1-40, wherein the liquid formulation has a nicotine concentration of about 4% (w/w).

47. The method of any one of embodiments 1-40, wherein the liquid formulation has a nicotine concentration of about 2% (w/w).

48. The method of any one of embodiments 1-47, wherein the formulation further comprises a flavorant.

49. The method of any one of embodiments 1-48, wherein the formulation is non-corrosive to an electronic cigarette.

50. The method of any one of embodiments 1-49, wherein the acid is stable at and below operating temperature or about 200 °C.

51. The method of any one of embodiments 1-50, wherein the acid does not decompose at and below operating temperature or about 200 °C.

52. The method of any one of embodiments 1-51, wherein the acid does not oxidize at and below operating temperature or about 200 °C.

53. The method of any one of embodiments 1-52, wherein the formulation is non-corrosive to the electronic cigarette.

54. The method of any one of embodiments 1-53, wherein the formulation is non-toxic to a user of the electronic cigarette.

55. The method of any one of embodiments 1-54, wherein the formulation further comprises one or more additional nicotine salts in a biologically acceptable liquid carrier suitable for generating the inhalable aerosol upon heating.

56. The method of embodiment 55, wherein a second acid used to form the additional nicotine salt is selected from the group consisting of salicylic acid, sorbic acid, benzoic acid, pyruvic acid, lauric acid, and levulinic acid.

57. A method of delivering nicotine to the blood of a user, said method comprising providing an aerosol that is inhaled by the user from an electronic cigarette that comprises a nicotine salt formulation wherein providing the aerosol comprises the electronic cigarette heating the formulation thereby generating the aerosol, wherein the aerosol is effective in delivering a level of nicotine in the blood of the user that is at least 5ng/mL at about 1.5 minutes after a first puff of ten puffs of the aerosol, each puff taken at 30 second intervals.

58. The method of embodiment 54, wherein the nicotine salt formulation comprises a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C.

59. The method of embodiment 54, wherein the nicotine salt formulation comprises a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C.

60. The method of embodiment 54, wherein the nicotine salt formulation comprises a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point.

61. The method of any one of embodiments 57-60, wherein the heating of the formulation is at a temperature from 150 °C to 250 °C.

62. The method of any one of embodiments 57-60, wherein the heating of the formulation is at a temperature from 180 °C to 220 °C.

63. The method of any one of embodiments 57-60, wherein the heating of the formulation is at a temperature of about 200 °C.

64. The method of embodiment 54, wherein the nicotine salt formulation comprises a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than the operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point; and the operating temperature is 200 °C.

65. The method of any one of embodiments 57-64, wherein the Cmax is over 10 ng/mL on average.

66. The method of any one of embodiments 57-64, wherein the Cmax is over 11 ng/mL on average.

67. The method of any one of embodiments 57-64, wherein the Cmax is between 10 ng/mL and 16 ng/mL on average.

68. The method of any one of embodiments 57-64, wherein the Cmax is between 11 ng/mL and 15 ng/mL on average.

69. The method of any one of embodiments 57-64, wherein the Cmax is between 11 ng/mL and 14 ng/mL on average.

70. The method of any one of embodiments 57-69, wherein the Tmax under 10 minutes on average.

71. The method of any one of embodiments 57-69, wherein the Tmax is under 9 minutes on average.

72. The method of any one of embodiments 57-69, wherein the Tmax is under 8 minutes on average.

73. The method of any one of embodiments 57-69, wherein the Tmax is under 7 minutes on average.

74. The method of any one of embodiments 54-63, wherein the Tmax is from 3 minutes to 10 minutes on average.

75. The method of any one of embodiments 57-69, wherein the Tmax is from 3 minutes to 7.5 minutes on average.

76. The method of any one of embodiments 57-75, wherein the aerosol comprises condensate of the nicotine salt.

77. The method of any one of embodiments 57-75, wherein the aerosol comprises condensate of freebase nicotine.

78. The method of any one of embodiments 57-75, wherein the aerosol comprises condensate of freebase nicotine and condensate of the carrier.

79. The method of any one of embodiments 57-75, wherein the aerosol comprises condensate of freebase nicotine and condensate of the acid.

80. The method of any one of embodiments 57-79, wherein the aerosol comprises condensate in particle sizes from about 0.1 microns to about 5 microns.

81. The method of any one of embodiments 57-79, wherein the aerosol comprises condensate in particle sizes from about 0.1 microns to about 1 or 2 microns.

82. The method of any one of embodiments 57-79, wherein the aerosol comprises condensate in particle sizes from about 0.1 microns to about 0.7 microns.

83. The method of any one of embodiments 57-79, wherein the aerosol comprises condensate in particle sizes from about 0.3 microns to about 0.4 microns.

84. The method of any one of embodiments 57-83, wherein the acid is a carboxylic acid.

85. The method of any one of embodiments 57-83, wherein the acid used to form said nicotine salt is an organic acid.

86. The method of embodiment 85, wherein the organic acid is monocarboxylic acid, aromatic acid, or keto acid.

87. The method of embodiment 85, wherein the organic acid is formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, citric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, finnaric acid, gluconic acid, saccharic acid, salicylic acid, sorbic acid, malonic acid, or malic acid.

88. The method of any one of embodiments 57-83, wherein the acid used to form the nicotine salt is salicylic acid.

89. The method of any one of embodiments 57-83, wherein the acid used to form the nicotine salt is benzoic acid.

90. The method of any one of embodiments 57-83, wherein the acid used to form the nicotine salt is pyruvic acid.

91. The method of any one of embodiments 57-83, wherein the acid used to form the nicotine salt is sorbic acid.

92. The method of any one of embodiments 57-83, wherein the acid used to form the nicotine salt is lauric acid.

93. The method of any one of embodiments 57-83, wherein the acid used to form the nicotine salt is levulinic acid.

94. The method of any one of embodiments 57-83, wherein said nicotine salt comprises nicotine pyruvate.

95. The method of any one of embodiments 57-83, wherein said nicotine salt comprises nicotine salicylate.

96. The method of any one of embodiments 57-83, wherein said nicotine salt comprises nicotine sorbate.

97. The method of any one of embodiments 57-83, wherein said nicotine salt comprises nicotine laurate.

98. The method of any one of embodiments 57-83, wherein said nicotine salt comprises nicotine levulinate.

99. The method of any one of embodiments 57-83, wherein said nicotine salt comprises nicotine benzoate.

100. The method of any one of embodiments 57-99, wherein the liquid carrier comprises glycerol, propylene glycol, trimethylene glycol, water, ethanol or combinations thereof.

101. The method of any one of embodiments 57-99, wherein the liquid carrier comprises propylene glycol and vegetable glycerin.

102. The method of any one of embodiments 57-99, wherein the liquid carrier comprises 20% to 50% of propylene glycol and 80% to 50% of vegetable glycerin.

103. The method of any one of embodiments 57-99, wherein the liquid carrier comprises 30% propylene glycol and 70% vegetable glycerin.

104. The method of any one of embodiments 57-103, wherein the nicotine salt is in an amount that forms about 0.5% to about 20% nicotine in the inhalable aerosol.

105. The method of any one of embodiments 57-103, wherein the nicotine salt is in an amount that forms about 1% to about 20% nicotine in the inhalable aerosol.

106. The method of any one of embodiments 57-105, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 25% (w/w).

107. The method of any one of embodiments 57-105, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 20% (w/w).

108. The method of any one of embodiments 57-105, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 18% (w/w).

109. The method of any one of embodiments 57-105, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 15% (w/w).

110. The method of any one of embodiments 57-105, wherein the liquid formulation has a nicotine concentration of about 4% (w/w) to about 12% (w/w).

111. The method of any one of embodiments 57-105, wherein the liquid formulation has a nicotine concentration of about 4% (w/w).

112. The method of any one of embodiments 57-105, wherein the liquid formulation has a nicotine concentration of about 2% (w/w).

113. The method of any one of embodiments 57-112, wherein the formulation further comprises a flavorant.

114. The method of any one of embodiments 57-113, wherein the formulation is non-corrosive to an electronic cigarette.

115. The method of any one of embodiments 57-114, wherein the acid is stable at and below operating temperature or about 200 °C.

116. The method of any one of embodiments 57-115, wherein the acid does not decompose at and below operating temperature or about 200 °C.

117. The method of any one of embodiments 57-116, wherein the acid does not oxidize at and below operating temperature or about 200 °C.

118. The method of any one of embodiments 57-117, wherein the formulation is non-corrosive to the electronic cigarette.

119. The method of any one of embodiments 57-118, wherein the formulation is non-toxic to a user of the electronic cigarette.

120. The method of any one of embodiments 57-119, wherein the formulation further comprises one or more additional nicotine salts in a biologically acceptable liquid carrier suitable for generating the inhalable aerosol upon heating.

121. The method of embodiment 120, wherein a second acid used to form the additional nicotine salt is selected from the group consisting of salicylic acid, sorbic acid, benzoic acid, pyruvic acid, lauric acid, and levulinic acid.

122. A nicotine salt liquid formulation in an electronic cigarette for generating an inhalable aerosol upon heating in the electronic cigarette, the formulation in the cigarette comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C.

123. A nicotine salt liquid formulation in an electronic cigarette for generating an inhalable aerosol upon heating in the electronic cigarette, the formulation in the cigarette comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C.

124. A nicotine salt liquid formulation in an electronic cigarette for generating an inhalable aerosol upon heating in the electronic cigarette, the formulation in the cigarette comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point.

125. A nicotine salt liquid formulation in an electronic cigarette for generating an inhalable aerosol upon heating in the electronic cigarette, the formulation in the cigarette comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point.

126. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-124, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature from 150 °C to 250 °C.

127. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-124, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature from 180 °C to 220 °C.

128. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-124, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature of about 200 °C.

129. The nicotine salt liquid formulation in the electronic cigarette of embodiment 125, wherein the operating temperature is from 150 °C to 250 °C.

130. The nicotine salt liquid formulation in the electronic cigarette of embodiment 125, wherein the operating temperature is from 180 °C to 220 °C.

131. The nicotine salt liquid formulation in the electronic cigarette of embodiment 125, wherein the operating temperature is about 200 °C.

132. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-131, wherein the acid is a carboxylic acid.

133. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-131, wherein the acid used to form said nicotine salt is an organic acid.

134. The nicotine salt liquid formulation in the electronic cigarette of embodiment 133, wherein the organic acid is monocarboxylic acid, aromatic acid, or keto acid.

135. The nicotine salt liquid formulation in the electronic cigarette of embodiment 133, wherein the organic acid is formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, citric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, fennaric acid, gluconic acid, saccharic acid, salicylic acid, sorbic acid, malonic acid, or malic acid.

136. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-131, wherein the acid used to form the nicotine salt is salicylic acid.

137. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-131, wherein the acid used to form the nicotine salt is benzoic acid.

138. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-131, wherein the acid used to form the nicotine salt is pyruvic acid.

139. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-131, wherein the acid used to form the nicotine salt is sorbic acid.

140. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-131, wherein the acid used to form the nicotine salt is lauric acid.

141. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-131, wherein the acid used to form the nicotine salt is levulinic acid.

142. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-131, wherein said nicotine salt comprises nicotine pyruvate.

143. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-131, wherein said nicotine salt comprises nicotine salicylate.

144. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-131, wherein said nicotine salt comprises nicotine sorbate.

145. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-131, wherein said nicotine salt comprises nicotine laurate.

146. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-131, wherein said nicotine salt comprises nicotine levulinate.

147. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-131, wherein said nicotine salt comprises nicotine benzoate.

148. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-147, wherein the liquid carrier comprises glycerol, propylene glycol, trimethylene glycol, water, ethanol or combinations thereof.

149. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-147, wherein the liquid carrier comprises propylene glycol and vegetable glycerin.

150. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-147, wherein the liquid carrier comprises 20% to 50% of propylene glycol and 80% to 50% of vegetable glycerin.

151. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-147, wherein the liquid carrier comprises 30% propylene glycol and 70% vegetable glycerin.

152. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-151, wherein the nicotine salt is in an amount that forms about 0.5% to about 20% nicotine in the inhalable aerosol.

153. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-151, wherein the nicotine salt is in an amount that forms about 1% to about 20% nicotine in the inhalable aerosol.

154. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-153, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 25% (w/w).

155. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-153, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 20% (w/w).

156. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-153, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 18% (w/w).

157. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-153, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 15% (w/w).

158. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-153, wherein the liquid formulation has a nicotine concentration of about 4% (w/w) to about 12% (w/w).

159. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-153, wherein the liquid formulation has a nicotine concentration of about 4% (w/w).

160. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-153, wherein the liquid formulation has a nicotine concentration of about 2% (w/w).

161. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-160, wherein the formulation further comprises a flavorant.

162. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-161, wherein the formulation is non-corrosive to an electronic cigarette.

163. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-162, wherein the acid is stable at and below operating temperature or about 200 °C.

164. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-163, wherein the acid does not decompose at and below operating temperature or about 200 °C.

165. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-164, wherein the acid does not oxidize at and below operating temperature or about 200 °C.

166. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-165, wherein the formulation is non-corrosive to the electronic cigarette.

167. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-166, wherein the formulation is non-toxic to a user of the electronic cigarette.

168. The nicotine salt liquid formulation in the electronic cigarette of any one of embodiments 122-167 further comprising one or more additional nicotine salts in a biologically acceptable liquid carrier suitable for generating the inhalable aerosol upon heating.

169. The nicotine salt liquid formulation in the electronic cigarette of embodiment 168, wherein a second acid used to form the additional nicotine salt is selected from the group consisting of salicylic acid, sorbic acid, benzoic acid, pyruvic acid, lauric acid, and levulinic acid.

170. A nicotine salt liquid formulation for generating an inhalable aerosol upon heating in the electronic cigarette, the nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C.

171. A nicotine salt liquid formulation for generating an inhalable aerosol upon heating in the electronic cigarette, the nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C.

172. A nicotine salt liquid formulation for generating an inhalable aerosol upon heating in the electronic cigarette, the nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further

characterized by a melting point $<160^{\circ}\text{C}$, a boiling point $>160^{\circ}\text{C}$, and at least a 50-degree difference between the melting point and the boiling point.

173. A nicotine salt liquid formulation for generating an inhalable aerosol upon heating in the electronic cigarette, the nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point.

174. The nicotine salt liquid formulation of any one of embodiments 170-172, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature from 150°C to 250°C .

175. The nicotine salt liquid formulation of any one of embodiments 170-172, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature from 180°C to 220°C .

176. The nicotine salt liquid formulation of any one of embodiments 170-172, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature of about 200°C .

177. The nicotine salt liquid formulation of embodiment 173, wherein the operating temperature is from 150°C to 250°C .

178. The nicotine salt liquid formulation of embodiment 173, wherein the operating temperature is from 180°C to 220°C .

179. The nicotine salt liquid formulation of embodiment 173, wherein the operating temperature is about 200°C .

180. The nicotine salt liquid formulation of any one of embodiments 170-179, wherein the acid is a carboxylic acid.

181. The nicotine salt liquid formulation of any one of embodiments 170-179, wherein the acid used to form said nicotine salt is an organic acid.

182. The nicotine salt liquid formulation of embodiment 181, wherein the organic acid is monocarboxylic acid, aromatic acid, or keto acid.

183. The nicotine salt liquid formulation of embodiment 181, wherein the organic acid is formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, citric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, finnaric acid, gluconic acid, saccharic acid, salicylic acid, sorbic acid, malonic acid, or malic acid.

184. The liquid formulation of any one of embodiments 170-179, wherein the acid used to form the nicotine salt is salicylic acid.

185. The nicotine salt liquid formulation of any one of embodiments 170-179, wherein the acid used to form the nicotine salt is benzoic acid.

186. The nicotine salt liquid formulation of any one of embodiments 170-179, wherein the acid used to form the nicotine salt is pyruvic acid.

187. The nicotine salt liquid formulation of any one of embodiments 170-179, wherein the acid used to form the nicotine salt is sorbic acid.

188. The nicotine salt liquid formulation of any one of embodiments 170-179, wherein the acid used to form the nicotine salt is lauric acid.

189. The nicotine salt liquid formulation of any one of embodiments 170-179, wherein the acid used to form the nicotine salt is levulinic acid.

190. The nicotine salt liquid formulation of any one of embodiments 170-179, wherein said nicotine salt comprises nicotine pyruvate.

191. The nicotine salt liquid formulation of any one of embodiments 170-179, wherein said nicotine salt comprises nicotine salicylate.

192. The nicotine salt liquid formulation of any one of embodiments 170-179, wherein said nicotine salt comprises nicotine sorbate.

193. The nicotine salt liquid formulation of any one of embodiments 170-179, wherein said nicotine salt comprises nicotine laurate.

194. The nicotine salt liquid formulation of any one of embodiments 170-179, wherein said nicotine salt comprises nicotine levulinate.

195. The nicotine salt liquid formulation of any one of embodiments 170-179, wherein said nicotine salt comprises nicotine benzoate.

196. The nicotine salt liquid formulation of any one of embodiments 170-195, wherein the liquid carrier comprises glycerol, propylene glycol, trimethylene glycol, water, ethanol or combinations thereof.

197. The nicotine salt liquid formulation of any one of embodiments 170-195, wherein the liquid carrier comprises propylene glycol and vegetable glycerin.

198. The nicotine salt liquid formulation of any one of embodiments 170-195, wherein the liquid carrier comprises 20% to 50% of propylene glycol and 80% to 50% of vegetable glycerin.

199. The nicotine salt liquid formulation of any one of embodiments 170-195, wherein the liquid carrier comprises 30% propylene glycol and 70% vegetable glycerin.

200. The nicotine salt liquid formulation of any one of embodiments 170-199, wherein the nicotine salt is in an amount that forms about 0.5% to about 20% nicotine in the inhalable aerosol.

201. The nicotine salt liquid formulation of any one of embodiments 170-199, wherein the nicotine salt is in an amount that forms about 1% to about 20% nicotine in the inhalable aerosol.

202. The nicotine salt liquid formulation of any one of embodiments 170-201, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 25% (w/w).

203. The nicotine salt liquid formulation of any one of embodiments 170-201, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 20% (w/w).

204. The nicotine salt liquid formulation of any one of embodiments 170-201, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 18% (w/w).

205. The nicotine salt liquid formulation of any one of embodiments 170-201, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 15% (w/w).

206. The nicotine salt liquid formulation of any one of embodiments 170-201, wherein the liquid formulation has a nicotine concentration of about 4% (w/w) to about 12% (w/w).

207. The nicotine salt liquid formulation of any one of embodiments 170-201, wherein the liquid formulation has a nicotine concentration of about 4% (w/w).

208. The nicotine salt liquid formulation of any one of embodiments 170-201, wherein the liquid formulation has a nicotine concentration of about 2% (w/w).

209. The nicotine salt liquid formulation of any one of embodiments 170-208, wherein the formulation further comprises a flavorant.

210. The nicotine salt liquid formulation of any one of embodiments 170-209, wherein the formulation is non-corrosive to an electronic cigarette.

211. The nicotine salt liquid formulation of any one of embodiments 170-210, wherein the acid is stable at and below operating temperature or about 200 °C.

212. The nicotine salt liquid formulation of any one of embodiments 170-211, wherein the acid does not decompose at and below operating temperature or about 200 °C.

213. The nicotine salt liquid formulation of any one of embodiments 170-212, wherein the acid does not oxidize at and below operating temperature or about 200 °C.

214. The nicotine salt liquid formulation of any one of embodiments 170-213, wherein the formulation is non-corrosive to the electronic cigarette.

215. The nicotine salt liquid formulation of any one of embodiments 170-214, wherein the formulation is non-toxic to a user of the electronic cigarette.

216. The nicotine salt liquid formulation of any one of embodiments 170-215, further comprising one or more additional nicotine salts in a biologically acceptable liquid carrier suitable for generating the inhalable aerosol upon heating.

217. The nicotine salt liquid formulation of embodiment 216, wherein a second acid used to form the additional nicotine salt is selected from the group consisting of salicylic acid, sorbic acid, benzoic acid, pyruvic acid, lauric acid, and levulinic acid.

218. A nicotine salt liquid formulation for use in an electronic cigarette the nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C.

219. A nicotine salt liquid formulation for use in an electronic cigarette the nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C.

220. A nicotine salt liquid formulation for use in an electronic cigarette the nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point.

221. A nicotine salt liquid formulation for use in an electronic cigarette the nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees

lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point.

222. The nicotine salt liquid formulation of any one of embodiments 218-220, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature from 150 °C to 250 °C.

223. The nicotine salt liquid formulation of any one of embodiments 218-220, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature from 180 °C to 220 °C.

224. The nicotine salt liquid formulation of any one of embodiments 218-220, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature of about 200 °C.

225. The nicotine salt liquid formulation of embodiment 221, wherein the operating temperature is from 150 °C to 250 °C.

226. The nicotine salt liquid formulation of embodiment 221, wherein the operating temperature is from 180 °C to 220 °C.

227. The nicotine salt liquid formulation of embodiment 221, wherein the operating temperature is about 200 °C.

228. The nicotine salt liquid formulation of any one of embodiments 218-227, wherein the acid is a carboxylic acid.

229. The nicotine salt liquid formulation of any one of embodiments 218-227, wherein the acid used to form said nicotine salt is an organic acid.

230. The nicotine salt liquid formulation of embodiment 229, wherein the organic acid is monocarboxylic acid, aromatic acid, or keto acid.

231. The nicotine salt liquid formulation of embodiment 229, wherein the organic acid is formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, citric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, finnaric acid, gluconic acid, saccharic acid, salicylic acid, sorbic acid, malonic acid, or malic acid.

232. The liquid formulation of any one of embodiments 218-227, wherein the acid used to form the nicotine salt is salicylic acid.

233. The nicotine salt liquid formulation of any one of embodiments 218-227, wherein the acid used to form the nicotine salt is benzoic acid.

234. The nicotine salt liquid formulation of any one of embodiments 218-227, wherein the acid used to form the nicotine salt is pyruvic acid.

235. The nicotine salt liquid formulation of any one of embodiments 218-227, wherein the acid used to form the nicotine salt is sorbic acid.

236. The nicotine salt liquid formulation of any one of embodiments 218-227, wherein the acid used to form the nicotine salt is lauric acid.

237. The nicotine salt liquid formulation of any one of embodiments 218-227, wherein the acid used to form the nicotine salt is levulinic acid.

238. The nicotine salt liquid formulation of any one of embodiments 218-227, wherein said nicotine salt comprises nicotine pyruvate.

239. The nicotine salt liquid formulation of any one of embodiments 218-227, wherein said nicotine salt comprises nicotine salicylate.

240. The nicotine salt liquid formulation of any one of embodiments 218-227, wherein said nicotine salt comprises nicotine sorbate.

241. The nicotine salt liquid formulation of any one of embodiments 218-227, wherein said nicotine salt comprises nicotine laurate.

242. The nicotine salt liquid formulation of any one of embodiments 218-227, wherein said nicotine salt comprises nicotine levulinate.

243. The nicotine salt liquid formulation of any one of embodiments 218-227, wherein said nicotine salt comprises nicotine benzoate.

244. The nicotine salt liquid formulation of any one of embodiments 218-243, wherein the liquid carrier comprises glycerol, propylene glycol, trimethylene glycol, water, ethanol or combinations thereof.

245. The nicotine salt liquid formulation of any one of embodiments 218-243, wherein the liquid carrier comprises propylene glycol and vegetable glycerin.

246. The nicotine salt liquid formulation of any one of embodiments 218-243, wherein the liquid carrier comprises 20% to 50% of propylene glycol and 80% to 50% of vegetable glycerin.

247. The nicotine salt liquid formulation of any one of embodiments 218-243, wherein the liquid carrier comprises 30% propylene glycol and 70% vegetable glycerin.

248. The nicotine salt liquid formulation of any one of embodiments 218-247, wherein the nicotine salt is in an amount that forms about 0.5% to about 20% nicotine in the inhalable aerosol.

249. The nicotine salt liquid formulation of any one of embodiments 218-247, wherein the nicotine salt is in an amount that forms about 1% to about 20% nicotine in the inhalable aerosol.

250. The nicotine salt liquid formulation of any one of embodiments 218-247, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 25% (w/w).

251. The nicotine salt liquid formulation of any one of embodiments 218-247, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 20% (w/w).

252. The nicotine salt liquid formulation of any one of embodiments 218-247, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 18% (w/w).

253. The nicotine salt liquid formulation of any one of embodiments 218-247, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 15% (w/w).

254. The nicotine salt liquid formulation of any one of embodiments 218-247, wherein the liquid formulation has a nicotine concentration of about 4% (w/w) to about 12% (w/w).

255. The nicotine salt liquid formulation of any one of embodiments 218-247, wherein the liquid formulation has a nicotine concentration of about 4% (w/w).

256. The nicotine salt liquid formulation of any one of embodiments 218-247, wherein the liquid formulation has a nicotine concentration of about 2% (w/w).

257. The nicotine salt liquid formulation of any one of embodiments 218-256, wherein the formulation further comprises a flavorant.

258. The nicotine salt liquid formulation of any one of embodiments 218-257, wherein the formulation is non-corrosive to an electronic cigarette.

259. The nicotine salt liquid formulation of any one of embodiments 218-258, wherein the acid is stable at and below operating temperature or about 200 °C.

260. The nicotine salt liquid formulation of any one of embodiments 218-259, wherein the acid does not decompose at and below operating temperature or about 200 °C.

261. The nicotine salt liquid formulation of any one of embodiments 218-260, wherein the acid does not oxidize at and below operating temperature or about 200 °C.

262. The nicotine salt liquid formulation of any one of embodiments 218-261, wherein the formulation is non-corrosive to the electronic cigarette.

263. The nicotine salt liquid formulation of any one of embodiments 218-262, wherein the formulation is non-toxic to a user of the electronic cigarette.

264. The nicotine salt liquid formulation of any one of embodiments 218-263, further comprising one or more additional nicotine salts in a biologically acceptable liquid carrier suitable for generating the inhalable aerosol upon heating.

265. The nicotine salt liquid formulation of embodiment 264, wherein a second acid used to form the additional nicotine salt is selected from the group consisting of salicylic acid, sorbic acid, benzoic acid, pyruvic acid, lauric acid, and levulinic acid.

266. Use of a nicotine salt formulation for delivery of nicotine to a user from an electronic cigarette wherein the nicotine salt formulation comprises a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200°C , and the nicotine salt formulation is heated by the electronic cigarette to generate an aerosol inhalable by the user.

267. Use of a nicotine salt formulation for delivery of nicotine to a user from an electronic cigarette wherein the nicotine salt formulation comprises a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200°C , and the nicotine salt formulation is heated by the electronic cigarette to generate an aerosol inhalable by the user.

268. Use of a nicotine salt formulation for delivery of nicotine to a user from an electronic cigarette wherein the nicotine salt formulation comprises a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point $<160^{\circ}\text{C}$, a boiling point $>160^{\circ}\text{C}$, and at least a 50-degree difference between the melting point and the boiling point, and the nicotine salt formulation is heated by the electronic cigarette to generate an aerosol inhalable by the user.

269. Use of a nicotine salt formulation for delivery of nicotine to the blood of a user from an electronic cigarette, wherein the nicotine salt formulation in the electronic cigarette is heated to form an aerosol which delivers a level of nicotine in the blood of the user that is at least 5 ng/mL at about 1.5 minutes after a first puff of ten puffs of the aerosol, each puff taken at 30 second intervals.

270. Use of a nicotine salt formulation for delivery of nicotine to a user from an electronic cigarette wherein the nicotine salt formulation comprises a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point, and the nicotine salt formulation is heated by the electronic cigarette to generate an aerosol inhalable by the user.

271. The use of any one of embodiments 266-269, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature is from 150 °C to 250 °C.

272. The use of any one of embodiments 266-269, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature is from 180 °C to 220 °C.

273. The use of any one of embodiments 266-269, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature is about 200 °C.

274. The use of embodiment 270, wherein the operating temperature is from 150 °C to 250 °C.

275. The use of embodiment 270, wherein the operating temperature is from 180 °C to 220 °C.

276. The use of embodiment 270, wherein the operating temperature is about 200 °C.

277. The use of any one of embodiments 266-276, wherein the aerosol comprises condensate of the nicotine salt.

278. The use of any one of embodiments 266-276, wherein the aerosol comprises condensate of freebase nicotine.

279. The use of any one of embodiments 266-276, wherein the aerosol comprises condensate of freebase nicotine and condensate of the carrier.

280. The use of any one of embodiments 266-276, wherein the aerosol comprises condensate of freebase nicotine and condensate of the acid.

281. The use of any one of embodiments 266-280, wherein the aerosol comprises condensate in particle sizes from about 0.1 microns to about 5 microns.

282. The use of any one of embodiments 266-280, wherein the aerosol comprises condensate in particle sizes from about 0.1 microns to about 1 or 2 microns.

283. The use of any one of embodiments 266-280, wherein the aerosol comprises condensate in particle sizes from about 0.1 microns to about 0.7 microns.

284. The use of any one of embodiments 266-280, wherein the aerosol comprises condensate in particle sizes from about 0.3 microns to about 0.4 microns.

285. The use of any one of embodiments 266-284, wherein the acid is a carboxylic acid.

286. The use of any one of embodiments 266-284, wherein the acid used to form said nicotine salt is an organic acid.

287. The use of embodiment 286, wherein the organic acid is monocarboxylic acid, aromatic acid, or keto acid.

288. The use of embodiment 286, wherein the organic acid is formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, citric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, finnaric acid, gluconic acid, saccharic acid, salicylic acid, sorbic acid, malonic acid, or malic acid.

289. The use of any one of embodiments 266-284, wherein the acid used to form the nicotine salt is salicylic acid.

290. The use of any one of embodiments 266-284, wherein the acid used to form the nicotine salt is benzoic acid.

291. The use of any one of embodiments 266-284, wherein the acid used to form the nicotine salt is pyruvic acid.

292. The use of any one of embodiments 266-284, wherein the acid used to form the nicotine salt is sorbic acid.

293. The use of any one of embodiments 266-284, wherein the acid used to form the nicotine salt is lauric acid.

294. The use of any one of embodiments 266-284, wherein the acid used to form the nicotine salt is levulinic acid.

295. The use of any one of embodiments 266-284, wherein said nicotine salt comprises nicotine pyruvate.

296. The use of any one of embodiments 266-284, wherein said nicotine salt comprises nicotine salicylate.

297. The use of any one of embodiments 266-284, wherein said nicotine salt comprises nicotine sorbate.

298. The use of any one of embodiments 266-284, wherein said nicotine salt comprises nicotine laurate.

299. The use of any one of embodiments 266-284, wherein said nicotine salt comprises nicotine levulinate.

300. The use of any one of embodiments 266-284, wherein said nicotine salt comprises nicotine benzoate.

301. The use of any one of embodiments 266-300, wherein the liquid carrier comprises glycerol, propylene glycol, trimethylene glycol, water, ethanol or combinations thereof.

302. The use of any one of embodiments 266-300, wherein the liquid carrier comprises propylene glycol and vegetable glycerin.

303. The use of any one of embodiments 266-300, wherein the liquid carrier comprises 20% to 50% of propylene glycol and 80% to 50% of vegetable glycerin.

304. The use of any one of embodiments 266-300, wherein the liquid carrier comprises 30% propylene glycol and 70% vegetable glycerin.

305. The use of any one of embodiments 266-304, wherein the nicotine salt is in an amount that forms about 0.5% to about 20% nicotine in the inhalable aerosol.

306. The use of any one of embodiments 266-304, wherein the nicotine salt is in an amount that forms about 1% to about 20% nicotine in the inhalable aerosol.

307. The use of any one of embodiments 266-306, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 25% (w/w).

308. The use of any one of embodiments 266-306, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 20% (w/w).

309. The use of any one of embodiments 266-306, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 18% (w/w).

310. The use of any one of embodiments 266-306, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 15% (w/w).

311. The use of any one of embodiments 266-306, wherein the liquid formulation has a nicotine concentration of about 4% (w/w) to about 12% (w/w).

312. The use of any one of embodiments 266-306, wherein the liquid formulation has a nicotine concentration of about 4% (w/w).

313. The use of any one of embodiments 266-306, wherein the liquid formulation has a nicotine concentration of about 2% (w/w).

314. The use of any one of embodiments 266-313, wherein the formulation further comprises a flavorant.

315. The use of any one of embodiments 266-314, wherein the formulation is non-corrosive to an electronic cigarette.

316. The use of any one of embodiments 266-315, wherein the acid is stable at and below operating temperature or about 200 °C.

317. The use of any one of embodiments 266-316, wherein the acid does not decompose at and below operating temperature or about 200 °C.

318. The use of any one of embodiments 266-317, wherein the acid does not oxidize at and below operating temperature or about 200 °C.

319. The use of any one of embodiments 266-318, wherein the formulation is non-corrosive to the electronic cigarette.

320. The use of any one of embodiments 266-319, wherein the formulation is non-toxic to a user of the electronic cigarette.

321. The use of any one of embodiments 266-320, wherein the formulation further comprises one or more additional nicotine salts in a biologically acceptable liquid carrier suitable for generating the inhalable aerosol upon heating.

322. The use of embodiment 321, wherein a second acid used to form the additional nicotine salt is selected from the group consisting of salicylic acid, sorbic acid, benzoic acid, pyruvic acid, lauric acid, and levulinic acid

323. A cartomizer for an electronic cigarette comprising:

a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C;

an atomizer comprising a heating element in fluid communication with the nicotine salt liquid formulation; and

a fluid storage compartment that stores the nicotine salt liquid formulation.

324. A cartomizer for an electronic cigarette comprising:

a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C;

an atomizer comprising a heating element in fluid communication with the nicotine salt liquid formulation; and

a fluid storage compartment that stores the nicotine salt liquid formulation.

325. A cartomizer for an electronic cigarette comprising:

a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point;

an atomizer comprising a heating element in fluid communication with the nicotine salt liquid formulation; and

a fluid storage compartment that stores the nicotine salt liquid formulation.

326. A cartomizer for an electronic cigarette comprising:

a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point;

an atomizer comprising a heating element in fluid communication with the nicotine salt liquid formulation; and

a fluid storage compartment that stores the nicotine salt liquid formulation.

327. The cartomizer of any one of embodiments 323-325, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature from 150 °C to 250 °C.

328. The cartomizer of any one of embodiments 323-325, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature from 180 °C to 220 °C.

329. The cartomizer of any one of embodiments 323-325, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature of about 200 °C.

330. The cartomizer of embodiment 326, wherein the operating temperature is from 150 °C to 250 °C.

331. The cartomizer of embodiment 326, wherein the operating temperature is from 180 °C to 220 °C.

332. The cartomizer of embodiment 326, wherein the operating temperature is about 200 °C.

333. The cartomizer of any one of embodiments 323-332, wherein the cartomizer further comprises a mouthpiece.

334. The cartomizer of any one of embodiments 323-333, wherein the acid is a carboxylic acid.

335. The cartomizer of any one of embodiments 323-333, wherein the acid used to form said nicotine salt is an organic acid.

336. The cartomizer of embodiment 335, wherein the organic acid is monocarboxylic acid, aromatic acid, or keto acid.

337. The cartomizer of embodiment 335, wherein the organic acid is formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, citric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, finnaric acid, gluconic acid, saccharic acid, salicylic acid, sorbic acid, malonic acid, or malic acid.

338. The cartomizer of any one of embodiments 323-333, wherein the acid used to form the nicotine salt is salicylic acid.

339. The cartomizer of any one of embodiments 323-333, wherein the acid used to form the nicotine salt is benzoic acid.

340. The cartomizer of any one of embodiments 323-333, wherein the acid used to form the nicotine salt is pyruvic acid.

341. The cartomizer of any one of embodiments 323-333, wherein the acid used to form the nicotine salt is sorbic acid.

342. The cartomizer of any one of embodiments 323-333, wherein the acid used to form the nicotine salt is lauric acid.

343. The cartomizer of any one of embodiments 323-333, wherein the acid used to form the nicotine salt is levulinic acid.

344. The cartomizer of any one of embodiments 323-333, wherein said nicotine salt comprises nicotine pyruvate.

345. The cartomizer of any one of embodiments 323-333, wherein said nicotine salt comprises nicotine salicylate.

346. The cartomizer of any one of embodiments 323-333, wherein said nicotine salt comprises nicotine sorbate.

347. The cartomizer of any one of embodiments 323-333, wherein said nicotine salt comprises nicotine laurate.

348. The cartomizer of any one of embodiments 323-333, wherein said nicotine salt comprises nicotine levulinate.

349. The cartomizer of any one of embodiments 323-333, wherein said nicotine salt comprises nicotine benzoate.

350. The cartomizer of any one of embodiments 323-349, wherein the liquid carrier comprises glycerol, propylene glycol, trimethylene glycol, water, ethanol or combinations thereof.

351. The cartomizer of any one of embodiments 323-349, wherein the liquid carrier comprises propylene glycol and vegetable glycerin.

352. The cartomizer of any one of embodiments 323-349, wherein the liquid carrier comprises 20% to 50% of propylene glycol and 80% to 50% of vegetable glycerin.

353. The cartomizer of any one of embodiments 323-349, wherein the liquid carrier comprises 30% propylene glycol and 70% vegetable glycerin.

354. The cartomizer of any one of embodiments 323-353, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 25% (w/w).

355. The cartomizer of any one of embodiments 323-353, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 20% (w/w).

356. The cartomizer of any one of embodiments 323-353, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 18% (w/w).

357. The cartomizer of any one of embodiments 323-353, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 15% (w/w).

358. The cartomizer of any one of embodiments 323-353, wherein the liquid formulation has a nicotine concentration of about 4% (w/w) to about 12% (w/w).

359. The cartomizer of any one of embodiments 323-353, wherein the liquid formulation has a nicotine concentration of about 4% (w/w).

360. The cartomizer of any one of embodiments 323-353, wherein the liquid formulation has a nicotine concentration of about 2% (w/w).

361. The cartomizer of any one of embodiments 323-360, wherein the electronic cigarette is configured to generate an aerosol inhalable by a user.

362. The cartomizer of embodiment 361, wherein the aerosol comprises condensate of the nicotine salt.

363. The cartomizer of embodiment 361, wherein the aerosol comprises condensate of freebase nicotine.

364. The cartomizer of embodiment 361, wherein the aerosol comprises condensate of freebase nicotine and condensate of the carrier.

365. The cartomizer of embodiment 361, wherein the aerosol comprises condensate of freebase nicotine and condensate of the acid.

366. The cartomizer of any one of embodiments 361-365, wherein the aerosol comprises condensate in particle sizes from about 0.1 microns to about 5 microns.

367. The cartomizer of any one of embodiments 361-365, wherein the aerosol comprises condensate in particle sizes from about 0.1 microns to about 1 or 2 microns.

368. The cartomizer of any one of embodiments 361-365, wherein the aerosol comprises condensate in particle sizes from about 0.1 microns to about 0.7 microns.

369. The cartomizer of any one of embodiments 361-365, wherein the aerosol comprises condensate in particle sizes from about 0.3 microns to about 0.4 microns.

370. The cartomizer of any one of embodiments 361-369, wherein the nicotine salt is in an amount that forms about 0.5% to about 20% nicotine in the inhalable aerosol.

371. The cartomizer of any one of embodiments 361-369, wherein the nicotine salt is in an amount that forms about 1% to about 20% nicotine in the inhalable aerosol.

372. The cartomizer of any one of embodiments 323-371, wherein the formulation further comprises a flavorant.

373. The cartomizer of any one of embodiments 323-372, wherein the formulation is non-corrosive to an electronic cigarette.

374. The cartomizer of any one of embodiments 323-373, wherein the acid is stable at and below operating temperature or about 200 °C.

375. The cartomizer of any one of embodiments 323-374, wherein the acid does not decompose at and below operating temperature or about 200 °C.

376. The cartomizer of any one of embodiments 323-375, wherein the acid does not oxidize at and below operating temperature or about 200 °C.

377. The cartomizer of any one of embodiments 323-376, wherein the formulation is non-corrosive to the electronic cigarette.

378. The cartomizer of any one of embodiments 323-377, wherein the formulation is non-toxic to a user of the electronic cigarette.

379. The cartomizer of any one of embodiments 323-378, wherein the formulation further comprises one or more additional nicotine salts in a biologically acceptable liquid carrier suitable for generating the inhalable aerosol upon heating.

380. The cartomizer of embodiment 379, wherein a second acid used to form the additional nicotine salt is selected from the group consisting of salicylic acid, sorbic acid, benzoic acid, pyruvic acid, lauric acid, and levulinic acid.

381. An electronic cigarette for generating an inhalable aerosol comprising
a fluid storage compartment;
a heater; and
a nicotine salt liquid formulation in the fluid storage compartment, the liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C;
a battery; and
a mouthpiece.

382. An electronic cigarette for generating an inhalable aerosol comprising
a fluid storage compartment;
a heater; and
a nicotine salt liquid formulation in the fluid storage compartment, the liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used

to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C;

a battery; and

a mouthpiece.

383. An electronic cigarette for generating an inhalable aerosol comprising

a fluid storage compartment;

a heater; and

a nicotine salt liquid formulation in the fluid storage compartment, the liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point;

a battery; and

a mouthpiece.

384. An electronic cigarette for generating an inhalable aerosol comprising

a fluid storage compartment;

a heater; and

a nicotine salt liquid formulation in the fluid storage compartment, the liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point;

a battery; and

a mouthpiece.

385. The electronic cigarette of any one of embodiments 381-384, wherein the heater comprises a heater chamber, a fluid wick, and a resistive heating element in contact with the fluid wick.

386. The electronic cigarette of any one of embodiments 381-384, wherein the mouthpiece, the heater and the fluid storage compartment form a cartomizer separable from the battery.

387. The electronic cigarette of any one of embodiments 381-384, wherein the heater and the fluid storage compartment form a cartomizer separable from the battery and the mouthpiece.

388. The electronic cigarette of any one of embodiments 381-384, wherein the fluid storage compartment is separable from the heater, the battery and the mouthpiece.

389. The electronic cigarette of any one of embodiments 381-383, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature from 150 °C to 250 °C.

390. The electronic cigarette of any one of embodiments 381-383, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature from 180 °C to 220 °C.

391. The electronic cigarette of any one of embodiments 381-383, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature of about 200 °C.

392. The electronic cigarette of embodiment 384, wherein the operating temperature is from 150 °C to 250 °C.

393. The electronic cigarette of embodiment 384, wherein the operating temperature is from 180 °C to 220 °C.

394. The electronic cigarette of embodiment 384, wherein the operating temperature is about 200 °C.

395. The electronic cigarette of any one of embodiments 381-394, wherein the aerosol comprises condensate of the nicotine salt.

396. The electronic cigarette of any one of embodiments 381-394, wherein the aerosol comprises condensate of freebase nicotine.

397. The electronic cigarette of any one of embodiments 381-394, wherein the aerosol comprises condensate of freebase nicotine and condensate of the carrier.

398. The electronic cigarette of any one of embodiments 381-394, wherein the aerosol comprises condensate of freebase nicotine and condensate of the acid.

399. The electronic cigarette of any one of embodiments 381-398, wherein the aerosol comprises condensate in particle sizes from about 0.1 microns to about 5 microns.

400. The electronic cigarette of any one of embodiments 381-398, wherein the aerosol comprises condensate in particle sizes from about 0.1 microns to about 1 or 2 microns.

401. The electronic cigarette of any one of embodiments 381-398, wherein the aerosol comprises condensate in particle sizes from about 0.1 microns to about 0.7 microns.

402. The electronic cigarette of any one of embodiments 381-398, wherein the aerosol comprises condensate in particle sizes from about 0.3 microns to about 0.4 microns.

403. The electronic cigarette of any one of embodiments 381-402, wherein the acid is a carboxylic acid.

404. The electronic cigarette of any one of embodiments 381-402, wherein the acid used to form said nicotine salt is an organic acid.

405. The electronic cigarette of embodiment 404, wherein the organic acid is monocarboxylic acid, aromatic acid, or keto acid.

406. The electronic cigarette of embodiment 404, wherein the organic acid is formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, citric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, finnaric acid, gluconic acid, saccharic acid, salicylic acid, sorbic acid, malonic acid, or malic acid.

407. The electronic cigarette of any one of embodiments 381-402, wherein the acid used to form the nicotine salt is salicylic acid.

408. The electronic cigarette of any one of embodiments 381-402, wherein the acid used to form the nicotine salt is benzoic acid.

409. The electronic cigarette of any one of embodiments 381-402, wherein the acid used to form the nicotine salt is pyruvic acid.

410. The electronic cigarette of any one of embodiments 381-402, wherein the acid used to form the nicotine salt is sorbic acid.

411. The electronic cigarette of any one of embodiments 381-402, wherein the acid used to form the nicotine salt is lauric acid.

412. The electronic cigarette of any one of embodiments 381-402, wherein the acid used to form the nicotine salt is levulinic acid.

413. The electronic cigarette of any one of embodiments 381-402, wherein said nicotine salt comprises nicotine pyruvate.

414. The electronic cigarette of any one of embodiments 381-402, wherein said nicotine salt comprises nicotine salicylate.

415. The electronic cigarette of any one of embodiments 381-402, wherein said nicotine salt comprises nicotine sorbate.

416. The electronic cigarette of any one of embodiments 381-402, wherein said nicotine salt comprises nicotine laurate.

417. The electronic cigarette of any one of embodiments 381-402, wherein said nicotine salt comprises nicotine levulinate.

418. The electronic cigarette of any one of embodiments 381-402, wherein said nicotine salt comprises nicotine benzoate.

419. The electronic cigarette of any one of embodiments 381-419, wherein the liquid carrier comprises glycerol, propylene glycol, trimethylene glycol, water, ethanol or combinations thereof.

420. The electronic cigarette of any one of embodiments 381-419, wherein the liquid carrier comprises propylene glycol and vegetable glycerin.

421. The electronic cigarette of any one of embodiments 381-419, wherein the liquid carrier comprises 20% to 50% of propylene glycol and 80% to 50% of vegetable glycerin.

422. The electronic cigarette of any one of embodiments 381-419, wherein the liquid carrier comprises 30% propylene glycol and 70% vegetable glycerin.

423. The electronic cigarette of any one of embodiments 381-422, wherein the nicotine salt is in an amount that forms about 0.5% to about 20% nicotine in the inhalable aerosol.

424. The electronic cigarette of any one of embodiments 381-422, wherein the nicotine salt is in an amount that forms about 1% to about 20% nicotine in the inhalable aerosol.

425. The electronic cigarette of any one of embodiments 381-424, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 25% (w/w).

426. The electronic cigarette of any one of embodiments 381-424, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 20% (w/w).

427. The electronic cigarette of any one of embodiments 381-424, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 18% (w/w).

428. The electronic cigarette of any one of embodiments 381-424, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 15% (w/w).

429. The electronic cigarette of any one of embodiments 381-424, wherein the liquid formulation has a nicotine concentration of about 4% (w/w) to about 12% (w/w).

430. The electronic cigarette of any one of embodiments 381-424, wherein the liquid formulation has a nicotine concentration of about 4% (w/w).

431. The electronic cigarette of any one of embodiments 381-424, wherein the liquid formulation has a nicotine concentration of about 2% (w/w).

432. The electronic cigarette of any one of embodiments 381-431, wherein the formulation further comprises a flavorant.

433. The electronic cigarette of any one of embodiments 381-432, wherein the formulation is non-corrosive to an electronic cigarette.

434. The electronic cigarette of any one of embodiments 381-433, wherein the acid is stable at and below operating temperature or about 200 °C.

435. The electronic cigarette of any one of embodiments 381-434, wherein the acid does not decompose at and below operating temperature or about 200 °C.

436. The electronic cigarette of any one of embodiments 381-435, wherein the acid does not oxidize at and below operating temperature or about 200 °C.

437. The electronic cigarette of any one of embodiments 381-436, wherein the formulation is non-corrosive to the electronic cigarette.

438. The electronic cigarette of any one of embodiments 381-437, wherein the formulation is non-toxic to a user of the electronic cigarette.

439. The electronic cigarette of any one of embodiments 381-438, wherein the formulation further comprises one or more additional nicotine salts in a biologically acceptable liquid carrier suitable for generating the inhalable aerosol upon heating.

440. The electronic cigarette of embodiment 439, wherein a second acid used to form the additional nicotine salt is selected from the group consisting of salicylic acid, sorbic acid, benzoic acid, pyruvic acid, lauric acid, and levulinic acid.

441. A cartridge in an electronic cigarette comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C.

442. A cartridge in an electronic cigarette comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a

nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C.

443. A cartridge in an electronic cigarette comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point.

444. A cartridge in an electronic cigarette comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point.

445. The cartridge of any one of embodiments 441-444, wherein the cartridge is separable from the electronic cigarette.

446. The cartridge of any one of embodiments 441-445, wherein the acid is a carboxylic acid.

447. The cartridge of any one of embodiments 441-445, wherein the acid used to form said nicotine salt is an organic acid.

448. The cartridge of embodiment 447, wherein the organic acid is monocarboxylic acid, aromatic acid, or keto acid.

449. The cartridge of embodiment 447, wherein the organic acid is formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, citric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, fennaric acid, gluconic acid, saccharic acid, salicylic acid, sorbic acid, malonic acid, or malic acid.

450. The cartridge of any one of embodiments 441-445, wherein the acid used to form the nicotine salt is salicylic acid.

451. The cartridge of any one of embodiments 441-445, wherein the acid used to form the nicotine salt is benzoic acid.

452. The cartridge of any one of embodiments 441-445, wherein the acid used to form the nicotine salt is pyruvic acid.

453. The cartridge of any one of embodiments 441-445, wherein the acid used to form the nicotine salt is sorbic acid.

454. The cartridge of any one of embodiments 441-445, wherein the acid used to form the nicotine salt is lauric acid.

455. The cartridge of any one of embodiments 441-445, wherein the acid used to form the nicotine salt is levulinic acid.

456. The cartridge of any one of embodiments 441-445, wherein said nicotine salt comprises nicotine pyruvate.

457. The cartridge of any one of embodiments 441-445, wherein said nicotine salt comprises nicotine salicylate.

458. The cartridge of any one of embodiments 441-445, wherein said nicotine salt comprises nicotine sorbate.

459. The cartridge of any one of embodiments 441-445, wherein said nicotine salt comprises nicotine laurate.

460. The cartridge of any one of embodiments 441-445, wherein said nicotine salt comprises nicotine levulinate.

461. The cartridge of any one of embodiments 441-445, wherein said nicotine salt comprises nicotine benzoate.

462. The cartridge of any one of embodiments 441-461, wherein the liquid carrier comprises glycerol, propylene glycol, trimethylene glycol, water, ethanol or combinations thereof.

463. The cartridge of any one of embodiments 441-461, wherein the liquid carrier comprises propylene glycol and vegetable glycerin.

464. The cartridge of any one of embodiments 441-461, wherein the liquid carrier comprises 20% to 50% of propylene glycol and 80% to 50% of vegetable glycerin.

465. The cartridge of any one of embodiments 441-461, wherein the liquid carrier comprises 30% propylene glycol and 70% vegetable glycerin.

466. The cartridge of any one of embodiments 441-465, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 25% (w/w).

467. The cartridge of any one of embodiments 441-465, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 20% (w/w).

468. The cartridge of any one of embodiments 441-465, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 18% (w/w).

469. The cartridge of any one of embodiments 441-465, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 15% (w/w).

470. The cartridge of any one of embodiments 441-465, wherein the liquid formulation has a nicotine concentration of about 4% (w/w) to about 12% (w/w).

471. The cartridge of any one of embodiments 441-465, wherein the liquid formulation has a nicotine concentration of about 4% (w/w).

472. The cartridge of any one of embodiments 441-465, wherein the liquid formulation has a nicotine concentration of about 2% (w/w).

473. The cartridge of any one of embodiments 441-472, wherein the formulation further comprises a flavorant.

474. The cartridge of any one of embodiments 441-473, wherein the formulation is non-corrosive to an electronic cigarette.

475. The cartridge of any one of embodiments 441-474, wherein the acid is stable at and below operating temperature or about 200 °C.

476. The cartridge of any one of embodiments 441-475, wherein the acid does not decompose at and below operating temperature or about 200 °C.

477. The cartridge of any one of embodiments 441-476, wherein the acid does not oxidize at and below operating temperature or about 200 °C.

478. The cartridge of any one of embodiments 441-477, wherein the formulation is non-corrosive to the electronic cigarette.

479. The cartridge of any one of embodiments 441-478, wherein the formulation is non-toxic to a user of the electronic cigarette.

480. The cartridge of any one of embodiments 441-479, wherein the formulation further comprises one or more additional nicotine salts in a biologically acceptable liquid carrier suitable for generating the inhalable aerosol upon heating.

481. The cartridge of embodiment 480, wherein a second acid used to form the additional nicotine salt is selected from the group consisting of salicylic acid, sorbic acid, benzoic acid, pyruvic acid, lauric acid, and levulinic acid.

482. A kit comprising:

(a) an electronic cigarette for generating an inhalable aerosol comprising

- i. a device body comprising a cartridge receptacle;
- ii. a cartridge comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C;

iii. a heater;

iv. a battery; and

v. a mouthpiece; and

(b) instructions for using the electronic cigarette to generate an inhalable aerosol.

483. A kit comprising:

(a) an electronic cigarette for generating an inhalable aerosol comprising

- i. a device body comprising a cartridge receptacle;
- ii. a cartridge comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C;

iii. a heater;

iv. a battery; and

v. a mouthpiece; and

(b) instructions for using the electronic cigarette to generate an inhalable aerosol.

484. A kit comprising:

(a) an electronic cigarette for generating an inhalable aerosol comprising

- i. a device body comprising a cartridge receptacle;
- ii. a cartridge comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is

further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point;

iii. a heater;

iv. a battery; and

v. a mouthpiece; and

(b) instructions for using the electronic cigarette to generate an inhalable aerosol.

485. A kit comprising:

(a) an electronic cigarette for generating an inhalable aerosol comprising

i. a device body comprising a cartridge receptacle;

ii. a cartridge comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point;

iii. a heater;

iv. a battery; and

v. a mouthpiece; and

(b) instructions for using the electronic cigarette to generate an inhalable aerosol.

486. The kit of any one of embodiments 482-485, wherein the acid is a carboxylic acid.

487. The kit of any one of embodiments 482-485, wherein the acid used to form said nicotine salt is an organic acid.

488. The kit of embodiment 487, wherein the organic acid is monocarboxylic acid, aromatic acid, or keto acid.

489. The kit of embodiment 487, wherein the organic acid is formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, citric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, finnaric acid, gluconic acid, saccharic acid, salicylic acid, sorbic acid, malonic acid, or malic acid.

490. The kit of any one of embodiments 482-485, wherein the acid used to form the nicotine salt is salicylic acid.

491. The kit of any one of embodiments 482-485, wherein the acid used to form the nicotine salt is benzoic acid.

492. The kit of any one of embodiments 482-485, wherein the acid used to form the nicotine salt is pyruvic acid.

493. The kit of any one of embodiments 482-485, wherein the acid used to form the nicotine salt is sorbic acid.

494. The kit of any one of embodiments 482-485, wherein the acid used to form the nicotine salt is lauric acid.

495. The kit of any one of embodiments 482-485, wherein the acid used to form the nicotine salt is levulinic acid.

496. The kit of any one of embodiments 482-485, wherein said nicotine salt comprises nicotine pyruvate.

497. The kit of any one of embodiments 482-485, wherein said nicotine salt comprises nicotine salicylate.

498. The kit of any one of embodiments 482-485, wherein said nicotine salt comprises nicotine sorbate.

499. The kit of any one of embodiments 482-485, wherein said nicotine salt comprises nicotine laurate.

500. The kit of any one of embodiments 482-485, wherein said nicotine salt comprises nicotine levulinate.

501. The kit of any one of embodiments 482-485, wherein said nicotine salt comprises nicotine benzoate.

502. The kit of any one of embodiments 482-501, wherein the liquid carrier comprises glycerol, propylene glycol, trimethylene glycol, water, ethanol or combinations thereof.

503. The kit of any one of embodiments 482-501, wherein the liquid carrier comprises propylene glycol and vegetable glycerin.

504. The kit of any one of embodiments 482-501, wherein the liquid carrier comprises 20% to 50% of propylene glycol and 80% to 50% of vegetable glycerin.

505. The kit of any one of embodiments 482-501, wherein the liquid carrier comprises 30% propylene glycol and 70% vegetable glycerin.

506. The kit of any one of embodiments 482-505, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 25% (w/w).

507. The kit of any one of embodiments 482-505, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 20% (w/w).

508. The kit of any one of embodiments 482-505, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 18% (w/w).

509. The kit of any one of embodiments 482-505, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 15% (w/w).

510. The kit of any one of embodiments 482-505, wherein the liquid formulation has a nicotine concentration of about 4% (w/w) to about 12% (w/w).

511. The kit of any one of embodiments 482-505, wherein the liquid formulation has a nicotine concentration of about 4% (w/w).

512. The kit of any one of embodiments 482-505, wherein the liquid formulation has a nicotine concentration of about 2% (w/w).

513. The kit of any one of embodiments 482-512, wherein the formulation further comprises a flavorant.

514. The kit of any one of embodiments 482-513, wherein the formulation is non-corrosive to an electronic cigarette.

515. The kit of any one of embodiments 482-514, wherein the acid is stable at and below operating temperature or about 200 °C.

516. The kit of any one of embodiments 482-515, wherein the acid does not decompose at and below operating temperature or about 200 °C.

517. The kit of any one of embodiments 482-516, wherein the acid does not oxidize at and below operating temperature or about 200 °C.

518. The kit of any one of embodiments 482-517, wherein the formulation is non-corrosive to the electronic cigarette.

519. The kit of any one of embodiments 482-518, wherein the formulation is non-toxic to a user of the electronic cigarette.

520. The kit of any one of embodiments 482-519, wherein the formulation further comprises one or more additional nicotine salts in a biologically acceptable liquid carrier suitable for generating the inhalable aerosol upon heating.

521. The kit of embodiment 520, wherein a second acid used to form the additional nicotine salt is selected from the group consisting of salicylic acid, sorbic acid, benzoic acid, pyruvic acid, lauric acid, and levulinic acid.

522. A cartridge comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C.

523. A cartridge comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C.

524. A cartridge comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point.

525. A cartridge comprising a fluid storage compartment, wherein the fluid storage compartment stores a nicotine salt liquid formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point.

526. The cartridge of any one of embodiments 523-526, wherein the cartridge can be connected to an electronic cigarette.

527. The cartridge of any one of embodiments 523-527, wherein the acid is a carboxylic acid.

528. The cartridge of any one of embodiments 523-527, wherein the acid used to form said nicotine salt is an organic acid.

529. The cartridge of embodiment 529, wherein the organic acid is monocarboxylic acid, aromatic acid, or keto acid.

530. The cartridge of embodiment 529, wherein the organic acid is formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, citric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, finnaric acid, gluconic acid, saccharic acid, salicylic acid, sorbic acid, malonic acid, or malic acid.

531. The cartridge of any one of embodiments 523-527, wherein the acid used to form the nicotine salt is salicylic acid.

532. The cartridge of any one of embodiments 523-527, wherein the acid used to form the nicotine salt is benzoic acid.

533. The cartridge of any one of embodiments 523-527, wherein the acid used to form the nicotine salt is pyruvic acid.

534. The cartridge of any one of embodiments 523-527, wherein the acid used to form the nicotine salt is sorbic acid.

535. The cartridge of any one of embodiments 523-527, wherein the acid used to form the nicotine salt is lauric acid.

536. The cartridge of any one of embodiments 523-527, wherein the acid used to form the nicotine salt is levulinic acid.

537. The cartridge of any one of embodiments 523-527, wherein said nicotine salt comprises nicotine pyruvate.

538. The cartridge of any one of embodiments 523-527, wherein said nicotine salt comprises nicotine salicylate.

539. The cartridge of any one of embodiments 523-527, wherein said nicotine salt comprises nicotine sorbate.

540. The cartridge of any one of embodiments 523-527, wherein said nicotine salt comprises nicotine laurate.

541. The cartridge of any one of embodiments 523-527, wherein said nicotine salt comprises nicotine levulinate.

542. The cartridge of any one of embodiments 523-527, wherein said nicotine salt comprises nicotine benzoate.

543. The cartridge of any one of embodiments 523-543, wherein the liquid carrier comprises glycerol, propylene glycol, trimethylene glycol, water, ethanol or combinations thereof.

544. The cartridge of any one of embodiments 523-543, wherein the liquid carrier comprises propylene glycol and vegetable glycerin.

545. The cartridge of any one of embodiments 523-543, wherein the liquid carrier comprises 20% to 50% of propylene glycol and 80% to 50% of vegetable glycerin.

546. The cartridge of any one of embodiments 523-543, wherein the liquid carrier comprises 30% propylene glycol and 70% vegetable glycerin.

547. The cartridge of any one of embodiments 523-547, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 25% (w/w).

548. The cartridge of any one of embodiments 523-547, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 20% (w/w).

549. The cartridge of any one of embodiments 523-547, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 18% (w/w).

550. The cartridge of any one of embodiments 523-547, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 15% (w/w).

551. The cartridge of any one of embodiments 523-547, wherein the liquid formulation has a nicotine concentration of about 4% (w/w) to about 12% (w/w).

552. The cartridge of any one of embodiments 523-547, wherein the liquid formulation has a nicotine concentration of about 4% (w/w).

553. The cartridge of any one of embodiments 523-547, wherein the liquid formulation has a nicotine concentration of about 2% (w/w).

554. The cartridge of any one of embodiments 523-553, wherein the formulation further comprises a flavorant.

555. The cartridge of any one of embodiments 523-554, wherein the formulation is non-corrosive to an electronic cigarette.

556. The cartridge of any one of embodiments 523-555, wherein the acid is stable at and below operating temperature or about 200 °C.

557. The cartridge of any one of embodiments 523-556, wherein the acid does not decompose at and below operating temperature or about 200 °C.

558. The cartridge of any one of embodiments 523-557, wherein the acid does not oxidize at and below operating temperature or about 200 °C.

559. The cartridge of any one of embodiments 523-558, wherein the formulation is non-corrosive to the electronic cigarette.

560. The cartridge of any one of embodiments 523-559, wherein the formulation is non-toxic to a user of the electronic cigarette.

561. The cartridge of any one of embodiments 523-560, wherein the formulation further comprises one or more additional nicotine salts in a biologically acceptable liquid carrier suitable for generating the inhalable aerosol upon heating.

562. The cartridge of embodiment 561, wherein a second acid used to form the additional nicotine salt is selected from the group consisting of salicylic acid, sorbic acid, benzoic acid, pyruvic acid, lauric acid, and levulinic acid.

[00131] Although preferred embodiments of the present invention have been shown and described herein, it will be obvious to those skilled in the art that such embodiments are provided by way of example only. Numerous variations, changes, and substitutions will now occur to those skilled in the art without departing from the invention. It should be understood that various alternatives to the embodiments of the invention described herein can be employed in practicing the invention. It is intended that the following embodiments define the scope of the invention and that methods and structures within the scope of these embodiments and their equivalents be covered thereby.

WHAT IS CLAIMED IS:

1. A method of delivering nicotine to a user comprising operating an electronic cigarette to a user wherein the electronic cigarette comprises a nicotine salt formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C, and inhaling an aerosol generated from the nicotine salt formulation heated by the electronic cigarette.

2. A method of delivering nicotine to a user comprising operating an electronic cigarette to a user wherein the electronic cigarette comprises a nicotine salt formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C, and inhaling an aerosol generated from the nicotine salt formulation heated by the electronic cigarette.

3. A method of delivering nicotine to a user comprising operating an electronic cigarette wherein the electronic cigarette comprises a nicotine salt formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point, and inhaling an aerosol generated from the nicotine salt formulation heated by the electronic cigarette.

4. A method of delivering nicotine to a user comprising providing an electronic cigarette to a user wherein the electronic cigarette comprises a nicotine salt formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point, and inhaling an aerosol generated from the nicotine salt formulation heated by the electronic cigarette.

5. The method of any one of claims 1-3, wherein an operating temperature is from 150 °C to 250 °C.

6. The method of any one of claims 1-3, wherein an operating temperature is from 180 °C to 220 °C.

7. The method any one of claims 1-3, wherein an operating temperature is about 200 °C.

8. The method of claim 4, wherein the operating temperature is from 150 °C to 250 °C.

9. The method of claim 4, wherein the operating temperature is from 180 °C to 220 °C.
10. The method of claim 4, wherein the operating temperature is about 200 °C.
11. The method any one of claims 1-10, wherein the aerosol comprises condensate of the nicotine salt.
12. The method any one of claims 1-10, wherein the aerosol comprises condensate of freebase nicotine.
13. The method any one of claims 1-10, wherein the aerosol comprises condensate of freebase nicotine and condensate of the carrier.
14. The method any one of claims 1-10, wherein the aerosol comprises condensate of freebase nicotine and condensate of the acid.
15. The method any one of claims 1-14, wherein the aerosol comprises condensate in particle sizes from about 0.1 microns to about 5 microns.
16. The method any one of claims 1-14, wherein the aerosol comprises condensate in particle sizes from about 0.1 microns to about 1 or 2 microns.
17. The method any one of claims 1-14, wherein the aerosol comprises condensate in particle sizes from about 0.1 microns to about 0.7 microns.
18. The method any one of claims 1-14, wherein the aerosol comprises condensate in particle sizes from about 0.3 microns to about 0.4 microns.
19. The method any one of claims 1-18, wherein the acid is a carboxylic acid.
20. The method of any one of claims 1-18, wherein the acid used to form said nicotine salt is an organic acid.
21. The method of claim 20, wherein the organic acid is monocarboxylic acid, aromatic acid, or keto acid.
22. The method of claim 20, wherein the organic acid is formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, citric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, finnaric acid, gluconic acid, saccharic acid, salicylic acid, sorbic acid, malonic acid, or malic acid.
23. The method of any one of claims 1-18, wherein the acid used to form the nicotine salt is salicylic acid.

24. The method of any one of claims 1-18, wherein the acid used to form the nicotine salt is benzoic acid.

25. The method of any one of claims 1-18, wherein the acid used to form the nicotine salt is pyruvic acid.

26. The method of any one of claims 1-18, wherein the acid used to form the nicotine salt is sorbic acid.

27. The method of any one of claims 1-18, wherein the acid used to form the nicotine salt is lauric acid.

28. The method of any one of claims 1-18, wherein the acid used to form the nicotine salt is levulinic acid.

29. The method of any one of claims 1-18, wherein said nicotine salt comprises nicotine pyruvate.

30. The method of any one of claims 1-18, wherein said nicotine salt comprises nicotine salicylate.

31. The method of any one of claims 1-18, wherein said nicotine salt comprises nicotine sorbate.

32. The method of any one of claims 1-18, wherein said nicotine salt comprises nicotine laurate.

33. The method of any one of claims 1-18, wherein said nicotine salt comprises nicotine levulinate.

34. The method of any one of claims 1-18, wherein said nicotine salt comprises nicotine benzoate.

35. The method of any one of claims 1-34, wherein the liquid carrier comprises glycerol, propylene glycol, trimethylene glycol, water, ethanol or combinations thereof.

