

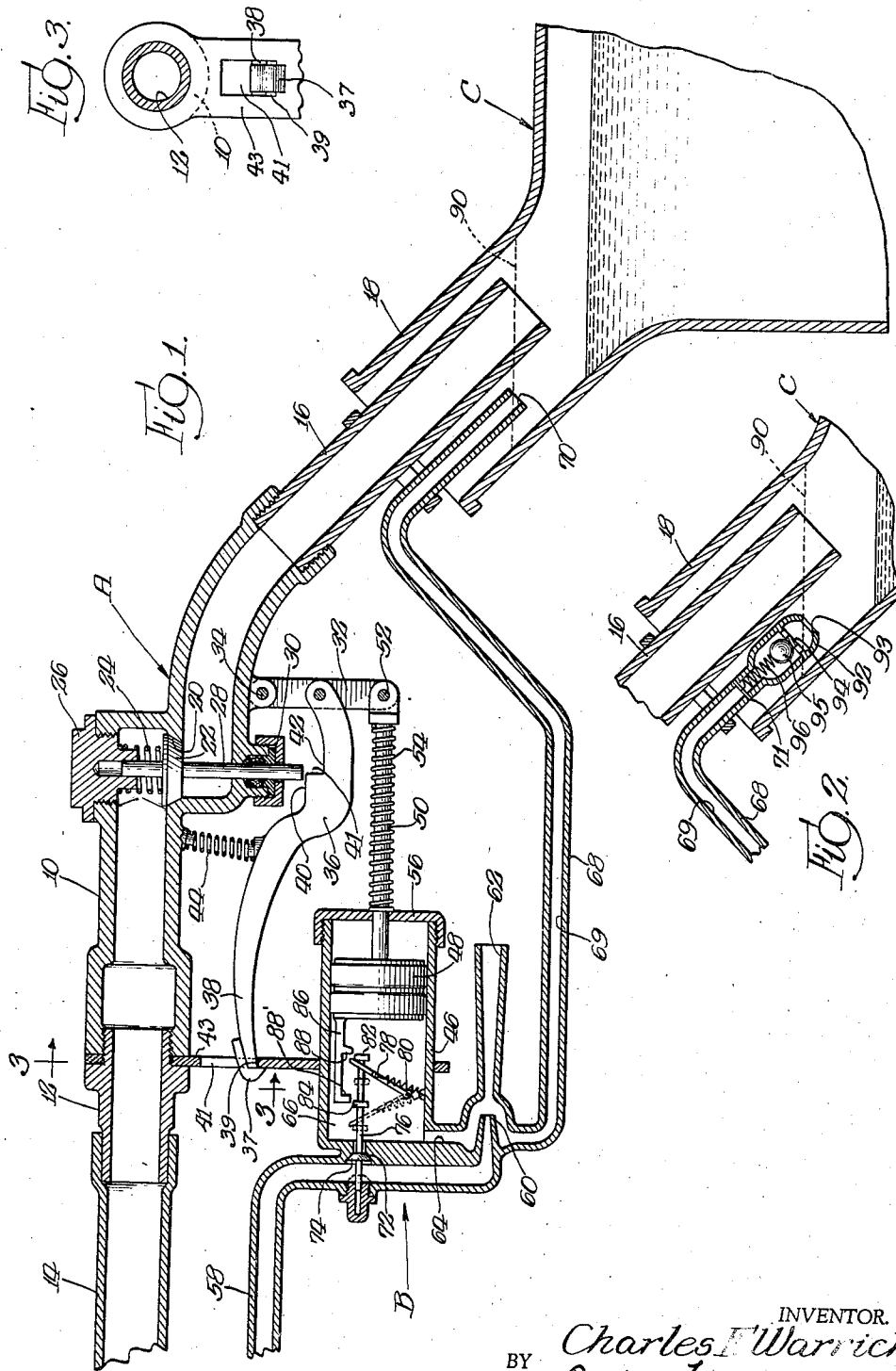
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C. F. WARRICK

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FLUID FILLING NOZZLE

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INVENTOR.
Charles F. Warrick.
BY *Barri & Freeman*
ATTORNEY.

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FLUID FILLING NOZZLE

Charles F. Warrick, Detroit, Mich., assignor to
The Imperial Brass Manufacturing Company,
Chicago, Ill., a corporation of Illinois

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My invention relates to fluid filling nozzles and particularly the type used for filling tanks by means of a hose attached to some reservoir for the liquid.

