

CLAIMS

What is claimed is:

1. A vaporizer device comprising:

an absolute pressure sensor positioned to detect a first pressure of air along an airflow path connecting air outside of a vaporizer device body with a vaporization chamber of the vaporizer device and a mouthpiece of the vaporizer device;

an additional absolute pressure sensor positioned to detect a second pressure of air representative of ambient air pressure to which the vaporizer device is exposed; and

a controller configured to perform operations comprising:

receiving a first signal from the absolute pressure sensor representative of the first pressure and a second signal from the additional absolute pressure sensor representative of the second pressure,

determining, based on at least the first signal and the second signal, that a puff is occurring, the puff comprising air flowing along the airflow path in reaction to a user drawing on the mouthpiece, and

causing, in response to the determining, electrical current to be delivered to a resistive heating element of the vaporizer device, the delivered electrical current causing heating of a vaporizable material for forming of an inhalable aerosol in the air flowing along the airflow path.

2. A vaporizer device as in claim 1, further comprising an additional sensor, and wherein the operations further comprise receiving a third signal from an additional sensor and adapting the determining that the puff is occurring based on the third signal.

3. A vaporizer device as in claim 2, wherein the additional sensor comprises an accelerometer or another motion sensing device.

4. A vaporizer device as in any preceding claim, wherein the airflow path includes a known and well-characterized orifice size, and wherein the absolute pressure sensor provides a measurement of the pressure drop resulting from a user taking a puff, wherein the operations performed by the controller further comprise:

calculating an air velocity and volumetric flow rate;

determining an amount of the vaporizable material converted to the vapor phase per unit time; and

controlling an amount of the inhalable aerosol generated for a given volume of air based on the calculating and the determining.

5. A vaporizer device as in claim 4, wherein the operations performed by the controller further comprise: controlling a temperature of the heater.

6. A vaporizer device as in any of claims 4 to 5, wherein the operations performed by the controller further comprise: providing a consistent aerosol concentration across different puff strengths.

7. A vaporizer device as in any of claims 4 to 6, wherein the operations performed by the controller further comprise: applying a correction for ambient pressure to correct for effects of atmospheric pressure on an amount of airflow.

8. A vaporizer device as in any of claims 4 to 7, wherein the operations performed by the controller further comprise:

prompting the user to take a sample puff or a series of sample puffs; and

characterizing and storing information regarding a relative strength of a puffing power of the user.

9. A vaporizer device as in claim 8, wherein the operations performed by the controller further comprise: varying a size of a pressure drop required to indicate a puff based on the relative strength of the puffing power of the user to better detect actual puffs and reject false positives in detection of user puffing activity.

10. A method comprising:

receiving, at electronic circuitry, a first signal from an absolute pressure sensor of a vaporizer device and a second signal from an additional absolute pressure sensor of the vaporizer device, the first signal representing a first pressure, and the second signal representing a the second pressure, the absolute pressure sensor disposed to experience the first pressure of air, which occurs along an airflow path connecting air outside of a vaporizer device body of the vaporizer device with a vaporization chamber of the vaporizer device and a mouthpiece of the vaporizer device, the additional absolute pressure sensor disposed to detect the second pressure of air, which is representative of ambient air pressure to which the vaporizer device is exposed;

determining that a puff is occurring based on at least the first signal and the second signal, the puff comprising air flowing along the airflow path in reaction to a user drawing on the mouthpiece; and

causing electrical current to be delivered to a resistive heating element of the vaporizer device in response to the determining.

11. A method as in claim 10, wherein the vaporizer device further comprises an additional sensor, and wherein the method further comprises receiving a third signal from an additional sensor and adapting the determining that the puff is occurring based on the third signal.

12. A method as in claim 11, wherein the additional sensor comprises an accelerometer or another motion sensing device.

13. A method as in any of claims 10 to 12, wherein the airflow path includes a known and well-characterized orifice size, and wherein the absolute pressure sensor provides a measurement of the pressure drop resulting from a user taking a puff, wherein the method further comprises:

calculating an air velocity and volumetric flow rate;

determining an amount of the vaporizable material converted to the vapor phase per unit time; and

controlling an amount of the inhalable aerosol generated for a given volume of air based on the calculating and the determining.

14. A method as in claim 13, further comprising: controlling a temperature of the heater.

15. A method as in any of claims 13 to 14, further comprising: providing a consistent aerosol concentration across different puff strengths.

16. A method as in any of claims 13 to 15, further comprising: applying a correction for ambient pressure to correct for effects of atmospheric pressure on an amount of airflow.

17. A method as in any of claims 13 to 16, further comprising:
prompting the user to take a sample puff or a series of sample puffs; and
characterizing and storing information regarding a relative strength of a puffing power of the user.

18. A method as in claim 17, further comprising: varying a size of a pressure drop required to indicate a puff based on the relative strength of the puffing power of the user to better detect actual puffs and reject false positives in detection of user puffing activity.

19. A vaporizer device comprising;
a vaporizer device body shell;
an internal skeleton of the disposed within the vaporizer device body shell;
and
a gasket configured to prevent passage of liquids between a volume within a cartridge-receiving receptacle of a vaporizer device body and a volume within the vaporizer device body shell containing internal electronic circuitry, the gasket comprising a connective feature via which a pressure sensing device that is connected to part of the internal electronic circuitry is exposed to air pressure in the cartridge-receiving receptacle, the gasket comprising a supportive rib positioned to be compressed between the vaporizer device body shell and a part of the internal skeleton.

20. A vaporizer device as in claim 19, wherein the internal electronic circuitry comprises one or more electronic components and/or circuit boards.

21. A vaporizer device as in any of claims 19 to 20, wherein the volume within the vaporizer device body shell further contains a power source.

22. A vaporizer device as in any of claims 19 to 21, wherein the gasket is formed of one or more of silicon, Silicone70A, NBR 70A, NANCAR 1052 70A, and a mixture of 80% Silicone / 20% Flourisilicone, 70A.

23. A vaporizer device comprising an electrical contact pin for electrical coupling with a contact of a cartridge configured to be insertably received within a cartridge-receiving receptacle of a vaporizer device body, the electrical contact pin comprising a liquid-resistant feature.

24. A vaporizer device as in claim 23, wherein the liquid-resistant feature comprises a spring for urging a plunger of the electrical contact pin, the spring being formed of and/or coated with a material that has a reduced conductivity relative to the plunger and/or to a barrel within which the plunger moves.

25. A vaporizer device as in any of claims 23 to 24, wherein the liquid-resistant feature comprises one or more of an anti-corrosion coating, and a broadened contact surface, and a structural feature.

26. A vaporizer device as any of claims 23 to 25, wherein the liquid-resistant feature comprises a structural feature.

27. A vaporizer device as in claim 26, wherein the structural feature comprises elimination of any spring-driven feature and/or of features that require movement of two or more mechanical parts relative to one another.

28. A vaporizer device as in any of claims 26 to 27, wherein the structural feature comprises the electrical contact pin having a solid structure that does not require movement of conductive parts of the electrical contact pin relative to each other.