Aug. 17, 1954 E. J. SLATTERY 2,686,626

AUTOMATIC FILLING NOZZLE

Filed Oct. 29, 1951 3 Sheets-Sheet 1

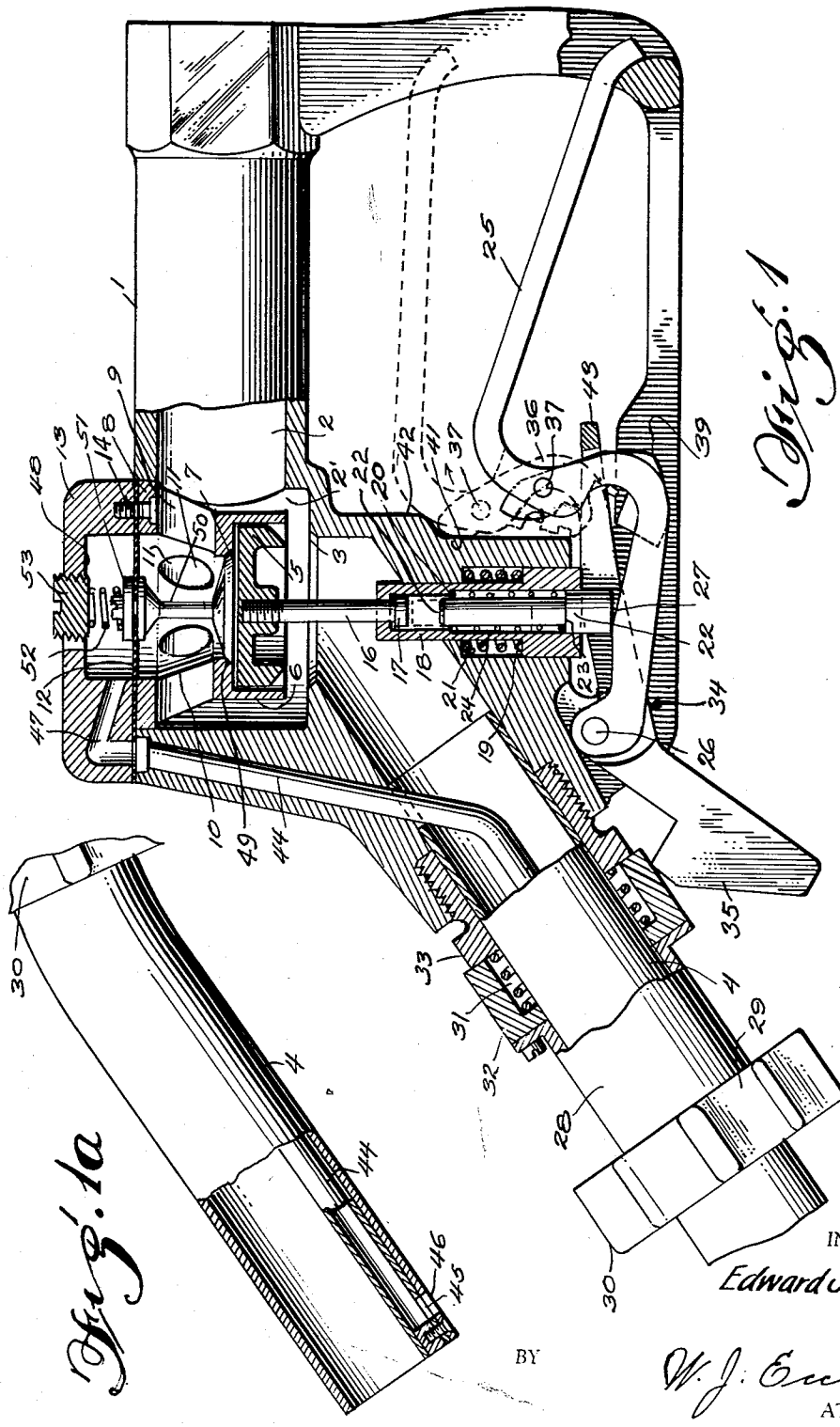

Fig. 1

Fig. 1a