5 Among the objects of my invention is the provision of a new and improved nozzle device for transferring liquid into tanks which is provided with a valve adapted to be automatically closed when the tank becomes filled.

10 Another object of my invention is the provision of a new and improved manually operated nozzle for filling tanks with liquid which has incorporated therein an automatically operated mechanism for shutting off flow through the nozzle independently of the position of the manually operated means whenever the level of fluid in the tank makes contact with the nozzle.

Still another object is the provision of a new and improved filling nozzle which utilizes the jet principle to shut off flow through the nozzle automatically when the liquid reaches a given level. Another object still is the provision of a new and improved filling nozzle adapted to be automatically shut off when the level of the fluid in a container comes into contact with the nozzle by means of an auxiliary pressure supply operating by suction jet principle wherein the force of the vacuum produced by the jet can be used to close the nozzle valve, but wherein under normal filling conditions atmosphere connection is established through a duct into the jet chamber so that the air aspirated through said duct acts to reduce the vacuum produced by the jet to a low degree insufficient to operate the nozzle valve closing mechanism but wherein the flow of air from outside through the aspirating duct may be impeded by the presence of liquid, rising to its level in the container, to cause the vacuum produced by the jet to increase to a value sufficient to operate the nozzle valve mechanism for shutting off the flow of liquid through the nozzle.

A further object is the provision of a new and improved pressure operated control for liquid filling nozzles operating on the suction jet principle which utilizes a pair of aspirating passages, one leading to the control mechanism and the other leading near the nozzle end so that it may draw liquid thereinto to change the degree of vacuum produced by the suction jet action under given circumstances, and thereafter to by-pass the pressure flow so as to reverse its direction and change from vacuum to pressure through said other aspirating passage in order to prevent liquid being drawn into the jet and a mist of liquid being expelled at the jet discharge.

A still further object is the provision of a new and improved pressure operated control mechanism for a liquid filling nozzle operating upon the suction jet principle wherein one aspirating passage for the jet is positioned so as to be brought into contact with a body of liquid under given circumstances in order to change the degree of vacuum produced by the action of the suction jet and thereby operate the pressure control mechanism, said mechanism being provided with by-pass means adapted to effect a reversal of flow condition in the aspirating passage in order to thoroughly cleanse the passage and the intake thereto during this stage of operation.

A still further object is the provision of a new and improved pressure operated control mechanism for a liquid filling nozzle operating upon the suction jet principle wherein one aspirating passage to the jet is positioned so as to be brought into contact with a body of liquid under given circumstances in order to change the degree of vacuum produced by the action of the suction jet and thereby operate the valve control mechanism, said mechanism being provided with means for closing the discharge opening of the suction jet adapted to effect a reversal of flow condition in said aspirating passage in order to thoroughly scavenge the passage and its connections during this stage of operation.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawing, in which:

Figure 1 is a diagrammatic view showing a longitudinal section through the liquid filling nozzle and control apparatus.

Figure 2 is a modified form of inlet for the open aspirating passage.

Figure 3 is a fragmentary view on the line 3—3 of Figure 1.

Where liquid containing tanks are provided which are adapted to be filled by hand filling means there is always present the problem of filling such tanks to the top and then stopping the input of liquid before the tank overflows. This problem is particularly present in automobile and airplane gasoline tanks wherein the filling apertures are frequently positioned so that it is not possible to observe the level of liquid inside of them until it reaches a point where the tank is dangerously full. Gauges on such tanks are usually not sufficiently accurate to help the at-

tendant at a service station, for example, who is filling the tank outside the car or plane.

The present invention contemplates providing a filling nozzle which can be inserted into the opening of a tank for any type of liquid and then opened by the attendant to permit the liquid to flow into the tank and which will be automatically shut off whenever the level of liquid in the tank reaches the open end of the nozzle or in case trapped air causes an upward surge of liquid.

In order to accomplish this, the invention contemplates using gas or air pressure and a suction jet for controlling a vacuum and pressure operated mechanism for closing a valve in the nozzle, an aspirating passage to the jet chamber being secured to the open end of the nozzle so as to be brought into contact with the liquid level in the tank when that level rises to a point above the nozzle end.

By using an apparatus embodying this principle it is to be noted that the presence of liquid in the aspirating passage to the suction jet by reason of being more viscous in action than air or gas impedes the vacuum reducing flow of atmospheric air to the suction or gas jet chamber and causes substantially the full degree of attainable vacuum to be built up in the jet chamber and any other passage or passages with which it is designed to operate.

