

H. FINZEL.
CONTINUOUS SPRAY PUMP.
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991,291.

Patented May 2, 1911.

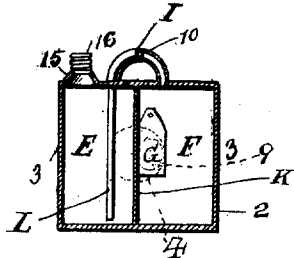


Fig. 2.

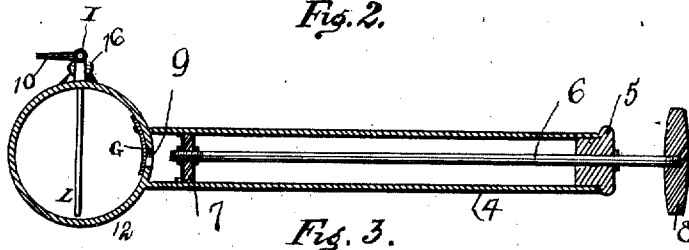


Fig. 3.

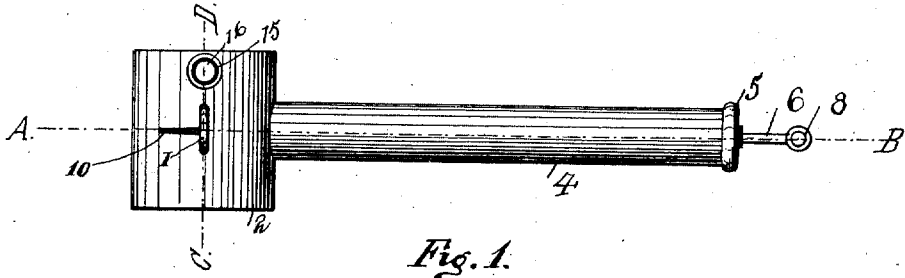


Fig. 1.

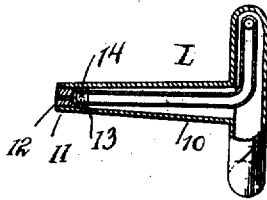


Fig. 4.

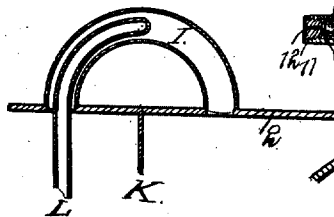


Fig. 5.

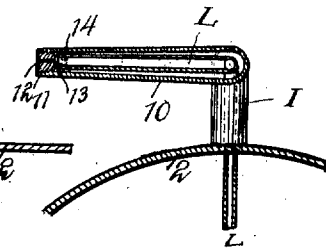


Fig. 6.

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UNITED STATES PATENT OFFICE.

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CONTINUOUS-SPRAY PUMP.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HERMAN FINZEL, a citizen of the United States, residing at No. 153 Logan street, in the city of Pasadena, county of Los Angeles, and State of California, have invented a new and useful Continuous-Spray Pump, of which the following is a specification.

The invention relates to an atomizer and more particularly to the class of spray pumps.

The primary object of the invention is the provision of a device of this character in which a continuous spray column of fluid will be ejected from the same when the piston of the pump is reciprocated in either direction in its cylinder thereby avoiding the objectionable feature of an interrupted spray as is ordinarily the case when operating an atomizer or spray pump.

Another object of the invention is the provision of a device of this character in which the font or receiver for the spraying fluid is provided with an independent air compartment or chamber so that air may be forced therein to act upon the spraying liquid whereby it may be ejected from the receiver in a continuous uninterrupted column.

A further object of the invention is the provision of a spray pump which is simple in construction, thoroughly reliable and efficient in operation and inexpensive in manufacture.

With these and other objects in view the invention consists in the construction, combination and arrangement of parts as will be hereinafter more fully described and pointed out in the claims hereunto appended.