36. The method of any one of claims 1-34, wherein the liquid carrier comprises propylene glycol and vegetable glycerin.

37. The method of any one of claims 1-34, wherein the liquid carrier comprises 20% to 50% of propylene glycol and 80% to 50% of vegetable glycerin.

38. The method of any one of claims 1-34, wherein the liquid carrier comprises 30% propylene glycol and 70% vegetable glycerin.

39. The method of any one of claims 1-38, wherein the nicotine salt is in an amount that forms about 0.5% to about 20% nicotine in the inhalable aerosol.

40. The method of any one of claims 1-38, wherein the nicotine salt is in an amount that forms about 1% to about 20% nicotine in the inhalable aerosol.

41. The method of any one of claims 1-40, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 25% (w/w).

42. The method of any one of claims 1-40, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 20% (w/w).

43. The method of any one of claims 1-40, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 18% (w/w).

44. The method of any one of claims 1-40, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 15% (w/w).

45. The method of any one of claims 1-40, wherein the liquid formulation has a nicotine concentration of about 4% (w/w) to about 12% (w/w).

46. The method of any one of claims 1-40, wherein the liquid formulation has a nicotine concentration of about 4% (w/w).

47. The method of any one of claims 1-40, wherein the liquid formulation has a nicotine concentration of about 2% (w/w).

48. The method of any one of claims 1-47, wherein the formulation further comprises a flavorant.

49. The method of any one of claims 1-48, wherein the formulation is non-corrosive to an electronic cigarette.

50. The method of any one of claims 1-49, wherein the acid is stable at and below operating temperature or about 200 °C.

51. The method of any one of claims 1-50, wherein the acid does not decompose at and below operating temperature or about 200 °C.

52. The method of any one of claims 1-51, wherein the acid does not oxidize at and below operating temperature or about 200 °C.

53. The method of any one of claims 1-52, wherein the formulation is non-corrosive to the electronic cigarette.

54. The method of any one of claims 1-53, wherein the formulation is non-toxic to a user of the electronic cigarette.

55. The method of any one of claims 1-54, wherein the formulation further comprises one or more additional nicotine salts in a biologically acceptable liquid carrier suitable for generating the inhalable aerosol upon heating.

56. The method of claim 55, wherein a second acid used to form the additional nicotine salt is selected from the group consisting of salicylic acid, sorbic acid, benzoic acid, pyruvic acid, lauric acid, and levulinic acid.

57. A nicotine salt liquid formulation in an electronic cigarette for generating an inhalable aerosol upon heating in the electronic cigarette, the formulation in the cigarette comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200°C .

58. A nicotine salt liquid formulation in an electronic cigarette for generating an inhalable aerosol upon heating in the electronic cigarette, the formulation in the cigarette comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200°C .

59. A nicotine salt liquid formulation in an electronic cigarette for generating an inhalable aerosol upon heating in the electronic cigarette, the formulation in the cigarette comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point $<160^{\circ}\text{C}$, a boiling point $>160^{\circ}\text{C}$, and at least a 50-degree difference between the melting point and the boiling point.

60. A nicotine salt liquid formulation in an electronic cigarette for generating an inhalable aerosol upon heating in the electronic cigarette, the formulation in the cigarette comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point.

61. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-59, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature from 150°C to 250°C .

62. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-59, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature from 180 °C to 220 °C.

63. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-59, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature of about 200 °C.

64. The nicotine salt liquid formulation in the electronic cigarette of claim 60, wherein the operating temperature is from 150 °C to 250 °C.

65. The nicotine salt liquid formulation in the electronic cigarette of claim 60, wherein the operating temperature is from 180 °C to 220 °C.

66. The nicotine salt liquid formulation in the electronic cigarette of claim 60, wherein the operating temperature is about 200 °C.

67. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-66, wherein the acid is a carboxylic acid.

68. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-66, wherein the acid used to form said nicotine salt is an organic acid.

69. The nicotine salt liquid formulation in the electronic cigarette of claim 68, wherein the organic acid is monocarboxylic acid, aromatic acid, or keto acid.

70. The nicotine salt liquid formulation in the electronic cigarette of claim 68, wherein the organic acid is formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, citric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, fennaric acid, gluconic acid, saccharic acid, salicylic acid, sorbic acid, malonic acid, or malic acid.

71. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-66, wherein the acid used to form the nicotine salt is salicylic acid.

72. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-66, wherein the acid used to form the nicotine salt is benzoic acid.

73. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-66, wherein the acid used to form the nicotine salt is pyruvic acid.

74. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-66, wherein the acid used to form the nicotine salt is sorbic acid.

75. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-66, wherein the acid used to form the nicotine salt is lauric acid.

76. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-66, wherein the acid used to form the nicotine salt is levulinic acid.

77. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-66, wherein said nicotine salt comprises nicotine pyruvate.

78. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-66, wherein said nicotine salt comprises nicotine salicylate.

79. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-66, wherein said nicotine salt comprises nicotine sorbate.

80. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-66, wherein said nicotine salt comprises nicotine laurate.

81. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-66, wherein said nicotine salt comprises nicotine levulinate.

82. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-66, wherein said nicotine salt comprises nicotine benzoate.

83. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-82, wherein the liquid carrier comprises glycerol, propylene glycol, trimethylene glycol, water, ethanol or combinations thereof.

84. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-82, wherein the liquid carrier comprises propylene glycol and vegetable glycerin.

85. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-82, wherein the liquid carrier comprises 20% to 50% of propylene glycol and 80% to 50% of vegetable glycerin.

86. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-82, wherein the liquid carrier comprises 30% propylene glycol and 70% vegetable glycerin.

87. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-86, wherein the nicotine salt is in an amount that forms about 0.5% to about 20% nicotine in the inhalable aerosol.

88. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-86, wherein the nicotine salt is in an amount that forms about 1% to about 20% nicotine in the inhalable aerosol.

89. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-89, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 25% (w/w).

90. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-89, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 20% (w/w).

91. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-89, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 18% (w/w).

92. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-89, wherein the liquid formulation has a nicotine concentration of about 1% (w/w) to about 15% (w/w).

93. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-89, wherein the liquid formulation has a nicotine concentration of about 4% (w/w) to about 12% (w/w).

94. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-89, wherein the liquid formulation has a nicotine concentration of about 4% (w/w).

95. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-89, wherein the liquid formulation has a nicotine concentration of about 2% (w/w).

96. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-95, wherein the formulation further comprises a flavorant.

97. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-96, wherein the formulation is non-corrosive to an electronic cigarette.

98. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-97, wherein the acid is stable at and below operating temperature or about 200 °C.

99. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-98, wherein the acid does not decompose at and below operating temperature or about 200 °C.

100. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-99, wherein the acid does not oxidize at and below operating temperature or about 200 °C.

101. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-100, wherein the formulation is non-corrosive to the electronic cigarette.

102. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-101, wherein the formulation is non-toxic to a user of the electronic cigarette.

103. The nicotine salt liquid formulation in the electronic cigarette of any one of claims 57-102, further comprising one or more additional nicotine salts in a biologically acceptable liquid carrier suitable for generating the inhalable aerosol upon heating.

104. The nicotine salt liquid formulation in the electronic cigarette of claim 103, wherein a second acid used to form the additional nicotine salt is selected from the group consisting of salicylic acid, sorbic acid, benzoic acid, pyruvic acid, lauric acid, and levulinic acid.

ABSTRACT OF THE DISCLOSURE

A nicotine salt liquid formulation for generating an inhalable aerosol in an electronic cigarette comprising nicotine salt that forms about 0.5% to about 20% nicotine is provided.

FIG. 1

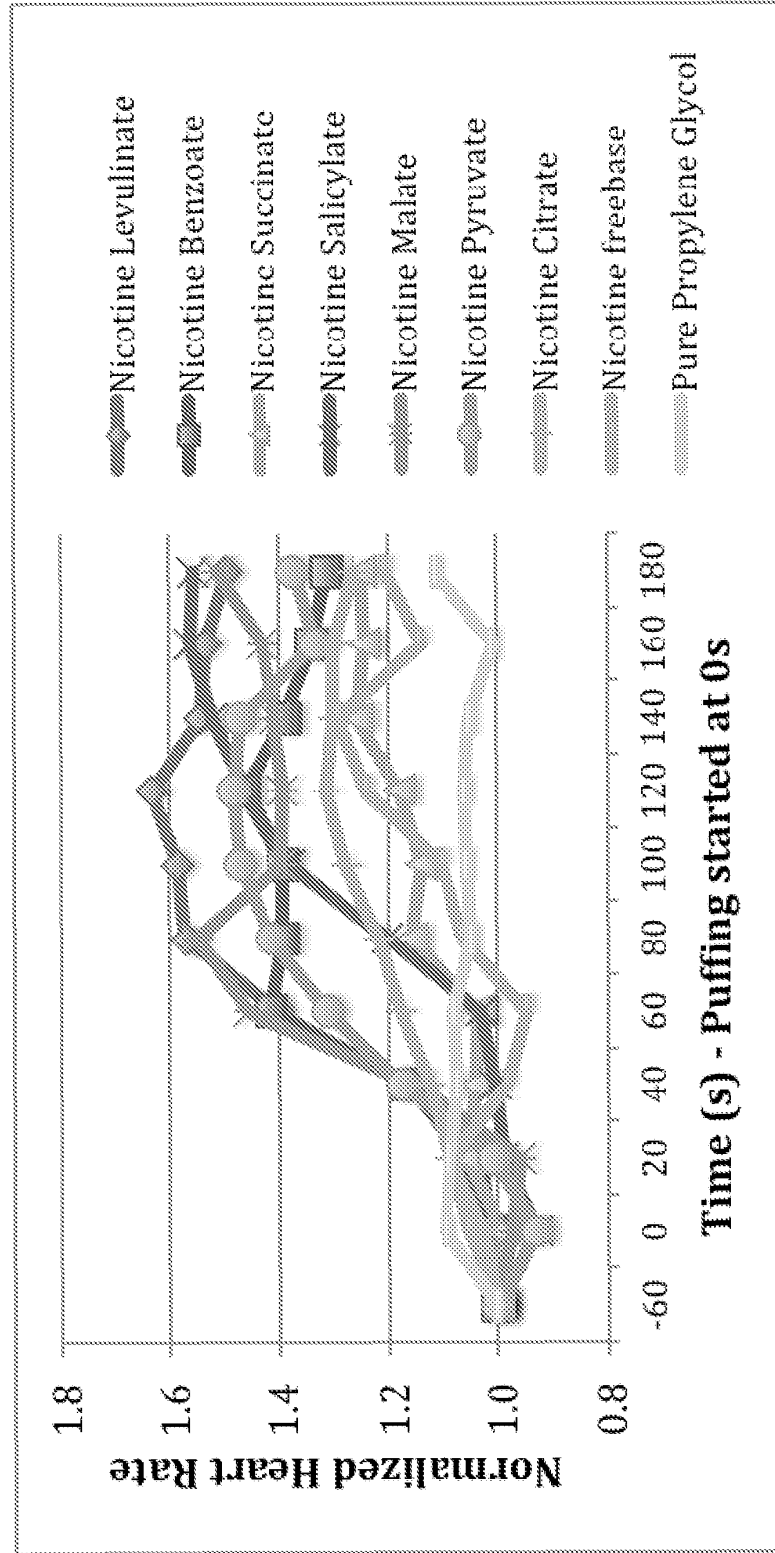


FIG. 2

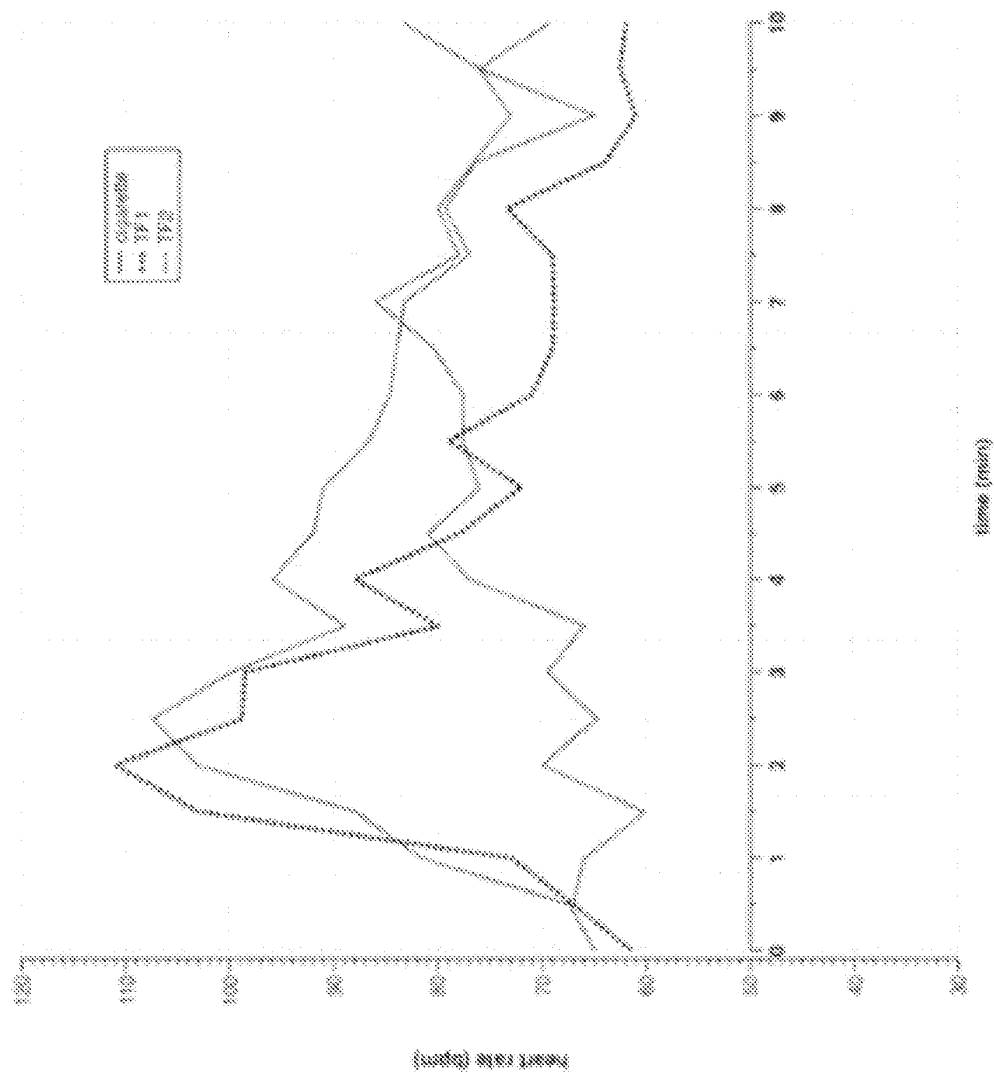


FIG. 3

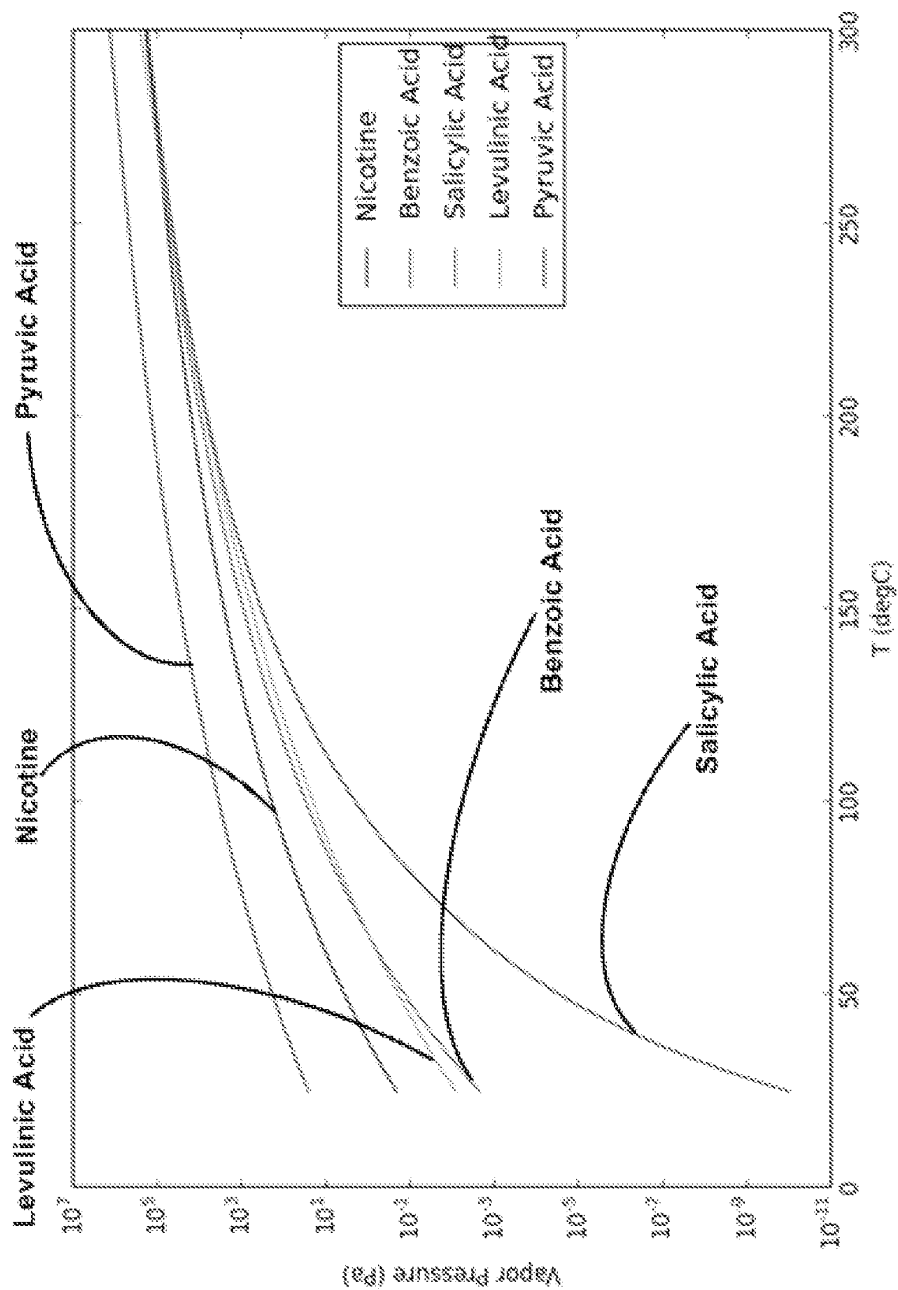


FIG. 4

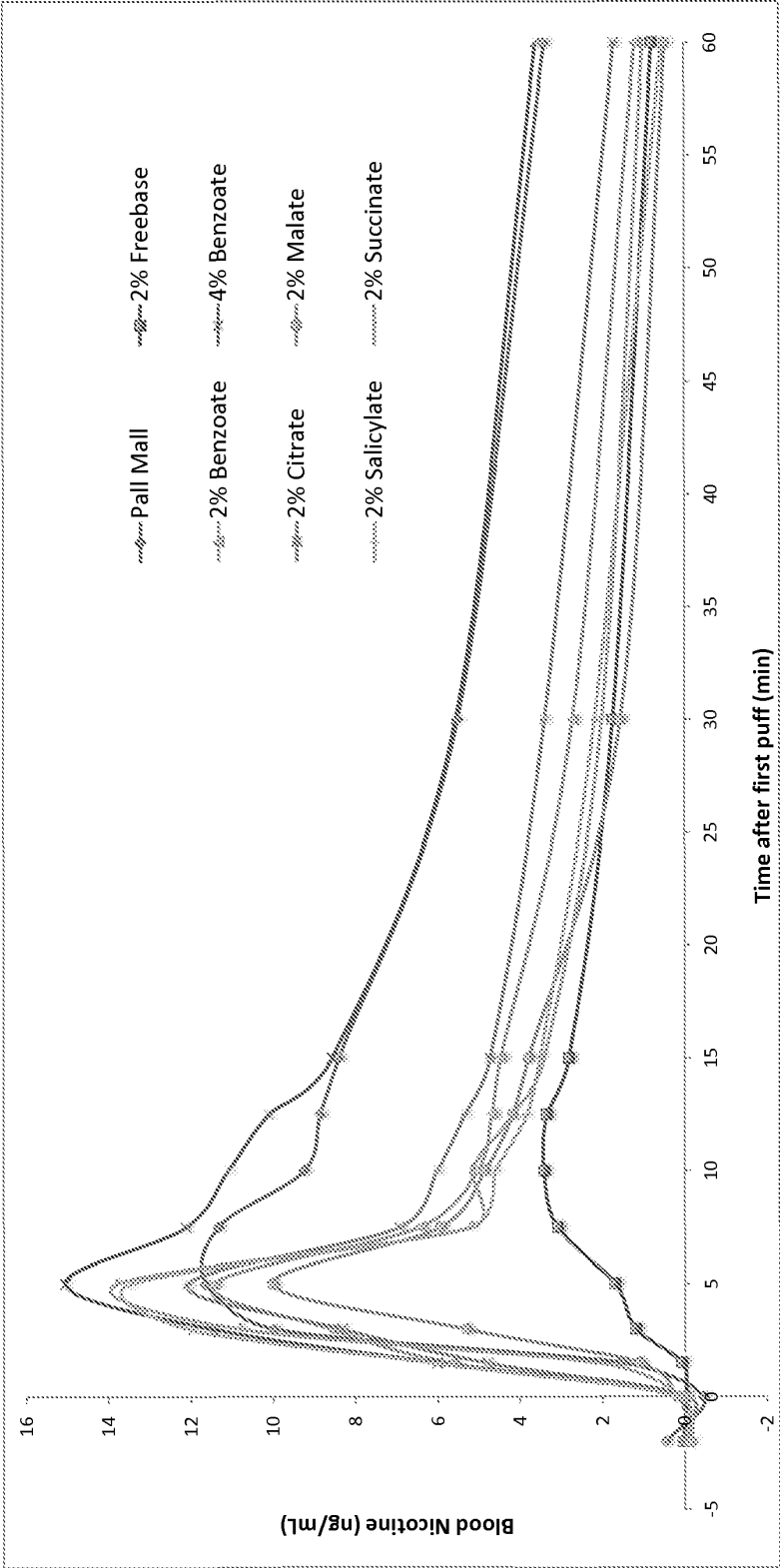


FIG. 5

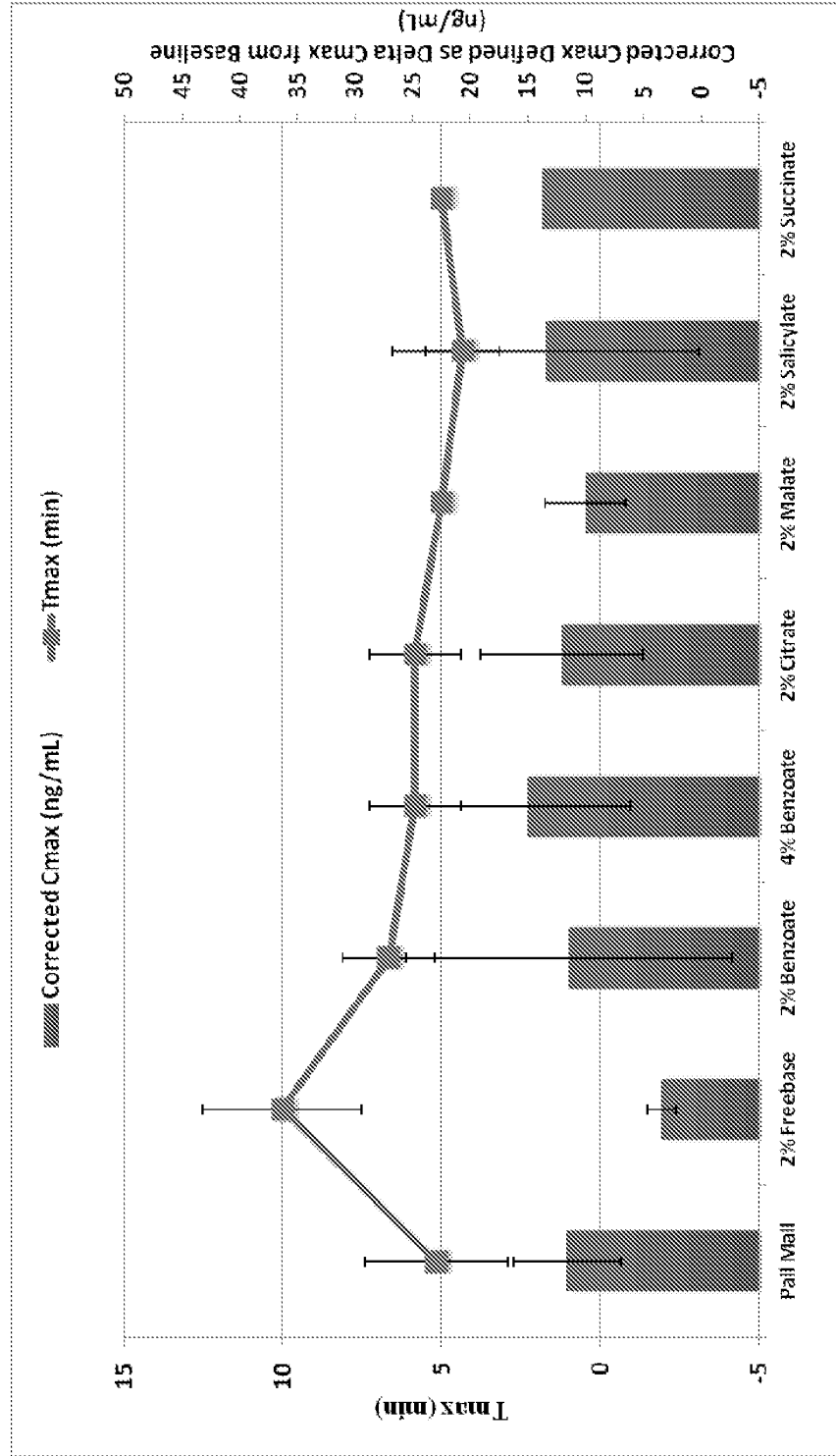


FIG. 6

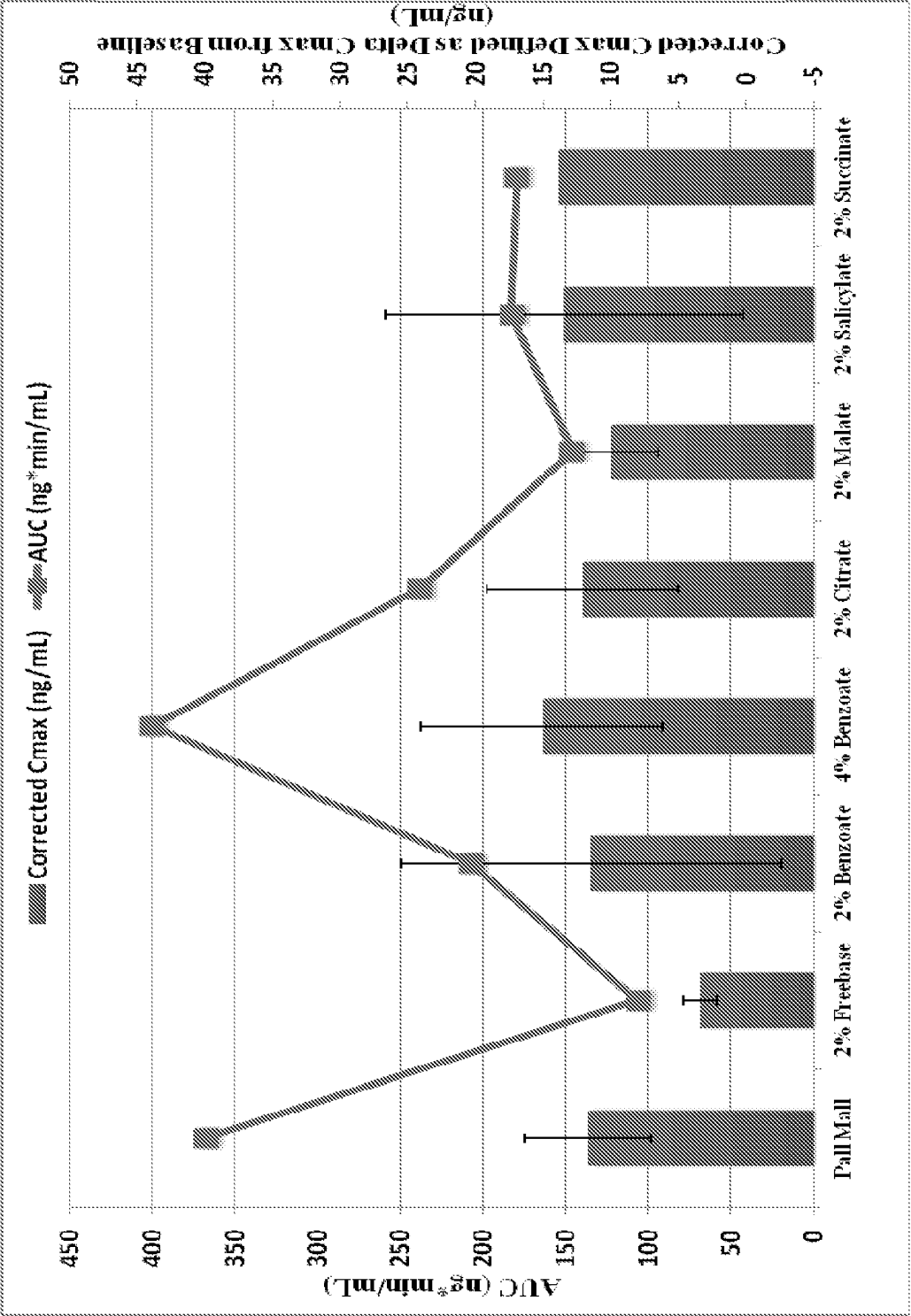


FIG. 7

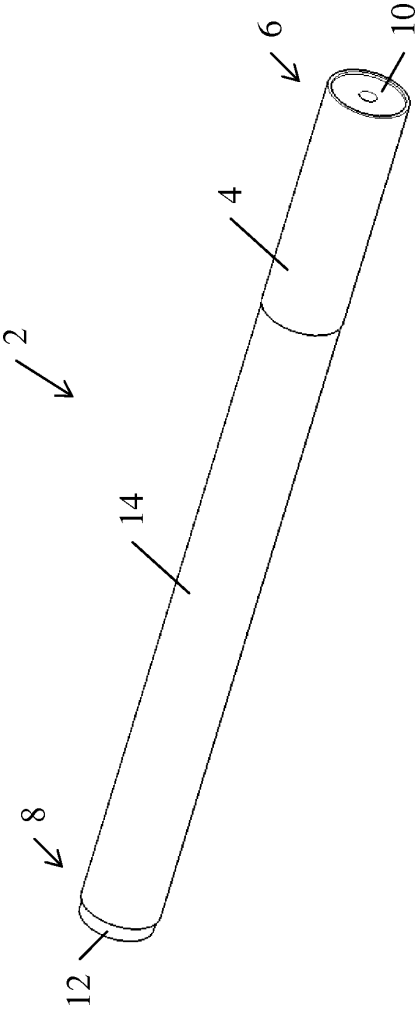
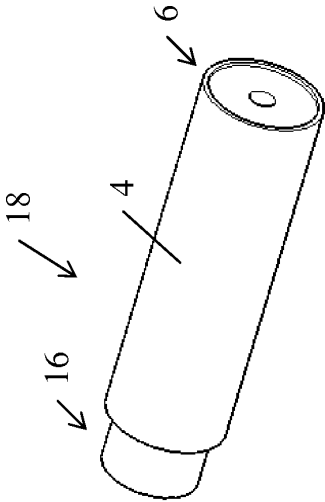


FIG. 8



Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF		
First Named Inventor/Applicant Name:		Adam Bowen		
Filer:		Kristin J. Havranek		
Attorney Docket Number:		35196-713.201		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility application filing	1011	1	280	280
Utility Search Fee	1111	1	600	600
Utility Examination Fee	1311	1	720	720
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1600

Electronic Acknowledgement Receipt	
EFS ID:	18959357
Application Number:	14271071
International Application Number:	
Confirmation Number:	6078
Title of Invention:	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
First Named Inventor/Applicant Name:	Adam Bowen
Customer Number:	21971
Filer:	Kristin J. Havranek
Filer Authorized By:	
Attorney Docket Number:	35196-713.201
Receipt Date:	06-MAY-2014
Filing Date:	
Time Stamp:	17:20:59
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 1600
RAM confirmation Number	3977
Deposit Account	232415
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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1	Transmittal of New Application	35196-713-201Transmittal.pdf	276544 d33ba0355b3de2b451c82d8e4d198af2a12d7298	no	2
Warnings:					
Information:					
2	Application Data Sheet	35196-713-201ADS.pdf	1561383 856dc8dd82836765fb8be7e0f3a6e92596f565e3	no	7
Warnings:					
Information:					
3		35196-713-201App.pdf	839541 3a98cf9a47baf7adfabd413d1b37a033c1996dc5	yes	108
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	90	
	Claims		91	99	
	Abstract		100	100	
	Drawings-only black and white line drawings		101	108	
Warnings:					
Information:					
4	Fee Worksheet (SB06)	fee-info.pdf	33185 2fa8b97a920cba7a92bd0fbaf57f35269c69f784	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			2710653		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

SCORE Placeholder Sheet for IFW Content

Application Number: 14271071

Document Date: 05/06/2014

The presence of this form in the IFW record indicates that the following document type was received in electronic format on the date identified above. This content is stored in the SCORE database.

- Drawings – Other than Black and White Line Drawings

Since this was an electronic submission, there is no physical artifact folder, no artifact folder is recorded in PALM, and no paper documents or physical media exist. The TIFF images in the IFW record were created from the original documents that are stored in SCORE.

To access the documents in the SCORE database, refer to instructions below.

At the time of document entry (noted above):

- Examiners may access SCORE content via the eDAN interface.
- Other USPTO employees can bookmark the current SCORE URL (<http://Score.uspto.gov/ScoreAccessWeb/>).
- External customers may access SCORE content via the Public and Private PAIR interfaces.

Form Revision Date: September 30, 2013



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Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/271,071	05/06/2014	Adam Bowen	35196-713.201

CONFIRMATION NO. 6078

FORMALITIES LETTER



OC000000685/1126

21971
WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304-1050

Date Mailed: 05/22/2014

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Filing Date Granted

An application number and filing date have been accorded to this application. The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given **TWO MONTHS** from the date of this Notice within which to correct the informalities indicated below. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

The required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are required. The drawings submitted are not acceptable because:
 - The drawings submitted to the Office are not electronically reproducible because portions of figures 2 are missing and/or blurry.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

- Additional claim fees of \$ **10560** as an undiscounted entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.
- Surcharge as set forth in 37 CFR 1.16(f) must be submitted.
The surcharge is due for any one of:
 - late submission of the basic filing fee, search fee, or examination fee,
 - late submission of inventor's oath or declaration,
 - filing an application that does not contain at least one claim on filing, or
 - submission of an application filed by reference to a previously filed application.

SUMMARY OF FEES DUE:

The fee(s) required within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are itemized below. No entity status discount is in effect. If applicant is qualified for small entity status, a written assertion of small entity status must be submitted to establish small entity status. (See 37 CFR 1.27). If applicant is qualified for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- \$ **140** surcharge.
- \$ **2100** for **5** independent claims over 3.

- \$ **7680** for **96** total claims over 20.
- \$ **780** for multiple dependent claim surcharge.
- \$(**0**) previous unapplied payment amount.
- \$ **10700** TOTAL FEE BALANCE DUE.

Items Required To Avoid Processing Delays:

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
Adam Bowen
Chenyue Xing

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice".
<https://portal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/fberhane/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

<div>MULTIPLE DEPENDENT CLAIM FEE CALCULATION SHEET</div> <div>Substitute for Form PTO-1360 (For use with Form PTO/SB/06)</div>							<div>Application Number</div> <div>14271071</div>		<div>Filing Date</div>				
							<div>Applicant(s) Adam Bowen</div>						
							<div>* May be used for additional claims or amendments</div>						
CLAIMS	AS FILED		AFTER FIRST AMENDMENT		AFTER SECOND AMENDMENT			*		*		*	
	Indep	Depend	Indep	Depend	Indep	Depend		Indep	Depend	Indep	Depend	Indep	Depend
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2	1						52		(1)				
3	1						53		(1)				
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48		(1)					98		(1)				
49		(1)					99		(1)				
50		(1)					100		(1)				

<div>MULTIPLE DEPENDENT CLAIM FEE CALCULATION SHEET</div> <div>Substitute for Form PTO-1360 (For use with Form PTO/SB/06)</div>							<div>Application Number</div> <div>14271071</div>		<div>Filing Date</div>				
							<div>Applicant(s) Adam Bowen</div>						
							<div>* May be used for additional claims or amendments</div>						
CLAIMS	AS FILED		AFTER FIRST AMENDMENT		AFTER SECOND AMENDMENT			*		*		*	
	Indep	Depend	Indep	Depend	Indep	Depend		Indep	Depend	Indep	Depend	Indep	Depend
101		(1)											
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Total Indep	8		0		0								
Total Depend	108	↙	0	↙	0	↙							
Total Claims	116		0		0								

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 14/271,071				
APPLICATION AS FILED - PART I										
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY				
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)			
BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A	N/A			N/A	280			
SEARCH FEE <small>(37 CFR 1.16(k), (l), or (m))</small>	N/A	N/A	N/A			N/A	600			
EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A	N/A			N/A	720			
TOTAL CLAIMS <small>(37 CFR 1.16(j))</small>	116	minus 20 = 96			OR	x 80 =	7680			
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	8	minus 3 = 5			OR	x 420 =	2100			
APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00			
MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>							780			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	12160			
APPLICATION AS AMENDED - PART II										
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY		
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	Total <small>(37 CFR 1.16(i))</small>	*	Minus	**	=	x	=	OR	x	=
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	***	=	x	=	OR	x	=
	Application Size Fee <small>(37 CFR 1.16(s))</small>							OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>							OR		
TOTAL ADD'L FEE								OR	TOTAL ADD'L FEE	
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	Total <small>(37 CFR 1.16(i))</small>	*	Minus	**	=	x	=	OR	x	=
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	***	=	x	=	OR	x	=
	Application Size Fee <small>(37 CFR 1.16(s))</small>							OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>							OR		
TOTAL ADD'L FEE								OR	TOTAL ADD'L FEE	
<div style="font-size: x-small;"> * If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1. </div>										



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
14/271,071	05/06/2014	1629	1600	35196-713.201	104	8

CONFIRMATION NO. 6078

21971

WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304-1050

FILING RECEIPT



OC000000068571125

Date Mailed: 05/22/2014

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Adam Bowen, San Francisco, CA;
Chenyue Xing, San Francisco, CA;

Applicant(s)

Ploom, Inc., San Francisco, CA

Assignment For Published Patent Application

Ploom, Inc., San Francisco, CA

Power of Attorney: None

Domestic Priority data as claimed by applicant

This appln claims benefit of 61/820,128 05/06/2013
and claims benefit of 61/912,507 12/05/2013

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 05/20/2014

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/271,071**

Projected Publication Date: To Be Determined - pending completion of Corrected Papers

page 1 of 3

Non-Publication Request: No

Early Publication Request: No

Title

NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF

Preliminary Class

514

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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Title 37, Code of Federal Regulations, 5.11 & 5.15

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The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

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FILED ELECTRONICALLY ON JULY 22, 2014

**ATTORNEY DOCKET NO. 35196-713.201
PATENT**

In re the Patent Application of:	Confirmation No.: 6078
Applicants: Adam Bowen <i>et al.</i>	Group Art Unit: To Be Assigned
Serial No.: 14/271,071	Examiner: To Be Assigned
Filed: May 6, 2014	
Title: NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF	

PRELIMINARY AMENDMENT

AND RESPONSE TO NOTICE TO FILE CORRECTED APPLICATION PAPERS

MAIL STOP AMENDMENT

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Commissioner:

Responsive to the Notice to File Corrected Application Papers mailed May 22, 2014, Applicants submit herewith a Replacement Sheet for Figure 2 in compliance with 37 CFR 1.84 and 37 CFR 1.121(d). A copy of the Notice to File Corrected Application Papers is also submitted herewith as required in the Notice.

Applicants respectfully request entry of the proposed amendments prior to examination and allowance of the pending claims.

Amendments to the Claims begin on page **2** of this paper.

Remarks and Conclusion are on page **7** of this paper.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings of claims in this application. Applicant reserves the right to pursue any subject matter of any canceled claims in this or any other appropriate patent application. Support for these claims is provided in the remarks following the listing of claims.

Claims 1-104 (Cancelled)

105. (New) A method of delivering nicotine to a user comprising

- (a) deploying an electronic cigarette wherein the electronic cigarette comprises a nicotine salt formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by a vapor pressure great than or equal to 20 mmHg at 200°C, and
- (b) delivering an inhalable aerosol generated from the nicotine salt formulation heated by the electronic cigarette.

106. (New) The method of claim 105, wherein the acid comprises a melting point at least 40 °C lower than the operating temperature of the electronic cigarette, and at least a 50 °C difference between a melting point of the acid and a boiling point of the acid.

107. (New) The method of claim 105, wherein the operating temperature is from 150°C to 250°C, or is about 200°C.

108. (New) The method of claim 105, wherein the aerosol comprises any combination of condensate of the nicotine salt, condensate of freebase nicotine, condensate of the carrier, and/or condensate of the acid.

109. (New) The method of claim 105, wherein the aerosol comprises condensate in particles sizes from about 0.1 microns to about 5 microns, or about 0.3 microns to about 0.4 microns.

110. (New) The method of claim 105, wherein the acid is:
a carboxylic acid, or

an organic acid chosen from the group of monocarboxylic acid, aromatic acid, keto acid, formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, citric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, finnaric acid, gluconic acid, saccharic acid, salicylic acid, sorbic acid, malonic acid, or malic acid.

111. (New) The method of claim 105, wherein said nicotine salt comprises nicotine pyruvate, nicotine salicylate, nicotine sorbate, nicotine laurate, nicotine levulinate, or nicotine benzoate.

112. (New) The method of claim 105, wherein the liquid carrier comprises 20%-50% of propylene glycol and 80% to 50% of vegetable glycerin.

113. (New) The method of claim 105, wherein the nicotine salt is in an amount that forms about 0.5% to about 20% nicotine in the inhalable aerosol.

114. (New) The method of claim 105, wherein the liquid formulation has a nicotine concentration between about 1% (w/w) to about 25% (w/w).

115. (New) A method of delivering nicotine to a user comprising

(a) deploying an electronic cigarette wherein the electronic cigarette comprises a nicotine salt formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 °C lower than the operating temperature of the electronic cigarette, and at least a 50 °C difference between a melting point of the acid and a boiling point of the acid, and

(b) delivering an inhalable aerosol generated from the nicotine salt formulation heated by the electronic cigarette.

116. (New) The method of claim 115, wherein the operating temperature is from 150°C to 250°C, or is about 200°C.

117. (New) The method of claim 115, wherein the aerosol comprises condensate in particles sizes from about 0.1 microns to about 5 microns, or about 0.3 microns to about 0.4 microns.

118. (New) The method of claim 115, wherein the acid is:

a carboxylic acid, or

an organic acid chosen from the group of monocarboxylic acid, aromatic acid, keto acid, formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, citric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, fennaric acid, gluconic acid, saccharic acid, salicylic acid, sorbic acid, malonic acid, or malic acid.

119. (New) The method of claim 115, wherein said nicotine salt comprises nicotine pyruvate, nicotine salicylate, nicotine sorbate, nicotine laurate, nicotine levulinate, or nicotine benzoate.

120. (New) The method of claim 115, wherein the liquid carrier comprises 20%-50% of propylene glycol and 80% to 50% of vegetable glycerin.

121. (New) The method of claim 115, wherein the nicotine salt is in an amount that forms about 0.5% to about 20% nicotine in the inhalable aerosol.

122. (New) The method of claim 115, wherein the liquid formulation has a nicotine concentration between about 1% (w/w) to about 25% (w/w).

123. (New) A nicotine salt liquid formulation in an electronic cigarette for generating an inhalable aerosol up on heating in the electronic cigarette, the formulation in the cigarette comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 mmHg to 200 mmHg at 200°C.

124. (New) The nicotine salt liquid formulation in the electronic cigarette of claim 123, wherein the acid comprises a melting point at least 40°C lower than the operating temperature of the electronic cigarette, and at least a 50°C difference between a melting point of the acid and a boiling point of the acid.

125. (New) The nicotine salt liquid formulation in the electronic cigarette of claim 123, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature from 150°C to 250°C, or about 200°C

126. (New) The nicotine salt liquid formulation in the electronic cigarette of claim 123, wherein the acid is carboxylic acid or is an organic acid, wherein the organic acid is chosen from the group of monocarboxylic acid, aromatic acid, keto acid, formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, citric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, finnaric acid, gluconic acid, saccharic acid, salicylic acid, sorbic acid, malonic acid, or malic acid.

127. (New) The nicotine salt liquid formulation in the electronic cigarette of claim 123, wherein said nicotine salt comprises nicotine pyruvate, nicotine salicylate, nicotine sorbate, nicotine laurate, nicotine levulinate, or nicotine benzoate.

128. (New) The nicotine salt liquid formulation in the electronic cigarette of claim 123, wherein the liquid carrier comprises 20%-50% of propylene glycol and 80% to 50% of vegetable glycerin.

129. (New) The nicotine salt liquid formulation in the electronic cigarette of claim 123, wherein the nicotine salt is in an amount that forms about 0.5% to about 20% nicotine in the inhalable aerosol.

130. (New) The nicotine salt liquid formulation in the electronic cigarette of claim 123, wherein the liquid formulation has a nicotine concentration between about 1% (w/w) to about 25% (w/w).

131. (New) A nicotine salt liquid formulation in an electronic cigarette for generating an inhalable aerosol up on heating in the electronic cigarette, the formulation in the cigarette comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40°C lower than the operating temperature of the electronic cigarette, and at least a 50°C difference between a melting point of the acid and a boiling point of the acid.

132. (New) The nicotine salt liquid formulation in the electronic cigarette of claim 131, wherein the electronic cigarette heats the nicotine salt formulation to an operating temperature from 150°C to 250°C, or about 200°C

133. (New) The nicotine salt liquid formulation in the electronic cigarette of claim 131, wherein the acid is carboxylic acid or is an organic acid, wherein the organic acid is chosen from the group of monocarboxylic acid, aromatic acid, keto acid, formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, citric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, phenylacetic acid, benzoic acid, pyruvic acid, levulinic acid, tartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, finnaric acid, gluconic acid, saccharic acid, salicylic acid, sorbic acid, malonica acid, or malic acid.

134. (New) The nicotine salt liquid formulation in the electronic cigarette of claim 131, wherein said nicotine salt comprises nicotine pyruvate, nicotine salicylate, nicotine sorbate, nicotine laurate, nicotine levulinate, or nicotine benzoate.

135. (New) The nicotine salt liquid formulation in the electronic cigarette of claim 131, wherein the liquid carrier comprises 20%-50% of propylene glycol and 80% to 50% of vegetable glycerin.

136. (New) The nicotine salt liquid formulation in the electronic cigarette of claim 131, wherein the nicotine salt is in an amount that forms about 0.5% to about 20% nicotine in the inhalable aerosol.

137. (New) The nicotine salt liquid formulation in the electronic cigarette of claim 131, wherein the liquid formulation has a nicotine concentration between about 1% (w/w) to about 25% (w/w).

REMARKS

Claims 1-104 have been canceled. Claims 105-137 are new. Support for the new claims can be found in the original claims and in the specification. No new matter is introduced. Applicant reserves the right to pursue any cancelled claims in this or any continuation or divisional application.

Replacement Sheet for Figure 2 is filed herewith.

CONCLUSION

Applicants respectfully solicit the Examiner to enter the amendments and expedite prosecution of this patent application to issuance. Should the Examiner have any questions, the Examiner is encouraged to contact the undersigned attorney at (858) 350-2215.

The Commissioner is authorized to charge additional fees which may be required, or credit any excess fees, to Deposit Account No. 23-2415 (Docket No. 35196-713.201).

Respectfully submitted,

WILSON SONSINI GOODRICH & ROSATI

Date: July 22, 2014

By: /Kristin Havranek/
Kristin Havranek
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/271,071	05/06/2014	Adam Bowen	35196-713.201

CONFIRMATION NO. 6078

21971
WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304-1050

FORMALITIES LETTER



OC000000685/1126

Date Mailed: 05/22/2014

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Filing Date Granted

An application number and filing date have been accorded to this application. The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given **TWO MONTHS** from the date of this Notice within which to correct the informalities indicated below. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

The required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are required. The drawings submitted are not acceptable because:
 - The drawings submitted to the Office are not electronically reproducible because portions of figures 2 are missing and/or blurry.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

- Additional claim fees of \$ **10560** as an undiscounted entity, including any required multiple dependent claim fee, are required. Applicant must submit the additional claim fees or cancel the additional claims for which fees are due.
- Surcharge as set forth in 37 CFR 1.16(f) must be submitted.
The surcharge is due for any one of:
 - late submission of the basic filing fee, search fee, or examination fee,
 - late submission of inventor's oath or declaration,
 - filing an application that does not contain at least one claim on filing, or
 - submission of an application filed by reference to a previously filed application.

SUMMARY OF FEES DUE:

The fee(s) required within **TWO MONTHS** from the date of this Notice to avoid abandonment is/are itemized below. No entity status discount is in effect. If applicant is qualified for small entity status, a written assertion of small entity status must be submitted to establish small entity status. (See 37 CFR 1.27). If applicant is qualified for micro entity status, an acceptable Certification of Micro Entity Status must be submitted to establish micro entity status. (See 37 CFR 1.29 and forms PTO/SB/15A and 15B.)

- \$ **140** surcharge.
- \$ **2100** for **5** independent claims over 3.

- \$ **7680** for **96** total claims over 20.
- \$ **780** for multiple dependent claim surcharge.
- \$(**0**) previous unapplied payment amount.
- \$ **10700** TOTAL FEE BALANCE DUE.

Items Required To Avoid Processing Delays:

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
Adam Bowen
Chenyue Xing

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

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Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

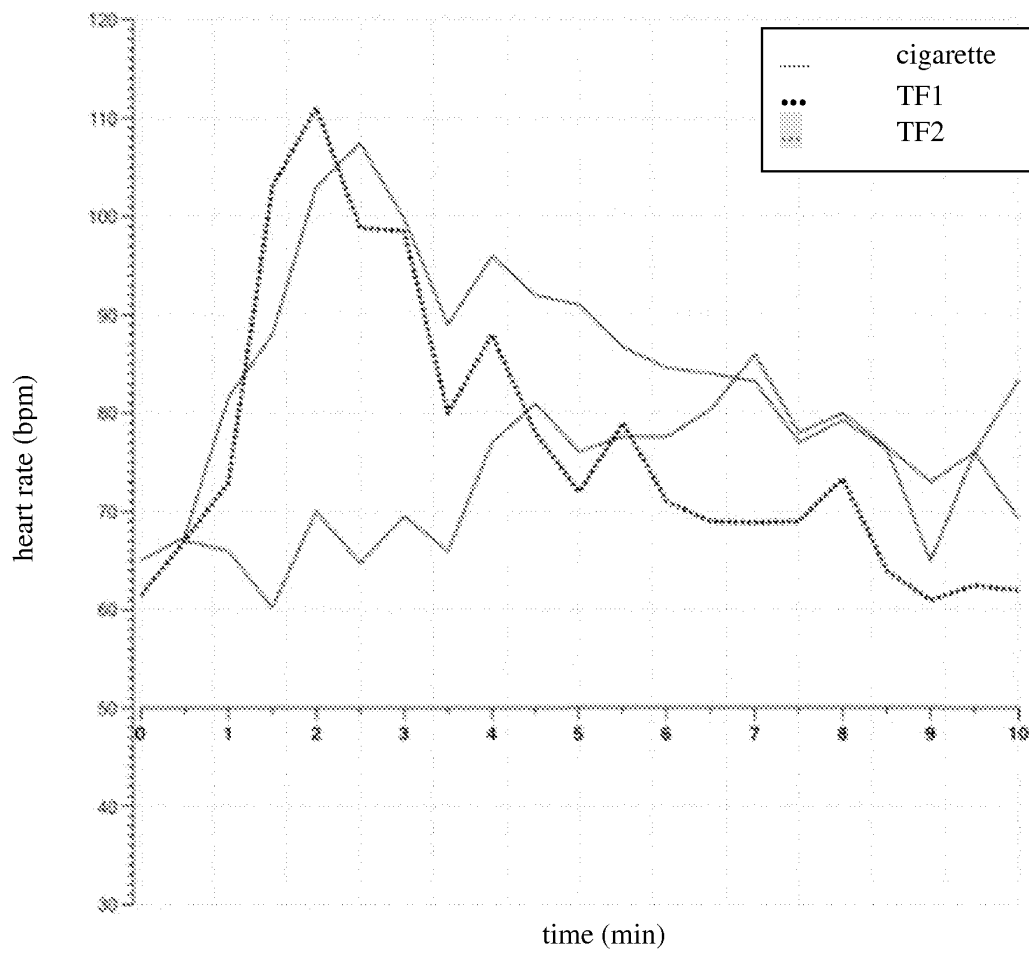
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If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/fberhane/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



Electronic Patent Application Fee Transmittal				
Application Number:	14271071			
Filing Date:	06-May-2014			
Title of Invention:	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF			
First Named Inventor/Applicant Name:	Adam Bowen			
Filer:	Kristin J. Havranek/Lori Ford			
Attorney Docket Number:	35196-713.201			
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility application filing	1011	1	280	280
Utility Search Fee	1111	1	600	600
Utility Examination Fee	1311	1	720	720
Pages:				
Claims:				
Claims in Excess of 20	1202	13	80	1040
Independent claims in excess of 3	1201	1	420	420
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Late Filing Fee for Oath or Declaration	1051	1	140	140
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				3200

Electronic Acknowledgement Receipt	
EFS ID:	19652983
Application Number:	14271071
International Application Number:	
Confirmation Number:	6078
Title of Invention:	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
First Named Inventor/Applicant Name:	Adam Bowen
Customer Number:	21971
Filer:	Kristin J. Havranek/Lori Ford
Filer Authorized By:	Kristin J. Havranek
Attorney Docket Number:	35196-713.201
Receipt Date:	22-JUL-2014
Filing Date:	06-MAY-2014
Time Stamp:	19:26:35
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		35196_713_201_Prel_Am_Response.pdf	300792 7a6bbd206d20608a27df9fab4045219b4cb bc52b	yes	9

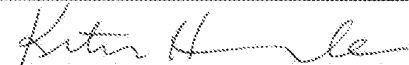
Multipart Description/PDF files in .zip description					
Document Description			Start	End	
Preliminary Amendment			1	1	
Claims			2	6	
Applicant summary of interview with examiner			7	7	
Miscellaneous Incoming Letter			8	9	
Warnings:					
Information:					
2	Drawings-only black and white line drawings	35196_713_201_Replacement_Figure_2_FINAL.PDF	145134 822b4e8322f27b68214b3b99714f4c531a2ec004	no	1
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	40019 df925e28110a0df2be651abfb75b6d3402f055d08	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			485945		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA/82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	14/271,071
Filing Date	May 6, 2014
First Named Inventor	Adam Bowen
Title	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
Art Unit	Not yet assigned
Examiner Name	Not yet assigned
Attorney Docket Number	35196-713.201

SIGNATURE of Applicant or Patent Practitioner

Signature		Date (Optional)	6/18/14
Name	Kristin Havranek	Registration Number	58,789
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			
NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.			
☒ *Total of 1 forms are submitted.			

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date
14/271,071	May 6, 2014

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☒ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:

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21971

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- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature Adam Bowen Date (Optional) 5/14/14

Name Adam Bowen

Title Chief Technology Officer, Ploom, Inc.

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☒ Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Patent Application Fee Transmittal				
Application Number:		14271071		
Filing Date:		06-May-2014		
Title of Invention:		NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF		
First Named Inventor/Applicant Name:		Adam Bowen		
Filer:		Kristin J. Havranek/Lori Ford		
Attorney Docket Number:		35196-713.201		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Claims in Excess of 20	1202	13	80	1040
Independent claims in excess of 3	1201	1	420	420
Miscellaneous-Filing:				
Late Filing Fee for Oath or Declaration	1051	1	140	140
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1600

Electronic Acknowledgement Receipt	
EFS ID:	19653065
Application Number:	14271071
International Application Number:	
Confirmation Number:	6078
Title of Invention:	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
First Named Inventor/Applicant Name:	Adam Bowen
Customer Number:	21971
Filer:	Kristin J. Havranek/Lori Ford
Filer Authorized By:	Kristin J. Havranek
Attorney Docket Number:	35196-713.201
Receipt Date:	22-JUL-2014
Filing Date:	06-MAY-2014
Time Stamp:	19:39:40
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 1600
RAM confirmation Number	5308
Deposit Account	232415
Authorized User	

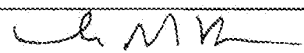
File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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1	Oath or Declaration filed	35196_713_201_Declarations.pdf	1390159 8dfc71c2b1f9fd871c413df1cc7e3051feec8144	no	2
Warnings:					
Information:					
2	Power of Attorney	35196_713_201_POA.pdf	1529715 d13ac14bb0a4e6a26bf15fc847df621f9440996a	no	2
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	35516 63f7adddb155ca5c68a40033aaf3b3891edd0797b	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			2955390		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

**DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN
APPLICATION DATA SHEET (37 CFR 1.76)**

Title of Invention	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
<p>As the below named inventor, I hereby declare that:</p> <p>This declaration is directed to: ☐ The attached application, or</p> <p style="margin-left: 150px;">☒ United States application or PCT international application number <u>14/271,071</u></p> <p style="margin-left: 150px;">filed on <u>May 6, 2014</u></p> <p>The above-identified application was made or authorized to be made by me.</p> <p>I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.</p> <p>I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.</p> <p style="text-align: center;">WARNING:</p> <p>Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.</p>	
<p>LEGAL NAME OF INVENTOR</p> <p>Inventor: <u>Adam Bowen</u> Date (Optional): <u>5/14/14</u></p> <p>Signature: </p>	
<p><small>Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.</small></p>	

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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**DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN
APPLICATION DATA SHEET (37 CFR 1.76)**

Title of Invention	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
-------------------------------	---

As the below named inventor, I hereby declare that:

This declaration is directed to: ☐ The attached application, or
☒ United States application or PCT international application number 14/271,071
filed on May 6, 2014

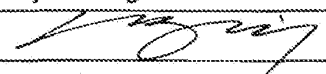
The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR	
Inventor: <u>Chenyue Xing</u>	Date (Optional): <u>05/19/14</u>
Signature: 	

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

SCORE Placeholder Sheet for IFW Content

Application Number: 14271071

Document Date: 07/22/2014

The presence of this form in the IFW record indicates that the following document type was received in electronic format on the date identified above. This content is stored in the SCORE database.

- Drawings – Other than Black and White Line Drawings

Since this was an electronic submission, there is no physical artifact folder, no artifact folder is recorded in PALM, and no paper documents or physical media exist. The TIFF images in the IFW record were created from the original documents that are stored in SCORE.

To access the documents in the SCORE database, refer to instructions below.

At the time of document entry (noted above):

- Examiners may access SCORE content via the eDAN interface.
- Other USPTO employees can bookmark the current SCORE URL (<http://Score.uspto.gov/ScoreAccessWeb/>).
- External customers may access SCORE content via the Public and Private PAIR interfaces.

Form Revision Date: September 30, 2013



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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/271,071	05/06/2014	Adam Bowen	35196-713.201

CONFIRMATION NO. 6078

POA ACCEPTANCE LETTER

21971
WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304-1050



Date Mailed: 07/29/2014

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/22/2014.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/tchaka/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/271,071	05/06/2014	Adam Bowen	35196-713.201

CONFIRMATION NO. 6078

21971
WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304-1050

FORMALITIES LETTER



0C00000069857114

Date Mailed: 07/29/2014

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Filing Date Granted

An application number and filing date have been accorded to this application. The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given TWO MONTHS from the date of this Notice within which to correct the informalities indicated below. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

The required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are required. The drawings submitted are not acceptable because:
 - More than one figure is present and each figure is not labeled "Fig." with a consecutive Arabic numeral (1, 2, etc.) or an Arabic numeral and capital letter in the English alphabet (A, B, etc.)(see 37 CFR 1.84(u)(1)). See Figure(s) 2. A brief description of the several views of the drawings (see 37 CFR 1.74) should be added or amended to correspond to the corrected numbering of the figures. See also 37 CFR 1.77(b)(9).

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice".
<https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/tchaka/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/271,071	05/06/2014	Adam Bowen	35196-713.201

CONFIRMATION NO. 6078

21971
WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
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WITHDRAWAL NOTICE



0C00000069857111

Date Mailed: 07/29/2014

Letter Regarding a New Notice and/or the Status of the Application

If a new notice or Filing Receipt is enclosed, applicant may disregard the previous notice mailed on 05/22/2014. The time period for reply runs from the mail date of the new notice. Within the time period for reply, applicant is required to file a reply in compliance with the requirements set forth in the new notice to avoid abandonment of the application.

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.
<https://portal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at <http://www.uspto.gov/ebc>.

If the reply is not filed electronically via EFS-Web, the reply must be accompanied by a copy of the new notice.

If the Office previously granted a petition to withdraw the holding of abandonment or a petition to revive under 37 CFR 1.137, the status of the application has been returned to pending status.

/tchaka/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 14/271,071			
APPLICATION AS FILED - PART I									
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY			
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)		
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280		
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A	600		
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720		
TOTAL CLAIMS (37 CFR 1.16(j))	33 minus 20 =	13			OR	x 80 =	1040		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	4 minus 3 =	1			OR	x 420 =	420		
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00		
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00		
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	3060		
APPLICATION AS AMENDED - PART II									
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)	ADDITIONAL FEE(\$)		
	Total (37 CFR 1.16(i))	* Minus **	=	x =		OR	x =		
	Independent (37 CFR 1.16(h))	* Minus ***	=	x =		OR	x =		
	Application Size Fee (37 CFR 1.16(s))					OR			
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					OR			
			TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE			
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	RATE(\$)	ADDITIONAL FEE(\$)		
	Total (37 CFR 1.16(i))	* Minus **	=	x =		OR	x =		
	Independent (37 CFR 1.16(h))	* Minus ***	=	x =		OR	x =		
	Application Size Fee (37 CFR 1.16(s))					OR			
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					OR			
			TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE			
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.									



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
14/271,071	05/06/2014	1629	3200	35196-713.201	33	4

CONFIRMATION NO. 6078

21971

WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304-1050

FILING RECEIPT



OC000000069857113

Date Mailed: 07/29/2014

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Adam Bowen, San Francisco, CA;
Chenyue Xing, San Francisco, CA;

Applicant(s)

Ploom, Inc., San Francisco, CA

Assignment For Published Patent Application

Ploom, Inc., San Francisco, CA

Power of Attorney: The patent practitioners associated with Customer Number 21971**Domestic Priority data as claimed by applicant**

This appln claims benefit of 61/820,128 05/06/2013
and claims benefit of 61/912,507 12/05/2013

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 05/20/2014

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/271,071**

Projected Publication Date: To Be Determined - pending completion of Corrected Papers

page 1 of 3

Non-Publication Request: No

Early Publication Request: No

Title

NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF

Preliminary Class

514

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

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The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

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ELECTRONICALLY FILED ON AUGUST 18, 2014

**ATTORNEY DOCKET NO. 35196-713.201
PATENT**

In re the Patent Application of: Applicants: Adam Bowen <i>et al.</i> Serial No.: 14/271,071 Filed: May 6, 2014 Title: NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF	Confirmation No.: 6078 Group Art Unit: To Be Assigned Examiner: To Be Assigned
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RESPONSE TO NOTICE TO FILE CORRECTED APPLICATION PAPERS

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Responsive to the Notice to File Corrected Application Papers mailed July 29, 2014,
Applicants submit herewith a properly labeled Replacement Sheet for Figure 2 in compliance with
37 CFR 1.84 and 37 CFR 1.121(d). A copy of the Notice to File Corrected Application Papers is
also submitted herewith as required in the Notice.

6547913-1

REMARKS

A properly labeled Replacement Sheet for Figure 2 is filed herewith.

CONCLUSION

Applicants respectfully solicit the Examiner to expedite prosecution of this patent application to issuance. Should the Examiner have any questions, the Examiner is encouraged to contact the undersigned attorney at (858) 350-2356.

The Commissioner is authorized to charge additional fees which may be required, or credit any excess fees, to Deposit Account No. 23-2415 (Docket No. 35196-713.201).

Respectfully submitted,

WILSON SONSINI GOODRICH & ROSATI

Date: August 18, 2014

By: /Andrew Stelzer/
Andrew Stelzer
Reg. No. 71,785

650 Page Mill Road
Palo Alto, CA 94304
Direct Dial: (858) 350-2215
Facsimile: (858) 350-2399
Customer No. 021971



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/271,071	05/06/2014	Adam Bowen	35196-713.201

CONFIRMATION NO. 6078

21971

WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304-1050

FORMALITIES LETTER



0C00000069857114

Date Mailed: 07/29/2014

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Filing Date Granted

An application number and filing date have been accorded to this application. The application is informal since it does not comply with the regulations for the reason(s) indicated below. Applicant is given TWO MONTHS from the date of this Notice within which to correct the informalities indicated below. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

The required item(s) identified below must be timely submitted to avoid abandonment:

- Replacement drawings in compliance with 37 CFR 1.84 and 37 CFR 1.121(d) are required. The drawings submitted are not acceptable because:
 - More than one figure is present and each figure is not labeled "Fig." with a consecutive Arabic numeral (1, 2, etc.) or an Arabic numeral and capital letter in the English alphabet (A, B, etc.)(see 37 CFR 1.84(u)(1)). See Figure(s) 2. A brief description of the several views of the drawings (see 37 CFR 1.74) should be added or amended to correspond to the corrected numbering of the figures. See also 37 CFR 1.77(b)(9).