Danger exists here, however, in that when some kinds of liquid such as gasoline or a similar volatile combustible fluid, eventually reach the jet chamber they are likely to be blown outward through the jet discharge in the form of an explosive mist, a highly dangerous condition. To avoid this there is provided in the control mechanism a by-pass valve operated immediately after a change in the jet-produced, vacuum condition due to the admission of a slug of liquid in the aspirating passage. By by-passing the gas or air normally operating the suction jet the gas or air is conducted into the aspirating passage itself, thereby reversing the flow in the passage stoppered by the liquid and in so reversing the flow of gas or air under pressure is capable of blowing the volatile liquid back through the aspirating passage to the entrance from which it came.

This blowing action not only eliminates the hazard of forming an explosive mist at the jet but also performs a scavenging operation in the aspirating passage so as to clear out any dirt or other non-liquid particles which might be drawn into it during its normal aspirating operation. It prevents the possibility of the suction jet action being interfered with by the presence of liquid in the throat.

In the apparatus here chosen to illustrate an embodiment of my invention there is shown a liquid filling nozzle device generally indicated by the character A, a pressure operated control B connected therewith, and a tank C adapted to be filled with liquid such as gasoline for example. The nozzle device consists of a casing 10 which is adapted to be connected by means of a coupling 12 to a supply hose 14 leading from a tank reservoir or from the container for the liquid. At the outlet end of the casing there is provided a spout 16 by means of which the liquid is directed into a narrow entrance 18, for example, of the tank C.

In the casing there is provided a valve opening 20 with a valve 22 seated therein and normally urged to a closed position by means of a coiled spring 24. A plug 26 holds the spring in place.

The valve is provided with a valve stem 28 which

extends outward through the casing through a packing joint 30.

In order to operate the valve there is provided a link 32 pivoted to the casing at the point 34 to which is attached an operating arm 36 provided with a handle grip 38. On the operating arm is a shoulder 40 which engages the end of the valve stem 28 and immediately adjacent the shoulder a recess 42 into which the stem is designed to slip under certain conditions. The handle and operating arm is normally urged to an outward or closed position for the valve by means of a coiled spring 44.

To render the handle parts and lever members stationary under normal conditions the nozzle device is provided with a handle bracket 43 made stationary with respect to the casing and in the bracket there is provided an aperture 41 which has a lower edge 39. At the end of the handle member 38 there is provided a hook-like latch element 37 which protrudes through the aperture 41 and is designed to hook over the lower edge 39.

The pressure operated device B is designed to utilize the principle of a jet and is provided with operating means connected to the valve and its operating arm consisting of a sealed chamber formed by a cylinder 46 in which a movable sealing disc here shown as a plunger 48 is designed to reciprocate. The plunger 48 is connected by a rod 50 to the link 32 by means of a pivot pin 52. A coiled spring 54 is provided upon the rod to normally urge the rod outward and thus tend to force the link 32 in a counterclockwise direction so that the shoulder 40 will be in a position to depress the valve stem 28 whenever the operating arm is manipulated. The spring likewise urges the latch 37 into engaged position. A cap 56 is provided to supply a closure for the cylinder and a guide for the rod 50.

For operating the cylinder and plunger a supply of air under pressure is provided conducted from some suitable source to the apparatus through a pipe line 58 which terminates in a jet or orifice outlet 60. At the jet there is provided a somewhat elongated outlet passage 62 which aids in the operation of the jet. In this portion of the device are provided two aspirating passages for the jet, one a substantially closed passage 64 which is directly connected to the bore 66 at the adjacent end of the cylinder and at the other side a tube 68 containing an open aspirating passage 69. The open passage 69 operates to normally permit the fairly free flow of atmosphere through it from the inlet or open end 70 to the jet. The open end 70 is here shown positioned near and customarily secured to the open end of the spout 16.

As a safety feature, the operation of which will be subsequently explained, there is provided a by-pass valve passage 72 in which is seated a valve 74 provided with a valve stem 76 extending into the cylinder 46. A short passage connects the end bore 66 of the cylinder directly with the pipe line 58. The valve itself is operated by a snap action incorporated in a pivoted toggle arm 78 within the cylinder operated by a coiled spring 80. The arm is designed to pull against a shoulder 82 on the valve stem to hold the valve closed and upon a shoulder 84 to hold the valve open under certain circumstances. The arm itself is operated by means of a bracket 86 attached to the plunger provided with operating lugs 88 and 88'.

