R. SCHORR.

ADJUSTABLE IMPACT ATOMIZER.

APPLICATION FILED MAY 17, 1911.

1,076,708.

Patented Oct. 28, 1913.

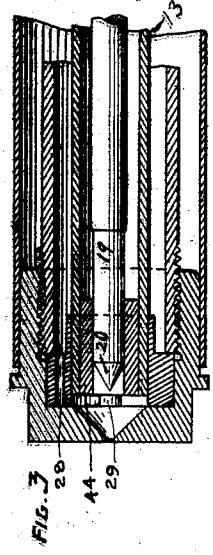


FIG. 3

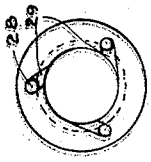


FIG. 4

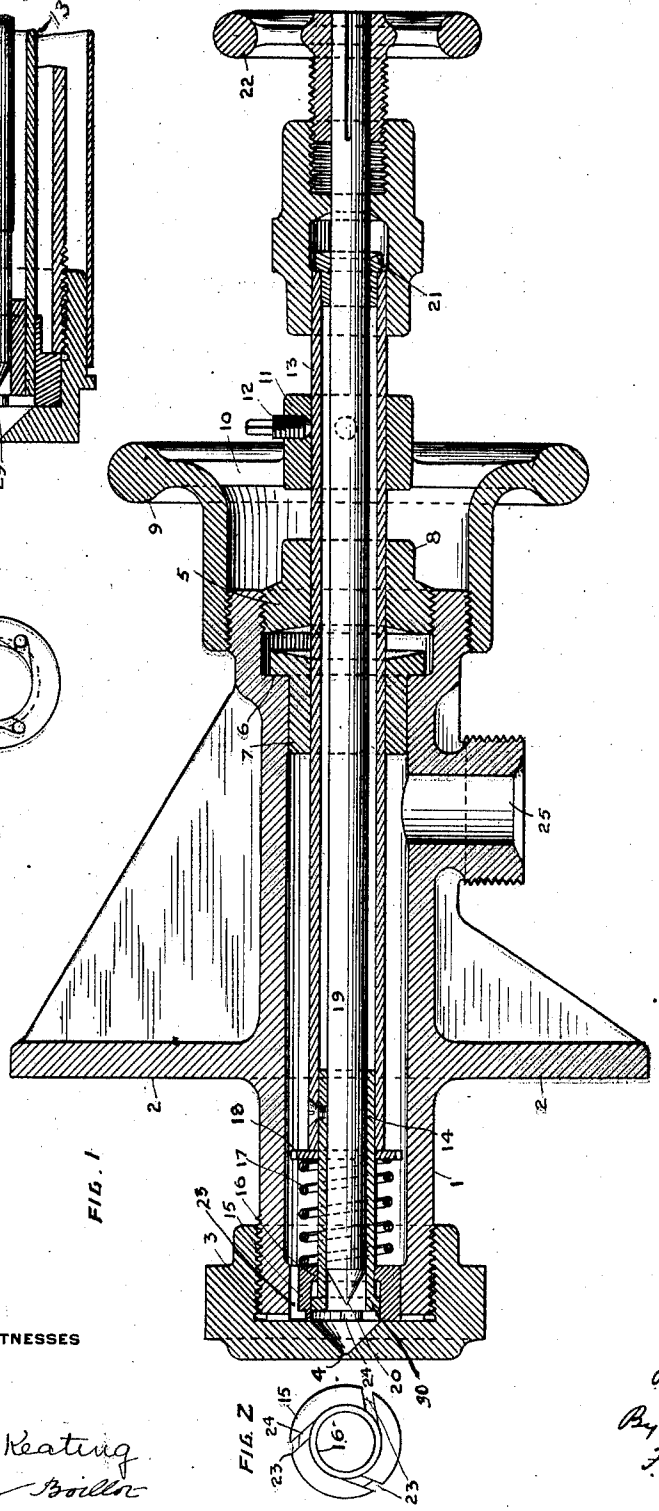


FIG. 1

FIG. 2

WITNESSES

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ADJUSTABLE IMPACT-ATOMIZER.

1,076,708. Specification of Letters Patent. Patented Oct. 28, 1913.

Application filed May 17, 1911. Serial No. 627,866.

To all whom it may concern:

Be it known that I, ROBERT SCHORR, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Adjustable Impact-Atomizers, of which the following is a specification.

The object of the present invention is to provide, in a device for atomizing liquids mechanically, that is, without the aid of steam or compressed air, improved means, which, while permitting variation of the quantity discharged, will at the same time and independently of the variations in the discharge, effect desirable variations of the shape or angle of the spray.

In the accompanying drawing, Figure 1 is a longitudinal sectional view of a mechanical sprayer equipped with my improvement; Fig. 2 is an end view of the jet divider shown in Fig. 1; Fig. 3 is a broken longitudinal section of a modified form of sprayer; and Fig. 4 is an end view of a modified form of jet divider shown in Fig. 3.

