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FILLING NOZZLE WITH AUTOMATIC SHUT-OFF

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The present invention relates to a filling nozzle for filling a random container with liquid, the nozzle being equipped with a valve that is manually opened and automatically shut off when the level of the liquid in the container being filled reaches a given point on the nozzle.

The invention relates to a nozzle suitable for filling containers with a liquid through a bung hole or filling tube.

The invention is particularly well adapted for a filling nozzle having a high capacity, requiring that substantially the whole area of the nozzle outlet be available for the stream of liquid discharging into the container. The nozzle can be inserted into a filling opening but slightly larger than the cross section of the nozzle, it may be inserted at an angle, it need not be immersed to a substantial degree, to permit the mechanism to function.

The invention is suitable for filling closed containers having but a single opening which serves both to fill the tank with the liquid and to let the air escape. While I do not wish to limit my invention to a gasoline nozzle for filling automobile fuel tanks it is particularly well adapted for that use and the invention will be illustrated by the nozzle designed for filling such tanks.

It has a large capacity, over 12 gallons per minute, which will fill the average motor car tank in less than two minutes. The nozzle will function at various angles and there are no floats or other movable devices in the discharge tube which supply the energy for tripping the valve and which require that the nozzle be inserted far enough to be immersed for a substantial distance.

The nozzle is further differentiated from such nozzles as have been used for many years in the filling of standard containers such as barrels or bottles in that the nozzle does not seal the opening during filling and it will function equally satisfactorily if the nozzle is opened only partially.

This invention relates particularly to a nozzle in which the flow of liquid is manually controlled and regulated, and in which the flow is automatically cut off by the action of a vacuum created by the flow of the liquid. This vacuum is created by an aspirator operated by the flow of liquid, and having a Venturi seat having an annular groove at the contracted part connected to the suction passage to insure a large capacity for the air injector.

A further aspect of the invention is a Venturi seat with an annular groove at the contracted part connecting with the suction passage. This assures a large capacity of the air ejector.

Another aspect of the invention is a frictionless pressure-release neumatics so designed that a small force acting at right angles to the major stress can trip the latch against a heavy load without the complication of multiplying devices.

There may be a fire hazard resulting from spilled fuel. It is essential that the operation be dependable and positive. If, as has frequently been attempted, the nozzle is to be shut off by the action of a vacuum upon a diaphragm when the level of the liquid in the container being filled rises to the inlet of a suction tube, it is essential that the apparatus be capable of creating a high degree of suction to give such positive, prompt action.

My invention provides a much higher degree of vacuum than hitherto available to operate the nozzle. Instead of a suction of 6" of gasoline, a suction of over 25" is readily obtainable by drawing gasoline rather than air through a small orifice.

While automatic filling nozzles generally have been operated at the full rate of flow until they shut off, my invention provides a nozzle which permits manual control of the amount of valve opening and still the nozzle will shut off when the level in the tank rises to the desired point, regardless of the rate of the flow at that time. This is of great importance in filling successively various types of tanks with varying capacity and varying restrictions in their inlet pipe.

In order to function in a manner that will assure a flow through the throat at a speed high enough to assure a negative pressure under all conditions, a central flow-reducing needle has been provided. This needle moving in a manner correlated to the opening of the valve disc assures that the rate of flow through the annular section of the throat will remain reasonably constant over wide range of valve openings.

In an alternate form the cross section of the stream is varied by having a cone-shaped restricting member pushed upwards against the spring toward a conical seat by a light spring. This spring is so selected that at no flow the passage is substantially closed but as the resistance of the spring is light it will be pushed back as the volume of flow increases, thus preventing the building up of a back pressure.

In order to secure a prompt and dependable action based upon vacuum created in a space which is controlled by the shutting off of an air vent that leaks into the vacuum it is necessary...
to have air-evacuating means of large capacity functioning throughout the entire range of flow over which the device is to be used. It has hitherto been proposed to use a small side opening such as is used in Pitot tubes in a Venturi flow measuring device contacting the stream as it flows past the valve disc over the valve seat. Such devices fail to take into account that in any Venturi measuring device pressure heads without appreciable flow are created while the action in the nozzle is more nearly that of an ejector. In order to secure a large-capacity ejector a circular air groove is run around the throat of the Venturi device.

This throat is not a part of the valve disc seat but is located below the valve.