Operation

In operation the spout 16 is inserted into the

narrow entrance 18 of the gas tank C together with the open end 70 of the tube 68. The valve 22 is then opened by the operator who depresses the handle 38 and operating arm 36 of the valve so that pressure is exerted against the valve stem 28, thereby unseating the valve 22 from its seat 20. During this stage of the filling operation gas or air under pressure is being passed through the pipe line 58 and thence outward at the suction jet 60, into throat 62. The velocity of the air or gas through this combination tends to carry the air surrounding the jet with it, thus lowering the pressure around the jet or producing a vacuum effect by ejector action. Since the open aspirating passage 69 is free to admit the passage of air, the vacuum effect created by the suction jet 60 will largely be expended in drawing atmospheric air through the passage 69 and passing it outward from the elongated outlet passage or throat 62 of the jet.

The vacuum producing action of the jet tends to set up a potential flow through the aspirating passage 64. There will be of course no actual flow normally through this passage but only a very slight vacuum condition which is resisted by the spring 54 and the plunger 48 is balanced in a position wherein the operating arm can maintain the liquid valve 22 in open position.

As liquid rises in the tank it eventually reaches a level indicated by the dotted line 90, where it covers the inlet 70 of the normally open aspirating passage 69. In accordance with a well-known principle of fluid flow, the presence of liquid of greater viscosity in this passage materially changes the action of the suction jet since liquid cannot be aspirated as rapidly as a gas through a given duct. Such a condition therefore causes, by means of the impeded flow in the aspirating passage 69, an increase in degree of vacuum created by the suction jet through passage 64 in the bore 66 of the cylinder and the materially increased vacuum thus created tends immediately to draw the plunger 48 toward the left as viewed in Figure 1. This action tilts the link 32 in a clockwise direction and in so doing shifts the shoulder 40 of the attached operating arm toward the left until the valve stem 28 slips over the edge of the shoulder into the depression 42. By this action pressure on the valve stem is released and the valve is urged to a closed position by means of the spring 24 together with the pressure of the liquid itself and immediately shuts off flow of liquid into the tank. By use of such an apparatus it will be impossible to fill the tank C to overflowing or in fact to fill it above the level of the inlet 70.

When it is taken into consideration that a frequent application of a liquid filling nozzle of this sort, is in filling gasoline tanks, it must be remembered that gasoline when vaporized forms an explosive mist. Under ordinary circumstances a slug of gasoline which might be drawn into the aspirating passage 69 would quickly reach the jet 60 and be blown out through the elongated outlet or throat 62 in the form of an explosive mist which would be highly dangerous. To prevent such an action the by-pass valve 74 is provided. In operation, when the suction jet action or vacuum condition has been changed by admission of liquid into the aspirating passage 69 the plunger 48 of course is immediately drawn to the left. During this motion the lug 88 on the bracket 86 is moved against the toggle arm 78, shifting it counterclockwise to a position wherein it is driven into contact with the shoul-

der 84 on the auxiliary valve stem rod whereby it drives the rod toward the left, thus opening the by-pass valve 74. When the valve has been opened the air or gas under pressure in the pipe line 58 is immediately admitted into the bore 66 of the cylinder from which it passes through the passage 64 to the outside of the base of the jet. Since the corresponding end of the passage 69 is directly opposite the passage 64 the force of the air under pressure drives it into the passage 69 and sets up a flow therein in a reverse direction. Under such conditions the full force of the air or gas pressure is directed in reverse through the passage 69 and sweeps all of the volatile combustible liquid back through it into the tank C before it is given the opportunity of being blown out by the jet in the form of a mist or even to reach the suction jet.

By this same action the air under pressure continues to flow in reverse direction through the passage 69 and in so doing acts as a scavenging agent to clean sediment or foreign particles from the passage, thus maintaining it in efficient operation, ready for the next filling.

When once the operating arm 36 has been shifted so as to release the liquid valve 22, thereby shutting off the liquid flow, the plunger 48 will be held in a position toward the left by means of a vertical edge 41 of the shoulder portion 40. Therefore, as long as the operator grasps the handle 38 against action of spring 44, the air pressure will sweep through the by-pass valve, the passages 64 and 69 and outward past the inlet 70. As soon as the handle is released the plunger will immediately be moved toward the right as viewed in Figure 1 by means of the spring 54 assisted by the pressure of air in the bore 66 of the cylinder and reset the device for the next operation. Simultaneously by motion of the plunger 48 toward the right the by-pass valve 74 is reseated.

