Nov. 14, 1950 G. H. FISHER 2,530,161

POCKET ATOMIZER

Filed Aug. 30, 1946

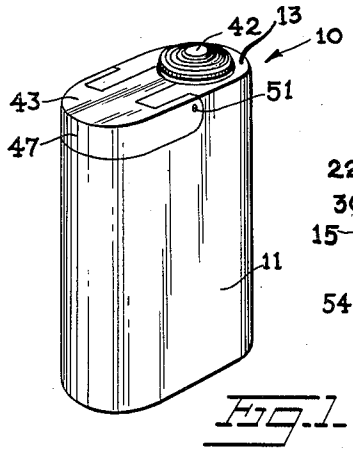


Fig. 1

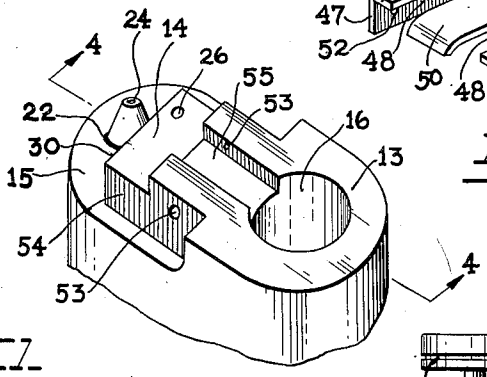


Fig. 2

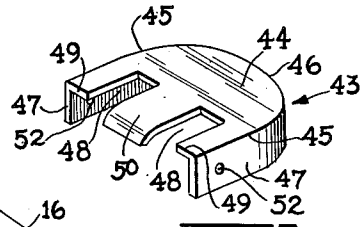


Fig. 7

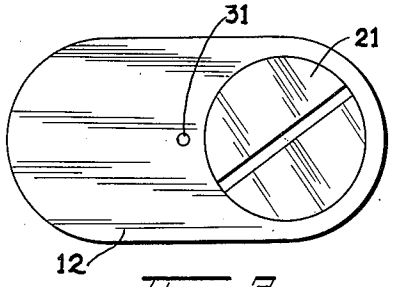


Fig. 3

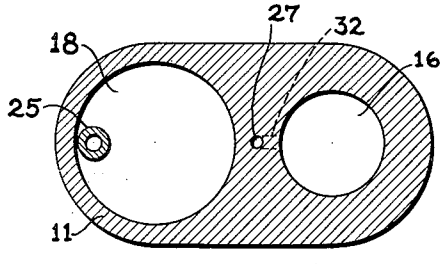


Fig. 5

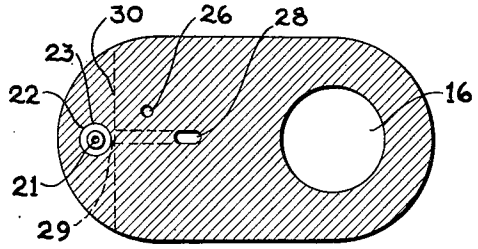


Fig. 6

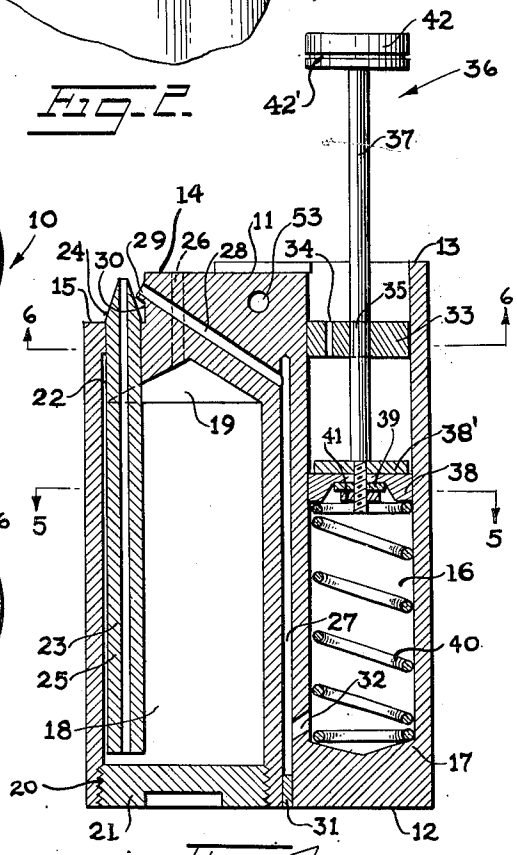


Fig. 4

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POCKET ATOMIZER

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2 Claims. (Cl. 299—88)

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This invention relates to atomizers and more particularly to new and useful improvements in pocket size atomizer construction.

