produce and is robust. It would be further desirable to provide a heater assembly that is as efficient or more efficient than prior heater assemblies in aerosol-generating systems.

In one aspect there is provided a cartridge for use in an aerosol-generating system, comprising: a liquid storage portion comprising a housing for holding a liquid aerosol-forming substrate, the housing having an opening; and a heater assembly comprising at least one heater element fixed to the housing and extending across the opening of the housing, wherein the at least one heater element of the heater assembly has a width that is smaller than a width of the opening of the housing, wherein the heater element is fluid permeable and comprises a plurality of electrically conductive filaments, and wherein the at least one heater element comprises a mesh having interstices between the electrically conductive filaments.

The opening of the cartridge has a width and a length dimension. The at least one heater element extends across the full length dimension of the opening of the housing. The width dimension is the dimension perpendicular to the length dimension in the plane of the opening. Preferably the at least one heater element of the heater assembly has a width that is smaller than the width of the opening of the housing.

Preferably a part of the heater element is spaced apart from the perimeter of the opening. Where the heater element comprises a strip attached to the housing at each end, preferably the sides of the strip do not contact the housing. Preferably there is a space between the sides of the strip and the perimeter of the opening.

The width of the heater element may be less than the width of the opening in at least a region of the opening. The width of the heater element may be less than the width of the opening in all of the opening.

The width of the at least one heater element of the heater assembly may be less than 90%, for example less than 50%, for example less than 30 %, for example less than 25% of the width of the opening of the housing.

The area of the heater element may be less than 90%, for example less than 50%, for example less than 30 %, for example less than 25% of the area of the opening of the housing. The area of the heater elements of the heater assembly may be for example between 10% and 50% of the area of the opening, preferably between 15 and 25% of the area of the opening.

The heater element preferably is supported on an electrically insulating substrate. The insulating substrate preferably has an aperture defining the opening of the housing. The opening may be of any appropriate shape. For example the opening may have a circular, square or rectangular shape. The area of the opening may be small, preferably less than or equal to about 25 mm^2.

The at least one heater element is preferably arranged in such a way that the physical contact area with the substrate is reduced compared with a case in which the heater elements of

comprising the steps of providing a liquid storage portion with a housing having an opening, filling the liquid storage portion with liquid aerosol-forming substrate and providing a heater assembly comprising at least one heater element extending across the opening of the housing wherein the heater element is smaller than the opening of the housing and comprises a plurality of electrically conductive filaments, and wherein the at least one heater element comprises a mesh having interstices between the electrically conductive filaments. The width of the at least one heater element of the heater assembly may be less than 90%, preferably less than 50, further preferably less than 30 %, most preferably less than 25% of the width of the opening of the housing.

The heater assembly and the heater element or elements are preferably fluid permeable. As used herein "fluid permeable" in relation to a heater assembly means that the aerosol-forming substrate, in a gaseous phase and possibly in a liquid phase, can readily pass through the heater assembly or heater element.

The term "substantially flat" filament arrangement is used to refer to a filament arrangement that is preferably in the form of a substantially two dimensional topological manifold. Thus, the substantially flat filament arrangement extends in two dimensions along a surface substantially more than in a third dimension. In particular, the dimensions of the substantially flat filament arrangement in the two dimensions within the surface are at least 5 times larger than in the third dimension, normal to the surface. An example of a substantially flat filament arrangement is a structure between two substantially parallel surfaces, wherein the distance between these two surfaces is substantially smaller than the extension within the surfaces. In some embodiments, the substantially flat filament arrangement is planar. In other embodiments, the substantially flat filament arrangement is curved along one or more dimensions, for example forming a dome shape or bridge shape.

The term "filament" is used preferably to refer to an electrical path arranged between two electrical contacts. A filament may arbitrarily branch off and diverge into several paths or filaments, respectively, or may converge from several electrical paths into one path. A filament may have a round, square, flat or any other form of cross-section. A filament may be arranged in a straight or curved manner.

The term "filament arrangement" is used preferably to refer to an arrangement of one or preferably a plurality of filaments. The filament arrangement may be an array of filaments, for example arranged parallel to each other. Preferably, the filaments may form a mesh. The mesh may be woven or non-woven.

Embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

CLAIMS

1. A cartridge for use in an aerosol-generating system, comprising:

a liquid storage portion comprising a housing for holding a liquid aerosol-forming substrate, the housing having an opening; and

a heater assembly comprising at least one heater element fixed to the housing and extending across the opening of the housing,

wherein the at least one heater element of the heater assembly has a width that is smaller than a width of the opening of the housing,

wherein the heater element is fluid permeable and comprises a plurality of electrically conductive filaments, and

wherein the at least one heater element comprises a mesh having interstices between the electrically conductive filaments.

2. The cartridge according to claim 1, wherein the width of the at least one heater element is less than 90%, preferably less than 50%, preferably less than 30 %, preferably less than 25% of the width of the opening of the housing.

3. The cartridge according to claim 1 or claim 2, wherein the area of the heater elements of the heater assembly is less than 90% of the area of the opening of the housing, preferably between 10% and 50% of the area of the opening, preferably between 15 and 25% of the area of the opening.

4. The cartridge according to any one of the preceding claims, wherein the heater assembly has a total resistance of over 1 Ohm, preferably of between 1 and 4 Ohm and most preferably of about 1.5 Ohm.

5. A cartridge according to one of the preceding claims, wherein the heater assembly comprises a plurality of heater elements connected in series.

6. A cartridge according to claim 5, wherein the heater elements of the heater assembly are arranged substantially in parallel to each other.

7. A cartridge according to one of the preceding claims, wherein the heater assembly is substantially flat.

8. A cartridge according to claim 1, wherein at least a portion of the heater element is spaced apart from the periphery of the opening by a distance which is greater than a dimension of the interstices of that portion of the heater element.

9. A cartridge according to any one of the preceding claims, wherein the housing of the liquid storage portion contains a capillary material and wherein the capillary material extends into the interstices between the filaments.

10. A method of manufacture of a cartridge for use in an aerosol-generating system, comprising:

providing a liquid storage portion comprising a housing having an opening;

filling the liquid storage portion with liquid aerosol-forming substrate; and

providing a heater assembly comprising at least one heater element extending across the opening of the housing,

wherein the at least one heater element of the heater assembly is smaller than the opening of the housing and comprises a plurality of electrically conductive filaments, and

wherein the at least one heater element comprises a mesh having interstices between the electrically conductive filaments.

11. An aerosol-generating system comprising

a main unit, and

a cartridge according to any one of claims 1 to 9 that is removably coupled to the main unit,

wherein the liquid storage portion and heater assembly are provided in the cartridge and the main unit comprises a power supply.

12. An aerosol-generating system according to claim 11, further comprising electric circuitry connected to the heater assembly and to an electrical power source, the electric circuitry configured to monitor the electrical resistance of the heater assembly or of one or more filaments of the heater assembly, and to control a supply of power from the electrical power source to the heater assembly dependent on the electrical resistance of the heater assembly or the one or more filaments.

13. An aerosol-generating system comprising a cartridge according to any of claims 1 to 9, wherein the system is an electrically operated smoking system.