Now assuming the liquid in the tank has reached level 90, part has been drawn into aspirating tube 69 causing the sequence of operations previously described to release the hand lever 36 from engagement with stem of valve 22 and assuming that operator holds nozzle and aspirating tube end 70 under the level and then releases the hand lever. The air pressure will then drive the hand lever and associated linkage to the right into normal operating position but with the aspirating tube opening 70 still under the liquid the mechanism will then snap to the left in a valve releasing action, tripping valve 74, releasing pressure on plunger 48 and again forcing handle and linkage to the right. This so-called motoring action would continue as long as the aspirating tube outlet 70 was immersed in liquid and due to its rapidity would cause undue wear on all the moving parts. In order to prevent this effect the latch 37 is provided on the handle engaging upon the lower edge 39 of the aperture 41 in the handle bracket 43. When the hand lever 38 and associated mechanism are moved toward normal resetting position after an interruption the hand lever being free, pressure on aspirating tube 69 will cause these members to engage and prevent further reciprocating action. When the operator removes the nozzle end from the neck of the tank and prepares to fill another tank the first action of his grasp on hand lever 38 will be to release latch 37 from the edge 39 and the hand lever will be then moved to the right a slight amount further into normal filling position.

In the modified form of my device shown in

Figure 2 there is provided a check valve at the inlet end 71 of the tube 68. The check valve comprises a casing 92 provided with an open end 93 and an inner perforated diaphragm 94. The valve itself consists of a ball 95 spring pressed by means of a rather lightweight coiled spring 96 to an outward position against the diaphragm. By use of this modified form of the device when the liquid rises to a level such as the level 90 previously indicated, the ball 95 will be impelled into a position for closing the inlet 71 either by suction pressure or may be floated into such a position so that comparatively little liquid of the usual volatile character may enter the aspirating passage 69. The employment of such a device effectively cuts off the aspirating action of the passage 69, rendering the other parts of the device operable to shut off the liquid valve while at the same time prevents the volatile liquid from being sucked through the passage and eventually expelled in the form of a dangerous mist. After the unlatching stroke of the hand lever 38 and associated mechanism, the ball 95 is returned to its normally unseated position by the reversal of air flow through aspirating tube 69.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure, or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. A nozzle device for filling containers with liquid provided with an automatic shut-off mechanism comprising a liquid valve in the nozzle device including an operating arm, a valve opening means cooperable therewith for opening the liquid valve, lever means cooperable with said valve opening means adapted to shift the valve to closed position and a pressure device coupled thereto for actuating said lever means including a passage carrying air under pressure and a branch portion positioned adjacent the nozzle outlet normally providing passage for a flow of air induced by said air pressure in a contrary direction, said outlet being subject to liquid brought into contact therewith by a rise in the liquid level in the container and operable thereby to effect a closing of the liquid valve and interrupt the flow of liquid from the nozzle.

2. A manually operated filling device including a nozzle for filling containers with liquid provided with an automatic shut-off mechanism comprising a valve in the filling device including a stem, an operating arm for opening said valve, lever means cooperable with the arm and a pressure device coupled thereto, said pressure device comprising a sealed chamber, a sliding disc therein provided with an extension connected with the lever, a conduit for gas under positive pressure communicating with the atmosphere, a branch conduit for gas connected with said chamber subjected to a negative pressure induced by passage of air through said first conduit and a second branch conduit open to the atmosphere rendering said first branch conduit normally ineffective and the disc and connected lever means inactive, said second branch conduit being provided with a portion lying adjacent the nozzle so as to be contacted by the liquid in said container when said liquid reaches a predetermined level and adapted to produce another pressure condition, said plunger and lever being adapted to be displaced under said other pressure condition to

release said valve stem and interrupt the flow of liquid from the nozzle.

