

G. J. KELLEY.
ATOMIZER.

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1,042,685.

Patented Oct. 29, 1912.

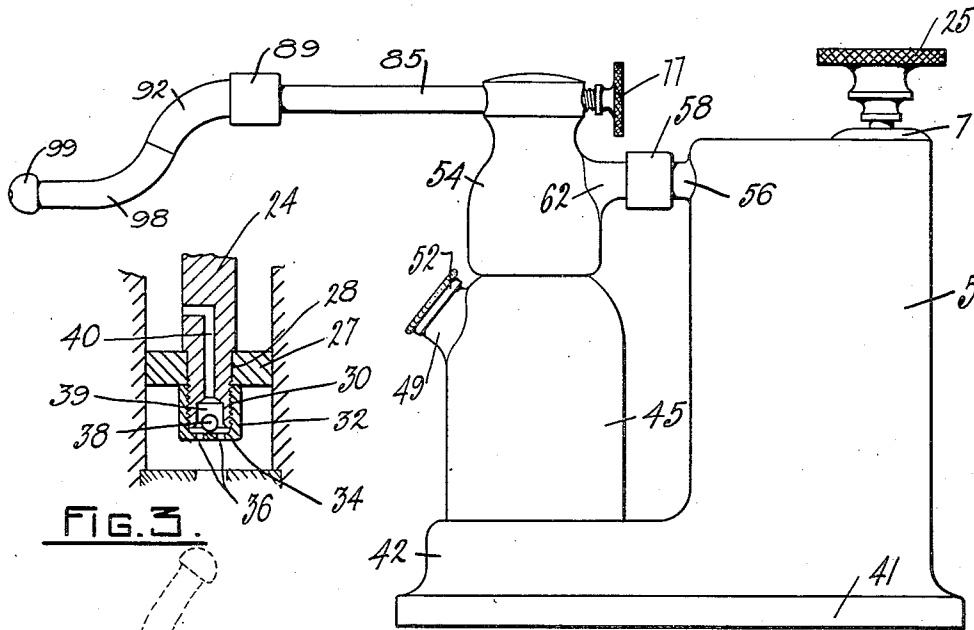


FIG. 3.

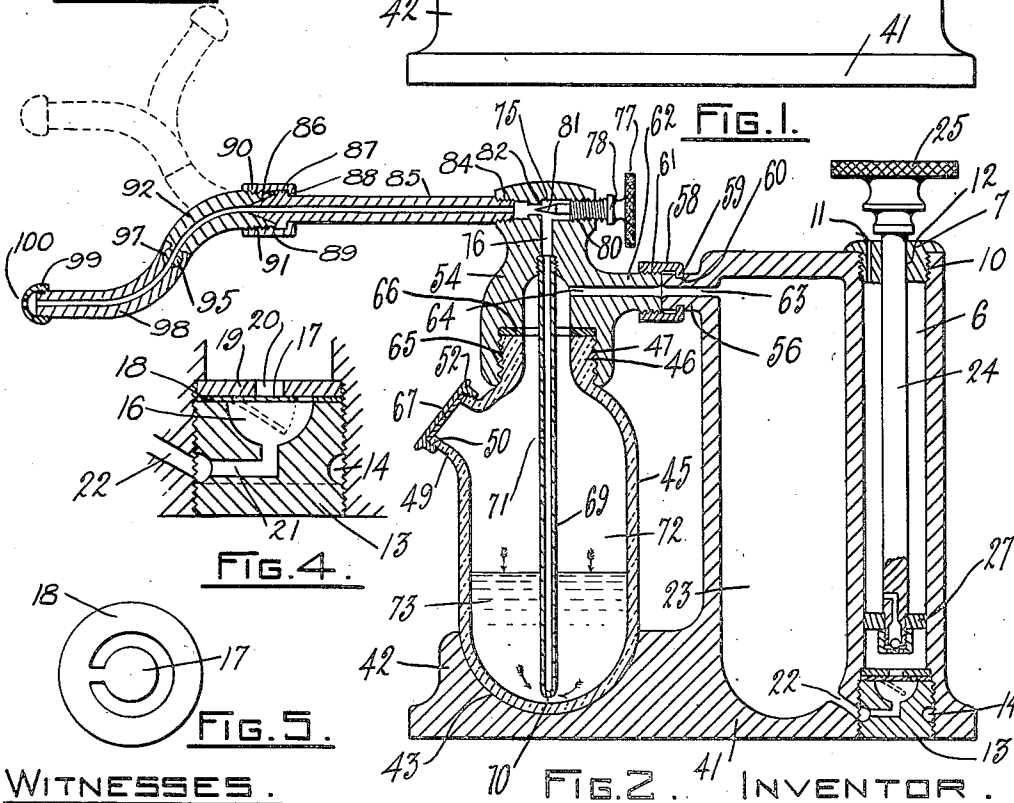


FIG. 1.