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Fig. 2

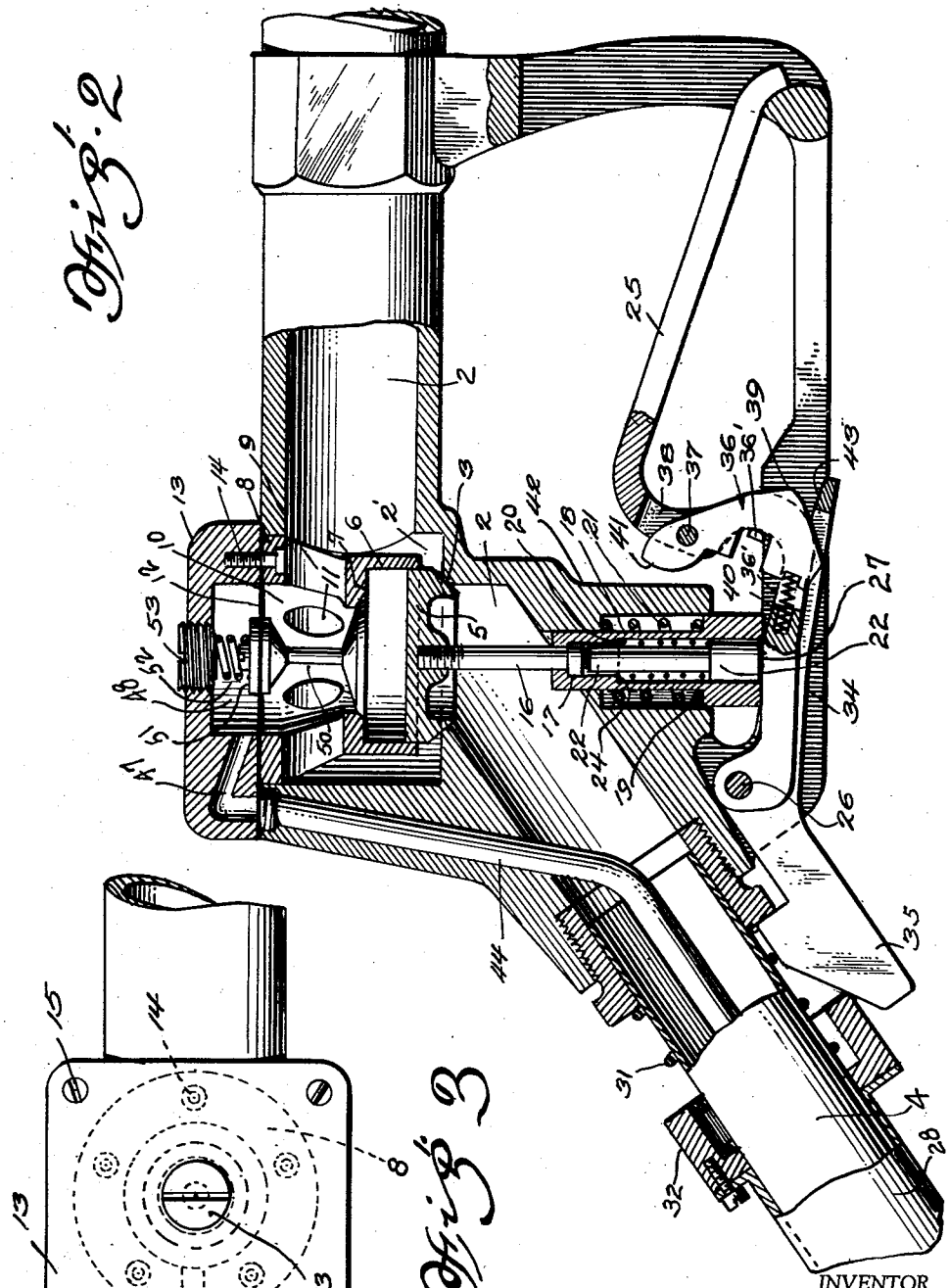

Fig. 3

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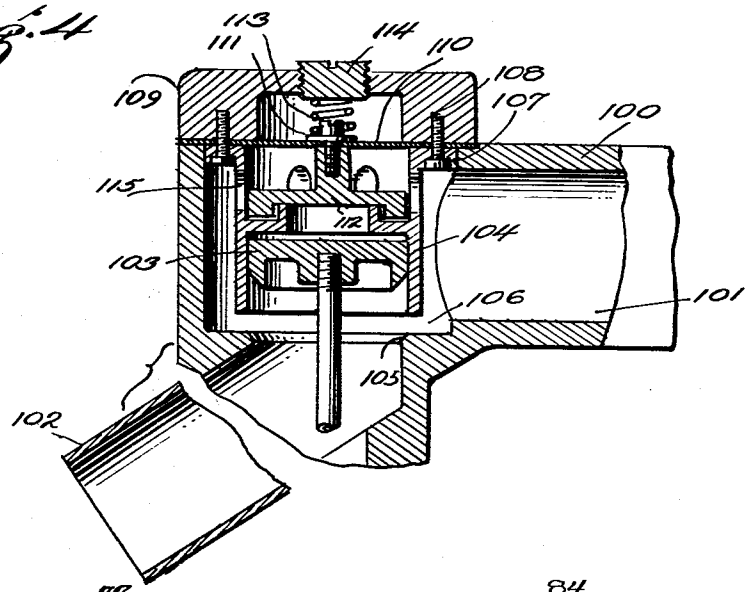
Fig. 4