To release the main gasoline valve causing the flow to shut off by the force of a partial vacuum I provide a single bolt moving at right angles to the main line of stress directly controlled by the diaphragm in this manner. I avoid the complicated lever systems heretofore proposed, with the unreliability that comes from them.

The object of my invention is to provide a filling nozzle which will shut off automatically when the valve has been opened only part way, giving a reduced flow, as when the valve is opened wide.

A further object is to provide a filling nozzle in which the valve is controlled by a lever, one end of which is manually controlled, the other end of which is automatically released when the level of the liquid flowing through the nozzle has risen in the tank to the end of the nozzle, so that the closing of the valve may be accomplished either manually or automatically.

A further object of the invention is to provide a filling nozzle wherein the valve is controlled by an operating lever, the fulcrum of which is latched in place during operation and released only when the vacuum-operated means are made effective by the rising fluid level of the tank.

A further object of the invention is to provide a filling nozzle in which the pressure to open the valve is transmitted from a surface through two rollers to an abutment having a parallel surface with means for releasing the opening pressure quickly and easily by rolling the two rollers on each other and on the two parallel surfaces, past the end of one of the surfaces.

A further object of the invention is to provide a filling nozzle wherein a light spring determines when a latch bolt which controls the automatic shutting off of the flow shall trip, this releasing a heavy spring held under stress by the operator, which spring shall both shut off the flow and store up energy in a third spring, the object of the third spring being to restore the parts to their initial position after all action has ceased, the flow having stopped, and the hand of the operator released.

A further object of the invention is to provide a filling nozzle wherein a slide carrying the fulcrum for the hand lever is normally moved by a spring in one direction to a position where a latch will engage it, and vacuum means for withdrawing the latch against spring means tending to restore the latch when the vacuum ceases.

A further object is to provide incident to the control of an automatic shutoff nozzle by a vacuum an air ejector which remains effective over a wide range of flow.

A further object is to provide a throat below the valve seat of a nozzle designed to fill a tank, the throat being adapted to increase the velocity of flow at a partial valve opening by constricting the throat without backing up the flow at full opening.

A further object is to provide a throat below the valve seat of a filling nozzle whose effective area is varied by a needle as the valve opens and closes, to maintain a substantially constant velocity through the throat over a wide range of valve openings.

A further object is to provide a filling nozzle having a throat below the valve seat designed so that the liquid which has passed through the valve will suck out large volumes of air even at small valve openings to assure the adequate evacuation of air from the mechanism that trips the valve and shuts off the flow.

A further object is to provide a filling nozzle wherein a vacuum-operated shutoff mechanism is very reliable because the valve of air withdrawn by the suction of the stream flowing through the nozzle is kept high over a wide range of valve openings and the air drawn in is held down by a constricted inlet opening to the vacuum pipe leading to the nozzle tip.

A further object is to provide a throat below a valve with means for varying the effective area of the throat in connection with an annular groove around the throat.

A further object is to provide in a filling nozzle a constriction below the valve with straight sides for a little way, merging into an outwardly flaring cone and a conical extension to the valve disc extending down into the throat.

Figure 1 is a vertical section of a filling nozzle embodying the invention. The parts are shown in their position before the nozzle is operated.

Figure 2 is an elevation partly in section showing a modification. The parts are shown in position assumed when the valve is held open but after it has been shut off by the automatic mechanism.

Figure 3 is an end elevation, partly in section, of either the nozzle shown in Figure 1 or Figure 2.

Figure 4 is an elevation, partly in section of another modification.

Figure 5 is a chart showing the available and necessary pressure at various rates of flow through the nozzle.

Valve body 18 is threaded at / for attachment to the usual gasoline hose 46. This hose may be connected with any of the standard types of power-operated pumps. Generally a motor is started when the hose is taken from the hook of the pump and this motor builds up a gasoline pressure in hose 46 and nozzle body 18. No delivery is registered until a flow is established by the opening of the valve. Attached to the valve body 18 is a guard 2 intended to prevent the accidental operation of lever 4. Lever 4 is designed to be operated by the fingers of the hand grasping the valve body 18. A stop limiting the opening movement of lever 4, such as a slot in guard 2 is provided, the end of the slot 3, which serves as the stop. Lever 4 serves to lift valve stem 5 which carries cone 40 and valve disc 15. A nut 19 is threaded on and valve disc 15 is pinned on the stem. Valve stem 5 passes through a packing gland 8 in plug 7 with the customary wear take-
up 6. The other end of the valve body is closed by a plug 19. A spring 17 reacting against this plug 19 serves to assist the fluid pressure to push the valve disc 13 down upon its seat 14. Some distance below valve seat 14 is a contraction which brings the cone of a ring 13 forced into place against a shoulder in valve body 18.