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice".
<https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

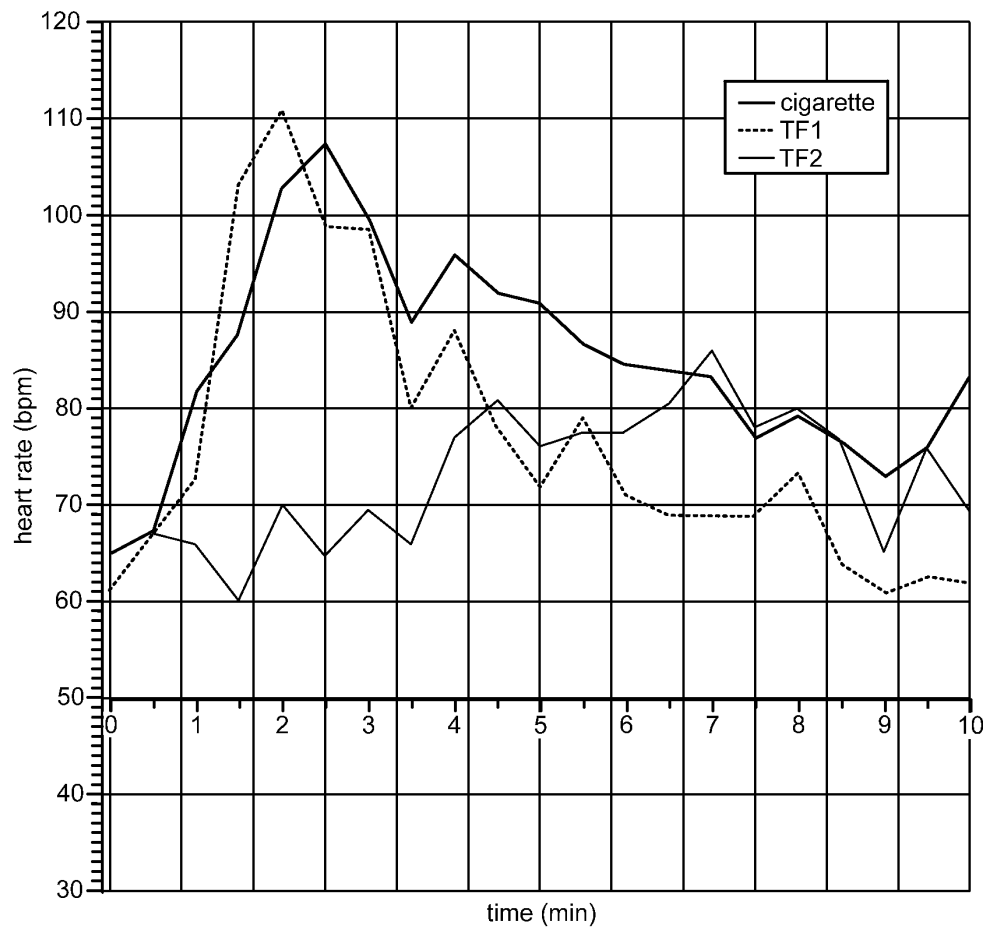
For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/tchaka/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

FIG. 2



Electronic Acknowledgement Receipt	
EFS ID:	19896254
Application Number:	14271071
International Application Number:	
Confirmation Number:	6078
Title of Invention:	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
First Named Inventor/Applicant Name:	Adam Bowen
Customer Number:	21971
Filer:	Andrew Corbet Stelzer/Lori Ford
Filer Authorized By:	Andrew Corbet Stelzer
Attorney Docket Number:	35196-713.201
Receipt Date:	18-AUG-2014
Filing Date:	06-MAY-2014
Time Stamp:	19:37:54
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		35196_713_201_Response.pdf	<div>202012</div> <div>fs30129097cf12ae9a0ead4617f0fc7d96339c26</div>	yes	4

	Multipart Description/PDF files in .zip description								
	Document Description		Start	End					
	Applicant Response to Pre-Exam Formalities Notice		1	2					
	Miscellaneous Incoming Letter		3	4					
Warnings:									
Information:									
2	Drawings-only black and white line drawings	35196_713_201_Replacement_Figure_2__Labeled.pdf	36084	no	1				
			da7e5e6ffa42c8aef6b7a5d879e99303da8d706e						
Warnings:									
Information:									
Total Files Size (in bytes):			238096						
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>									

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 14/271,071				
APPLICATION AS FILED - PART I										
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY				
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)			
BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A	N/A			N/A	280			
SEARCH FEE <small>(37 CFR 1.16(k), (l), or (m))</small>	N/A	N/A	N/A			N/A	600			
EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A	N/A			N/A	720			
TOTAL CLAIMS <small>(37 CFR 1.16(i))</small>	33	minus 20 = 13				x 80 =	1040			
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	4	minus 3 = 1				x 420 =	420			
APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00			
MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>							0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL		TOTAL	3060			
APPLICATION AS AMENDED - PART II										
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY		
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	Total <small>(37 CFR 1.16(i))</small>	*	Minus	**	=	x	=		x	=
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	***	=	x	=		x	=
	Application Size Fee <small>(37 CFR 1.16(s))</small>									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>									
						TOTAL ADD'L FEE			TOTAL ADD'L FEE	
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	Total <small>(37 CFR 1.16(i))</small>	*	Minus	**	=	x	=		x	=
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	***	=	x	=		x	=
	Application Size Fee <small>(37 CFR 1.16(s))</small>									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>									
						TOTAL ADD'L FEE			TOTAL ADD'L FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.										



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
14/271,071	05/06/2014	1629	3200	35196-713.201	33	4

CONFIRMATION NO. 6078

UPDATED FILING RECEIPT

21971

WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
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OC000000070299918

Date Mailed: 08/22/2014

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Adam Bowen, San Francisco, CA;
Chenyue Xing, San Francisco, CA;

Applicant(s)

Ploom, Inc., San Francisco, CA

Assignment For Published Patent Application

Ploom, Inc., San Francisco, CA

Power of Attorney: The patent practitioners associated with Customer Number 21971**Domestic Priority data as claimed by applicant**

This appln claims benefit of 61/820,128 05/06/2013
and claims benefit of 61/912,507 12/05/2013

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

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If Required, Foreign Filing License Granted: 05/20/2014

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/271,071**

Projected Publication Date: 11/27/2014

page 1 of 3

Non-Publication Request: No

Early Publication Request: No

Title

NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF

Preliminary Class

514

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Complete if Known	
				Application Number	14/271,071
				Filing Date	May 6, 2014
				First Named Inventor	Adam Bowen
				Art Unit	1747
				Examiner Name	Not assigned
Sheet	1	of	3	Attorney Docket Number	35196-713.201

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	1.	US 2004/0191322	09/30/2004	Hansson	
	2.	US 2006/0018840	01/26/2006	Lechuga- Ballesteros et al.	
	3.	US 2006/0196518 A1	09/07/2006	Hon, Lik	
	4.	US 2008/0241255	01/02/2008	Rose et al.	
	5.	US 2009/0004249	01/02/2009	Gonda	
	6.	US 2010/0242976	09/30/2010	Katayama et al.	
	7.	US 2011/0268809	11/03/2011	Brinkley et al.	
	8.	US 2012/0255567	02/26/2013	Gonda	
	9.	US 4,830,028	05/16/1989	Lawson et al.	
	10.	US 4,836,224	06/06/1989	Lawson et al.	
	11.	US 6,102,036	08/15/2000	Slutsky et al.	
	12.	US 6,234,169	05/22/2001	Bulbrook et al.	
	13.	US 6,799,576	10/05/2004	Farr	
	14.	US 6,874,507	04/05/2005	Farr	
	15.	US 7,767,698	08/03/2010	Warchol et al.	
	16.	US 8,079,371	12/20/2011	Robinson et al.	
	17.	US 8,322,350	12/04/2012	Lipowicz	
	18.	US 8,375,957	02/19/2013	Hon	
	19.	US 8,381,739	02/26/2013	Gonda	
	20.	US 8,741,348	06/03/2014	Hansson et al.	

U.S. UNPUBLISHED PATENT APPLICATIONS					
Examiner Initials*	Cite No. ¹	Document Number	Filing Date MM-DD-YYYY	Name of Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			

Examiner Signature		Date Considered	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Complete if Known	
				Application Number	14/271,071
				Filing Date	May 6, 2014
				First Named Inventor	Adam Bowen
				Art Unit	1747
				Examiner Name	Not assigned
Sheet	2	of	3	Attorney Docket Number	35196-713.201

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ² - Number ³ - Kind Code ⁴ (if known)				
	21.	CN 102754924 A (in Chinese with English abstract)	10/31/2012	Long		X
	22.	WO 97/12639	04/10/1997	Slutsky		
	23.	WO 2011/139684	11/10/2011	Niconovum USA Inc.		
	24.	WO 2014/182736	11/13/2014	Ploom, Inc.		
	25.	EP 2186507	5/19/2010	McNeil AB		
	26.	JP 02145179	11/7/2000	Tomitaka Kunihiro		
	27.	JP09075058	09/26/2007	Citizen Holding Co. LTD		

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	28.	International search report and written opinion dated 09/05/2014 for PCT Application No. US2014/037019.	
	29.	Summary of evaluations performed by the Joint FAO/WHO expert committee on food additives. (March 10, 2003) http://www.inchem.org/documents/jecfa/jecval/jec_1266.htm	
	30.	Summary of evaluations performed by the Joint FAO/WHO expert committee on food additives. (May 28, 2005) http://www.inchem.org/documents/jecfa/jecval/jec_184.htm	
	31.	Inspections, compliance, enforcement and criminal investigations compliance actions and activities warning letters 2002. The compounding pharmacy (April 9, 2002) http://www.fda.gov/ICECI/EnforcementActions/WarningLetters/2002/ucm144	
Examiner Signature			Date Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Under the Paperwork Reduction Act of 1995, no persons required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Complete if Known	
				Application Number	14/271,071
				Filing Date	May 6, 2014
				First Named Inventor	Adam Bowen
				Art Unit	1747
				Examiner Name	Not assigned
Sheet	3	of	3	Attorney Docket Number	35196-713.201

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
		843.htm	
	32.	Summary of evaluations performed by the Joint FAO/WHO expert committee on food additives. (January 29, 2003) http://www.inchem.org/documents/jecfa/jecval/jec_2072.htm	
	33.	Summary of evaluations performed by the Joint FAO/WHO expert committee on food additive. (May 29, 2005) http://www.inchem.org/documents/jecfa/jecval/jec_2181.htm	
	34.	Harvest Vapor™ http://harvestvapor.com/	
	35.	Flouris, et al., Acute impact of active and passive electronic cigarette smoking on serum cotinine and lung function. <i>Toxicol.</i> 25(2):91-101 (2013)	
	36.	Goniewicz, et al., Nicotine levels in electronic cigarettes. <i>Nicotine Tob Res.</i> 15(1):158-66 (2013)	
	37.	Ingebrethsen, et al., Electronic cigarette aerosol particle size distribution measurements. <i>Inhal Toxicol.</i> 24(14):976-84 (2012)	
	38.	Seeman, et al., The form of nicotine in tobacco. Thermal transfer of nicotine and nicotine acid salts to nicotine in the gas phase. <i>J Agric Food Chem.</i> 47(12):5133-45 (1999)	
	39.	Vansickel, et al., A clinical laboratory model for evaluating the acute effects of electronic "cigarettes": Nicotine delivery profile and cardiovascular and subjective effects. <i>Cancer Epidemiol Biomarkers Prev.</i> 19(8):1945-53 (2010)	
	40.	Zhang, et al., In vitro particle size distributions in electronic and conventional cigarette aerosols suggest comparable deposition patterns. <i>Nicotine Tob Res.</i> 15(2):501-8 (2013)	

Examiner Signature	Date Considered
-----------------------	--------------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Electronic Acknowledgement Receipt	
EFS ID:	20811968
Application Number:	14271071
International Application Number:	
Confirmation Number:	6078
Title of Invention:	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
First Named Inventor/Applicant Name:	Adam Bowen
Customer Number:	21971
Filer:	Kristin J. Havranek
Filer Authorized By:	
Attorney Docket Number:	35196-713.201
Receipt Date:	26-NOV-2014
Filing Date:	06-MAY-2014
Time Stamp:	18:02:44
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Foreign Reference	WO9712639.pdf	2571800 a2a828cebb0cd09a29694f22c89740361cf672cb	no	57

Warnings:

Information:

2	Foreign Reference	WO2011139684.pdf	1623621	no	26
			77ed83520fa8a8cc1382dcbbb16005a3e40dce51		
Warnings:					
Information:					
3	Foreign Reference	EP2186507.pdf	6421820	no	23
			98e1031876faa9b0163bbebcf653c7c472ee91c1		
Warnings:					
Information:					
4	Foreign Reference	JP02145179.pdf	118651	no	2
			ef00fa143bdc086d752fd133aea6d9f3b3b08d51		
Warnings:					
Information:					
5	Foreign Reference	JP09075058.pdf	86621	no	2
			04267f34c58060a22ebc0180b882a69bb203a28		
Warnings:					
Information:					
6	Foreign Reference	CN102754924A.pdf	1465967	no	22
			8aa4b88e8974e25ac219a6360f3123e14631d1a0		
Warnings:					
Information:					
7	Non Patent Literature	PCTUS2014037019_ISR_WO_dated05SEPT2014.pdf	3064829	no	38
			f46739fdab58c8b1bc39de13d50c2852f606411		
Warnings:					
Information:					
8	Non Patent Literature	Summary_of_Evaluations_10MAR2003.pdf	56279	no	1
			8c654bd661cf3a606a627c7e2cc4bd89ce6d4a03		
Warnings:					
Information:					
9	Non Patent Literature	Summary_of_Evaluations_28May2005.pdf	65819	no	2
			01e47a1d167651cc253ac61c47a06deb3e9ad2c5		
Warnings:					
Information:					
10	Non Patent Literature	Summary_of_Evaluations_29Jan2003.pdf	54671	no	1
			c35f4ddc4316c40535c293c8986d208eb796f3cd		
Warnings:					
Information:					

11	Non Patent Literature	Summary_of_evaluations_29May2005.pdf	60260	no	1
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Warnings:					
Information:					
12	Non Patent Literature	Harvest_Vapor.pdf	128491	no	2
			13280b66f6c96ef2e4867b98811b7571335ec52e		
Warnings:					
Information:					
13	Non Patent Literature	Flouris.pdf	647231	no	12
			152c89c58eeb0d04f081a8b30d0af8c807a3ee9c		
Warnings:					
Information:					
14	Non Patent Literature	Goniewicz.pdf	529363	no	9
			fe65aa7a2f05be34883a090eba0f350086506902		
Warnings:					
Information:					
15	Non Patent Literature	Ingebrethsen.pdf	2111679	no	9
			94ba4ffdd8cecd7f59cc07a8d1a80816612e04b		
Warnings:					
Information:					
16	Non Patent Literature	Seeman.pdf	1031639	no	13
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Warnings:					
Information:					
17	Non Patent Literature	Vansickel.pdf	440340	no	10
			ce559322d5697de6971b153e746fbd852479209		
Warnings:					
Information:					
18	Non Patent Literature	Zhang.pdf	506749	no	8
			f3c725c7aeebf906a63d15038786bba8f3deca36		
Warnings:					
Information:					
19	Non Patent Literature	Compounding_Pharmacy.pdf	277510	no	3
			05fb4a9b1067188723032d3413adcbc4a60f4aa		
Warnings:					
Information:					

20	Foreign Reference	WO14182736.pdf	5539175 28424c5310005f0d6ab14197540361cb52dca616	no	99
Warnings:					
Information:					
21		IDS_35196_713_201.pdf	299528 005e0a38b23a378f57919aa5018a893ef6307bb	yes	7
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Transmittal Letter		1	4	
	Information Disclosure Statement (IDS) Form (SB08)		5	7	
Warnings:					
Information:					
Total Files Size (in bytes):			27102043		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

RECEIVED

SEP 10 2014

Ploom | 35196-713.601
Vici | K91 ASTE (SICC) SMMA

PATENT COOPERATION TREATY

WILSON, SONSINI,
GOODRICH & ROSATI
INTERNATIONAL SEARCHING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT AND
THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

To: KRISTIN HAVRANEK WILSON SONSINI GOODRICH & ROSATI 650 PAGE MILL ROAD PALO ALTO, CA 94304		Date of mailing (day/month/year) 05 SEP 2014
Applicant's or agent's file reference 35196-713601	FOR FURTHER ACTION See paragraphs 1 and 4 below	
International application No. PCT/US2014/037019	International filing date (day/month/year) 06 May 2014	
Applicant PLOOM, INC.		

- 1 ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.
- Filing of amendments and statement under Article 19:**
The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46).
- When?** The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.
- How?** Directly to the International Bureau of WIPO preferably through ePCT or on paper to, 34 chemin des Colombettes
1211 Geneva 20, Switzerland. Facsimile No.: +41 22 338 82 70
- For more detailed instructions,** see *PCT Applicant's Guide*, International Phase, paragraphs 9.004 – 9.011.
- 2 ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.
- 3 ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices
 - ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Reminders

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. These comments will be made available to the public after international publication. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established.

Shortly after the expiration of **18 months from the priority date**, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90bis.1 and 90bis.3).

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for **entry into the national phase** before those designated Offices. In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months. For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

Within **19 months from the priority date**, the applicant may request that a supplementary international search be carried out by a different International Searching Authority that offers this service (Rule 45bis.1). The procedure for requesting supplementary international search is described in the *PCT Applicant's Guide*, International Phase, paragraphs 8.006-8.032.

Name and mailing address of the ISA/
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Authorized officer:

Blaine R. Copenheaver

PCT Helpdesk: 571-272-4300
Telephone No. PCT OSP: 571-272-7724

Form PCT/ISA/220 (July 2014)

WSGR PATENT DOCKET	
U.S. _____	FOREIGN: ☒
DOCKETED: 9/10/14	BY: cc
ACTION: Search report 11/5/14	
DUE DATES: Written Opinion 3/6/15	
2013/2014 fee 12/5/14	
ATTY _____	C/M # _____

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 35196-713601	FOR FURTHER ACTION		see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. PCT/US2014/037019	International filing date (<i>day/month/year</i>) 06 May 2014	(Earliest) Priority Date (<i>day/month/year</i>) 06 May 2013	
Applicant PLOOM, INC.			

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of:

- ☒ the international application in the language in which it was filed.
☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. ☐ This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

c. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. ☒ **Certain claims were found unsearchable** (see Box No. II).

3. ☐ **Unity of invention is lacking** (see Box No. III).

4. With regard to the **title**,

- ☒ the text is approved as submitted by the applicant.
☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- ☐ the text is approved as submitted by the applicant.
☒ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

- a. the figure of the **drawings** to be published with the abstract is Figure No. 4
☒ as suggested by the applicant.
☐ as selected by this Authority, because the applicant failed to suggest a figure.
☐ as selected by this Authority, because this figure better characterizes the invention.
- b. ☐ none of the figures is to be published with the abstract.

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.: 11-56, 67-104
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:

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 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.

Form PCT/ISA/210 (continuation of first sheet (2)) (July 2009)

Box No. IV Text of the abstract (Continuation of item 5 of the first sheet)

A nicotine salt liquid formulation for generating an inhalable aerosol in an electronic cigarette comprising nicotine salt that forms about 0.5% to about 20% nicotine is provided. Provided herein is a method of delivering nicotine to a user comprising operating an electronic cigarette to a user wherein the electronic cigarette comprises a nicotine salt formulation comprising a nicotine salt in a biologically acceptable liquid carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C, and inhaling an aerosol generated from the nicotine salt formulation heated by the electronic cigarette.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2014/037019

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A24F 47/00 (2014.01)

CPC - A24F 47/00 (2014.06)

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) - A24F 47/00 (2014.01)

CPC - A24B 15/22; A24F 47/00, 47/002, 47/004, 47/006, 47/008 (2014.06)

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

USPC - 131/273, 329, 347, 359, 360

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

Orbit, Google Scholar

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2006/0196518 A1 (HON) 07 September 2006 (07.09.2006) entire document	1-10, 57-66
Y	US 2012/0255567 A1 (ROSE et al) 11 October 2012 (11.10.2012) entire document	1, 2, 5-7, 57, 58, 61-63
Y	US 2008/0241255 A1 (ROSE et al) 02 October 2008 (02.10.2008) entire document	3, 4, 8-10, 59, 60, 64-66
Y	CN 102754924 A (LONG) 31 October 2012 (31.10.2012), see machine translation	4-10, 60-66
A	US 2011/0268809 A1 (BRINKLEY et al) 03 November 2011 (03.11.2011) entire document	1-10, 57-66
A	US 2006/0018840 A1 (LECHUGA-BALLESTEROS et al) 26 January 2006 (26.01.2006) entire document	1-10, 57-66

☐ Further documents are listed in the continuation of Box C.


* 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

18 August 2014

Date of mailing of the international search report

05 SEP 2014

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents

P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

Authorized officer:

Blaine R. Copenheaver

PCT Helpdesk: 571-272-4300

PCT OSP: 571-272-7774

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: KRISTIN HAVRANEK
WILSON SONSINI GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

05 SEP 2014

Applicant's or agent's file reference
35196-713601

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US2014/037019

International filing date (day/month/year)

06 May 2014

Priority date (day/month/year)

06 May 2013

International Patent Classification (IPC) or both national classification and IPC

IPC(8) - A24F 47/00 (2014.01)

CPC - A24F 47/00 (2014.06)

Applicant PLOOM, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1 bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Date of completion of this opinion

18 August 2014

Authorized officer:

Blaine R. Copenheaver

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2011)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US2014/037019

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - ☒ the international application in the language in which it was filed.
 - ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a)).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:
 - a. (means)
 - ☐ on paper
 - ☐ in electronic form
 - b. (time)
 - ☐ in the international application as filed
 - ☐ together with the international application in electronic form
 - ☐ subsequently to this Authority for the purposes of search
4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US2014/037019

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application.

☒ claims Nos. 11-56, 67-104

because:

☐ the said international application, or the said claims Nos. _____ relate to the following subject matter which does not require an international search (*specify*):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 11-56, 67-104 are so unclear that no meaningful opinion could be formed (*specify*):

Claims 11-56 and 67-104 are multiple dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

☐ the claims, or said claims Nos. _____ are so inadequately supported by the description that no meaningful opinion could be formed (*specify*):

☒ no international search report has been established for said claims Nos. 11-56, 67-104

☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit

☐ furnish a sequence listing on paper complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.

☐ furnish a sequence listing in electronic form complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.

☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rule 13ter.1(a) or (b).

☐ See Supplemental Box for further details.

Form PCT/ISA/237 (Box No. III) (July 2011)

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2014/037019

Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement			
1. Statement				
	Novelty (N)	Claims	1-10, 57-66	YES
		Claims	None	NO
	Inventive step (IS)	Claims	None	YES
		Claims	1-10, 57-66	NO
	Industrial applicability (IA)	Claims	1-10, 57-66	YES
		Claims	None	NO
<p>2. Citations and explanations:</p> <p>Claims 1, 2, 57 and 58 lack an inventive step under PCT Article 33(3) as being obvious over Hon in view of US 2012/0255567 A1 to Rose et al. (hereafter Rose).</p> <p>Regarding claim 1, Hon discloses a method of delivering nicotine to a user (Hon, Para. [0001] The invention relates to a non-smokable electronic spray cigarette which contains only nicotine without tar) comprising operating an electronic cigarette to a user wherein the electronic cigarette comprises a nicotine salt formulation (Hon, Para. [0020] The high frequency generator of a control circuit board 8 is composed of a capacitance connecting three point type oscillator, an inductance connecting three point type oscillator, or a transformer-type oscillating circuit, which has the frequency of 35 KHz to 3.3 MHz. The circuit includes an automatic frequency fine-adjusting circuit resonating with a piezoelectric element 20. A nicotine solution storage container 13 is made of silicon rubber, alternatively, other polymers that can be protected against the penetration of nicotine can be used. A one-way valve for liquid injection 12 is sealed by a ball or cone member under the pressure of a spring. An airflow sensor 18 can be comprised of an array of integrated thermal sensitive resistors in the shape of film. The electrode of a resistance or capacitance sensor 19, which is sensitive to touches of human body, is composed of an upper metal film and a lower metal film and located at the end of the cigarette holder. The changes of the resistance or capacitance parameters due to human touch are inputted into the control circuit to perform the operation of a body sensitive switch. The electric controlled pump 11, driven by a motor or a linear motor, drives a retarder that has a large speed ratio, via a shaft coupling, to revolve at a low speed but with large torque. The pump can be a peristaltic pump, a plunger pump, an eccentric pump or a screw pump. Alternatively, the liquid pump can use piezoelectric pump, a super magnetostrictive pump, a thermal expansion drive pump, a thermal contraction drive pump, a thermal bubble pump. The electric control pump or valve may be thermal contractible. The valve is formed on a silicon rubber tube by nickel-titanium memory alloy or copper-based memory alloy under the force of electro-thermal contractions. The electro-thermal vaporization nozzle 17 is made of high-temperature-resistant materials with low thermal conductivity. The nozzle 17 is a tube, with the internal diameter of 0.05-2 mm and the effective working length of 3-20 mm. An electric heating element is provided within the nozzle, and the shapes of the electric heating element and the cavity of the nozzle are designed to facilitate vaporization and ejection of liquid. The vaporization nozzle 17 may be made of conventional ceramics, or be made of aluminum silicate ceramics, titanium oxide, zirconium dioxide, yttrium oxide ceramics, molten silicon, silicon dioxide, molten aluminum oxide. The vaporization nozzle 17 may be in the shape of straight tube or spiral, and may also be made from polytetrafluoroethylene, carbon fiber, glass fiber or other materials with similar properties. The electric heating element arranged within the vaporization nozzle 17 may be made of wires of nickel chromium alloy, iron chromium aluminum alloy, stainless steel, gold, platinum, tungsten molybdenum alloy, etc., and may be in the shape of straight line, single spiral, double spiral, cluster or spiral cluster, wherein the straight line and cluster are preferred. The heating function of the electric heating element may be achieved by applying a heating coating on the inner wall of the tube, and the coating may be made from electro-thermal ceramic materials, semiconductor materials, corrosion-resistant metal films, such as gold, nickel, chromium, platinum and molybdenum. The method for coating can include a coat sintering process, a chemical deposition sintering process and an ion spraying process. The materials mentioned above can be provided within the inner wall of vaporization nozzle in any of the processes mentioned above. The nozzle with high resistance, made of metal, can have no electric heating element being attached, and can be directly applied with heating current. Alternatively, the materials mentioned above can be arranged outside of the nozzle in any of the ways mentioned above, and an appropriate response time can also be achieved in the power supply mode of short-term preheating. Nicotine solution used in the atomization process comprises nicotine, propylene glycol, glycerol, organic acids, anti-oxidation agents, essence, water and alcohol, in which the nicotine content is 0.1%-6%, propylene glycol content 80%-90%, organic acids 0.2%-20%, the rest is glycerol, essence, anti-oxidation agents, water and alcohol) comprising a nicotine salt in a biologically acceptable liquid carrier (Hon, Para. [0020]) and inhaling an aerosol generated from the nicotine salt formulation heated by the electronic cigarette (Hon, Para. [0021] the fundamental principle of the device is that, when a smoker puts the cigarette holder on his/her mouth, the resistance sensor 19 activates the control circuit board 8. The control circuit board 8 then outputs two driving voltages respectively, one used to supply power to the electric heating element of the vaporization nozzle 17 and the other used to activate the micro pump 11 (shown in FIG. 6). The stored solution is then pumped to the nozzle 17 by the solution storage container 13. On the electric heating element of the nozzle 17, the nicotine solution is then vaporized into high temperature vapor which is subsequently ejected from the opening end. In the air, the vapor ejected out is then expanded and condensed into micro aerosol droplets. The effect of the ultrasonic piezoelectric element 20 mounting on the nozzle is that, firstly, the large liquid droplets in the unstable thermal airflow under high pressure will be in sufficient contact with the electric heating element, and thereby be vaporized; secondly, the liquid droplets in the nozzle 17 is directly fragmented and atomized; thirdly, possible bumping occurred when the liquid is above a boiling point will be avoided...)</p> <p><Claim 1 continued in first Supplemental Box></p>				

Form PCT/ISA/237 (Box No. V) (July 2011)

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

<Claim 1 continued from Box V, Part 2>

...The effect of integrated atomization will allow the aerosol droplets with diameters of 0.2-3 μm to enter into the alveolus easily and be absorbed. The airflow sensor 18 is sensitive to the diluted air which enters through air inlet 16 when a "suction" action takes place. The sensed signals are transmitted to the control circuit, and the control circuit then stop to supply power to the micro pump and the electric heater after a certain time delay. The relay relationship between the time delays of the micro pump and electric heater is as follows: after the electric heater is activated, the micro pump is activated after a time delay of 0.1-0.5 seconds; the electric heater is then turned off after a time delay of 0.2-0.5 seconds when the control circuit of the micro pump is turned off, so as to guarantee a complete vaporization of the liquid after quantitative liquid injection without any leftovers. The nicotine solution container may be designed to be different sizes as required. The nicotine solution may be refilled once a day, or once a couple of days. The liquid crystal display screen can show operating state parameters, such as cell capacity, smoking times per day, average using cycle and warnings for over smoking. A red LED 3 blinks for each smoking action, and a sawtooth wave signal that lasts for 1.2 seconds is given by the control circuit for blinking signals, which provides a gradual change of luminance to imitate the ignition and combustion process of a conventional cigarette. The charger 1, charging jack 2, spring 4, shell 6, threads 7, switch 9, passage tube 14 and baffle plate 15 are shown in FIG. 1. The silicon gel tube 601, pinch roller 602, worm 603 and motor 604 are shown in FIG. 6). Hon fails to explicitly disclose the method wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C. However, Rose teaches a method of enhancing nicotine concentrations in a gaseous carrier (Rose, Abstract) wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C (Rose, Para. [0156]) Delivery enhancing compounds are those compounds capable of increasing the total concentration of nicotine in a gaseous carrier when the gaseous carrier is placed in communication with a nicotine source. Nicotine has a vapor pressure of 0.04 mmHg at 25.degree. C. Delivery enhancing compounds having a vapor pressure greater than nicotine at a given temperature are preferred if ambient temperatures are used. Non-limiting examples include inorganic acids such as hydrochloric, hydrobromic, or sulfuric acid, and organic acids including saturated and unsaturated aliphatic acids, saturated and unsaturated alicyclic acids, aromatic acids (including heterocyclic aromatic), polycarboxylic acids, hydroxy, alkoxy, keto, and oxo acids, thioacids, amino acids, and each of the preceding optionally substituted with one or more heteroatoms, including but not limited to halogens. In some embodiments, the delivery enhancing compound is a carboxylic acid. In some of these embodiments, the carboxylic acid is in the class termed "2-Oxo acids." In some of these embodiments, the carboxylic acid is in the class of .alpha.-Keto acids known as "2-Keto acids." In some of these embodiments, the acid is selected from the group consisting of 3-Methyl-2-oxovaleric acid, Pyruvic acid, 2-Oxovaleric acid, 4-Methyl-2-oxovaleric acid, 3-Methyl-2-oxobutanoic acid, 2-Oxooctanoic acid and combinations thereof. In some embodiments, the delivery enhancing compound forms solid particles, for example salt particles. In other embodiments, the delivery enhancing compound forms a liquid droplet aerosol. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C as taught by Rose. The motivation for doing so would be to provide a method for combining nicotine or other medicaments with a delivery enhancing compound in a gaseous stream to generate an aerosol for pulmonary delivery, without the need for excipients or other additives including solvents (Rose, Para. [0009]).

Regarding claim 2, Hon discloses a method of delivering nicotine to a user (Hon, Para. [0001]) comprising operating an electronic cigarette to a user wherein the electronic cigarette comprises a nicotine salt formulation (Hon, Paras. [0020];[0021]) comprising a nicotine salt in a biologically acceptable liquid carrier (Hon, Paras. [0020];[0021]) and inhaling an aerosol generated from the nicotine salt formulation heated by the electronic cigarette (Hon, Paras. [0020];[0021]). Hon fails to explicitly disclose the method wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C. However, Rose teaches wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C, (Rose, Para. [0156]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C as taught by Rose. The motivation for doing so would be to provide a method for combining nicotine or other medicaments with a delivery enhancing compound in a gaseous stream to generate an aerosol for pulmonary delivery, without the need for excipients or other additives including solvents (Rose, Para. [0009]).

Regarding claim 57, Hon discloses a nicotine salt liquid formulation (Hon, Para. [0020]) in an electronic cigarette for generating an inhalable aerosol upon heating in the electronic cigarette (Hon, Paras. [0020] and [0021]), the formulation in the cigarette comprising a nicotine salt in a biologically acceptable liquid carrier (Hon, Paras. [0020] and [0021]). Hon fails to explicitly disclose the method wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C. However, Rose teaches wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C (Rose, Para. [0156]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein an acid used to form said nicotine salt is characterized by vapor pressure >20 mmHg at 200 °C as taught by Rose. The motivation for doing so would be to provide a method for combining nicotine or other medicaments with a delivery enhancing compound in a gaseous stream to generate an aerosol for pulmonary delivery, without the need for excipients or other additives including solvents (Rose, Para. [0009]).

Regarding claim 58, Hon discloses a nicotine salt liquid formulation (Hon, Para. [0020]) in an electronic cigarette for generating an inhalable aerosol upon heating in the electronic cigarette (Hon, Paras. [0020] and [0021]), the formulation in the cigarette comprising a nicotine salt in a biologically acceptable liquid carrier (Hon, Paras. [0020] and [0021]). Hon fails to explicitly disclose the method wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C. However, Rose teaches a method of enhancing nicotine concentrations in a gaseous carrier wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C, (Rose, Para. [0156]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein an acid used to form said nicotine salt is characterized by vapor pressure of about 20 to 200 mmHg at 200 °C as taught by Rose. The motivation for doing so would be to provide a method for combining nicotine or other medicaments with a delivery enhancing compound in a gaseous stream to generate an aerosol for pulmonary delivery, without the need for excipients or other additives including solvents (Rose, Para. [0009]).

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of

Claims 3 and 59 lack an inventive step under PCT Article 33(3) as being obvious over Hon in view of US 2008/0241255 A1 to Rose'255 et al. (hereafter Rose'255).

Regarding claim 3, Hon discloses a method of delivering nicotine to a user (Hon, Para. [0001]) comprising operating an electronic cigarette wherein the electronic cigarette comprises a nicotine salt formulation (Hon, Paras. [0020] and [0021]) comprising a nicotine salt in a biologically acceptable liquid carrier (Hon, Paras. [0020] and [0021]) and inhaling an aerosol generated from the nicotine salt formulation heated by the electronic cigarette (Hon, Paras. [0020] and [0021]). Hon fails to explicitly disclose the method wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point. However, Rose'255 teaches a method of delivering nicotine to a user (Rose'255, Abstract) wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point (Rose'255, Para. [0141]) the methods disclosed herein may be adapted for use with a variety of other medicaments having similar biophysical and/or chemical properties to nicotine. The following compounds are aliphatic or aromatic, saturated or unsaturated nitrogenous bases (nitrogen containing alkaline compounds) in which a nitrogen atom is present in a heterocyclic ring or in an acyclic chain (substitution). In addition, the compounds have been selected based on melting point (below 150.degree. C.) or boiling point (below 300.degree. C.) that are expected to favor volatilization). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point as taught by Rose'255. The motivation for doing so would be to provide a method for combining nicotine or other medicaments with a delivery enhancing compound in a gaseous stream to generate an aerosol for pulmonary delivery, without the need for excipients or other additives including solvents. (Rose'255, Para. [0009]).

Regarding claim 59, Hon discloses a nicotine salt liquid formulation (Hon, Para. [0020]) in an electronic cigarette for generating an inhaleable aerosol upon heating in the electronic cigarette (Hon, Paras. [0020] and [0021]), the formulation in the cigarette comprising a nicotine salt in a biologically acceptable liquid carrier (Hon, Paras. [0020] and [0021]). Hon fails to explicitly disclose the method wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point. However, Rose'255 teaches a method of delivering nicotine to a user wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point (Rose'255, Para. [0141]) the methods disclosed herein may be adapted for use with a variety of other medicaments having similar biophysical and/or chemical properties to nicotine. The following compounds are aliphatic or aromatic, saturated or unsaturated nitrogenous bases (nitrogen containing alkaline compounds) in which a nitrogen atom is present in a heterocyclic ring or in an acyclic chain (substitution). In addition, the compounds have been selected based on melting point (below 150.degree. C.) or boiling point (below 300.degree. C.) that are expected to favor volatilization). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein an acid used to form said nicotine salt is further characterized by a melting point <160 °C, a boiling point >160 °C, and at least a 50-degree difference between the melting point and the boiling point as taught by Rose'255. The motivation for doing so would be to provide a method for combining nicotine or other medicaments with a delivery enhancing compound in a gaseous stream to generate an aerosol for pulmonary delivery, without the need for excipients or other additives including solvents. (Rose'255, Para. [0009]).

Claims 4, 8-10, 60, 64-66 lacks an inventive step under PCT Article 33(3) as being obvious over Hon in view of Rose'255 and Long.

Regarding claim 4, Hon discloses a method of delivering nicotine to a user comprising providing an electronic cigarette to a user wherein the electronic cigarette comprises a nicotine salt formulation (Hon, Paras. [0020] and [0021]) comprising a nicotine salt in a biologically acceptable liquid carrier (Hon, Paras. [0020] and [0021]) and the boiling point, and inhaling an aerosol generated from the nicotine salt formulation heated by the electronic cigarette (Hon, Paras. [0021] and [0021]). Hon fails to explicitly disclose the method wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point. However, Rose'255 teaches wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point (Rose'255, Para. [0141]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point as taught by Rose'255. The motivation for doing so would be to provide a method for combining nicotine or other medicaments with a delivery enhancing compound in a gaseous stream to generate an aerosol for pulmonary delivery, without the need for excipients or other additives including solvents. (Rose'255, Para. [0009]). Long teaches an electronic cigarettes (Long, Abstract) wherein the operating temperature of the electronic cigarette (Long, Para. [0005] As a further improvement of the technical proposal: The oven temperature for detecting a temperature sensor, the temperature sensor is connected to the control unit, the control unit in the working condition detected by the temperature sensor controls the heater temperature heating state of the operating temperature of the oven maintained at 180 ° C ~ 240 ° C, and when the temperature sensor detects the temperature reaches at 240 ° C the control unit controls the heater stops heating when the temperature sensor detects a temperature below 180 ° C when the control unit controls the heater for heating). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein the operating temperature of the electronic cigarette as taught by Long. The motivation for doing so would be to provide a true taste of smoking does not produce carbon monoxide and tar, no smoke, compact, easy to use evaporative electronic cigarettes (Long, Para. [0003]).

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Regarding claim 8, Hon in view of Rose'255 and Long discloses the method of claim 4. Hon fails to explicitly disclose the method wherein an operating temperature is from 150 °C to 250 °C. However, Long teaches wherein an operating temperature is from 150 °C to 250 °C (Long, Para. [0005] As a further improvement of the technical proposal: The oven temperature for detecting a temperature sensor, the temperature sensor is connected to the control unit, the control unit in the working condition detected by the temperature sensor controls the heater temperature heating state of the operating temperature of the oven maintained at 180 °C ~ 240 °C, and when the temperature sensor detects the temperature reaches at 240 °C the control unit controls the heater stops heating when the temperature sensor detects a temperature below 180 °C when the control unit controls the heater for heating). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein an operating temperature is from 150 °C to 250 °C as taught by Long. The motivation for doing so would be to provide a true taste of smoking does not produce carbon monoxide and tar, no smoke, compact, easy to use evaporative electronic cigarettes (Long, Para. [0003]).

Regarding claim 9, Hon in view of Rose'255 and Long discloses the method of claim 4. Hon fails to explicitly disclose the method wherein the operating temperature is from 180 °C to 220 °C. However, Long teaches wherein the operating temperature is from 180 °C to 220 °C (Long, Para. [0005] As a further improvement of the technical proposal: The oven temperature for detecting a temperature sensor, the temperature sensor is connected to the control unit, the control unit in the working condition detected by the temperature sensor controls the heater temperature heating state of the operating temperature of the oven maintained at 180 °C ~ 240 °C, and when the temperature sensor detects the temperature reaches at 240 °C the control unit controls the heater stops heating when the temperature sensor detects a temperature below 180 °C when the control unit controls the heater for heating). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein the operating temperature is from 180 °C to 220 °C as taught by Long. The motivation for doing so would be to provide a true taste of smoking does not produce carbon monoxide and tar, no smoke, compact, easy to use evaporative electronic cigarettes (Long, Para. [0003]).

Regarding claim 10, Hon in view of Rose'255 and Long discloses the method of claim 4. Hon fails to explicitly disclose the method wherein the operating temperature is about 200 °C. However, Long teaches an electronic cigarettes wherein the operating temperature is about 200 °C (Long, Para. [0005] As a further improvement of the technical proposal: The oven temperature for detecting a temperature sensor, the temperature sensor is connected to the control unit, the control unit in the working condition detected by the temperature sensor controls the heater temperature heating state of the operating temperature of the oven maintained at 180 °C ~ 240 °C, and when the temperature sensor detects the temperature reaches at 240 °C the control unit controls the heater stops heating when the temperature sensor detects a temperature below 180 °C when the control unit controls the heater for heating). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein the operating temperature is about 200 °C as taught by Long. The motivation for doing so would be to provide a true taste of smoking does not produce carbon monoxide and tar, no smoke, compact, easy to use evaporative electronic cigarettes (Long, Para. [0003]).

Regarding claim 60, Hon discloses a nicotine salt liquid formulation (Hon, Para. [0020]) in an electronic cigarette for generating an inhalable aerosol upon heating in the electronic cigarette (Hon, Paras. [0020] and [0021]), the formulation in the cigarette comprising a nicotine salt in a biologically acceptable liquid carrier (Hon, Paras. [0020] and [0021]). Hon fails to explicitly disclose the method wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point. However, Rose'255 teaches a method of delivering nicotine to a user wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point (Rose'255, Para. [0141]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein an acid used to form said nicotine salt is further characterized by a melting point at least 40 degrees lower than an operating temperature of the electronic cigarette, a boiling point no more than 40 degrees lower than the operating temperature of the electronic cigarette, and at least a 50-degree difference between the melting point and the boiling point as taught by Rose'255. The motivation for doing so would be to provide a method for combining nicotine or other medicaments with a delivery enhancing compound in a gaseous stream to generate an aerosol for pulmonary delivery, without the need for excipients or other additives including solvents. (Rose'255, Para. [0009]). Long teaches the operating temperature of the electronic cigarette (Long, Para. [0005] As a further improvement of the technical proposal: The oven temperature for detecting a temperature sensor, the temperature sensor is connected to the control unit, the control unit in the working condition detected by the temperature sensor controls the heater temperature heating state of the operating temperature of the oven maintained at 180 °C ~ 240 °C, and when the temperature sensor detects the temperature reaches at 240 °C the control unit controls the heater stops heating when the temperature sensor detects a temperature below 180 °C when the control unit controls the heater for heating). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein the operating temperature of the electronic cigarette as taught by Long. The motivation for doing so would be to provide a true taste of smoking does not produce carbon monoxide and tar, no smoke, compact, easy to use evaporative electronic cigarettes (Long, Para. [0003]).

Regarding claim 64, Hon in view of Rose'255 and Long discloses the method of claim 60. Hon fails to explicitly disclose the method wherein an operating temperature is from 150 °C to 250 °C. However, Long teaches an electronic cigarettes wherein an operating temperature is from 150 °C to 250 °C (Long, Para. [0005] As a further improvement of the technical proposal: The oven temperature for detecting a temperature sensor, the temperature sensor is connected to the control unit, the control unit in the working condition detected by the temperature sensor controls the heater temperature heating state of the operating temperature of the oven maintained at 180 °C ~ 240 °C, and when the temperature sensor detects the temperature reaches at 240 °C the control unit controls the heater stops heating when the temperature sensor detects a temperature below 180 °C when the control unit controls the heater for heating). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein an operating temperature is from 150 °C to 250 °C as taught by Long. The motivation for doing so would be to provide a true taste of smoking does not produce carbon monoxide and tar, no smoke, compact, easy to use evaporative electronic cigarettes (Long, Para. [0003]).

Supplemental Box

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Continuation of:

Regarding claim 65, Hon in view of Rose'255 and Long discloses the method of claim 60. Hon fails to explicitly disclose the method wherein the operating temperature is from 180 °C to 220 °C. However, Long teaches an electronic cigarettes wherein the operating temperature is from 180 °C to 220 °C (Long, Para. [0005] As a further improvement of the technical proposal: The oven oven temperature for detecting a temperature sensor, the temperature sensor is connected to the control unit, the control unit in the working condition detected by the temperature sensor controls the heater temperature heating state of the operating temperature of the oven maintained at 180 °C ~ 240 °C, and when the temperature sensor detects the temperature reaches at 240 °C the control unit controls the heater stops heating when the temperature sensor detects a temperature below 180 °C when the control unit controls the heater for heating). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein the operating temperature is from 180 °C to 220 °C as taught by Long. The motivation for doing so would be to provide a true taste of smoking does not produce carbon monoxide and tar, no smoke, compact, easy to use evaporative electronic cigarettes (Long, Para. [0003]).

Regarding claim 66, Hon in view of Rose'255 and Long discloses the method of claim 60. Hon fails to explicitly disclose the method wherein the operating temperature is about 200 °C. However, Long teaches an electronic cigarettes wherein the operating temperature is about 200 °C (Long, Para. [0005] As a further improvement of the technical proposal: The oven oven temperature for detecting a temperature sensor, the temperature sensor is connected to the control unit, the control unit in the working condition detected by the temperature sensor controls the heater temperature heating state of the operating temperature of the oven maintained at 180 °C ~ 240 °C, and when the temperature sensor detects the temperature reaches at 240 °C the control unit controls the heater stops heating when the temperature sensor detects a temperature below 180 °C when the control unit controls the heater for heating). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein the operating temperature is about 200 °C as taught by Long. The motivation for doing so would be to provide a true taste of smoking does not produce carbon monoxide and tar, no smoke, compact, easy to use evaporative electronic cigarettes (Long, Para. [0003]).

Claims 5-7 and 61-63 lacks an inventive step under PCT Article 33(3) as being obvious over Hon in view of Rose and Long.

Regarding claim 5, Hon in view of Rose discloses the method of claim 1. Hon fails to explicitly disclose the method wherein an operating temperature is from 150 °C to 250 °C. However, Long teaches an electronic cigarettes wherein an operating temperature is from 150 °C to 250 °C (Long, Para. [0005] As a further improvement of the technical proposal: The oven oven temperature for detecting a temperature sensor, the temperature sensor is connected to the control unit, the control unit in the working condition detected by the temperature sensor controls the heater temperature heating state of the operating temperature of the oven maintained at 180 °C ~ 240 °C, and when the temperature sensor detects the temperature reaches at 240 °C the control unit controls the heater stops heating when the temperature sensor detects a temperature below 180 °C when the control unit controls the heater for heating). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein an operating temperature is from 150 °C to 250 °C as taught by Long. The motivation for doing so would be to provide a true taste of smoking does not produce carbon monoxide and tar, no smoke, compact, easy to use evaporative electronic cigarettes (Long, Para. [0003]).

Regarding claim 6, Hon in view of Rose discloses the method of claim 1. Hon fails to explicitly disclose the method wherein an operating temperature is from 180 °C to 220 °C. However, Long teaches an electronic cigarettes wherein an operating temperature is from 180 °C to 220 °C (Long, Para. [0005] As a further improvement of the technical proposal: The oven oven temperature for detecting a temperature sensor, the temperature sensor is connected to the control unit, the control unit in the working condition detected by the temperature sensor controls the heater temperature heating state of the operating temperature of the oven maintained at 180 °C ~ 240 °C, and when the temperature sensor detects the temperature reaches at 240 °C the control unit controls the heater stops heating when the temperature sensor detects a temperature below 180 °C when the control unit controls the heater for heating). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein an operating temperature is from 180 °C to 220 °C as taught by Long. The motivation for doing so would be to provide a true taste of smoking does not produce carbon monoxide and tar, no smoke, compact, easy to use evaporative electronic cigarettes (Long, Para. [0003]).

Regarding claim 7, Hon in view of Rose discloses the method of claim 1. Hon fails to explicitly disclose the method wherein an operating temperature is about 200 °C. However, Long teaches an electronic cigarettes wherein an operating temperature is about 200 °C (Long, Para. [0005] As a further improvement of the technical proposal: The oven oven temperature for detecting a temperature sensor, the temperature sensor is connected to the control unit, the control unit in the working condition detected by the temperature sensor controls the heater temperature heating state of the operating temperature of the oven maintained at 180 °C ~ 240 °C, and when the temperature sensor detects the temperature reaches at 240 °C the control unit controls the heater stops heating when the temperature sensor detects a temperature below 180 °C when the control unit controls the heater for heating). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein an operating temperature is about 200 °C as taught by Long. The motivation for doing so would be to provide a true taste of smoking does not produce carbon monoxide and tar, no smoke, compact, easy to use evaporative electronic cigarettes (Long, Para. [0003]).

Regarding claim 61, Hon in view of Rose discloses the method of claim 57. Hon fails to explicitly disclose the method wherein an operating temperature is from 150 °C to 250 °C. However, Long teaches an electronic cigarettes wherein an operating temperature is from 150 °C to 250 °C (Long, Para. [0005] As a further improvement of the technical proposal: The oven oven temperature for detecting a temperature sensor, the temperature sensor is connected to the control unit, the control unit in the working condition detected by the temperature sensor controls the heater temperature heating state of the operating temperature of the oven maintained at 180 °C ~ 240 °C, and when the temperature sensor detects the temperature reaches at 240 °C the control unit controls the heater stops heating when the temperature sensor detects a temperature below 180 °C when the control unit controls the heater for heating). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein an operating temperature is from 150 °C to 250 °C as taught by Long. The motivation for doing so would be to provide a true taste of smoking does not produce carbon monoxide and tar, no smoke, compact, easy to use evaporative electronic cigarettes (Long, Para. [0003]).

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

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PCT/US2014/037019

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Regarding claim 62, Hon in view of Rose discloses the method of claim 57. Hon fails to explicitly disclose the method wherein an operating temperature is from 180 °C to 220 °C. However, Long teaches an electronic cigarettes wherein an operating temperature is from 180 °C to 220 °C (Long, Para. [0005] As a further improvement of the technical proposal: The oven oven temperature for detecting a temperature sensor, the temperature sensor is connected to the control unit, the control unit in the working condition detected by the temperature sensor controls the heater temperature heating state of the operating temperature of the oven maintained at 180 ° C ~ 240 ° C, and when the temperature sensor detects the temperature reaches at 240 ° C the control unit controls the heater stops heating when the temperature sensor detects a temperature below 180 ° C when the control unit controls the heater for heating). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein an operating temperature is from 180 °C to 220 °C as taught by Long. The motivation for doing so would be to provide a true taste of smoking does not produce carbon monoxide and tar, no smoke, compact, easy to use evaporative electronic cigarettes (Long, Para. [0003]).

Regarding claim 63, Hon in view of Rose discloses the method of claim 57. Hon fails to explicitly disclose the method wherein an operating temperature is about 200 °C. However, Long teaches an electronic cigarettes wherein an operating temperature is about 200 °C (Long, Para. [0005] As a further improvement of the technical proposal: The oven oven temperature for detecting a temperature sensor, the temperature sensor is connected to the control unit, the control unit in the working condition detected by the temperature sensor controls the heater temperature heating state of the operating temperature of the oven maintained at 180 ° C ~ 240 ° C, and when the temperature sensor detects the temperature reaches at 240 ° C the control unit controls the heater stops heating when the temperature sensor detects a temperature below 180 ° C when the control unit controls the heater for heating). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Hon wherein an operating temperature is about 200 °C as taught by Long. The motivation for doing so would be to provide a true taste of smoking does not produce carbon monoxide and tar, no smoke, compact, easy to use evaporative electronic cigarettes (Long, Para. [0003]).

Claims 1-10 and 57-66 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

Search History:

Limited Classification Search

The Patent Analyst selectively searched within the following US, CPC, IPC, ECLA, or F-Term classification areas to determine if the documents classified there are relevant to the subject matter:

IPC (8) Classes/Subclass(es): A24F 47/00 (2014.01)

CPC Class/Subclass(es): A24B 15/22; A24F 47/00, 47/002, 47/004, 47/006, 47/008 (2014.06)

US Class/Subclass(es): 131/273, 329, 347, 359, 360

See Global Search Results.

Global Patent Literature Text Search

The Patent Analyst performed the following global text search, which was not limited by classification but may or may not have been limited by other criteria:

Orbit

Search No.	No. of Hits	Text String
17	2	NICOTINE AND SALT? AND ACID? AND DELIVER+ AND (LIQUID W CARRIER)
16	82	NICOTINE AND SALT? AND ACID? AND DELIVER+
15	54	NICOTINE AND SALT? AND ACID? AND CIGARETTE?
14	935	NICOTINE AND SALT? AND ACID?
13	27	12 AND NICOTINE AND SALT? AND ACID?
12	4741	5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11
11	326	(A24F-047/002)/IPC/CPC
10	229	(A24F-047/004)/IPC/CPC
9	472	(A24F-047/008)/IPC/CPC
8	101	(A24F-047/006)/IPC/CPC
7	3779	(A24F-047/00)/IPC/CPC
6	233	(A24B-015/22)/IPC/CPC
5	1214	(131273 OR 131329 OR 131347 OR 131359 OR 131360)/PCL
4	25	(NICOTINE AND ACID? AND (MELT+ W (POINT OR TEMPERATURE)) AND (BOIL+ W (POINT OR TEMPERATURE)))/NOMT/CLMS/TX AND (131)/PCL
3	2025	(NICOTINE AND ACID? AND (MELT+ W (POINT OR TEMPERATURE)) AND (BOIL+ W (POINT OR TEMPERATURE)))/NOMT/CLMS/TX
2	97	(NICOTINE AND ACID? AND MELT+ AND BOIL+)/NOMT/CLMS
1	2	(WO201340193 OR CN102754924) /PN

Computer Accessed Text Databases Searched

The Patent Analyst searched the following computer accessed text databases:

Google Scholar (<http://scholar.google.com>)

nicotine delivering acid salt electronic cigarette	Patents 19,900 hits
nicotine delivering acid salt electronic cigarette liquid	Patents 18,400 hits
nicotine delivering acid salt electronic cigarette "liquid carrier"	Patents 190 hits

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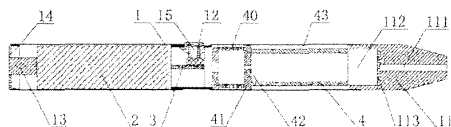
权利要求书 1 页 说明书 5 页 附图 6 页

(54) 发明名称

蒸发式电子香烟

(57) 摘要

本发明公开了一种蒸发式电子香烟,包括壳体(1)和设于壳体(1)内的电池(2)、控制单元(3),壳体(1)的一端设有吸嘴(11),壳体(1)上设有用于控制电热片(41)工作状态的控制开关(12),控制开关(12)与控制单元(3)相连,壳体(1)内还设有用于放置烟草组合物的烤箱(4),烤箱(4)上设有进气孔(42)和用于蒸发烟草组合物的电热片(41),烤箱(4)与吸嘴(11)连通,电池(2)通过控制单元(3)与电热片(41)电连接。本发明具有口感真实、吸烟时不产生一氧化碳及焦油、不产生二手烟、体积小巧、使用方便的优点。



1. 一种蒸发式电子香烟,包括壳体(1)和设于壳体(1)内的电池(2)、控制单元(3),所述壳体(1)的一端设有吸嘴(11),所述壳体(1)上设有用于控制电热片(41)工作状态的控制开关(12),所述控制开关(12)与控制单元(3)相连,其特征在于:所述壳体(1)内还设有用于放置烟草组合物的烤箱(4),所述烤箱(4)上设有进气孔(42)和用于蒸发烟草组合物的电热片(41),所述烤箱(4)与吸嘴(11)连通,所述电池(2)通过控制单元(3)与电热片(41)电连接。

2. 根据权利要求1所述的蒸发式电子香烟,其特征在于:所述烤箱(4)上设有用于检测烤箱(4)温度的温度传感器(43),所述温度传感器(43)与控制单元(3)相连,所述控制单元(3)在工作状态时根据温度传感器(43)检测的温度控制所述电热片(41)的加热状态使烤箱(4)的工作温度保持在180℃~240℃之间,当温度传感器(43)检测的温度到达240℃时控制单元(3)控制电热片(41)停止加热,当温度传感器(43)检测的温度低于180℃时控制单元(3)控制电热片(41)进行加热。

3. 根据权利要求2所述的蒸发式电子香烟,其特征在于:所述烤箱(4)为桶状,所述电热片(41)构成所述烤箱(4)的桶底,所述进气孔(42)设于所述电热片(41)上,所述壳体(1)上设有通孔(16),所述进气孔(42)与通孔(16)相连通。

4. 根据权利要求3所述的蒸发式电子香烟,其特征在于:所述控制单元(3)设于电池(2)和电热片(41)之间,所述控制单元(3)和电热片(41)之间设有用于隔热保护控制单元(3)并支承电热片(41)的隔热支撑云母片(40)。

5. 根据权利要求1或2或3或4所述的蒸发式电子香烟,其特征在于:所述吸嘴(11)上设有吸嘴孔(111),所述吸嘴(11)与壳体(1)套接,所述吸嘴(11)套接壳体(1)的一端设有与吸嘴孔(111)连通的凹槽(112),所述凹槽(112)与烤箱(4)的开口端相对布置且所述凹槽(112)与烤箱(4)的内腔连通,所述凹槽(112)的底部设有用于防止烟草组合物从吸嘴孔(111)漏出的镍丝网(113)。

6. 根据权利要求5所述的蒸发式电子香烟,其特征在于:所述控制单元(3)包括用于控制电热片(41)加热状态的开关电路(31),所述电热片(41)通过开关电路(31)与电源相连。

7. 根据权利要求6所述的蒸发式电子香烟,其特征在于:所述壳体(1)上设有USB充电接口(13),所述电池(2)为可充电的锂离子电池,所述控制单元(3)上设有用于调节充电电流和电压的充电电路,所述电池(2)通过所述充电电路与USB充电接口(13)相连。

8. 根据权利要求7所述的蒸发式电子香烟,其特征在于:所述充电电路为BUCK充电电路。

9. 根据权利要求8所述的蒸发式电子香烟,其特征在于:所述壳体(1)上设有用于指示所述充电电路充电状态的充电指示灯(14)和用于指示电热片(41)的加热状态的加热指示灯(15),所述充电指示灯(14)与USB充电接口(13)相连,所述加热指示灯(15)的与控制单元(3)相连。

10. 根据权利要求9所述的蒸发式电子香烟,其特征在于:所述电热片(41)为厚膜电热片。

蒸发式电子香烟

技术领域

[0001] 本发明涉及电子香烟，具体涉及一种利用蒸发的方式替代传统燃烧方式的电子香烟。

背景技术

[0002] 目前世界上有超过十亿的吸烟者，而抽烟的过程中产生的主要成分包括尼古丁、一氧化碳、焦油等，而香烟的有效成分是尼古丁，其他成分绝大部分都对人体有害，所以每年都会有很多人因为抽烟而死亡。所以许多公共场合都是禁止抽烟，甚至有些国家全民禁烟，但是对于抽烟成瘾的人又不得不抽烟，针对这种需求市场上出现了各式各样的电子香烟，但是电子香烟跟纸烟味道差别太大，依然不能满足吸烟者的需求。

发明内容

[0003] 本发明要解决的技术问题是提供一种口感真实、吸烟时不产生一氧化碳及焦油、不产生二手烟、体积小巧、使用方便的蒸发式电子香烟。

[0004] 为了解决上述技术问题，本发明采用的技术方案为：

一种蒸发式电子香烟，包括壳体和设于壳体内的电池、控制单元，所述壳体的一端设有吸嘴，所述壳体上设有用于控制电热片工作状态的控制开关，所述控制开关与控制单元相连，所述壳体内还设有用于放置烟草组合物的烤箱，所述烤箱上设有进气孔和用于蒸发烟草组合物的电热片，所述烤箱与吸嘴连通，所述电池通过控制单元与电热片电连接。

[0005] 作为上述技术方案的进一步改进：

所述烤箱上设有用于检测烤箱温度的温度传感器，所述温度传感器与控制单元相连，所述控制单元在工作状态时根据温度传感器检测的温度控制所述电热片的加热状态使烤箱的工作温度保持在 180℃～240℃之间，当温度传感器检测的温度到达 240℃时控制单元控制电热片停止加热，当温度传感器检测的温度低于 180℃时控制单元控制电热片进行加热。

[0006] 所述烤箱为桶状，所述电热片构成所述烤箱的桶底，所述进气孔设于所述电热片上，所述壳体上设有通孔，所述进气孔与通孔相连通。

[0007] 所述控制单元设于电池和电热片之间，所述控制单元和电热片之间设有用于隔热保护控制单元并支承电热片的隔热支撑云母片。

[0008] 所述吸嘴上设有吸嘴孔，所述吸嘴与壳体套接，所述吸嘴套接壳体的一端设有与吸嘴孔连通的凹槽，所述凹槽与烤箱的开口端相对布置且所述凹槽与烤箱的内腔连通，所述凹槽的底部设有用于防止烟草组合物从吸嘴孔漏出的镍丝网。

[0009] 所述控制单元包括用于控制电热片加热状态的开关电路，所述电热片通过开关电路与电源相连。

[0010] 所述壳体上设有 USB 充电接口，所述电池为可充电的锂离子电池，所述控制单元上设有用于调节充电电流和电压的充电电路，所述电池通过所述充电电路与 USB 充电接口

相连。

[0011] 所述充电电路为 BUCK 充电电路。

[0012] 所述壳体上设有用于指示所述充电电路充电状态的充电指示灯和用于指示电热片的加热状态的加热指示灯,所述充电指示灯与 USB 充电接口相连,所述加热指示灯的与控制单元相连。

[0013] 所述电热片为厚膜电热片。

[0014] 本发明具有下述优点:

1、本发明通过电热片加热烟草组合物蒸发形成雾滴供吸烟者吸食,通过蒸发烟草组合物替代传统电子香烟的燃烧烟液的形式,相对传统电子香烟而言具有口感真实的优点。

[0015] 2、本发明的壳体内还设有用于放置烟草组合物的烤箱,烤箱上设有用于蒸发烟草组合物的电热片和进气孔,电池通过控制单元与电热片电连接,通过电热片加热烟草组合物蒸发形成雾滴,通过蒸发的方式替代传统的燃烧方式,吸烟时不产生一氧化碳、焦油等有害物质,而且由于蒸发出来的是雾滴不是烟而且需要吸食才能吸出烟嘴外,不会产生二手烟,而且本发明仅有传统香烟大小,体积小巧、使用非常方便。

附图说明

[0016] 图 1 为本发明实施例的立体结构示意图。

[0017] 图 2 为本发明实施例的剖视结构示意图。

[0018] 图 3 为本发明实施例中控制单元及其外围电路的框架结构示意图。

[0019] 图 4 为本发明实施例中充电电路的电路原理示意图。

[0020] 图 5 为本发明实施例中加热指示灯的电路原理示意图。

[0021] 图 6 为本发明实施例中控制单元及其外围电路的电路原理示意图。

[0022] 图 7 为本发明实施例中开关电路的电路原理示意图。

[0023] 图 8 为本发明实施例中控制单元稳压电路的电路原理示意图。

[0024] 图 9 为本发明实施例中温度传感器的电路原理示意图。

[0025] 图例说明:1、壳体;11、吸嘴;111、吸嘴孔;112、凹槽;113、镍丝网;12、控制开关;13、USB 充电接口;14、充电指示灯;15、加热指示灯;16、通孔;2、电池;3、控制单元;31、开关电路;4、烤箱;40、隔热支撑云母片;41、电热片;42、进气孔;43、温度传感器。

具体实施方式

[0026] 如图 1、图 2 和图 3 所示,本实施例的蒸发式电子香烟包括壳体 1 和设于壳体 1 内的电池 2、控制单元 3,壳体 1 的一端设有吸嘴 11,壳体 1 上设有用于控制电热片 41 工作状态的控制开关 12,控制开关 12 与控制单元 3 相连,壳体 1 内还设有用于放置烟草组合物的烤箱 4,烤箱 4 上设有进气孔 42 和用于蒸发烟草组合物的电热片 41,烤箱 4 与吸嘴 11 连通,电池 2 通过控制单元 3 与电热片 41 电连接。在工作状态时,控制单元 3 控制电热片 41 发热将烟草组合物蒸发形成的雾滴,吸烟者通过吸嘴 11 吸食烟草混合液蒸发形成的雾滴,由于本实施例通过蒸发的方式替代传统的燃烧方式,由于蒸发出来的是雾滴而不是烟雾,因此不产生一氧化碳、焦油等有害物质,而且不吸烟时也不会产生二手烟,使用非常方便。

[0027] 本实施例中烟草组合物主要由烟草粉末和调和添加剂配制而成的半固态混合物,

烟草组合物在 $180^{\circ}\text{C} \sim 240^{\circ}\text{C}$ 的加热范围内蒸发形成雾滴而且不产生一氧化碳、焦油等有害物质。烟草组合物中,烟草粉末的粒度约为 1mm 左右,烟草粉末与调和添加剂的质量比可为 $(2 \sim 3) : 1$, 本实施例中烟草粉末与调和添加剂的质量比可为 $2 : 1$; 其中调和添加剂配制为混合溶液态, 调和添加剂包括用作混合溶液溶质的丙二醇和用作溶剂的甘油, 甘油与丙二醇的质量比可为 $(3 \sim 5) : 1$, 本实施例中甘油与丙二醇的质量比具体为 $3 : 1$ 。此外调和添加剂中还包含有天然香料, 天然香料的含量可根据需要进行调整, 本实施例中天然香料与甘油的质量比为 $1 : 3$ 。

[0028] 如图 1、图 2 和图 3 所示, 吸嘴 11 上设有吸嘴孔 111, 吸嘴 11 与壳体 1 套接, 吸嘴 11 套接壳体 1 的一端设有与吸嘴孔 111 连通的凹槽 112, 凹槽 112 与烤箱 4 的开口端相对布置且凹槽 112 与烤箱 4 的内腔连通, 凹槽 112 的底部设有用于防止烟草组合物从吸嘴孔 111 漏出的镍丝网 113。本实施例中, 由于凹槽 112 与烤箱 4 的开口端相对布置形成的内腔, 使得放置烟草组合物的空间更大, 一次性能够放置的烟草组合物更多, 镍丝网 113 则能够防止烤箱 4 内的烟草组合物从吸嘴孔 111 中漏出; 进气孔 42 的孔径大小为 0.5mm 左右, 能够防止烟草组合物中粒度约为 1mm 的烟草粉末从进气孔 42 中漏出。

[0029] 如图 1 和图 2 所示, 壳体 1 上设有 USB 充电接口 13, 电池 2 为可充电的锂离子电池, 控制单元 3 上设有用于调节充电电流和电压的充电电路, 电池 2 通过充电电路与 USB 充电接口 13 相连。电池 2 可以循环充电使用, 能够降低使用成本。此外, 电池 2 也可以根据需要采用其他类型的充电电池, 或者采用普通的碱性电池。

[0030] 如图 4 和图 6 所示, 本实施例的充电电路为 BUCK 充电电路, BUCK 充电电路的 PWM 控制端与 STC12C5204AD 单片机的 17 号引脚相连, BUCK 充电电路的 BAT+ 和 BAT- 与电池 2 相连。BUCK 充电电路为一种降压斩波电路, 相对传统的充电电路而言具有电路简单, 成本低, 充电效率高等优点。