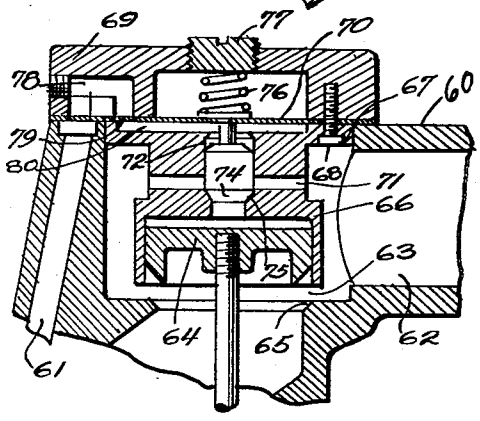


Fig. 5

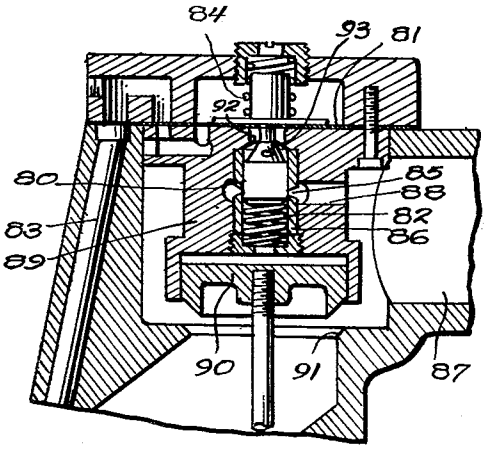


Fig. 6

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UNITED STATES PATENT OFFICE

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AUTOMATIC FILLING NOZZLE

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Application October 29, 1951, Serial No. 253,746

12 Claims. (Cl. 226—127)

(Granted under Title 35, U. S. Code (1952), sec. 266)

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The invention described herein, if patented, may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to automatic nozzles for dispensing gasoline or other liquid, and has for its primary object to provide a filling nozzle which is fully automatic, that is to say, one which is automatically opened when placed in the neck of a container or the like, automatically closed when removed from the container or the like, is automatically closed when the container is approximately full, and yet which may be also manually operated in the conventional manner or semi-automatically operated, as desired.

Another object of the invention consists in the construction of a nozzle having an automatic shut-off valve provided with a hydrodynamic latch which is hydraulically operated.

A further object of the invention resides in the construction of an automatic nozzle of simple design and relatively few parts, and which is so constructed that failure of its functions is reduced to a minimum.

Another object of the invention consists in providing an automatic nozzle which is so designed that failure of the working parts will cause the valve to close so as to cut off the flow of liquid through the nozzle, thereby preventing liability of fires, explosions, etc.; in other words, if the nozzle fails it will "fail safe."

Another object of the invention consists in providing an automatic nozzle which is fully open at its discharge end so that it may be of sufficiently small diameter to permit its insertion into containers having narrow necks.

A still further object of the invention resides in the provision of an automatic nozzle which is so constructed that it will not restrict the flow of fluid below that of the input line and which will not allow air to enter the line or nozzle.

Other objects and advantages of the invention will be apparent from the following description when taken in connection with the accompanying drawings, in which,

Figure 1 is a side elevational view of the filling nozzle with parts broken away and showing the valve in open position;

Figure 1(*a*) is a side elevational view partly in section showing the free end of the discharge tube and a part of the slidable sleeve for automatically opening the valve;

Figure 2 is a view similar to Figure 1 but showing the parts in closed or inoperative position;

Figure 3 is a top plan view of a portion of the nozzle as shown in Figures 1 and 2;

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Figure 4 is a fragmentary view of a modified form of nozzle so constructed as to eliminate the need for a sensing tube;

Figures 5 and 6 are fragmentary sectional views through the closure valve and related parts of two different forms of automatic nozzles in which a sensing tube is employed.

