

Oct. 14, 1952

A. SHER ET AL
SURFACE-ATOMIZER

2,613,999

Filed Feb. 4, 1949

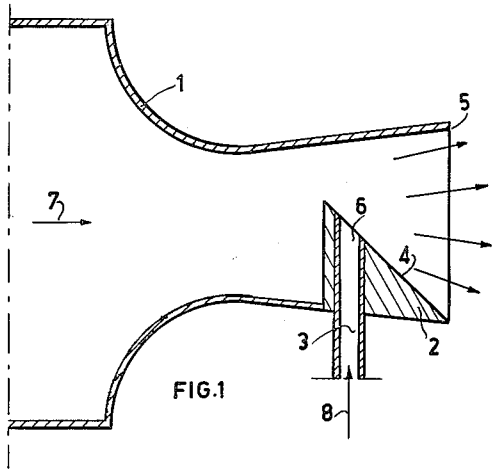


FIG. 1

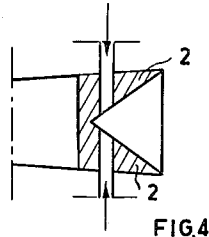


FIG. 4

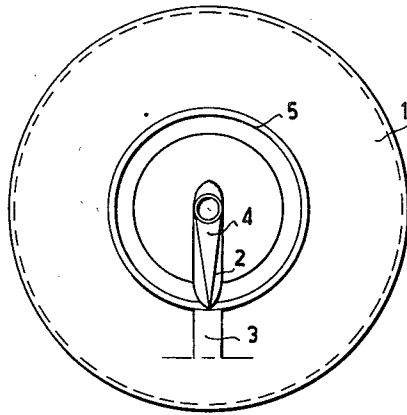


FIG. 3

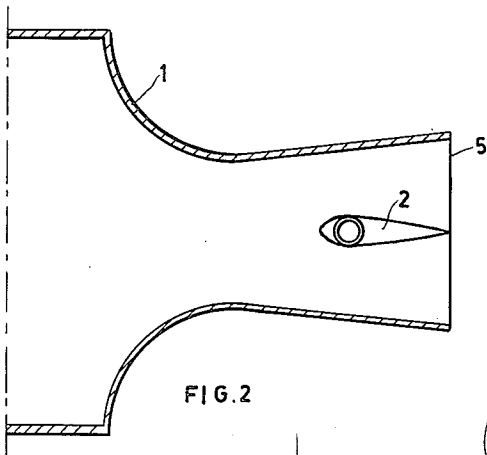


FIG. 2

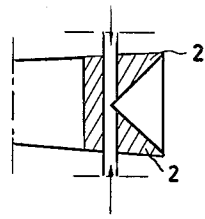


FIG. 5

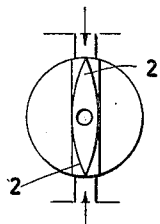


FIG. 6

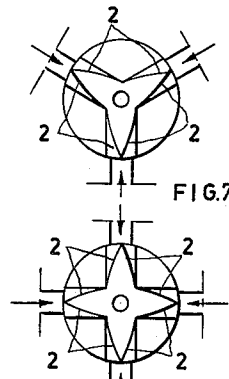


FIG. 7

FIG. 8

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2,613,999

SURFACE-ATOMIZER

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Application February 4, 1949, Serial No. 74,660
In the Netherlands February 24, 1948

3 Claims. (Cl. 299-140)

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The invention relates to a surface-atomiser for the atomisation of fluid by means of compressed gas and has for its main object to provide an improved surface-atomiser for forming a mist within the gas substantially equally divided very small particles of the fluid, said particles to be transported by the gas.

For instance our improved surface atomiser may be applied for spraying fruit trees and other plants with insecticidal fluid, for equably moistening the air in buildings, for the atomisation of fuel in burners in combustion furnaces, for the crystallization process in the manufacturing of milk powder, etc.

The novel features, which we consider as characteristic for our invention are set forth in particular in the appended claims.

The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments, when read in connection with the accompanying drawings, in which

Fig. 1 is an axial section of a nozzle with an atomiser body fixed to the inner wall thereof.

Fig. 2 is an axial section perpendicular to the section of Fig. 1.

Fig. 3 shows a front-view of the nozzle.

Figs. 4, 5, 6, 7 and 8 schematically show other embodiments of the invention.