[0031] 如图 1、图 2、图 3 和图 5 所示, 壳体 1 上设有用于指示充电电路充电状态的充电指示灯 14 和用于指示电热片 41 的加热状态的加热指示灯 15, 充电指示灯 14 与 USB 充电接口 13 相连, 加热指示灯 15 的与控制单元 3 相连。本实施例的充电指示灯 14 为与 USB 充电接口 13 相连的发光二极管, 加热指示灯 15 为具有双色显示功能的发光二极管。加热指示灯 15 包括 LED3 和 LED4 共两个发光二极管, 其中 LED3 为红色发光二极管, LED4 为绿色发光二极管, 当 LED3 发光时代表当前烤箱 4 的温度低于 180°C , 当 LED4 发光时代表当前烤箱 4 的温度处于 $180^{\circ}\text{C} \sim 240^{\circ}\text{C}$ 的区间内。

[0032] 如图 2、图 3 和图 6 所示, 本实施例中控制单元 3 为基于 STC12C5204AD 单片机实现的控制电路板, STC12C5204AD 单片机内置 8 路 10bit AD 采集模块可以将温度、电压等模拟信号转换为数字信号。STC12C5204AD 单片机的 4 号引脚与 LED3 相连, STC12C5204AD 单片机的 5 号引脚与 LED4 相连。控制开关 12 即为图中的 S1, 与 STC12C5204AD 单片机的 23 号引脚相连; STC12C5204AD 单片机通过 26 号引脚 (CONT1) 与开关电路 31 相连, 通过开关电路 31 来控制电热片 41。

[0033] 如图 2、图 3 和图 7 所示, 本实施例的控制单元 3 包括用于控制电热片 41 加热状态的开关电路 31, 电热片 41 通过开关电路 31 与电源相连, 此外控制单元 3 也可以通过驱动电路的形式来直接驱动电热片 41 的加热状态。本实施例中, 开关电路 31 基于高电平驱动 MOS 管 Q2 实现, MOS 管 Q2 的控制端通过电阻 R3 与 STC12C5204AD 单片机的 26 号引脚

相连。按一下开关 S1, 则 STC12C5204AD 单片机的 26 号引脚由低电平变为高电平, 从而驱动 MOS 管 Q2 导通, 电热片 41 通电并开始发热。当温度传感器 43 检测到温度达到设置温度后, STC12C5204AD 单片机的 26 号引脚变为低电平, MOS 管 Q2 断开停止加热。

[0034] 如图 8 所示, 本实施例中控制单元 3 采用 HT7530 稳压 IC 芯片 (U1) 作为稳压电路实现电源供给, HT7530 稳压 IC 芯片将电池电压稳定在 3V 通过 OUT+ 引脚给 STC12C5204AD 单片机供电, 同时起到为单片机内部的 AD 采集模块提供电压基准的作用。

[0035] 如图 2 所示, 本实施例的控制单元 3 设于电池 2 和电热片 41 之间, 控制单元 3 和电热片 41 之间设有用于隔热保护控制单元 3 并支承电热片 41 的隔热支撑云母片 40。隔热支撑云母片 40 能够对控制单元 3 起到隔热保护的作用, 防止电热片 41 的热量传递到控制单元 3 影响电路板上的电路元器件; 同时隔热支撑云母片 40 还对电热片 41 以及烤箱 4 起到支撑固定的作用。

[0036] 如图 2 所示, 本实施例的烤箱 4 为桶状, 电热片 41 构成烤箱 4 的桶底, 进气孔 42 设于电热片 41 上, 壳体 1 上设有通孔 16, 进气孔 42 与通孔 16 相连通, 通孔 16 设于壳体 1 上对应隔热支撑云母片 40 的位置; 当吸烟时, 壳体 1 外部的空气从设于壳体 1 上的通孔 16 进去壳体 1 的内腔, 然后通过进气孔 42 进入烤箱 4 的内腔, 将烤箱 4 内腔中蒸发形成的雾滴通过吸嘴孔 111 带入吸烟者的口腔。本实施例中, 烤箱 4 的桶壁采用钢管制成, 构成烤箱 4 桶底的电热片 41 与构成烤箱 4 桶壁的钢管焊接成桶状。本实施例中, 电热片 41 为厚膜电热片, 此外电热片 41 也可以根据需要采用其他类型的加热器。

[0037] 如图 2 和图 9 所示, 烤箱 4 上设有用于检测烤箱 4 温度的温度传感器 43, 温度传感器 43 与控制单元 3 相连, 控制单元 3 在工作状态时根据温度传感器 43 检测的温度控制电热片 41 的加热状态使烤箱 4 的工作温度保持在 $180^{\circ}\text{C} \sim 240^{\circ}\text{C}$ 之间, 当温度传感器 43 检测的温度到达 240°C 时控制单元 3 控制电热片 41 停止加热, 当温度传感器 43 检测的温度低于 180°C 时控制单元 3 控制电热片 41 进行加热。温度传感器 43 为负温度系数的热敏电阻 RT (负温度系数的热敏电阻 RT 的阻值与温度成反比, 温度越高则阻值越低), 温度传感器 43 设于烤箱 4 的桶壁上, STC12C5204AD 单片机通过 18 号引脚 (ADCT) 采集热敏电阻 RT 的电压, 通过输入的电压计算出热敏电阻 RT 的阻值, 再查表得出温度。当温度低于 180°C 时打开电热片 41 进行加热, 当温度高于 240°C 时关闭电热片 41 停止加热, 采用这种方法来达到恒温控制的效果, 从而使烤箱 4 的工作温度保持在 $180^{\circ}\text{C} \sim 240^{\circ}\text{C}$ 之间, 防止烟草组合物受热产生一氧化碳、焦油等有害物质。

[0038] 本实施例的工作过程如下:

(1) 充电: 需要充电时将 DC-5V 电源插头插到壳体 1 底部的 USB 充电接口 13 上, USB 充电接口 13 处的充电指示灯 14 则立即亮起, 同时 BUCK 充电电路控制电池 2 的充电电流和充电电压开始给电池 2 充电。充电过程中, 控制单元 3 上的单片机采集电池 2 的电量, 充电过程中充电指示灯 14 保持亮起, 当电池 2 的电量充满后控制单元 3 立即控制 BUCK 充电电路停止给电池 2 充电, 同时控制充电指示灯 14 熄灭。

[0039] (2) 使用: 取适量的烟草组合物放入烤箱 4 内并将本实施例装配好, 按一下控制开关 12, 则控制单元 3 控制电热片 41 通电开始加热, 此时加热指示灯 15 显示为红色, 同时控制单元 3 上的单片机通过温度传感器 43 获取烤箱 4 的温度。当温度传感器 43 检测到烤箱 4 的温度加热到 240°C 时, 控制单元 3 上的单片机控制电热片 41 停止加热, 同时控制加热指

示灯 15 的显示由红色变为绿色 ; 当温度传感器 43 检测到烤箱 4 的温度低于 180℃ 时控制单元 3 上的单片机控制电热片 41 通电加热, 同时控制加热指示灯 15 的显示由绿色变为红色 ; 这样循环往复, 使烤箱 4 的工作温度保持在 180℃ ~ 240℃ 之间, 烟草组合物在该温度区间内蒸发产生雾滴, 同时不会产生一氧化碳、焦油等有害物质 ; 而且不吸时烟草组合物蒸发形成的雾滴不会流出吸嘴 11 的外部形成二手烟。

[0040] 以上所述仅是本发明的优选实施方式, 本发明的保护范围并不仅局限于上述实施例, 凡属于本发明思路下的技术方案均属于本发明的保护范围。应当指出, 对于本技术领域的普通技术人员来说, 在不脱离本发明原理前提下的若干改进和润饰, 这些改进和润饰也应视为本发明的保护范围。

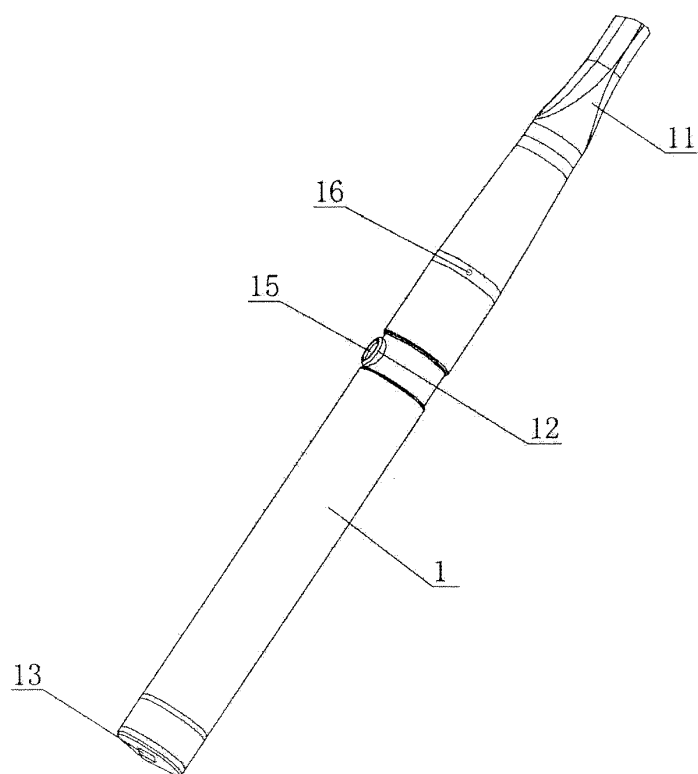


图 1

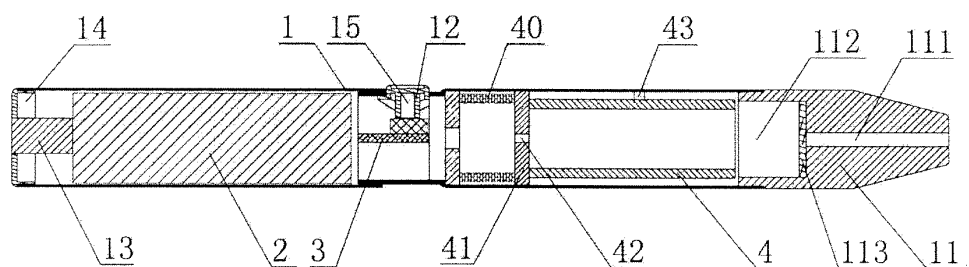


图 2

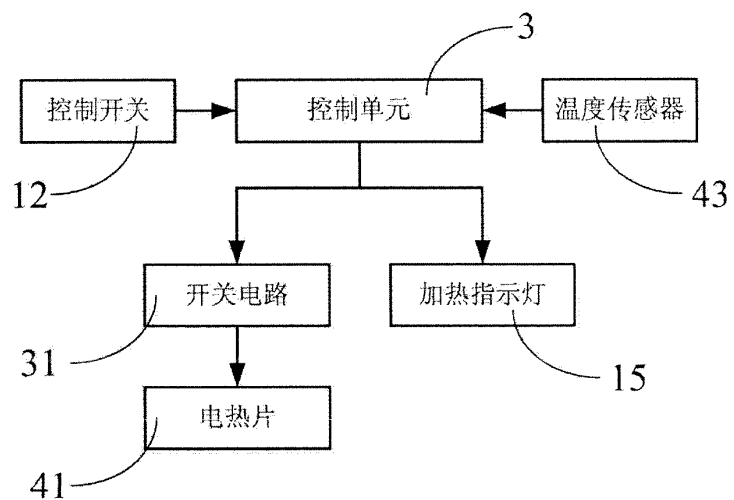


图 3

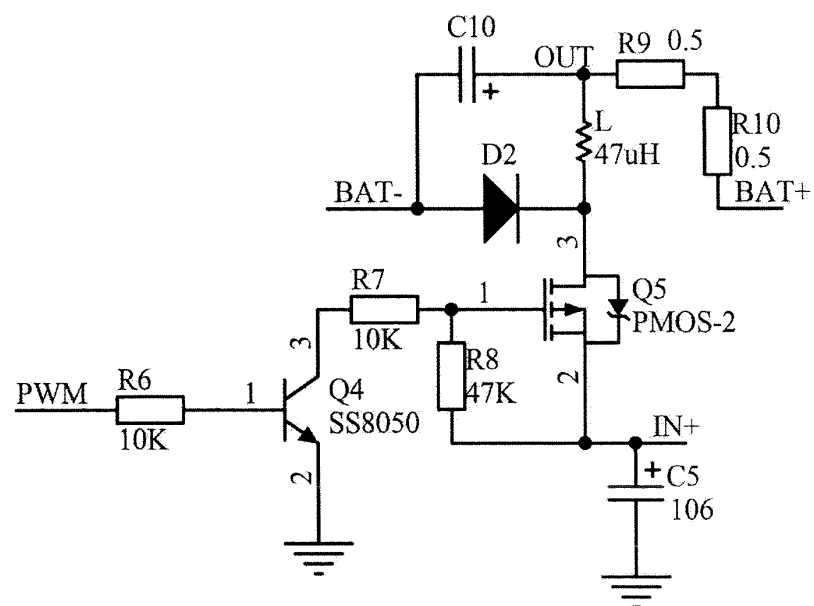


图 4

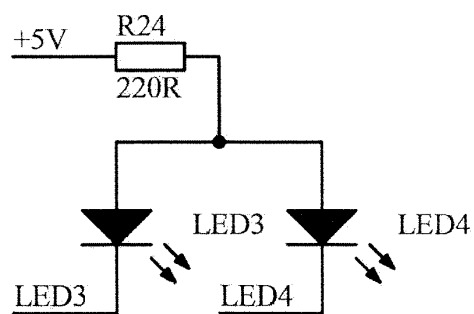


图 5

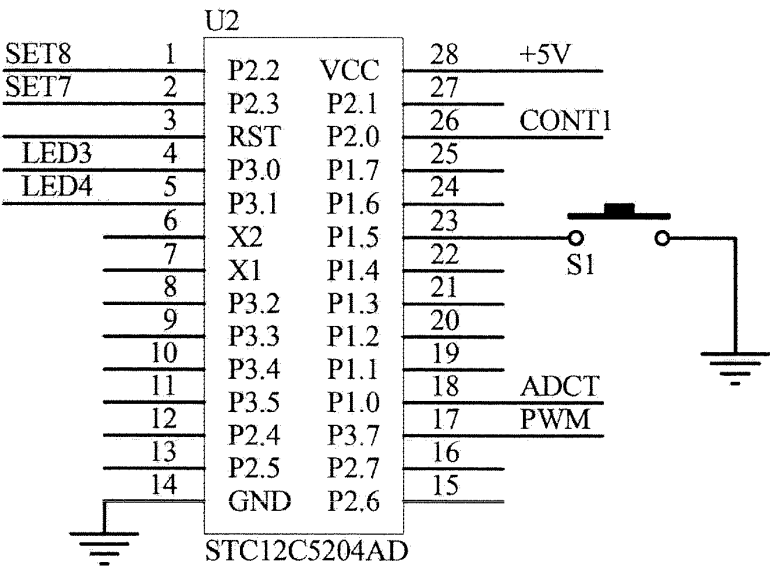


图 6

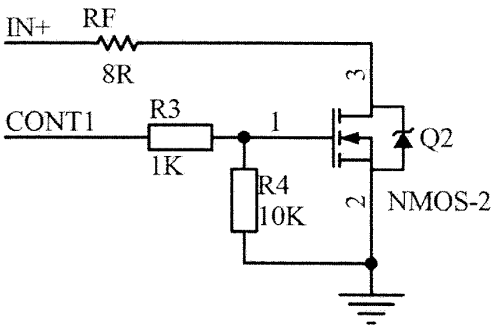


图 7

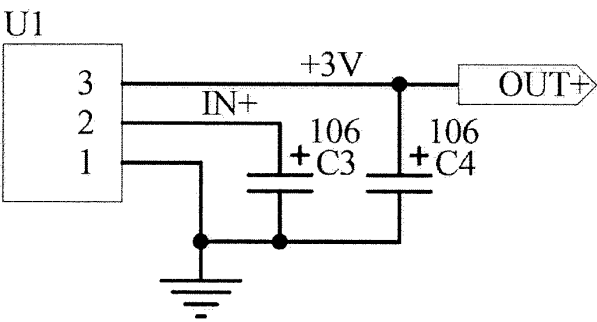


图 8

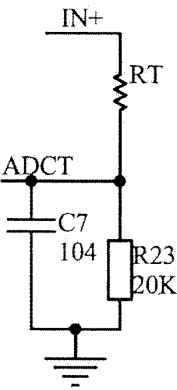


图 9

Patents

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 Inventors [龙功运](#)
 Applicant [龙功运](#)
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External Links: [SIPO](#), [Espacenet](#)

Evaporation type electronic cigarette
CN 102754924 A

Abstract

The invention discloses an evaporation type electronic cigarette which comprises a casing (1), a battery (2) and a control unit (3), wherein the battery (2) and the control unit (3) are arranged in the casing (1). One end of the casing (1) is provided with a suction nozzle (11), a control switch (12) for controlling a working state of an electric heating piece (41) is arranged on the casing (1) and is connected with the control unit (3), an oven (4) for placing tobacco compositions is further arranged in the casing (1), an air inlet hole (42) and the electric heating piece (41) for evaporating the tobacco compositions are arranged on the oven (4), the oven (4) is communicated with the suction nozzle (11), and the battery (2) is electrically connected with the electric heating piece (41) through the control unit (3). The evaporation type electronic cigarette has the advantages of being real in taste, small in volume and convenient to use, free of carbon monoxide, tar and passive smoking in combustion.

Claims(10) translated from [Chinese](#)

A method of evaporative electronic cigarette, comprising a housing (I) and located in the housing (I) the battery (2), the control unit Wu (3), said housing (I) with one end of the nozzle (11), said housing (I) is provided for controlling the heater (41) operating state control switch (12), said control switch (12) and the control unit (3) is connected, characterized in that: the said housing (I) is also a composition for placing tobacco oven (4), said oven (4) is provided with inlet port (42) and means for heating the composition evaporation tobacco sheet (41), The oven (4) and the nozzle (11) communicates, said battery (2) by a control unit (3) and Heater (41) are electrically connected.

(2) as claimed in claim 1 wherein evaporative electronic cigarette, characterized in that: the oven (4) is provided for detecting the oven (4) a temperature sensor (43), said temperature sensor (43) and the control unit (3) is connected to said control unit (3) in the working condition of the temperature sensor (43) detects the temperature control of the heater (41) heating state of the oven (4) the operating temperature maintained at 180 ° C ~ 240 ° C, and when the temperature sensor (43) detects the temperature reaches 240 ° C when the control unit (3) controls the thermal plate (41) to stop heating, when the temperature sensor (43) detects a temperature below 180 °C to control unit (3) controls the thermal sheet (41) for heating.

3 according to claim 2, wherein said evaporative electronic cigarette, characterized in that: the oven (4) of the barrel, said heater (41) constituting said oven (4) of the barrel end, the intake air hole (42) provided in the heating plate (41), said housing (1) is provided with a through hole (16), said air inlet port (42) and the through hole (16) connected to pass.

As claimed in claim 3, wherein the evaporative electronic cigarette, characterized in that: said control unit (3) provided in the battery (2) and the heater (41), said control unit (3) and Heater (41) is provided between heat protection control unit (3) and supporting the heating plate (41) supporting mica insulation (40).

5 according to claim 1 or 2 or 3 or 4, wherein the evaporative electronic cigarette, characterized in that: said nozzle (11) is provided with a nozzle hole (111), the nozzle (11) and the shell Body (1) socket, the nozzle (11) socket housing (1) and the nozzle end of a hole (111) communicating the recess (112), said recess (112) and the oven (4) disposed opposite the open end and said recess (112) and the oven (4) communicating the inner cavity, said recess (112) at the bottom of a composition for preventing tobacco from the nozzle hole (111) leakage nickel screen (113).

As claimed in claim 5, wherein said electronic cigarette evaporative, wherein: said control unit (3) comprises means for controlling heating plate (41) a heated state switching circuit (31), said heater (41) through the switching circuit (31) connected to the power.

As claimed in claim 6, wherein the electronic cigarette evaporative, wherein: said housing (1) is provided with a USB charging port (13), said battery (2) is a rechargeable lithium ion battery, the the control unit (3) is provided for adjusting the charging current and voltage charging circuit, said battery (2) through said charging circuit and the USB charging port (13) is connected.

As claimed in claim 7, wherein the evaporative electronic cigarette, wherein: said charging circuit for the BUCK charging circuit.

(10) according to claim 8, wherein the electronic cigarette evaporation, characterized in that: said housing (1) is provided with a charging circuit for indicating the state of charge of said charge indicator (14) and means for indicating Heater (41) of the heating state of the heating indicator (15), said charge indicator (14) with a USB charging port (13) connected to said heating indicator (15) with the control unit (3) is connected.

A process according to claim 9, wherein the evaporative electronic cigarette, characterized in that: said heater (41) is a thick film heater.

Description translated from Chinese

Electronic cigarette evaporative

Technology

[0001] The present invention relates to electronic cigarettes, specifically relates to a means of evaporation burning alternative to traditional methods of electronic cigarettes.

BACKGROUND

[0002] Today there are more than one billion smokers, and smoke produced during the main ingredients include nicotine, carbon monoxide, tar, etc., and the active ingredient in cigarettes is nicotine, most of the other ingredients are harmful, so Every year there are a lot of people died because of smoking. Therefore, smoking is prohibited in many public places, and even some national referendum smoking, but smoking addicts had to smoke, appeared on the market demand for such a wide range of electronic cigarettes, electronic cigarettes with cigarettes but taste the difference too, still can not meet the needs of smokers.

SUMMARY OF THE INVENTION

[0003] The present invention solves the technical problem is to provide a true taste of smoking does not produce carbon monoxide and tar, no smoke, compact, easy to use evaporative electronic cigarettes.

[0004] In order to solve the above problems, the present invention adopts the technical scheme is:

One kinds of evaporative electronic cigarette, comprising a housing and a battery located in the housing, a control unit, a nozzle at one end of said housing, said housing is provided with a heater for controlling the operating state of the control switch, the said control switch is connected with the control unit, the housing is also a composition for placing tobacco oven, the oven is provided with inlet port and means for heating the composition evaporate tobacco sheet, said nozzle communicating with the oven , the battery through the control unit is electrically connected with the heater.

[0005] As a further improvement of the technical proposal:

The oven oven temperature for detecting a temperature sensor, the temperature sensor is connected to the control unit, the control unit in the working condition detected by the temperature sensor controls the heater temperature heating state of the operating temperature of the oven maintained at $180^{\circ}\text{C} \sim 240^{\circ}\text{C}$, and when the temperature sensor detects the temperature reaches at 240°C the control unit controls the heater stops heating when the temperature sensor detects a temperature below 180°C when the control unit controls the heater for heating .

[0006] for the barrel of the oven, the oven heater constitutes the bottom of the barrel, said air inlet port is provided on the heater, said housing has a through hole, said air inlet port and through-hole.

[0007] The control unit is provided between the battery and the heater, said control unit and an electric insulating protective film is provided between the control unit and supporting the heater support mica insulation.

[0008] The nozzle is provided with a nozzle hole of the nozzle and the socket housing, one end of the nozzle socket housing has a recess communicating with the nozzle hole, said recess and disposed opposite the open end of the oven and the oven cavity and said groove communicates with the bottom of said recess for preventing tobacco compositions leaking from the nozzle hole nickel screen.

[0009] The control unit includes a heater for controlling the heating state of the switching circuit, said heater is connected to the power supply through the switching circuit.

[0010] The housing is provided with a USB charging port, the battery is a rechargeable lithium-ion battery, said control unit is provided for adjusting the charging current and voltage charging circuit, the battery through the charging circuit with USB charging connector.

[0011] BUCK of the charging circuit is a charging circuit.

[0012] provided on said housing for indicating charge status of the charging circuit and the charging indicator is used to indicate the state of heater heating heat indicator, the charging indicator light and USB charging port is connected to the heating indicator is connected to the control unit.

[0013] The electric heater is thick slice.

[0014] The present invention has the following advantages:

I, the present invention through the heater heating the tobacco evaporation of the droplet composition for smokers and smoking, the tobacco composition by evaporation alternative to traditional electronic cigarette burning in the form of liquid smoke, compared to the traditional electronic cigarette, with a taste of the real advantages.

[0015] 2, the housing of the present invention is also a composition for placing the tobacco in the oven, the oven is provided for evaporating the tobacco composition and inlet heater, the battery via the control unit and heater electrically connected through electric heating the tobacco sheet droplet evaporation of the composition, by means of evaporation alternative to the traditional way of burning, smoking does not produce carbon monoxide, tar and other harmful substances, and out of the droplet due to evaporation and need not smoke cigarette smoking in order to suck out above, is not will produce second-hand smoke, and the invention is only the size of traditional cigarettes, compact and easy to use.

BRIEF DESCRIPTION

[0016] Figure I of the present invention schematic perspective view of an embodiment.

[0017] Figure 2 is a sectional view of embodiment of the invention structure diagram.

[0018] Figure 3 is an embodiment of the invention the control unit and the peripheral circuit schematic diagram of frame structure.

[0019] Figure 4 is an embodiment of the invention a circuit schematic diagram of the charging circuit.

[0020] Figure 5 is an embodiment of the invention a circuit schematic diagram of the heating lamp.

[0021] Figure 6 is a embodiment of the invention the control unit and its peripheral circuits of the circuit diagram.

[0022] Figure 7 is an embodiment of the invention a circuit schematic diagram of the switching circuit.

[0023] Figure 8 is an embodiment of the invention the control unit circuit schematic diagram of the regulator circuit.

[0024] Figure 9 is an embodiment of the invention a circuit schematic diagram of the temperature sensor.

[0025] Legend: 1, shell; 11, nozzle; 111, nozzle holes; 112, the groove; 113, nickel wire mesh; 12, control switches; 13, USB charging port; 14, charging indicator light; 15, the heating light; 16, the through hole; 2, the battery; 3, the control unit; 31, open

OFF circuit; 4, oven; 40, mica insulation support; 41, heater; 42 intake; 43, the temperature sensor.

Specific embodiments

[0026] Figure 1, as shown in Figure 2 and Figure 3, this embodiment includes a housing evaporative electronic cigarette located in the housing 1 and the battery 2, the control unit 3, the housing has a suction end of 1 nozzle 11, the case 1 is provided with a heater 41 for controlling the operating state of the control switch 12, a control switch 12 is connected to the control unit 3, the housing 1 is also a composition for placing tobacco oven 4, 4 provided on the oven inlet 42 and a tobacco composition for evaporating heating sheet 41, the nozzle 11 communicates with the oven 4, cell 2 by the control unit 3 and the heater 41 are electrically connected. In operation, the control unit 3 controls the heater 41 heating the tobacco droplet evaporation of the composition, by the suction nozzle 11 smokers smoked tobacco droplet evaporation of the mixture, of this embodiment by means of evaporation to replace traditional combustion, due to evaporation out of the mist instead of smoke, so no carbon monoxide, tar and other harmful substances, and do not smoke when it does not produce smoke, use very convenient.

[0027] This embodiment mainly by the composition of tobacco in the tobacco powder and reconcile additives prepared from semi-solid mixture of the tobacco composition is 180 ° C ~ 240 ° C within the range of the heating and evaporation of the droplet does not produce carbon monoxide, tar and other harmful substances. Tobacco composition, the tobacco powder particle size of about 1mm, tobacco powder and additives, the mass ratio of harmonic may be (2-3): 1, in this embodiment the tobacco powder and the weight ratio of additive to reconcile for 2: 1; wherein the mixed solution is formulated additive harmonic state, harmonic additive comprises a mixed solution of the solute used as the solvent of propylene glycol and glycerol, propylene glycol and the mass ratio may be (3-5): 1, in this embodiment of glycerol and propylene glycol Specifically mass ratio of 3: 1. Furthermore harmonic additive also contains natural spices, natural flavors content can be adjusted according to need, in the present embodiment, the natural flavor and the mass ratio of glycerin 1: 3.

[0028] Figure 1, Figure 2 and Figure 3, the suction nozzle 11 is provided with a nozzle hole 111, the suction nozzle 11 and the socket casing 1, the suction nozzle 11 the socket end of the housing is provided with a suction 1 nozzle hole 111 communicating the groove 112, the groove 112 and the oven 4 and is disposed opposite the open end of the groove 112 communicates with the oven cavity 4, the groove 112 with the bottom of the composition for preventing tobacco leaking from the nozzle holes 111 nickel wire mesh 113. In this embodiment, since the recess 112 opposite the open end of the oven 4 to form the cavity disposed so that the tobacco composition placed more space, one composition can be placed more tobacco, nickel screen 113 can be prevented 4 oven from the tobacco composition in leakage nozzle holes 111; inlet port 42 is a pore size of 0.5 μm, so, the composition can be prevented tobacco particle size of about 1 μm tobacco powder leakage from the inlet port 42.

[0029] Figure 1 and Figure 2, the casing is provided with a USB charging port 13, the battery 2 is a rechargeable lithium ion battery, the control unit 3 is provided for adjusting the charging current and voltage charging circuit, the battery 2 through the charging circuit 13 is connected with a USB charging port. Rechargeable battery 2 can be used to reduce the cost. In addition, the battery 2 may also need to use other types of rechargeable batteries, or to use ordinary alkaline batteries.

[0030] Figure 4 and Figure 6, the charging circuit of this embodiment of the charging circuit BUCK, BUCK charging circuit STC12C5204AD PWM control terminal connected to the pin 17 of the microcontroller, BUCK charging circuit BAT+ and BAT- and battery 2 is connected. BUCK charging circuit as a step-down chopper circuit, compared to conventional charging circuit having a circuit in terms of simple, low cost, high efficiency charging.

[0031] Figure 1, Figure 2, Figure 3 and Figure 5, the housing 1 is provided to indicate the charging state of the charging circuit 14 and the charge indicator 41 for indicating the heater lamp 15 heating a heated state The charging indicator 14 is connected with a USB charging port 13, the heating lamp 15 is connected with the control unit 3. Charge indicator of the present embodiment 14 is connected with USB charging interface 13 of the light emitting diodes, the heating lamp 15 to have a color display LEDs. Heating LED3 and LED4 LED 15 includes two light emitting diodes of which the red light-emitting diodes LED3, LED4 for the green light emitting diode emits light when LED3 4 represents the current temperature of the oven is lower

than 180 ° C, when the oven LED4 emits light of current 4 the temperature is 180 ° C ~ 240 ° C within the range.

[0032] Figures 2, 3 and 6, in the present embodiment, the control unit 3 is based STC12C5204AD MCU control circuit board, STC12C5204AD microcon-8 IObit AD acquisition module can be temperature, voltage analog signal a digital signal. STC12C5204AD microcontroller the 4th pin LED3 connected, STC12C5204AD microcontroller pin 5 is connected with LED4. Control switch 12 is diagram SI, and STC12C5204AD microcontroller 23 connected to the pin; STC12C5204AD microcontroller through the 26th pin (CONT1) and the switching circuit 31 is connected through the switching circuit 31 to control the heater 41.

[0033] Figure 2, Figure 3 and Figure 7, this embodiment includes a control unit 3 for controlling the heater 41 heating-state switch circuit 31, heater 31 through the switching circuit 41 is connected to the power supply, in addition to the control unit 3 through the drive circuit can be driven directly in the form of heated state of heater 41. In this embodiment, the switching circuit 31 based on the high drive implementation of the MOS transistor Q2, MOS transistor Q2 is a control terminal via a resistor R3 and STC12C5204AD connected to pins 26 of the microcontroller. Click the switch SI, then STC12C5204AD microcontroller 26 pin from low to high, thereby driving MOS transistor Q2 is turned on, heater 41 is energized and begin to heat. When the temperature sensor 43 detects the temperature reaches the set temperature, STC12C5204AD microcontroller 26 pin goes low, MOS transistor Q2 is off to stop heating.

[0034] Figure 8 shows, in this embodiment the control unit 3 using HT7530 regulator IC chip (UI) is supplied as a voltage supply circuit, HT7530 cell voltage regulator IC chip will stabilize at 3V to STC12C5204AD pin through OUT + MCU power supply, also play for the internal microcontroller AD acquisition module provides voltage reference role.

[0035] Figure 2, the present embodiment is provided in the battery control unit 3 and the heater 41 of 2, the control unit 3 and the heater heat shield 41 is provided between the control unit 3 and supports the heater 41 mica insulation support 40. Mica insulating support 40 of the control unit 3 can play a role in protection insulation, to prevent heating of the heat transfer sheet 41 to the control unit 3, a circuit board components affected; while mica insulating support sheet 40 is also of the heating 41 and the fixing oven 4 play a supporting role.

[0036] Figure 2, the present embodiment 4 of the barrel oven, electric oven sheet 41 constituting the bottom of the barrel 4, into the hole 42 is provided in the heater 41, the housing is provided with a through-hole 16 I, inlet 42 is connected through the through holes 16, through hole 16 provided in the corresponding housing I mica insulating support 40 position; when smoke, the housing I provided in the outside air from the through-hole housing I I, into the housing cavity 16, and then through the inlet 42 into the oven cavity 4, the oven cavity 4 formed by evaporation of the droplet in the nozzle hole 111 through the mouth into the smoker. In this embodiment, four bucket wall oven made of steel pipe to form an electric oven 4 barrel end piece 41 and constitute oven 4 steel welded into the barrel of the tank wall. In this embodiment, electric heater 41 is a thick film, in addition to heater 41 may also need to use other types of heaters.

[0037] Figure 2 and Figure 9, the oven 4 is 4 for detecting a temperature of the oven temperature sensor 43, temperature sensor 43 is connected to the control unit 3, the control unit 3 is in the working state, the temperature sensor 43 detects the temperature of the control heater 41 is heated state to the operating temperature of the oven 4 maintained at $180^{\circ}\text{C} \sim 240^{\circ}\text{C}$, and when the temperature sensor 43 detects the temperature reaches 240°C when the control unit 3 controls the heater 41 stops heating when the temperature sensor 43 detects the temperature below 180°C when the control unit 3 controls the heater 41 for heating. Temperature sensor 43 is a negative temperature coefficient thermistor RT (negative temperature coefficient thermistor resistance RT is inversely with temperature, the higher the resistance, the lower the temperature), a temperature sensor 43 located in the barrel wall on the oven 4, STC12C5204AD microcontroller through the 18th pin (ADCT) collected thermistor RT voltage input voltage is calculated through the thermistor resistance RT, and then look-up table derived temperatures. When the temperature is below 180°C the heater 41 is heated to open when the temperature at 240°C closed heating heater 41 is stopped, the use of this method to achieve the effect of temperature control, so that the operating temperature of the oven kept at $4\ 180^{\circ}\text{C} \sim 240^{\circ}\text{C}$ between the heated composition to prevent the tobacco to produce carbon monoxide, tar and other harmful substances.

[0038] The operation of this embodiment is as follows:

(I) Charging: Charging needed when the DC-5V power supply plug into the bottom of the housing I USB charging port 13, USB charging port 13 of the charge indicator 14 is lit immediately, control the battery charging circuit while BUCK 2 charge current and charge voltage begins to charge the battery 2. Charging process, the control unit 3 SCM Acquisition battery 2 battery, the charging process the charging indicator 14 remains lit when the battery is fully charged after 2 immediate control of the control unit 3 BUCK charging circuit stops charging the battery 2, while controlling Charging indicator 14 is off.

[0039] (2) Use: Take appropriate amount of tobacco compositions within the oven 4 and assembled this embodiment, click the control switch 12, the control unit 3 controls the heater 41 is energized start heating, then heat indicator 15 is shown in red, while the control unit 3 on the microcontroller through the temperature sensor 43 to obtain the temperature of the oven 4. When the temperature sensor 43 detects the temperature of the oven 4 is heated to 240°C , the control unit 3 of the SCM control heater 41 stop heating, heating lamp 15 while controlling the display changes from red to green; when the temperature sensor 43 detects 4 Oven temperature below 180°C when the control unit 3 controls the chip heating heater 41 is energized, while controlling the display of the heating lamp 15 from green to red; this cycle, the working temperature of the oven 4 is maintained at $180^{\circ}\text{C} \sim 240^{\circ}\text{C}$ between the tobacco composition is produced by evaporation of the droplet temperature range, but does not produce carbon monoxide, tar and other harmful substances; And when you do not smoke tobacco composition is formed by evaporation of the droplet does not flow nozzle 11 formed outside the smoke.

[0040] The above description is only preferred embodiments of the present invention, the scope of the present invention is not limited to the embodiment described above, where a part of the present invention is the technical solution idea of the present invention belong to the scope of protection. It should be noted that for the technical field of ordinary skill, without departing from

the principle of the invention under the premise of improvements and modifications, these improvements and modifications should also be regarded as the protection scope of the present invention.

Referenced by

Citing Patent	Filing date	Publication date	Applicant	Title
<u>WO2014047953A1</u> *	Sep 29, 2012	Apr 3, 2014	Wu Changming	Electronic smoking device

* Cited by examiner

Classifications

International Classification A24F47/00

Legal Events

Date	Code	Event	Description
Dec 19, 2012	C10	Request of examination as to substance	
Oct 31, 2012	C06	Publication	

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: Adam Bowen

Serial Number: 14/271,071

Filing Date: May 6, 2014

Title: NICOTINE SALT FORMULATIONS
FOR AEROSOL DEVICES AND
METHODS THEREOF

Group Art Unit: 1747

Examiner: Not assigned

CONFIRMATION NO: 6078

FILED ELECTRONICALLY ON: November 26, 2014

Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

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UNDER 37 CFR §1.97

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Respectfully submitted,

WILSON SONSINI GOODRICH & ROSATI

Dated: 11/26/2014

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PUBLICATION NOTICE



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				Application Number	14/271,071
				Filing Date	May 6, 2014
				First Named Inventor	Adam Bowen
				Art Unit	1747
				Examiner Name	Not assigned
Sheet	1	of	1	Attorney Docket Number	35196-713.201

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number Number-Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1.	US 2014/0345635	11/27/2014	Rabinowitz et al.	

U.S. UNPUBLISHED PATENT APPLICATIONS					
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International Application Number:	
Confirmation Number:	6078
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First Named Inventor/Applicant Name:	Adam Bowen
Customer Number:	21971
Filer:	Kristin J. Havranek
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: Adam Bowen

Serial Number: 14/271,071

Filing Date: May 6, 2014

Title: NICOTINE SALT FORMULATIONS
FOR AEROSOL DEVICES AND
METHODS THEREOF

Group Art Unit: 1747

Examiner: Not assigned

CONFIRMATION NO: 6078

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The Examiner is requested to review the information provided and to make the information of record in the above-identified application. The Examiner is further requested to initial and return the attached PTO/SB/08 in accordance with MPEP §609.

The right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered, is hereby reserved.

This statement is not intended to represent that a search has been made or that the information cited in the statement is, or is considered to be, prior art or material to patentability as defined in §1.56.

- A. ☒ 37 CFR §1.97(b). This Information Disclosure Statement should be considered by the Office because:
- ☐ (1) It is being filed within 3 months of the filing date of a national application and is other than a continued prosecution application under §1.53(d);
-- OR --
 - ☐ (2) It is being filed within 3 months of entry of the national stage as set forth in §1.491 in an international application;
-- OR --
 - ☒ (3) It is being filed before the mailing of a first Office action on the merits;
-- OR --
 - ☐ (4) It is being filed before the mailing of a first Office action after the filing of a request for continued examination under §1.114.
- B. ☐ 37 CFR §1.97(c). Although this Information Disclosure Statement is being filed after the period specified in 37 CFR §1.97(b), above, it is filed before the mailing date of the earlier of (1) a final office action under §1.113, (2) a notice of allowance under §1.311, or (3) an action that otherwise closes prosecution on the merits, this Information Disclosure Statement should be considered because it is accompanied by one of:
- ☐ a statement as specified in §1.97(e) provided concurrently herewith;
-- OR --
 - ☐ a fee of \$180.00 as set forth in §1.17(p) authorized below, enclosed, or included with the payment of other papers filed together with this statement.
- C. ☐ 37 CFR §1.97(d). Although this Information Disclosure Statement is being filed after the mailing date of the earlier of (1) a final office action under §1.113 or (2) a notice of allowance under §1.311, it is being filed before payment of the issue fee and should be considered because it is accompanied by:
- i. a statement as specified in §1.97(e);
-- AND --
 - ii. a fee of \$180.00 as set forth in §1.17(p) is authorized below, enclosed, or included with the payment of other papers filed together with this Statement.
- D. ☐ 37 CFR §1.97(e). Statement.
- ☐ A statement is provided herewith to satisfy the requirement under 37 CFR §§1.97(c);
-- AND/OR --
 - ☐ A statement is provided herewith to satisfy the requirement under 37 CFR §§1.97(d);
-- AND/OR --
 - ☐ A copy of a dated communication from a foreign patent office clearly showing that the information disclosure statement is being submitted within 3 months of the filing date on the communication is provided in lieu of a statement under 37 C.F.R. § 1.97(e)(1) as provided for under MPEP 609.04(b) V.
- E. ☐ Statement Under 37 C.F.R. §1.704(d). Each item of information contained in the information disclosure statement was first cited in a communication from a foreign patent office in a counterpart application that was received by an individual designated in § 1.56(c) not more than thirty (30) days prior to the filing of this information disclosure statement. This statement is made pursuant to the

requirements of 37 C.F.R. §1.704(d) to avoid reduction of the period of adjustment of the patent term for Applicant(s) delay.

F. ☒ 37 CFR §1.98(a)(2). The content of the Information Disclosure Statement is as follows:

☐ Copies of each of the references listed on the attached Form PTO/SB/08 are enclosed herewith.

-- OR --

☒ Copies of U.S. Patent Documents (issued patents and patent publications) listed on the attached Form PTO/SB/08 are NOT enclosed.

-- AND/OR --

☒ Copies of Foreign Patent Documents and/or Non Patent Literature Documents listed on the attached Form PTO/SB/08 are enclosed in accordance with 37 CFR §1.98 (a)(2).

-- AND/OR --

☐ Copies of pending unpublished U.S. patent applications are enclosed in accordance with 37 CFR §1.98(a)(2)(iii).

G. ☐ 37 CFR §1.98(a)(3). The Information Disclosure Statement includes non-English patents and/or references.

☐ Pursuant to 37 CFR §1.98(a)(3)(i), a concise explanation of the relevance of each patent, publication or other information provided that is not in English is provided herewith.

☐ Pursuant to MPEP 609(B), an English language copy of a foreign search report is submitted herewith to satisfy the requirement for a concise explanation where non-English language information is cited in the search report.

-- OR --

☐ A concise explanation of the relevance of each patent, publication or other information provided that is not in English is as follows: _____

☐ Pursuant to 37 CFR §1.98(a)(3)(ii), a copy of a translation, or a portion thereof, of the non-English language reference(s) is provided herewith.

H. ☐ 37 CFR §1.98(d). Copies of patents, publications and pending U.S. patent applications, or other information specified in 37 C.F.R. § 1.98(a) are not provided herewith because:

☐ Pursuant to 37 CFR §1.98(d)(1) the information was previously submitted in an Information Disclosure Statement, or cited by examiner, for another application under which this application claims priority for an earlier effective filing date under 35 U.S.C. 120.

Application in which the information was submitted: _____

Information Disclosure Statement(s) filed on: _____

AND

☐ The information disclosure statement submitted in the earlier application complied with paragraphs (a) through (c) of 37 CFR §1.98.

- I. ☒ *Fee Authorization.* The Commissioner is hereby authorized to charge the above-referenced fees of \$0.00 and charge any additional fees or credit any overpayment associated with this communication to Deposit Account No. 23-2415 (Docket No. 35196-713.201).

Respectfully submitted,

WILSON SONSINI GOODRICH & ROSATI

Dated: 12/16/2014

By: /Andrew Stelzer/
Andrew Stelzer, Reg. No. 71,785

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Palo Alto, CA 94304-1050
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Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Complete if Known	
				Application Number	14/271,071
				Filing Date	May 6, 2014
				First Named Inventor	Adam Bowen
				Art Unit	1747
				Examiner Name	Not assigned
Sheet	1	of	1	Attorney Docket Number	35196-713.201

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	1.	US 2007/0163610	07/19/2007	Lindell et al.	
	2.	US 2009/0293895	12/03/2009	Axelsson	
	3.	US 2013/0186416	07/25/2013	Gao et al.	
	4.	US 7,832,410	11/16/2010	Lik Hon	
	5.	US 8,156,944	04/17/2012	Lik Hon	
	6.	US 8,511,318	08/20/2013	Lik Hon	

U.S. UNPUBLISHED PATENT APPLICATIONS					
Examiner Initials*	Cite No. ¹	Document Number	Filing Date MM-DD-YYYY	Name of Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ – Number ⁴ – Kind Code ⁵ (if known)				

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²

Examiner Signature		Date Considered	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Electronic Acknowledgement Receipt	
EFS ID:	21025962
Application Number:	14271071
International Application Number:	
Confirmation Number:	6078
Title of Invention:	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
First Named Inventor/Applicant Name:	Adam Bowen
Customer Number:	21971
Filer:	Kristin J. Havranek/diane garcia
Filer Authorized By:	Kristin J. Havranek
Attorney Docket Number:	35196-713.201
Receipt Date:	19-DEC-2014
Filing Date:	06-MAY-2014
Time Stamp:	19:39:30
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Ploom_35196_713_201.pdf	211955 858f448275f5ea6395b8f04dbfd0db4211287f9	yes	5

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Transmittal Letter	1	4
	Information Disclosure Statement (IDS) Form (SB08)	5	5
Warnings:			
Information:			
Total Files Size (in bytes):		211955	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>			

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: Adam Bowen

Serial Number: 14/271,071

Filing Date: May 6, 2014

Title: NICOTINE SALT FORMULATIONS FOR
AEROSOL DEVICES AND METHODS
THEREOF

Group Art Unit: 1747

Examiner: Not assigned

CONFIRMATION NO: 6078

FILED ELECTRONICALLY ON: December 19, 2014

Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

INFORMATION DISCLOSURE STATEMENT
UNDER 37 CFR §1.97

Madam/Sir:

An Information Disclosure Statement along with attached PTO/SB/08 is hereby submitted. A copy of each listed publication is submitted, if required, pursuant to 37 CFR §§1.97-1.98, as indicated below.

The Examiner is requested to review the information provided and to make the information of record in the above-identified application. The Examiner is further requested to initial and return the attached PTO/SB/08 in accordance with MPEP §609.

The right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered, is hereby reserved.

This statement is not intended to represent that a search has been made or that the information cited in the statement is, or is considered to be, prior art or material to patentability as defined in §1.56.

- A. ☐ *37 CFR §1.97(b)*. This Information Disclosure Statement should be considered by the Office because:
- ☐ (1) It is being filed within 3 months of the filing date of a national application and is other than a continued prosecution application under §1.53(d);
-- OR --
 - ☐ (2) It is being filed within 3 months of entry of the national stage as set forth in §1.491 in an international application;
-- OR --
 - ☒ (3) It is being filed before the mailing of a first Office action on the merits;
-- OR --
 - ☐ (4) It is being filed before the mailing of a first Office action after the filing of a request for continued examination under §1.114.
- B. ☐ *37 CFR §1.97(c)*. Although this Information Disclosure Statement is being filed after the period specified in *37 CFR §1.97(b)*, above, it is filed before the mailing date of the earlier of (1) a final office action under §1.113, (2) a notice of allowance under §1.311, or (3) an action that otherwise closes prosecution on the merits, this Information Disclosure Statement should be considered because it is accompanied by one of:
- ☐ a statement as specified in §1.97(e) provided concurrently herewith;
-- OR --
 - ☐ a fee of \$180.00 as set forth in §1.17(p) authorized below, enclosed, or included with the payment of other papers filed together with this statement.
- C. ☐ *37 CFR §1.97(d)*. Although this Information Disclosure Statement is being filed after the mailing date of the earlier of (1) a final office action under §1.113 or (2) a notice of allowance under §1.311, it is being filed before payment of the issue fee and should be considered because it is accompanied by:
- i. a statement as specified in §1.97(e);
-- AND --
 - ii. a fee of \$180.00 as set forth in §1.17(p) is authorized below, enclosed, or included with the payment of other papers filed together with this Statement.
- D. ☐ *37 CFR §1.97(e)*. Statement.
- ☐ A statement is provided herewith to satisfy the requirement under *37 CFR §1.97(c)*;
-- AND/OR --
 - ☐ A statement is provided herewith to satisfy the requirement under *37 CFR §1.97(d)*;
-- AND/OR --
 - ☐ A copy of a dated communication from a foreign patent office clearly showing that the information disclosure statement is being submitted within 3 months of the filing date on the communication is provided in lieu of a statement under *37 C.F.R. § 1.97(e)(1)* as provided for under MPEP 609.04(b) V.
- E. ☐ *Statement Under 37 C.F.R. §1.704(d)*. Each item of information contained in the information disclosure statement was first cited in a communication from a foreign patent office in a counterpart

application that was received by an individual designated in § 1.56(c) not more than thirty (30) days prior to the filing of this information disclosure statement. This statement is made pursuant to the requirements of 37 C.F.R. §1.704(d) to avoid reduction of the period of adjustment of the patent term for Applicant(s) delay.

F. ☒ 37 CFR §1.98(a)(2). The content of the Information Disclosure Statement is as follows:

☐ Copies of each of the references listed on the attached Form PTO/SB/08 are enclosed herewith.

-- OR --

☒ Copies of U.S. Patent Documents (issued patents and patent publications) listed on the attached Form PTO/SB/08 are NOT enclosed.

-- AND/OR --

☐ Copies of Foreign Patent Documents and/or Non Patent Literature Documents listed on the attached Form PTO/SB/08 are enclosed in accordance with 37 CFR §1.98 (a)(2).

-- AND/OR --

☐ Copies of pending unpublished U.S. patent applications are enclosed in accordance with 37 CFR §1.98(a)(2)(iii).

G. ☐ 37 CFR §1.98(a)(3). The Information Disclosure Statement includes non-English patents and/or references.

☐ Pursuant to 37 CFR §1.98(a)(3)(i), a concise explanation of the relevance of each patent, publication or other information provided that is not in English is provided herewith.

☐ Pursuant to MPEP 609(B), an English language copy of a foreign search report is submitted herewith to satisfy the requirement for a concise explanation where non-English language information is cited in the search report.

-- OR --

☐ A concise explanation of the relevance of each patent, publication or other information provided that is not in English is as follows: _____

☐ Pursuant to 37 CFR §1.98(a)(3)(ii), a copy of a translation, or a portion thereof, of the non-English language reference(s) is provided herewith.

H. ☐ 37 CFR §1.98(d). Copies of patents, publications and pending U.S. patent applications, or other information specified in 37 C.F.R. § 1.98(a) are not provided herewith because:

☐ Pursuant to 37 CFR §1.98(d)(1) the information was previously submitted in an Information Disclosure Statement, or cited by examiner, for another application under which this application claims priority for an earlier effective filing date under 35 U.S.C. 120.

Application in which the information was submitted: _____

Information Disclosure Statement(s) filed on: _____

AND

☐ The information disclosure statement submitted in the earlier application complied with paragraphs (a) through (c) of 37 CFR §1.98.

- I. ☒ *Fee Authorization.* The Commissioner is hereby authorized to charge the above-referenced fees of \$0.00 and charge any additional fees or credit any overpayment associated with this communication to Deposit Account No. 23-2415 (Docket No. 35196-713.201).

Respectfully submitted,

WILSON SONSINI GOODRICH & ROSATI

Dated: 12/19/2014_____

By: /Andrew Stelzer/
Andrew Stelzer, Reg. No. 71,785

650 Page Mill Road
Palo Alto, CA 94304-1050
(650) 493-9300
Customer No. 021971

Under the Paperwork Reduction Act of 1995, no persons required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Complete if Known	
				Application Number	14/271,071
				Filing Date	05-06-2014
				First Named Inventor	Adam Bowen
				Art Unit	1747
				Examiner Name	Not assigned
Sheet	1	of	7	Attorney Docket Number	35196-713.201

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	1.	US-374,584	12-13-1887	Cook	
	2.	US-576,653	02-09-1897	Bowlby	
	3.	US-595,070	12-07-1897	Oldenbusch	
	4.	US-799,844	9/19/1905	Fuller	
	5.	US-969,076	8/30/1910	Pender	
	6.	US-1,067,531	7/15/1913	MacGregor	
	7.	US-1,163,183	12/7/1915	Stoll	
	8.	US-1,299,162	4/1/1919	Fisher	
	9.	US-1,505,748	3/26/1924	Tamis	
	10.	US-1,552,877	9/8/1925	Phillipps et al.	
	11.	US-1,632,335	6/14/1927	Hiering	
	12.	US-1,706,244	3/19/1929	Meyerson	
	13.	US-1,845,340	2/16/1932	Ritz	
	14.	US-1,972,118	9/4/1934	McDill	
	15.	US-1,998,683	4/23/1935	Montgomery	
	16.	US-2,031,363	2/18/1936	Erikson	
	17.	US-2,039,559	5/5/1936	Segal	
	18.	US-2,231,909	2/18/1941	Hempel	
	19.	US-2,327,120	11/12/1940	McCoon	
	20.	US-2,460,427	2/1/1949	Musselman et al.	
	21.	US-2,483,304	9/27/1949	Vogel	
	22.	US-2,502,561	4/4/1950	Ebert	
	23.	US-2,765,949	10/9/1956	Hillman	
	24.	US-2,897,958	8/4/1959	Tarleton	
	25.	US-3,146,937	9/1/1964	Vesak	
	26.	US-3,420,360	1/7/1969	Young	

Examiner Signature	Date Considered
-----------------------	--------------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Complete if Known	
				Application Number	14/271,071
				Filing Date	05-06-2014
				First Named Inventor	Adam Bowen
				Art Unit	1747
				Examiner Name	Not assigned
Sheet	2	of	7	Attorney Docket Number	35196-713.201

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	27.	US-3,567,014	3/2/1971	Feigelman	
	28.	US-3,861,523	1/21/1975	Fountain et al.	
	29.	US-3,941,300	3/2/1976	Troth	
	30.	US-4,207,976	6/17/1980	Herman	
	31.	US-4,519,319	5/28/1985	Howlett	
	32.	US-4,771,796	9/20/1988	Myer	
	33.	US-4,798,310	1/17/1989	Kasai et al.	
	34.	US-4,813,536	3/21/1989	Willis	
	35.	US-4,848,563	7/18/1989	Robbins	
	36.	US-5,005,759	4/9/1991	Bouche	
	37.	US-5,123,530	6/23/1992	Lee	
	38.	US-5,269,327	12/14/1993	Counts et al.	
	39.	US-5,605,226	2/25/1997	Hernlein	
	40.	US-5,641,064	6/24/1997	Goserud	
	41.	US-5,746,587	5/5/1998	Racine et al.	
	42.	US-5,810,164	9/22/1998	Rennecamp	
	43.	US-5,979,460	11/9/1999	Matsumura	
	44.	US-5,881,884	3/16/1999	Podosek	
	45.	US-5,938,018	8/17/1999	Keaveney et al.	
	46.	US-5,967,310	10/19/1999	Hill	
	47.	US-5,975,415	11/2/1999	Zehnal	
	48.	US-6,269,966	8/7/2001	Pallo et al.	
	49.	US 6,381,739		Gonda	
	50.	US-6,386,371	5/14/2002	Parsons	
	51.	US-6,431,363	8/13/2002	Hacker	
	52.	US-6,446,793	9/10/2002	Layshock	
	53.	US-6,510,982	1/28/2003	White et al.	

Examiner Signature	Date Considered
--------------------	-----------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

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				Application Number	14/271,071
				Filing Date	05-06-2014
				First Named Inventor	Adam Bowen
				Art Unit	1747
				Examiner Name	Not assigned
Sheet	3	of	7	Attorney Docket Number	35196-713.201

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	54.	US-6,557,708	5/6/2003	Polacco	
	55.	US-6,622,867	9/23/2003	Menceles	
	56.	US-6,672,762	1/6/2004	Faircloth	
	57.	US-6,726,006	4/27/2004	Funderburk et al.	
	58.	US-7,000,775	2/21/2006	Gelardi	
	59.	US-7,374,048	5/20/2008	Mazurek	
	60.	US-7,546,703	6/16/2009	Johnske et al.	
	61.	US-7,621,403	11/24/2009	Althoff et al.	
	62.	US-7,644,823	1/12/2010	Gelardi et al.	
	63.	US-7,815,332	10/19/2010	Smith	
	64.	US-7,886,507	2/15/2011	McGuinness, Jr.	
	65.	US-7,988,034	8/2/2011	Pezzoli	
	66.	US-8,141,701	3/27/2012	Hodges	
	67.	US-8,381,739		Gonda	
	68.	US-8,443,534	5/21/2013	Goodfellow et al.	
	69.	US-8,464,867	6/18/2013	Holloway et al.	
	70.	US-8,539,959	9/24/2013	Scatterday	
	71.	US-8,596,460	12/3/2013	Scatterday	
	72.	US-2001/0032795 AI	10/25/2001	Weinstein et al.	
	73.	US-2001/0052480 AI	12/20/2001	Kawaguchi et al.	
	74.	US-2002/0043554 AI	4/18/2002	White et al.	
	75.	US-2002/0175164 AI	11/28/2002	Dees et al.	
	76.	US-2003/0089377 AI	5/15/2003	Hajaligol et al.	
	77.	US-2004/0149624 AI	8/5/2004	Wischusen, III et al.	
	78.	US-2005/0061759 AI	3/24/2005	Doucette	
	79.	US-2005/0118545 AI	6/2/2005	Wong	

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				Application Number	14/271,071
				Filing Date	05-06-2014
				First Named Inventor	Adam Bowen
				Art Unit	1747
				Examiner Name	Not assigned
Sheet	4	of	7	Attorney Docket Number	35196-713.201

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	80.	US 2007/062548 A1	03/22/2007	Michael Horstmann	
	81.	US-2005/0145533 A1	7/7/2005	Seligson	
	82.	US-2005/0172976 A1	8/11/2005	Newman et al.	
	83.	US-2006/0054676 A1	3/16/2006	Wischusen, III	
	84.	US-2006/0150991 A1	7/13/2006	Lee	
	85.	US-2006/0254948 A1	11/16/2006	Herbert et al.	
	86.	US-2006/0255105 A1	11/16/2006	Sweet	
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	88.	US-2007/0098148 A1	5/3/2007	Sherman	
	89.	US-2007/0235046 A1	10/11/2007	Gedevanishvili	
	90.	US-2007/0267033 A1	11/22/2007	Mishra et al.	
	91.	US-2008/0092912 A1	4/24/2008	Robinson et al.	
	92.	US-2008/0241255 A1	10/2/2008	Rose et al.	
	93.	US-2008/0276947 A1	11/13/2008	Martzel	
	94.	US-2009/0095311 A1	4/16/2009	Han	
	95.	US-2009/0151717	6/18/2009	Bowen et al.	
	96.	US-2009/0267252 A1	10/29/2009	Ikeyama	
	97.	US-2009/0288669 A1	11/26/2009	Hutchens	
	98.	US-2010/0000672 A1	1/7/2010	Fogle	
	99.	US-2010/0031968 A1	2/11/2010	Sheikh et al.	
	100.	US-2010/0186757 A1	7/29/2010	Crooks et al.	
	101.	US-2010/0200006 A1	8/12/2010	Robinson et al.	
	102.	US-2010/0242974 A1	9/30/2010	Pan	
	103.	US-2010/0275938 A1	11/4/2010	Roth et al.	
	104.	US-2010/0276333 A1	11/4/2010	Couture	
	105.	US-2010/0307116 A1	12/9/2010	Fisher	

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				Application Number	14/271,071
				Filing Date	05-06-2014
				First Named Inventor	Adam Bowen
				Art Unit	1747
				Examiner Name	Not assigned
Sheet	5	of	7	Attorney Docket Number	35196-713.201

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	106.	US-2011/0049226 AI	3/3/2011	Moreau et al.	
	107.	US-2011/0155153 AI	6/30/2011	Thorens et al.	
	108.	US-2011/0162667 AI	7/7/2011	Burke et al.	
	109.	US-2011/0168194 AI	7/14/2011	Hon	
	110.	US-2011/0180433 AI	6/28/2011	Rennecamp	
	111.	US-2011/0232654 AI	9/29/2011	Mass	
	112.	US-2011/0265806 AI	11/3/2011	Alarcon et al.	
	113.	US-2011/0277780 AI	11/17/2011	Terry et al.	
	114.	US-2011/0278189 AI	11/17/2011	Terry et al.	
	115.	US-2011/0315701 AI	12/29/2011	Everson	
	116.	US-2012/0060853 AI	3/15/2012	Robinson et al.	
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	118.	US-2012/0204889 AI	8/16/2012	Xiu	
	119.	US-2012/0227753 AI	9/13/2012	Newton	
	120.	US-2012/0261286 AI	10/18/2012	Holloway et al.	
	121.	US-2012/0267383 AI	10/25/2012	Van Rooyen	
	122.	US-2013/0140200 AI	6/6/2013	Scatterday	
	123.	US-2013/0228191 AI	9/5/2013	Newton	
	124.	US-2013/0247924 AI	9/26/2013	Scatterday et al.	
	125.	US-2013/0248385 AI	9/26/2013	Scatterday et al.	
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	128.	US-2013/0284191 AI	10/31/2013	Scatterday et al.	
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	130.	US-2015/0020824-A1	1/22/2015	Bowen	

U.S. UNPUBLISHED PATENT APPLICATIONS			
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				Filing Date	05-06-2014	
				First Named Inventor	Adam Bowen	
				Art Unit	1747	
				Examiner Name	Not assigned	
Sheet	6	of	7	Attorney Docket Number		35196-713.201

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		Number-Kind Code ² (if known)			

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ – Number ⁴ – Kind Code ⁵ (if known)				
	131.	CN 101869356 A (with translation)	10/27/2010	Zhegi		X
	132.	EP 0354661 A2	02/14/1990	British American Tobacco Co.		
	133.	EP 1618803	01/25/2006	Hon Lik (CN) Best Partners Worldwide Ltd		
	134.	EP 2325093 AI	5/25/2011	Imperial Tobacco Ltd.		
	135.	JP 2001-165437 A (abstract only)	6/22/2001	Tsubota Pearl Co. Ltd.		X
	136.	WO 2003/094900	11/20/2003	Alexza Molecular Delivery Corp.		
	137.	WO 2011/033396 AI	3/24/2011	Liu		
	138.	WO 2011/117580 A2	9/29/2011	Hearn		
	139.	WO 2012/021972 AI	2/23/2012	Boisseau		
	140.	WO 2013/141906	9/26/2013	Scatterday et al.		
	141.	WO 2013/141907	9/26/2013	Scatterday		
	142.	WO 2013/141994	9/26/2013	Scatterday		
	143.	WO 2013/141998	9/26/2013	Scatterday		
	144.	WO 2013/142671	9/26/2013	Scatterday et al.		
	145.	WO 2013/142678	9/26/2013	Scatterday		
	146.	WO 2014/113592	7/24/2014	Scatterday		

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				First Named Inventor	Adam Bowen
				Art Unit	1747
				Examiner Name	Not assigned
Sheet	7	of	7	Attorney Docket Number	35196-713.201

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	147.	Communication Relating to the Results of the Partial International Search for PCT/US2014/039016, dated Aug. 26, 2014 (7 pages).	
	148.	U.S. Application No. 14/512,311 Office Action mailed January 26, 2015	

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EFS ID:	21323745
Application Number:	14271071
International Application Number:	
Confirmation Number:	6078
Title of Invention:	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
First Named Inventor/Applicant Name:	Adam Bowen
Customer Number:	21971
Filer:	Kristin J. Havranek
Filer Authorized By:	
Attorney Docket Number:	35196-713.201
Receipt Date:	27-JAN-2015
Filing Date:	06-MAY-2014
Time Stamp:	18:55:14
Application Type:	Utility under 35 USC 111(a)

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1	Foreign Reference	WO03094900.pdf	2239588 c56791de8124abd0f01304052a40d233903ab711	no	43

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13	Foreign Reference	WO13141998.pdf	629198	no	15
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16	Foreign Reference	WO14113592.pdf	1055038	no	31
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17	Non Patent Literature	US14512311_OA_26JAN2015.pdf	750208	no	15
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Information:			
Total Files Size (in bytes):		16617640	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>			

PATENT COOPERATION TREATY

RECEIVED

SEP 04 2014

PCT Bookoff McAndrews

From the INTERNATIONAL SEARCHING AUTHORITY

To:

Johnson, Kirsten
BOOKOFF MCANDREWS, PLLC
2401 Pennsylvania Ave. NW
Suite 450
Washington, DC 20037
ETATS-UNIS D'AMERIQUE

INVITATION TO PAY ADDITIONAL FEES
AND, WHERE APPLICABLE, PROTEST FEE
(PCT Article 17(3)(a) and Rule 40.1 and 40.2(e))

Date of mailing
(day/month/year)

26 August 2014 (26-08-2014)

Applicant's or agent's file reference
00028-09-304

PAYMENT DUE

within **ONE MONTH** from
the above date of mailing

International application No.
PCT/US2014/039016

International filing date
(day/month/year)

21 May 2014 (21-05-2014)

Applicant

NJOY, INC.

1. This International Searching Authority

(i) considers that there are 2 (number of) inventions claimed in the international application covered by the claims indicated on an extra sheet:

(ii) therefore considers that **the international application does not comply with the requirements of unity of invention** (Rules 13.1, 13.2 and 13.3) for the reasons indicated on an extra sheet:

(iii) ☒ has carried out a partial international search (see Annex) ☐ will establish the international search report on those parts of the international application which relate to the invention first mentioned in claims Nos.:
see extra sheet

(iv) will establish the international search report on the other parts of the international application only if, and to the extent to which, additional fees are paid.

2. Consequently, the applicant is hereby invited to pay, within the time limit indicated above, the amount indicated below:

EUR 1.875,00 x 1 = EUR 1.875,00
Fee per additional invention number of additional inventions currency/total amount of additional fees

3. The applicant is informed that, according to Rule 40.2(c), the payment of any additional fee may be made under protest, i.e., a reasoned statement to the effect that the international application complies with the requirement of unity of invention or that the amount of the required additional fee is excessive, where applicable, subject to the payment of a protest fee.

Where the applicant pays additional fees under protest, the applicant is hereby invited, within the time limit indicated above, to pay a protest fee (Rule 40.2(e)) in the amount of EUR 865,00 (currency/amount)

Where the applicant has not, within the time limit indicated above, paid the required protest fee, the protest will be considered not to have been made and the International Searching Authority will so declare.

4. ☐ Claim(s) Nos. _____ have been found to be unsearchable under Article 17(2)(b) because of defects under Article 17(2)(a) and therefore have not been included with any invention.

Name and mailing address of the International Searching Authority



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

KOUROUSSENKO, Svetlana
Tel: +31 (0)70 340-2885

Form PCT/ISA/206 (April 2005)
Registered Mail

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

1. claims: 1-36

A composition (aerosol) comprising nicotine, at least one solvent, and at least one ion pairing agent, wherein vaporization and condensation of the composition produces an aerosol, and wherein at least 85% of the nicotine by weight with respect to the total weight of the composition is in a particulate phase of the aerosol, wherein the at least one ion pairing agent has a molar ratio with respect to nicotine ranging from about 1:2 to about 1:1 (ion pairing agent : nicotine) or has an acid group molar ratio with respect to nicotine ranging from about 1:2 to about 1:1 (carboxylic acid group(s) of ion pairing agent : nicotine).

