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E. J. GARDNER

2,187,779

ATOMIZING NOZZLE

Original Filed July 22, 1936

Fig. 1.

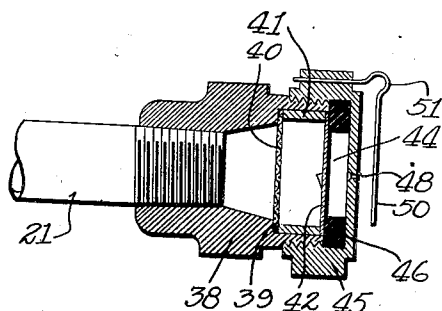


Fig. 2.

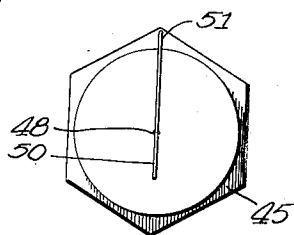
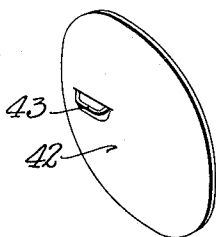


Fig. 3.



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ATOMIZING NOZZLE

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Original application July 22, 1936, Serial No.
91,861. Divided and this application Decem-
ber 28, 1936, Serial No. 117,807

7 Claims. (Cl. 299—121)

This invention relates to improvements in atomizing nozzles. This is a division of my application Serial No. 91,861 filed July 22, 1936, and entitled "Humidifier."

It is the primary object of the invention to provide means for finely atomizing the spray delivered from a nozzle without materially impeding the forward directional inertia of the spray.

In the drawing:

Figure 1 is an axial section through a nozzle embodying the invention.

Figure 2 is an end elevation of the nozzle shown in Figure 1.

Figure 3 is a fragmentary detail view in perspective of a baffle plate employed interiorly in the particular nozzle enclosed by way of illustrating the application of the invention.

Like parts are identified by the same reference characters throughout the several views.

It will be understood that the invention is of general application on many types of nozzles used for many different purposes, and the arrangement illustrated is purely illustrative of one successful embodiment of the invention.

In the embodiment shown, the supply pipe terminates in a chambered fitting shouldered at 39 to receive a screen 40 which is held to the shoulder by a ring 41 upon which I seat the baffle 42. The baffle is shown in detail in Fig. 3 and may comprise simply a disk having a lip offset at 43 to provide a passage for water, which is either tangential with respect to the outer chamber 44, or is at least offset from the axis so as to cause the water to flow in chamber 44.

Chamber 44 is formed within the cap 45 which is screw threaded to fitting 38 and retains against the end of the fitting a gasket 46 of which the inner periphery forms the wall of chamber 44. Cap 45 has a minute opening at 48 through which the water or other liquid is discharged in a whirling jet of spray.

A fine wire baffle 50 has at least one end fixed in a hole bored through the cap 45. Adjacent each fixed end of the wire there is a loop at 51 which is preferably used to avoid bending the wire short at this point, since a short bend would tend to allow the wire to crystallize due to vibration in the jet issuing from the nozzle. The central portion of the wire extends diametrically across the cap directly in front of the aperture 48 in a position to intercept the whirling jet of spray issuing therefrom. This jet encounters the baffle and is thoroughly atomized thereby, but the cross section of the baffle is so minute that it does not materially destroy the momen-

tum energy of the forward movement of the jet issuing from the orifice 48. Thus, the spray constituting the jet is more finely sub-divided by re-atomization in its encounter with the wire but continues to move with considerable momentum energy for a substantial distance away from the nozzle. One end of the wire is preferably, but not necessarily, free for undamped vibration.

It is believed possible that vibration of the wire under the impact of the jet may contribute to its success as a means of atomizing the spray, but the possible amplitude of vibration is very slight inasmuch as the wire used is stiff and it does not ever leave unobstructed the jet issuing from the orifice. Moreover, the wire is placed so close to the orifice that notwithstanding the tendency of the jet to assume a conical pattern the wire will act on substantially all of the component spray thereof.

I claim:

1. The combination with a nozzle provided with an orifice, of a baffle placed directly before the orifice in sufficiently close proximity to the orifice to intercept a substantial part of the effluent from the orifice and having a thickness not appreciably greater than the diameter of the orifice, said baffle extending completely across said orifice approximately at right angles thereto.

2. The combination with a nozzle having an orifice, of a fine wire constituting an atomizing baffle and extending transversely across said orifice in spaced relation thereto and in sufficiently close proximity to the orifice to intercept a substantial part of the effluent from said orifice without unduly impairing the forward velocity with which such effluent issues from the orifice.

3. The combination with a nozzle having an orifice, of a baffle connected at least at one end to the nozzle and projecting from its point of nozzle connection transversely across the orifice, the width of the baffle being not greatly larger or greatly smaller than the diameter of the orifice and the baffle being disposed so close to the orifice as to intercept a major portion of the effluent therethrough.

4. The combination with a nozzle having an orifice, of a fine wire connected to the nozzle and having a free end portion extending transversely across the orifice in spaced relation to the nozzle and in sufficiently close proximity to the orifice to intercept, in all positions of the wire, a substantial portion of the effluent through the orifice.

5. The combination with a nozzle provided with an orifice, of a wire having at least one end por-

- tion connected with the nozzle and provided forwardly of the nozzle with a loop, and its middle portion extending from the loop substantially parallel with the front of the nozzle across the orifice thereof, and in sufficiently close proximity to the nozzle to intercept a substantial part of the effluent through the orifice the diameter of the wire being approximately that of the orifice.
6. The combination with a nozzle containing an orifice and means for causing the jet delivered therethrough to take the form of a whirling spray, of a fine wire connected with the nozzle and having a free end portion projecting across the orifice in the path of such whirling spray for the atomization thereof in sufficiently close proximity to the orifice to intercept a substantial portion of

the effluent through the orifice without destroying the forward momentum with which the effluent issues from the orifice.

7. A nozzle fitting having an interior baffle provided with an off-center opening, a cap for said fitting having an interior chamber in which liquid will whirl when delivered through said opening, said cap having a substantially central forwardly directed orifice, and a fine wire vibratory baffle connected to said cap and extending substantially diametrically of the cap across said orifice in spaced relation thereto and in sufficiently close proximity for the interception of substantial quantities of spray issuing from said orifice and the atomization thereof.

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