Nov. 26, 1940. F. A. BERGEY 2,223,055

VARIABLE CAPACITY ATOMIZER

Filed May 20, 1939

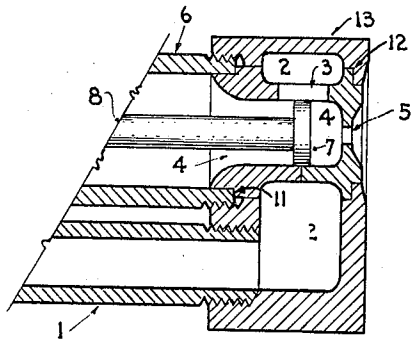
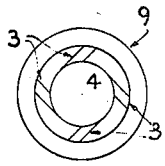


FIGURE 3



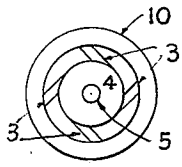


FIGURE 4 FIGURE 5

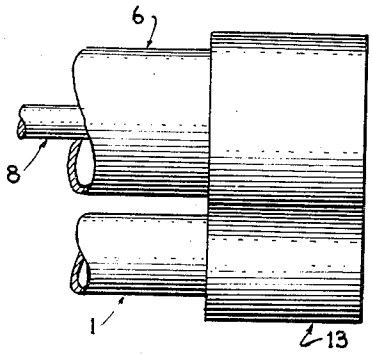


FIGURE 1

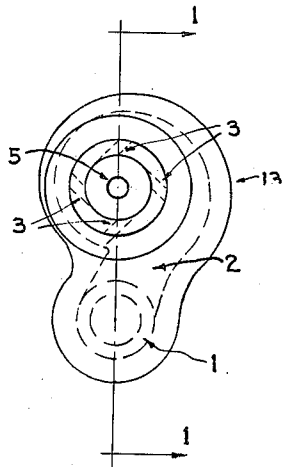


FIGURE 2

INVENTOR.

Frank Allen Bergey

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UNITED STATES PATENT OFFICE

2,223,055

VARIABLE CAPACITY ATOMIZER

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3 Claims. (Cl. 299—118)

My invention relates to the variable capacity feature of liquid atomizers; and the object of my invention is to provide a liquid atomizer which may be infinitely adjusted to any desired capacity throughout the full range of the atomizer, from zero to maximum capacity.

I attain this object by means of the device illustrated in the accompanying drawing, in which—

Figure 1 is a side view of the atomizer, Figure 2 an end view, Figure 3 a section taken on the line 1—1 of Fig. 2, and Figures 4 and 5 views respectively of the return outlet and the atomizer outlet from the whirling chamber hereinafter described.

Like numerals refer to like and similar parts throughout the several views.

Liquid supply pipe 1 is designed to carry liquid at a relatively high pressure to the large end of volute chamber 2, which distributes the liquid with approximately equal pressure drops to the one or more tangential slots 3.

Tangential slots 3 are formed tangent to the periphery of whirling chamber 4, which is composed of return outlet piece 9 and atomizer piece 10; both held in place within the volute chamber 2 by means of shoulders 11 and 12 bearing respectively on end of return pipe 6 and on volute casing 13.

Supply pipe 1 and return pipe 6 are suitably threaded to fit tapped holes in volute casing 13.

Atomizer piece 10 has centrally located orifice 5 through which liquid flows in the form of a thin, rapidly whirling, conical sheet just prior to atomization.

Movable dividing disc 7, attached to the end of operating rod 8, is mounted within whirling chamber 4 so that it may be caused to assume any desired position axially and thereby divide the flowing liquid into two parts in any required proportion; or direct all the flowing liquid to either orifice 5 or return pipe 6.

From the above description, an inspection of the accompanying drawing, and a knowledge of the flow of liquids, it can readily be seen that the pressure energy of the liquid flowing in supply pipe 1 is transformed into kinetic energy as the liquid passes successively through volute chamber 2, tangential slots 3, whirling chamber 4, and orifice 5; and that such part of the flowing liquid as may be directed through orifice 5 by means of dividing disc 7 will attain a maximum velocity just prior to atomization.

I claim:

1. In a variable capacity atomizer, walls forming a volute chamber, a fluid supply pipe connected to said volute chamber through which fluid under pressure is supplied thereto, walls forming a whirling chamber within said volute chamber and connected therewith by a plurality of communicating axially extending slots disposed tangentially with respect to the periphery of said whirling chamber, the said whirling chamber having an atomizer orifice and a fluid return outlet, a closely fitting partitioning means within said whirling chamber completely separating said atomizer orifice from said fluid return outlet, and means for moving said partitioning means longitudinally of said slots from without said whirling chamber whereby to direct fluid entering said whirling chamber through the said atomizer orifice and the said fluid return outlet thereof in any desired proportion.

2. In a variable capacity atomizer, walls forming a volute chamber, a fluid supply pipe connected to said volute chamber through which fluid under pressure is supplied thereto, walls forming a whirling chamber within said volute chamber and connected therewith by a plurality of communicating axially extending slots disposed tangentially with respect to the periphery of said whirling chamber, the said whirling chamber having an atomizer orifice and a fluid return outlet at opposite ends thereof, a closely fitting partitioning means within said whirling chamber completely separating said atomizer orifice from said fluid return outlet, and means for moving said partitioning means longitudinally of said slots from without said whirling chamber whereby to direct fluid entering said whirling chamber through the outlets at either or both ends thereof in any desired proportion.

3. In an atomizer for oil burners and the like, walls forming a whirling chamber having one or more slots through the wall thereof parallel to the longitudinal axis of said chamber and having an atomizer orifice and a return outlet through the ends thereof, partitioning means within the said chamber completely separating the said atomizer orifice from the said return outlet, the said partitioning means being closely fitted to the inner periphery of said whirling chamber, and means for moving said partitioning means longitudinally within said whirling chamber whereby to admit fluid into either or both ends of the said whirling chamber in any desired proportion.

FRANK ALLEN BERGEY.