A device for delivery of an aerosol, the device comprising a heating element and a composition comprising nicotine, at least one solvent, and at least one ion pairing agent chosen from lactic acid, acetic acid, pyruvic acid, or any combination thereof, wherein the composition comprises a liquid and the heating element provides heat to the liquid to form an aerosol.

A method of producing an aerosol, the method comprising heating and vaporizing a composition, wherein the composition comprises nicotine, at least one solvent, and at least one monoprotic carboxylic acid ion pairing agent, wherein the vaporized composition forms an aerosol, and wherein at least 50% of the nicotine by weight with respect to the total weight of the composition is in a particulate phase of the aerosol.

2. claims: 37-69

A device for delivery of an aerosol, the device comprising a heating element, a sensor for detecting activation of the device; a microprocessor and a composition comprising nicotine, wherein the microprocessor is configured to supply a first amount of current greater than zero to the heating element upon activation of the device for a first interval of time, and a second amount of current different from the first amount of current for a second interval of time, or comprising a vaporization unit, a battery coupled to the vaporization unit and an integrated circuit coupled to the battery, wherein the integrated circuit is configured to control operation of the battery in at least two different operating modes.

A method of delivering an aerosol comprising nicotine from a vaporizing device, the vaporizing device including a battery, a heating element, and a composition comprising nicotine, the method comprising modulating an amount of heat supplied to the composition based on at least one of a history of activation of the vaporizing device, a prior

inhalation characteristic of the vaporizing device, a temperature of the composition, or a temperature of the heating element.

The application lacks unity of invention as required by Article 3(4) (iii) and 17(3) (a) PCT.

The technical problem to be solved by the application can be regarded as the provision of a composition (a device and a method) that by evaporation and condensation can deliver nicotine to the deep lung of the user. The present invention solves this problem by including in the composition an ion pairing agent which can provide for control over, or otherwise affect, deposition of the nicotine in the body.

The special technical feature in the sense of Rule 13.1 PCT which links the subject-matter of the claims of the present application is the aerosol comprising nicotine and the device for delivery of said aerosol. However this feature and the general concept are known from documents D1, D2 (at least). D1 and D2 disclose a composition comprising nicotine, an aerosol produced by this composition and a device for the delivery of said aerosol (see references).

No further technical features can be distinguished in the application as filed that can be regarded as special technical features involved in the technical relationship between the different inventions. Each invention listed is a distinct invention, characterised by its own technical features, defining the contribution which each of the claimed inventions considered as a whole makes over the prior art.

The application was grouped into 2 groups of inventions.

The international search report was established on those parts of the international application which relate to the invention first mentioned in the claims.(cf. Article 17(3) (a) PCT).

**Annex to Form PCT/ISA/206
COMMUNICATION RELATING TO THE RESULTS
OF THE PARTIAL INTERNATIONAL SEARCH**

International Application No
PCT/US2014/039016

1. The present communication is an Annex to the invitation to pay additional fees (Form PCT/ISA/206). It shows the results of the international search established on the parts of the international application which relate to the invention first mentioned in claims Nos.:
- see 'Invitation to pay additional fees'
2. This communication is not the international search report which will be established according to Article 18 and Rule 43.
3. If the applicant does not pay any additional search fees, the information appearing in this communication will be considered as the result of the international search and will be included as such in the international search report.
4. If the applicant pays additional fees, the international search report will contain both the information appearing in this communication and the results of the international search on other parts of the international application for which such fees will have been paid.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 618 803 A1 (HON LIK [CN] BEST PARTNERS WORLDWIDE LTD [VG]) 25 January 2006 (2006-01-25) paragraph [0001] paragraph [0006] sentence 57, paragraph 11 - sentence 23, paragraph 12 paragraph [0019] -----	1-7, 10-15, 18-33,35
X	EP 0 354 661 A2 (BRITISH AMERICAN TOBACCO CO [GB]) 14 February 1990 (1990-02-14) column 1, line 1 - line 28 column 2, line 10 - line 30 column 3, line 17 - line 29 column 5, line 11 - line 22 -----	1-36
X	US 2008/241255 A1 (ROSE JED E [US] ET AL) 2 October 2008 (2008-10-02) paragraph [0003] paragraph [0008] - paragraph [0010] paragraph [0012] - paragraph [0013] paragraph [0019] paragraph [0022] - paragraph [0023] ----- -/--	1,4,6, 10,15-18

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in 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.
- *Z* document member of the same patent family

Form PCT/ISA/206 (Annex, first sheet) (July 1992; reprint January 2004)

page 1 of 2

**Annex to Form PCT/ISA/206
COMMUNICATION RELATING TO THE RESULTS
OF THE PARTIAL INTERNATIONAL SEARCH**

International Application No
PCT/US2014/039016

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>US 2007/062548 A1 (HORSTMANN MICHAEL [DE] ET AL) 22 March 2007 (2007-03-22)</p> <p>paragraph [0001] paragraph [0018] - paragraph [0026] paragraph [0056] paragraph [0092] - paragraph [0094] paragraph [0112] paragraph [0135] paragraph [0139] paragraph [0143] - paragraph [0151] paragraph [0155] paragraph [0159] paragraph [0172] - paragraph [0174] claims 6-12</p>	<p>1, 3-7, 10, 12-15, 33-36</p>
X	<p>WO 03/094900 A1 (ALEXZA MOLECULAR DELIVERY CORP [US]) 20 November 2003 (2003-11-20) page 13, line 10 - line 16 page 14, line 31 - page 15, line 4 page 15, line 27 - page 16, line 1 claim 17</p>	<p>1-36</p>

1

Form PCT/ISA/206 (Annex, continuation sheet) (July 1992; reprint January 2004)

page 2 of 2

Patent Family Annex
Information on patent family members

International Application No
PCT/US2014/039016

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1618803	A1	25-01-2006	AT 415831 T 15-12-2008
		AU 2004234199 A1 11-11-2004	
		BR P10407944 A 07-03-2006	
		CA 2518174 A1 11-11-2004	
		CA 2752134 A1 11-11-2004	
		CN 1541577 A 03-11-2004	
		DK 1618803 T3 16-03-2009	
		EP 1618803 A1 25-01-2006	
		ES 2316969 T3 16-04-2009	
		HK 1070791 A1 05-06-2009	
		JP 2006524494 A 02-11-2006	
		KR 20070087265 A 28-08-2007	
		MX PA05009191 A 10-03-2006	
		MY 138404 A 29-05-2009	
		PL 213491 B1 29-03-2013	
		PT 1618803 E 29-12-2008	
		RU 2336001 C2 20-10-2008	
		SI 1618803 T1 30-04-2009	
		UA 89752 C2 10-03-2010	
		US 2006196518 A1 07-09-2006	
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		US 2012273589 A1 01-11-2012	
		US 2013276804 A1 24-10-2013	
		WO 2004095955 A1 11-11-2004	
EP 0354661	A2	14-02-1990	AT 151234 T 15-04-1997
		AU 633502 B2 04-02-1993	
		AU 3894389 A 15-02-1990	
		CA 1330922 C 26-07-1994	
		DE 68927947 D1 15-05-1997	
		DE 68927947 T2 28-08-1997	
		EP 0354661 A2 14-02-1990	
		EP 0712584 A2 22-05-1996	
		ES 2100847 T3 01-07-1997	
		GR 3023434 T3 29-08-1997	
		US 5050621 A 24-09-1991	
US 2008241255	A1	02-10-2008	AU 2008232897 A1 09-10-2008
		CA 2682432 A1 09-10-2008	
		CN 102014995 A 13-04-2011	
		CN 103418062 A 04-12-2013	
		EP 2134395 A1 23-12-2009	
		EP 2708256 A2 19-03-2014	
		JP 2010532672 A 14-10-2010	
		JP 2013144157 A 25-07-2013	
		US 2008241255 A1 02-10-2008	
		WO 2008121610 A1 09-10-2008	
US 2007062548	A1	22-03-2007	CA 2546693 A1 16-06-2005
		CN 1889861 A 03-01-2007	
		DE 10356925 A1 14-07-2005	
		EP 1699309 A1 13-09-2006	
		JP 4516970 B2 04-08-2010	
		JP 2007512880 A 24-05-2007	
		US 2007062548 A1 22-03-2007	
		WO 2005053444 A1 16-06-2005	
WO 03094900	A1	20-11-2003	AU 2003239433 A1 11-11-2003

Form PCT/ISA/208 (patent family annex) (July 1992; reprint January 2004)

Patent Family Annex
Information on patent family members

International Application No
PCT/US2014/039016

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		CA 2483687 A1	20-11-2003
		EP 1503744 A1	09-02-2005
		US 2004009128 A1	15-01-2004
		US 2011245493 A1	06-10-2011
		WO 03094900 A1	20-11-2003

Form PCT/ISA/206 (patent family annex) (July 1992; reprint January 2004)

page 2 of 2

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: Adam Bowen

Serial Number: 14/271,071

Filing Date: May 6, 2014

Title: NICOTINE SALT FORMULATIONS
FOR AEROSOL DEVICES AND
METHODS THEREOF

Group Art Unit: 1747

Examiner: Not assigned

CONFIRMATION NO: 6078

FILED ELECTRONICALLY ON: January 27, 2015

Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

INFORMATION DISCLOSURE STATEMENT
UNDER 37 CFR §1.97

Madam/Sir:

An Information Disclosure Statement along with attached PTO/SB/08 is hereby submitted. A copy of each listed publication is submitted, if required, pursuant to 37 CFR §§1.97-1.98, as indicated below.

The Examiner is requested to review the information provided and to make the information of record in the above-identified application. The Examiner is further requested to initial and return the attached PTO/SB/08 in accordance with MPEP §609.

The right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered, is hereby reserved.

This statement is not intended to represent that a search has been made or that the information cited in the statement is, or is considered to be, prior art or material to patentability as defined in §1.56.

- A. ☒ 37 CFR §1.97(b). This Information Disclosure Statement should be considered by the Office because:
- ☐ (1) It is being filed within 3 months of the filing date of a national application and is other than a continued prosecution application under §1.53(d);
-- OR --
 - ☐ (2) It is being filed within 3 months of entry of the national stage as set forth in §1.491 in an international application;
-- OR --
 - ☒ (3) It is being filed before the mailing of a first Office action on the merits;
-- OR --
 - ☐ (4) It is being filed before the mailing of a first Office action after the filing of a request for continued examination under §1.114.
- B. ☐ 37 CFR §1.97(c). Although this Information Disclosure Statement is being filed after the period specified in 37 CFR §1.97(b), above, it is filed before the mailing date of the earlier of (1) a final office action under §1.113, (2) a notice of allowance under §1.311, or (3) an action that otherwise closes prosecution on the merits, this Information Disclosure Statement should be considered because it is accompanied by one of:
- ☐ a statement as specified in §1.97(e) provided concurrently herewith;
-- OR --
 - ☐ a fee of \$180.00 as set forth in §1.17(p) authorized below, enclosed, or included with the payment of other papers filed together with this statement.
- C. ☐ 37 CFR §1.97(d). Although this Information Disclosure Statement is being filed after the mailing date of the earlier of (1) a final office action under §1.113 or (2) a notice of allowance under §1.311, it is being filed before payment of the issue fee and should be considered because it is accompanied by:
- i. a statement as specified in §1.97(e);
-- AND --
 - ii. a fee of \$180.00 as set forth in §1.17(p) is authorized below, enclosed, or included with the payment of other papers filed together with this Statement.
- D. ☐ 37 CFR §1.97(e). Statement.
- ☐ A statement is provided herewith to satisfy the requirement under 37 CFR §§1.97(c);
-- AND/OR --
 - ☐ A statement is provided herewith to satisfy the requirement under 37 CFR §§1.97(d);
-- AND/OR --
 - ☐ A copy of a dated communication from a foreign patent office clearly showing that the information disclosure statement is being submitted within 3 months of the filing date on the communication is provided in lieu of a statement under 37 C.F.R. § 1.97(e)(1) as provided for under MPEP 609.04(b) V.
- E. ☐ Statement Under 37 C.F.R. §1.704(d). Each item of information contained in the information disclosure statement was first cited in a communication from a foreign patent office in a counterpart application that was received by an individual designated in § 1.56(c) not more than thirty (30) days prior to the filing of this information disclosure statement. This statement is made pursuant to the

requirements of 37 C.F.R. §1.704(d) to avoid reduction of the period of adjustment of the patent term for Applicant(s) delay.

F. ☒ 37 CFR §1.98(a)(2). The content of the Information Disclosure Statement is as follows:

☐ Copies of each of the references listed on the attached Form PTO/SB/08 are enclosed herewith.

-- OR --

☒ Copies of U.S. Patent Documents (issued patents and patent publications) listed on the attached Form PTO/SB/08 are NOT enclosed.

-- AND/OR --

☒ Copies of Foreign Patent Documents and/or Non Patent Literature Documents listed on the attached Form PTO/SB/08 are enclosed in accordance with 37 CFR §1.98 (a)(2).

-- AND/OR --

☐ Copies of pending unpublished U.S. patent applications are enclosed in accordance with 37 CFR §1.98(a)(2)(iii).

G. ☒ 37 CFR §1.98(a)(3). The Information Disclosure Statement includes non-English patents and/or references.

☐ Pursuant to 37 CFR §1.98(a)(3)(i), a concise explanation of the relevance of each patent, publication or other information provided that is not in English is provided herewith.

☐ Pursuant to MPEP 609(B), an English language copy of a foreign search report is submitted herewith to satisfy the requirement for a concise explanation where non-English language information is cited in the search report.

-- OR --

☐ A concise explanation of the relevance of each patent, publication or other information provided that is not in English is as follows: _____

☒ Pursuant to 37 CFR §1.98(a)(3)(ii), a copy of a translation, or a portion thereof, of the non-English language reference(s) is provided herewith.

H. ☐ 37 CFR §1.98(d). Copies of patents, publications and pending U.S. patent applications, or other information specified in 37 C.F.R. § 1.98(a) are not provided herewith because:

☐ Pursuant to 37 CFR §1.98(d)(1) the information was previously submitted in an Information Disclosure Statement, or cited by examiner, for another application under which this application claims priority for an earlier effective filing date under 35 U.S.C. 120.

Application in which the information was submitted: _____

Information Disclosure Statement(s) filed on: _____

AND

☐ The information disclosure statement submitted in the earlier application complied with paragraphs (a) through (c) of 37 CFR §1.98.

- I. ☒ *Fee Authorization.* The Commissioner is hereby authorized to charge the above-referenced fees of \$0.00 and charge any additional fees or credit any overpayment associated with this communication to Deposit Account No. 23-2415 (Docket No. 35196-713.201).

Respectfully submitted,

WILSON SONSINI GOODRICH & ROSATI

Dated: Jan. 27, 2015

By: /Andrew Stelzer/
Andrew Stelzer, Reg. No. 71,785

650 Page Mill Road
Palo Alto, CA 94304-1050
(650) 493-9300
Customer No. 021971

Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)				Complete if Known	
				Application Number	14271071
				Filing Date	05-06-2014
				First Named Inventor	BOWEN; Adam
				Art Unit	1747
				Examiner Name	Felton
Sheet 1 of 7				Attorney Docket Number	35196-713.201

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No.	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	001	US-D557209	12-11-2007	AHLGREN; Erik et al.	
	002	US-D611409	03-09-2010	GREEN; Chris et al.	
	003	US-D649932	12-06-2011	SYMONS; Dominic	
	004	US-D674748	01-22-2013	FERBER; Roman S. et al.	
	005	US-D686987	07-30-2013	VANSTONE; Mark et al.	
	006	US-D700572	03-04-2014	ESSES; Alfred	
	007	US-D704629	05-13-2014	LIU; Qiuming	
	008	US-D704634	05-13-2014	EIDELMAN; Steven et al.	
	009	US-20040099266	05-27-2004	CROSS; Stephen et al.	
	010	US-20070074734	04-05-2007	BRAUNSHTEYN; Michael S. et al.	
	011	US-20070144514	06-28-2007	YEATES; Donovan B. et al.	
	012	US-20080029095	02-07-2008	ESSER; Ralf	
	013	US-20110192397	08-11-2011	SASKAR; Matthew et al.	
	014	US-20120199146	08-09-2012	MARANGOS; Bill	
	015	US-20130042865	02-21-2013	MONSEES; James et al.	
	016	US-20130255702	10-03-2013	GRIFFITH Jr.; David William et al.	
	017	US-20130333700	12-19-2013	BUCHBERGER; Helmut	
	018	US-20140014124	01-16-2014	GLASBERG; Steve et al.	
	019	US-20140261474	09-18-2014	GONDA; Igor	

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No1	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
	001	EP-2609821-A1	07-03-2013	PHILIP MORRIS PROD [CH]		☐

Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)				Complete if Known	
				Application Number	14271071
				Filing Date	05-06-2014
				First Named Inventor	BOWEN; Adam
				Art Unit	1747
				Examiner Name	Felton
Sheet	2	of	7	Attorney Docket Number	35196-713.201

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
	002	WO-2013083635-A1	06-13-2013	PHILIP MORRIS PROD [CH]		☐
	003	WO-2015100361-A1	07-02-2015	PAX LABS INC [US]		☐

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	001	International Search Report and Written Opinion dated April 27, 2015 for PCT Application No. PCT/US2014/072230.	☐
	002	U.S. Application No. 14/512,311 Office Action mailed May 21, 2015.	☐

Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)				Complete if Known	
				Application Number	14271071
				Filing Date	05-06-2014
				First Named Inventor	BOWEN; Adam
				Art Unit	1747
				Examiner Name	Felton
				Attorney Docket Number	35196-713.201
Sheet	3	of	7		

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

- ☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

- ☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

- ☐ See attached certification statement.

- ☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

- ☒ A certification statement is not submitted herewith.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: Adam Bowen

Serial Number: 14/271,071

Filing Date: 05/06/2014

Title: NICOTINE SALT
FORMULATIONS FOR AEROSOL
DEVICES AND METHODS
THEREOF

Group Art Unit: 1747

Examiner: Felton

CONFIRMATION NO: 6078

FILED ELECTRONICALLY ON: July 21, 2015

Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

INFORMATION DISCLOSURE STATEMENT
UNDER 37 CFR §1.97

Madam/Sir:

An Information Disclosure Statement along with attached PTO/SB/08 is hereby submitted. A copy of each listed publication is submitted, if required, pursuant to 37 CFR §§1.97-1.98, as indicated below.

The Examiner is requested to review the information provided and to make the information of record in the above-identified application. The Examiner is further requested to initial and return the attached PTO/SB/08 in accordance with MPEP §609.

The right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered, is hereby reserved.

This statement is not intended to represent that a search has been made or that the information cited in the statement is, or is considered to be, prior art or material to patentability as defined in §1.56.

A. ☒ 37 CFR §1.97(b). This Information Disclosure Statement should be considered by the Office because:

☐ (1) It is being filed within 3 months of the filing date of a national application and is other than a continued prosecution application under §1.53(d);

-- OR --

☐ (2) It is being filed within 3 months of entry of the national stage as set forth in §1.491 in an international application;

-- OR --

☒ (3) It is being filed before the mailing of a first Office action on the merits;

-- OR --

☐ (4) It is being filed before the mailing of a first Office action after the filing of a request for continued examination under §1.114.

B. ☐ 37 CFR §1.97(c). Although this Information Disclosure Statement is being filed after the period specified in 37 CFR §1.97(b), above, it is filed before the mailing date of the earlier of (1) a final office action under §1.113, (2) a notice of allowance under §1.311, or (3) an action that otherwise closes prosecution on the merits, this Information Disclosure Statement should be considered because it is accompanied by one of:

☐ a statement as specified in §1.97(e) provided concurrently herewith;

-- OR --

☐ a fee of \$180.00 as set forth in §1.17(p) authorized below, enclosed, or included with the payment of other papers filed together with this statement.

C. ☐ 37 CFR §1.97(d). Although this Information Disclosure Statement is being filed after the mailing date of the earlier of (1) a final office action under §1.113 or (2) a notice of allowance under §1.311, it is being filed before payment of the issue fee and should be considered because it is accompanied by:

i. a statement as specified in §1.97(e);

-- AND --

ii. a fee of \$180.00 as set forth in §1.17(p) is authorized below, enclosed, or included with the payment of other papers filed together with this Statement.

D. ☐ 37 CFR §1.97(e). Statement.

- ☐ A statement is provided herewith to satisfy the requirement under 37 CFR §1.97(c);
- AND/OR --
- ☐ A statement is provided herewith to satisfy the requirement under 37 CFR §1.97(d);
- AND/OR --
- ☐ A copy of a dated communication from a foreign patent office clearly showing that the information disclosure statement is being submitted within 3 months of the filing date on the communication is provided in lieu of a statement under 37 C.F.R. § 1.97(e)(1) as provided for under MPEP 609.04(b) V.
- E. ☐ *Statement Under 37 C.F.R. §1.704(d)*. Each item of information contained in the information disclosure statement was first cited in a communication from a patent office in a counterpart foreign or international application or from the Office, or is a communication that was issued by a patent office in a counterpart foreign or international application or by the Office, that was received by an individual designated in § 1.56(c) not more than thirty (30) days prior to the filing of this information disclosure statement. This statement is made pursuant to the requirements of 37 C.F.R. §1.704(d) to avoid reduction of the period of adjustment of the patent term for Applicant(s) delay.
- F. ☒ *37 CFR §1.98(a)(2)*. The content of the Information Disclosure Statement is as follows:
- ☐ Copies of each of the references listed on the attached Form PTO/SB/08 are enclosed herewith.
- OR --
- ☒ Copies of U.S. Patent Documents (issued patents and patent publications) listed on the attached Form PTO/SB/08 are NOT enclosed.
- AND/OR --
- ☒ Copies of Foreign Patent Documents and/or Non Patent Literature Documents listed on the attached Form PTO/SB/08 are enclosed in accordance with 37 CFR §1.98 (a)(2).
- AND/OR --
- ☐ Copies of pending unpublished U.S. patent applications are enclosed in accordance with 37 CFR §1.98(a)(2)(iii).
- G. ☐ *37 CFR §1.98(a)(3)*. The Information Disclosure Statement includes non-English patents and/or references.
- ☐ Pursuant to 37 CFR §1.98(a)(3)(i), a concise explanation of the relevance of each patent, publication or other information provided that is not in English is provided herewith.

- ☐ Pursuant to MPEP 609(B), an English language copy of a foreign search report is submitted herewith to satisfy the requirement for a concise explanation where non-English language information is cited in the search report.

-- OR --

- ☐ A concise explanation of the relevance of each patent, publication or other information provided that is not in English is as follows:

- ☐ Pursuant to 37 CFR §1.98(a)(3)(ii), a copy of a translation, or a portion thereof, of the non-English language reference(s) is provided herewith.

H. ☐ 37 CFR §1.98(d). Copies of patents, publications and pending U.S. patent applications, or other information specified in 37 C.F.R. § 1.98(a) are not provided herewith because:

- ☐ Pursuant to 37 CFR §1.98(d)(1) the information was previously submitted in an Information Disclosure Statement, or cited by examiner, for another application under which this application claims priority for an earlier effective filing date under 35 U.S.C. 120.

Application in which the information was submitted: _____

Information Disclosure Statement(s) filed on: _____

AND

- ☐ The information disclosure statement submitted in the earlier application complied with paragraphs (a) through (c) of 37 CFR §1.98.

I. ☒ *Fee Authorization*. The Commissioner is hereby authorized to charge the above-referenced fees of \$0.00 and charge any additional fees or credit any overpayment associated with this communication to Deposit Account No. 23-2415 (Docket No. 35196-713.201).

Respectfully submitted,

WILSON SONSINI GOODRICH & ROSATI

Dated: July 21, 2015

By: /Kristin Havranek/
Kristin Havranek, Reg. No. 58,789

650 Page Mill Road
Palo Alto, CA 94304-1050
(650) 493-9300
Customer No. 021971

PATENT COOPERATION TREATY


 PAX 35196-716.601
 VN1; KH9; MWH; DG8; SMMA

Actions:

 Amend Claims: 6/27/15
 Written Opinion: 10/23/15

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

 NOTIFICATION OF TRANSMITTAL OF
 THE INTERNATIONAL SEARCH REPORT AND
 THE WRITTEN OPINION OF THE INTERNATIONAL
 SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

To: KRISTIN HAVRANEK WILSON SONSINI GOODRICH & ROSATI 650 PAGE MILL ROAD PALO ALTO, CA 94304		Date of mailing (day/month/year) 27 APR 2015
Applicant's or agent's file reference 35196-716601	FOR FURTHER ACTION See paragraphs 1 and 4 below	
International application No. PCT/US2014/072230	International filing date (day/month/year) 23 December 2014	
Applicant PLOOM, INC.		

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.
- Filing of amendments and statement under Article 19:**
 The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):
- When?** The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.
- How?** Directly to the International Bureau of WIPO preferably through ePCT or on paper to, 34 chemin des Colombettes
 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 82 70
- For more detailed instructions, see PCT Applicant's Guide, International Phase, paragraphs 9.004 – 9.011.**

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.
3. ☐ **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
- ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.
- ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Reminders

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. These comments will be made available to the public after international publication. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established.

Shortly after the expiration of **18 months from the priority date, the international application will be published** by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90bis.1 and 90bis.3).

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for **entry into the national phase** before those designated Offices. In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months. For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide, National Chapters*.

Within **19 months from the priority date, the applicant may request that a supplementary international search be carried out** by a different International Searching Authority that offers this service (Rule 45bis.1). The procedure for requesting supplementary international search is described in the *PCT Applicant's Guide, International Phase, paragraphs 8.006-8.032*.

Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 Telephone No. PCT OSP: 571-272-7774
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Form PCT/ISA/220 (July 2014)

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 35196-716601	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US2014/072230	International filing date (day/month/year) 23 December 2014	(Earliest) Priority Date (day/month/year) 23 December 2013
Applicant PLOOM, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 5 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of:

- ☒ the international application in the language in which it was filed.
☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. ☐ This international search report has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43.6bis(a)).

c. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☒ Certain claims were found unsearchable (see Box No. II).

3. ☒ Unity of invention is lacking (see Box No. III).

4. With regard to the title,

- ☒ the text is approved as submitted by the applicant.
☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- ☒ the text is approved as submitted by the applicant.
☐ the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

- a. the figure of the drawings to be published with the abstract is Figure No. 7B
☒ as suggested by the applicant.
☐ as selected by this Authority, because the applicant failed to suggest a figure.
☐ as selected by this Authority, because this figure better characterizes the invention.
b. ☐ none of the figures is to be published with the abstract.

Form PCT/ISA/210 (first sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2014/072230

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.: 47
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 last page

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 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.:
1-46,48-81

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.

Form PCT/ISA/210 (continuation of first sheet (2)) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2014/072230

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - A24F 1/22 (2015.01) CPC - A24F 1/00 (2015.01) 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) - A24F 1/22, 1/32, 5/04 (2015.01) USPC - 131/194, 195, 198.1, 198.2, 273, 347 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched CPC - A24F 1/00, 1/22, 47/004 (2015.01) (keyword delimited) Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Orbit, Google Patents, ProQuest Search terms used: aerosol, inhalable, heater, air, oven, valves, inlet, condensation, mouthpiece		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X -- Y	WO 2013/083635 A1 (DUBIEF et al) 13 June 2013 (13.06.2013) entire document	1-2, 4, 6, 18, 24-26, 33, 35, 48-49, 53, 56-58, 65, 67, 75-76, 78 ----- 3, 5, 7-17, 19-23, 27-32, 34, 36-47, 50-52, 54-55, 59-64, 66, 68-74, 77, 79-81
Y	US 2011/0192397 A1 (SASKAR et al) 11 August 2011 (11.08.2011) entire document	3, 5, 7, 50-52, 54, 74, 79-81
Y	US 2008/0029095 A1 (ESSER) 07 February 2008 (07.02.2008) entire document	7, 54
Y	US 2004/0099266 A1 (CROSS et al) 27 May 2004 (27.05.2004) entire document	8-17, 27-32, 55, 59-64, 77
Y	US 2007/0144514 A1 (YEATES et al) 28 June 2007 (28.06.2007) entire document	10-11
Y	US 2013/0255702 A1 (GRIFFITH, JR. et al) 03 October 2013 (03.10.2013) entire document	19-22, 43, 70
Y	US 2009/0151717 A1 (BOWEN et al) 18 June 2009 (18.06.2009) entire document	23
Y	US 2012/0199146 A1 (MARANGOS) 09 August 2012 (09.08.2012) entire document	34, 36-42, 66, 68-69
☒ Further documents are listed in the continuation of Box C. ☐		
* 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 06 April 2015		Date of mailing of the international search report 27 APR 2015
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2014/072230

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 2 609 821 A1 (PLOJOUX et al) 03 July 2013 (03.07.2013) entire document	44, 71
Y	US 2007/0074734 A1 (BRAUNSHTEYN et al) 05 April 2007 (05.04.2007) entire document	45-46, 72-73, 77
A	US 2013/0042865 A1 (MONSEES et al) 21 February 2013 (21.02.2013) entire document	1-46, 48-81
A	US 2013/0333700 A1 (BUCHBERGER) 19 December 2013 (19.12.2013) entire document	1-46, 48-81

Form PCT/ISA/210 (continuation of second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2014/072230

(Continued from Box III)

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claims 1-46, 48-81, drawn to a device and method for generating an inhalable aerosol comprising an oven.

Group II, claims 82-102, 104-105, 112-126, 130-153, 156-160, drawn to a device and method for generating an inhalable aerosol comprising a cartridge.

Group III, claims 161-164, drawn to a system for providing power to an electronic device for generating an inhalable vapor.

The inventions listed as Groups I, II and III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature of the Group I invention: an oven comprising an oven chamber and a heater for heating a vapor forming medium in the oven chamber to generate a vapor; a condenser comprising a condensation chamber in which at least a fraction of the vapor condenses to form the inhalable aerosol as claimed therein is not present in the invention of Groups II and III. The special technical feature of the Group II invention: cartridge for storing fluid as claimed therein is not present in the invention of Groups I or III. The special technical feature of the Group III invention: a rechargeable power storage device housed within the electronic device for generating an inhalable vapor as claimed therein is not present in the invention of Groups I or II.

Groups I, II and III lack unity of invention because even though the inventions of these groups require the technical feature of a device for generating an inhalable aerosol; deliver the inhalable aerosol to a user, this technical feature is not a special technical feature as it does not make a contribution over the prior art.

Specifically, US 2009/0151717 A1 (BOWEN et al) 18 June 2009 (18.06.2009) teaches a device for generating an inhalable aerosol and deliver the inhalable aerosol to a user (air inlets are directed downwards, so that fresh ambient air drawn through mixes with the vapor generated into the vaporization chamber located above the smokeable substance cartridge, which is extracted from the cartridge by inlets located below the cartridge and drawn into user's mouth for inhalation, Para. 17).

Since none of the special technical features of the Group I, II or III inventions are found in more than one of the inventions, unity of invention is lacking.

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: KRISTIN HAVRANEK
WILSON SONSINI GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

27 APR 2015

Applicant's or agent's file reference
35196-716601

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US2014/072230

International filing date (day/month/year)

23 December 2014

Priority date (day/month/year)

23 December 2013

International Patent Classification (IPC) or both national classification and IPC

IPC(8) - A24F 1/22 (2015.01)

CPC - A24F 1/00 (2015.01)

Applicant PLOOM, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1 bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Date of completion of this opinion

06 April 2015

Authorized officer:

Blaine R. Copenheaver

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

Form PCT/ISA/237 (cover sheet) (July 2011)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US2014/072230

Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:
- ☒ the international application in the language in which it was filed.
- ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a)).
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:
- a. (means)
- ☐ on paper
- ☐ in electronic form
- b. (time)
- ☐ in the international application as filed
- ☐ together with the international application in electronic form
- ☐ subsequently to this Authority for the purposes of search
4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2014/072230

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application.

☒ claims Nos. 47

because:

☐ the said international application, or the said claims Nos. _____ relate to the following subject matter which does not require an international search (*specify*):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 47 are so unclear that no meaningful opinion could be formed (*specify*):

because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

☐ the claims, or said claims Nos. _____ are so inadequately supported by the description that no meaningful opinion could be formed (*specify*):

☒ no international search report has been established for said claims Nos. 47

☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit

☐ furnish a sequence listing on paper complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.

☐ furnish a sequence listing in electronic form complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.

☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rule 13ter.1(a) or (b).

☐ See Supplemental Box for further details.

Form PCT/ISA/237 (Box No. III) (July 2011)

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2014/072230

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees the applicant has, within the applicable time limit:
- ☐ paid additional fees.
- ☐ paid additional fees under protest and, where applicable, the protest fee.
- ☐ paid additional fees under protest but the applicable protest fee was not paid.
- ☒ not paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☒ not complied with for the following reasons:

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claims 1-46, 48-81, drawn to a device and method for generating an inhalable aerosol comprising an oven.

Group II, claims 82-102, 104-105, 112-126, 130-153, 156-160, drawn to a device and method for generating an inhalable aerosol comprising a cartridge.

Group III, claims 161-164, drawn to a system for providing power to an electronic device for generating an inhalable vapor.

The inventions listed as Groups I, II and III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature of the Group I invention: an oven comprising an oven chamber and a heater for heating a vapor forming medium in the oven chamber to generate a vapor; a condenser comprising a condensation chamber in which at least a fraction of the vapor condenses to form the inhalable aerosol as claimed therein is not present in the invention of Groups II and III. The special technical feature of the Group II invention: cartridge for storing fluid as claimed therein is not present in the invention of Groups I or III. The special technical feature of the Group III invention: a rechargeable power storage device housed within the electronic device for generating an inhalable vapor as claimed therein is not present in the invention of Groups I or II.

Groups I, II and III lack unity of invention because even though the inventions of these groups require the technical feature of a device for generating an inhalable aerosol; deliver the inhalable aerosol to a user, this technical feature is not a special technical feature as it does not make a contribution over the prior art.

Specifically, US 2009/0151717 A1 (BOWEN et al) 18 June 2009 (18.06.2009) teaches a device for generating an inhalable aerosol and deliver the inhalable aerosol to a user (air inlets are directed downwards, so that fresh ambient air drawn through mixes with the vapor generated into the vaporization chamber located above the smokeable substance cartridge, which is extracted from the cartridge by inlets located below the cartridge and drawn into user's mouth for inhalation, Para. 17).

Since none of the special technical features of the Group I, II or III inventions are found in more than one of the inventions, unity of invention is lacking.

4. Consequently, this opinion has been established in respect of the following parts of the international application:

- ☐ all parts.
- ☒ the parts relating to claims Nos. 1-46, 48-81

Form PCT/ISA/237 (Box No. IV) (July 2011)

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US2014/072230

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	See supplemental Box	YES
	Claims	1-2, 4-6, 18, 24-26, 33, 35, 48-49, 53, 56-58, 65, 67, 75, 78	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-46, 48-81	NO
Industrial applicability (IA)	Claims	1-46, 48-81	YES
	Claims	None	NO

2. Citations and explanations:

Claims 1-2, 4, 6, 18, 24-26, 33, 35, 48-49, 53, 56-58, 65, 67, 75, 78 lack novelty under PCT Article 33(2) as being anticipated by Dubief et al., hereinafter referred to as Dubief.

Regarding claim 1, Dubief discloses a device for generating an inhalable aerosol (an aerosol generating device, Abstract. Forming an inhalable aerosol, page 10, line 22) comprising: an oven comprising an oven chamber and a heater for heating a vapor forming medium in the oven chamber to generate a vapor (liquid 115 is conveyed by capillary action from the cartridge 113 from the end of the wick 117. The liquid in that end of the wick 117 is vaporized by the heater 119 to create a supersaturated vapor, page 10, lines 12-19; thus fig.1 shows an oven comprising an oven chamber (113, 117) and a heater 119 for heating a vapor forming medium (liquid 115) in the oven chamber to generate a vapor); a condenser comprising a condensation chamber in which at least a fraction of the vapor condenses to form the inhalable aerosol (in the aerosol forming chamber 127, the vapor condenses to form an inhalable aerosol, page 10, lines 21-23, fig.1); an air inlet that originates a first airflow path that includes the oven chamber (the supersaturated vapor created is mixed with and carried in the air flow from the air inlet 123, page 10, lines 20-21, fig.1); and an aeration vent that originates a second airflow path that allows air from the aeration vent to join the first airflow path within the condensation chamber and downstream from the oven chamber thereby forming a joined path, wherein the joined path is configured to deliver the inhalable aerosol formed in the condensation chamber to a user (ambient air is drawn into the aerosol forming chamber 127 through the second air inlet 124. This ambient air mixes with the vapor to cool it and accelerate condensation. This cooling air provides aerosol with a desirable droplet size and density as well as ensuring a desirable temperature for the air aerosol entering the user's mouth, page 10, lines 23-27; thus fig.1 shows an aeration vent 124 that originates a second airflow path that allows air from the aeration vent 124 to join the first airflow path within the condensation chamber 127 and downstream from the oven chamber (113, 117) thereby forming a joined path, wherein the joined path is configured to deliver the inhalable aerosol formed in the condensation chamber 127 to a user).

Regarding claim 2, Dubief discloses the oven is within a body of the device (fig.1 shows the oven (113, 117, 119) is within a body (housing 101) of the device, page 10, line 6).

Regarding claim 4, Dubief discloses the device of claim 1 wherein the mouthpiece is separable from the oven (the device housing may include a mouthpiece portion surrounding the air outlet, page 3, line 8; thus it is considered that fig.1 inherently shows the mouthpiece surrounding the air outlet 125 is separable from the oven (113, 117, 119)).

Regarding claim 6, Dubief discloses a body that comprises the oven, the condenser, the air inlet, and the aeration vent (fig.1 shows a body (housing 101) that comprises the oven (113, 117, 119), the condenser 127, the air inlet 123, and the aeration vent 124).

Regarding claim 18, Dubief discloses a body that comprises at least one of: a power source (fig.1 shows a body (housing 101) comprises at least one of a power source (battery 107), page 9, line 32).

Regarding claim 24, Dubief discloses said vapor forming medium comprises tobacco (the aerosol forming substrate preferably comprises a tobacco material, page 5, lines 26-27).

Regarding claim 25, Dubief discloses said vapor forming medium comprises a botanical (the aerosol forming substrate preferably comprises a tobacco material (botanical), page 5, lines 26-27).

Regarding claim 26, Dubief discloses said vapor forming medium is heated in said oven chamber (liquid 115 is conveyed by capillary action from the cartridge 113 from the end of the wick 117. The liquid in that end of the wick 117 is vaporized by the heater 119 to create a supersaturated vapor, page 10, lines 12-19) wherein said vapor forming medium comprises a humectant to produce the vapor, wherein the vapor comprises a gas phase humectant (the aerosol forming substrate further comprises an aerosol former that facilitates the formation of a dense and stable aerosol, page 5, lines 30-32; thus it is considered that said vapor forming medium comprises a humectant (an aerosol former) to produce the vapor, wherein the vapor inherently comprises a gas phase humectant when the liquid is vaporized by the heater 119).

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Box No. V 1. Statement

Novelty (N) Claims: 3, 5, 7-17, 19-23, 27-32, 34, 36-47, 50-52, 54-55, 59-64, 66, 68-74, 76-77, 79-81 YES

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In case the space in any of the preceding boxes is not sufficient.

Continuation of:

Box No. V 2. Citations and explanations (cont.):

Regarding claim 33, Dubief discloses said humectant comprises glycerol as a vapor-forming medium (examples of suitable aerosol formers are glycerine (also known as glycerol) and propylene glycol, page 5, line 32).

Regarding claim 35, Dubief discloses said humectant comprises propylene glycol (examples of suitable aerosol formers are glycerine and propylene glycol, page 5, line 32).

Regarding claim 48, Dubief discloses a method for generating an inhalable aerosol (a method of delivering an aerosol, page 9, line 5. Forming an inhalable aerosol, page 10, line 22), the method comprising: providing an inhalable aerosol generating device (the aerosol generating device, page 9, line 4) wherein the device comprises: an oven comprising an oven chamber and a heater for heating a vapor forming medium in the oven chamber and for forming a vapor therein (liquid 115 is conveyed by capillary action from the cartridge 113 from the end of the wick 117. The liquid in that end of the wick 117 is vaporized by the heater 119 to create a supersaturated vapor, page 10, lines 12-19; thus fig.1 shows an oven comprising an oven chamber (113, 117) and a heater 119 for heating a vapor forming medium (liquid 115) in the oven chamber and for forming a vapor therein); a condenser comprising a condensation chamber in which the vapor forms the inhalable aerosol (in the aerosol forming chamber 127, the vapor condenses to form an inhalable aerosol, page 10, lines 21-23, fig.1); an air inlet that originates a first airflow path that includes the oven chamber (the supersaturated vapor created is mixed with and carried in the air flow from the air inlet 123, page 10, lines 20-21, fig.1); and an aeration vent that originates a second airflow path that allows air from the aeration vent to join the first airflow path within the condensation chamber and downstream from the oven chamber thereby forming a joined path, wherein the joined path is configured to deliver the inhalable aerosol formed in the condensation chamber to a user (ambient air is drawn into the aerosol forming chamber 127 through the second air inlet 124. This ambient air mixes with the vapor to cool it and accelerate condensation. This cooling air provides aerosol with a desirable droplet size and density as well as ensuring a desirable temperature for the air aerosol entering the user's mouth, page 10, lines 23-27; thus fig.1 shows an aeration vent 124 that originates a second airflow path that allows air from the aeration vent 124 to join the first airflow path within the condensation chamber 127 and downstream from the oven chamber (113; 117) thereby forming a joined path, wherein the joined path is configured to deliver the inhalable aerosol formed in the condensation chamber 127 to a user).

Regarding claim 49, Dubief discloses the oven is within a body of the device (fig.1 shows the oven (113, 117, 119) is within a body (housing 101) of the device, page 10, line 6).

Regarding claim 53, Dubief discloses a body that comprises the oven, the condenser, the air inlet, and the aeration vent (fig.1 shows a body (housing 101) that comprises the oven (113, 117, 119), the condenser 127, the air inlet 123, and the aeration vent 124).

Regarding claim 56, Dubief discloses said vapor forming medium comprises tobacco (the aerosol forming substrate preferably comprises a tobacco material, page 5, lines 26-27).

Regarding claim 57, Dubief discloses said vapor forming medium comprises a botanical (the aerosol forming substrate preferably comprises a tobacco material (botanical), page 5, lines 26-27).

Regarding claim 58, Dubief discloses said vapor forming medium is heated in said oven chamber (liquid 115 is conveyed by capillary action from the cartridge 113 from the end of the wick 117. The liquid in that end of the wick 117 is vaporized by the heater 119 to create a supersaturated vapor, page 10, lines 12-19) wherein said vapor forming medium comprises a humectant to produce the vapor, wherein the vapor comprises a gas phase humectant (the aerosol forming substrate further comprises an aerosol former that facilitates the formation of a dense and stable aerosol, page 5, lines 30-32; thus it is considered that said vapor forming medium comprises a humectant (an aerosol former) to produce the vapor, wherein the vapor inherently comprises a gas phase humectant when the liquid vaporized by the heater 119).

Regarding claim 65, Dubief discloses said humectant comprises glycerol as a vapor-forming medium (examples of suitable aerosol formers are glycerine (also known as glycerol) and propylene glycol, page 5, line 32).

Regarding claim 67, Dubief discloses said humectant comprises propylene glycol (examples of suitable aerosol formers are glycerine and propylene glycol, page 5, line 32).

Regarding claim 75, Dubief discloses said device is user serviceable (the aerosol is carried towards the mouth of a user, page 6, lines 28-29).

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Continuation of:

Regarding claim 78, Dubief discloses a method of manufacturing a device for generating an inhalable aerosol (there is provided an aerosol generating device, Abstract. Forming an inhalable aerosol, page 10, line 22) comprising: providing said device comprising a mouthpiece comprising an aerosol outlet at a first end of the device (the device housing may include a mouthpiece portion surrounding the air outlet, page 3, line 8; thus fig.1 shows providing said device inherently comprising a mouthpiece (around the mouthpiece end 103) comprising an aerosol outlet at a first end of the device); an oven comprising an oven chamber and a heater for heating a vapor forming medium in the oven chamber and for forming a vapor therein (liquid 115 is conveyed by capillary action from the cartridge 113 from the end of the wick 117. The liquid in that end of the wick 117 is vaporized by the heater 119 to create a supersaturated vapor, page 10, lines 12-19; thus fig.1 shows an oven comprising an oven chamber (113, 117) and a heater 119 for heating a vapor forming medium (liquid 115) in the oven chamber and for forming a vapor therein), a condenser comprising a condensation chamber in which the vapor forms the inhalable aerosol (in the aerosol forming chamber 127, the vapor condenses to form an inhalable aerosol, page 10, lines 21-23, fig.1), an air inlet that originates a first airflow path that includes the oven chamber and then the condensation chamber (the supersaturated vapor created is mixed with and carried in the air flow from the air inlet 123 towards the outlet 125, page 10, lines 20-21, fig.1), an aeration vent that originates a second airflow path that joins the first airflow path within the condensation chamber after the vapor is formed in the oven chamber, wherein the joined first airflow path and second airflow path are configured to deliver the inhalable aerosol formed in the condensation chamber through the aerosol outlet of the mouthpiece to a user (ambient air is drawn into the aerosol forming chamber 127 through the second air inlet 124. This ambient air mixes with the vapor to cool it and accelerate condensation. This cooling air provides aerosol with a desirable droplet size and density as well as ensuring a desirable temperature for the air aerosol entering the user's mouth, page 10, lines 23-27; thus fig.1 shows an aeration vent 124 that originates a second airflow path that joins the first airflow path within the condensation chamber 127 after the vapor is formed in the oven chamber (113, 117), wherein the joined first airflow path and second airflow path are configured to deliver the inhalable aerosol formed in the condensation chamber 127 through the aerosol outlet of the mouthpiece to a user).

Claim 76 lacks an inventive step under PCT Article 33(3) as being obvious over Dubief.

Regarding claim 76, Dubief does not teach said device is not user serviceable. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to include said device being not user serviceable so as to perform a device testing before use, since adjusting the device as such, where needed, involves only routine skill in the art.

Claims 3, 5, 50-52, 74, 79-81 lack an inventive step under PCT Article 33(3) as being obvious over Dubief in view of Saskar et al., hereinafter referred to as Saskar.

Regarding claims 3, 50, Dubief discloses the device further comprises a mouthpiece (the device housing may include a mouthpiece portion surrounding the air outlet, page 3, line 8). Dubief does not teach the mouthpiece comprises at least one of the air inlet, the aeration vent, and the condenser, Saskar is in the field of producing an inhalable aerosol (abstract) and teaches the mouthpiece comprises at least one of the air inlet (fig.1E shows the mouthpiece 9 comprises at least one of the air inlet 14 (air is drawn from outside through holes 14, para. 0069)). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the mouthpiece comprising at least one of the air inlet so as to make it easier for the user to inhale a dose (Saskar, para. 0069).

Regarding claims 5, 52, Dubief discloses the mouthpiece is integral to a body of the device, wherein the body comprises the oven (the device housing may include a mouthpiece portion surrounding the air outlet, page 3, line 8; thus fig.1 inherently shows the mouthpiece is integral to a body 101 of the device, wherein the body comprises the oven (113, 117, 119)).

Regarding claim 51, Dubief discloses the mouthpiece is separable from the oven (the device housing may include a mouthpiece portion surrounding the air outlet, page 3, line 8; thus it is considered that fig.1 inherently shows the mouthpiece is separable from the oven (113, 117, 119)).

Regarding claim 74, Dubief discloses the inhalable aerosol is cooled to a temperature before exiting the aerosol outlet of the mouthpiece (ambient air is drawn into the aerosol forming chamber 127 through the second air inlet 124. This ambient air mixes with the vapor to cool it and accelerate condensation. This cooling air provides aerosol with a desirable droplet size and density as well as ensuring a desirable temperature for the air aerosol entering the user's mouth, page 10, lines 23-27). Dubief does not teach the temperature is about 50°- 70° C at most. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the temperature being about 50°- 70° C at most so as to provide the aerosol with a desirable temperature entering the user's mouth (Dubief, page 10, lines 26-27), since adjusting the temperature as such, where needed, involves only routine skill in the art.

Regarding claim 79, Dubief discloses providing said device comprising a power source or battery; a printed circuit board; a temperature regulator or operational switch (there is provided an electric power supply in the form of battery 107 and electric circuitry in the form of hardware 109 (printed circuit board) and puff detection system 111 (temperature regulator, page 9, lines 31-33. Alternatively, the user may operate a switch when a puff is taken, page 11, lines 3-4).

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Continuation of:

Regarding claim 80, Dubief discloses a device for generating an inhalable aerosol (an aerosol generating device, abstract. Forming an inhalable aerosol, page 10, line 22) comprising: a mouthpiece comprising an aerosol outlet at a first end of the device (the device housing may include a mouthpiece portion surrounding the air outlet, page 3, line 8; thus fig.1 inherently shows a mouthpiece comprising an aerosol outlet at a first end of the device); an air inlet that originates a first airflow path (the supersaturated vapor created is mixed with and carried in the air flow from the air inlet 123, page 10, lines 20-21, fig. 1); an oven comprising an oven chamber that is in the first airflow path and includes the oven chamber and a heater for heating a vapor forming medium in the oven chamber and for forming a vapor therein (liquid 115 is conveyed by capillary action from the cartridge 113 from the end of the wick 117. The liquid in that end of the wick 117 is vaporized by the heater 119 to create a supersaturated vapor, page 10, lines 12-19; thus fig.1 shows an oven comprising an oven chamber (113, 117) that is in the first airflow path and includes the oven chamber and a heater 119 for heating a vapor forming medium (liquid 115) in the oven chamber and for forming a vapor therein); a condenser comprising a condensation chamber in which the vapor forms the inhalable aerosol (in the aerosol forming chamber 127, the vapor condenses to form an inhalable aerosol, page 10, lines 21-23, fig.1); and an aeration vent that originates a second airflow path that allows air from the aeration vent to join the first airflow path within the condensation chamber and downstream from the oven chamber thereby forming a joined path, wherein the joined path is configured to deliver the inhalable aerosol formed in the condensation chamber through the aerosol outlet of the mouthpiece to a user (ambient air is drawn into the aerosol forming chamber 127 through the second air inlet 124. This ambient air mixes with the vapor to cool it and accelerate condensation. This cooling air provides aerosol with a desirable droplet size and density as well as ensuring a desirable temperature for the air aerosol entering the user's mouth, page 10, lines 23-27; thus fig.1 shows an aeration vent 124 that originates a second airflow path that allows air from the aeration vent 124 to join the first airflow path within the condensation chamber 127 and downstream from the oven chamber (113, 117) thereby forming a joined path, wherein the joined path is configured to deliver the inhalable aerosol formed in the condensation chamber 127 through the aerosol outlet of the mouthpiece to a user). Dubief does not teach the mouthpiece comprising the air inlet. Saskar teaches the mouthpiece comprising the air inlet (fig.1E shows the mouthpiece 9 comprising the air inlet 14 (air is drawn from outside through holes 14, para. 0069)). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Dubief by including the mouthpiece comprising the air inlet so as to make it easier for the user to inhale (Saskar, para. 0069).

Regarding claim 81, Dubief discloses a device for generating an inhalable aerosol (an aerosol generating device, abstract. Forming an inhalable aerosol, page 10, line 22) comprising: a mouthpiece comprising an aerosol outlet at a first end of the device (the device housing may include a mouthpiece portion surrounding the air outlet, page 3, line 8; thus fig.1 inherently shows a mouthpiece comprising an aerosol outlet at a first end of the device); an air inlet that originates a first airflow path (the supersaturated vapor created is mixed with and carried in the air flow from the air inlet 123, page 10, lines 20-21, fig. 1); an aeration vent that originates a second airflow path that allows air from the aeration vent to join the first airflow path (ambient air is drawn into the aerosol forming chamber 127 through the second air inlet 124. This ambient air mixes with the vapor to cool it and accelerate condensation. This cooling air provides aerosol with a desirable droplet size and density as well as ensuring a desirable temperature for the air aerosol entering the user's mouth, page 10, lines 23-27); an oven comprising an oven chamber that is in the first airflow path and includes the oven chamber and a heater for heating a vapor forming medium in the oven chamber and for forming a vapor therein (liquid 115 is conveyed by capillary action from the cartridge 113 from the end of the wick 117. The liquid in that end of the wick 117 is vaporized by the heater 119 to create a supersaturated vapor, page 10, lines 12-19; thus fig.1 shows an oven comprising an oven chamber (113, 117) that is in the first airflow path and includes the oven chamber and a heater 119 for heating a vapor forming medium (liquid 115) in the oven chamber and for forming a vapor therein); and a condenser comprising a condensation chamber in which the vapor forms the inhalable aerosol and wherein air from the aeration vent joins the first airflow path within the condensation chamber and downstream from the oven chamber thereby forming a joined path, wherein the joined path is configured to deliver the inhalable aerosol through the aerosol outlet of the mouthpiece to a user (in the aerosol forming chamber 127, the vapor condenses to form an inhalable aerosol. Ambient air is drawn into the aerosol forming chamber 127 through the second air inlet 124. This ambient air mixes with the vapor to cool it and accelerate condensation. This cooling air provides aerosol with a desirable droplet size and density as well as ensuring a desirable temperature for the air aerosol entering the user's mouth, page 10, lines 21-27; thus fig.1 shows a condenser comprising a condensation chamber 127 in which the vapor forms the inhalable aerosol and wherein air from the aeration vent 124 joins the first airflow path within the condensation chamber 127 and downstream from the oven chamber (113, 117) thereby forming a joined path, wherein the joined path is configured to deliver the inhalable aerosol through the aerosol outlet of the mouthpiece to a user). Dubief does not teach the mouthpiece comprising the air inlet and the aeration vent. Saskar teaches the mouthpiece comprising the air inlets (fig.1E shows the mouthpiece 9 comprising the air inlets 14 (air is drawn from outside through holes 14, para. 0069)). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Dubief by including the mouthpiece comprising the air inlet and the aeration vent so as to make it easier for the user to inhale (Saskar, para. 0069).

Claim 7 lacks an inventive step under PCT Article 33(3) as being obvious over Dubief in view of Saskar, and further in view of Esser.

Regarding claim 7, Dubief does not specifically teach the mouthpiece is separable from the body. Esser is in the field of an inhalable aerosol (the inhalation mixture is an aerosol containing solid particles, para. 0011) and teaches the mouthpiece is separable from the body (the figure shows the mouthpiece (replaceable mouthpiece 4) is separable (replaceable) from the body 1, para. 0027). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the mouthpiece being separable from the body so as to effectively replace the mouthpiece in a desired manner.

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In case the space in any of the preceding boxes is not sufficient.

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Claims 8-9, 12-17, 27-32, 55, 59-64 lack an inventive step under PCT Article 33(3) as being obvious over Dubief in view of Cross et al., hereinafter referred to as Cross.

Regarding claims 8, 55, Dubief discloses said oven chamber comprises an oven chamber inlet and an oven chamber outlet (fig.1 shows said oven chamber (113, 117) inherently comprises an oven chamber inlet and an oven chamber outlet, page 10, lines 12-19). Dubief does not teach the oven further comprises a first valve at the oven chamber inlet, and a second valve at the oven chamber outlet. Cross is in the field of an inhalable aerosol (desired-size drug-aerosol particles for inhalation, para. 0002) and teaches the oven further comprises a first valve at the oven chamber inlet, and a second valve at the oven chamber outlet (heat source 44 for heating the substrate to a temperature effective to vaporize the drug, para. 0033; thus figs. 1 and 8A show the oven (heating source 44 in fig.1) further comprises a first valve 138 at the oven chamber inlet, and a second valve 127 at the oven chamber outlet, para. 0058). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the oven further comprising a first valve at the oven chamber inlet, and a second valve at the oven chamber outlet so as to effectively distribute airflow through the device during operation (Cross, para. 0058).

Regarding claim 9, Dubief does not teach said aeration vent comprises a third valve. Cross teaches said aeration vent comprises a valve (volumetric airflow rate B through the bypass valve. Valve 34 acts to limit air drawn into the device to a preselected level P, para. 0040). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the aeration vent of Dubief by including said aeration vent comprising a third valve so as to limit airflow to a desired level (Cross, para. 0040).

Regarding claim 12, Dubief does not teach said first valve or said second valve is mechanically actuated. Cross teaches the valve is actuated (the gas flow valve includes the actuation switch with valve movement in response to an air pressure differential across the valve acting to close the switch, para. 0013). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said first valve or said second valve being mechanically actuated so as to limit the rate of airflow through the device chamber (Cross, para. 0013), since adjusting the actuating of the valve as such, where needed, involves only routine skill in the art.

Regarding claim 13, Dubief does not teach said first valve or said second valve is electronically actuated. Cross teaches the valve is actuated (the gas flow valve includes the actuation switch with valve movement in response to an air pressure differential across the valve acting to close the switch, para. 0013). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said first valve or said second valve being electronically actuated so as to limit the rate of airflow through the device chamber (Cross, para. 0013), since adjusting the actuating of the valve as such, where needed, involves only routine skill in the art.

Regarding claim 14, Dubief does not teach said first valve or said second valve is manually actuated. Cross teaches the valve is actuated (the gas flow valve includes the actuation switch with valve movement in response to an air pressure differential across the valve acting to close the switch, para. 0013). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said first valve or said second valve being manually actuated so as to limit the rate of airflow through the device chamber (Cross, para. 0013), since adjusting the actuating of the valve as such, where needed, involves only routine skill in the art.

Regarding claim 15, Dubief does not teach said third valve is mechanically actuated. Cross teaches the valve is actuated (the gas flow valve includes the actuation switch with valve movement in response to an air pressure differential across the valve acting to close the switch, para. 0013). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said third valve being mechanically actuated so as to limit the rate of airflow through the device chamber (Cross, para. 0013), since adjusting the actuating of the valve as such, where needed, involves only routine skill in the art.

Regarding claim 16, Dubief does not teach said third valve is electronically actuated. Cross teaches the valve is actuated (the gas flow valve includes the actuation switch with valve movement in response to an air pressure differential across the valve acting to close the switch, para. 0013). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said third valve being electronically actuated so as to limit the rate of airflow through the device chamber (Cross, para. 0013), since adjusting the actuating of the valve as such, where needed, involves only routine skill in the art.

Regarding claim 17, Dubief does not teach said third valve is manually actuated. Cross teaches the valve is actuated (the gas flow valve includes the actuation switch with valve movement in response to an air pressure differential across the valve acting to close the switch, para. 0013). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said third valve being manually actuated so as to limit the rate of airflow through the device chamber (Cross, para. 0013), since adjusting the actuating of the valve as such, where needed, involves only routine skill in the art.

Regarding claim 27, Dubief discloses said vapor is mixed in said condensation chamber with air from the aeration vent to produce the inhalable aerosol (this ambient air mixes with the vapor to cool it and accelerate condensation. This cooling air provides aerosol with a desirable droplet size and density as well as ensuring a desirable temperature for the air aerosol entering the user's mouth, page 10, lines 23-27). Dubief does not teach the inhalable aerosol comprising particle diameters of average size of about 1 micron. Cross teaches the inhalable aerosol comprising particle diameters of average size of about 1 micron (mass median aerodynamic diameter (MMAD) of the aerosol particles. Forming drug condensation particles having a selected MMAD particle size between 1- 3.5 microns, para. 0011). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the inhalable aerosol comprising particle diameters of average size of about 1 micron so as to provide aerosol particles for deep lung delivery (Cross, para. 0011).

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Continuation of:

Regarding claim 28, Dubief discloses said vapor forming medium is heated in said oven chamber (the liquid in that end of the wick 117 is vaporized by the heater 119, page 10, line 18), wherein said vapor is mixed in said condensation chamber with air from the aeration vent to produce the inhalable aerosol (this ambient air mixes with the vapor to cool it and accelerate condensation. This cooling air provides aerosol with a desirable droplet size and density as well as ensuring a desirable temperature for the air aerosol entering the user's mouth, page 10, lines 23-27). Dubief does not teach the inhalable aerosol comprising particle diameters of average size of less than or equal to 0.9 micron. Cross teaches the inhalable aerosol comprising particle diameters of average size of less than 0.9 micron (mass median aerodynamic diameter (MMAD) of the aerosol particles. Forming drug condensation particles having a selected MMAD particle size between 10-100 nm, para. 0011). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the inhalable aerosol comprising particle diameters of average size of less than 0.9 micron so as to provide aerosol particles for deep lung delivery (Cross, para. 0011).

Regarding claim 29, Dubief discloses said vapor forming medium is heated in said oven chamber (the liquid in that end of the wick 117 is vaporized by the heater 119, page 10, line 18), wherein said vapor is mixed in said condensation chamber with air from the aeration vent to produce the inhalable aerosol (this ambient air mixes with the vapor to cool it and accelerate condensation. This cooling air provides aerosol with a desirable droplet size and density as well as ensuring a desirable temperature for the air aerosol entering the user's mouth, page 10, lines 23-27). Dubief does not teach the inhalable aerosol comprising particle diameters of average size of less than or equal to 0.8 micron. Cross teaches the inhalable aerosol comprising particle diameters of average size of less than 0.8 micron (mass median aerodynamic diameter (MMAD) of the aerosol particles. Forming drug condensation particles having a selected MMAD particle size between 10-100 nm, para. 0011). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the inhalable aerosol comprising particle diameters of average size of less than 0.8 micron so as to provide aerosol particles for deep lung delivery (Cross, para. 0011).

Regarding claim 30, Dubief discloses said vapor forming medium is heated in said oven chamber (the liquid in that end of the wick 117 is vaporized by the heater 119, page 10, line 18), wherein said vapor is mixed in said condensation chamber with air from the aeration vent to produce the inhalable aerosol (this ambient air mixes with the vapor to cool it and accelerate condensation. This cooling air provides aerosol with a desirable droplet size and density as well as ensuring a desirable temperature for the air aerosol entering the user's mouth, page 10, lines 23-27). Dubief does not teach the inhalable aerosol comprising particle diameters of average size of less than or equal to 0.7 micron. Cross teaches the inhalable aerosol comprising particle diameters of average size of less than 0.7 micron (mass median aerodynamic diameter (MMAD) of the aerosol particles. Forming drug condensation particles having a selected MMAD particle size between 10-100 nm, para. 0011). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the inhalable aerosol comprising particle diameters of average size of less than 0.7 micron so as to provide aerosol particles for deep lung delivery (Cross, para. 0011).

Regarding claim 31, Dubief discloses said vapor forming medium is heated in said oven chamber (the liquid in that end of the wick 117 is vaporized by the heater 119, page 10, line 18), wherein said vapor is mixed in said condensation chamber with air from the aeration vent to produce the inhalable aerosol (this ambient air mixes with the vapor to cool it and accelerate condensation. This cooling air provides aerosol with a desirable droplet size and density as well as ensuring a desirable temperature for the air aerosol entering the user's mouth, page 10, lines 23-27). Dubief does not teach the inhalable aerosol comprising particle diameters of average size of less than or equal to 0.6 micron. Cross teaches the inhalable aerosol comprising particle diameters of average size of less than 0.6 micron (mass median aerodynamic diameter (MMAD) of the aerosol particles. Forming drug condensation particles having a selected MMAD particle size between 10-100 nm, para. 0011). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the inhalable aerosol comprising particle diameters of average size of less than 0.6 micron so as to provide aerosol particles for deep lung delivery (Cross, para. 0011).

Regarding claim 32, Dubief discloses said vapor forming medium is heated in said oven chamber (the liquid in that end of the wick 117 is vaporized by the heater 119, page 10, line 18), wherein said vapor is mixed in said condensation chamber with air from the aeration vent to produce the inhalable aerosol (this ambient air mixes with the vapor to cool it and accelerate condensation. This cooling air provides aerosol with a desirable droplet size and density as well as ensuring a desirable temperature for the air aerosol entering the user's mouth, page 10, lines 23-27). Dubief does not teach the inhalable aerosol comprising particle diameters of average size of less than or equal to 0.5 micron. Cross teaches the inhalable aerosol comprising particle diameters of average size of less than 0.5 micron (mass median aerodynamic diameter (MMAD) of the aerosol particles. Forming drug condensation particles having a selected MMAD particle size between 10-100 nm, para. 0011). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the inhalable aerosol comprising particle diameters of average size of less than 0.5 micron so as to provide aerosol particles for deep lung delivery (Cross, para. 0011).

Regarding claim 59, Dubief does not teach said vapor comprises particle diameters of average mass of about 1 micron. Cross teaches said vapor comprises particle diameters of average mass of about 1 micron (mass median aerodynamic diameter (MMAD) of the aerosol particles. Condensing drug vapor to form drug condensation particles having a selected MMAD particle size between 1- 3.5 microns, para. 0011). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said vapor comprising particle diameters of average mass of about 1 micron so as to provide aerosol particles for deep lung delivery (Cross, para. 0011).

Regarding claim 60, Dubief does not teach said vapor comprises particle diameters of average mass of less than or equal to about 0.9 micron. Cross teaches said vapor comprises particle diameters of average mass of less than 0.9 micron (mass median aerodynamic diameter (MMAD) of the aerosol particles. Condensing drug vapor to form drug condensation particles having a selected MMAD particle size between 10-100 nm, para. 0011). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said vapor comprising particle diameters of average mass of less than 0.9 micron so as to provide aerosol particles for deep lung delivery (Cross, para. 0011).

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Regarding claim 61, Dubief does not teach said vapor comprises particle diameters of average mass of less than or equal to about 0.8 micron. Cross teaches said vapor comprises particle diameters of average mass of less than 0.8 micron (mass median aerodynamic diameter (MMAD) of the aerosol particles. Condensing drug vapor to form drug condensation particles having a selected MMAD particle size between 10-100 nm, para. 0011). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said vapor comprising particle diameters of average mass of less than 0.8 micron so as to provide aerosol particles for deep lung delivery (Cross, para. 0011).

Regarding claim 62, Dubief does not teach said vapor comprises particle diameters of average mass of less than or equal to about 0.7 micron. Cross teaches said vapor comprises particle diameters of average mass of less than 0.7 micron (mass median aerodynamic diameter (MMAD) of the aerosol particles. Condensing drug vapor to form drug condensation particles having a selected MMAD particle size between 10-100 nm, para. 0011). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said vapor comprising particle diameters of average mass of less than 0.7 micron so as to provide aerosol particles for deep lung delivery (Cross, para. 0011).

Regarding claim 63, Dubief does not teach said vapor comprises particle diameters of average mass of less than or equal to about 0.6 micron. Cross teaches said vapor comprises particle diameters of average mass of less than 0.6 micron (mass median aerodynamic diameter (MMAD) of the aerosol particles. Condensing drug vapor to form drug condensation particles having a selected MMAD particle size between 10-100 nm, para. 0011). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said vapor comprising particle diameters of average mass of less than 0.6 micron so as to provide aerosol particles for deep lung delivery (Cross, para. 0011).