Referring to the drawings in greater detail and particularly to Figures 1, 2 and 3 the numeral 1 indicates the automatic nozzle generally, and which is provided with a longitudinal passage 2 extending therethrough and provided with a valve seat 3. The passage 2 through the body of the nozzle opens into a discharge tube 4 which is intended to be projected into a container or tank to be filled with liquid from a source with which the nozzle is connected.

The valve for cooperating with the valve seat 3 is a reciprocating valve preferably formed of plastic and indicated by the numeral 5. This valve 5 is reciprocably mounted in an inverted cup or cage 6 which is open at its upper and lower ends and is provided with a valve seat 7 for cooperation with a pilot valve to be later described. This cup 6 serves as a vacuum chamber in temporarily maintaining the valve in open position. The lower edge of the cup is spaced slightly above the plane of the valve seat 3 to provide a relatively narrow annular passageway 2' for a purpose to be later described. The inverted cup 6 may be integrally formed with and depends from a ring 8 which is disposed within an opening 9 formed in the top of the nozzle. The ring 8 and cup 6 may be connected by a plurality of more or less vertically disposed arms or by a continuous member such as the element 10 provided with openings 11 for the passage of liquid to the upper surface of the pilot valve.

Extending across the top of the ring 8 is a flexible diaphragm 12 formed of any suitable material and secured to an outer inverted cup 13 by means of screws 14. This diaphragm extends beyond the periphery of the ring 8 and may act as a seal between the inverted cup 13 and the body 1 of the nozzle when the cup 13 is secured in position to clamp the diaphragm in place as by means of screws 15.

The valve body 5 is threaded or otherwise connected to a valve stem 16 which depends from the valve 5 and is provided on its lower end with a head 17 reciprocably mounted in a sleeve 18 slidably mounted in the lower portion of the body of the nozzle. The sleeve 18 is provided on its exterior surface with a cutaway portion to provide an external shoulder 19 and on its interior surface with a cutaway portion to provide a

shoulder 20. The shoulder 19 cooperates with a coil spring 21 which at its upper end is seated against the body of the nozzle and serves to depress the sleeve 18 downwardly against an operating dog as hereinafter referred to in more detail. The lower end of the valve stem 16 passes through a constricted opening in the upper end of the sleeve 18 and the inner surface of the upper wall of the sleeve cooperates with the head 17 to normally draw the valve 5 downwardly onto its seat 3. The valve 5 may be mechanically raised from its seat by means of a plunger 22 reciprocably mounted within the sleeve 18 and provided with a shoulder 23 against which is seated a coil spring 24 which abuts at its upper end against the internal shoulder 20 heretofore mentioned.

If it is desired to open the valve manually a handle 25 is provided and is pivoted to the body of the nozzle as indicated by the numeral 26. This handle is provided with a bearing portion 27 for cooperation with the lower end of the plunger 22 so as to raise it and thereby raise the valve stem 16 and valve 5 to open the passage through the nozzle. It should be noted also that the handle 25 also bears against the lower end of the sleeve 18, and when the sleeve is raised by the operation of the handle the pressure of spring 21 is removed from the valve stem 16 and of the valve 5. In this operation it should also be noted that there is a lost motion connection between the plunger 22 and the valve stem 16 so that when the handle 25 is released and returned to its normal position the valve may remain open while the plunger 22 descends with the handle due to the operation of the spring 24.

As heretofore mentioned the nozzle disclosed herein may be opened automatically as the discharge tube 4 is inserted in the neck of a container, tank or the like. To this end a sleeve 28 is slidably mounted on the exterior of the discharge tube 4 and at its lower end has secured an external ring 29 provided with radiating fins 30 adapted to engage the neck of the container and push the sleeve upwardly along the discharge tube 4 against pressure of a coil spring 31. This spring 31 is seated at its lower end in an annular pocket provided in a ring 32 fixed to the upper end of the sleeve, and has its upper end in engagement with the threaded fixture 33 secured in the body of the nozzle.

The ring 32 fixed to the upper end of the slidable sleeve 28 serves as a cam to swing the operating dog 34 about its pivot which is the pin 26 on which the handle 25 is also pivoted. The dog 34 is provided with a sloped surface 35 against which the ring 32 engages to swing the dog about its pivot 26, and the portion of the dog beyond the pivot 26 is bifurcated so as to permit it to rise upwardly without interfering with the handle 25 or the plunger 22 which latter serves to open the valve 5. In order that the valve may be opened when the discharge tube 4 is passed into the container to be filled, a pivoted latch 36 is connected to the handle 25 as indicated by the numeral 37. This latch is mounted in an elongated slot 38 formed in the body of the handle. The latch is provided with a shoulder 39 adjacent its lower end, and this shoulder normally extends beyond the body of the handle by reason of the pressure of a spring 40 which has one end in engagement with the lower end of the latch and its opposite end seated in a recess formed in the adjacent portion of the handle 25. The latch is provided with a limit stop 36' which co-