Below the ring 13 is a space 12 which connects with an air passage 23 extending into the chamber 20 which is also contained within the valve body 18. Below the disc 13 is a constricted cylinder portion 11 below which the passage spreads out into a cone 9. Cone 10 lies within the passage. Just described leaving a limited annular opening through which the fluid coming from the valve 15 passes. The fluid emerging from the expanding cone 9 passes through the space 24, divides around a post 43 in the passage, and unites in the discharge outlet. The front face of the chamber 20 is closed off by a dikeable diaphragm 39.

This diaphragm is held in place by a retaining ring 38 which also carries ears 31. Discharge tube 25 is attached to the nozzle body to convey the fluid to the container and down through this tube extends a smaller tube 28 which is connected to chamber 20, one end, and the other end is restricted by an orifice 50 extending out through the wall of tube 25 near its outlet.

Lever 4 is pivoted at 25 on member 27 which slides in a hole in post 42. A spring 29 is pushing upwards against hub 30 of cam slotted head 32 which is pinned to the sliding member 27. This head carries an L-shaped slot 37. Through this L-shaped slot pass two rollers 34. These rollers roll on each other and on the parallel surfaces 35 of ear 31. Thus the assembly comprising pivot 25, stem 27, head 32 cannot move downwards as long as the rollers 34 are in the position shown in Figure 1. In that position any stress along the axis of stem 27 will be transmitted to the surface 35 at right angles thereto, and hence through retaining cap 38 to the body of the device.

Rollers 34 also pass through a third slot. This is a narrow slot just wide enough to allow the two rollers, and this slot is attached to a stem 31 which fits into the diaphragm 39, and is retained thereagainst by a nut. A light spring 22 tends to push diaphragm 39 and actuator 33 into the position shown in Figure 1.

In the operation of this device the parts being in the position shown in Figure 1, the operator grasps valve body 18, lifting lever 4 with his finger. Normally he will lift it until it reaches stop 3. Should this be too great a rate of flow the handle 4 will not be lifted quite so high. Pivot 25 is immovable as long as the rollers 34 in the L-shaped slot 37 in the head 32 prevent it from moving. That is as long as the rollers 34 remain in the position shown in Figure 1 where they bear against surfaces 35 in a piece attached to the body of the nozzle.

When lever 4 is lifted it will lift the valve stem 5. As valve stem 5 rises cone 10 and valve disc 15 are lifted and the valve-closing spring 17 is compressed. Fluid immediately flows through the valve between valve disc 15 and valve seat 14.

As this fluid passing through the valve reaches ring 13 some distance below the valve it passes through the annular space between cone 10 and the ring 13. Depending upon the amount that the valve is lifted the cone will open a larger or smaller area of flow between itself and the ring 13. This fluid continues past the circular opening 12. Because of the contraction described the flow in the annular space is at a rapid rate and the static pressure as it passes 12 is less than atmospheric. That creates a suction drawing air from the circular passage 12. The fluid carrying this air with it then passes through the cylindrical passage 11, losing in speed as the annular area of flow increases toward the lower end of the cone, emerging into the outer cone 9 where a further loss of speed takes place. The fluid finds its way through passage 24 around the post 43 into nozzle 26 leading to the filling tank.

The air which has been drawn from the circular passage 12 is replaced by air passing from chamber 20 through a passage 23. The vacuum which would result in space 20 is partly broken by air drawn through the small tube 28 which extends to an orifice 50, near the lower end of the nozzle. The vacuum created in space 20 thus is not sufficient to draw the diaphragm 39 inward against the light compression spring 22.

Thus air continues to pass through the line 28 into space 20, passage 23, annular passage 12 into the gasoline and is discharged with it into the gasoline tank.

