Feb. 20, 1962 J. F. D. BRUINSMA 3,022,013

DEVICE FOR ATOMIZING LIQUIDS

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Fig. 1

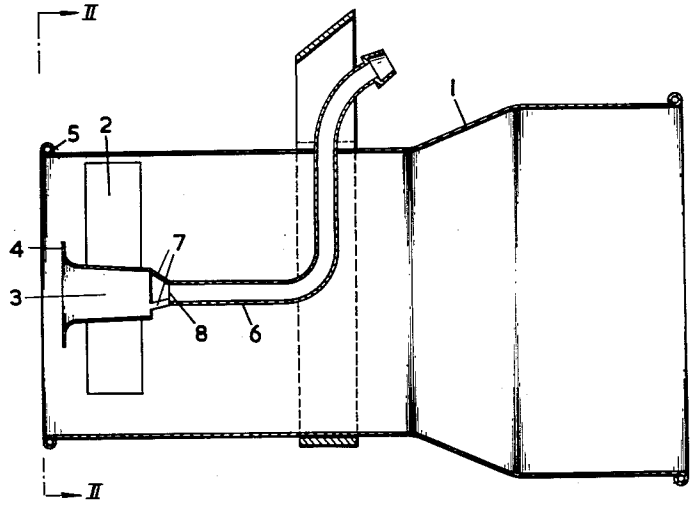
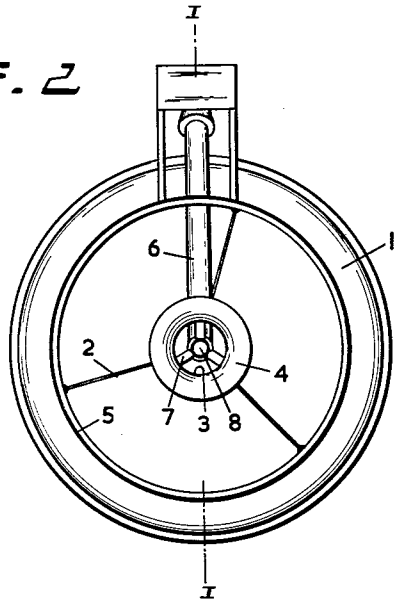


Fig. 2



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DEVICE FOR ATOMIZING LIQUIDS

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2 Claims. (Cl. 239—419)

The present invention relates to a device for atomizing liquids by means of a current of air, comprising an air jet nozzle having a liquid atomizing auxiliary nozzle open at both ends centrally arranged therein and a conduit for supplying liquid to said auxiliary nozzle.

Devices of this type are used inter alia for spraying crops with some or other liquid mist. The effect of this spraying depends inter alia on the size and the speed of the droplets forming the mist. For the same speed larger droplets have a greater power of penetration than small droplets, the latter, however presenting the advantage of a more uniform distribution of the liquid. In certain cases it is necessary to increase the amount of liquid sprayed per unit of time with one and the same device, so that the mist loses its special character and at the same time obtains a rain or jet effect, without the correct relationship between said effects.

The object of the invention is to provide a device by means of which a mist can be produced in which mist both large and small droplets are entrained by the current of air in a correct proportion also when the supply of liquid varies.

According to the invention said device produces such a mist if the mouth of the liquid supplying conduit is located centrally and upstream relative to the rear end of the auxiliary nozzle and has a smaller diameter than said nozzle and if between the mouth of said conduit and the rear end of said auxiliary nozzle radially extending air resistance elements are provided; which elements preferably are in the form of flat connecting strips. Furthermore it is favourable if upstream the front end of the trumpet-shaped auxiliary nozzle is located before the end of the air jet nozzle.

The invention is elucidated with reference to the accompanying drawing showing an embodiment of the device according to the invention. In said drawing:

FIGURE 1 shows an axial section,

FIGURE 2 shows an end elevation of the apparatus taken on line II—II in FIG. 1.

By means of three ribs 2 a trumpet-shaped auxiliary nozzle 3 is centrally secured in an air jet nozzle 1 which is to be arranged on an air hose or the like (not shown). the terminal rim 4 of said trumpet-shaped auxiliary nozzle

is so flared outwardly that it lies in a plane normal to its axis of revolution.

The terminal rim 4 is located at some distance before the beaded terminal rim 5 of the air jet nozzle 1 as seen in the direction of flow. A liquid supplying conduit 6 laterally entering the air jet nozzle ends just before the rear end of the auxiliary nozzle 3 and has its end portion located co-axially relative to said auxiliary nozzle. Three flat strips 7 connect the mouth 8 of said conduit 6 with the inlet end of the auxiliary nozzle 3, they flare in forward direction.

If a current of air passes through the device the strips 7 will so influence said current that locally under-pressures and a radially directed air current result, so that at the same time liquid issuing from the mouth 8 is displaced radially towards the wall of the auxiliary nozzle 3, along which wall the liquid is further carried by the current of air to be delivered in finely divided condition at the rim 4, over which rim the liquid is uniformly distributed. When the supply of liquid is increased the relative under-pressures and the secondary currents of air are no longer capable of fully displacing the larger amount of liquid sideways, so that a central jet of the desired much larger liquid droplets is formed.

The magnitude of the effect naturally also depends on the degree of flare and the shape of the strips 7 and the other structural details of the device.

I claim:

1. A device for atomizing liquids by means of a current of air comprising an air jet nozzle having a liquid atomizing auxiliary nozzle open at both ends centrally arranged therein and a conduit for supplying liquid to said auxiliary nozzle, characterized in that the mouth of the liquid supplying conduit is located centrally and upstream relative to the rear end of the auxiliary nozzle and has a smaller diameter than said auxiliary nozzle and in that between the mouth of said conduit and the rear end of said auxiliary nozzle radially extending air resistance elements are provided.

2. A device according to claim 1, characterized in that said air resistance elements are in the form of flat strips interconnecting the walls of the mouth of said liquid supplying conduit and the rear end of said auxiliary nozzle.

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