In the Figures 1 through 3 the nozzle is indicated by 1. To the inner wall of this nozzle an atomising body 2 is connected e. g. by welding. This body is directed to the longitudinal axis of the nozzle and is provided with a boring substantially perpendicular to said axis, in which boring the liquid supply pipe 3 is placed. The atomising body 2 is provided with a flat atomising surface 4, extending from the edge 5 of the mouth of the nozzle 1 beyond the boring 6.

The atomising body 2 is formed in such a manner, that the side remote from the mouth of the nozzle is substantially perpendicular to the longitudinal axis of the nozzle and that the sections of the body parallel to this axis are streamlined.

The current of air, indicated by the arrow 7 strikes the atomising body 2 and flows in a uniform flow along the edge of the atomising surface 4, uniformly and finely dividing and transporting the fluid, which is sucked in the pipe 3 (vide the arrow 8 in Fig. 1) and flows along said surface.

The dimensions of the nozzle 1 and of the atomising body 2 as well as their form and relative place are chosen in such a manner, that the

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resulting cone of mist is exactly free from the edge 5 of the mouth of the nozzle, in order to prevent the accumulation of larger drops on the wall of the nozzle, which would be transported by the air current, thus disturbing the desired uniformity of the mist.

It has been proved, that by using our improved atomiser a uniform division of very small particles of fluid can be obtained and that the mist can be sprayed far into the atmosphere. For instance a quantity of fluid of about 40 U. S. A.-gallons/h. was sprayed up to 60-65 feet by using an air capacity of 700 cu. ft./min. and an air-pressure of 24 inch water-pressure in the nozzle.

Instead of only one atomising body as described a plurality of such bodies forming one integral part can be placed in the nozzle.

The Figures 4, 5 and 6 schematically show how two atomising bodies placed in line can be combined in one unit, the Figures 7 and 8 showing three and four atomising bodies combined in one unit, respectively.

Within the scope of the invention it is also possible to vary the form of the surface atomiser. For instance the atomising surface 4 may be curved instead of flat or the inclination of this surface towards the edge 5 may be varied and the surface 4 need not intersect the edge 5 in one point.

Neither is it necessary, that the fluid channel 3 and the boring 6 are exactly perpendicular to the axis of the nozzle.

The thickness of the atomising body may also be varied in relation to the inner diameter of the boring 6.

If desired the fluid may be supplied under some pressure so that the quantity of the fluid to be sprayed can be adjusted.

While we have disclosed the detail constructions of our invention, we do not wish to be limited thereto except as recited in the appended claims.

We claim:

1. A surface-atomizer for atomizing fluid by means of a flow of gas, comprising a nozzle having substantially the form of a Venturi pipe having an inlet end and a mouth, at least one oblong atomizing body arranged on the inner nozzle wall adjacent the outer edge thereof projecting radially inwardly and extending in the direction of the longitudinal axis of the nozzle, the rear side of said body facing away from the mouth and toward the inlet end of the nozzle being substantially perpendicular to said axis, said atomizing body on its side facing said mouth being pro-

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vided with a flat inclined atomizing surface substantially extending from the apex of said rear side to said mouth, said body being of substantially airfoil contour in the direction of the gas flow, and a fluid inlet conduit arranged in said atomizing body and having its opening in said surface.

2. A surface-atomizer for atomizing fluid by means of a flow of gas, comprising a nozzle having an inlet end and a mouth, at least one oblong atomizing body arranged on the inner nozzle wall adjacent the outer edge thereof projecting radially inwardly and extending in the direction of the longitudinal axis of the nozzle, said atomizing body on its side facing said mouth being provided with a flat inclined atomizing surface substantially extending from the apex of said body to said mouth, said body being of substantially airfoil contour in the direction of the gas flow and a fluid inlet conduit arranged in said atomizing body and having its opening in said surface.

3. A surface-atomizer for atomizing fluid by means of a flow of gas, comprising a nozzle having substantially the form of a Venturi pipe having an inlet end and a mouth, at least one oblong atomizing body arranged on the inner nozzle wall adjacent the outer edge thereof projecting radi-

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ally inwardly and extending in the direction of the longitudinal axis of the nozzle, said atomizing body on its side facing said mouth being provided with a flat inclined atomizing surface substantially extending from the apex of said body to said mouth, said body being of substantially airfoil contour in the direction of the gas flow, and a fluid inlet conduit arranged in said atomizing body and having its opening in said surface.

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