This condition continues until the rise of liquid in the gasoline container being filled immerses the orifice 50. The device proceeds to draw fluid through the orifice and would continue to do so in the same manner that air was drawn through, were it not that it requires so much greater head to force the denser fluid, the liquid, through the same orifice that the air has passed through that there is an immediate rise in vacuum pressure, almost as sharp as if the opening had been sealed entirely. In a manner therefore the liquid itself forms the plug and only a few drops will actually enter the tube before the pressure has so built up that the atmosphere will push the diaphragm 39 inward against the resistance of spring 22. The diaphragm carries with it actuator 33. This actuator, it will be recalled, contains a slot which pushes against the rollers 34. These rollers are under considerable pressure but as the two rollers roll on each other and on the surface 35, only a very small pressure is required to roll them forward the rounded pole is retained thereagainst by a nut. As long as the rollers 34 remain in the position shown in Figure 1 where they bear against surfaces 35 in a piece attached to the body of the nozzle.

The flow having ceased air will no longer be drawn out of the chamber 20, the vacuum disappears and light spring 22 attempts to restore actuator 33 and rollers 34 to the position shown in Figure 1 but is unable to do so until head 32 has again been lifted.

Head 32 is lifted by the restoring spring 29 as soon as the operator removes his hand from lever 4.

Thus, once the valve has been tripped, it is necessary for the operator to remove his hand, allowing the valve to reset itself before again opening it.

A guard 38 encloses the latch mechanism. No fluid enters the latch mechanism chamber.

An alternate form is shown in Figure 2. The nozzle is shown in the condition when the operator is still holding the lever 4 up but the trip mechanism has functioned allowing the fulcrum
The vacuum summer has pushed the valve disc 15 against the seat 14, closing off the flow. In this form the valve body, 18, below the seat 14, is outward in the form of a cone 44. The air suction passage 23 extends from the wall of this cone to vacuum chamber 20. The conical opening 44 is closed by a cone-shaped plug 42 which slides loosely on stem 5 against the pressure of spring 41. When the valve is open, the fluid flowing in the manner previously described, between valve seat 14 and disc 15 pushes the plug 42 downward, allowing an annular stream to flow between the plug and cone 44. The increased rate of flow through this contracted annular section assures a negative pressure at the outlet of passage 23 and creates suction in chamber 20. The end of passage 23 may lead into an annular passage 42 in the manner shown in Figure 1 if desired. The further the valve is opened, the larger the flow, the further the plug 42 will be depressed and the larger the cross section of the annular stream passing between the plug 42 and the cone 44. Thus there is no obstruction of the free flow of fluid through the nozzle and yet the pressure is contracted as the flow decreases.

From the foregoing description it will be understood that the tripping of the latch mechanism depends on an increase of vacuum in the space 20 when the orifice 50 is immersed in the liquid. The latch mechanism must not operate under the low vacuum developed when air is being drawn through orifice 50, yet it must trip at the vacuum developed when the liquid attempts to enter the orifice. The low vacuum at a high rate of gasoline flow through the nozzle must still be below the tripping point of the latch mechanism or else the valve will close before the orifice 50 has been immersed. On the other hand the vacuum developed when orifice 50 is immersed in the liquid must be sufficiently high to operate the latch mechanism even at low rates of flow through the nozzle assembly.

The purpose of many of the features of the invention described has been to secure such positive operation over a considerable range of discharge by securing a well defined, definite, spread before the suction is cut off by the latch mechanism or else the vacuum developed when the orifice is open to the air and when it is immersed in the liquid. If the light spring 22 is designed to rest the lower two of these pressures, exerted when the orifice is not immersed, the variations in these two pressures due to flow must not be so great that under some conditions of flow the pressure with the orifice in air approaches the vacuum pressure under other conditions of flow when the orifice is immersed in the liquid.

The refinements shown might permit this were it not for the necessity of maintaining the nozzle compact. This creates various flow losses that introduce a factor dependent upon the rate of flow. In Figure 5 the vertical ordinates 52 represent the vacuum pressure measured in inches of water. The horizontal abscissa, 53, represents the rate of flow expressed in gallons per minute. Experience has shown that for any particular nozzle, two curves 54, 55, may be drawn. Curve 54 indicates that in this chamber the vacuum increases somewhat with the increase in the rate of flow when the orifice is open. Curve 55 shows similarly that the suction on the diaphragm, expressed in inches of water, is always higher when the suction orifice is closed by the fluid in which the nozzle is immersed but that it also becomes larger as the rate of flow increases. By varying the proportions of the nozzle, curves 54, 55, may be changed in direction: they may even slope to the opposite direction.