Regarding claim 64, Dubief does not teach said vapor comprises particle diameters of average mass of less than or equal to about 0.5 micron. Cross teaches said vapor comprises particle diameters of average mass of less than 0.5 micron (mass median aerodynamic diameter (MMAD) of the aerosol particles. Condensing drug vapor to form drug condensation particles having a selected MMAD particle size between 10-100 nm, para. 0011). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said vapor comprising particle diameters of average mass of less than 0.5 micron so as to provide aerosol particles for deep lung delivery (Cross, para. 0011).

Claims 10-11 lack an inventive step under PCT Article 33(3) as being obvious over Dubief in view of Cross, and further in view of Yeates et al., hereinafter referred to as Yeates.

Regarding claim 10, Dubief does not teach said first valve, or said second valve is chosen from the group of a check valve, a clack valve, a non-return valve, and a one-way valve. Yeates is in the field of the processing of aerosols (para. 0002) and teaches the valve is chosen from the group of a check valve (the valve 513 is a normally closed one way resistive check valve, para. 0098). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said first valve, or said second valve being chosen from the group of a check valve so as to control the aerosol flow rate (Yeates, para. 0098).

Regarding claim 11, Dubief does not teach said third valve is chosen from the group of a check valve, a clack valve, a non-return valve, and a one-way valve. Yeates teaches the valve is chosen from the group of a check valve (the valve 513 is a normally closed one way resistive check valve, para. 0098). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said third valve, being chosen from the group of a check valve so as to control the aerosol flow rate (Yeates, para. 0098).

Claims 19-22, 43, 70 lack an inventive step under PCT Article 33(3) as being obvious over Dubief in view of Griffith, JR. et al., hereinafter referred to as Griffith, JR.

Regarding claim 19, Dubief does not teach a temperature regulator in communication with a temperature sensor. Griffith, JR. is in the field of providing aerosol for inhalation (para. 0134) and teaches a temperature regulator in communication with a temperature sensor (the control component (temperature regulator) is then activated to direct power through the article such that the resistive heating element 50 produces heat and thus provides aerosol for inhalation by the consumer. The article can include a temperature sensor to provide feedback to the control component. Such sensor can be in direct contact with the resistive heating element 50, para. 0134). It would have been obvious to one of ordinary skill in the art at the time of the invention to include a temperature regulator in communication with a temperature sensor so as to provide the feedback to the temperature regulator (Griffith, JR., para. 0134).

Regarding claim 20, Dubief does not teach the temperature sensor is the heater. Griffith, JR. teaches the temperature sensor is the heater (the article can include a temperature sensor to provide feedback to the control component. Such sensor can be in direct contact with the resistive heating element 50, para. 0134). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the temperature sensor being the heater so as to effectively control the heating element (Griffith, JR., para. 0134).

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Regarding claim 21, Dubief does not teach said power source is rechargeable. Griffith, JR. teaches said power source is rechargeable (examples of useful power sources include lithium ion batteries that preferably are rechargeable, para. 0050). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said power source being rechargeable so as to provide the power source in a cost effective manner (Griffith, JR., para. 0050).

Regarding claim 22, Dubief does not teach said power source is removable. Griffith, JR. teaches said power source is removable (wherein disposable batteries are provided, smoking article can comprise access for removal and replacement of the battery, para. 0050). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said power source being removable so as to provide current flow sufficient to provide various functionalities of the smoking article (Griffith, JR., para. 0050).

Regarding claim 43, Dubief discloses the humectant (the aerosol forming substrate further comprises an aerosol former (humectant) that facilitates the formation of a dense and stable aerosol, page 5, lines 30-32). Dubief does not teach the device of claim 26 wherein the humectant further comprises a flavorant. Griffith, JR. teaches the humectant further comprises a flavorant (heat from the heater can volatilize an aerosol precursor material carried by the aerosol generating material (as well as one or more flavorants that may be provided for delivery to a user), para. 0049). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the humectant further comprising a flavorant so as to deliver the desired flavor to a user (Griffith, JR., para. 0086).

Regarding claim 70, Dubief discloses the humectant (the aerosol forming substrate further comprises an aerosol former (humectant) that facilitates the formation of a dense and stable aerosol, page 5, lines 30-32). Dubief does not teach the device of claim 58 wherein the humectant further comprises a flavorant. Griffith, JR. teaches the humectant further comprises a flavorant (heat from the heater can volatilize an aerosol precursor material carried by the aerosol generating material (as well as one or more flavorants that may be provided for delivery to a user), para. 0049). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the humectant further comprising a flavorant so as to deliver the desired flavor to a user (Griffith, JR., para. 0086).

Claim 23 lacks an inventive step under PCT Article 33(3) as being obvious over Dubief in view of Bowen et al., hereinafter referred to as Bowen.

Regarding claim 23, Dubief does not teach said oven further comprises an access lid. Bowen is in the field of an aerosol for inhalation (abstract) and teaches said oven further comprises an access lid (the lid can be penetrable, wherein a penetrated lid allows an exit of an aerosol generated from heating the viscous vaporizable material, para. 0004). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said oven further comprising an access lid so as to allow an exit of aerosol generated from heating the viscous vaporizable material (Bowen, para. 0004).

Claims 34, 36-42, 66, 68-69 lack an inventive step under PCT Article 33(3) as being obvious over Dubief in view of Marangos.

Regarding claims 34, 66, Dubief does not teach said humectant comprises vegetable glycerol. Marangos is in the field of an electronic cigarette (abstract) and teaches said humectant comprises vegetable glycerol (the fluid comprises but is not limited to propylene, vegetable glycerin, or other vaporizing liquids, para. 0047). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said humectant comprising vegetable glycerol so as to provide a liquid for an improved cartomizer in an electronic cigarette (Marangos, para. 0001, 0047).

Regarding claims 36, 68, Dubief does not teach said humectant comprises a ratio of vegetable glycerol to propylene glycol. Marangos teaches said humectant comprises vegetable glycerol, propylene glycol (the fluid comprises but is not limited to propylene, vegetable glycerin, or other vaporizing liquids, para. 0047). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said humectant comprising a ratio of vegetable glycerol to propylene glycol so as to provide a liquid for an improved cartomizer in an electronic cigarette (Marangos, para. 0001, 0047), since adjusting the liquid ratio as such, where needed, involves only routine skill in the art.

Regarding claim 37, Dubief does not teach said ratio is about 100:0 vegetable glycerol to propylene glycol. Marangos teaches said ratio is about 100:0 vegetable glycerol to propylene glycol (the fluid comprises but is not limited to propylene, vegetable glycerin, or other vaporizing liquids, para. 0047; thus the ratio may be about 100:0 vegetable glycerol to propylene glycol when liquid only comprises vegetable glycerol (glycerin)). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said ratio being about 100:0 vegetable glycerol to propylene glycol so as to provide a liquid for an improved cartomizer in an electronic cigarette (Marangos, para. 0001, 0047).

Regarding claim 38, Dubief does not teach said ratio is about 90:10 vegetable glycerol to propylene glycol. Marangos teaches said humectant comprises vegetable glycerol, propylene glycol (the fluid comprises but is not limited to propylene, vegetable glycerin, or other vaporizing liquids, para. 0047). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said humectant comprising said ratio being about 90:10 vegetable glycerol to propylene glycol so as to provide a liquid for an improved cartomizer in an electronic cigarette (Marangos, para. 0001, 0047), since adjusting the liquid ratio as such, where needed, involves only routine skill in the art.

Regarding claim 39, Dubief does not teach said ratio is about 80:20 vegetable glycerol to propylene glycol. Marangos teaches said humectant comprises vegetable glycerol, propylene glycol (the fluid comprises but is not limited to propylene, vegetable glycerin, or other vaporizing liquids, para. 0047). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said humectant comprising said ratio being about 80:20 vegetable glycerol to propylene glycol so as to provide a liquid for an improved cartomizer in an electronic cigarette (Marangos, para. 0001, 0047), since adjusting the liquid ratio as such, where needed, involves only routine skill in the art.

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Regarding claims 40, 69, Dubief does not teach said ratio is about 70:30 vegetable glycerol to propylene glycol. Marangos teaches said humectant comprises vegetable glycerol, propylene glycol (the fluid comprises but is not limited to propylene, vegetable glycerin, or other vaporizing liquids, para. 0047). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said humectant comprising said ratio being about 70:30 vegetable glycerol to propylene glycol so as to provide a liquid for an improved cartomizer in an electronic cigarette (Marangos, para. 0001, 0047), since adjusting the liquid ratio as such, where needed, involves only routine skill in the art.

Regarding claim 41, Dubief does not teach said ratio is about 60:40 vegetable glycerol to propylene glycol. Marangos teaches said humectant comprises vegetable glycerol, propylene glycol (the fluid comprises but is not limited to propylene, vegetable glycerin, or other vaporizing liquids, para. 0047). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said humectant comprising said ratio being about 60:40 vegetable glycerol to propylene glycol so as to provide a liquid for an improved cartomizer in an electronic cigarette (Marangos, para. 0001, 0047), since adjusting the liquid ratio as such, where needed, involves only routine skill in the art.

Regarding claim 42, Dubief does not teach said ratio is about 50:50 vegetable glycerol to propylene glycol. Marangos teaches said humectant comprises vegetable glycerol, propylene glycol (the fluid comprises but is not limited to propylene, vegetable glycerin, or other vaporizing liquids, para. 0047). It would have been obvious to one of ordinary skill in the art at the time of the invention to include said humectant comprising said ratio being about 50:50 vegetable glycerol to propylene glycol so as to provide a liquid for an improved cartomizer in an electronic cigarette (Marangos, para. 0001, 0047), since adjusting the liquid ratio as such, where needed, involves only routine skill in the art.

Claims 44, 71 lack an inventive step under PCT Article 33(3) as being obvious over Dubief in view of Plojoux et al., hereinafter referred to as Plojoux.

Regarding claims 44, 71, Dubief does not teach the vapor forming medium is heated to its pyrolytic temperature. Plojoux is in the field of an aerosol generating device (abstract) and teaches the vapor forming medium is heated to its pyrolytic temperature (raising the temperature of the heating element to a second temperature sufficient to thermally liberate organic materials deposited on the heating element, where the second temperature is a higher temperature than the first temperature, and the thermal liberation may occur by a pyrolysis, para. 0008). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the vapor forming medium being heated to its pyrolytic temperature so as to obtain a usable heating element (Plojoux, para. 0008).

Claims 45-46, 72-73 lack an inventive step under PCT Article 33(3) as being obvious over Dubief in view of Braunshteyn et al., hereinafter referred to as Braunshteyn.

Regarding claims 45, 72, Dubief does not teach the vapor forming medium is heated to 200° C at most. Braunshteyn is in the field of an aerosol generating flavor cartridge. See claim 7) and teaches the vapor forming medium is heated to 200° C at most (the temperature range preferably in the range of about 160C to about 200C, and the heat in the chamber 52 begins to releasing volatile vapors from the tobacco or tobacco flavor extract cartridge, para. 0034). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the vapor forming medium being heated to 200° C at most so as to avoid the visible smoke during puffing (Braunshteyn, para. 0034).

Regarding claims 46, 73, Dubief does not teach the vapor forming medium is heated to 160° C at most. Braunshteyn teaches the vapor forming medium is heated to 160° C at most (the temperature of about 160C is preferred since below that temperature, volatile vapors may not be released, para. 0034). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the vapor forming medium being heated to 160° C at most so as to release volatile vapors (Braunshteyn, para. 0034).

Claim 54 lacks an inventive step under PCT Article 33(3) as being obvious over Dubief in view of Saskar, and further in view of Esser.

Regarding claim 54, Dubief does not specifically teach the mouthpiece is separable from the body. Esser teaches the mouthpiece is separable from the body (the figure shows the mouthpiece (replaceable mouthpiece 4) is separable (replaceable) from the body 1, para. 0027). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the mouthpiece being separable from the body so as to effectively replace the mouthpiece in a desired manner.

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Claim 77 lacks an inventive step under PCT Article 33(3) as being obvious over Cross in view of Braunshteyn.

Regarding claim 77, Cross discloses a method for generating an inhalable aerosol (producing desired-size drug-aerosol particles for inhalation, para. 0002), the method comprising: providing a vaporization device heating the substrate to a temperature effective to vaporize said drug, para. 0016), wherein said device produces a vapor comprising particle diameters of average mass of about 1 micron or less (mass median aerodynamic diameter (MMAD) of the aerosol particles. Forming drug condensation particles having a selected MMAD particle size between 10-100 nm, para. 0011), wherein said vapor is formed by heating a vapor forming medium in an oven chamber to a first temperature (a heat source 44 for heating the substrate to a temperature effective to vaporize the drug, para. 0033, fig.1), and cooling said vapor in a condensation chamber to a second temperature below the first temperature, before exiting an aerosol outlet of said device (the condensation region in the device where heated drug vapor is condensed to form desired-size aerosol particles, para. 0032. Resulting in almost the entire compound vaporizing and cooling in the air prior to thermal degradation, para. 0034; thus it is considered that fig.1 inherently shows cooling said vapor in a condensation chamber 32 to a second temperature below the first temperature, before exiting an aerosol outlet of said device).

Cross does not specifically teach the first temperature is below the pyrolytic temperature of said vapor forming medium. Braunshteyn teaches the first temperature is below the pyrolytic temperature of said vapor forming medium (at and below this higher temperature, the lighter operates without combustion of tobacco. Coincidentally, most of the pyrolytic and pyrosynthetic processes are avoided, para. 0020. The air condenses the volatile and semi-volatile vapors of the tobacco. This distillation aerosol looks like smoke but does not include the particulate matter, ash, pyrolytic and pyrosynthetic compounds found in conventional tobacco smoke, para. 0039; thus it is considered that the temperature is inherently below the pyrolytic temperature of the vapor forming medium because most of the pyrolytic processes are avoided herein). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the first temperature being below the pyrolytic temperature of said vapor forming medium so as to provide a smokeless cigarette lighter (Braunshteyn, para. 0002).

Claims 1-46, 48-81 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.

Electronic Acknowledgement Receipt	
EFS ID:	22979044
Application Number:	14271071
International Application Number:	
Confirmation Number:	6078
Title of Invention:	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
First Named Inventor/Applicant Name:	Adam Bowen
Customer Number:	21971
Filer:	Kristin J. Havranek
Filer Authorized By:	
Attorney Docket Number:	35196-713.201
Receipt Date:	21-JUL-2015
Filing Date:	06-MAY-2014
Time Stamp:	16:29:55
Application Type:	Utility under 35 USC 111(a)

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		35196_713_201.pdf	202246	yes	7
			18e899546c8745f6871216e3319043712e13f6e4		

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Warnings:					
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2	Foreign Reference	EP2609821A1.pdf	1027372	no	16
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If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

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Application Number	Filing Date
14/271,071	May 6, 2014

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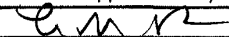
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SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	
Name	Adam Bowen		
Title	Chief Technology Officer and Co-Founder		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☒ Total of one forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: PAX Labs, Inc.

Application No./Patent No.: 14/271,071 Filed/Issue Date: May 6, 2014

Titled: NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF

PAX Labs, Inc., a Corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
- ☐ The extent (by percentage) of its ownership interest is ____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
- B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Inventors To: Ploom, Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 033367, Frame 0718, or for which a copy thereof is attached.

2. From: Ploom, Inc. To: PAX Labs, Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 035121, Frame 0328, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

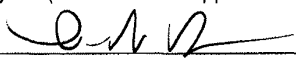
The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☒ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.



Signature

10-15-2015

Date

Adam Bowen

Printed or Typed Name

CTO and Co-Founder

Title or Registration Number

[Page 2 of 2]

Supplemental Application Data Sheet

Application Information

Application number:: 14/271,071
Filing Date:: May 6, 2014
Title:: NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES
AND METHODS THEREOF
Attorney Docket Number:: ~~35196-713.201~~ 13211-713.201

➤ Please update the Applicant Information as follows:

Applicant Information

Assignee?:: YES
Organization name:: ~~Ploom, Inc.~~ PAX Labs, Inc.
Street of mailing address:: 660 Alabama Street
City of mailing address:: San Francisco
State or Province of mailing address:: CA
Postal or Zip Code of
mailing address:: 94110
Country of mailing address:: US

➤ Please update the Assignee Information as follows:

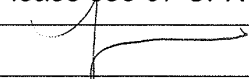
Assignee Information

Assignee name:: ~~Ploom, Inc.~~ PAX Labs, Inc.
Street of mailing address:: 660 Alabama Street
City of mailing address:: San Francisco
State or Province of mailing address:: CA
Postal or Zip Code of

Page #1
Supplemental 14/271,071 05/06/2014 10/29/2015

mailing address:: 94110
Country of mailing address:: US

Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.			
Signature		Date	October 29, 2015
Name	Kathleen R. Kelleher	Registration No.	62,230

Electronic Acknowledgement Receipt	
EFS ID:	23937496
Application Number:	14271071
International Application Number:	
Confirmation Number:	6078
Title of Invention:	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
First Named Inventor/Applicant Name:	Adam Bowen
Customer Number:	21971
Filer:	Kathleen R. Kelleher/Jennifer Capizzi
Filer Authorized By:	Kathleen R. Kelleher
Attorney Docket Number:	35196-713.201
Receipt Date:	29-OCT-2015
Filing Date:	06-MAY-2014
Time Stamp:	19:48:17
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		13211-713-201_POA_Stmnt3-7 3c_SupplADS_10-29-15.pdf	272372 <small>3b8493debd37956b0c381734e924bfbb953bd515</small>	yes	5

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Power of Attorney	1	1
	Assignee showing of ownership per 37 CFR 3.73	2	3
	Application Data Sheet	4	5
Warnings:			
Information:			
Total Files Size (in bytes):		272372	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>			



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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
14/271,071	05/06/2014	1747	3200	13211-713.201	33	4

CONFIRMATION NO. 6078

REPLACEMENT FILING RECEIPT



0000000078529964

66854
SHAY GLENN LLP
2755 CAMPUS DRIVE
SUITE 210
SAN MATEO, CA 94403

Date Mailed: 11/06/2015

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Adam Bowen, San Francisco, CA;
Chenyue Xing, San Francisco, CA;

Applicant(s)

PAX Labs, Inc., San Francisco, CA;

Assignment For Published Patent Application

PAX Labs, Inc., San Francisco, CA

Power of Attorney: The patent practitioners associated with Customer Number 66854

Domestic Priority data as claimed by applicant

This appln claims benefit of 61/820,128 05/06/2013
and claims benefit of 61/912,507 12/05/2013

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 05/20/2014

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/271,071**

Projected Publication Date: Not Applicable

page 1 of 3

Non-Publication Request: No

Early Publication Request: No

Title

NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF

Preliminary Class

131

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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Title 37, Code of Federal Regulations, 5.11 & 5.15

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UNITED STATES DEPARTMENT OF COMMERCE
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/271,071	05/06/2014	Adam Bowen	35196-713.201

21971
WILSON, SONSINI, GOODRICH & ROSATI
650 PAGE MILL ROAD
PALO ALTO, CA 94304-1050

CONFIRMATION NO. 6078

POWER OF ATTORNEY NOTICE



0000000078529928

Date Mailed: 11/06/2015

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/29/2015.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/mtekle michael/



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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/271,071	05/06/2014	Adam Bowen	13211-713.201

CONFIRMATION NO. 6078

POA ACCEPTANCE LETTER



66854
SHAY GLENN LLP
2755 CAMPUS DRIVE
SUITE 210
SAN MATEO, CA 94403

Date Mailed: 11/06/2015

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/29/2015.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/mtekle michael/

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Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 1 of 11

Complete if Known

Application Number	14/271,071
Filing Date	May 6, 2014
First Named Inventor	Adam Bowen
Art Unit	1747
Examiner Name	Mayes, Dionne Walls
Attorney Docket Number	13211-713.201

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	4	US- 720,007	2/10/1903	Dexter	
	6	US- 968,160	8/23/1910	Johnson	
	20	US- 2,104,266	1/4/1938	McCormick	
	27	US- 2,830,597	4/15/1958	Jakob	
	28	US- 2,860,638	11/18/1958	Frank	
	30	US- 2,935,987	5/10/1960	Ackerbauer	
	32	US- 3,258,015	6/28/1966	Ellis et al.	
	33	US- 3,292,634	12/20/1966	Beucler	
	34	US- 3,373,915	3/19/1968	Anderson et al.	
	36	US- 3,479,561	11/18/1969	Janning	
	38	US- 3,707,017	12/26/1972	Paquette	
	39	US- 3,792,704	2/19/1974	Parker	
	42	US- 4,020,853	5/3/1977	Nuttall	
	43	US- 4,049,005	9/20/1977	Hernandez et al.	
	44	US- 4,066,088	1/3/1978	Ensor	
	46	US- 4,215,708	8/5/1980	Bron	
	47	US- 4,219,032	8/26/1980	Tabatznik et al.	
	48	US- 4,506,683	3/26/1985	Cantrell et al.	
	50	US- 4,595,024	6/17/1986	Greene et al.	

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
	374	CA2641869A1	5/6/2010	Xia, Hao Ran		
	377	CN1122213A(w/EngAbs)	5/15/1996	Philip Morris Prod Inc		
	378	CN85106876A(w/EngCorres)	9/3/1986	M. J. Luinoziancaogose		
	379	DE19854005A1(w/EngAbs)	5/18/2000	Reemtsma Gmbh		
	380	DE19854012A1(w/EngTrans)	5/18/2000	Reemtsma Gmbh		
	381	DE4200639A1(w/EngEquiv)	7/23/1992	Brown & Williamson Tob.		

Examiner Signature	Date Considered
--------------------	-----------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND**

TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Substitute for form 1449/PTO		Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 2	of 11	Attorney Docket Number	13211-713.201

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	51	US- 4,708,151	11/24/1987	Shelar	
	52	US- 4,735,217	4/5/1988	Gerth et al.	
	54	US- 4,793,365	12/27/1988	Sensabaugh Jr. et al.	
	55	US- 4,794,323	12/27/1988	Zhou et al.	
	58	US- 4,819,665	4/11/1989	Roberts et al.	
	61	US- 4,846,199	7/11/1989	Rose	
	62	US- 4,848,374	7/18/1989	Chard et al.	
	64	US- 4,893,639	1/16/1990	White	
	65	US- 4,907,606	3/13/1990	Lilja et al.	
	66	US- 4,941,483	7/17/1990	Ridings et al.	
	67	US- 4,944,317	7/31/1990	Thal	
	68	US- 4,947,874	8/14/1990	Brooks et al.	
	69	US- 4,947,875	8/14/1990	Brooks et al.	
	71	US- 5,020,548	6/4/1991	Farrier et al.	
	72	US- 5,027,836	7/2/1991	Shannon et al.	
	73	US- 5,050,621	9/24/1991	Creighton et al.	
	74	US- 5,060,671	10/29/1991	Counts et al.	
	75	US- 5,065,776	11/19/1991	Lawson et al.	
	76	US- 5,076,297	12/31/1991	Farrier et al.	

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
	382	EP0532194A1	3/17/1993	Philip Morris Prod Inc		
	383	EP0535695A2	4/7/1993	Phillips Petroleum Co		
	384	EP1458388A(asWO03/055486)	9/22/2004	McNeil AB		
	390	ES2118034A1(w/EngAbs)	9/1/1998	Nugar Bobinajes SI		
	391	GB1025630A	4/14/1966	British American Tobacco		
	392	GB1065678A	4/19/1967	Super Temp Corp		

Examiner Signature	Date Considered
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Substitute for form 1449/PTO		Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 3	of 11	Attorney Docket Number	13211-713.201

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	77	US- 5,105,831	4/21/1992	Banerjee et al.	
	78	US- 5,105,838	4/21/1992	White et al.	
	80	US- 5,144,962	9/8/1992	Counts et al.	
	81	US- 5,183,062	2/2/1993	Clearman et al.	
	82	US- 5,224,498	7/6/1993	Deevi et al.	
	83	US- 5,249,586	10/5/1993	Morgan et al.	
	84	US- 5,261,424	11/16/1993	Sprinkel Jr.	
	85	US- 5,269,237	12/14/1993	Baker et al.	
	87	US- 5,322,075	6/21/1994	Deevi et al.	
	88	US- 5,324,498	6/28/1994	Streusand et al.	
	89	US- 5,372,148	12/13/1994	McCafferty et al.	
	90	US- 5,388,574	2/14/1995	Ingebrethsen	
	91	US- 5,591,368	1/7/1997	Fleischhauer et al.	
	94	US- 5,649,552	7/22/1997	Cho et al.	
	95	US- 5,666,977	9/16/1997	Higgins et al.	
	96	US- 5,666,978	9/16/1997	Counts et al.	
	97	US- 5,708,258	1/13/1998	Counts et al.	
	98	US- 5,730,118	3/24/1998	Hermanson	
	99	US- 5,730,158	3/24/1998	Collins et al.	

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Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
	393	IE-S2005-0051	2/2/2005	Oglesby & Butler R&D Ltd		
	394	IE-S2005-0563	8/24/2005	Oglesby & Butler R&D Ltd		
	395	IE-S2005-0615	9/19/2005	Oglesby & Butler R&D Ltd		
	397	JP03-049671(w/EngEquiv)	3/4/1991	Brown & Williamson Tob.		
	398	JP03-180166(w/EngEquiv)	8/6/1991	R J Reynolds Tobacco Co		
	400	JP11-178563(w/EngAbs)	7/6/1999	Japan Tobacco Inc		

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Substitute for form 1449/PTO <div style="text-align: center;">INFORMATION DISCLOSURE STATEMENT BY APPLICANT</div> <div style="text-align: center;"><small>(Use as many sheets as necessary)</small></div>	<div style="text-align: center;">Complete if Known</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Application Number</td> <td>14/271,071</td> </tr> <tr> <td>Filing Date</td> <td>May 6, 2014</td> </tr> <tr> <td>First Named Inventor</td> <td>Adam Bowen</td> </tr> <tr> <td>Art Unit</td> <td>1747</td> </tr> <tr> <td>Examiner Name</td> <td>Mayes, Dionne Walls</td> </tr> <tr> <td>Attorney Docket Number</td> <td>13211-713.201</td> </tr> </table>	Application Number	14/271,071	Filing Date	May 6, 2014	First Named Inventor	Adam Bowen	Art Unit	1747	Examiner Name	Mayes, Dionne Walls	Attorney Docket Number	13211-713.201
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		Number-Kind Code ² (if known)			
	102	US- 5,819,756	10/13/1998	Mielordt	
	103	US- 5,845,649	12/8/1998	Saito et al.	
	104	US- 5,865,185	2/2/1999	Collins et al.	
	106	US- 5,931,828	8/3/1999	Durkee	
	107	US- 5,934,289	8/10/1999	Watkins et al.	
	109	US- 5,944,025	8/31/1999	Cook et al.	
	110	US- 5,954,979	9/21/1999	Counts et al.	
	114	US- 5,994,025	11/30/1999	Iwasa et al.	
	115	US- 5,996,589	12/7/1999	St. Charles	
	116	US- 6,053,176	4/25/2000	Adams et al.	
	118	US- 6,095,153	8/1/2000	Kessler et al.	
	120	US- 6,125,853	10/3/2000	Susa et al.	
	121	US- 6,155,268	12/5/2000	Takeuchi	
	122	US- 6,164,287	12/26/2000	White	
	125	US- 6,349,728	2/26/2002	Pham	
	131	US- 6,532,965	3/18/2003	Abhulimen et al.	
	132	US- 6,536,442	3/25/2003	St. Charles et al.	
	134	US- 6,598,607	7/29/2003	Adiga et al.	
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		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
	401	JP2000-203639(w/EngAbs)	7/25/2000	S & B Foods Inc		
	402	JP2000-236865A(w/EngAbs)	9/5/2000	Seiko Kogyo KK		
	404	JP2005-034021A(w/EngCorres)	2/10/2005	Seiko Epson Corp		
	405	JP2006-504430A(w/EngEquiv)	2/9/2006	R J Reynolds Tobacco Co		
	406	JP62-278975(w/EngAbs)	12/3/1987	Watabe, Isamu		
	407	JP64-37276A(w/EngEquiv)	2/7/1989	R J Reynolds Tobacco Co		

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Sheet	5	of	11
		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
		Attorney Docket Number	13211-713.201

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		Number-Kind Code ² (if known)			
	136	US- 6,615,840	9/9/2003	Fournier et al.	
	138	US- 6,655,379	12/2/2003	Clark et al.	
	140	US- 6,688,313	2/10/2004	Wrenn et al.	
	142	US- 6,772,756	8/10/2004	Shayan	
	144	US- 6,803,545	10/12/2004	Blake et al.	
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	147	US- 6,827,573	12/7/2004	St. Charles et al.	
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	151	US- 7,488,171	2/10/2009	St. Charles et al.	
	163	US- 8,371,310	2/12/2013	Brenneise	
	165	US- 8,387,612	3/5/2013	Damani et al.	
	167	US- 8,490,629	7/23/2013	Shenassa et al.	
	169	US- 8,541,401	9/24/2013	Mishra et al.	
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	181	US- D590991	4/21/2009	Hon	

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		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
	408	KR0193885B1(w/EngEquiv)	6/15/1999	Philip Morris Prod Inc		
	409	WO95/01137A1	1/12/1995	Voges Innovation Pty Ltd.		
	411	WO00/28842A1(EngAbs)	5/25/2000	Reemtsma GmbH		
	412	WO03/056948A1(EngAbs)	7/17/2003	Japan Tobacco Inc.		
	413	WO03/082031A1	10/9/2003	Steinberg, Dan A.		
	415	WO2004/064548A1	8/5/2004	Netzer, Omry		

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		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 6	of 11	Attorney Docket Number	13211-713.201

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	182	US- D624238	9/21/2010	Turner	
	183	US- D642330	7/26/2011	Turner	
	184	US- D644375	8/30/2011	Zhou	
	185	US- D653803	2/7/2012	Timmermans	
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	193	US- 2002/0078951	6/27/2002	Nichols et al.	
	195	US- 2003/0005926	1/9/2003	Jones et al.	
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	199	US- 2004/0149296	8/5/2004	Rostami et al.	
	201	US- 2004/0173229	9/9/2004	Crooks et al.	
	202	US- 2004/0182403	9/23/2004	Andersson et al.	
	203	US- 2004/0221857	11/11/2004	Dominguez	
	204	US- 2004/0237974	12/2/2004	Min	
	205	US- 2005/0016549	1/27/2005	Banerjee et al.	
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		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
	417	WO2005/020726A1	3/10/2005	Lee, Seunghyun		
	418	WO2006/015070A1	2/9/2006	Brown & Williamson Tob.		
	419	WO2007/026131A1	3/8/2007	Acetate Products Ltd		
	421	WO2010/023561A1	3/4/2010	Actavis Group Ptc		
	425	WO2012/027350A2	3/1/2012	Alelov, Eli		
	426	WO2012/085207A1	6/28/2012	Philip Morris Prod S.A		

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STATEMENT BY APPLICANT**

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Sheet 7 of 11**Complete if Known**

Application Number	14/271,071
Filing Date	May 6, 2014
First Named Inventor	Adam Bowen
Art Unit	1747
Examiner Name	Mayes, Dionne Walls
Attorney Docket Number	13211-713.201

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	207	US- 2005/0034723	2/17/2005	Bennett et al.	
	212	US- 2005/0244521	11/3/2005	Strickland et al.	
	213	US- 2005/0268911	12/8/2005	Cross et al.	
	216	US- 2006/0102175	5/18/2006	Nelson	
	218	US- 2006/0191546	8/31/2006	Takano et al.	
	219	US- 2006/0191548	8/31/2006	Strickland et al.	
	223	US- 2007/0006889	1/11/2007	Kobal et al.	
	224	US- 2007/0045288	3/1/2007	Nelson	
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	235	US- 2007/0283972**	12/13/2007	Monsees et al.	
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	239	US- 2008/0149118	6/26/2008	Oglesby et al.	
	240	US- 2008/0216828	9/11/2008	Wensley et al.	
	242	US- 2008/0257367	10/23/2008	Paterno et al.	
	245	US- 2009/0095287	4/16/2009	Emarlou	
	247	US- 2009/0133691	5/28/2009	Yamada et al.	
	248	US- 2009/0230117	9/17/2009	Fernando et al.	

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		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
	428	WO2013/050934A1	4/11/2013	SIS Resources Ltd.		
	431	WO2013/098398A2	7/4/2013	Philip Morris Prod S.A		
	434	WO2014/093127A2	6/19/2014	Fuisz, Richard C.		
	436	WO2014/118286A2	8/7/2014	Philip Morris Prod S.A		
	437	WO2014/139611A1	9/18/2014	Philip Morris Prod S.A		
	438	WO2014/140087A1	9/18/2014	Philip Morris Prod S.A		

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		Attorney Docket Number	13211-713.201

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	249	US- 2009/0255534	10/15/2009	Paterno	
	251	US- 2009/0272379	11/5/2009	Thorens et al.	
	252	US- 2009/0288668	11/26/2009	Inagaki	
	254	US- 2009/0293892	12/3/2009	Williams et al.	
	257	US- 2010/0006092	1/14/2010	Hale et al.	
	258	US- 2010/0024834	2/4/2010	Oglesby et al.	
	260	US- 2010/0156193	6/24/2010	Rhodes et al.	
	261	US- 2010/0163063	7/1/2010	Fernando et al.	
	264	US- 2010/0236562	9/23/2010	Hearn et al.	
	270	US- 2011/0030706	2/10/2011	Gibson et al.	
	271	US- 2011/0036346	2/17/2011	Cohen et al.	
	272	US- 2011/0041861	2/24/2011	Sebastian et al.	
	274	US- 2011/0094523	4/28/2011	Thorens et al.	
	275	US- 2011/0108023	5/12/2011	McKinney et al.	
	280	US- 2011/0226236	9/22/2011	Buchberger	
	281	US- 2011/0226266	9/22/2011	Tao	
	283	US- 2011/0236002	9/29/2011	Oglesby et al.	
	289	US- 2012/0006342	1/12/2012	Rose et al.	
	295	US- 2012/0260927	10/18/2012	Liu	

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Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
	440	WO2014/187763A1	11/27/2014	Philip Morris Prod S.A		
	441	WO2014/187770A2	11/27/2014	Philip Morris Prod S.A		
	443	WO2015/006652A1	1/15/2015	Alexza Pharm. Inc.		
	445	WO2015/040180A2	3/26/2015	Philip Morris Prod S.A		
	448	WO2015/082652A1	6/11/2015	Philip Morris Prod S.A		
	449	WO2015/084544A1	6/11/2015	Pax Labs, Inc.		

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Substitute for form 1449/PTO		Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 9	of 11	Attorney Docket Number	13211-713.201

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	298	US- 2012/0325227	12/27/2012	Robinson et al.	
	300	US- 2013/0068239	3/21/2013	Youn	
	302	US- 2013/0152922	6/20/2013	Benassayag et al.	
	309	US- 2013/0312742**	11/28/2013	Monsees et al.	
	315	US- 2014/0041655	2/13/2014	Barron et al.	
	317	US- 2014/0060552**	3/6/2014	Cohen	
	325	US- 2014/0190503	7/10/2014	Li et al.	
	337	US- 2014/0366898**	12/18/2014	Monsees et al.	
	338	US- 2014/0378790**	12/25/2014	Cohen	
	339	US- 2015/0020823	1/22/2015	Lipowicz et al.	
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	350	US- 2015/0128966	5/14/2015	Lord	
	353	US- 2015/0150308**	6/4/2015	Monsees et al.	
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Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
	451	WO2015/101651A1	7/9/2015	Philip Morris Prod S.A		
	453	WO2015/124878A1(EngAbs)	8/27/2015	Smokio		
	454	WO2015/148547A1	10/1/2015	Nicotech LLC		
	455	WO2015/175979A1	11/19/2015	Pax Labs, Inc.		

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		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 10	of 11	Attorney Docket Number	13211-713.201

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	461	BAKER et al.; The pyrolysis of tobacco ingredients; J. Anal. Appl. Pyrolysis; 71(1); pp. 223-311; March 2004	
	458	BOMBICK et al.; Chemical and biological studies of a new cigarette that primarily heats tobacco; Part 3: In vitro toxicity of whole smoke; Food and Chemical Toxicology; 36(3); pp. 191-197; March 1998	
	457	BOMBICK et al.; Chemical and biological studies of a new cigarette that primarily heats tobacco; Part 2: In vitro toxicology of mainstream smoke condensate; Food and Chemical Toxicology; 36(3); pp. 183-190; March 1998	
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	456	ECF; Any interest in determining nicotine--by DVAP; (https://www.e-cigarette-forum.com/forum/threads/any-interest-in-determining-nicotine-by-dvap.35922/); blog posts dated: 2009; 8 pgs.; print/retrieval date: July 31, 2014	
	467	KUO et al.; Appendix D: Particle size-U.S. sieve size and Tyler screen mesh equivalents; Applications of Turbulent and Multiphase Combustion; John Wiley & Sons, Inc.; pp. 541-543; May 1, 2012	
	465	McCANN et al.; Detection of carcinogens as mutagens in the salmonella/microsome test: Assay of 300 chemicals: Discussion; Proc. Nat. Acad. Sci.; 73(3); pp. 950-954; March 1976	
	460	MIRRIAM-WEBSTER Online Dictionary; Lighter; retrieved 1/4/2013 from the internet: (http://www.merriam-webster.com/dictionary/lighter?show=0&t=1357320593); 2 pgs.; print date: 1/4/2013	
	479	NICOLI et al.; Mammalian tumor xenografts induce neovascularization in Zebrafish embryos; Cancer Research; 67(7); pp. 2927-2931; April 1, 2007	
	483	PERFETTI; Structural study of nicotine salts; Beitrage zur Tabakforschung International; Contributions to Tobacco Research; 12(2); pp. 43-54; June 1983	

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		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 11	of 11	Attorney Docket Number	13211-713.201

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	462	TORIKAI et al.; Effects of temperature, atmosphere and pH on the generation of smoke compounds during tobacco pyrolysis; Food and Chemical Toxicology; 42(9); pp. 1409-1417; September 2004	
	463	WARD; Green leaf threshing and redrying tobacco; Section 10B; in TOBACCO Production, Chemistry and Technology; Davis and Nielsen (Eds.); Blackwell Science Ltd.; pp. 330-333; July 15, 1999	
	466	WELLS; Glycerin as a constituent of cosmetics and toilet preparations; Journal of the Society of Cosmetic Chemists; 9(1); pp. 19-25; January 1958	
	480	YouTube; Firefly Vaporizer Review w/ Usage Tips by The Vape Critic; retrieved from the internet (http://www.youtube.com/watch?v=1J38N0AV7wI); 1 pg.; published 12/10/2013; download/print date: 2/18/2015	
	484	MONSEES, J.; U.S. Pat. App. # 12/115,400 entitled "Method And System For Vaporization Of A Substance", filed 5/5/2008	
	485	BOWEN et al.; U.S. Pat. App. # 14/960,259 entitled "Calibrated Dose Control", filed 12/4/2015	

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Electronic Acknowledgement Receipt	
EFS ID:	25349246
Application Number:	14271071
International Application Number:	
Confirmation Number:	6078
Title of Invention:	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
First Named Inventor/Applicant Name:	Adam Bowen
Customer Number:	66854
Filer:	Kathleen R. Kelleher/Brian Flick
Filer Authorized By:	Kathleen R. Kelleher
Attorney Docket Number:	13211-713.201
Receipt Date:	30-MAR-2016
Filing Date:	06-MAY-2014
Time Stamp:	16:11:08
Application Type:	Utility under 35 USC 111(a)

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50	Foreign Reference	WO2015084544A1.pdf	5708151	no	96
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51	Foreign Reference	WO2015101651A1.pdf	1921727	no	33
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Warnings:					
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52	Foreign Reference	WO2015124878A1.pdf	1336991	no	38
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53	Foreign Reference	WO2015148547A1.pdf	1438191	no	40
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Warnings:					
Information:					

54	Foreign Reference	WO2015175979A1.pdf	1119240 0dd652d7668462d8e3d3db8ac6c821153f76a199	no	23
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Information:					
55	Non Patent Literature	Baker_et_al- ThePyrolysisOfTobacco.pdf	2879309 4b0893691633ed9d79e393be947f5f87354315b5	no	89
Warnings:					
Information:					
56	Non Patent Literature	Bombick_et_al- Part3ChemicalAndBiological. pdf	392773 5fa2131a60b3a540bbc3e44e70466aec6b1d8385	no	7
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Warnings:					
Information:					
58	Non Patent Literature	Borgerding_et_al- Part1ChemicalAndBiological. pdf	1370908 fd584d757c9d92460d2fcdde06d50b5a8a34ca	no	13
Warnings:					
Information:					
59	Non Patent Literature	ECF- AnyInterestInDeterminingNicot ine.pdf	945899 fd5d4738ac20cd0f4cfda305be518eb16c4556ce	no	8
Warnings:					
Information:					
Total Files Size (in bytes):			184106719		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

CERTIFICATE OF TRANSMISSION UNDER 37 CFR 1.8I hereby certify that this correspondence is being transmitted to the USPTO via EFS-Web on 3-30-2016.Brian Fleck
Name

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 14/271,071 Confirmation No.: 6078
 First Named Inventor : Adam Bowen
 Filed : May 6, 2014
 Art Unit : 1747
 Examiner : Mayes, Dionne Walls
 Title : NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES
 AND METHODS THEREOF
 Customer No. : 66854

INFORMATION DISCLOSURE STATEMENT UNDER
37 CFR § 1.97 & § 1.98

Sir:

In accordance with 37 CFR § 1.97-1.98, applicants hereby submit an Information Disclosure Statement, including attached forms(s) PTO/SB/08. A copy of each reference is being submitted herewith, along with a concise explanation in English for those publications in a foreign language.

Applicants respectfully request that the listed information be considered by the Examiner and be made of record in the above-identified application. Applicants further request that the Examiner initial and return a copy of the attached form(s) PTO/SB/08 in accordance with MPEP §609.

Applicants reserve the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and /or to prove that this information may not be enabling for the teachings purportedly offered.

This statement is not intended to represent that a search has been made or that the information cited in the statement is, or is considered to be, prior art or material to patentability as defined in 37 CFR §1.56.

FILING OF INFORMATION DISCLOSURE STATEMENT☒ **37 CFR §1.97(b)**

This statement is being submitted under 37 CFR §1.97(b) because the IDS is being filed:

- ☐ 1). Within 3 months of the application filing date, or
☐ 2). Within 3 months of entry of a national stage as set forth in § 1.491, or
☒ 3). Before the mail date of a first Office Action on the merits, or
☐ 3a). Certifications as specified in § 1.97(e) and § 1.704(d) are provided below
☐ 4). Before the mailing of a first Office Action after filing a request for continued examination under § 1.114.
☐ 4a). Certifications as specified in § 1.97(e) and § 1.704(d) are provided below

☐ **37 CFR § 1.97(c)**

This statement is being filed after the latest of:

- ☐ 1). Three months beyond the filing date of a national application, or
- ☐ 2). Three months beyond the date of entry of the national stage as set forth in § 1.491 in an international application, or
- ☐ 3). The mailing date of a first Office Action on the merits, but before the mailing date of the earlier of a final Office Action under § 1.113 or a Notice of Allowance under § 1.311, and then either:
 - ☐ A). A fee of \$180 (\$90 for small entity) as set forth in § 1.17(p) is authorized below, enclosed, or included with the payment of other papers filed together with this statement.
 - or
 - ☐ B). A certification as specified in § 1.97(e) is provided below; thus no fee is required.

☐ **37 CFR § 1.97(d)**

This statement is being filed after the mailing date of a Final Office action, a Notice of Allowance under § 1.311, or an action that otherwise closes prosecution, but on or before payment of the issue fee, and then:

A). A fee of \$180 (\$90 for small entity) as set forth in § 1.17(p) is authorized below, enclosed, or payment is included with other papers filed together with this statement

--AND--

B). A certification as specified in § 1.97(e) is included below.

CONTENT OF INFORMATION DISCLOSURE STATEMENT UNDER
37 CFR § 1.98

- ☒ **37 CFR § 1.98 (a)(2)(ii), U.S. patents or patent application publication(s) cited**
 - ☒ 1). Since not requested by the Office, U.S. patents and U.S. patent application publications are not included.
 - ☐ 2). At the request of the Office, a copy of the following U.S. patent or patent application publication is attached:
 - ☒ 3). Items identified by a double asterisk (**) on the SB08A are *commonly-owned U.S. patents and U.S. patent application publications.
- ☒ **37 CFR § 1.98 (a)(2)(iii) and (d), *Commonly-owned, unpublished U.S. applications cited**
 - ☐ 1). A copy of each application specification including the claim(s), and any drawing, or that portion of the application that caused it to be listed, is attached.
 - ☐ 2). A copy of each application specification is not submitted because the specification was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:
 - ☒ 3). A copy of each application specification is not submitted because the application is stored in the IFW. Cite no(s): 484 and 485

**Applicant(s) assume the Examiner has access to the file histories of these items. However, if the Examiner would like to receive copies of Office Actions in any of the commonly-owned applications, publications and/or patents identified on the attached SB08, please inform the undersigned and copies will be provided.*

- ☒ **37 CFR § 1.98 (a)(2)(iii) and (d), English language publication (other than U.S. patents, patent applications, or pending unpublished applications) cited**
 - ☒ 1). A legible copy of each publication or that portion which caused it to be listed is attached.
 - ☐ 2). A copy of each publication or that portion which caused it to be listed is not submitted because the publication was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:

- ☒ **37 CFR §1.98 (a)(2)(i) and (d), Foreign patent(s) in English cited**
☒ 1). A legible copy of each foreign patent or that portion which caused it to be listed is attached.
☐ 2). A copy of each foreign patent is not submitted because the publication was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:
- ☒ **37 CFR §1.98 (a)(2)(i), (a)(3)(i-ii) and 609.04(a)III, Foreign patent(s) or other foreign documents not in English cited. Either:**
☒ 1). A legible copy of each foreign patent, each publication or that portion which caused it to be listed, is attached **--AND--**
☒ 2a). An English language abstract or an English language copy of a foreign search report or other action by a foreign patent office is provided herewith to fulfill the requirement for a concise explanation of the relevance, as it is presently understood by the individual designated in § 1.56(c) most knowledgeable about the content of the information, of each patent, publication, or other information listed that is not in the English language: Cite no(s): 377-381, 390, 397, 398, 400-402, 404-408, 411, 412, and 453 **--AND/OR--**
☒ 2b). A copy of a written, English-language translation or portion thereof is readily available and attached: Cite no(s): 378, 380, 381, 397, 398, 404, 405, 407, and 408 **--OR--**
☐ 3). A copy of each foreign patent is not submitted because the publication was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:

STATEMENT UNDER 37 CFR § 1.97(e)

- ☐ Each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. Cite no(s):
- ☐ No item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement. Cite no(s):

STATEMENT UNDER 37 CFR § 1.704(d)

- ☐ Each item of information contained in the information disclosure statement was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office, and this communication was not received by any individual designated in § 1.56(c) more than thirty days prior to the filing of the information disclosure statement.

FEE AUTHORIZATION

- ☒ The Commissioner is hereby authorized to charge the above-referenced fees of \$0.00 and charge any additional fees or credit any overpayment associated with this communication to Deposit Account No. 50-4050.

Respectfully Submitted,

Dated: 4/30/16

By: Kathleen R. Kelleher
Kathleen R. Kelleher, Reg. No. 62,230

Shay Glenn LLP
2755 Campus Drive, Suite 210
San Mateo, CA 94403
(650) 212-1700
Customer No. 66854

Electronic Acknowledgement Receipt	
EFS ID:	25349403
Application Number:	14271071
International Application Number:	
Confirmation Number:	6078
Title of Invention:	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
First Named Inventor/Applicant Name:	Adam Bowen
Customer Number:	66854
Filer:	Kathleen R. Kelleher/Brian Flick
Filer Authorized By:	Kathleen R. Kelleher
Attorney Docket Number:	13211-713.201
Receipt Date:	30-MAR-2016
Filing Date:	06-MAY-2014
Time Stamp:	16:17:03
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Non Patent Literature	Kuo_et_al-AppendixDParticleSize.pdf	118553 bd6edf7f6957d7459bbfb02198723c3f321c8596	no	3

Warnings:

Information:

2	Non Patent Literature	McCann_et_al- DetectionOfCarcinogens.pdf	589865 <div>2c765bee4e459ebc6a924f04ff346bd9923c85f5</div>	no	5
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Information:					
3	Non Patent Literature	Miriam-Webster_Lighter.pdf	217877 <div>f7c501314ae49e09f1f0f39a5ba2e80245b35dc6</div>	no	2
Warnings:					
Information:					
4	Non Patent Literature	Nicoli_et_al- MammalianTumorXenografts. pdf	1881086 <div>01dec3636aa89952d4ada56f48082fea27ec89a</div>	no	5
Warnings:					
Information:					
5	Non Patent Literature	Perfetti_StructuralStudyNicotin eSalts_1983.pdf	1995767 <div>2c689cfbc458ce980fd57948bada4be583c1e834</div>	no	12
Warnings:					
Information:					
6	Non Patent Literature	Torikai_et_al- EffectOfTemperature.pdf	711044 <div>6bdded6d5e43171f769eed5db35224f150206102e</div>	no	9
Warnings:					
Information:					
7	Non Patent Literature	Ward-GreenLeafThreshing.pdf	1277487 <div>b28df6ab57bb5892d621fa45fb6d06e65361d3a0</div>	no	7
Warnings:					
Information:					
8	Non Patent Literature	Wells-GlycerinAsAConstituent. pdf	400896 <div>55e15a965e5197a0ada0588565d1024ad9fd2e01</div>	no	7
Warnings:					
Information:					
9	Non Patent Literature	YouTube- FireflyVaporizorReview.pdf	128746 <div>19ccc5a77bdfaca405e07ddee58a341f6fb28ec7</div>	no	1
Warnings:					
Information:					
Total Files Size (in bytes):			7321321		

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New Applications Under 35 U.S.C. 111

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National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Complete if Known	
		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 1	of 3	Attorney Docket Number	13211-713.201

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	595	US- 9,220,302	12/29/2015	DePiano et al.	
	596	US- 9,226,526	1/5/2016	Liu	
	597	US- 9,271,525	3/1/2016	Liu	
	598	US- 9,271,529	3/1/2016	Alima	
	599	US- 9,272,103	3/1/2016	Storz	
	600	US- 9,277,769	3/8/2016	Liu	
	601	US- 9,282,772	3/15/2016	Tucker et al.	
	602	US- 9,282,773	3/15/2016	Greim et al.	
	603	US- 9,289,014	3/22/2016	Tucker et al.	
	604	US- 9,308,336	4/12/2016	Newton	
	605	US- 9,326,547	5/3/2016	Tucker et al.	
	606	US- 9,351,522	5/31/2016	Safari	
	590	US- 2013/0199528	8/8/2013	Goodman et al.	
	591	US- 2014/0144429	5/29/2014	Wensley et al.	
	581	US- 2015/0128967	5/14/2015	Robinson et al.	
	592	US- 2015/0272220	10/1/2015	Spinka et al.	
	608	US- 2015/0282525	10/8/2015	Plojoux et al.	
	609	US- 2015/0313275	11/5/2015	Anderson et al.	
	611	US- 2015/0351456	12/10/2015	Johnson et al.	

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ *Number ⁴ *Kind Code ⁵ (if known)				
	585	JP10-501999A(w/EngEquiv)	2/24/1998	Boehringer Ingelheim		
	639	WO2015/149647A1(w/ Eng Abs)	10/8/2015	Kimree Hi-Tech Inc.		
	640	WO2015/168828A1(w/ Eng Abs)	11/12/2015	Kimree Hi-Tech Inc.		

Examiner Signature	Date Considered
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Substitute for form 1449/PTO <div style="text-align: center;">INFORMATION DISCLOSURE STATEMENT BY APPLICANT</div> <div style="text-align: center;"><i>(Use as many sheets as necessary)</i></div>	<div style="text-align: center;">Complete if Known</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Application Number</td> <td>14/271,071</td> </tr> <tr> <td>Filing Date</td> <td>May 6, 2014</td> </tr> <tr> <td>First Named Inventor</td> <td>Adam Bowen</td> </tr> <tr> <td>Art Unit</td> <td>1747</td> </tr> <tr> <td>Examiner Name</td> <td>Mayes, Dionne Walls</td> </tr> <tr> <td>Attorney Docket Number</td> <td>13211-713.201</td> </tr> </table>	Application Number	14/271,071	Filing Date	May 6, 2014	First Named Inventor	Adam Bowen	Art Unit	1747	Examiner Name	Mayes, Dionne Walls	Attorney Docket Number	13211-713.201
Application Number	14/271,071												
Filing Date	May 6, 2014												
First Named Inventor	Adam Bowen												
Art Unit	1747												
Examiner Name	Mayes, Dionne Walls												
Attorney Docket Number	13211-713.201												
Sheet 2 of 3													

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	614	US- 2016/0021931	1/28/2016	Haweset al.	
	607	US- 2016/0058071	3/3/2016	Hearn	
	618	US- 2016/0058072	3/3/2016	Liu	
	621	US- 2016/0081395	3/24/2016	Thorens et al.	
	623	US- 2016/0106154	4/21/2016	Lord	
	624	US- 2016/0106155	4/21/2016	Reevell	
	627	US- 2016/0120218	5/5/2016	Schennum et al.	
	630	US- 2016/0135503	5/19/2016	Liu	
	632	US- 2016/0143359	5/26/2016	Xiang	
	635	US- 2016/0143365	5/26/2016	Liu	
	580	US- 2016/0174611**	6/23/2016	Monsees et al.	
		US-			
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FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				

Examiner Signature	Date Considered	
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Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Complete if Known	
		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 3	of 3	Attorney Docket Number	13211-713.201

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	584	E-CIGARETTE FORUM; pg-gv-peg (discussion/posting); retrieved from the internet: https://e-cigarette-forum.com/forum/threads/pg-gv-peg.177551 ; 7 pgs.; April 8, 2011	
	587	MONSEES et al.; U.S. Pat. Appl. # 15/165,954 entitled "Devices for vaporization of a substance," filed 5/26/2016	
	588	MONSEES et al.; U.S. Pat. Appl. # 15/166,001 entitled "Electronic vaporization device," filed 5/26/2016	
	589	MONSEES et al.; U.S. Pat. Appl. # 15/165,972 entitled "Portable devices for generating an inhalable vapor," filed 5/26/2016	
	665	BOWEN et al.; U.S. Pat Appl. # 15/101,303 entitled "Nicotine liquid formulations for aerosol devices and methods thereof," filed 6/2/2016	

Examiner Signature	Date Considered
--------------------	-----------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.
¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.
This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Electronic Acknowledgement Receipt	
EFS ID:	26468283
Application Number:	14271071
International Application Number:	
Confirmation Number:	6078
Title of Invention:	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
First Named Inventor/Applicant Name:	Adam Bowen
Customer Number:	66854
Filer:	Richard Douglas Shoop/Brian Flick
Filer Authorized By:	Richard Douglas Shoop
Attorney Docket Number:	13211-713.201
Receipt Date:	27-JUL-2016
Filing Date:	06-MAY-2014
Time Stamp:	12:34:54
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no				
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		13211-713-201_IDS_Filing_7-27-2016.pdf	447451 3615a72ffa35677977facd64cc2766d0b3ee012	yes	6

	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Transmittal Letter		1	3	
	Information Disclosure Statement (IDS) Form (SB08)		4	6	
Warnings:					
Information:					
2	Foreign Reference	JP10-501999AwEngEquiv.pdf	3881257	no	32
			9f5f4be56c683c9397af0c0f9f521e95b21f35e6		
Warnings:					
Information:					
3	Foreign Reference	WO2015149647A1wEngAbs.pdf	4126062	no	30
			5befb950204f07116668f0505bde16b475a60b4c		
Warnings:					
Information:					
4	Foreign Reference	WO2015168828A1wEngAbs.pdf	3569086	no	30
			5ee87f51ce7ac3a070eabc7220a3d17100792211		
Warnings:					
Information:					
5	Non Patent Literature	E-Cigarette-Forum_PG-VG-PEG.pdf	503075	no	7
			08272f3c84e30dbfdacb81fa2f4a81ca484066cd		
Warnings:					
Information:					
Total Files Size (in bytes):			12526931		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

CERTIFICATE OF TRANSMISSION UNDER 37 CFR 1.8I hereby certify that this correspondence is being transmitted to the USPTO via EFS-Web on 7-27-2016.Simon T. Lee
Name

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 14/271,071 Confirmation No.: 6078
 First Named Inventor : Adam Bowen
 Filed : May 6, 2014
 Art Unit : 1747
 Examiner : Mayes, Dionne Walls
 Title : NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES
 AND METHODS THEREOF
 Customer No. : 66854

INFORMATION DISCLOSURE STATEMENT UNDER
37 CFR § 1.97 & § 1.98

Sir:

In accordance with 37 CFR § 1.97-1.98, applicants hereby submit an Information Disclosure Statement, including attached forms(s) PTO/SB/08. A copy of each reference is being submitted herewith, along with a concise explanation in English for those publications in a foreign language.

Applicants respectfully request that the listed information be considered by the Examiner and be made of record in the above-identified application. Applicants further request that the Examiner initial and return a copy of the attached form(s) PTO/SB/08 in accordance with MPEP §609.

Applicants reserve the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and /or to prove that this information may not be enabling for the teachings purportedly offered.

This statement is not intended to represent that a search has been made or that the information cited in the statement is, or is considered to be, prior art or material to patentability as defined in 37 CFR §1.56.

FILING OF INFORMATION DISCLOSURE STATEMENT

☒ **37 CFR §1.97(b)**

This statement is being submitted under 37 CFR §1.97(b) because the IDS is being filed:

- ☐ 1). Within 3 months of the application filing date, or
☐ 2). Within 3 months of entry of a national stage as set forth in § 1.491, or
☒ 3). Before the mail date of a first Office Action on the merits, or
☐ 3a). Certifications as specified in § 1.97(e) and § 1.704(d) are provided below
☐ 4). Before the mailing of a first Office Action after filing a request for continued examination under § 1.114.
☐ 4a). Certifications as specified in § 1.97(e) and § 1.704(d) are provided below

☐ **37 CFR § 1.97(c)**

This statement is being filed after the latest of:

- ☐ 1). Three months beyond the filing date of a national application, or
- ☐ 2). Three months beyond the date of entry of the national stage as set forth in § 1.491 in an international application, or
- ☐ 3). The mailing date of a first Office Action on the merits, but before the mailing date of the earlier of a final Office Action under § 1.113 or a Notice of Allowance under § 1.311, and then either:
 - ☐ A). A fee of \$180 (\$90 for small entity) as set forth in § 1.17(p) is authorized below, enclosed, or included with the payment of other papers filed together with this statement.
 - or
 - ☐ B). A certification as specified in § 1.97(e) is provided below; thus no fee is required.

☐ **37 CFR § 1.97(d)**

This statement is being filed after the mailing date of a Final Office action, a Notice of Allowance under §1.311, or an action that otherwise closes prosecution, but on or before payment of the issue fee, and then:

A). A fee of \$180 (\$90 for small entity) as set forth in § 1.17(p) is authorized below, enclosed, or payment is included with other papers filed together with this statement

--AND--

B). A certification as specified in § 1.97(e) is included below.

CONTENT OF INFORMATION DISCLOSURE STATEMENT UNDER
37 CFR § 1.98

☒ **37 CFR §1.98 (a)(2)(ii), U.S. patents or patent application publication(s) cited**

- ☒ 1). Since not requested by the Office, U.S. patents and U.S. patent application publications are not included.
- ☐ 2). At the request of the Office, a copy of the following U.S. patent or patent application publication is attached:
- ☒ 3). Items identified by a double asterisk (**) on the SB08A are *commonly-owned U.S. patents and U.S. patent application publications.

☒ **37 CFR §1.98 (a)(2)(iii) and (d), *Commonly-owned, unpublished U.S. applications cited**

- ☐ 1). A copy of each application specification including the claim(s), and any drawing, or that portion of the application that caused it to be listed, is attached.
- ☐ 2). A copy of each application specification is not submitted because the specification was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:
- ☒ 3). A copy of each application specification is not submitted because the application is stored in the IFW. Cite no(s): 587-589 and 665

**Applicant(s) assume the Examiner has access to the file histories of these items. However, if the Examiner would like to receive copies of Office Actions in any of the commonly-owned applications, publications and/or patents identified on the attached SB08, please inform the undersigned and copies will be provided.*

☒ **37 CFR §1.98 (a)(2)(iii) and (d), English language publication (other than U.S. patents, patent applications, or pending unpublished applications) cited**

- ☒ 1). A legible copy of each publication or that portion which caused it to be listed is attached.
- ☐ 2). A copy of each publication or that portion which caused it to be listed is not submitted because the publication was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:

- ☐ **37 CFR §1.98 (a)(2)(i) and (d), Foreign patent(s) in English cited**
- ☐ 1). A legible copy of each foreign patent or that portion which caused it to be listed is attached.
- ☐ 2). A copy of each foreign patent is not submitted because the publication was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:
- ☒ **37 CFR §1.98 (a)(2)(i), (a)(3)(i-ii) and 609.04(a)III, Foreign patent(s) or other foreign documents not in English cited. Either:**
- ☒ 1). A legible copy of each foreign patent, each publication or that portion which caused it to be listed, is attached **--AND--**
- ☒ 2a). An English language abstract or an English language copy of a foreign search report or other action by a foreign patent office is provided herewith to fulfill the requirement for a concise explanation of the relevance, as it is presently understood by the individual designated in § 1.56(c) most knowledgeable about the content of the information, of each patent, publication, or other information listed that is not in the English language: Cite no(s): 585, 639, and 640 **--AND/OR--**
- ☒ 2b). A copy of a written, English-language translation or portion thereof is readily available and attached: Cite no(s): 585 **--OR--**
- ☐ 3). A copy of each foreign patent is not submitted because the publication was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:

STATEMENT UNDER 37 CFR § 1.97(e)

- ☐ Each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. Cite no(s):
- ☐ No item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement. Cite no(s):

STATEMENT UNDER 37 CFR § 1.704(d)

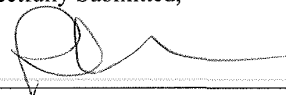
- ☐ Each item of information contained in the information disclosure statement was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office, and this communication was not received by any individual designated in § 1.56(c) more than thirty days prior to the filing of the information disclosure statement.

FEE AUTHORIZATION

- ☒ The Commissioner is hereby authorized to charge the above-referenced fees of \$0.00 and charge any additional fees or credit any overpayment associated with this communication to Deposit Account No. 50-4050.

Respectfully Submitted,

Dated: 7/27/16

By: 
Richard D. Shoop, Reg. No. 45,763

Shay Glenn LLP
2755 Campus Drive, Suite 210
San Mateo, CA 94403
(650) 212-1700
Customer No. 66854

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO		Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
		Attorney Docket Number	13211-713.201
Sheet 1	of 2		

[illegible]

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)	MM-DD-YYYY			
	687	EP0283672B1	9/22/1993	R J Reynolds Tobacco		
	668	EP2152313B1	9/3/2014	McNeil AB		
	688	EP2319934B1	9/2/2015	Stichting Dienst		
	689	WO2007/078273A1	7/12/2007	Augite Inc.		
	690	WO2015/009862A2	1/22/2015	Altria Client Services		

Examiner Signature		Date Considered	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Complete if Known	
		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 2	of 2	Attorney Docket Number	13211-713.201

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	683	BURCH et al.; Effect of pH on nicotine absorption and side effects produced by aerosolized nicotine; Journal of Aerosol Medicine: Deposition, Clearance, and Effects in the Lung; 6(1); pp. 45-52; 1993	
	703	MONSEES et al.; U.S. Pat. Appl. # 15/257,748 entitled "Cartridge for use with a vaporizer device," filed 9/6/2016	
	704	MONSEES et al.; U.S. Pat. Appl. # 15/257,760 entitled "Vaporizer apparatus," filed 9/6/2016	
	705	MONSEES et al.; U.S. Pat. Appl. # 15/257,768 entitled "Vaporizer apparatus," filed 9/6/2016	

Examiner Signature		Date Considered	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.
 1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.
 This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Electronic Acknowledgement Receipt	
EFS ID:	27140422
Application Number:	14271071
International Application Number:	
Confirmation Number:	6078
Title of Invention:	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
First Named Inventor/Applicant Name:	Adam Bowen
Customer Number:	66854
Filer:	Richard Douglas Shoop/Brian Flick
Filer Authorized By:	Richard Douglas Shoop
Attorney Docket Number:	13211-713.201
Receipt Date:	06-OCT-2016
Filing Date:	06-MAY-2014
Time Stamp:	13:14:03
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		13211-713-201_IDS_Filing_10-6-2016.pdf	352790 8a1261a13301bfba9560e561477ddb85a9db1692	yes	5

	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Transmittal Letter		1	3	
	Information Disclosure Statement (IDS) Form (SB08)		4	5	
Warnings:					
Information:					
2	Foreign Reference	EP283672B1.pdf	3867930	no	23
			7f9eb1f19eeaf5644df8592a26ad3a644ad2e54a		
Warnings:					
Information:					
3	Foreign Reference	EP2152313B.pdf	8630620	no	28
			b964bc79855e9ccb2a5804467fe593d8436850d8		
Warnings:					
Information:					
4	Foreign Reference	EP2319934B1.pdf	6584620	no	103
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Warnings:					
Information:					
5	Foreign Reference	WO2007078273A1.pdf	399703	no	13
			6a9fb5cbeb0bcf9e4930704c0b6aba049a2b71cd		
Warnings:					
Information:					
6	Foreign Reference	WO2015009862A2.pdf	1682368	no	29
			6e44adca6a616c91976e43fe6417eb350b192f6f		
Warnings:					
Information:					
7	Non Patent Literature	Burch_et_al- EffectOfpHOnNicotineAbsorpti on.pdf	2286776	no	8
			75e63872d4e2d57f082dc3da685332142911f433		
Warnings:					

Information:	
Total Files Size (in bytes):	23804807
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>	

CERTIFICATE OF TRANSMISSION UNDER 37 CFR 1.8

I hereby certify that this correspondence is being transmitted to the USPTO via EFS-Web on October 6, 2016.

/Brian Flick/
Brian Flick

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 14/271,071 Confirmation No.: 6078
 First Named Inventor : Adam Bowen
 Filed : May 6, 2014
 Art Unit : 1747
 Examiner : Mayes, Dionne Walls
 Title : NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES
 AND METHODS THEREOF
 Customer No. : 66854

INFORMATION DISCLOSURE STATEMENT UNDER
37 CFR § 1.97 & § 1.98

Sir:

In accordance with 37 CFR § 1.97-1.98, applicants hereby submit an Information Disclosure Statement, including attached forms(s) PTO/SB/08. A copy of each reference is being submitted herewith, along with a concise explanation in English for those publications in a foreign language.

Applicants respectfully request that the listed information be considered by the Examiner and be made of record in the above-identified application. Applicants further request that the Examiner initial and return a copy of the attached form(s) PTO/SB/08 in accordance with MPEP §609.

Applicants reserve the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and /or to prove that this information may not be enabling for the teachings purportedly offered.