operates with the handle 25 to limit the outward movement of the shoulder 39. The upper end of the latch is provided with a camming portion 41 extending beyond the pivot point 37 and adapted to contact the body portion 42 of the nozzle when the handle 25 is lifted by reason of a crossbar 43 on the free end of the dog engaging the shoulder 39 on the latch, as clearly indicated in Figure 1. When the cam surface 41 engages the part 42 of the nozzle the latch 36 is swung in a clockwise direction against the pressure of spring 40 and thereby disengages its shoulder 39 from the crossbar 43 thus allowing the handle 25 to return to its normal position as shown in full lines in Figure 1. This return of the operating handle 25 to its lowermost position permits the valve operating plunger 22 to return to its inoperative position by reason of the pressure of spring 24 thereby disengaging the head 17 of the valve stem 16 so that the valve 5 would be free to return to its closed position except for the fact that the valve will be retained in its open position by reason of the hydrodynamic latch hereinafter referred to. It should be noted in this connection that while the handle 25 returns to its normal position the operating dog 34 is still retained in its uppermost position because its cam portion 35 is still engaged by the operating ring 32, and the sleeve 18 is still retained in its uppermost position due to the fact that it is supported on the arms of the dog 34 so that the valve stem is relieved of the closing pressure which would otherwise be exerted by the spring 21.

In order to provide for the automatic closing of the valve 5 after the liquid in a container being filled has reached a pre-determined level a sensing tube 44 is positioned on the interior of the discharge tube 4 and is provided with an outlet 45 communicating with an outlet aperture 46 formed adjacent the lower end of the tube 4. This sensing tube 44 extends upwardly through the discharge tube 4 and its upper end is positioned in the body of the nozzle 1 and opens into a passage 47 formed in the body of the inverted cup 13 which is secured on the outer face of the nozzle body for clamping the diaphragm 12 in position and suspending the inverted cup 6 in the passageway of the nozzle. The passage 47 opens into the chamber 48 of cup 13 so as to apply the pressure passing up through the tube 44 onto the upper surface of the diaphragm 12.

The pilot valve heretofore referred to generally is indicated by the numeral 49 and is provided with a stem 50 which is secured to the center of the diaphragm 12 by the nut 51. A spring 52 has its lower end seated on the flanged nut 51 and its upper end in engagement with a threaded plug 53 so that the pressure on the spring 52 and diaphragm 12 may be suitably adjusted to normally equalize the pressures on both sides of the diaphragm. When the liquid in the container reaches the outlets 45, 46 of the sensing tube 44 and discharge tube 4 the liquid will pass into the tube 44 and create a pressure therein above atmospheric, and this pressure passes through the passage 47 into the chamber 48 and onto the upper surface of the diaphragm 12. This abnormal pressure depresses the diaphragm and thereby opens the pilot valve 49 thus admitting liquid onto the upper surface of the valve 5. In this connection it should be noted that the liquid passing through the passageway 2 must pass through the narrow annular passage 2'

formed between the lower end of the inverted cup or cage 6 and the body of the nozzle thereby producing a Venturi effect and evacuating air from about the periphery of the valve 5 and the interior of the cup 6 which is sealed at its upper end by the engagement of the pilot valve 49 with its seat 7. It is the vacuum thus created by this Venturi effect which maintains the valve in open position after the valve-operating handle 25 has been released and moved to its lower position by its own weight and because of the pressure of the spring-pressed plunger 22 against the bearing portion 27 of the handle.

