

Aug. 2, 1932.

J. M. HEWLETT

1,869,809

LIQUID ATOMIZING DEVICE

Filed Dec. 24, 1930



FIG. 5

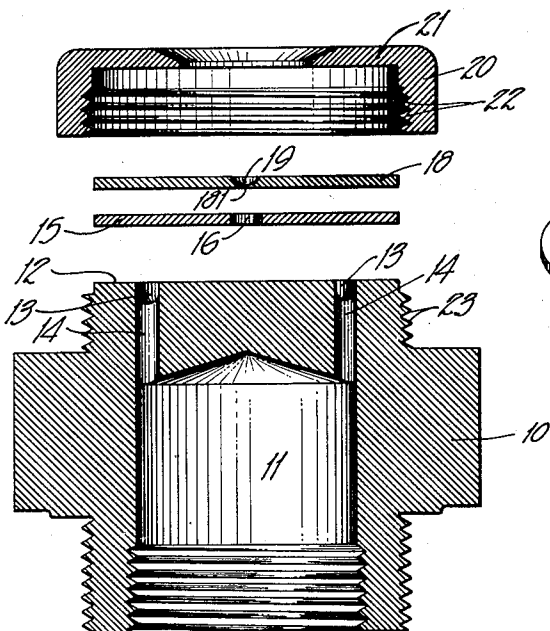


FIG. 1

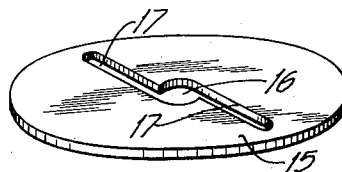


FIG. 2

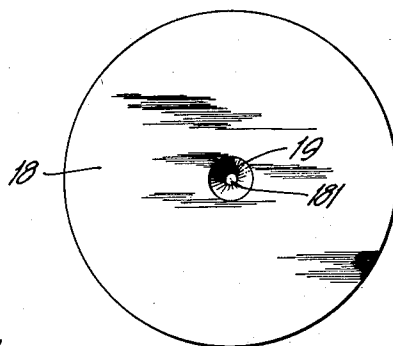


FIG. 3

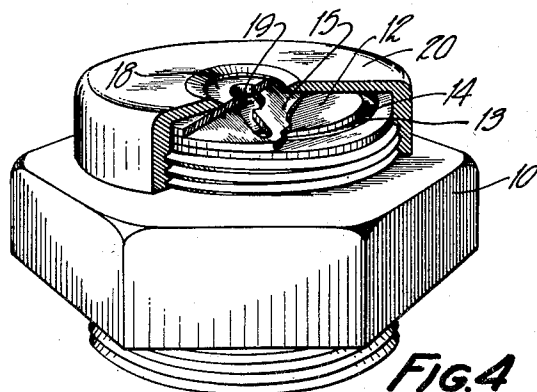


FIG. 4

INVENTOR
John M. Hewlett
By *Andrew Hood*
ATTORNEYS

UNITED STATES PATENT OFFICE

JOHN M. HEWLETT, OF SCHENECTADY, NEW YORK

LIQUID ATOMIZING DEVICE

Application filed December 24, 1930. Serial No. 504,511.

My invention more particularly relates to an atomizing device which is adapted to produce a spray of liquid without the use of compressed air or steam.

- 8 One of the objects of my invention is the provision of an atomizing device comprising discs, the sides of which may easily be ground to true surfaces, the nozzle being constructed and arranged to produce a spray of the liquid.
- 10 The parts embodying my invention are easy to manufacture and may easily be removed and cleaned.

My invention will best be understood by reference to the accompanying drawing in which Fig. 1 is a longitudinal section view of an atomizing device embodying my invention and showing the parts in disassembled position; Fig. 2 is a perspective view illustrating a disc provided with a central opening and tangential slots communicating therewith; Fig. 3 is a plan view of a second disc provided with a central orifice;

Fig. 4 is a perspective view, partially broken away, of a nozzle embodying my invention, and Fig. 5 is a sectional view through a modified form of perforated disc.

Like reference characters indicate like parts throughout the drawing.

Referring now to the drawing, 10 is a body member for the nozzle provided with a chamber 11 to which fluid, such as oil, which is to be atomized is conducted. The free end 12 of the body member is ground to a true plane surface and is provided with an annular groove 13 which communicates with the chamber 11 by a passage or passages 14, here illustrated as two, extending longitudinally of the body member.

A first disc 15 is formed on opposite sides with parallel surfaces which may be readily ground and polished and thereby form a liquid tight joint with the surface 12 on the end of the body member and with the disc which is mounted above the same. The disc 15 is provided with a central opening 16, which is preferably circular, and with which tangential slots 17 communicate, the ends of said slots communicating with the grooves or channel 13.

A second disc 18 is seated on the disc 15 and

is provided with a central orifice 181 communicating with the central opening 16 of the disc 15 and preferably also formed with a concave recess 19 communicating with the opening 181.