This statement is not intended to represent that a search has been made or that the information cited in the statement is, or is considered to be, prior art or material to patentability as defined in 37 CFR §1.56.

FILING OF INFORMATION DISCLOSURE STATEMENT

☒ **37 CFR §1.97(b)**

This statement is being submitted under 37 CFR §1.97(b) because the IDS is being filed:

- ☐ 1). Within 3 months of the application filing date, or
- ☐ 2). Within 3 months of entry of a national stage as set forth in § 1.491, or
- ☒ 3). Before the mail date of a first Office Action on the merits, or
 - ☐ 3a). Certifications as specified in § 1.97(e) and § 1.704(d) are provided below
- ☐ 4). With or after the filing of a request for continued examination (RCE) under § 1.114 but before the mailing date of a first Office Action (after RCE).
 - ☐ 4a). Certifications as specified in § 1.97(e) and § 1.704(d) are provided below

☐ **37 CFR § 1.97(c)**

This statement is being filed after the latest of:

- ☐ 1). Three months beyond the filing date of a national application, or
- ☐ 2). Three months beyond the date of entry of the national stage as set forth in § 1.491 in an international application, or
- ☐ 3). The mailing date of a first Office Action on the merits, but before the mailing date of the earlier of a final Office Action under § 1.113 or a Notice of Allowance under § 1.311, and then either:
 - ☐ A). A fee of \$180 (\$90 for small entity) as set forth in § 1.17(p) is authorized below, enclosed, or included with the payment of other papers filed together with this statement.
 - or
 - ☐ B). A certification as specified in § 1.97(e) is provided below; thus no fee is required.

☐ **37 CFR § 1.97(d)**

This statement is being filed after the mailing date of a Final Office action, a Notice of Allowance under §1.311, or an action that otherwise closes prosecution, but on or before payment of the issue fee, and then:

A). A fee of \$180 (\$90 for small entity) as set forth in § 1.17(p) is authorized below, enclosed, or payment is included with other papers filed together with this statement

--AND--

B). A certification as specified in § 1.97(e) is included below.

CONTENT OF INFORMATION DISCLOSURE STATEMENT UNDER
37 CFR § 1.98

☒ **37 CFR §1.98 (a)(2)(ii), U.S. patents or patent application publication(s) cited**

- ☒ 1). Since not requested by the Office, U.S. patents and U.S. patent application publications are not included.
- ☐ 2). At the request of the Office, a copy of the following U.S. patent or patent application publication is attached:
- ☐ 3). Items identified by a double asterisk (**) on the SB08A are *commonly-owned U.S. patents and U.S. patent application publications.

☒ **37 CFR §1.98 (a)(2)(iii) and (d), *Commonly-owned, unpublished U.S. applications cited**

- ☐ 1). A copy of each application specification including the claim(s), and any drawing, or that portion of the application that caused it to be listed, is attached.
- ☐ 2). A copy of each application specification is not submitted because the specification was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:
- ☒ 3). A copy of each application specification is not submitted because the application is stored in the IFW. Cite no(s): 703-705

**Applicant(s) assume the Examiner has access to the file histories of these items. However, if the Examiner would like to receive copies of Office Actions in any of the commonly-owned applications, publications and/or patents identified on the attached SB08, please inform the undersigned and copies will be provided.*

☒ **37 CFR §1.98 (a)(2)(iii) and (d), English language publication (other than U.S. patents, patent applications, or pending unpublished applications) cited**

- ☒ 1). A legible copy of each publication or that portion which caused it to be listed is attached.
- ☐ 2). A copy of each publication or that portion which caused it to be listed is not submitted because the publication was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:

- ☒ **37 CFR §1.98 (a)(2)(i) and (d), Foreign patent(s) in English cited**
- ☒ 1). A legible copy of each foreign patent or that portion which caused it to be listed is attached.
- ☐ 2). A copy of each foreign patent is not submitted because the publication was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:
- ☐ **37 CFR §1.98 (a)(2)(i), (a)(3)(i-ii) and 609.04(a)III, Foreign patent(s) or other foreign documents not in English cited. Either:**
- ☐ 1). A legible copy of each foreign patent, each publication or that portion which caused it to be listed, is attached **--AND--**
- ☐ 2a). An English language abstract or an English language copy of a foreign search report or other action by a foreign patent office is provided herewith to fulfill the requirement for a concise explanation of the relevance, as it is presently understood by the individual designated in § 1.56(c) most knowledgeable about the content of the information, of each patent, publication, or other information listed that is not in the English language: Cite no(s): **--AND/OR--**
- ☐ 2b). A copy of a written, English-language translation or portion thereof is readily available and attached: Cite no(s): **--OR--**
- ☐ 3). A copy of each foreign patent is not submitted because the publication was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:

STATEMENT UNDER 37 CFR § 1.97(e)

- ☐ Each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. Cite no(s):
- ☐ No item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement. Cite no(s):

STATEMENT UNDER 37 CFR § 1.704(d)

- ☐ Each item of information contained in the information disclosure statement was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office, and this communication was not received by any individual designated in § 1.56(c) more than thirty days prior to the filing of the information disclosure statement.

FEE AUTHORIZATION

- ☒ The Commissioner is hereby authorized to charge the above-referenced fees of \$0.00 and charge any additional fees or credit any overpayment associated with this communication to Deposit Account No. 50-4050.

Respectfully Submitted,

By: 
Richard D. Shoop, Reg. No. 45,763

Dated: October 6, 2016

Shay Glenn LLP
2755 Campus Drive, Suite 210
San Mateo, CA 94403
(650) 212-1700
Customer No. 66854

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<p>Substitute for form 1449/PTO</p> <p style="text-align: center; font-weight: bold; font-size: 1.2em;">INFORMATION DISCLOSURE STATEMENT BY APPLICANT</p> <p style="text-align: center; font-style: italic;">(Use as many sheets as necessary)</p>	<p style="text-align: center; font-weight: bold; font-size: 1.2em;">Complete if Known</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Application Number</td> <td>14/271,071</td> </tr> <tr> <td>Filing Date</td> <td>May 6, 2014</td> </tr> <tr> <td>First Named Inventor</td> <td>Adam Bowen</td> </tr> <tr> <td>Art Unit</td> <td>1747</td> </tr> <tr> <td>Examiner Name</td> <td>Mayes, Dionne Walls</td> </tr> <tr> <td>Attorney Docket Number</td> <td>13211-713.201</td> </tr> </table>	Application Number	14/271,071	Filing Date	May 6, 2014	First Named Inventor	Adam Bowen	Art Unit	1747	Examiner Name	Mayes, Dionne Walls	Attorney Docket Number	13211-713.201
Application Number	14/271,071												
Filing Date	May 6, 2014												
First Named Inventor	Adam Bowen												
Art Unit	1747												
Examiner Name	Mayes, Dionne Walls												
Attorney Docket Number	13211-713.201												

[illegible]

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)	MM-DD-YYYY			
	712	EP3024343A2(WO2015/013327)	1/29/2015	Altria Client Serv. Inc.		
	716	WO 03/103387A2	12/18/2003	S.C. Johnson & Son Inc.		
	715	WO2014/159982A1	10/2/2014	R.J. Reynolds Tobacco Co.		

Examiner Signature		Date Considered	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

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Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Complete if Known	
		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 2	of 2	Attorney Docket Number	13211-713.201

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	706	MONSEES et al.; U.S. Pat. Appl. # 15/261,823 entitled "Low temperature electronic vaporization device and methods," filed 9/9/2016	

Examiner Signature		Date Considered	
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¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

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Electronic Acknowledgement Receipt	
EFS ID:	27330803
Application Number:	14271071
International Application Number:	
Confirmation Number:	6078
Title of Invention:	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
First Named Inventor/Applicant Name:	Adam Bowen
Customer Number:	66854
Filer:	Richard Douglas Shoop/Brian Flick
Filer Authorized By:	Richard Douglas Shoop
Attorney Docket Number:	13211-713.201
Receipt Date:	26-OCT-2016
Filing Date:	06-MAY-2014
Time Stamp:	16:09:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no				
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		13211-713-201_IDS_Filing_10-26-2016.pdf	<div>338618</div> <div>5cfa4d62eafb164eb3d22801dfce85556b04b061</div>	yes	5

Multipart Description/PDF files in .zip description					
Document Description			Start	End	
Transmittal Letter			1	3	
Information Disclosure Statement (IDS) Form (SB08)			4	5	
Warnings:					
Information:					
2	Foreign Reference	EP3024343_WO2015013327A2.pdf	1551941 <small>38b90b391e5bac610c8ecc13d2064b30bc1cb7b2</small>	no	29
Warnings:					
Information:					
3	Foreign Reference	WO2003103387A2.pdf	2281687 <small>5d69a17bf4b6e3d684a5bc376351096a89b6ca1f</small>	no	57
Warnings:					
Information:					
4	Foreign Reference	WO2014159982A1.pdf	3297006 <small>fd807d68a49865ed1945bd6c5b092fb648c255f7</small>	no	52
Warnings:					
Information:					
Total Files Size (in bytes):			7469252		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

CERTIFICATE OF TRANSMISSION UNDER 37 CFR 1.8

I hereby certify that this correspondence is being transmitted to the USPTO via EFS-Web on October 26, 2016.

/Brian Flick/
Brian Flick

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 14/271,071 Confirmation No.: 6078
 First Named Inventor : Adam Bowen
 Filed : May 6, 2014
 Art Unit : 1747
 Examiner : Mayes, Dionne Walls
 Title : NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES
 AND METHODS THEREOF
 Customer No. : 66854

INFORMATION DISCLOSURE STATEMENT UNDER
37 CFR § 1.97 & § 1.98

Sir:

In accordance with 37 CFR § 1.97-1.98, applicants hereby submit an Information Disclosure Statement, including attached forms(s) PTO/SB/08. A copy of each reference is being submitted herewith, along with a concise explanation in English for those publications in a foreign language.

Applicants respectfully request that the listed information be considered by the Examiner and be made of record in the above-identified application. Applicants further request that the Examiner initial and return a copy of the attached form(s) PTO/SB/08 in accordance with MPEP §609.

Applicants reserve the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and /or to prove that this information may not be enabling for the teachings purportedly offered.

This statement is not intended to represent that a search has been made or that the information cited in the statement is, or is considered to be, prior art or material to patentability as defined in 37 CFR §1.56.

FILING OF INFORMATION DISCLOSURE STATEMENT

☒ **37 CFR §1.97(b)**

This statement is being submitted under 37 CFR §1.97(b) because the IDS is being filed:

- ☐ 1). Within 3 months of the application filing date, or
- ☐ 2). Within 3 months of entry of a national stage as set forth in § 1.491, or
- ☒ 3). Before the mail date of a first Office Action on the merits, or
 - ☐ 3a). Certifications as specified in § 1.97(e) and § 1.704(d) are provided below
- ☐ 4). With or after the filing of a request for continued examination (RCE) under § 1.114 but before the mailing date of a first Office Action (after RCE).
 - ☐ 4a). Certifications as specified in § 1.97(e) and § 1.704(d) are provided below

☐ **37 CFR § 1.97(c)**

This statement is being filed after the latest of:

- ☐ 1). Three months beyond the filing date of a national application, or
- ☐ 2). Three months beyond the date of entry of the national stage as set forth in § 1.491 in an international application, or
- ☐ 3). The mailing date of a first Office Action on the merits, but before the mailing date of the earlier of a final Office Action under § 1.113 or a Notice of Allowance under § 1.311, and then either:
 - ☐ A). A fee of \$180 (\$90 for small entity) as set forth in § 1.17(p) is authorized below, enclosed, or included with the payment of other papers filed together with this statement.
 - or
 - ☐ B). A certification as specified in § 1.97(e) is provided below; thus no fee is required.

☐ **37 CFR § 1.97(d)**

This statement is being filed after the mailing date of a Final Office action, a Notice of Allowance under § 1.311, or an action that otherwise closes prosecution, but on or before payment of the issue fee, and then:

A). A fee of \$180 (\$90 for small entity) as set forth in § 1.17(p) is authorized below, enclosed, or payment is included with other papers filed together with this statement

--AND--

B). A certification as specified in § 1.97(e) is included below.

CONTENT OF INFORMATION DISCLOSURE STATEMENT UNDER
37 CFR § 1.98

☒ **37 CFR §1.98 (a)(2)(ii), U.S. patents or patent application publication(s) cited**

- ☒ 1). Since not requested by the Office, U.S. patents and U.S. patent application publications are not included.
- ☐ 2). At the request of the Office, a copy of the following U.S. patent or patent application publication is attached:
- ☐ 3). Items identified by a double asterisk (**) on the SB08A are *commonly-owned U.S. patents and U.S. patent application publications.

☒ **37 CFR §1.98 (a)(2)(iii) and (d), *Commonly-owned, unpublished U.S. applications cited**

- ☐ 1). A copy of each application specification including the claim(s), and any drawing, or that portion of the application that caused it to be listed, is attached.
- ☐ 2). A copy of each application specification is not submitted because the specification was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:
- ☒ 3). A copy of each application specification is not submitted because the application is stored in the IFW.

**Applicant(s) assume the Examiner has access to the file histories of these items. However, if the Examiner would like to receive copies of Office Actions in any of the commonly-owned applications, publications and/or patents identified on the attached SB08, please inform the undersigned and copies will be provided.*

☐ **37 CFR §1.98 (a)(2)(iii) and (d), English language publication (other than U.S. patents, patent applications, or pending unpublished applications) cited**

- ☐ 1). A legible copy of each publication or that portion which caused it to be listed is attached.
- ☐ 2). A copy of each publication or that portion which caused it to be listed is not submitted because the publication was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:

☒ **37 CFR §1.98 (a)(2)(i) and (d), Foreign patent(s) in English cited**

- ☒ 1). A legible copy of each foreign patent or that portion which caused it to be listed is attached.
- ☐ 2). A copy of each foreign patent is not submitted because the publication was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:

☐ **37 CFR §1.98 (a)(2)(i), (a)(3)(i-ii) and 609.04(a)III, Foreign patent(s) or other foreign documents not in English cited. Either:**

- ☐ 1). A legible copy of each foreign patent, each publication or that portion which caused it to be listed, is attached **--AND--**
- ☐ 2a). An English language abstract or an English language copy of a foreign search report or other action by a foreign patent office is provided herewith to fulfill the requirement for a concise explanation of the relevance, as it is presently understood by the individual designated in § 1.56(c) most knowledgeable about the content of the information, of each patent, publication, or other information listed that is not in the English language: Cite no(s): **--AND/OR--**
- ☐ 2b). A copy of a written, English-language translation or portion thereof is readily available and attached: Cite no(s): **--OR--**
- ☐ 3). A copy of each foreign patent is not submitted because the publication was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:

STATEMENT UNDER 37 CFR § 1.97(e)

☐ Each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. Cite no(s):

☐ No item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement. Cite no(s):

STATEMENT UNDER 37 CFR § 1.704(d)

☐ Each item of information contained in the information disclosure statement was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office, and this communication was not received by any individual designated in § 1.56(c) more than thirty days prior to the filing of the information disclosure statement.

FEE AUTHORIZATION

☒ The Commissioner is hereby authorized to charge the above-referenced fees of \$0.00 and charge any additional fees or credit any overpayment associated with this communication to Deposit Account No. 50-4050.

Respectfully Submitted,

Dated: October 26, 2016

By: /Richard D. Shoop/
Richard D. Shoop, Reg. No. 45,763

Shay Glenn LLP
2755 Campus Drive, Suite 210
San Mateo, CA 94403
(650) 212-1700
Customer No. 66854

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 1 of 6

Complete if Known

Application Number	14/271,071
Filing Date	May 6, 2014
First Named Inventor	Adam Bowen
Art Unit	1747
Examiner Name	Mayes, Dionne Walls
Attorney Docket Number	13211-713.201

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	694	US- 3,271,719	9/6/1966	Ovshinsky	
	670	US- 3,443,827	5/13/1969	Acker et al.	
	671	US- 5,497,791	3/12/1996	Bowen et al.	
	672	US- 5,529,078	6/25/1996	Rehder et al.	
	117	US- 6,089,857	7/18/2000	Matsuura et al.	
	673	US- 6,196,232	3/6/2001	Chkadua	
	718	US- 6,603,924	8/5/2003	Brown et al.	
	150	US- 7,015,796	3/21/2006	Snyder	
	675	US- 7,801,573	9/21/2010	Yazdi et al.	
	173	US- 8,820,330	9/2/2014	Bellinger et al.	
	174	US- 8,851,081	10/7/2014	Fernando et al.	
	178	US- 9,095,175	8/4/2015	Terry et al.	
	722	US- D725310	3/24/2015	Eksouzian	
	695	US- 2004/0050382	3/18/2004	Goodchild	
	696	US- 2007/0277816	12/6/2007	Morrison et al.	
	674	US- 2009/0111287	4/30/2009	Lindberg et al.	
	263	US- 2010/0200008	8/12/2010	Taieb	
	676	US- 2011/0240047	10/6/2011	Adamic	
	297	US- 2012/0285475	11/15/2012	Liu	

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
	387	EP2856893A1	4/8/2015	Fontem Holdings		
	388	EP2908675A1(asWO2014/060268)	8/26/2015	Nicoventures Holdings Ltd		
	389	EP2915443A1	9/9/2015	Fontem Holdings		
	757	EP3062646A1 (WO2015/66136)	9/7/2016	Rai Strategic Holdings Inc		
	758	EP3065581A2 (WO2015/68044)	9/14/2016	SIS Resources Ltd		
	759	EP3068244A1 (WO2015/73975)	9/21/2016	VMR Products LLC		

Examiner Signature		Date Considered	
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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 2

of 6

Complete if Known

Application Number	14/271,071
Filing Date	May 6, 2014
First Named Inventor	Adam Bowen
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U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	719	US- 2013/0298905	11/14/2013	Levin et al.	
	310	US- 2013/0319440	12/5/2013	Capuano	
	312	US- 2013/0340775	12/26/2013	Juster et al.	
	313	US- 2014/0000638	1/2/2014	Sebastian et al.	
	723	US- 2014/0007891	1/9/2014	Liu	
	314	US- 2014/0014126	1/16/2014	Peleg et al.	
	316	US- 2014/0053856	2/27/2014	Liu	
	318	US- 2014/0060556	3/6/2014	Liu	
	319	US- 2014/0096782	4/10/2014	Ampolini et al.	
	320	US- 2014/0109921	4/24/2014	Chen	
	321	US- 2014/0116455	5/1/2014	Youn	
	322	US- 2014/0123990	5/8/2014	Timmermans	
	323	US- 2014/0150810	6/5/2014	Hon	
	324	US- 2014/0174459	6/26/2014	Burstyn	
	327	US- 2014/0196735	7/17/2014	Liu	
	328	US- 2014/0216450	8/7/2014	Liu	
	329	US- 2014/0230835	8/21/2014	Saliman	
	331	US- 2014/0270727	9/18/2014	Ampolini et al.	
	332	US- 2014/0301721	10/9/2014	Ruscio et al.	

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
	416	WO2004/080216A1(EngAbs)	9/23/2004	Hon, Lik		
	420	WO2008/077271A1(EngAbs)	7/3/2008	Maas, Bernard		
	427	WO2012/120487A2	9/13/2012	Chong Corp		
	430	WO2013/089551A1	6/20/2013	Foo, Kit Seng		
	433	WO2014/040915A1(EngAbs)	3/20/2014	Snoke Gmbh & Co		
	435	WO2014/101734A1	7/3/2014	Shenzhen Smoore Tech		

Examiner Signature		Date Considered	
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Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 3

of 6

Complete if Known

Application Number	14/271,071
Filing Date	May 6, 2014
First Named Inventor	Adam Bowen
Art Unit	1747
Examiner Name	Mayes, Dionne Walls
Attorney Docket Number	13211-713.201

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	333	US- 2014/0305450	10/16/2014	Xiang	
	336	US- 2014/0355969	12/4/2014	Stern	
	340	US- 2015/0020825	1/22/2015	Galloway et al.	
	341	US- 2015/0020831	1/22/2015	Weigensberg et al.	
	343	US- 2015/0027472	1/29/2015	Amir	
	344	US- 2015/0034103	2/5/2015	Hon	
	724	US- 2015/0034104	2/5/2015	Zhou	
	345	US- 2015/0040929	2/12/2015	Hon	
	346	US- 2015/0101625	4/16/2015	Newton et al.	
	347	US- 2015/0122252	5/7/2015	Frija	
	348	US- 2015/0122274	5/7/2015	Cohen et al.	
	349	US- 2015/0128965	5/14/2015	Lord	
	351	US- 2015/0136153	5/21/2015	Lord	
	697	US- 2015/0136158	5/21/2015	Stevens et al.	
	352	US- 2015/0142387	5/21/2015	Alarcon et al.	
	355	US- 2015/0164141	6/18/2015	Newton	
	356	US- 2015/0164144	6/18/2015	Liu	
	698	US- 2015/0164147	6/18/2015	Verleur et al.	
	357	US- 2015/0181928	7/2/2015	Liu	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
	439	WO2014/150704A2	9/25/2014	Altria Client Svs Inc.		
	442	WO2014/205263A1	12/24/2014	Loec Inc.		
	444	WO2015/028815A1	3/5/2015	British American Tobacco		
	446	WO2015/058387A1(EngAbs)	4/30/2015	Kimree Hi-Tech Inc.		
	447	WO2015/063126A1	5/7/2015	Choukroun, B.		
	450	WO2015/089711A1(EngAbs)	6/25/2015	Kimree Hi-Tech Inc.		

Examiner Signature		Date Considered	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 4 of 6

Complete if Known

Application Number	14/271,071
Filing Date	May 6, 2014
First Named Inventor	Adam Bowen
Art Unit	1747
Examiner Name	Mayes, Dionne Walls
Attorney Docket Number	13211-713.201

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	358	US- 2015/0189695	7/2/2015	Xiang	
	359	US- 2015/0196059	7/16/2015	Liu	
	699	US- 2015/0196060	7/16/2015	Wensley et al.	
	361	US- 2015/0208731	7/30/2015	Malamud et al.	
	700	US- 2015/0216237	8/6/2015	Wensley et al.	
	362	US- 2015/0223521	8/13/2015	Menting et al.	
	363	US- 2015/0224268	8/13/2015	Henry et al.	
	364	US- 2015/0237917	8/27/2015	Lord	
	365	US- 2015/0237918	8/27/2015	Liu	
	366	US- 2015/0245654	9/3/2015	Memari et al.	
	367	US- 2015/0245660	9/3/2015	Lord	
	368	US- 2015/0257445	9/17/2015	Henry Jr. et al.	
	369	US- 2015/0258289	9/17/2015	Henry Jr. et al.	
	370	US- 2015/0282527	10/8/2015	Henry Jr.	
	701	US- 2015/0305409	10/29/2015	Verleur et al.	
	702	US- 2016/0021933	1/28/2016	Thorens et al.	
	750	US- 2016/0242466	8/25/2016	Lord et al.	
	751	US- 2016/0249680	9/1/2016	Liu	
	753	US- 2016/0295924	10/13/2016	Liu	

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
	452	WO2015/109616A1(EngAbs)	7/30/2015	Kimree Hi-Tech Inc.		

Examiner Signature		Date Considered	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet	5	of	6
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Complete if Known

Application Number	14/271,071
Filing Date	May 6, 2014
First Named Inventor	Adam Bowen
Art Unit	1747
Examiner Name	Mayes, Dionne Walls
Attorney Docket Number	13211-713.201

U. S. PATENT DOCUMENTS

[illegible]

FOREIGN PATENT DOCUMENTS

[illegible]

Examiner Signature	Date Considered
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

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Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Use as many sheets as necessary)		Complete if Known	
		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 6	of 6	Attorney Docket Number	13211-713.201

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	481	BRADLEY et al.; Electronic cigarette aerosol particle size distribution measurements; Inhal. Toxicol.; 24(14); pp. 976-984; Dec. 2012	
	482	BULLEN et al.; Effect of an electronic nicotine delivery device (e cigarette) on desire to smoke and withdrawal, user preferences and nicotine delivery; randomised cross-over trial; Tobacco Control; 19(2); pp. 98-103; Apr. 2010	
	678	CAPPONNETTO et al.; Successful smoking cessation with cigarettes in smokers with a documented history of recurring relapses: a case series; Journal of Medical Case Reports; 5(1); 6 pages; (year of pub. sufficiently earlier than effective US filing date and any foreign priority date); 2011	
	721	FARSALINOS et al.; Electronic cigarettes do not damage the heart; European Society of Cardiology; 4 pages; retrieved from the internet (http://www.escardio.org/The-ESC/Press-Office/Press-releases/Electronic-cigarettes-do-not-damage-the-heart); August 25, 2012	
	677	HURT et al.; Treating tobacco dependence in a medical setting; CA: A Cancer Journal for Clinicians; 59(5); pp. 314-326; Sept. 2009	
	720	VANSICKEL et al.; Electronic cigarettes: effective nicotine delivery after acute administration; Nicotine & Tobacco Research; 15(1); pp. 267-270; January 2013	

Examiner Signature		Date Considered	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

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If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Electronic Acknowledgement Receipt	
EFS ID:	27804224
Application Number:	14271071
International Application Number:	
Confirmation Number:	6078
Title of Invention:	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
First Named Inventor/Applicant Name:	Adam Bowen
Customer Number:	66854
Filer:	Richard Douglas Shoop/Brian Flick
Filer Authorized By:	Richard Douglas Shoop
Attorney Docket Number:	13211-713.201
Receipt Date:	15-DEC-2016
Filing Date:	06-MAY-2014
Time Stamp:	13:02:03
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		13211-713-201_IDS_Filing_SupplIDS_12-15-2016.pdf	776572 f2164f0ee17766f49f65e8b7120b643923f2d4a9	yes	9

	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Transmittal Letter		1	3	
	Information Disclosure Statement (IDS) Form (SB08)		4	9	
Warnings:					
Information:					
2	Foreign Reference	EP2856893A1.pdf	3797855	no	17
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Warnings:					
Information:					
3	Foreign Reference	EP2908675A1.pdf	2851612	no	26
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Warnings:					
Information:					
4	Foreign Reference	EP2915443A1.pdf	3131188	no	11
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5	Foreign Reference	EP3062646-WO2015066136.pdf	1920287	no	37
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6	Foreign Reference	EP3065581-WO2015068044.pdf	729371	no	15
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7	Foreign Reference	EP3068244-WO2015073975.pdf	797485	no	16
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8	Foreign Reference	WO2004080216A1.pdf	749955	no	18
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9	Foreign Reference	WO2008077271A1.pdf	827852	no	21
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10	Foreign Reference	WO2012120487A2.pdf	3158287	no	79
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Warnings:					
Information:					
13	Foreign Reference	WO2014101734A1.pdf	728234	no	18
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Information:					
14	Foreign Reference	WO2014150704A2.pdf	828026	no	19
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Information:					

15	Foreign Reference	WO2014205263A1.pdf	1056949	no	35
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Warnings:					
Information:					
16	Foreign Reference	WO2015028815A1.pdf	1594036	no	33
			9d638f363ab8782b303dc2a82e54d0bdec9 71717		
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17	Foreign Reference	WO2015058387A1.pdf	931263	no	23
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18	Foreign Reference	WO2015063126A1.pdf	1411710	no	39
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Warnings:					
Information:					
19	Foreign Reference	WO2015089711A1.pdf	1209458	no	27
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20	Foreign Reference	WO2015109616A1.pdf	667054	no	18
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Information:					
21	Non Patent Literature	Bradley_et_al_ElectronicCigare tteAerosol_2012.pdf	5098764	no	10
			f8b6e76ddde2d5e4306ba1de5d0ec91180c 45a66		
Warnings:					
Information:					

22	Non Patent Literature	Bullen_EffectElectronicNicotine_2010.pdf	3656275	no	7
			dcda601d833bb249ef0884fa3718b17416ec42a0		
Warnings:					
Information:					
23	Non Patent Literature	Caponnetto_et_al_SuccessfulSmokingCessation_2011.pdf	2503183	no	6
			756b138489ce9750e025de03abdef56fd476156		
Warnings:					
Information:					
24	Non Patent Literature	Farsalinos_et_al_ElectronicCigarettesDoNotDamage_2012.pdf	60065	no	4
			60439509eb9ffb3386f6b00a5c61f547def2e017		
Warnings:					
Information:					
25	Non Patent Literature	Hurt_et_al_TreatingTobaccoDependence_2009.pdf	13685927	no	13
			a8e5b848e6aac6a987c0fc18291c770e1fd3bc6d		
Warnings:					
Information:					
26	Non Patent Literature	Vansickel_et_al_ElectronicCigarettesEffective_2013.pdf	1994756	no	4
			6e5877e04f3be9d23e60ca8831e34168e1faf8e8		
Warnings:					
Information:					
Total Files Size (in bytes):			56041703		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

CERTIFICATE OF TRANSMISSION UNDER 37 CFR 1.8

I hereby certify that this correspondence is being transmitted to the USPTO via EFS-Web on December 15, 2016.

/Brian Flick/
Brian Flick

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 14/271,071 Confirmation No.: 6078
 First Named Inventor : Adam Bowen
 Filed : May 6, 2014
 Art Unit : 1747
 Examiner : Mayes, Dionne Walls
 Title : NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES
 AND METHODS THEREOF
 Customer No. : 66854

INFORMATION DISCLOSURE STATEMENT UNDER
37 CFR § 1.97 & § 1.98

Sir:

In accordance with 37 CFR § 1.97-1.98, applicants hereby submit an Information Disclosure Statement, including attached forms(s) PTO/SB/08. A copy of each reference is being submitted herewith, along with a concise explanation in English for those publications in a foreign language.

Applicants respectfully request that the listed information be considered by the Examiner and be made of record in the above-identified application. Applicants further request that the Examiner initial and return a copy of the attached form(s) PTO/SB/08 in accordance with MPEP §609.

Applicants reserve the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and /or to prove that this information may not be enabling for the teachings purportedly offered.

This statement is not intended to represent that a search has been made or that the information cited in the statement is, or is considered to be, prior art or material to patentability as defined in 37 CFR §1.56.

FILING OF INFORMATION DISCLOSURE STATEMENT

☒ **37 CFR §1.97(b)**

This statement is being submitted under 37 CFR §1.97(b) because the IDS is being filed:

- ☐ 1). Within 3 months of the application filing date, or
- ☐ 2). Within 3 months of entry of a national stage as set forth in § 1.491, or
- ☒ 3). Before the mail date of a first Office Action on the merits, or
 - ☐ 3a). Certifications as specified in § 1.97(e) and § 1.704(d) are provided below
- ☐ 4). With or after the filing of a request for continued examination (RCE) under § 1.114 but before the mailing date of a first Office Action (after RCE).
 - ☐ 4a). Certifications as specified in § 1.97(e) and § 1.704(d) are provided below

☐ **37 CFR § 1.97(c)**

This statement is being filed after the latest of:

- ☐ 1). Three months beyond the filing date of a national application, or
- ☐ 2). Three months beyond the date of entry of the national stage as set forth in § 1.491 in an international application, or
- ☐ 3). The mailing date of a first Office Action on the merits, but before the mailing date of the earlier of a final Office Action under § 1.113 or a Notice of Allowance under § 1.311, and then either:
 - ☐ A). A fee of \$180 (\$90 for small entity) as set forth in § 1.17(p) is authorized below, enclosed, or included with the payment of other papers filed together with this statement.
 - or
 - ☐ B). A certification as specified in § 1.97(e) is provided below; thus no fee is required.

☐ **37 CFR § 1.97(d)**

This statement is being filed after the mailing date of a Final Office action, a Notice of Allowance under § 1.311, or an action that otherwise closes prosecution, but on or before payment of the issue fee, and then:

A). A fee of \$180 (\$90 for small entity) as set forth in § 1.17(p) is authorized below, enclosed, or payment is included with other papers filed together with this statement

--AND--

B). A certification as specified in § 1.97(e) is included below.

CONTENT OF INFORMATION DISCLOSURE STATEMENT UNDER
37 CFR § 1.98

☒ **37 CFR §1.98 (a)(2)(ii), U.S. patents or patent application publication(s) cited**

- ☒ 1). Since not requested by the Office, U.S. patents and U.S. patent application publications are not included.
- ☐ 2). At the request of the Office, a copy of the following U.S. patent or patent application publication is attached:
- ☐ 3). Items identified by a double asterisk (**) on the SB08A are *commonly-owned U.S. patents and U.S. patent application publications.

☐ **37 CFR §1.98 (a)(2)(iii) and (d), *Commonly-owned, unpublished U.S. applications cited**

- ☐ 1). A copy of each application specification including the claim(s), and any drawing, or that portion of the application that caused it to be listed, is attached.
- ☐ 2). A copy of each application specification is not submitted because the specification was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:
- ☐ 3). A copy of each application specification is not submitted because the application is stored in the IFW. Cite no(s):

**Applicant(s) assume the Examiner has access to the file histories of these items. However, if the Examiner would like to receive copies of Office Actions in any of the commonly-owned applications, publications and/or patents identified on the attached SB08, please inform the undersigned and copies will be provided.*

☒ **37 CFR §1.98 (a)(2)(iii) and (d), English language publication (other than U.S. patents, patent applications, or pending unpublished applications) cited**

- ☒ 1). A legible copy of each publication or that portion which caused it to be listed is attached.
- ☐ 2). A copy of each publication or that portion which caused it to be listed is not submitted because the publication was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:

☒ **37 CFR §1.98 (a)(2)(i) and (d), Foreign patent(s) in English cited**

- ☒ 1). A legible copy of each foreign patent or that portion which caused it to be listed is attached.
- ☐ 2). A copy of each foreign patent is not submitted because the publication was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:

☒ **37 CFR §1.98 (a)(2)(i), (a)(3)(i-ii) and 609.04(a)III, Foreign patent(s) or other foreign documents not in English cited. Either:**

- ☒ 1). A legible copy of each foreign patent, each publication or that portion which caused it to be listed, is attached **--AND--**
- ☒ 2a). An English language abstract or an English language copy of a foreign search report or other action by a foreign patent office is provided herewith to fulfill the requirement for a concise explanation of the relevance, as it is presently understood by the individual designated in § 1.56(c) most knowledgeable about the content of the information, of each patent, publication, or other information listed that is not in the English language: Cite no(s): 416, 420, 433, 446, 450, and 452 **--AND/OR--**
- ☐ 2b). A copy of a written, English-language translation or portion thereof is readily available and attached: Cite no(s): **--OR--**
- ☐ 3). A copy of each foreign patent is not submitted because the publication was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:

STATEMENT UNDER 37 CFR § 1.97(e)

☐ Each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. Cite no(s):

☐ No item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement. Cite no(s):

STATEMENT UNDER 37 CFR § 1.704(d)

☐ Each item of information contained in the information disclosure statement was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office, and this communication was not received by any individual designated in § 1.56(c) more than thirty days prior to the filing of the information disclosure statement.

FEE AUTHORIZATION

☒ The Commissioner is hereby authorized to charge the above-referenced fees of \$0.00 and charge any additional fees or credit any overpayment associated with this communication to Deposit Account No. 50-4050.

Respectfully Submitted,

Dated: December 15, 2016

By: /Richard D. Shoop/
Richard D. Shoop, Reg. No. 45,763

Shay Glenn LLP
2755 Campus Drive, Suite 210
San Mateo, CA 94403
(650) 212-1700
Customer No. 66854

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 1 of 3

Complete if Known

Application Number	14/271,071
Filing Date	May 6, 2014
First Named Inventor	Adam Bowen
Art Unit	1747
Examiner Name	Mayes, Dionne Walls
Attorney Docket Number	13211-713.201

U. S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number Number-Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	791	US- 2,159,698	5/23/1939	Harris et al.	
	792	US- 2,177,636	10/31/1939	Coffelt et al.	
	769	US- 2,195,260	3/26/1940	Rasener	
	793	US- 3,456,645	7/22/1969	Brock	
	770	US- 3,675,661	7/11/1972	Weaver	
	771	US- 3,815,597	6/11/1974	Gottelman	
	802	US- 4,303,083	12/1/1981	Burruss	
	807	US- 4,520,938	6/4/1985	Finke	
	798	US- 5,152,456	10/6/1992	Ross et al.	
	794	US- 5,303,720	4/19/1994	Banerjee et al.	
	808	US- 5,449,078	9/12/1995	Akers	
	795	US- 5,456,269	10/10/1995	Kollasch	
	809	US- 5,579,934	12/3/1996	Buono	
	799	US- 6,324,261	11/27/2001	Merte	
	800	US- 6,612,404	9/2/2003	Sweet et al.	
	796	US- 8,251,060	8/28/2012	White et al.	
	797	US- 2009/0283103	11/19/2009	Nielsen et al.	
	803	US- 2014/0053858	2/27/2014	Liu	
	804	US- 2015/0128976	5/14/2015	Verleur et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
	805	WO2013/044537A1 (EngAbs)	4/4/2013	Joyetech Changzhou Electric		

Examiner Signature	Date Considered
--------------------	-----------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet	2	of	3
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Complete if Known

Application Number	14/271,071
Filing Date	May 6, 2014
First Named Inventor	Adam Bowen
Art Unit	1747
Examiner Name	Mayes, Dionne Walls
Attorney Docket Number	13211-713.201

U. S. PATENT DOCUMENTS

[illegible]

FOREIGN PATENT DOCUMENTS

[illegible]

Examiner Signature		Date Considered	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. ² Applicant's unique citation designation number (optional). ³ See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ⁴ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁵ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁶ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁷ Applicant is to place a check mark here if English language Translation is attached.

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TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Complete if Known	
		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 3	of 3	Attorney Docket Number	13211-713.201

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	810	GROTENHERMEN et al.; Developing science-based per se limits for driving under the influence of cannabis (DUI/C): findings and recommendations by an expert panel; retrieved 2/9/2017 from (http://www.canorml.org/healthfacts/DUICreport.2005.pdf); 49 pages; September 2005	
	773	MONSEES et al.; U.S. Pat. Appl. # 15/368,539 entitled "Low temperature electronic vaporization device and methods," filed 12/2/2016	
	774	BOWEN et al.; U.S. Appl. # 15/309,554 entitled "Systems and methods for aerosolizing a smokeable material," filed 11/8/2016	
	801	MONSEES et al.; U.S. Pat. Appl. # 15/379,898 entitled "Vaporization device systems and methods," filed 12/15/2016	
	806	HATTON et al.; U.S. Pat. Appl. # 15/396,584 entitled "Leak-resistant vaporizer cartridges for use with cannabinoids," filed 12/31/2016	

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

CERTIFICATE OF TRANSMISSION UNDER 37 CFR 1.8

I hereby certify that this correspondence is being transmitted to the USPTO via EFS-Web on February 27, 2017.

/Brian Flick/
Brian Flick

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 14/271,071 Confirmation No.: 6078
 First Named Inventor : Adam Bowen
 Filed : May 6, 2014
 Art Unit : 1747
 Examiner : Mayes, Dionne Walls
 Title : NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES
 AND METHODS THEREOF
 Customer No. : 66854

INFORMATION DISCLOSURE STATEMENT UNDER
37 CFR § 1.97 & § 1.98

Sir:

In accordance with 37 CFR § 1.97-1.98, applicants hereby submit an Information Disclosure Statement, including attached forms(s) PTO/SB/08. A copy of each reference is being submitted herewith, along with a concise explanation in English for those publications in a foreign language.

Applicants respectfully request that the listed information be considered by the Examiner and be made of record in the above-identified application. Applicants further request that the Examiner initial and return a copy of the attached form(s) PTO/SB/08 in accordance with MPEP §609.

Applicants reserve the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and /or to prove that this information may not be enabling for the teachings purportedly offered.

This statement is not intended to represent that a search has been made or that the information cited in the statement is, or is considered to be, prior art or material to patentability as defined in 37 CFR §1.56.

FILING OF INFORMATION DISCLOSURE STATEMENT

☒ **37 CFR §1.97(b)**

This statement is being submitted under 37 CFR §1.97(b) because the IDS is being filed:

- ☐ 1). Within 3 months of the application filing date, or
- ☐ 2). Within 3 months of entry of a national stage as set forth in § 1.491, or
- ☒ 3). Before the mail date of a first Office Action on the merits, or
 - ☐ 3a). Certifications as specified in § 1.97(e) and § 1.704(d) are provided below
- ☐ 4). With or after the filing of a request for continued examination (RCE) under § 1.114 but before the mailing date of a first Office Action (after RCE).
 - ☐ 4a). Certifications as specified in § 1.97(e) and § 1.704(d) are provided below

☐ **37 CFR § 1.97(c)**

This statement is being filed after the latest of:

- ☐ 1). Three months beyond the filing date of a national application, or
- ☐ 2). Three months beyond the date of entry of the national stage as set forth in § 1.491 in an international application, or
- ☐ 3). The mailing date of a first Office Action on the merits, but before the mailing date of the earlier of a final Office Action under § 1.113 or a Notice of Allowance under § 1.311, and then either:
 - ☐ A). A fee of \$180 (\$90 for small entity) as set forth in § 1.17(p) is authorized below, enclosed, or included with the payment of other papers filed together with this statement.
 - or
 - ☐ B). A certification as specified in § 1.97(e) is provided below; thus no fee is required.

☐ **37 CFR § 1.97(d)**

This statement is being filed after the mailing date of a Final Office action, a Notice of Allowance under § 1.311, or an action that otherwise closes prosecution, but on or before payment of the issue fee, and then:

- A). A fee of \$180 (\$90 for small entity) as set forth in § 1.17(p) is authorized below, enclosed, or payment is included with other papers filed together with this statement
- AND--
- B). A certification as specified in § 1.97(e) is included below.

CONTENT OF INFORMATION DISCLOSURE STATEMENT UNDER
37 CFR § 1.98

☒ **37 CFR §1.98 (a)(2)(ii), U.S. patents or patent application publication(s) cited**

- ☒ 1). Since not requested by the Office, U.S. patents and U.S. patent application publications are not included.
- ☐ 2). At the request of the Office, a copy of the following U.S. patent or patent application publication is attached:
- ☐ 3). Items identified by a double asterisk (**) on the SB08A are *commonly-owned U.S. patents and U.S. patent application publications.

☒ **37 CFR §1.98 (a)(2)(iii) and (d), *Commonly-owned, unpublished U.S. applications cited**

- ☐ 1). A copy of each application specification including the claim(s), and any drawing, or that portion of the application that caused it to be listed, is attached.
- ☐ 2). A copy of each application specification is not submitted because the specification was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:
- ☒ 3). A copy of each application specification is not submitted because the application is stored in the IFW. Cite no(s): 773, 774, 801, and 806

**Applicant(s) assume the Examiner has access to the file histories of these items. However, if the Examiner would like to receive copies of Office Actions in any of the commonly-owned applications, publications and/or patents identified on the attached SB08, please inform the undersigned and copies will be provided.*

☒ **37 CFR §1.98 (a)(2)(iii) and (d), English language publication (other than U.S. patents, patent applications, or pending unpublished applications) cited**

- ☒ 1). A legible copy of each publication or that portion which caused it to be listed is attached.
- ☐ 2). A copy of each publication or that portion which caused it to be listed is not submitted because the publication was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:

- ☐ 37 CFR §1.98 (a)(2)(i) and (d), Foreign patent(s) in English cited
- ☐ 1). A legible copy of each foreign patent or that portion which caused it to be listed is attached.
- ☐ 2). A copy of each foreign patent is not submitted because the publication was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:
- ☒ 37 CFR §1.98 (a)(2)(i), (a)(3)(i-ii) and 609.04(a)III, Foreign patent(s) or other foreign documents not in English cited. Either:
- ☒ 1). A legible copy of each foreign patent, each publication or that portion which caused it to be listed, is attached --AND--
- ☒ 2a). An English language abstract or an English language copy of a foreign search report or other action by a foreign patent office is provided herewith to fulfill the requirement for a concise explanation of the relevance, as it is presently understood by the individual designated in § 1.56(c) most knowledgeable about the content of the information, of each patent, publication, or other information listed that is not in the English language: Cite no(s): 805
- AND/OR--
- ☐ 2b). A copy of a written, English-language translation or portion thereof is readily available and attached: Cite no(s):
- OR--
- ☐ 3). A copy of each foreign patent is not submitted because the publication was previously submitted in the IDS of the following, earlier filed application relied on for an earlier effective filing date:

STATEMENT UNDER 37 CFR § 1.97(e)

- ☐ Each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. Cite no(s):
- ☐ No item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement. Cite no(s):

STATEMENT UNDER 37 CFR § 1.704(d)

- ☐ Each item of information contained in the information disclosure statement was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office, and this communication was not received by any individual designated in § 1.56(c) more than thirty days prior to the filing of the information disclosure statement.

FEE AUTHORIZATION

- ☒ The Commissioner is hereby authorized to charge the above-referenced fees of \$0.00 and charge any additional fees or credit any overpayment associated with this communication to Deposit Account No. 50-4050.

Respectfully Submitted,

Dated: February 27, 2017

By: /Richard D. Shoop/
Richard D. Shoop, Reg. No. 45,763

Shay Glenn LLP
2755 Campus Drive, Suite 210
San Mateo, CA 94403
(650) 212-1700
Customer No. 66854

Electronic Acknowledgement Receipt	
EFS ID:	28472804
Application Number:	14271071
International Application Number:	
Confirmation Number:	6078
Title of Invention:	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
First Named Inventor/Applicant Name:	Adam Bowen
Customer Number:	66854
Filer:	Richard Douglas Shoop/Brian Flick
Filer Authorized By:	Richard Douglas Shoop
Attorney Docket Number:	13211-713.201
Receipt Date:	27-FEB-2017
Filing Date:	06-MAY-2014
Time Stamp:	16:26:25
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no				
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		13211-713-201_IDS_Filing_SupplIDS_2-27-2017.pdf	467483 5c90e3894cd0b40474cff167b5bf6cfb223ef35	yes	6

Multipart Description/PDF files in .zip description					
Document Description			Start	End	
Information Disclosure Statement (IDS) Form (SB08)			4	6	
Transmittal Letter			1	3	
Warnings:					
Information:					
2	Foreign Reference	WO2013044537A1wEngAbs.pdf	2523385	no	27
			fde3f01e61587b609229cb9ff8b51a683d462f1b		
Warnings:					
Information:					
3	Non Patent Literature	Grotenhermen_et_al_DevelopingScienceBased_2005.pdf	19397990	no	49
			8e18e27f94dc637650c112a26ff1eda776b1f79		
Warnings:					
Information:					
Total Files Size (in bytes):			22388858		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA/82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	14/271,071		
Filing Date	May 6, 2014		
First Named Inventor	Adam Bowen		
Title	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF		
Art Unit	1747		
Examiner Name	D. W. Mayes		
Attorney Docket Number	52210-501001US		
SIGNATURE of Applicant or Patent Practitioner			
Signature	/Ken Jenkins/	Date (Optional)	April 25, 2017
Name	Kenneth E. Jenkins, Ph.D.	Registration Number	51,846
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			
NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.			
☐ *Total of <u>1</u> forms are submitted.			

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number

Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☒ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:

64046

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☒ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

Firm or
Individual Name

Address

City

State

Zip

Country

Telephone

Email

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

PAX Labs, Inc.

- ☐ Inventor or Joint Inventor (title not required below)
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature

Date (Optional)

4/5/17

Name

Ashley C. Gould

Title

General Counsel, Chief Regulatory and Communications Officer

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐

Total of 1 forms are submitted.

Electronic Acknowledgement Receipt	
EFS ID:	29025300
Application Number:	14271071
International Application Number:	
Confirmation Number:	6078
Title of Invention:	NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF
First Named Inventor/Applicant Name:	Adam Bowen
Customer Number:	66854
Filer:	Kenneth Edwin Jenkins/Teri Barnett
Filer Authorized By:	Kenneth Edwin Jenkins
Attorney Docket Number:	13211-713.201
Receipt Date:	25-APR-2017
Filing Date:	06-MAY-2014
Time Stamp:	17:04:03
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	52210_501001US_POA.pdf	80166	no	2
			9fd6d6f7e80724989fca60722901dd7389277d		

Warnings:

Information:	
Total Files Size (in bytes):	80166
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>	



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/271,071	05/06/2014	Adam Bowen	13211-713.201

66854
SHAY GLENN LLP
2755 CAMPUS DRIVE
SUITE 210
SAN MATEO, CA 94403

CONFIRMATION NO. 6078
POWER OF ATTORNEY NOTICE



Date Mailed: 04/28/2017

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/25/2017.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/sleutchit/



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/271,071	05/06/2014	Adam Bowen	13211-713.201

64046
Mintz Levin/San Diego Office
One Financial Center
Boston, MA 02111

CONFIRMATION NO. 6078

POA ACCEPTANCE LETTER



0C000000090949203

Date Mailed: 04/28/2017

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/25/2017.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

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APPLICATION NUMBER	PATENT NUMBER	GROUP ART UNIT	REQUEST ID
14/271,071		1741	40380

PAIR Correspondence Address/Fee Address Change

The following fields have been changed to Customer Number 148514 on 05/23/2017 via Private PAIR in view of the certification copied below that authorized the change.

- Correspondence Address

The address for Customer Number 148514 is:

148514

Mintz Levin/PAX

One Financial Center

Boston, MA 02111

I certify, in accordance with 37 CFR 1.4(d)(4) that I am:

An attorney or Agent of Record registered to practice before the Patent and Trademark Office who has been given power of attorney in this application

Signature:	/Ken Jenkins/
Name:	Kenneth E. Jenkins
Registration Number:	51846



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/271,071	05/06/2014	Adam Bowen	52210-501001US / 713.201	6078
148514	7590	06/15/2017		
Mintz Levin/PAX One Financial Center Boston, MA 02111			EXAMINER CORDRAY, DENNIS R	
			ART UNIT	PAPER NUMBER
			1741	
			NOTIFICATION DATE	DELIVERY MODE
			06/15/2017	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

IPDocketingBOS@mintz.com
IPFilerombos@mintz.com

Office Action Summary	Application No. 14/271,071	Applicant(s) BOWEN ET AL.	
	Examiner DENNIS CORDRAY	Art Unit 1741	AIA (First Inventor to File) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☒ Claim(s) 105-137 is/are pending in the application.
 5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☒ Claim(s) 105-137 is/are rejected.

8) ☒ Claim(s) 105 is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☒ The drawing(s) filed on 8/18/2014 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some** c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
 Paper No(s)/Mail Date _____
11/26/14, 12/16/14, 12/19/14, 1/27/15, 3/30/16, 7/21/15, 7/27/16, 10/6/16, 10/26/16, 12/15/16, 2/27/17.

3) ☐ Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____

4) ☐ Other: _____

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

DETAILED ACTION

Claim Objections

Claim 105 is objected to because of the following informalities: in line 5, the word "great" should be amended to read "greater".. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):

(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

Claims 106, 107, 109, 110, 112-122, 124-126, 128, 129 and 131-137 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

Claim 106 recites the limitation "the operating temperature of the electronic cigarette" in Claim 105. There is insufficient antecedent basis for this limitation in the claim since Claim 105 fails to indicate that the electronic cigarette has an operating temperature.

Claim 107 recites the limitation "the operating temperature" in Claim 105. There is insufficient antecedent basis for this limitation in the claim since Claim 105 fails to indicate that the electronic cigarette has an operating temperature.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 107 recites the broad recitation "from 150 °C to 250 °C", and the claim also recites "200 °C", which is the narrower statement of the range/limitation.

Each of Claims 109 and 117 recites the broad recitation "from about 0.1 microns to about 5 microns", and the claim also recites "from about 0.3 microns to about 0.4 microns", which is the narrower statement of the range/limitation (see further explanation under the rejection of Claim 107 above).

Each of Claims 110, 118, 126 and 133 recites "a carboxylic acid, or an organic acid chosen from the group of monocarboxylic acid,..., malonica acid, or malic acid." It is not clear if all acids recited are intended to be part of a Markush grouping or if a selection is to be made between 1) a carboxylic acid, 2) an organic acid chosen from

the group of monocarboxylic acid,..., malonica acid and 3) malic acid. In addition, the terms “carboxylic acid” is generic for many of the recited acids following including monocarboxylic acid, and “monocarboxylic acid” is generic for many of the recited acids following, thus creating multiple redundancies throughout the claimed species.

Each of Claims 112, 120, 128 and 135 recites percentages of propylene glycol and vegetable glycerin, but fail to recite whether the percentages are by weight or by volume.

Each of Claims 113, 121, 129 and 136 recites percentages of nicotine in the inhalable aerosol, but fail to recite whether the percentages are by weight or by volume.

Each of Claims 116, 125 and 132 recites the broad recitation “from 150 °C to 250 °C”, and the claim also recites “200 °C”, which is the narrower statement of the range/limitation (see further explanation under the rejection of Claim 107 above).

Claim 114 recites “the liquid formulation” in Claim 105. It is not clear if the liquid formulation is the nicotine salt formulation of Claim 105 or a different liquid formulation.

Claim 115 recites the limitation “the operating temperature of the electronic cigarette”, apparently in reference to an earlier portion of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 122 recites “the liquid formulation” in Claim 115. It is not clear if the liquid formulation is the nicotine salt formulation of Claim 115 or a different liquid formulation.

Claim 124 recites the limitation “the operating temperature of the electronic cigarette” in Claim 123. There is insufficient antecedent basis for this limitation in the

claim since Claim 123 fails to indicate that the electronic cigarette has an operating temperature.

Claim 131 recites the limitation "the operating temperature of the electronic cigarette", apparently in reference to an earlier portion of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claims 119, 134 and 137 depend from and inherit the indefiniteness of a claim rejected above.

International Search Report

Hon (US 2006/0196518), Rose et al (US 2012/0255567), Rose et al (US 2008/0241255) and Long (CN 102754924 A) were cited as "Y" references in the International Search Report and Written Opinion for International Application PCT/US2014/037019, to which the instant application is related although priority is not claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 105, 108, 110, 113, 114, 123, 126, 129 and 130 are rejected under 35 U.S.C. 103 as being unpatentable over Hon (US 2006/0196518) as evidenced by Lechuga-Ballesteros et al (US 2006/0018840) and Merriam-Webster Dictionary.

Claims 105, 110, 114, 123, 126, 130: Hon discloses an electronic cigarette and a method of using the same. The cigarette dispenses a liquid nicotine formulation contained in a storage container in aerosolized/vaporized form (inhalable aerosol) upon being heated by an electric heater, for inhalation by a user (delivers nicotine to a user). The nicotine formulation includes nicotine in an amount from 0.1-6% by weight, propylene glycol, glycerol, organic acids, etc. (Abstract; [0006],[0020],[0021],[0028]-[0032], Claims 99 -104). Citric acid is disclosed as a suitable acid [0030]. While not explicitly disclosed, at least some nicotine salt would be expected to form from reaction between the basic nicotine and organic acid (for evidence, see Lechuga-Ballesteros et al [0012],[0023],[0040]). The disclosed method reads on the claimed method.

The amount of nicotine by weight significantly overlays the claimed ranges or, at least, it would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to include an amount of nicotine in the formulation of Hon in the claimed range with a reasonable expectation of success in obtaining a suitable electronic cigarette.

Citric acid is a claimed organic acid and will form a nicotine salt having the claimed vapor pressure, and difference between melting point and boiling point or, at least, the claimed properties would have been obvious because, where the claimed and prior art apparatus or product are identical or substantially identical in structure or

composition, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In other words, when the structure recited in the reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent or at least obvious.

Claim 108: "Aerosol" is defined as "a suspension of fine solid or liquid particles in gas" (Merriam-Webster Dictionary), therefore, the aerosol produced by the device of Hon comprises particles of at least a condensate of nicotine salt and condensate of the carrier. One of ordinary skill in the art would also expect at least some condensate of free base nicotine and condensate of the organic acid.

Claims 113, 129: The liquid composition overlays the claimed composition, and therefore, the aerosolized/vaporized composition will comprise an amount of nicotine in the inhalable aerosol in the claimed range or, at least, obtaining the claimed amount of nicotine would have been obvious from aerosolization/vaporization of the liquid.

Claims 110, 111, 126 and 127 are rejected under 35 U.S.C. 103 as being unpatentable over Hon in view of Lechuga-Ballesteros et al (US 2006/0018840) or Rose et al (US 2008/0241255).

The disclosure of Hon et al is used as above. Hon et al does not disclose many of the claimed nicotine salts or acids used to form the nicotine salts.

Lechuga-Ballesteros et al discloses aerosolizable formulations comprising free-base nicotine and an organic acid for administration to a user wherein the free-base

nicotine and organic acid form a nicotine salt (Abs, [0011],[0012],[0015],[0023]).

Suitable organic acids include formic acid, acetic acid, propionic acid, butyric acid, caproic acid, caprylic acid, capric acid, citric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, phenylacetic acid, benzoic acid, tartaric acid, bitartaric acid, lactic acid, malonic acid, succinic acid, fumaric acid, finnaric acid, gluconic acid, saccharic acid, malonic acid, and malic acid [0042].

Rose et al discloses devices and methods for pulmonary delivery of an aerosol of nicotine to a user (Abs,[0001],[0112]) In disclosed embodiments, the nicotine is free base nicotine or nicotine particles in salt form. Nicotine pyruvate is specifically mentioned ([0105],[0108]).

The art of Hon, Lechuga-Ballesteros et al, Rose et al and the instant invention is analogous as pertaining to devices and methods for pulmonary delivery of an inhalable aerosol of nicotine to a user. It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to employ the claimed acids to form a nicotine salt for inclusion into the electronic cigarette of Hon with or in place of the citric acid salt disclosed by Hon in view of Lechuga-Ballesteros et al or Rose et al with a reasonable expectation of success in forming a suitable electronic cigarette for delivery of an inhalable aerosol containing nicotine to a user. Forming the claimed nicotine salts would further have been obvious.

"It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose... [T]he idea of combining them flows logically from their

having been individually taught in the prior art.” In re Kerkhoven, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). Alternatively, the fact that both polymers were known for the same use in the art presents strong evidence of obviousness in substituting one for the other as a functionally equivalent option. An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. In re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982).

Claim 109 is rejected under 35 U.S.C. 103 as being unpatentable over Hon in view of Cross et al (US 2004/0099266) and Rose et al.

The disclosure of Hon is used as above. Hon does not disclose a particle size of the condensate particles.

Cross et al (US 2004/0099266) teaches that, for efficient aerosol delivery to the lungs or for deep lung delivery of drug particles in an inhalable aerosol, a suitable particle size is between 1 and 3.5 micrometers (Abs, [0007],[0011]). Rose et al discloses that the nicotine particles are less than 6 microns, in some embodiments from 0.5 to 5 microns in diameter ([0113]-[0114]).

The art of Hon, Cross et al, Rose et al and the instant invention is analogous as pertaining to devices and methods for pulmonary delivery of an inhalable aerosol to a user. It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to obtain a particle size in the claimed range in the electronic cigarette of Hon in view of Cross et al and Rose et al with a reasonable

expectation of success in forming a suitable electronic cigarette for efficient delivery of an inhalable aerosol containing nicotine to a user.

Claims 106, 107, 112, 115, 116, 118, 120-122, 124, 125, 128, 131-133 and 135-137 are rejected under 35 U.S.C. 103 as being unpatentable over Hon in view of Sebastian et al (US 2014/0000638) and Goniewicz et al ("Nicotine Levels In Electronic Cigarettes"). Goniewicz et al was provided by Applicant in an Information Disclosure Statement submitted 11/26/2014.

Claims 106, 107, 115, 116, 118, 121, 122, 124, 125, 131-133, 136 and 137: The disclosure of Hon is used as above. Hon does not disclose the operating temperature.

Sebastian et al (US 2014/0000638) discloses electronic smoking articles for delivery of two or more components of an aerosol precursor to one or more heaters to provide improved aerosol delivery rate for human consumption. Suitable components of the aerosol precursor composition include glycerin, propylene glycol, nicotine, etc. (Abs,[0001],[0009],[0015],[0055]-[0057]). Sebastian et al discloses that the amount of heat provided is selected to provide an amount of aerosol equivalent to a typical puff on a conventional cigarette, and that the heat needed to volatilize the aerosol precursor composition in a sufficient volume to provide a desired volume for a single puff can vary. Operating temperatures in some embodiments are about 150 °C to about 250 °C, or about 200 °C or greater [0043], which are claimed values. The operating temperature is thus revealed to be a result effective variable and can be optimized by one of ordinary skill in the art to deliver a desired volume of aerosol for a single puff.

The art of Hon, Sebastian et al and the instant invention is analogous as pertaining to devices and methods for pulmonary delivery of an aerosol of nicotine to a user. It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to obtain an operating temperature in the claimed range in the electronic cigarette of Hon in view of Sebastian et al by optimization to provide an amount of aerosol equivalent to a typical puff on a conventional cigarette. Citric acid is a claimed organic acid and will form a nicotine salt having the claimed difference between melting point and boiling point of the acid and a melting point at least 40 °C below the operating temperature of the cigarette for reasons given previously.

Claims 112, 120, 128 and 135: Hon does not disclose the claimed amounts of glycerin and propylene glycol. Hon discloses compositions comprising a greater amount of propylene glycol and a lesser amount of glycerin as the carrier, but fails to provide any particular benefit from the composition of the carrier. Sebastian et al discloses that the aerosol precursor composition can comprise up to about 98% by weight of a polyol, and that the total amount can be split in any combination between two or more polyols [0060]. As a non-limiting example, an aerosol precursor comprises an amount of about 70% to about 90% by weight of glycerol (glycerin), about 1% to about 10% by weight of propylene glycol, about 0.1% to about 5% of nicotine, up to about 5% by weight of flavors and water [0061]. The literature treats propylene glycol and glycerin as equivalents and the most popular solvents for nicotine in that they form an aerosol that closely imitates cigarette smoke (see Goniewicz et al, 1st sentence of

the last paragraph on p 58). Absent convincing evidence of unexpected results commensurate in scope with the claims, and because both propylene glycol and glycerin are disclosed in the prior art for the same purpose, one of ordinary skill in the art before the effective filing date of the claimed invention would have found that no significant difference is imparted to nicotine containing aerosols from carriers comprising any relative amounts of propylene glycol and glycerin, and would have found it obvious to select and form aerosol producing compositions comprising the claimed amounts of propylene glycol and glycerin with a reasonable expectation of success in forming a suitable aerosolizable composition.

It has been held by the courts that where patentability is predicated upon a change in a condition of a prior art composition, such as a change in concentration or the like, the burden is on the applicant to establish with objective evidence that the change is critical, i.e., it leads to a new, unexpected result. *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990); *In re Aller*, 220 F.2d 454, 456 (CCPA 1955).

Claims 118, 119, 133 and 134 are rejected under 35 U.S.C. 103 as being unpatentable over Hon in view of Sebastian et al and further in view of Lechuga-Ballesteros et al or Rose et al.

The disclosures of Hon et al and Sebastian et al are used as above. Hon et al and Sebastian et al do not disclose many of the claimed nicotine salts or acids used to form the nicotine salts.

The disclosures of Lechuga-Ballesteros et al and Rose et al are applied as above.

The art of Hon, Sebastian et al, Lechuga-Ballesteros et al, Rose et al and the instant invention is analogous as pertaining to devices and methods for pulmonary delivery of an inhalable aerosol of nicotine to a user. It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to employ the claimed acids to form a nicotine salt for inclusion into the electronic cigarette of Hon with or in place of the citric acid salt disclosed by Hon in view of Sebastian et al and further in view of Lechuga-Ballesteros et al or Rose et al with a reasonable expectation of success in forming a suitable electronic cigarette for delivery of an inhalable aerosol containing nicotine to a user. Forming the claimed nicotine salts would further have been obvious.

“It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose... [T]he idea of combining them flows logically from their having been individually taught in the prior art.” In re Kerkhoven, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). Alternatively, the fact that both polymers were known for the same use in the art presents strong evidence of obviousness in substituting one for the other as a functionally equivalent option. An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. In re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982).

Claim 117 is rejected under 35 U.S.C. 103 as being unpatentable over Hon in view of Sebastian et al and further in view of Cross et al and Rose et al.

The disclosures of Hon et al and Sebastian et al are used as above. Hon et al and Sebastian et al do not disclose a particle size of the condensate particles.

The disclosures of Cross et al and Rose et al are applied as above.

The art of Hon, Sebastian et al, Cross et al, Rose et al and the instant invention is analogous as pertaining to devices and methods for pulmonary delivery of an aerosol to a user. It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to obtain a particle size in the claimed range in the electronic cigarette of Hon in view of Cross et al and Rose et al with a reasonable expectation of success in forming a suitable electronic cigarette for efficient delivery of an inhalable aerosol containing nicotine to a user.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46

USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the examined application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP §§ 706.02(I)(1) - 706.02(I)(3) for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/patent/patents-forms. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. *An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission.* For more information about eTerminal Disclaimers, refer to www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

Claims 105, 109, 110, 114, 123, 126 and 130 are rejected on the ground of nonstatutory double patenting as being unpatentable over claim claims 1, 6 and 12-15 of U.S. Patent No. 9215895. Although the claims at issue are not identical, they are not patentably distinct from each other because the claims of the patent recite the limitations of the instant claims except for the vapor pressure of the acid. However, acids claimed in the patent are acids of the instant claims, therefore have the instantly claimed vapor pressure. Regarding instant claims 123, 126 and 130, the nicotine formulation claimed in the patent is in an electronic cigarette.

Claims 105, 109, 110, 114, 123, 126 and 130 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1, 3, 7, 9, 10, 15 and 17 of copending Application No. 14/925961. Although the claims at issue are not identical, they are not patentably distinct from each other because the claims of the patent recite the limitations of the instant claims except for the vapor pressure of the acid. However, acids claimed in the patent are acids of the instant claims, therefore have the instantly claimed vapor pressure. Regarding instant claims 123, 126 and 130, the nicotine formulation claimed in the copending application is either in an electronic cigarette or at least it would have been obvious to include the nicotine formulation in an electronic cigarette.

This is a provisional nonstatutory double patenting rejection.

Claims 105, 107, 110, 112, 114-118, 122-126, 128, 130-133, 135 and 137 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1, 4, 7-20, 20, 61, 64, 67 and 71-81 of copending Application No. 15/101303 unpatentable over claims 1, 3, 7, 9, 10, 15 and 17 of copending Application No. 14/925961. Although the claims at issue are not identical, they are not patentably distinct from each other because the claims of the patent recite the limitations of the instant claims except for the vapor pressure of the acid. However, acids claimed in the patent are acids of the instant claims, therefore have the instantly claimed vapor pressure and differences between melting point and boiling point or operating temperature. Regarding instant claims 123, 126 and 130, the nicotine formulation claimed in the patent is either in an electronic cigarette or at least it would have been obvious to include the nicotine formulation in an electronic cigarette.