If a horizontal line 58 be drawn to represent the pressure required upon the diaphragm to actuate the tripping mechanism it may come close to, or even intersect, lines 55, or 54. This indicates that at a very low flow the suction may not be sufficient to positively overcome the light spring 22 even when the container is full. At a higher flow the amount of suction generated even with the orifice open may suffice to shut off the flow before the tank is full. To prevent unreliability which would result therefore, the pressure required to shut off the valve may be modified to also change with the rate of flow so that it will be modified to conform to a line such as 57 whose ordinates will always lie intermediate between the pressure exerted on the diaphragm with the orifice open and with it immersed.

The method of accomplishing this is illustrated in Figure 4 where 60 represents a modification of the L-shaped slot in head 32. Portion 64 of the short leg of the L-shaped slot 30 against which the stacked rollers 34 rest may be inclined so that there is a horizontal component which will assist or oppose the light spring 22 which tends to prevent the movement of the diaphragm 59. For a nozzle having the characteristics shown in the chart, Figure 5, cam 64 is sloped to create additional resistance to the movement of rollers 34 and the latch. It should be noted that the cam 64 is not the equivalent of sloping a latch bolt face to make it more sensitive by overcoming friction. For the particular nozzle illustrated, after going to the pains of securing a frictionless latch which employs rollers, 34, we actually create a horizontal component that resists the movement of the latch. This component is a function of the pressure of spring 17 on valve disc 15. This pressure will vary with the increase of valve opening—the higher the pressure in the spring 17 the harder surface 54 will be forced against the rollers 34. It is evident that, depending on the shape of the surface 64, which may be tilted one way or the other, the amount of corrective force that aids or resists spring 22 may vary with the higher pressure on spring 17 incident to a wider or narrower opening of the valve and the line 57 may be inclined at such an angle on the chart 5 as to place all parts of line 57 well intermediate curves 55 and 56.

This invention in its broader aspects is not limited to the specific mechanism shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

I claim:
1. A device for insertion into a container to be filled with liquid comprising in combination a valve body having a fluid passage therein, a self closing valve in said body, manual means for opening said valve including a disengageable means for manually operating said valve even when said manual means is held actuated, a sliding member for holding said disengageable means in valve actuating position and having a shoulder thereon transverse to the direction of sliding, a restraining member adapted to engage
said shoulder to hold said sliding member in valve actuable position, an actuator for moving said restraining member a diaphragm for actuating said actuator a chamber in the valve body closed by the diaphragm, a connection from the chamber to the fluid passage of liquid through said valve will create suction on said diaphragm, and an air inlet located near the nozzle outlet and connected to relieve the suction on said diaphragm.

A device in accordance with claim 1 in which the valve body has a shoulder opposite to the shoulder on said sliding member and the restraining member comprises a pair of rollers between said shoulders to restrain the movement of said sliding member and one of said shoulders is provided with a recess to receive said rollers when said actuator has been moved laterally by said diaphragm, to permit the sliding of said member, to allow said valve to close.

3. In a device for insertion into a container to be filled with liquid comprising, in combination, a valve body, a valve within the body controlling the flow of liquid through the body, a spring tending to close the valve, manual means for opening the valve against the spring, means for releasing the restraint upon the valve while the manual means are still actuated, a valve stem having fluid passage means which is stressed by the expansion of the valve closing spring, a bolt normally holding the releasing means which may be moved against its own restoring spring, so arranged that upon the release of the hand from the manual means the stressed restoring spring will return the release means to initial position and allow the bolt—restoring spring to restore the bolt to its initial position.

4. A device for insertion into a container to be filled with liquid comprising, in combination, a valve body having a valve seat, a self-closing valve in the valve body, means for manually holding the valve open, means for disabling the manual means for holding the valve open, means to set the disabling means in motion, including a device having an air inlet located near the nozzle outlet, in position to be submerged when the container is filled, the body having a contracted flow section formed by the valve seat and an expanding section beyond the valve seat, there being provided a fluid passage means arranged to be acted upon by liquid as it flows through the expanding section, to draw air from the air inlet into the stream of liquid passing through the expanding section and means constructed to vary the area of the expanding section with the volume of fluid flowing at any given time so as to assure a relatively uniform suction head throughout the operating range of flow through the device.