In the operation of the device as a fully automatic nozzle the discharge tube 4 is inserted into the neck of the container to be filled and this operation forces the sleeve 28 upwardly due to the engagement of the fins 30 against the neck of the container. This movement of the sleeve 28 and its ring 32 causes the latter to engage the cam surface 35 of the operating dog 34 so as to swing the latter in a counterclockwise direction thereby causing the bar 43 to engage the projection 39 of latch 36 so as to raise the handle 25 together with the sleeve 18 and the plunger 22. The plunger 22 in turn travels through its lost motion connection with the valve stem 16 and eventually engages the head 17 and lifts the valve 5 to its open position as shown in Figure 1. In this movement of the handle 25 the cam surface 41 of the latch 36 engages part 42 of the body of the nozzle so as to disengage its shoulder 39 from the crossbar 43 on operating dog 34 and permits the handle to return to its normal position through the medium of gravity and the pressure of spring-pressed plunger 22. The sleeve 18, however, has its bearing on the arms of the operating dog 34, and consequently the sleeve remains in its elevated position, and there is no downward pressure on the head 17 of the valve stem 16 during this phase of the operation. When the liquid reaches the lower end of the discharge tube 4 and passes into the sensing tube 44 the increased pressure created in this tube passes into the chamber 48 of the inverted cup 13 as heretofore described, and this pressure causes the diaphragm 12 to be biased downwardly to open the pilot valve 49. Upon this movement of the valve 49 the liquid will pass onto the top of valve 5 thereby breaking the vacuum formed by the Venturi action of the liquid passing through the annular passage 2' and permit the valve 5 to descend upon its seat by the action of gravity and normal atmospheric pressure. When the nozzle is removed from the container being filled the pressure of spring 31 will cause the sleeve 28 to slide downwardly along the tube 4 and thereby remove cam ring 32 from engagement with the cam portion 35 of the operating dog 34 which latter is returned to its normal position partly by gravity and partly by the pressure of spring-pressed plunger 18 on the upper surface of that portion of the operating dog to the right of its pivot point 26.

The foregoing operation and description of the nozzle relates to its use when being used as fully automatic. It is to be understood, however, that the nozzle may be operated as only semi-automatic in which instance there would be no need for the latch 36. In this semi-automatic operation the attendant will raise the handle 25 to open the valve 5, as he grasps the nozzle in the usual manner; he may thereafter, however, release the handle 25 so that it will return to normal position inasmuch as the vacuum created in the cup 6 by the Venturi action will hold the valve in open position and the dog 34 will maintain the sleeve 18 in its elevated position to eliminate the closing action of the spring 21 on the sleeve 18, head 17 and valve stem 16. Also, the nozzle may be operated as fully manual by inserting the discharge tube 4 only part way into the neck of the container being filled so as to avoid operation of the dog 34, and then lifting the handle 25.

The form of the invention shown in Figure 5 is quite similar to that shown in Figures 1 and 2 and will therefore be described only as to the structural differences from that shown in the first form of the invention. In Figure 5 the nozzle is indicated generally by the numeral 60, the sensing tube by the numeral 61, the passage through the nozzle by the numeral 62 and the Venturi passage by the numeral 63.

The valve which is substantially identical with that shown in the earlier form of the invention is indicated by the numeral 64 and cooperates with valve seat 65 which is located in the passageway 62. The inverted cup 66 forms a guideway for the reciprocating valve 64 and is secured in position in the opening 67 in the top of the nozzle by means of screws 68 threaded into the inverted cup 69 mounted exterior of the nozzle body and serving to clamp the diaphragm 70 in position.

In this form of the invention the upper portion of the inverted cup is of solid formation except for the radial passageways 71 which admit liquid into the cylinder 72 provided with the vertically reciprocable valve body or piston 73. This element 73 is provided with a tapered seat 74 for cooperation with valve seat 75 formed in the body of the cup just below the passageways 71. The valve 73 is attached to the diaphragm 70 and a spring 76 has one end in contact with the diaphragm, while its opposite end engages an adjusting plug 77 whereby the diaphragm may be properly balanced.

The sensing tube 61 in the form of the invention now being described communicates with a passage 78 in the body of the cup 69, and this passageway communicates with an aperture 79 in the diaphragm 70, which in turn communicates with the opening 80 provided in the upper end of the cup or spider 66. By this arrangement it will be noted that when liquid enters the lower end of the sensing tube 61 the pressure created thereby will be transmitted to the underside of the diaphragm 70. This increase in pressure on the underside of the diaphragm overcomes the pressure of the springs 76 and the diaphragm is flexed upwardly and draws with it the valve body or piston 73, thereby uncovering the inner ends of the passages 71 in the cup 66 and permitting liquid to pass from the passageway 62 in the nozzle and thence to the upper side of the valve 64 causing it to descend onto its seat 65. Here again the pressure in the sensing tube causes the opening of the pilot valve or piston 73 thereby breaking the vacuum formed in the inverted cup, and closing the valve 64 by hydraulic action.