This is a provisional nonstatutory double patenting rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DENNIS CORDRAY whose telephone number is (571)272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Del Sole can be reached on 571-272-1130. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DENNIS CORDRAY/
Primary Examiner, Art Unit 1741

Notice of References Cited	Application/Control No. 14/271,071		Applicant(s)/Patent Under Reexamination BOWEN ET AL.	
	Examiner DENNIS CORDRAY		Art Unit 1741	Page 1 of 1

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
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*	B	US-9,215,895 B2	12-2015	Bowen; Adam	A24B15/16	1/1
	C	US-				
	D	US-				
	E	US-				
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

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*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
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	O					
	P					
	Q					
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	S					
	T					

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*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	Definition of "aerosol", Merriam-Webster Dictionary, [online], no date, retrieved from the Internet, [retrieved 6/8/2017], <URL: https://www.merriam-webster.com/dictionary/aerosol >.
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes 	Application/Control No.		Applicant(s)/Patent under Reexamination	
	14/271,071		BOWEN ET AL.	
	Examiner		Art Unit	
	DENNIS CORDRAY		1741	

SEARCHED			
Class	Subclass	Date	Examiner
131	328,273,3 29,347,35 9,360	6/7/2017	DRC

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
Inventor search-PALM, EAST	6/7/2017	DRC
Consider references in IDS submission(s)	6/7/2017	DRC
Consider references in Search Report for PCT/US2014/037019	6/7/2017	DRC
A24F47/00-008 A24B15/167 A24B15/16 A24B15/00 A24B15/10 A61K9/007 A61K9/12 A61K31/33 A61K31/465 A61K31/60-see search history	6/7/2017	DRC
A61K47/10-see search history	6/7/2017	DRC
text limited search- EAST (US-PGPUB;USPAT;USOCR;EPO;JPO;D ERWENT)-see search history printout	6/9/2017	DRC



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CONFIRMATION NO. 6078

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.		
14/271,071	05/06/2014	131	1741	52210-501001US / 713.201		
APPLICANTS PAX Labs, Inc., San Francisco, CA; INVENTORS Adam Bowen, San Francisco, CA; Chenyue Xing, San Francisco, CA; ** CONTINUING DATA ***** This appln claims benefit of 61/820,128 05/06/2013 and claims benefit of 61/912,507 12/05/2013 ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 05/20/2014						
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☐ No Verified and /DENNIS R CORDRAY/ Acknowledged Examiner's Signature		☐ Met after Allowance Initials	STATE OR COUNTRY CA	SHEETS DRAWINGS 8	TOTAL CLAIMS 33	INDEPENDENT CLAIMS 4
ADDRESS Mintz Levin/PAX One Financial Center Boston, MA 02111 UNITED STATES						
TITLE NICOTINE SALT FORMULATIONS FOR AEROSOL DEVICES AND METHODS THEREOF						
FILING FEE RECEIVED 3200	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:			☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit		

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				Application Number	14/271,071
				Filing Date	May 6, 2014
				First Named Inventor	Adam Bowen
				Art Unit	1747
				Examiner Name	Not assigned
Sheet	1	of	1	Attorney Docket Number	35196-713.201

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number Number-Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	1.	US 2014/0345635	11/27/2014	Rabinowitz et al.	

U.S. UNPUBLISHED PATENT APPLICATIONS					
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	2.	WO 2014/190079	11/27/2014	NJOY, Inc.		

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Examiner Signature	/DENNIS R CORDRAY/	Date Considered	06/07/2017
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				Application Number	14271071
				Filing Date	05-06-2014
				First Named Inventor	BOWEN; Adam
				Art Unit	1747
				Examiner Name	Felton
Sheet	1	of	7	Attorney Docket Number	35196-713.201

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	003	US-D649932	12-06-2011	SYMONS; Dominic	
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	001	EP-2609821-A1	07-03-2013	PHILIP MORRIS PROD [CH]		☐

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				Application Number	14271071
				Filing Date	05-06-2014
				First Named Inventor	BOWEN; Adam
				Art Unit	1747
				Examiner Name	Felton
Sheet	2	of	7	Attorney Docket Number	35196-713.201

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	002	WO-2013083635-A1	06-13-2013	PHILIP MORRIS PROD [CH]		☐
	003	WO-2015100361-A1	07-02-2015	PAX LABS INC [US]		☐

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	001	International Search Report and Written Opinion dated April 27, 2015 for PCT Application No. PCT/US2014/072230.	☐
	002	U.S. Application No. 14/512,311 Office Action mailed May 21, 2015.	☐

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				Application Number	14/271,071
				Filing Date	May 6, 2014
				First Named Inventor	Adam Bowen
				Art Unit	1747
				Examiner Name	Not assigned
Sheet	1	of	1	Attorney Docket Number	35196-713.201

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				Art Unit	1747
				Examiner Name	Not assigned
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		Number-Kind Code ² (if known)			
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	2.	US-576,653	02-09-1897	Bowlby	
	3.	US-595,070	12-07-1897	Oldenbusch	
	4.	US-799,844	9/19/1905	Fuller	
	5.	US-969,076	8/30/1910	Pender	
	6.	US-1,067,531	7/15/1913	MacGregor	
	7.	US-1,163,183	12/7/1915	Stoll	
	8.	US-1,299,162	4/1/1919	Fisher	
	9.	US-1,505,748	3/26/1924	Tamis	
	10.	US-1,552,877	9/8/1925	Phillipps et al.	
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	25.	US-3,146,937	9/1/1964	Vesak	
	26.	US-3,420,360	1/7/1969	Young	

Examiner Signature	/DENNIS R CORDRAY/	Date Considered	06/07/2017
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Sheet	2	of	7	Attorney Docket Number		35196-713.201

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	27.	US-3,567,014	3/2/1971	Feigelman	
	28.	US-3,861,523	1/21/1975	Fountain et al.	
	29.	US-3,941,300	3/2/1976	Troth	
	30.	US-4,207,976	6/17/1980	Herman	
	31.	US-4,519,319	5/28/1985	Howlett	
	32.	US-4,771,796	9/20/1988	Myer	
	33.	US-4,798,310	1/17/1989	Kasai et al.	
	34.	US-4,813,536	3/21/1989	Willis	
	35.	US-4,848,563	7/18/1989	Robbins	
	36.	US-5,005,759	4/9/1991	Bouche	
	37.	US-5,123,530	6/23/1992	Lee	
	38.	US-5,269,327	12/14/1993	Counts et al.	
	39.	US-5,605,226	2/25/1997	Hernlein	
	40.	US-5,641,064	6/24/1997	Goserud	
	41.	US-5,746,587	5/5/1998	Racine et al.	
	42.	US-5,810,164	9/22/1998	Rennecamp	
	43.	US-5,979,460	11/9/1999	Matsumura	
	44.	US-5,881,884	3/16/1999	Podosek	
	45.	US-5,938,018	8/17/1999	Keaveney et al.	
	46.	US-5,967,310	10/19/1999	Hill	
	47.	US-5,975,415	11/2/1999	Zehnal	
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	49.	US 6,381,739	4/30/2002	Gonda	
	50.	US-6,386,371	5/14/2002	Parsons	
	51.	US-6,431,363	8/13/2002	Hacker	
	52.	US-6,446,793	9/10/2002	Layshock	
	53.	US-6,510,982	1/28/2003	White et al.	

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Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Complete if Known	
				Application Number	14/271,071
				Filing Date	05-06-2014
				First Named Inventor	Adam Bowen
				Art Unit	1747
				Examiner Name	Not assigned
Sheet	3	of	7	Attorney Docket Number	35196-713.201

U.S. PATENT DOCUMENTS					
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		Number-Kind Code ² (if known)			
	54.	US-6,557,708	5/6/2003	Polacco	
	55.	US-6,622,867	9/23/2003	Menceles	
	56.	US-6,672,762	1/6/2004	Faircloth	
	57.	US-6,726,006	4/27/2004	Funderburk et al.	
	58.	US-7,000,775	2/21/2006	Gelardi	
	59.	US-7,374,048	5/20/2008	Mazurek	
	60.	US-7,546,703	6/16/2009	Johnske et al.	
	61.	US-7,621,403	11/24/2009	Althoff et al.	
	62.	US-7,644,823	1/12/2010	Gelardi et al.	
	63.	US-7,815,332	10/19/2010	Smith	
	64.	US-7,886,507	2/15/2011	McGuinness, Jr.	
	65.	US-7,988,034	8/2/2011	Pezzoli	
	66.	US-8,141,701	3/27/2012	Hodges	
	67.	US-8,381,739	2/26/2013	Gonda	
	68.	US-8,443,534	5/21/2013	Goodfellow et al.	
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	70.	US-8,539,959	9/24/2013	Scatterday	
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	73.	US-2001/0052480 AI	12/20/2001	Kawaguchi et al.	
	74.	US-2002/0043554 AI	4/18/2002	White et al.	
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	76.	US-2003/0089377 AI	5/15/2003	Hajaligol et al.	
	77.	US-2004/0149624 AI	8/5/2004	Wischusen, III et al.	
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Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				Complete if Known	
				Application Number	14/271,071
				Filing Date	05-06-2014
				First Named Inventor	Adam Bowen
				Art Unit	1747
				Examiner Name	Not assigned
Sheet	4	of	7	Attorney Docket Number	35196-713.201

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	80.	US 2007/062548 A1	03/22/2007	Michael Horstmann	
	81.	US-2005/0145533 A1	7/7/2005	Seligson	
	82.	US-2005/0172976 A1	8/11/2005	Newman et al.	
	83.	US-2006/0054676 A1	3/16/2006	Wischusen, III	
	84.	US-2006/0150991 A1	7/13/2006	Lee	
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	95.	US-2009/0151717	6/18/2009	Bowen et al.	
	96.	US-2009/0267252 A1	10/29/2009	Ikeyama	
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	98.	US-2010/0000672 A1	1/7/2010	Fogle	
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	100.	US-2010/0186757 A1	7/29/2010	Crooks et al.	
	101.	US-2010/0200006 A1	8/12/2010	Robinson et al.	
	102.	US-2010/0242974 A1	9/30/2010	Pan	
	103.	US-2010/0275938 A1	11/4/2010	Roth et al.	
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				Filing Date	05-06-2014	
				First Named Inventor	Adam Bowen	
				Art Unit	1747	
				Examiner Name	Not assigned	
Sheet	5	of	7	Attorney Docket Number		35196-713.201

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		Number-Kind Code ² (if known)			
	106.	US-2011/0049226 AI	3/3/2011	Moreau et al.	
	107.	US-2011/0155153 AI	6/30/2011	Thorens et al.	
	108.	US-2011/0162667 AI	7/7/2011	Burke et al.	
	109.	US-2011/0168194 AI	7/14/2011	Hon	
	110.	US-2011/0180433 AI	6/28/2011	Rennecamp	
	111.	US-2011/0232654 AI	9/29/2011	Mass	
	112.	US-2011/0265806 AI	11/3/2011	Alarcon et al.	
	113.	US-2011/0277780 AI	11/17/2011	Terry et al.	
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	116.	US-2012/0060853 AI	3/15/2012	Robinson et al.	
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	118.	US-2012/0204889 AI	8/16/2012	Xiu	
	119.	US-2012/0227753 AI	9/13/2012	Newton	
	120.	US-2012/0261286 AI	10/18/2012	Holloway et al.	
	121.	US-2012/0267383 AI	10/25/2012	Van Rooyen	
	122.	US-2013/0140200 AI	6/6/2013	Scatterday	
	123.	US-2013/0228191 AI	9/5/2013	Newton	
	124.	US-2013/0247924 AI	9/26/2013	Scatterday et al.	
	125.	US-2013/0248385 AI	9/26/2013	Scatterday et al.	
	126.	US-2013/0276802 AI	10/24/2013	Scatterday	
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U.S. UNPUBLISHED PATENT APPLICATIONS			
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				First Named Inventor	Adam Bowen	
				Art Unit	1747	
				Examiner Name	Not assigned	
Sheet	6	of	7	Attorney Docket Number		35196-713.201

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FOREIGN PATENT DOCUMENTS						
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		Country Code ³ - Number ⁴ - Kind Code ⁵ (if known)				
	131.	CN 101869356 A (with translation)	10/27/2010	Zhegi		X
	132.	EP 0354661 A2	02/14/1990	British American Tobacco Co.		
	133.	EP 1618803	01/25/2006	Hon Lik (CN) Best Partners Worldwide Ltd		
	134.	EP 2325093 A1	5/25/2011	Imperial Tobacco Ltd.		
	135.	JP 2001-165437 A (abstract only)	6/22/2001	Tsubota Pearl Co. Ltd.		X
	136.	WO 2003/094900	11/20/2003	Alexza Molecular Delivery Corp.		
	137.	WO 2011/033396 A1	3/24/2011	Liu		
	138.	WO 2011/117580 A2	9/29/2011	Hearn		
	139.	WO 2012/021972 A1	2/23/2012	Boisseau		
	140.	WO 2013/141906	9/26/2013	Scatterday et al.		
	141.	WO 2013/141907	9/26/2013	Scatterday		
	142.	WO 2013/141994	9/26/2013	Scatterday		
	143.	WO 2013/141998	9/26/2013	Scatterday		
	144.	WO 2013/142671	9/26/2013	Scatterday et al.		
	145.	WO 2013/142678	9/26/2013	Scatterday		
	146.	WO 2014/113592	7/24/2014	Scatterday		

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				Examiner Name	Not assigned
Sheet	7	of	7	Attorney Docket Number	35196-713.201

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	147.	Communication Relating to the Results of the Partial International Search for PCT/US2014/039016, dated Aug. 26, 2014 (7 pages).	
	148.	U.S. Application No. 14/512,311 Office Action mailed January 26, 2015	

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EAST Search History (Prior Art) /DC/ - 6/9/2017

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S2	1	("8381739").PN.	USPAT; USOCR	OR	OFF	2017/06/07 11:59
S3	1	("6381739").PN.	USPAT; USOCR	OR	OFF	2017/06/07 12:00
S4	1	("20140345631").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2017/06/08 09:22
S5	2582	(131/328,273,329,347,359,360).CCLS.	US- PGPUB; USPAT; USOCR	OR	OFF	2017/06/08 10:31
S6	691	S5 and ((electronic adj (cigar cigarette (smoking adj (device article)))) e? cigarette)	US- PGPUB; USPAT; USOCR	OR	ON	2017/06/08 10:33
S7	11	S5 and ((NICOTINE nicotinic) near3 SALT) AND ACID AND aerosol and DELIVER\$3 AND (LIQUID near10 CARRIER)	US- PGPUB; USPAT; USOCR	OR	ON	2017/06/08 10:33
S8	13	S5 and ((NICOTINE nicotinic) near3 SALT) AND aerosol and DELIVER\$3 AND (LIQUID near10 CARRIER)	US- PGPUB; USPAT; USOCR	OR	ON	2017/06/08 10:33
S9	45	S5 and ((NICOTINE nicotinic) near3 SALT) AND aerosol and DELIVER\$3 AND LIQUID and (CARRIER solvent (propylene adj glycol) glycerin\$1 glycerol)	US- PGPUB; USPAT; USOCR	OR	ON	2017/06/08 10:35
S10	49	S5 and ((NICOTINE nicotinic) near3 SALT) AND aerosol AND LIQUID and (CARRIER solvent (propylene adj glycol) glycerin\$1 glycerol)	US- PGPUB; USPAT; USOCR	OR	ON	2017/06/08 10:35
S11	36	S10 and ((salicylic sorbic formic acetic benzoic pyruvic lauric citric succinic malic levulinic) adj acid)	US- PGPUB; USPAT; USOCR	OR	ON	2017/06/08 10:36
S12	20	S10 and (nicotine near20 (\$3salicylate \$3formate \$3acetate \$3sorbate \$3benzoate \$3pyruvate \$3malate \$3laurate \$3citrate \$3succinate \$3levuliniate))	US- PGPUB; USPAT; USOCR	OR	ON	2017/06/08 10:37
S13	40	S11 S12	US- PGPUB; USPAT; USOCR	OR	ON	2017/06/08 10:37
S14	24	S13 and ((propylene adj glycol) glycerin\$1 glycerol)	US- PGPUB; USPAT;	OR	ON	2017/06/08 10:39

			USOCR			
S15	32	S13 and (heated heating)	US-PGPUB; USPAT; USOCR	OR	ON	2017/06/08 10:43
S16	22	S14 and S15	US-PGPUB; USPAT; USOCR	OR	ON	2017/06/08 10:43
S18	1	("9215895").PN.	USPAT; USOCR	OR	OFF	2017/06/08 11:13
S19	28921	(A24F47/00-008 A24B15/167 A24B15/16 A24B15/00 A24B15/10 A61K9/007 A61K9/12 A61K31/33 A61K31/465 A61K31/60 A61K47/10).CPC.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/08 11:26
S20	2993	S19 and ((electronic adj (cigar cigarette (smoking adj (device article)))) e? cigarette)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/08 11:26
S21	30	S20 and ((NICOTINE nicotinic) near3 SALT) AND aerosol AND LIQUID and (CARRIER solvent) and ((propylene adj glycol) glycerin\$1 glycerol)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/08 11:27
S22	27	S21 and (heated heating)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/08 11:27
S23	26	S21 and ((salicylic sorbic formic acetic benzoic pyruvic lauric citric succinic malic levulinic) adj acid)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/08 11:28
S24	14	S21 and (nicotine near20 (\$3salicylate \$3formate \$3acetate \$3sorbate \$3benzoate \$3pyruvate \$3malate \$3laurate \$3citrate \$3succinate \$3levuliniate))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/08 11:28
S25	26	S23 S24	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/08 11:29
S26	12	S25 not S16	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/08 11:29
S27	9	S26 and nicotine and (heated heating)	US-	OR	ON	2017/06/08

			PGPUB; USPAT; USOCR; EPO; JPO; DERWENT			11:37
S28	542	(("0004249") or ("0018840") or ("0191322") or ("0196518") or ("0241255") or ("0242976") or ("0255567") or ("0268809") or ("0374584") or ("0576653") or ("0595070") or ("0720007") or ("0799844") or ("0968160") or ("0969076") or ("1067531") or ("1163183") or ("1299162") or ("1505748") or ("1552877") or ("1632335") or ("1706244") or ("1845340") or ("1972118") or ("1998683") or ("2031363") or ("2039559") or ("2104266") or ("2159698") or ("2177636") or ("2195260") or ("2231909") or ("2327120") or ("2460427") or ("2483304") or ("2502561") or ("2765949") or ("2830597") or ("2860638") or ("2897958") or ("2935987") or ("3146937") or ("3258015") or ("3271719") or ("3292634") or ("3373915") or ("3420360") or ("3443827") or ("3456645") or ("3479561") or ("3567014") or ("3675661") or ("3707017") or ("3792704") or ("3815597") or ("3861523") or ("3941300") or ("4020853") or ("4049005") or ("4066088") or ("4207976") or ("4215708") or ("4219032") or ("4303083") or ("4506683") or ("4519319") or ("4520938") or ("4595024") or ("4648393") or ("4708151") or ("4735217") or ("4771796") or ("4793365") or ("4794323") or ("4798310") or ("4813536") or ("4819665") or ("4830028") or ("4836224") or ("4846199") or ("4848374") or ("4848563") or ("4893639") or ("4907606") or ("4941483") or ("4944317") or ("4947874") or ("4947875") or ("5005759") or ("5020548") or ("5027836") or ("5031646") or ("5050621") or ("5060671") or ("5065776") or ("5076297") or ("5105831") or ("5105838") or ("5123530") or ("5133368") or ("5144962") or ("5152456") or ("5183062") or ("5224498") or ("5240012") or ("5249586") or ("5261424") or ("5269237") or ("5269327") or ("5303720") or ("5322075") or ("5324498") or ("5372148") or ("5388574") or ("5449078") or ("5456269") or ("5497791") or ("5529078") or	US- PGPUB; USPAT; USOCR	OR	OFF	2017/06/08 11:56

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S29	155	S28 and ((electronic adj (cigar cigarette (smoking adj (device article)))) e? cigarette)	US- PG PUB; US PAT; US OCR	OR	ON	2017/06/08 11:57

S30	4	S29 and ((NICOTINE nicotinic) near3 SALT) AND aerosol AND LIQUID and (CARRIER solvent) and ((propylene adj glycol) glycerin\$1 glycerol)	US-PGPUB; USPAT; USOCR	OR	ON	2017/06/08 11:57
S31	23	S29 and ((salicylic sorbic formic acetic benzoic pyruvic lauric citric succinic malic levulinic) adj acid)	US-PGPUB; USPAT; USOCR	OR	ON	2017/06/08 11:59
S32	4	S29 and (nicotine near20 (\$3salicylate \$3formate \$3acetate \$3sorbate \$3benzoate \$3pyruvate \$3malate \$3laurate \$3citrate \$3succinate \$3levuliniate))	US-PGPUB; USPAT; USOCR	OR	ON	2017/06/08 11:59
S33	23	S31 S32	US-PGPUB; USPAT; USOCR	OR	ON	2017/06/08 12:00
S34	4	S30 and S33	US-PGPUB; USPAT; USOCR	OR	ON	2017/06/08 12:00
S35	7	((("5050621") or ("20040099266") or ("20060196518") or ("20070062548") or ("20080241255") or ("20110245493") or ("20120255567")).PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/06/08 12:04
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("20140014124") or ("20140014126") or
("20140041655") or ("20140053856") or
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("20140366898") or ("20140378790") or
("20150020823") or ("20150020824") or
("20150020825") or ("20150020831") or
("20150027468") or ("20150027472")).PN.
or ("20150034103") or ("20150034104")
or ("20150038567") or ("20150040929")
or ("20150101625") or ("20150122252")
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or ("20150208731") or ("20150216237")
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or ("20150245654") or ("20150245660")
or ("20150257445") or ("20150258289")
or ("20150272220") or ("20150282525")
or ("20150282527") or ("20150305409")
or ("20150313275") or ("20150351456")
or ("20160021931") or ("20160021933")
or ("20160058071") or ("20160058072")
or ("20160081395") or ("20160106154")
or ("20160106155") or ("20160120218")
or ("20160135503") or ("20160143359")
or ("20160143365") or ("20160174611")
or ("20160242466") or ("20160249680")
or ("20160295924") or ("20160302483")

		or ("20160309784") or ("20160324215") or ("20160331033") or ("20160331038") or ("20160331040") or ("20160338410") or ("20160338411") or ("20160345627") or ("20160345630") or ("20160368670") or ("20160371464") or ("20160374390") or ("20160374398") or ("20130319440") or ("9226526") or ("9271525") or ("9271529") or ("9272103") or ("D557209") or ("D590990") or ("D590991") or ("D611409") or ("D624238") or ("D642330") or ("D644375") or ("D649932") or ("D653803") or ("D674748") or ("D686987") or ("D691324") or ("D695450") or ("D700572") or ("D704629") or ("D704634") or ("D707389") or ("D725310")).PN.				
S37	155	S36 and ((electronic adj (cigar cigarette (smoking adj (device article)))) e? cigarette)	US- PGPUB; USPAT; USOCR	OR	ON	2017/06/08 15:36
S38	23	S37 and ((salicylic sorbic formic acetic benzoic pyruvic lauric citric succinic malic levulinic) adj acid)	US- PGPUB; USPAT; USOCR	OR	ON	2017/06/08 15:36
S39	4	S37 and (nicotine near20 (\$3salicylate \$3formate \$3acetate \$3sorbate \$3benzoate \$3pyruvate \$3malate \$3laurate \$3citrate \$3succinate \$3levuliniate))	US- PGPUB; USPAT; USOCR	OR	ON	2017/06/08 15:36
S40	23	S38 S39	US- PGPUB; USPAT; USOCR	OR	ON	2017/06/08 15:36
S41	3	S40 and protonate\$1	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/08 15:36
S42	28921	(A24F47/00-008 A24B15/167 A24B15/16 A24B15/00 A24B15/10 A61K9/007 A61K9/12 A61K31/33 A61K31/465 A61K31/60 A61K47/10).CPC.	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/08 15:38
S43	2993	S42 and ((electronic adj (cigar cigarette (smoking adj (device article)))) e? cigarette)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/08 15:38
S44	30	S43 and ((NICOTINE nicotinic) near3 SALT) AND aerosol AND LIQUID and (CARRIER solvent) and ((propylene adj glycol) glycerin\$1 glycerol)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/08 15:38
S45	26	S44 and ((salicylic sorbic formic acetic benzoic pyruvic lauric citric succinic malic	US- PGPUB;	OR	ON	2017/06/08 15:38

		levulinic) adj acid)	USPAT; USOCR; EPO; JPO; DERWENT			
S46	14	S44 and (nicotine near20 (\$3salicylate \$3formate \$3acetate \$3sorbate \$3benzoate \$3pyruvate \$3malate \$3laurate \$3citrate \$3succinate \$3levulinate))	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/08 15:38
S47	26	S45 S46	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/08 15:38
S48	10	S47 and protonate\$1	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/08 15:38
S49	240	(form\$3 near5 (nicotine adj salt)) and acid	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/08 15:40
S50	1	("20060018840").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/06/08 15:44
S51	28921	(A24F47/00-008 A24B15/167 A24B15/16 A24B15/00 A24B15/10 A61K9/007 A61K9/12 A61K31/33 A61K31/465 A61K31/60 A61K47/10).CPC.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/09 08:09
S52	2993	S51 and ((electronic adj (cigar cigarette (smoking adj (device article)))) e? cigarette)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/09 08:09
S53	42	S52 and ((N I C O T I N E nicotinic) near3 (SALT \$3salicylate \$3formate \$3acetate \$3sorbate \$3benzoate \$3pyruvate \$3malate \$3laurate \$3citrate \$3succinate \$3levulinate)) AND aerosol AND LIQUID and ((propylene adj glycol) glycerin\$1 glycerol)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/09 08:09
S54	22	S53 and (temperature near5 operat\$3)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/09 08:10
S55	42	((electronic adj (cigar cigarette (smoking adj (device article)))) e?cigarette) and ((N I C O T I N E nicotinic) near3 SALT) AND	US-PGPUB; USPAT;	OR	ON	2017/06/09 08:13

		aerosol AND((propylene adj glycol) glycerin\$1 glycerol)	USOCR; EPO; JPO; DERWENT			
S56	54	((electronic adj (cigar cigarette (smoking adj (device article)))) e?cigarette) and ((NICOTINE nicotinic) near3 SALT) AND aerosol	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/09 08:13
S57	24	S56 and (temperature near5 operat\$3)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/09 08:13
S58	2	((("8381739") or ("20090151717")).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2017/06/09 08:23
S59	3	((("20110061667") or ("20060196518") or ("20070267031")).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2017/06/09 08:37
S60	614	((electronic adj (cigar cigarette (smoking adj (device article)))) e?cigarette) and NICOTINE AND aerosol	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/09 08:47
S61	99	S60 and (temperature near5 operat\$3)	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/09 08:48
S62	75	S61 not S57	US- PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2017/06/09 08:48
S63	1	("20140088044").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2017/06/09 09:05
S64	2	((("20130042865") or ("20120006342")).PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2017/06/09 09:14
S65	1	("20060196518").PN.	US- PGPUB; USPAT; USOCR	OR	OFF	2017/06/09 12:38

EAST Search History (Interference)

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6/ 9/ 2017 4:37:44 PM**C:\Users\dcordray\Documents\EAST\Workspaces\EAST workspace 14271071.wsp**

PTO/SB/08A (04-07)

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Substitute for form 1449/PTO		Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 1 of 11	Attorney Docket Number	13211-713.201	

U. S. PATENT DOCUMENTS					
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		Number-Kind Code ² (if known)			
	4	US- 720,007	2/10/1903	Dexter	
	6	US- 968,160	8/23/1910	Johnson	
	20	US- 2,104,266	1/4/1938	McCormick	
	27	US- 2,830,597	4/15/1958	Jakob	
	28	US- 2,860,638	11/18/1958	Frank	
	30	US- 2,935,987	5/10/1960	Ackerbauer	
	32	US- 3,258,015	6/28/1966	Ellis et al.	
	33	US- 3,292,634	12/20/1966	Beucler	
	34	US- 3,373,915	3/19/1968	Anderson et al.	
	36	US- 3,479,561	11/18/1969	Janning	
	38	US- 3,707,017	12/26/1972	Paquette	
	39	US- 3,792,704	2/19/1974	Parker	
	42	US- 4,020,853	5/3/1977	Nuttall	
	43	US- 4,049,005	9/20/1977	Hernandez et al.	
	44	US- 4,066,088	1/3/1978	Ensor	
	46	US- 4,215,708	8/5/1980	Bron	
	47	US- 4,219,032	8/26/1980	Tabatznik et al.	
	48	US- 4,506,683	3/26/1985	Cantrell et al.	
	50	US- 4,595,024	6/17/1986	Greene et al.	

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
	374	CA2641869A1	5/6/2010	Xia, Hao Ran		
	377	CN1122213A(w/EngAbs)	5/15/1996	Philip Morris Prod Inc		
	378	CN85106876A(w/EngCorres)	9/3/1986	M. J. Luinoziancaogose		
	379	DE19854005A1(w/EngAbs)	5/18/2000	Reemtsma Gmbh		
	380	DE19854012A1(w/EngTrans)	5/18/2000	Reemtsma Gmbh		
	381	DE4200639A1(w/EngEquiv)	7/23/1992	Brown & Williamson Tob.		

Examiner Signature	/DENNIS R CORDRAY/	Date Considered	06/07/2017
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		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 2	of 11	Attorney Docket Number	13211-713.201

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		Number-Kind Code ² (if known)			
	51	US- 4,708,151	11/24/1987	Shelar	
	52	US- 4,735,217	4/5/1988	Gerth et al.	
	54	US- 4,793,365	12/27/1988	Sensabaugh Jr. et al.	
	55	US- 4,794,323	12/27/1988	Zhou et al.	
	58	US- 4,819,665	4/11/1989	Roberts et al.	
	61	US- 4,846,199	7/11/1989	Rose	
	62	US- 4,848,374	7/18/1989	Chard et al.	
	64	US- 4,893,639	1/16/1990	White	
	65	US- 4,907,606	3/13/1990	Lilja et al.	
	66	US- 4,941,483	7/17/1990	Ridings et al.	
	67	US- 4,944,317	7/31/1990	Thal	
	68	US- 4,947,874	8/14/1990	Brooks et al.	
	69	US- 4,947,875	8/14/1990	Brooks et al.	
	71	US- 5,020,548	6/4/1991	Farrier et al.	
	72	US- 5,027,836	7/2/1991	Shannon et al.	
	73	US- 5,050,621	9/24/1991	Creighton et al.	
	74	US- 5,060,671	10/29/1991	Counts et al.	
	75	US- 5,065,776	11/19/1991	Lawson et al.	
	76	US- 5,076,297	12/31/1991	Farrier et al.	

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		Country Code ³ *Number ⁴ *Kind Code ⁵ (if known)				
	382	EP0532194A1	3/17/1993	Philip Morris Prod Inc		
	383	EP0535695A2	4/7/1993	Phillips Petroleum Co		
	384	EP1458388A(asWO03/055486)	9/22/2004	McNeil AB		
	390	ES2118034A1(w/EngAbs)	9/1/1998	Nugar Bobinajes SI		
	391	GB1025630A	4/14/1966	British American Tobacco		
	392	GB1065678A	4/19/1967	Super Temp Corp		

Examiner Signature	/DENNIS R CORDRAY/	Date Considered	06/07/2017
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		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 3 of 11	Attorney Docket Number	13211-713.201	

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		Number-Kind Code ² (if known)			
	77	US- 5,105,831	4/21/1992	Banerjee et al.	
	78	US- 5,105,838	4/21/1992	White et al.	
	80	US- 5,144,962	9/8/1992	Counts et al.	
	81	US- 5,183,062	2/2/1993	Clearman et al.	
	82	US- 5,224,498	7/6/1993	Deevi et al.	
	83	US- 5,249,586	10/5/1993	Morgan et al.	
	84	US- 5,261,424	11/16/1993	Sprinkel Jr.	
	85	US- 5,269,237	12/14/1993	Baker et al.	
	87	US- 5,322,075	6/21/1994	Deevi et al.	
	88	US- 5,324,498	6/28/1994	Streusand et al.	
	89	US- 5,372,148	12/13/1994	McCafferty et al.	
	90	US- 5,388,574	2/14/1995	Ingebrethsen	
	91	US- 5,591,368	1/7/1997	Fleischhauer et al.	
	94	US- 5,649,552	7/22/1997	Cho et al.	
	95	US- 5,666,977	9/16/1997	Higgins et al.	
	96	US- 5,666,978	9/16/1997	Counts et al.	
	97	US- 5,708,258	1/13/1998	Counts et al.	
	98	US- 5,730,118	3/24/1998	Hermanson	
	99	US- 5,730,158	3/24/1998	Collins et al.	

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		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
	393	IE-S2005-0051	2/2/2005	Oglesby & Butler R&D Ltd		
	394	IE-S2005-0563	8/24/2005	Oglesby & Butler R&D Ltd		
	395	IE-S2005-0615	9/19/2005	Oglesby & Butler R&D Ltd		
	397	JP03-049671(w/EngEquiv)	3/4/1991	Brown & Williamson Tob.		
	398	JP03-180166(w/EngEquiv)	8/6/1991	R J Reynolds Tobacco Co		
	400	JP11-178563(w/EngAbs)	7/6/1999	Japan Tobacco Inc		

Examiner Signature	/DENNIS R CORDRAY/	Date Considered	06/07/2017
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	102	US- 5,819,756	10/13/1998	Mielordt	
	103	US- 5,845,649	12/8/1998	Saito et al.	
	104	US- 5,865,185	2/2/1999	Collins et al.	
	106	US- 5,931,828	8/3/1999	Durkee	
	107	US- 5,934,289	8/10/1999	Watkins et al.	
	109	US- 5,944,025	8/31/1999	Cook et al.	
	110	US- 5,954,979	9/21/1999	Counts et al.	
	114	US- 5,994,025	11/30/1999	Iwasa et al.	
	115	US- 5,996,589	12/7/1999	St. Charles	
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	118	US- 6,095,153	8/1/2000	Kessler et al.	
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	122	US- 6,164,287	12/26/2000	White	
	125	US- 6,349,728	2/26/2002	Pham	
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Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
	401	JP2000-203639(w/EngAbs)	7/25/2000	S & B Foods Inc		
	402	JP2000-236865A(w/EngAbs)	9/5/2000	Seiko Kogyo KK		
	404	JP2005-034021A(w/EngCorres)	2/10/2005	Seiko Epson Corp		
	405	JP2006-504430A(w/EngEquiv)	2/9/2006	R J Reynolds Tobacco Co		
	406	JP62-278975(w/EngAbs)	12/3/1987	Watabe, Isamu		
	407	JP64-37276A(w/EngEquiv)	2/7/1989	R J Reynolds Tobacco Co		

Examiner Signature	/DENNIS R CORDRAY/	Date Considered	06/07/2017
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Complete if Known	
		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 5	of 11	Attorney Docket Number	13211-713.201

U. S. PATENT DOCUMENTS					
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		Number-Kind Code ² (if known)			
	136	US- 6,615,840	9/9/2003	Fournier et al.	
	138	US- 6,655,379	12/2/2003	Clark et al.	
	140	US- 6,688,313	2/10/2004	Wrenn et al.	
	142	US- 6,772,756	8/10/2004	Shayan	
	144	US- 6,803,545	10/12/2004	Blake et al.	
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		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
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	409	WO95/01137A1	1/12/1995	Voges Innovation Pty Ltd.		
	411	WO00/28842A1(EngAbs)	5/25/2000	Reemtsma GmbH		
	412	WO03/056948A1(EngAbs)	7/17/2003	Japan Tobacco Inc.		
	413	WO03/082031A1	10/9/2003	Steinberg, Dan A.		
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Substitute for form 1449/PTO		Complete if Known	
		Application Number	14/271,071
INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
		Attorney Docket Number	13211-713.201
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		Number-Kind Code ² (if known)			
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	184	US- D644375	8/30/2011	Zhou	
	185	US- D653803	2/7/2012	Timmermans	
	186	US- D691324	10/8/2013	Saliman	
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		Country Code ³ Number ⁴ Kind Code ⁵ (if known)				
	417	WO2005/020726A1	3/10/2005	Lee, Seunghyun		
	418	WO2006/015070A1	2/9/2006	Brown & Williamson Tob.		
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	426	WO2012/085207A1	6/28/2012	Philip Morris Prod S.A		

Examiner Signature	/DENNIS R CORDRAY/	Date Considered	06/07/2017
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 7 of 11	Attorney Docket Number	13211-713.201	

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	235	US- 2007/0283972**	12/13/2007	Monsees et al.	
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		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)	MM-DD-YYYY			
	428	WO2013/050934A1	4/11/2013	SIS Resources Ltd.		
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		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 8 of 11	Attorney Docket Number	13211-713.201	

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		Number-Kind Code ² (if known)			
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	260	US- 2010/0156193	6/24/2010	Rhodes et al.	
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	283	US- 2011/0236002	9/29/2011	Oglesby et al.	
	289	US- 2012/0006342	1/12/2012	Rose et al.	
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	440	WO2014/187763A1	11/27/2014	Philip Morris Prod S.A		
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	443	WO2015/006652A1	1/15/2015	Alexza Pharm. Inc.		
	445	WO2015/040180A2	3/26/2015	Philip Morris Prod S.A		
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	449	WO2015/084544A1	6/11/2015	Pax Labs, Inc.		

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		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 9 of 11	Attorney Docket Number	13211-713.201	

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	453	WO2015/124878A1(EngAbs)	8/27/2015	Smokio		
	454	WO2015/148547A1	10/1/2015	Nicotech LLC		
	455	WO2015/175979A1	11/19/2015	Pax Labs, Inc.		

Examiner Signature	/DENNIS R CORDRAY/	Date Considered	06/07/2017
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		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 10 of 11	Attorney Docket Number	13211-713.201	

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	461	BAKER et al.; The pyrolysis of tobacco ingredients; J. Anal. Appl. Pyrolysis; 71(1); pp. 223-311; March 2004	
	458	BOMBICK et al.; Chemical and biological studies of a new cigarette that primarily heats tobacco; Part 3: In vitro toxicity of whole smoke; Food and Chemical Toxicology; 36(3); pp. 191-197; March 1998	
	457	BOMBICK et al.; Chemical and biological studies of a new cigarette that primarily heats tobacco; Part 2: In vitro toxicology of mainstream smoke condensate; Food and Chemical Toxicology; 36(3); pp. 183-190; March 1998	
	459	BORGERDING et al.; Chemical and biological studies of a new cigarette that primarily heats tobacco; Part 1: Chemical composition of mainstream smoke; Food and Chemical Toxicology; 36(3); pp. 169-182; March 1998	
	456	ECF; Any interest in determining nicotine--by DVAP; (https://www.e-cigarette-forum.com/forum/threads/any-interest-in-determining-nicotine-by-dvap.35922/); blog posts dated: 2009; 8 pgs.; print/retrieval date: July 31, 2014	
	467	KUO et al.; Appendix D: Particle size-U.S. sieve size and Tyler screen mesh equivalents; Applications of Turbulent and Multiphase Combustion; John Wiley & Sons, Inc.; pp. 541-543; May 1, 2012	
	465	McCANN et al.; Detection of carcinogens as mutagens in the salmonella/microsome test: Assay of 300 chemicals: Discussion; Proc. Nat. Acad. Sci.; 73(3); pp. 950-954; March 1976	
	460	MIRRIAM-WEBSTER Online Dictionary; Lighter; retrieved 1/4/2013 from the internet: (http://www.merriam-webster.com/dictionary/lighter?show=0&t=1357320593); 2 pgs.; print date: 1/4/2013	
	479	NICOLI et al.; Mammalian tumor xenografts induce neovascularization in Zebrafish embryos; Cancer Research; 67(7); pp. 2927-2931; April 1, 2007	
	483	PERFETTI; Structural study of nicotine salts; Beitrage zur Tabakforschung International; Contributions to Tobacco Research; 12(2); pp. 43-54; June 1983	

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	462	TORIKAI et al.; Effects of temperature, atmosphere and pH on the generation of smoke compounds during tobacco pyrolysis; Food and Chemical Toxicology; 42(9); pp. 1409-1417; September 2004	
	463	WARD; Green leaf threshing and redrying tobacco; Section 10B; in TOBACCO Production, Chemistry and Technology; Davis and Nielsen (Eds.); Blackwell Science Ltd.; pp. 330-333; July 15, 1999	
	466	WELLS; Glycerin as a constituent of cosmetics and toilet preparations; Journal of the Society of Cosmetic Chemists; 9(1); pp. 19-25; January 1958	
	480	YouTube; Firefly Vaporizer Review w/ Usage Tips by The Vape Critic; retrieved from the internet (http://www.youtube.com/watch?v=1J38N0AV7wI); 1 pg.; published 12/10/2013; download/print date: 2/18/2015	
	484	MONSEES, J.; U.S. Pat. App. # 12/115,400 entitled "Method And System For Vaporization Of A Substance", filed 5/5/2008	
	485	BOWEN et al.; U.S. Pat. App. # 14/960,259 entitled "Calibrated Dose Control", filed 12/4/2015	

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		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)	MM-DD-YYYY		
	712	EP3024343A2(WO2015/013327)	1/29/2015	Altria Client Serv. Inc.	
	716	WO 03/103387A2	12/18/2003	S.C. Johnson & Son Inc.	
	715	WO2014/159982A1	10/2/2014	R.J. Reynolds Tobacco Co.	

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	706	MONSEES et al.; U.S. Pat. Appl. # 15/261,823 entitled "Low temperature electronic vaporization device and methods," filed 9/9/2016	

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		Number-Kind Code ² (if known)			
	684	US- 5,031,646	7/16/1991	Lippiello et al.	
	685	US- 5,133,368	7/28/1992	Neumann et al.	
	680	US- 5,240,012	8/31/1993	Ehrman et al.	
	666	US- 8,809,261	8/19/2014	Elschly et al.	
	669	US- 8,881,737	11/11/2014	Collett et al.	
	667	US- 2015/0038567	2/5/2015	Herkenroth et al.	
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	687	EP0283672B1	9/22/1993	R J Reynolds Tobacco		
	668	EP2152313B1	9/3/2014	McNeil AB		
	688	EP2319934B1	9/2/2015	Stichting Dienst		
	689	WO2007/078273A1	7/12/2007	Augite Inc.		
	690	WO2015/009862A2	1/22/2015	Altria Client Services		

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	683	BURCH et al.; Effect of pH on nicotine absorption and side effects produced by aerosolized nicotine; Journal of Aerosol Medicine: Deposition, Clearance, and Effects in the Lung; 6(1); pp. 45-52; 1993	
	703	MONSEES et al.; U.S. Pat. Appl. # 15/257,748 entitled "Cartridge for use with a vaporizer device," filed 9/6/2016	
	704	MONSEES et al.; U.S. Pat. Appl. # 15/257,760 entitled "Vaporizer apparatus," filed 9/6/2016	
	705	MONSEES et al.; U.S. Pat. Appl. # 15/257,768 entitled "Vaporizer apparatus," filed 9/6/2016	

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	595	US- 9,220,302	12/29/2015	DePiano et al.	
	596	US- 9,226,526	1/5/2016	Liu	
	597	US- 9,271,525	3/1/2016	Liu	
	598	US- 9,271,529	3/1/2016	Alima	
	599	US- 9,272,103	3/1/2016	Storz	
	600	US- 9,277,769	3/8/2016	Liu	
	601	US- 9,282,772	3/15/2016	Tucker et al.	
	602	US- 9,282,773	3/15/2016	Greim et al.	
	603	US- 9,289,014	3/22/2016	Tucker et al.	
	604	US- 9,308,336	4/12/2016	Newton	
	605	US- 9,326,547	5/3/2016	Tucker et al.	
	606	US- 9,351,522	5/31/2016	Safari	
	590	US- 2013/0199528	8/8/2013	Goodman et al.	
	591	US- 2014/0144429	5/29/2014	Wensley et al.	
	581	US- 2015/0128967	5/14/2015	Robinson et al.	
	592	US- 2015/0272220	10/1/2015	Spinka et al.	
	608	US- 2015/0282525	10/8/2015	Plojoux et al.	
	609	US- 2015/0313275	11/5/2015	Anderson et al.	
	611	US- 2015/0351456	12/10/2015	Johnson et al.	

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	585	JP10-501999A(w/EngEquiv)	2/24/1998	Boehringer Ingelheim	
	639	WO2015/149647A1(w/ Eng Abs)	10/8/2015	Kimree Hi-Tech Inc.	
	640	WO2015/168828A1(w/ Eng Abs)	11/12/2015	Kimree Hi-Tech Inc.	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Complete if Known	
		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 2	of 3	Attorney Docket Number	13211-713.201

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	614	US- 2016/0021931	1/28/2016	Haweset al.	
	607	US- 2016/0058071	3/3/2016	Hearn	
	618	US- 2016/0058072	3/3/2016	Liu	
	621	US- 2016/0081395	3/24/2016	Thorens et al.	
	623	US- 2016/0106154	4/21/2016	Lord	
	624	US- 2016/0106155	4/21/2016	Reevell	
	627	US- 2016/0120218	5/5/2016	Schennum et al.	
	630	US- 2016/0135503	5/19/2016	Liu	
	632	US- 2016/0143359	5/26/2016	Xiang	
	635	US- 2016/0143365	5/26/2016	Liu	
	580	US- 2016/0174611**	6/23/2016	Monsees et al.	
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FOREIGN PATENT DOCUMENTS						
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		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				

Examiner Signature	/DENNIS R CORDRAY/	Date Considered	06/07/2017
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Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Complete if Known	
		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 3	of 3	Attorney Docket Number	13211-713.201

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	584	E-CIGARETTE FORUM; pg-gv-peg (discussion/posting); retrieved from the internet: https://e-cigarette-forum.com/forum/threads/pg-gv-peg.177551 ; 7 pgs.; April 8, 2011	
	587	MONSEES et al.; U.S. Pat. Appl. # 15/165,954 entitled "Devices for vaporization of a substance," filed 5/26/2016	
	588	MONSEES et al.; U.S. Pat. Appl. # 15/166,001 entitled "Electronic vaporization device," filed 5/26/2016	
	589	MONSEES et al.; U.S. Pat. Appl. # 15/165,972 entitled "Portable devices for generating an inhalable vapor," filed 5/26/2016	
	665	BOWEN et al.; U.S. Pat Appl. # 15/101,303 entitled "Nicotine liquid formulations for aerosol devices and methods thereof," filed 6/2/2016	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Application Number	14/271,071
		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 1 of 6	Attorney Docket Number	13211-713.201	

U. S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	694	US- 3,271,719	9/6/1966	Ovshinsky	
	670	US- 3,443,827	5/13/1969	Acker et al.	
	671	US- 5,497,791	3/12/1996	Bowen et al.	
	672	US- 5,529,078	6/25/1996	Rehder et al.	
	117	US- 6,089,857	7/18/2000	Matsuura et al.	
	673	US- 6,196,232	3/6/2001	Chkadua	
	718	US- 6,603,924	8/5/2003	Brown et al.	
	150	US- 7,015,796	3/21/2006	Snyder	
	675	US- 7,801,573	9/21/2010	Yazdi et al.	
	173	US- 8,820,330	9/2/2014	Bellinger et al.	
	174	US- 8,851,081	10/7/2014	Fernando et al.	
	178	US- 9,095,175	8/4/2015	Terry et al.	
	722	US- D725310	3/24/2015	Eksouzian	
	695	US- 2004/0050382	3/18/2004	Goodchild	
	696	US- 2007/0277816	12/6/2007	Morrison et al.	
	674	US- 2009/0111287	4/30/2009	Lindberg et al.	
	263	US- 2010/0200008	8/12/2010	Taieb	
	676	US- 2011/0240047	10/6/2011	Adamic	
	297	US- 2012/0285475	11/15/2012	Liu	

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		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)	MM-DD-YYYY			
	387	EP2856893A1	4/8/2015	Fontem Holdings		
	388	EP2908675A1(asWO2014/060268)	8/26/2015	Nicoventures Holdings Ltd		
	389	EP2915443A1	9/9/2015	Fontem Holdings		
	757	EP3062646A1 (WO2015/66136)	9/7/2016	Rai Strategic Holdings Inc		
	758	EP3065581A2 (WO2015/68044)	9/14/2016	SIS Resources Ltd		
	759	EP3068244A1 (WO2015/73975)	9/21/2016	VMR Products LLC		

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		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 2	of 6	Attorney Docket Number	13211-713.201

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		Number-Kind Code ² (if known)			
	719	US- 2013/0298905	11/14/2013	Levin et al.	
	310	US- 2013/0319440	12/5/2013	Capuano	
	312	US- 2013/0340775	12/26/2013	Juster et al.	
	313	US- 2014/0000638	1/2/2014	Sebastian et al.	
	723	US- 2014/0007891	1/9/2014	Liu	
	314	US- 2014/0014126	1/16/2014	Peleg et al.	
	316	US- 2014/0053856	2/27/2014	Liu	
	318	US- 2014/0060556	3/6/2014	Liu	
	319	US- 2014/0096782	4/10/2014	Ampolini et al.	
	320	US- 2014/0109921	4/24/2014	Chen	
	321	US- 2014/0116455	5/1/2014	Youn	
	322	US- 2014/0123990	5/8/2014	Timmermans	
	323	US- 2014/0150810	6/5/2014	Hon	
	324	US- 2014/0174459	6/26/2014	Burstyn	
	327	US- 2014/0196735	7/17/2014	Liu	
	328	US- 2014/0216450	8/7/2014	Liu	
	329	US- 2014/0230835	8/21/2014	Saliman	
	331	US- 2014/0270727	9/18/2014	Ampolini et al.	
	332	US- 2014/0301721	10/9/2014	Ruscio et al.	

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		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
	416	WO2004/080216A1(EngAbs)	9/23/2004	Hon, Lik		
	420	WO2008/077271A1(EngAbs)	7/3/2008	Maas, Bernard		
	427	WO2012/120487A2	9/13/2012	Chong Corp		
	430	WO2013/089551A1	6/20/2013	Foo, Kit Seng		
	433	WO2014/040915A1(EngAbs)	3/20/2014	Snoke GmbH & Co		
	435	WO2014/101734A1	7/3/2014	Shenzhen Smoore Tech		

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Sheet	3	of	6
		Attorney Docket Number	13211-713.201

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	333	US- 2014/0305450	10/16/2014	Xiang	
	336	US- 2014/0355969	12/4/2014	Stern	
	340	US- 2015/0020825	1/22/2015	Galloway et al.	
	341	US- 2015/0020831	1/22/2015	Weigensberg et al.	
	343	US- 2015/0027472	1/29/2015	Amir	
	344	US- 2015/0034103	2/5/2015	Hon	
	724	US- 2015/0034104	2/5/2015	Zhou	
	345	US- 2015/0040929	2/12/2015	Hon	
	346	US- 2015/0101625	4/16/2015	Newton et al.	
	347	US- 2015/0122252	5/7/2015	Frija	
	348	US- 2015/0122274	5/7/2015	Cohen et al.	
	349	US- 2015/0128965	5/14/2015	Lord	
	351	US- 2015/0136153	5/21/2015	Lord	
	697	US- 2015/0136158	5/21/2015	Stevens et al.	
	352	US- 2015/0142387	5/21/2015	Alarcon et al.	
	355	US- 2015/0164141	6/18/2015	Newton	
	356	US- 2015/0164144	6/18/2015	Liu	
	698	US- 2015/0164147	6/18/2015	Verleur et al.	
	357	US- 2015/0181928	7/2/2015	Liu	

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		Country Code ³ -Number ⁴ -Kind Code ⁵ (if known)				
	439	WO2014/150704A2	9/25/2014	Altria Client Svs Inc.		
	442	WO2014/205263A1	12/24/2014	Loec Inc.		
	444	WO2015/028815A1	3/5/2015	British American Tobacco		
	446	WO2015/058387A1(EngAbs)	4/30/2015	Kimree Hi-Tech Inc.		
	447	WO2015/063126A1	5/7/2015	Choukroun, B.		
	450	WO2015/089711A1(EngAbs)	6/25/2015	Kimree Hi-Tech Inc.		

Examiner Signature	/DENNIS R CORDRAY/	Date Considered	06/07/2017
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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

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Sheet 4 of 6

Complete if Known

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	358	US- 2015/0189695	7/2/2015	Xiang	
	359	US- 2015/0196059	7/16/2015	Liu	
	699	US- 2015/0196060	7/16/2015	Wensley et al.	
	361	US- 2015/0208731	7/30/2015	Malamud et al.	
	700	US- 2015/0216237	8/6/2015	Wensley et al.	
	362	US- 2015/0223521	8/13/2015	Menting et al.	
	363	US- 2015/0224268	8/13/2015	Henry et al.	
	364	US- 2015/0237917	8/27/2015	Lord	
	365	US- 2015/0237918	8/27/2015	Liu	
	366	US- 2015/0245654	9/3/2015	Memari et al.	
	367	US- 2015/0245660	9/3/2015	Lord	
	368	US- 2015/0257445	9/17/2015	Henry Jr. et al.	
	369	US- 2015/0258289	9/17/2015	Henry Jr. et al.	
	370	US- 2015/0282527	10/8/2015	Henry Jr.	
	701	US- 2015/0305409	10/29/2015	Verleur et al.	
	702	US- 2016/0021933	1/28/2016	Thorens et al.	
	750	US- 2016/0242466	8/25/2016	Lord et al.	
	751	US- 2016/0249680	9/1/2016	Liu	
	753	US- 2016/0295924	10/13/2016	Liu	

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	452	WO2015/109616A1(EngAbs)	7/30/2015	Kimree Hi-Tech Inc.	

Examiner Signature	/DENNIS R CORDRAY/	Date Considered	06/07/2017
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet	5	of	6
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Complete if Known

Application Number	14/271,071
Filing Date	May 6, 2014
First Named Inventor	Adam Bowen
Art Unit	1747
Examiner Name	Mayes, Dionne Walls
Attorney Docket Number	13211-713.201

U. S. PATENT DOCUMENTS

[illegible]

FOREIGN PATENT DOCUMENTS

[illegible]

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Date Considered	06/07/2017
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		Filing Date	May 6, 2014
		First Named Inventor	Adam Bowen
		Art Unit	1747
		Examiner Name	Mayes, Dionne Walls
Sheet 6	of 6	Attorney Docket Number	13211-713.201

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	481	BRADLEY et al.; Electronic cigarette aerosol particle size distribution measurements; Inhal. Toxicol.; 24(14); pp. 976-984; Dec. 2012	
	482	BULLEN et al.; Effect of an electronic nicotine delivery device (e cigarette) on desire to smoke and withdrawal, user preferences and nicotine delivery; randomised cross-over trial; Tobacco Control; 19(2); pp. 98-103; Apr. 2010	
	678	CAPPONNETTO et al.; Successful smoking cessation with cigarettes in smokers with a documented history of recurring relapses: a case series; Journal of Medical Case Reports; 5(1); 6 pages; (year of pub. sufficiently earlier than effective US filing date and any foreign priority date); 2011	
	721	FARSALINOS et al.; Electronic cigarettes do not damage the heart; European Society of Cardiology; 4 pages; retrieved from the internet (http://www.escardio.org/The-ESC/Press-Office/Press-releases/Electronic-cigarettes-do-not-damage-the-heart); August 25, 2012	
	677	HURT et al.; Treating tobacco dependence in a medical setting; CA: A Cancer Journal for Clinicians; 59(5); pp. 314-326; Sept. 2009	
	720	VANSICKEL et al.; Electronic cigarettes: effective nicotine delivery after acute administration; Nicotine & Tobacco Research; 15(1); pp. 267-270; January 2013	

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				Application Number	14/271,071
				Filing Date	May 6, 2014
				First Named Inventor	Adam Bowen
				Art Unit	1747
				Examiner Name	Not assigned
Sheet	1	of	3	Attorney Docket Number	35196-713.201

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code ² (if known)			
	1.	US 2004/0191322	09/30/2004	Hansson	
	2.	US 2006/0018840	01/26/2006	Lechuga- Ballesteros et al.	
	3.	US 2006/0196518 A1	09/07/2006	Hon, Lik	
	4.	US 2008/0241255	01/02/2008	Rose et al.	
	5.	US 2009/0004249	01/02/2009	Gonda	
	6.	US 2010/0242976	09/30/2010	Katayama et al.	
	7.	US 2011/0268809	11/03/2011	Brinkley et al.	
	8.	US 2012/0255567	02/26/2013	Gonda	
	9.	US 4,830,028	05/16/1989	Lawson et al.	
	10.	US 4,836,224	06/06/1989	Lawson et al.	
	11.	US 6,102,036	08/15/2000	Slutsky et al.	
	12.	US 6,234,169	05/22/2001	Bulbrook et al.	
	13.	US 6,799,576	10/05/2004	Farr	
	14.	US 6,874,507	04/05/2005	Farr	
	15.	US 7,767,698	08/03/2010	Warchol et al.	
	16.	US 8,079,371	12/20/2011	Robinson et al.	
	17.	US 8,322,350	12/04/2012	Lipowicz	
	18.	US 8,375,957	02/19/2013	Hon	
	19.	US 8,381,739	02/26/2013	Gonda	
	20.	US 8,741,348	06/03/2014	Hansson et al.	

U.S. UNPUBLISHED PATENT APPLICATIONS					
Examiner Initials*	Cite No. ¹	Document Number	Filing Date MM-DD-YYYY	Name of Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
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Attorney Docket No. 35196-713.201

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				Filing Date	May 6, 2014	
				First Named Inventor	Adam Bowen	
				Art Unit	1747	
				Examiner Name	Not assigned	
Sheet	2	of	3	Attorney Docket Number		35196-713.201

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear	T ⁶
		Country Code ² - Number ³ - Kind Code ⁴ (if known)				
	21.	CN 102754924 A (in Chinese with English abstract)	10/31/2012	Long		X
	22.	WO 97/12639	04/10/1997	Slutsky		
	23.	WO 2011/139684	11/10/2011	Niconovum USA Inc.		
	24.	WO 2014/182736	11/13/2014	Ploom, Inc.		
	25.	EP 2186507	5/19/2010	McNeil AB		
	26.	JP 02145179	11/7/2000	Tomitaka Kunihiro		
	27.	JP09075058	09/26/2007	Citizen Holding Co. LTD		

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	28.	International search report and written opinion dated 09/05/2014 for PCT Application No. US2014/037019.	
	29.	Summary of evaluations performed by the Joint FAO/WHO expert committee on food additives. (March 10, 2003) http://www.inchem.org/documents/jecfa/jecval/jec_1266.htm	
	30.	Summary of evaluations performed by the Joint FAO/WHO expert committee on food additives. (May 28, 2005) http://www.inchem.org/documents/jecfa/jecval/jec_184.htm	
	31.	Inspections, compliance, enforcement and criminal investigations compliance actions and activities warning letters 2002. The compounding pharmacy (April 9, 2002) http://www.fda.gov/ICECI/EnforcementActions/WarningLetters/2002/ucm144	
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Attorney Docket No. 35196-713.201

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				First Named Inventor	Adam Bowen
				Art Unit	1747
				Examiner Name	Not assigned
Sheet	3	of	3	Attorney Docket Number	35196-713.201

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		843.htm	
	32.	Summary of evaluations performed by the Joint FAO/WHO expert committee on food additives. (January 29, 2003) http://www.inchem.org/documents/jecfa/jecval/jec_2072.htm	
	33.	Summary of evaluations performed by the Joint FAO/WHO expert committee on food additive. (May 29, 2005) http://www.inchem.org/documents/jecfa/jecval/jec_2181.htm	
	34.	Harvest Vapor™ http://harvestvapor.com/ NO DATE	
	35.	Flouris, et al., Acute impact of active and passive electronic cigarette smoking on serum cotinine and lung function. Toxicol. 25(2):91-101 (2013)	
	36.	Goniewicz, et al., Nicotine levels in electronic cigarettes. Nicotine Tob Res. 15(1):158-66 (2013)	
	37.	Ingebrethsen, et al., Electronic cigarette aerosol particle size distribution measurements. Inhal Toxicol. 24(14):976-84 (2012)	
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	39.	Vansickel, et al., A clinical laboratory model for evaluating the acute effects of electronic "cigarettes": Nicotine delivery profile and cardiovascular and subjective effects. Cancer Epidemiol Biomarkers Prev. 19(8):1945-53 (2010)	
	40.	Zhang, et al., In vitro particle size distributions in electronic and conventional cigarette aerosols suggest comparable deposition patterns. Nicotine Tob Res. 15(2):501-8 (2013)	

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		Examiner Name	Mayes, Dionne Walls
Sheet 1	of 3	Attorney Docket Number	13211-713.201

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	791	US- 2,159,698	5/23/1939	Harris et al.	
	792	US- 2,177,636	10/31/1939	Coffelt et al.	
	769	US- 2,195,260	3/26/1940	Rasener	
	793	US- 3,456,645	7/22/1969	Brock	
	770	US- 3,675,661	7/11/1972	Weaver	
	771	US- 3,815,597	6/11/1974	Gottelman	
	802	US- 4,303,083	12/1/1981	Burruss	
	807	US- 4,520,938	6/4/1985	Finke	
	798	US- 5,152,456	10/6/1992	Ross et al.	
	794	US- 5,303,720	4/19/1994	Banerjee et al.	
	808	US- 5,449,078	9/12/1995	Akers	
	795	US- 5,456,269	10/10/1995	Kollasch	
	809	US- 5,579,934	12/3/1996	Buono	
	799	US- 6,324,261	11/27/2001	Merte	
	800	US- 6,612,404	9/2/2003	Sweet et al.	
	796	US- 8,251,060	8/28/2012	White et al.	
	797	US- 2009/0283103	11/19/2009	Nielsen et al.	
	803	US- 2014/0053858	2/27/2014	Liu	
	804	US- 2015/0128976	5/14/2015	Verleur et al.	

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	805	WO2013/044537A1 (EngAbs)	4/4/2013	Joyetech Changzhou Electric		

Examiner Signature	/DENNIS R CORDRAY/	Date Considered	06/07/2017
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Sheet 2

2

of 3

3

Complete if Known

Application Number	14/271,071
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14/271.071

Filing Date	May 6, 2014
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May 6, 2014

First Named Inventor	Adam Bowen
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Adam Bowen

Art Unit	1747
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1747

Examiner Name	Mayes, Dionne Walls
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1747	Mayer, Dionne Walls
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Attorney Docket Number	13211-713.201
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13211-713.201

U. S. PATENT DOCUMENTS

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This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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PTO/SB/08b (07-09)

Approved for use through 07/31/2012. OMB 0651-0031

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>		Complete if Known			
		Application Number	14/271,071		
		Filing Date	May 6, 2014		
		First Named Inventor	Adam Bowen		
		Art Unit	1747		
		Examiner Name	Mayes, Dionne Walls		
Sheet	3	of	3	Attorney Docket Number	13211-713.201

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	810	GROTENHERMEN et al.; Developing science-based per se limits for driving under the influence of cannabis (DUI/C): findings and recommendations by an expert panel; retrieved 2/9/2017 from (http://www.canorml.org/healthfacts/DUICreport.2005.pdf); 49 pages; September 2005	
	773	MONSEES et al.; U.S. Pat. Appl. # 15/368,539 entitled "Low temperature electronic vaporization device and methods," filed 12/2/2016	
	774	BOWEN et al.; U.S. Appl. # 15/309,554 entitled "Systems and methods for aerosolizing a smokeable material," filed 11/8/2016	
	801	MONSEES et al.; U.S. Pat. Appl. # 15/379,898 entitled "Vaporization device systems and methods," filed 12/15/2016	
	806	HATTON et al.; U.S. Pat. Appl. # 15/396,584 entitled "Leak-resistant vaporizer cartridges for use with cannabinoids," filed 12/31/2016	

Examiner Signature	/DENNIS R CORDRAY/	Date Considered	06/07/2017
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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APPLICATION NUMBER	PATENT NUMBER	GROUP ART UNIT	REQUEST ID
14/271,071		1741	45212

PAIR Correspondence Address/Fee Address Change

The following fields have been changed to Customer Number 148514 on 08/14/2017 via Private PAIR in view of the certification copied below that authorized the change.

- Correspondence Address

The address for Customer Number 148514 is:

148514

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Boston, MA 02111

I certify, in accordance with 37 CFR 1.4(d)(4) that I am:

An attorney or Agent of Record registered to practice before the Patent and Trademark Office who has been given power of attorney in this application

Signature:	/npm/
Name:	Nicholas Mouton
Registration Number:	75306



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/271,071	05/06/2014	Adam Bowen	52210-501001US/713.201	6078
148514	7590	01/04/2018		
Mintz/JUUL/PAX One Financial Center Boston, MASSACHUSETTS 02111			EXAMINER CORDRAY, DENNIS R	
			ART UNIT	PAPER NUMBER
			1741	
			NOTIFICATION DATE	DELIVERY MODE
			01/04/2018	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

IPDocketingBOS@mintz.com
IPFileroombos@mintz.com

Notice of Abandonment	Application No.	Applicant(s)
	14/271,071	Bowen et al.
	Examiner	Art Unit
	DENNIS R CORDRAY	1741

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

This application is abandoned in view of:

1. ☒ Applicant's failure to timely file a proper reply to the Office letter mailed on 15 June 2017.
 - (a) ☐ A reply was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply (including a total extension of time of _____ month(s)) which expired on _____.
 - (b) ☐ A proposed reply was received on _____, but it does not constitute a proper reply under 37 CFR 1.113 to the final rejection. (A proper reply under 37 CFR 1.113 to a final rejection consists only of: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) if this is utility or plant application, a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. Note that RCEs are not permitted in design applications.)
 - (c) ☐ A reply was received on _____ but it does not constitute a proper reply, or a bona fide attempt at a proper reply, to the non-final rejection. See 37 CFR 1.85(a) and 1.111. (See explanation in box 7 below).
 - (d) ☒ No reply has been received.
2. ☐ Applicant's failure to timely pay the required issue fee and publication fee, if applicable, within the statutory period of three months from the mailing date of the Notice of Allowance (PTOL-85).
 - (a) ☐ The issue fee and publication fee, if applicable, was received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the statutory period for payment of the issue fee (and publication fee) set in the Notice of Allowance (PTOL-85).
 - (b) ☐ The submitted fee of \$ _____ is insufficient. A balance of \$ _____ is due.
The issue fee required by 37CFR 1.18 is \$ _____. The publication fee, if required by 37 CFR 1.18(d), is \$ _____.
 - (c) ☐ The issue fee and publication fee, if applicable, has not been received.
3. ☐ Applicant's failure to timely file corrected drawings as required by, and within the three-month period set in, the Notice of Allowability (PTO-37).
 - (a) ☐ Proposed corrected drawings were received on _____ (with a Certificate of Mailing or Transmission dated _____), which is after the expiration of the period for reply.
 - (b) ☐ No corrected drawings have been received.
4. ☐ The letter of express abandonment which is signed by the attorney or agent of record or other party authorized under 37 CFR 1.33 (b). See 37 CFR 1.138(b).
5. ☐ The letter of express abandonment which is signed by an attorney or agent (acting in a representative capacity under 37 CFR 1.34) upon the filing of a continuing application.
6. ☐ The decision by the Board of Patent Appeals and Interference rendered on _____ and because the period for seeking court review of the decision has expired and there are no allowed claims.
7. ☐ The reason(s) below:

/DENNIS R CORDRAY/
Primary Examiner, Art Unit 1741

Petitions to revive under 37 CFR 1.137, or requests to withdraw the holding of abandonment under 37 CFR 1.181, should be promptly filed to minimize any negative effects on patent term.