An object of the invention is to provide a pocket size atomizer having the fewest possible parts, including a one-piece block member having various openings drilled therein in such relationship that a plunger disposed in one of the openings will cause atomization of liquid contained in another of the openings.

Another object is to provide a pocket size atomizer that is leak proof, attractive in design, easy to assemble and can withstand long usage without requiring servicing.

These and other objects are accomplished in brief, by providing an atomizer that has a block member that can be made from a solid block of material by drilling therein a well, a well air vent, a hole to the well adapted to admit a tube, an air compression chamber and an air passageway extending from a vent above the hole to the compression chamber. A tube is disposed in the hole with a portion extending into the well and a nozzle projecting from the block to a position adjacent the air passageway vent. The bottom of the well is closed by a threaded plug, and a spring impelled plunger is slidably disposed within the air compression chamber and is adapted to force air through the air passageway and its vent to cause atomization of liquid from within the well.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a perspective view of a pocket atomizer constructed in accordance with the invention herein.

Fig. 2 is an enlarged perspective view of the top portion of the pocket atomizer with its pivotally mounted top portion removed.

Fig. 3 is an enlarged bottom view of the atomizer.

Fig. 4 is an enlarged vertical sectional view taken along the line 4—4 of Fig. 2.

Fig. 5 is a horizontal sectional view taken on the line 5—5 of Fig. 4.

Fig. 6 is a horizontal sectional view taken on the line 6—6 of Fig. 4.

Fig. 7 is a perspective view of the top portion of the atomizer.

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In the drawings and in the specification, in which like reference numbers designate similar parts, a pocket atomizer 10 has a block member 11, preferably of aluminum or other light metal, said block being shaped with a flat bottom face 12 and a stepped top having a topmost face 13, a middle top face 14 and a lowermost top face 15.

The block 11 has a cylindrical air compression chamber 16 extending downwardly from its topmost face 13 to a conical terminus 17 adjacent its bottom face 12, and a cylindrical well 18 extending upwardly from its bottom face 12 to a conical terminus 19 below its stepped top faces. The mouth 20 of the well 18 at the bottom of the block 11 is threaded, and a threaded plug 21 is engaged therewith to close the well at its bottom. A hole 22 extends downwardly from the lowermost top face 15 of the block to the well conical terminus 19, and a tube 23 extends through the hole 22 with a reduced nozzle 24 projecting upwardly from the lowermost top face 15 and a tube portion 25 disposed within the well, the end of the tube within the well being slightly above the threaded plug 21 so that liquid in the well can readily enter the tube. A well air vent 26 extends downwardly from the middle top face 14 of the block to the well conical terminus 19.

A cylindrical passageway 27 extends upwardly from the bottom face 12 of the block between the air compression chamber 16 and the well 18, said passageway rising to about the same elevation as the conical terminus of the well, and another cylindrical inclined passageway 28 extends upwardly and laterally from the upper end of the passageway 27 to a vent 29 in a vertical face 30 connecting the middle top face 14 and the lowermost top face 15. The vent 29 and the tube nozzle 24 are adjacent each other, and so positioned as to cause atomization of liquid within the well when air is forced outwardly through the vent. A plug 31 permanently seals the lower end of the passageway 27, and an aperture 32 extends between the passageway 27 just above the plug and the conical terminus 17 of the air compression chamber. Thus, a continuous air passageway is formed leading from the compression chamber, through the aperture 32, up the vertical passageway 27, through the inclined passageway 28 and out through the vent 29, the permanent plug 31 sealing the bottom of the passageway 27 and forcing the air from the compression chamber to follow the course outlined.

The relative positioning of the well, chamber, passageways, holes, vents and apertures is of the utmost importance, since they have been designed

to permit the atomizer block to be made from a solid block of material allowing many of the drilling, boring and reaming operations to be performed simultaneously or consecutively on pieces held in a jig or fixture. Thus, with the bottom face of a block exposed, the well and the passageway 27 can be bored and drilled and the well mouth threaded, and with the top face of the block uppermost, the air chamber, the tube hole 22, the well air vent 26, the passageway 28, and the aperture 32 can be bored and drilled. With the block thus formed, the tube 23 can then be force fed in the hole 22 to the position shown in the drawings and described hereinabove.