The form of the invention shown in Figure 6 is substantially identical with that shown in Figure 5, except for the fact that the pilot valve or plunger 80 is spring-pressed upwardly against the diaphragm 81 instead of being permanently connected thereto as in the form shown in Figure 5. The spring for biasing the pilot valve upwardly against the diaphragm is indicated by the numeral 82, and when the pressure is increased in

the sensing tube 83 the diaphragm is flexed upwardly against the pressure of spring 84, thus allowing spring 82 to raise the valve 80 to expose the apertures 85 in the sleeve 86, which serves to guide the pilot valve, and permit liquid to pass from the passageway 87 of the nozzle into the passage 88 formed in the body of the inverted cup 89 and pass downwardly onto the top of the reciprocating control valve 90 to hydraulically force the same onto its seat 91. In order to prevent the escape of liquid from the upper end of the guide sleeve 86, a flexible diaphragm 92 is secured to the upper end of the sleeve and encompasses the upper end of the valve body 80. Also, in order to avoid the formation of an air lock or the like in the upper end of the guide sleeve 86, the valve body 80 is provided with one or more longitudinally extending passageways 93 to permit the escape of fluid from above the valve body into the interior of the nozzle. In other respects the operation of this form of the invention is substantially identical with that shown in Figure 5.

The form of the invention shown in Figure 4 while a fully automatic, semi-automatic or manually operated type, is nevertheless somewhat different from the several forms of the invention heretofore described, in that a sensing tube is unnecessary to its successful operation. In this form the nozzle is indicated generally by the numeral 100 and is provided with the passageway 101 communicating with the discharge nozzle 102. The inverted cup or cage which encloses and guides the shut off valve 103 is designated by the numeral 104 and is spaced slightly above the valve seat 105, so as to provide the heretofore mentioned Venturi effect as the liquid is discharged through the nozzle. This annular passageway is indicated by the numeral 106.

The cage 104, which includes the inverted cup for the valve 103, is secured in the opening 107 in the top of the nozzle by means of screw bolts 108 threaded into the inverted cup 109 on the exterior of the nozzle, and between the upper end of the cage 104 and the lower edge of the cup 109 the flexible diaphragm 110 is clamped in position. Secured to the underside of the diaphragm 110 as by means of screw bolt 111 is a pilot valve 112, the diaphragm is balanced by means of a spring 113 and the adjustable plug 114.

The cage 104 is provided adjacent its upper end with a plurality of openings or passageways 115 which permit the flow of liquid into the space between the pilot valve and the diaphragm 110. In this particular form of the invention the Venturi effect is present when the nozzle is in operation, and the valve 103 having been once raised off of its seat in any of the various manners heretofore described is held in open position by the vacuum created in the lower or cup portion of cage 104. When, however, the liquid in the container being filled rises above the lower end of the discharge tube 102, a back pressure is created in the passageway 101 of the nozzle and thereby increases the pressure on the lower side of the diaphragm 114, due to the fact that the pressure operates on a greater area on the underside of the diaphragm than it does on the pilot valve 112, thus causing the valve to open and permitting liquid to pass onto the top of the valve 103 and break the vacuum which was sustaining the valve in open position and allowing the same to close.

From the foregoing description taken in connection with the attached drawings, it will be noted that I have devised a filling nozzle of rather simple construction which may be operated as fully automatic, semi-automatic or manually, and in which the control valve is sustained in open position by a vacuum which is automatically broken when the liquid in the container being filled reaches a predetermined level.

In accordance with the patent statutes, I have described what I now consider to be the preferred forms of the filling nozzle, but since various changes may be made in structural details without departing from the essence of the invention, it is intended that all such changes be included within the scope of the appended claims.

I claim:

1. An automatic filling nozzle comprising a casing having a passage therethrough provided with a valve seat, a discharge tube communicating with one end of the passage, an inverted cup provided with a passage therethrough and spaced slightly above the valve seat to provide a Venturi effect, a reciprocably-mounted valve positioned in the cup for cooperation with the valve seat, means for opening the valve and releasing the same, said valve being maintained in open position by a vacuum formed by the Venturi effect, and means for automatically breaking the vacuum when a container is filled to a predetermined level.

2. An automatic filling nozzle comprising a casing having a passage therethrough provided with a valve seat, a discharge tube communicating with one end of the passage, an inverted cup provided with a passage therethrough,, a reciprocably-mounted valve positioned in the cup for cooperation with the valve seat, said cup being spaced slightly above the valve seat to provide a Venturi effect to maintain the valve open by the vacuum produced by the venturi once the valve is opened, and a pilot valve for breaking said vacuum under certain conditions.

