CLAIMS

1. A humidification chamber for use in a medical humidification system, the humidification chamber comprising:

a base and a top linked by a side wall to define the chamber;

a gases inlet configured to receive a gases flow from a gases source; and

a gases outlet,

wherein the gases inlet is orientated relative to the side wall of the chamber to introduce the gases flow to the humidification chamber as a gases jet in a direction substantially tangential to the side wall of the humidification chamber,
and characterised in that the gases inlet comprises a nozzle having a constriction that internally tapers so as to be gradually narrowed along its length, wherein the internal profile is substantially smooth.

2. The humidification chamber of claim 1, wherein the side wall defines a substantially circular chamber, when viewed from above.

3. The humidification chamber of any one of the preceding claims, wherein the gases outlet is disposed on the top of the humidification chamber.

4. The humidification chamber of any one of claims 1 to 3, wherein the gases outlet is disposed on the side wall of the humidification chamber.

5. The humidification chamber of claim 4, wherein the nozzle is configured to increase a velocity of the gases flow prior to the gases flow being introduced to the humidification chamber.

6. The humidification chamber of any one of the preceding claims, wherein the gases inlet comprises a substantially tubular body.

7. The humidification chamber of any one of the preceding claims, wherein an inner diameter of the gases outlet is greater than an inner diameter of the gases inlet.

8. The humidification chamber of claim 6, wherein the ratio of the inner diameters of the gases outlet to the inner diameter of the gases inlet is between 3:1 and 7:1, and is preferably approximately 5:1.

9. The humidification chamber of any one of the preceding claims, wherein the ratio of an inner diameter of the gases inlet to a diameter of a bottom wall of the humidification chamber is between 1:25 and 1:10 and is preferably between 1:20 and 1:15.

10. The humidification chamber of any one of the preceding claims, wherein the top of the humidification chamber comprises any one of: a dome shape.

11. The humidification chamber of any one of the preceding claims, wherein an inner surface of the top and/or sidewall of the humidification chamber, and/or the inlet, is configured to produce a turbulent gases flow within the humidification chamber.

1. The humidification chamber of any one of the preceding claims, wherein the inner surface of the top and/or sidewall of the humidification chamber, and/or the inlet, comprises at least one protrusion projecting into the chamber and/or at least one recess recessed away from the chamber to produce turbulent gases flow in the humidification chamber.

13. The humidification chamber of any one of the preceding claims, wherein the inlet extends through a side wall of the humidification chamber.

14. The humidification chamber of any one of the preceding claims, wherein the inlet and/or the side wall is configured such that gases entering the humidification chamber via the gases inlet swirl into a spiral within the humidification chamber before exiting the humidification chamber through the gases outlet.

15. The humidification chamber of claim 14, wherein the inlet is disposed on and/or orientated relative to the side wall such that:

a distance between adjacent winds and/or turns of the spiral is reduced when a flow rate of the gases entering the humidification chamber is increased;

and/or the gases are introduced such that the bulk or average gases flow attached to the side wall and follows the shape of the side wall.

16. The humidification chamber of any one of the preceding claims, wherein the flow path through the gases inlet is angled down towards the base of the humidification chamber.

17. The humidification chamber of any one of the preceding claims, further comprising at least one internal element disposed between the gases inlet and the gases outlet to direct or redirect or influence the gases flow within the humidification chamber.

18. The humidification chamber of claim 17, wherein:

the at least one internal element is a baffle shaped and configured to encourage rotation of the bulk gases flow and/or

at least one said internal element is orientated in a plane substantially parallel to the base or the side wall of the humidification chamber.

19. A humidification chamber of any one of the preceding claims

wherein the gases inlet has a longitudinal axis which is substantially parallel to the tangent to the side wall and is located adjacent the side wall;

wherein the gases inlet is configured to introduce the gases flow to the humidification chamber adjacent the side wall at a velocity sufficient to causes the gases to attach to the side wall.

20. A humidification apparatus for use in a medical humidification system, the humidification apparatus comprising at least two humidification chambers, each of the

chambers comprising a humidification chamber according to any one of the preceding claims.