FIG. 4.

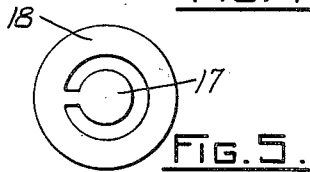


FIG. 5.

WITNESSES.

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FIG. 2.

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ATOMIZER.

1,042,685.

Specification of Letters Patent.

Patented Oct. 29, 1912.

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To all whom it may concern:

Be it known that I, GEORGE J. KELLEY, a citizen of the United States, residing at Attleboro, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Atomizers, of which the following is a specification.

My invention relates to atomizers and has for its essential objects, compactness; adaptability for use with a single hand; capacity for continuous and uninterrupted discharge, simplicity and inexpensiveness.

To the above ends essentially my invention consists in such novel parts and combination of parts as fall within the scope of the appended claims.

In the accompanying drawings which form a part of this specification and in which like reference letters indicate like parts throughout the views, Figure 1 is a side elevation of my novel atomizer, Fig. 2, a central longitudinal section of the same, Fig. 3, an enlarged section of the lower portion of the piston, Fig. 4, an enlarged section of the valve block, and Fig. 5, a bottom plan view of the flap.

My device comprises a casing 5 of an outline adapted to be readily grasped by the hand having in its rear portion a piston chamber 6 closed at its upper end by a cap 7 having a threaded connection 10 with the casing and provided with an air inlet 11 and a central opening 12. An exteriorly threaded block 13 is provided with an external annular channel 14 which is fixed in the threaded lower end of the cylinder chamber. It has a central cavity 16 in its upper portion permitting movement of a flexible flap 17 integral with a washer 18 resting upon the top of the block and superimposed upon which is a disk 19 provided with a central opening 20. The cavity 16 is an enlargement of a passage 21 extending into the channel 14. From this channel is another channel 22 leading through the casing wall to an air storage chamber 23 located in the casing adjacent the cylinder chamber. Slidable in the opening 12 in the cap 7 is a piston rod 24 provided with a handle 25 in the form of a milled disk, and provided at its lower end with a piston. In the present instance the piston comprises a disk 27 seated upon a reduced portion 28 of the rod. The latter is exteriorly threaded at its end 30 to engage an interiorly threaded cap 32 whose open end abuts against the disk. The closed end

34 of the cap is provided with openings 36 and supports a ball 38 in a chamber or cavity 39 in the end of the rod 24. From this cavity extends a passage 40 opening into the chamber 6 which passage is of less diameter than that of the ball.

A base portion 41 of the casing is forwardly extended as at 42 and provided with a concave seat 43 adapted to receive the lower end of a flask 45 preferably of glass, having a reduced neck portion 46 provided with external threads 47. The flask has also a lateral upwardly directed neck 49 provided with threads 50 engaging an interiorly threaded cap 52. An extension piece 54 is integral with the casing forming a part thereof or connected to a projection 56 of the latter by a collar 58 whose flange 59 is seated in an annular groove 60 upon the projection 75 and whose interior is threaded as at 61 to engage an exteriorly threaded projection 62 upon the piece 54 abutting against the projection 56. The projections 56 and 62 have respectively passages 63 and 64 registering with each other and leading from the chamber 23 to the interior of the flask 45. The piece 54 has its lower portion undercut to receive the neck 46 and is provided with internal threads 65 to engage the threads 47. Upon the top of the necks 46 and 49 respectively are gaskets 66 and 67 if desired. A vertically disposed tube 69 extends concentrically of the flask 45 and is fixed at its upper end in the piece 54 in any convenient manner. Its lower end is open as at 70 adjacent the bottom of the flask, while a perforation 71 in the tube is located near the top of the flask. The chamber 72 of the flask is partially filled with liquid 73. The removable or auxiliary portion 54 of the casing has a horizontal passage 75 disposed at right angles to a vertical passage 76 extending from the tube 69 to the center of the horizontal passage. In one end of the latter passage is a needle valve comprising a milled head 77 and a shank 78 provided with threads engaging threads 80 in the casing, and having a needle point 81 adapted to cooperate with an annular seat 82 of the casing. Located in the horizontal passage adjacent the opposite side of the seat 82 is the threaded end 84 of a horizontal tube 85 provided with a conical outer end 86 and an external shoulder or head 87 loosely engaged by the flange 88 of union or sleeve 89 provided with internal threads 90 engaging

threads 91 upon the end of a curved hard rubber tube 92 loosely surrounding the conical portion 86. The union 89 may be united with the tube 92 in any other convenient manner. The tube 92 is provided upon its outer end with a spherical projection 95 which registers in a spherical cavity 97 in the end of another curved tubular section 98 upon whose end is fixed a cap 99 provided with spraying perforations. Since the tube 92 is swiveled upon the tube 85; and the tube 98 is swiveled upon the tube 92 it will be noted that the discharge nozzle 100 is capable of a variety of radial adjustments, some of which are shown in broken lines in Fig. 2.