A collar 33 is disposed within the air compression chamber 16 below the topmost face 13 of the block, said collar having an air intake 34 and a concentric opening 35 therethrough. A plunger assembly 36, consisting of a plunger stem 37, a rubber gasket 38, gasket seat 38', washer 39, a spring 40 and a nut 41, is positioned with the plunger stem 37 extending slidably through the opening 35 of the collar 33, the gasket 38 threaded on the lower end of the stem between the gasket seat 38' and the washer 39, the spring 40 located within chamber 16 between the gasket and conical terminus 17 and acting to force the plunger upwardly and the nut 41 threaded on the stem to retain the gasket and washer securely in position. The plunger stem 37 has an enlarged end 42 which engages the collar 33 when the plunger is fully depressed, leaving a domed top portion of the end 42 extending somewhat above the topmost face 13 of the block.

The atomizer 10 is provided with a pivotally mounted top portion 43 (see Figs. 1 and 7) which is formed with a cover 44 having front and back parallel edges 45, a curved edge 46 extending between the edges 45, a flange 47 extending downwardly from the edges 45 and 46, and two cut-out portions 48 extending inwardly from its remaining edge 49 leaving a center tongue 50 therebetween.

The top portion 43 is rotatably joined to the block 11 by means of a pin 51 which extends through two opposing holes 52 in the flange 47 and a hole 53 which extends transversely through the stepped top of the block. The stepped top of the block is set slightly in at sides 54 so that the cover 44 is flush with the topmost face 13 and the flange 47 is flush with the front and back faces of the block, while the tongue 50 rests in a slot 55 in the topmost face 13. In closed position, the undersurface of the cover 44 seals the tube nozzle 24 and the well air vent 26 preventing leakage of liquid from the well.

The enlarged end 42 is provided about its outer periphery with a groove 42' which tongue 50 engages while the atomizer is in inoperative position.

When it is desired to use the atomizer of the present invention, it is necessary first to release plunger 36 by pressing inwardly on end 42. This causes top portion 43 to rotate on pin 51 thus disengaging tongue 50 from groove 42' and permitting plunger 36 to spring upwardly due to the force of spring 40. Now each time the plunger is pressed downwardly the air within chamber 16 becomes compressed, is forced out through aperture 32, passageways 27 and 28 and out through vent 29, thus producing a change in atmospheric pressure in tube 23 and resulting in the rise of liquid within the tube due to the aspirating action thus brought about. At the same time, the liquid so raised is formed into a fine spray by the air which escapes through vent 29.

If it is desired, the well air vent 26 can extend from the well to a terminus in any face of the block, and a tiny one way air valve disposed therein to permit air to enter the well.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reversed to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. An article of the class described, comprising a one-piece metal body, said body being formed with an air compression chamber extended down from the top thereof and terminating adjacent the bottom of said body, a plunger assembly in said air compression chamber, said body being formed with a well extended up from the bottom thereof and terminating adjacent the top of said body, means closing the open bottom of said well, said body being formed with a passageway extended up from the bottom thereof between said air compression chamber and said well and terminating adjacent the top of said body, means closing the bottom of said passageway, said body being formed with an aperture connecting the bottom of said air compression chamber with the bottom of said passageway, said body having a lowered top face portion above said well and a vertical face at one end thereof, said block being formed with an inclined passageway extending from the top end of said first-mentioned passageway and terminating in said vertical face at the top thereof, said block being formed with a hole extending down from said lowered top face portion and communicating with the top of said well, and a tube portion having an intermediate portion passing through said hole with its lower end adjacent the closed bottom end of said well and its top end formed with a reduced nozzle positioned adjacent the terminal end of said inclined passageway.

2. An article of the class described, comprising a one-piece metal body, said body being formed with an air compression chamber extended down from the top thereof and terminating adjacent the bottom of said body, a plunger assembly in said air compression chamber, said body being formed with a well extended up from the bottom thereof and terminating adjacent the top of said body, means closing the open bottom of said well, said body being formed with a passageway extended up from the bottom thereof between said air compression chamber and said well and terminating adjacent the top of said body, means closing the bottom of said passageway, said body being formed with an aperture connecting the bottom of said air compression chamber with the bottom of said passageway, said body having a lowered top face portion above said well and a vertical face at one end thereof, said block being formed with an inclined passageway extending from the top end of said first-mentioned passageway and terminating in said vertical face at the top thereof, said block being formed with a hole extending down from said lowered top face portion and

communicating with the top of said well, and a tube portion having an intermediate portion passing through said hole with its lower end adjacent the closed bottom end of said well and its top end formed with a reduced nozzle positioned adjacent the terminal end of said inclined passageway, said means closing the bottom of said first-mentioned passageway, comprises a plug permanently sealed in the bottom of said first-named passageway.

GEORGE H. FISHER.

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