In the drawings: Figure 1 is a top plan view of an atomizer constructed in accordance with the invention. Fig. 2 is a sectional view on the line C—D of Fig. 1. Fig. 3 is a sectional view on the line A—B of Fig. 1. Fig. 4 is a top plan view on an enlarged scale of the spray nozzle, the same being partly in section. Fig. 5 is a vertical transverse sectional view therethrough. Fig. 6 is a vertical longitudinal sectional view thereof.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings by numerals 2 designates a cylindrical font or receiver of the atomizer or spray pump, the same being

closed by end walls 3 and within this receiver or font is arranged a partition K, the latter dividing the same into independent liquid and air compartments E and F respectively for a purpose as will be hereinafter more fully described. Extending outwardly medially from the said font or receiver 2 is a pump cylinder 4, the latter being closed at its outer or free end by the usual removable cap 5 containing a central aperture through which is passed a reciprocating piston rod or stem 6 which carries the usual piston 7 adapted to work within the pump cylinder, the outer end of the rod 6 being provided with a hand grip or handle 8 so that the piston rod and its piston may be operated for a purpose as will be hereinafter more fully described.

Communication is established between the pump cylinder 4 and the compartment F within the receiver or font 2 by means of a vent or orifice 9, the latter being normally closed by a flap valve G so that on the movement of the piston 7 within the cylinder 4 toward its outer or free end the said flap valve G will prevent the sucking of air from the chamber F into the said pump cylinder 7, but upon movement of said piston 7 in the opposite direction within the cylinder air will be forced into the said air chamber or compartment F from the pump cylinder thereby compressing the air fed within the said air compartment or chamber within a receiver or font for a purpose as will be hereinafter more fully described.

Rising from the top of the font or receiver 2 is a semicircular-shaped or arched bypass or pipe I. This pipe I is adapted to establish communication between the liquid and air compartments or chambers E and F, the bypass or pipe I being intersected medially thereof by means of a delivery nozzle 10 the outer end of which is substantially closed by an end piece 11. This end piece 11 is formed with a central discharge passage 12 intersecting a circular recess 13, the wall of which is suitably threaded for engagement with one end of a liquid delivery tube L. The tube L is passed through the nozzle, a portion of the arched pipe I and downwardly into the liquid chamber or compartment E, terminating at a point spaced from the bottom of the said compartment or chamber E. This delivery tube L is of a size considerably less than the interior diameter of the pipe I and nozzle 10 so that air

may freely pass or circulate through the said pipe I from the air compartment F to the compartment E, thus causing the liquid contained within the latter to be discharged
 5 through the tube L and passage 12 during the spraying operation of the atomizer or pump. The end of the delivery tube L engaged in the recess 13 has its threads mutilated at diametrically opposite points to
 10 provide air vents 14 so that a portion of the air within the pipe I and nozzle 10 may pass into the passage 12 during the spraying operation. The air passing through these vents
 15 12 is permitted to gain access to the passage 12 by reason of the fact that the end of the delivery tube L engaging the end piece 11 is spaced from the bed of the recess 13 formed in the said end piece so that there
 20 will be formed a space which will permit the air passing through the vents 14 to gain access to the passage 12 and exhaust to the atmosphere.

Rising from the top of the receiver or font 2 is a threaded nipple 15 through which liquid may be introduced into the chamber or
 25 compartment E, the nipple being closed by a removable cap 16 threaded thereon.

In operating the atomizer the piston 7 is reciprocated within the pump cylinder 4
 30 thus compressing air within the air compartment or chamber F which latter will pass through the bypass or pipe I into the liquid chamber or compartment E above the level of the liquid held therein whereupon
 35 the body of liquid within the said compart-

ment or chamber E will be forced upwardly into the delivery tube L and ejected from the nozzle 10 through the passage 12 in a continuous and uninterrupted stream or column for spraying purposes.

What is claimed is—

1. A spray pump of the class described comprising a receiver having independent chambers therein, a piston-operated pump connected with said receiver and having
 45 communication with one of said chambers, a semi-circular pipe connected with the receiver and establishing communication between the said chambers, a nozzle leading
 50 from said semi-circular-shaped pipe, and a delivery tube passed through the nozzle and a portion of said semi-circular-shaped pipe and terminating within the other chamber.

2. In a spray pump, a font having independent air and liquid compartments, a by-
 55 pass leading from the air compartment to the liquid compartment, a nozzle communicating with said bypass, a liquid delivery tube extending upwardly from the liquid
 60 compartment through the said bypass into the said nozzle, a centrally perforated end piece mounted in the free end of the nozzle and connected with said delivery tube, and an air supply pump communicating with said air compartment.

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