SPRAYING ATTACHMENT AND APPLIANCE

TECHNICAL FIELD

The invention presented here involves a nozzle head for the nebulization of liquids having different viscosities, suited to produce liquid particles having dimensions less than 1 μm and to diffuse them in order to form a spray or an aerosol.

The invention presented here also relates to the nebulization device equipped with such a nozzle head.

BACKGROUND ART

Nebulization devices are designed to produce a fine particle spray for the purpose of purification of the atmosphere of place or premises such as premises that are open to the public. In this application, the spray formed can have properties of disinfection, deodorization, and at the same time, the substance sprayed can be a substance that has a smell in order to put a scent in the atmosphere.

Also, substances can be nebulized that have curative properties. Thus, it is known to use this type of device in medical fields such as the veterinary field notably for the treatment of respiratory canals, for vaccination of animals and for the disinfection of farming areas.

Also, these types of devices can also be used in the form of a spray for the formation of a mixture of combustive air with a fuel to supply boilers or even thermal engines.

Other areas of applications of this type of device are also known.

Regardless of the area of application of the device, the results and the efficiencies are even better since the spray is formed from particles having a size that is less than a micron, since the size of the particles is uniform and since the spray has a natural capacity to become diffuse and to become uniformly distributed in the volume in which it is introduced.

Known devices do not allow the known objectives indicated.

In fact, a size of particles that is not constant as well as in the end, a discharge of the large particles, which is manifest in a loss of liquid that can be very costly because of condensation on the surfaces, has been observed with these types of devices.

In order to avoid the discharge of large particles, certain nebulizers require at the outlet special geometric shapes in order to trap the large particles, prohibiting any axial exit of the spray, thus limiting the possibilities of integrating this type of device in assemblies for conveyance and distribution of the spray formed.

In addition, the particles formed with the devices of the prior art have a greater size such that the spray or the aerosol can be transported, without condensation, over great distances, for example, in an air conditioning network or in tubular elements having internal cross-sections on the order of a half-centimeter. These tubular elements can be used in order to transport the spray or the aerosol that is formed towards volumes several dozens of meters away from the nebulization device.

With most of these known devices, it is difficult to nebulize, with acceptable results, liquids having an extensive range of viscosity. In fact, these devices only function correctly for a specified range of viscosity that, moreover, turns out to be very narrow. In addition, this type of device does not offer the possibility for increasing or reducing the rated flow without changing the result.

Finally, the devices planned for the formation of particles having a size less than a micron function using very high air pressure.

The invention presented here has the purpose of solving the known problems mentioned by implementing a nozzle and a device for nebulization that is suitable for producing particles having a size less than 1 μm and to release a spray or an aerosol that is made of particles having a uniform size constant in time that can be transported over relatively sizeable distances without any notable condensation effect in the transporting conduit.

Another purpose of the invention is to implement a nozzle head and a device for nebulization that are suitable to nebulize with the equivalent results, liquids having a very extensive range of viscosity and to do this at different flow rates.

Finally, a last purpose of the invention is to implement a nozzle head and a nebulization device suitable for making particles having a size that is less than a micron under low air pressure in a range of from 0.5 to 8 bars.

SUMMARY OF THE INVENTION

For this purpose, the nebulization nozzle head according to the invention is made of a body in which an open chamber for mixing and fractionation is formed, consisting of an outlet nozzle and in an opposite manner, at the base, a first nozzle behind which a supply hole is made in the body for gas under pressure, an input of the liquid to be nebulized being formed in the body in a manner communicating with the nozzle from the hole, and the input having been connected, by the intermediary of conduits, to a source of gas under pressure and to a reservoir of a liquid to be nebulized, the liquid being sucked into the mixing and fractionation chamber under the action of the partial vacuum created by the passage into it of the gas flow from the first nozzle to the outlet nozzle and being finely fractionated and mixed with the flow of gas under pressure under the effect of turbulences prevalent in this chamber, which has in front of the first nozzle, a spreading section, characterized in that:

- the spreading section is formed by a surface of rotation,
- the spreading section and the zone of the first hole situated immediately upstream from the spreading section are coaxial,
- the introduction is radial in the direction of the flow of the air across the first nozzle,
- a third nozzle is formed at the downstream end of the first hole at the level of its intersection with the input of the liquid,
- the first and third nozzles are both in contact with the liquid input, are set apart from each other, and are formed by the sharp edges and can be aligned axially,
- the type of the conical jet formed at the outlet of the nozzle head is conical and is made up of fine particles in the center and large particles at the periphery.

According to another characteristic of the invention, the liquid input is formed by at least one cylindrical radial hole terminated by a second formed nozzle and in the mixing and fractionation chamber and in the first hole **(8)**, the geometrical longitudinal axis of symmetry from the zone of the second hole, located immediately upstream from the second nozzle is contained in the geometric plane containing the first nozzle which is defined by a sharp edge formed by the intersection of the spreading section with the upstream zone of the first hole.

- the longitudinal axis of symmetry of the zone of the second hole located immediately upstream from the