5. A device for insertion into a container to be filled with liquid comprising, in combination a valve body, having a discharge nozzle, containing an air chamber, and a movable diaphragm comprising one wall of said chamber, a self-closing control valve in the valve body, a lever pivoted about a fulcrum, and adapted, by manual operation about the fulcrum to unseat the valve, mechanical means for restraining the movement of the fulcrum of the lever, means for connecting the diaphragm to the restraining means for holding the latter in restraining position, there being a passage way in the valve body connedted to said air chamber and constructed and arranged to be acted upon by liquid passing through the device to create a suction in said air chamber, and a device having an air inlet adjacent to the outlet end of said discharge nozzle and connected to the air chamber, and constructed and arranged to admit air to said air chamber from said air inlet.

6. A device for insertion into a container to be filled with liquid comprising, in combination a valve body having a fluid passage and a nozzle a self closing control valve having a stem in the body, a movable stud connected to said body, a manually operable lever pivoted on said stud and engaging said stem whereby it may fulcrum either on said stud or on said stem, construction means for manually holding the valve in said fixed position, a chamber closed by a diaphragm, a diaphragm actuated means for releasing said stud connection, the parts being so constructed and arranged that said valve may close on release of said stud connection, a restricted air inlet adjacent to the liquid discharge end of the nozzle, and connection whereby the flow of liquid through said fluid passage will draw air through said restricted inlet and from the chamber, into the fluid passage, and said suction is increased to operate said diaphragm when said air inlet is closed by immersion.

7. A device for insertion into a container to be filled with liquid comprising, in combination, a valve body, a self-closing valve in the body, a fulcrum support movable relative to the body, a manually operable valve control lever which fulcrums on the fulcrum support, said fulcrum support being spring urged in one direction and normally held in a fixed position by an anti-friction latch comprising an abutment on the device, having a track, parallel stacked rollers constructed and arranged to be interposed between and to transmit pressure in succession between the track on the fulcrum support and the track on the abutment, means for rolling the parallel rollers upon each other and upon the tracks, to release the latch.

8. A device of the character described adapted for use with a vacuum operated mechanism comprising a valve chamber, a valve cooperating with said chamber, a valve cooperating with said seat, a throat positioned to receive the liquid as it passes from the passage between said valve and valve seat and arranged to form a discharge channel of expanding area and including means to vary the discharge channel area so that the volume of discharge varies, said throat having an annular groove in its surface in position to be acted upon by the passage of liquid through said valve to create a suction in said groove, and an air passage leading from said channel for connection to the vacuum operated mechanism.

9. A device of the character described adapted for use with a vacuum operated mechanism comprising in combination, a casing, a valve and valve seat within the casing forming a throat, a cylindrical continuation of said throat beyond said valve seat, an expanding conical section of said throat beyond said cylindrical section, giving a greater cross sectional area at the nozzle outlet than the effective area of the valve, a valve stem for said valve extending through said throat and having a conical portion thereon constructed and arranged to vary the throat area approximately in proportion to the volume flowings, thus giving an approximately constant velocity through the nozzle being an annular groove within said throat below said valve seat in position to be subjected to a suction effect by the flow of liquid through
the device, and a passage leading from said channel for connection to the vacuum operated mechanism.

10. A device of the character described adapted for use with a vacuum operated mechanism, comprising in combination a valve and valve seat within the casing, a stem for raising the valve seat to a varying degree, said device having a throat below the valve seat comprising a contracted portion below the valve seat, a cylindrical section and an expanding section below the cylindrical section, said cylindrical section having an annular groove around its upper end, whereby it is acted upon by liquid flowing through the device to create a suction effect. Said valve stem having an inverted conical section below the valve extending axially downward through the contracted throat so that the annular area between the valve body and the said conical section decreases to the end of the said contracted portion, and as it comes opposite the groove, increases during the length of the cylindrical section and further increases through the expanding section.

11. A device for insertion into a container to be filled with liquid comprising in combination, a valve body containing a fluid passage, a valve seat therein, a valve disc, a spring within the body adapted to seat the valve disc on the valve seat, a stem for unseating the valve disc, a slide movable within the valve body carrying a lever support, a lever supported in the slide which, when manually operated, will lift the valve stem unseating the valve disc, a catch holding the slide against movement, a diaphragm attached to the catch, a chamber in the valve body closed by the diaphragm, a passage leading from the chamber to the fluid passage through which air is drawn by the fluid, creating a vacuum in the chamber, an air line extending from the chamber to the atmosphere proximate to the end of the nozzle through which air is drawn to reduce the vacuum in the chamber until the liquid in the container rises to reduce the flow through the tube, and spring means to restore the latch when the manually operated lever is released.

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