The operation of my spraying device is as follows: The storage chamber is first filled with air. This is effected by operating the air pump as follows. The piston forces the air through the passages 20, 16, 21, and 22 into the chamber 23 by its downward stroke which opens also the flap 17. During the descent of the piston the ball 38 moves upwardly and closes the air passage 40. During the upward stroke of the piston the air is permitted to pass through the passages 11, 40, and 36. After the atomizer has been thus charged the casing is grasped in the operator's palm so that the thumb and forefinger may engage the head 77 and thus control, by adjustment of the point 81 relatively to the seat 82, the discharge of fluid through the tubes 85, 92, and 98. The compressed air in the chamber 23 is discharged through the passages 63 and 64 into the chamber 75 and enters the perforation 71. It also presses upon the surface of the water 73 which rushes up through the opening 70 and mixed with the air, is forced through the tube 69, past the needle valve 81 and through the tubes 85, 92, and 98. The liquid is discharged as a spray through the perforated nozzle 100. The flask is replenished with liquid through the neck 49 after removal of the cap 52.

When the parts are constructed as herein shown they may be disassembled by unscrewing the union 58; and by unscrewing the casing section 54 from the neck of the flask.

1. In an atomizer, the combination of a casing, an air pump in the casing, a compressed air reservoir in the casing adjacent the pump, a liquid receptacle in the casing adjacent the reservoir, said casing being provided with air channels between the pump and reservoir and between the reservoir and the receptacle, a liquid tube fixed in the casing and extending into the receptacle, a transverse bore in the casing above the tube, the casing being provided with an air channel leading from the tube to an intermediate portion of the bore, a threaded valve working in one end of the

bore, and a discharge tube in the other end of the bore.

2. In an atomizer, the combination of a casing, an air pump in the casing, a compressed air reservoir in the casing adjacent the pump, a liquid receptacle in the casing adjacent the reservoir, said casing being provided with air connections between the pump and reservoir and between the reservoir and the receptacle, a liquid tube in the casing extending into the receptacle, a bore in the casing above the tube, an air channel leading from the tube to the bore and a valve in the bore extending into the air channel.

3. In an atomizer, the combination with the casing of a pump in the casing, an air reservoir in the casing adjacent the pump, a liquid receptacle resting upon the casing adjacent the reservoir, a removable extension upon the casing engaging the top of the receptacle, a discharge pipe upon the extension, a liquid pipe upon the extension extending into the receptacle, said extension being provided with an air channel extending between the pipes, a valve in the extension extending into the air channel, and a curved nozzle pivotally connected with the discharge tube comprising swiveled sections.

4. In an atomizer, the combination with the casing, of a pump in the casing, an air reservoir in the casing adjacent the pump, a liquid receptacle resting upon the casing and provided with a threaded upper portion, a removable extension provided with threads engaging the threads of the receptacle, a lateral projection upon the extension provided with threads, a projection upon the casing adjacent the reservoir provided with a shoulder, a union provided with threads engaging the threads upon the first projection, a flange upon the union engaging the shoulder upon the second projections, both projections being provided with registering air channels leading from the receptacle to the reservoir, a liquid tube in the reservoir fixed in the extension a discharge tube in the extension, an air passage leading from the liquid tube to the discharge tube, a valve seat in the passage, and a threaded valve mounted in the extension and controlling the last mentioned air passage.

5. In an atomizer, the combination with the casing, of a pump in the casing, an air reservoir in the casing adjacent the pump, a liquid receptacle resting upon the casing adjacent the reservoir, a removable extension upon the casing engaging the receptacle, a liquid pipe upon the extension extending into the receptacle, said extension being provided with an air channel leading from the tube through the extension, and a valve in the extension entering the air channel.

6. In a vaporizer, the combination with the casing and the air reservoir therein, of

a cylinder in the casing adjacent the reservoir provided with a piston chamber, a block removably mounted in the casing in the bottom of the piston chamber and provided with an air passage communicating with the reservoir, a flap valve upon the block controlling said air passage, a piston rod mounted in the cylinder provided with a cavity in its lower end and with a channel leading from the cavity to the outer surface

of the rod, a piston upon the rod near its end, a cap upon the end of the rod provided with openings and above the block, and a ball in the cavity.

In testimony whereof I have affixed my signature in presence of two witnesses.

GEORGE J. KELLEY.

Witnesses:

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