Referring to the drawing, 1 indicates a housing, having formed thereon a suitable transverse flange 2, said housing being at one end externally threaded to enter an internally threaded nozzle 3 which has a discharge orifice 4. At the other end the housing is internally threaded to receive an externally threaded sleeve 5, having a projecting portion 8 by which it may be screwed into the end of said housing, the latter having a shoulder 6 against which rests a flange of a sleeve 7, forming with said sleeve 5 a stuffing box. At said latter end, the housing is also externally threaded, to receive thereon a hand wheel 9, connected by a spider 10 with a hub 11, which is secured by a set screw 12 to a pipe 13 passing through said sleeves 5 and 7. In the end of said pipe 13 within the housing is secured a tubular regulating valve 14, formed at its outer end with a flange 30, which can slide within a jet divider 15, said jet divider having an inwardly extending flange 16, with which the valve 14 slides in contact. To take up the lost motion of the regulating valve, a helical spring 17 is interposed between the jet divider and a disk 18 resting against the pipe 13.

Within the regulating valve 14 can slide the stem 19 of a conical valve 20 adapted to seat in the discharge orifice 4 in the nozzle. The rear portion of said valve stem passes through a stuffing box 31 secured on the end of the pipe 13, and its rear end is secured to a hand wheel 22 screwed into the outer end of the stuffing box 21. By this means the valve 20 can be adjusted longitudinally. A number of channels 23, three being here shown, are formed in the cylindrical outer surface of the jet divider, parallel to the axis thereof, and opening into channels 24 extending obliquely inward, as shown in Fig. 2. Liquid is supplied to the nozzle by a passage 25 through one side of the housing 1, and adapted to be connected to a suitable supply pipe.

In the modification shown in Figs. 3 and 4, the spring 17 is dispensed with, and the regulating valve is formed by the pipe 13, within which is secured a guide 44 for the central valve stem 19. In this modification, a different form of jet divider is used, the longitudinally extending channels being formed wholly in the body of the jet divider, as shown at 28, and terminating in inwardly directed obliquely-extending channels 29. The liquid to be atomized is forced under great pressure through the channels 24 or 29 of the jet divider, and is divided into small streams or jets which impinge either upon the inside of the nozzle 3, or wholly or partly upon the tapering valve 20, so that the liquid, when escaping through the discharge orifice of the nozzle, is atomized and assumes the form of mist. The longitudinal movement, above indicated, of the regulating valve 14 is employed to vary the size of the discharge ends of said channels. By moving longitudinally the valve 20, to vary the extent of its surface upon which the jets impinge, the shape which the vapor assumes when discharged from the nozzle is varied. This is an important requirement in many industrial lines. Notably in the burning of liquid fuel under steam boilers it is very important to have, not only means of regulating speedily the quantities of fuel to be discharged, but also means for varying the shape of the flame to suit the furnace setting.

I claim:—

1. In a nozzle having a housing and a discharge orifice, a central stem having a tapering valve within the housing, co-axial means within the housing having channels for the liquid and discharging inwardly within the housing adjacent to said tapering valve, a

tubular valve around said stem, movable longitudinally to regulate the size of the discharge ends of said channels, means operable from the exterior of the housing for so moving said tubular valve, and means independently operable from the exterior of the nozzle to move said tapering valve relatively to said discharge ends.

2. In a nozzle having a housing and a discharge orifice, a central stem having a tapering valve within the housing, co-axial means within the housing having channels for the liquid and discharging inwardly within the housing adjacent to said tapering valve and at right angles thereto, a tubular valve around said stem, movable longitudinally to regulate the size of the discharge ends of said channels, means operable from the exterior of the housing for so moving said tubular valve, and means independently operable from the exterior of the nozzle to move said tapering valve relatively to said discharge ends.

3. A fluid fuel burner comprising a casing having a fuel inlet passage, a tubular member secured to and entered in the casing, a cap for the casing having a fuel discharge orifice, said cap and tubular member forming a vortex chamber therebetween said member having a tangential inlet port to said chamber, means for simultaneously governing the size of said chamber and port, and means for controlling said discharge orifice.

4. A fluid fuel burner having a fuel supply passage, a fuel outlet opening, a vortex chamber communicating with said opening, a tangential port through which fuel is introduced to the vortex chamber, a chamber contracting member, and an independent valve controlling the fuel outlet opening.

5. A fluid fuel burner having a fuel supply passage, a fuel outlet opening, a vortex chamber communicating with said opening, a tangential port through which fuel is introduced to the vortex chamber, a chamber contracting and port controlling member, and an independent valve controlling the fuel outlet opening.

6. A fluid fuel burner comprising a casing having a fuel inlet passage, an elongated tubular member entered in the casing and disposed to form a passage for fluid between the casing and the said member, a cap for the casing having a fuel discharge opening, said cap and member forming a vortex chamber therebetween, a port in said member communicating with said passage and entering said chamber tangentially, means for varying the volume of the vortex chamber, and independent means for controlling the fuel discharge opening.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ROBERT SCHORR.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."