3. A nozzle device for filling containers with liquid comprising a valve in the nozzle device, an operating arm therefor adapted to open the valve and a pressure operated means for automatically closing the valve, said last means including a lever cooperable with the valve, a cylinder and a plunger therein attached to the lever, a passage for a gas under pressure and a suction jet for expelling the gas therefrom, and a second passage having a portion intermediate its ends surrounding the jet in aspirating relation thereto, said passage having one end connected with the cylinder and another end positioned adjacent the outlet of said nozzle device so that the suction jet action normally induces a potential aspirating flow in the second passage inward from and divided between both ends for normally maintaining the plunger in a balanced inoperative position, the nozzle end of said passage being adapted to be obstructed by admission of container liquid thereinto whereby to cause substantially the entire aspirating potential to flow in a direction from the cylinder, said plunger being subject to displacement thereby to shift the lever to an operative position and automatically close said valve whereby the flow of liquid to the container is interrupted.

4. A manually operated nozzle device provided with an automatic shut-off mechanism for filling containers with liquid and comprising a nozzle casing and a spout therefor, a valve means in the casing normally resiliently urged to a closed position including a portion projecting outwardly therefrom, a handle adapted to depress the valve means and admit flow of liquid through the nozzle and a recess on the handle adjacent its contact with the valve means, a link pivotally securing said handle to the casing, a pressure device for operating the link comprising a cylinder and a plunger therein secured to the link, and a gas supply system including an ejector connected with the cylinder and the spout adapted to set up one pressure condition therein and adapted when the end of the passage adjacent the spout is impeded by liquid entering said end to change the pressure condition in said cylinder, said link being adapted to move in response to said change in the pressure condition and to shift the position of the handle thereby releasing said valve and stopping flow of liquid through the nozzle device.

5. A nozzle device for filling containers with liquid including a casing and a spout, a valve in the casing, actuating means therefor including an operating arm and a pressure actuated shut-off means cooperable with the valve comprising a cylinder and a plunger therein operable upon said valve to close the nozzle, a passage adjacent said cylinder terminating in a suction jet and provided with a valved by-pass connected to one end of said cylinder and held in a normally closed position, a second passage having a portion adjacent the ends positioned in aspirating relation to the jet whereby a potential flow is set up in said second passage inward from the ends, one of said ends being connected to said one end of the cylinder, the other of said ends being positioned adjacent the spout and adapted to be contacted by the liquid in said container when the level rises above the spout to substantially close said other end of the second passage to air, and a stem on said by-pass valve having a portion adapted to be shifted by movement of the

plunger to open said by-pass when the plunger is shifted and admit gas under pressure to said second passage in a direction at variance with the action of the jet and operable to force liquid from the other end of said second passage and temporarily destroy the action of said jet.

6. A nozzle device for filling containers with liquid including a casing and a spout, a valve in the casing, actuating means therefor including an operating arm and a pressure actuated shut-off means cooperable with the valve comprising a cylinder and a plunger therein operable upon said valve to close the nozzle, a passage adjacent said cylinder terminating in a jet and provided with a valved by-pass connected to one end of said cylinder and held in a normally closed position, a second passage having a portion adjacent the ends positioned in aspirating relation to the jet whereby a potential flow is set up in said second passage inward from the ends, one of said ends being connected to said one end of the cylinder, the other of said ends being positioned adjacent the spout and adapted to be contacted by the liquid in said container when the level rises above the spout to substantially close said other end of the second passage to air, and a snap acting stem on said by-pass valve including a spring pressed toggle in contact with the plunger adapted to snap the valve to open position when the plunger is shifted to active position and suddenly admit gas under pressure to said second passage in a direction at variance with the action of the jet and operable to force liquid from the other end of said second passage and temporarily destroy the action of said jet.

7. A nozzle device for filling containers with liquid including a casing and a spout, a valve in the casing, actuating means therefor including an operating arm and a pressure actuated shut-off means cooperable with the valve comprising a cylinder and a plunger therein operable through said valve to close the nozzle, a passage adjacent said cylinder terminating in a jet and provided with a valved by-pass connected to one end of said cylinder and held in a normally closed position, a second passage having a portion adjacent the ends positioned in aspirating relation to the jet whereby a potential flow is set up in said second passage inward from the ends, one of said ends being connected to said one end of the cylinder, the other of said ends being positioned adjacent the spout and adapted to be contacted by the liquid in said container when the level rises above the spout, said other end having a liquid operated check valve therein adapted to close said other end of the passage when liquid is brought into contact with said check valve in order to substantially close said other end of the second passage to air, and a stem on said by-pass valve having a portion adapted to be shifted by movement of the plunger to open said by-pass when the plunger is shifted and admit gas under pressure to said second passage in a direction at a variance with the action of the jet and operable to force liquid from the other end of said second passage and temporarily destroy the action of said jet.