The second disc 18 is also provided with parallel surfaces which may likewise be ground by an ordinary grinding machine and polished.

The discs 15 and 18 are held in position by a cap 20 formed with an inwardly extending flange 21 which engages the second disc 18 outside of the central orifice 181 and recess 19. The cap 20 is preferably provided with interior screw threads which engage screw threads 23 on the body member 10. The parts are assembled by seating the first disc 15 on the end of the body member 10, then seating the second disc 18 on the first disc and then securing the discs in position against each other and against the end of the body member by the cap 20.

While I have illustrated the disc 18 provided with a concave recess 19 on the upper side thereof communicating with the orifice 181, it will be understood that such a recess may be used on either or both sides of the disc. It will also be understood that while I have illustrated a concave recess, a recess formed by counterboring or otherwise may be provided on either or both sides of the disc.

In Fig. 5 I have illustrated a modified form of perforated disc 18a, the rear portion of which is provided with a conical recess 23' leading into the central orifice of the disc to distribute the fluid more evenly. The disc is also provided on its reverse side with a concave recess communicating with the central orifice, and which may be the same as or similar to that shown in Fig. 4.

The operation of the device embodying my invention will readily be understood from the foregoing description and is as follows: fluid is admitted to the chamber 11 through any suitable conduit (not illustrated) from which it is conducted through the passages 14 to the channel 13. From the channel the fluid passes through the tangential slots 17 to the central opening 16 in the first disc

15, thereby creating a whirling movement of the fluid, and when it passes through the central orifice 181 of the second disc, the fluid is thoroughly atomized.

8 The flat disc provided with the tangential slots and the flat orifice disc, requires only flat surface grinding and polishing to obtain perfect contact and a tight, non-leaking joint. In my atomizer, there are no recesses, 10 nor are there any milled or turned seats which are difficult to form and still more difficult to make fluid tight. When a member provided with a seat is turned upon a surface 15 provided with a slot or an orifice, it is likely to produce burring or roughening of the surface of the disc and thereby not only create a surface which is not fluid tight, but varies the opening and thereby the flow of fluid through the atomizer. My invention 20 avoids the foregoing difficulties.

The atomizer device embodying my invention permits a choice of a tangentially slotted disc from a number of interchangeable discs of different character, which may vary in 25 thickness, size of central opening, or width of tangential slot, and this disc can be used with a second disc chosen from a number of interchangeable discs with central orifices of different character also, which may vary with 30 regard to thickness, recesses, or length and diameter of orifice. The operator is thus able to secure different characters of spray by the use of different discs. For example, 35 one may obtain a wide short spray or a wide long spray or a narrow short or long spray as desired. The nozzle embodying my invention therefore permits flexibility. There is a further advantage in being able to reverse the slotted disc for certain uses, to further 40 change the character of the spray.

A still further advantage of my invention resides in the fact that both discs and all of the parts may readily be removed and cleaned. The nozzle embodying my invention 45 may readily and inexpensively be manufactured from special heat resistance or wear resistance or chemical resistance alloy metals instead of soft metal, such as brass or iron, which have hitherto commonly been 50 employed.

I have successfully used atomizing devices embodying my invention where there was a low rate of flow, for example, one gallon of fluid per hour.

55 While I have described my invention in its preferred embodiment, it is to be understood that the words which I have used are words of description rather than of limitation and that the drawing is merely illustrative. Hence, changes within the purview of the 60 appended claims may be made without departing from the true scope and spirit of my invention.

I claim:

65 1. In a liquid spray device, a head having a

free plane surface, a recess formed in the end thereof, a first disc having plane parallel surfaces and a central opening and tangential slots for conducting liquid from said recess to said opening, said first disc being seated 70 against the end surface of said head, a second disc having plane parallel surfaces, one of which is adapted to be seated against said first disc, said second disc being provided with a central orifice, communicating with 75 the central opening of said first disc, and a cap for retaining said discs in position against the end surface of said head.

2. In a liquid spray device, a head having a free plane surface, a recess formed in the end thereof, a first disc having plane parallel surfaces and a central opening and tangential slots for conducting liquid from said recess to said opening, said first disc being seated 80 against the end surface of said head, a second disc having plane parallel surfaces, one of which is adapted to be seated against said first disc, said second disc being provided with a central orifice, communicating with the central opening of said first disc and 85 a concave recess communicating with said orifice, and a cap for retaining said discs in position against the end surface of said head.

3. In a liquid spray device, a head having a free plane surface, a recess formed in the end thereof, a first disc having plane parallel surfaces and a central opening and slots 90 for conducting liquid from said recess to said opening, said first disc being seated against the end surface of said head, a second disc having plane parallel surfaces, said second disc being provided with a central orifice communicating with the central opening of said first disc, and a cap for retaining said 95 discs in position against the end surface of said head.

JOHN M. HEWLETT.

110

115

120

125

130