8. A nozzle valve device for filling containers with liquid including a casing, a spout, a valve, and an actuating arm for the valve, an automatic shut-off device for said valve including a first passage terminating in a jet and a second passage having an intermediate portion in aspirating relation to said jet including one end operatively connected with the shut-off device

in balanced position and the other end adjacent said spout adapted to be partially filled with liquid when the level thereof rises sufficient to enter the end, and a by-pass between said passages adapted, when said other end of said second passage becomes obstructed, to deflect substantially the full pressure against said other end whereby to completely flush said end in a direction opposite to the normal flow.

9. In a nozzle device for filling containers with liquid including a casing and spout, a valve in the casing normally urged to closed position and an operating arm on the casing having an operable position in contact with the valve for opening the valve and a displaced position out of operable contact with said valve, the combination of an automatic shut-off device for the valve comprising a pressure actuated cylinder and reciprocating plunger means connected with the arm adapted to shift said arm between the operative position and the displaced position to allow shutting off of said valve, a jet device having one aspirating inlet adjacent the spout and another communicating with the cylinder for normally holding the plunger in a position, rendering said arm operative to open the valve, said jet device being adapted when the spout inlet is closed by liquid to shift the plunger and arm to displaced position to allow closing of the valve whenever the first inlet is beneath a liquid surface.

10. In a nozzle device for filling containers with volatile liquid including a casing and spout, a liquid valve in the casing and an operating arm for the valve on said casing, the combination of an automatic shut-off device for the valve comprising a pressure actuated cylinder and plunger means for shutting off said valve, a jet device for gas under pressure having a normally closed aspirating inlet passage communicating with the cylinder and a normally open aspirating inlet passage adjacent the spout adapted to be immersed in the volatile liquid when the container is full and a suction jet located intermediate said passages, said jet being operable to divide its force between said aspirating passages to maintain a balanced inoperative condition of the plunger means while the open inlet passage remains above the surface of the liquid and being operable to utilize substantially its entire force to actuate said plunger thereby closing the liquid valve when a quantity of the liquid is drawn into said open inlet passage, and a by-pass valve actuatable by the plunger upon a shift of the plunger to liquid valve closing position to admit gas into the opposite end of said open inlet passage to expel the liquid therefrom.

11. In a nozzle device for filling containers with volatile liquid including a casing and spout, a liquid valve in the casing and an operating arm for the valve on said casing, the combination of an automatic shut-off device for the valve comprising a pressure actuated cylinder and plunger means for shutting off said valve, a jet device for gas under pressure having a normally closed aspirating inlet passage communicating with the cylinder and an open aspirating inlet passage adjacent the spout adapted to be immersed in the combustible liquid when the container is full and a suction jet located intermediate said passages, said jet being operable to divide its force between said aspirating passages to maintain a balanced inoperative condition of the plunger means while the open inlet passage re-

mains above the surface of the liquid and being operable to utilize substantially its entire force to actuate said plunger thereby closing the liquid valve when a quantity of the liquid is drawn into said open inlet passage, a by-pass valve actuable by the plunger upon a shift of the plunger to liquid valve closing position to admit gas into the opposite end of said open inlet passage to expel the liquid therefrom, and a retaining device on the plunger means adapted to hold said by-pass valve open until the operating arm is released, said gas being adapted to continue passing through the inlet passage in reverse direction until the operating arm is released to thoroughly cleanse said passage and the inlet thereto.

12. A manually operated nozzle device for filling containers with liquid including a casing, a filling valve, a valve handle and automatic shut-off mechanism for the valve, said mechanism comprising a device operated by an auxiliary gas pressure and lever means connecting

said pressure device with the handle, the pressure device comprising a sealed chamber, a member mounted for movement therein having a connection with said lever means and an aspirating conduit system having passages thereof connected respectively with the source of gas pressure, the sealed chamber, the atmosphere and with an aspirating inlet secured adjacent an outlet nozzle adapted to be blocked by fluid rising in the container to a level therewith, said aspirating system being supplied with gas under a pressure adapted to hold the movable member and lever means inactive under initial conditions, and to actuate said lever and said valve under high liquid level conditions to close the valve, and a latch device including engaging elements on the handle and on the casing respectively for holding said handle in inoperative position without displacement by the aspirating system whenever the system is subjected to high liquid level conditions.

CHARLES F. WARRICK.