3. An automatic filling nozzle comprising a casing having a passage therethrough provided with a valve seat, a discharge tube communicating with one end of said passage, an inverted cup provided with a passage therethrough, a reciprocably-mounted valve positioned in the cup for cooperation with the valve seat, said cup being spaced slightly above the valve seat to provide a Venturi effect to maintain the valve open by the vacuum produced by the venturi once the valve is opened, lost-motion means for opening the valve, and means for automatically breaking the vacuum when a container is filled to a predetermined level, said means including a pilot valve for controlling the flow of liquid to the upper face of the first-mentioned valve.

4. An automatic filling nozzle comprising a casing having a passage therethrough provided with a valve seat, a discharge tube communicating with one end of said passage, an inverted cup provided with a passage therethrough, a reciprocably-mounted valve positioned in the cup for cooperation with the valve seat, said cup being spaced slightly above the valve seat to provide a Venturi effect to maintain the valve open by the vacuum produced by the venturi once the valve is opened, lost-motion means for opening the valve, and means including a diaphragm controlled pilot valve for controlling the flow of liquid to the upper face of the first-mentioned valve.

5. An automatic filling nozzle comprising a casing having a passage therethrough provided with a valve seat, a discharge tube communicating with one end of said passage, an inverted

cup provided with a passage therethrough, a reciprocably-mounted valve positioned in the cup for cooperation with the valve seat, said cup being spaced slightly above the valve seat to provide a Venturi effect to maintain the valve open by the vacuum produced by the venturi once the valve is opened, lost-motion means for opening the valve, means including a diaphragm controlled pilot valve for controlling the flow of liquid to the upper face of the first-mentioned valve, and a sensing tube having one end positioned adjacent the outer end of the discharge tube and the other end communicating with a side of the diaphragm.

6. An automatic filling nozzle comprising a casing having a passage therethrough provided with a valve seat, a discharge tube communicating with one end of said passage, an inverted cup provided with a passage therethrough, a reciprocably-mounted valve positioned in the cup for cooperation with the valve seat, said cup being spaced slightly above the valve seat to provide a Venturi effect to maintain the valve open by the vacuum produced by the venturi once the valve is opened, lost-motion means for opening the valve, means for automatically breaking the vacuum when a container is filled to a predetermined level, said means including a pilot valve for controlling the flow of liquid to the upper face of the first-mentioned valve, and means supplementing the pressure on one side of the diaphragm.

7. An automatic filling nozzle comprising a casing having a passage therethrough provided with a valve seat, a valve therefor, a discharge tube communicating with one end of the passage, an inverted open-ended cup spaced slightly above the valve seat to provide a Venturi effect to maintain the valve open by the vacuum produced by the venturi once the valve is opened, a valve seat surrounding the opening in the inverted cup and extending upwardly therefrom, a pilot valve normally pressed downwardly onto the seat with a portion of the valve extended outwardly beyond the valve seat, said nozzle provided with one or more passageways extending from the passage to the pilot valve.

8. An automatic filling nozzle comprising a casing having a passage therethrough provided with a valve seat, a valve therefor, a discharge tube communicating with one end of the passage, an inverted open-ended cup spaced slightly above the valve seat to provide a Venturi effect to maintain the valve open by the vacuum produced by the venturi once the valve is opened, a valve seat surrounding the opening in the inverted cup and extending upwardly therefrom, a diaphragm-supported valve normally in engagement with said last-mentioned valve seat, said nozzle provided with one or more passageways extending from the passage to the pilot valve.

9. An automatic filling nozzle comprising a casing having a passage therethrough provided with a valve and valve seat, a discharge tube communicating with one end of the passage, an inverted open-ended cup spaced slightly above the valve seat to provide a Venturi effect to maintain the valve open by the vacuum produced by the venturi once the valve is opened, a valve seat on the upper side of the inverted cup, a reciprocably mounted pilot valve above the cup, means for biasing the pilot valve onto its seat, said nozzle provided with passageways for conducting liquid around the pilot valve, whereby the pilot valve is opened by hydrodynamic pressure when the outer end of the discharge tube becomes submerged.

10. An automatic filling nozzle comprising a body portion, a discharge tube communicating with the interior thereof, a valve for controlling the flow of liquid through the nozzle, vacuum means for maintaining the valve in open position, a second valve for controlling said vacuum, and a sensing tube having one end positioned adjacent the outer end of the discharge tube and the other end operatively associated with the second valve.

11. An automatic filling nozzle comprising a body portion, a discharge tube communicating with the interior theroef, a valve for controlling the flow of liquid through the nozzle, vacuum means for maintaining the valve in open position, a diaphragm-operated valve for controlling said vacuum, and a sensing tube having one end positioned adjacent the outer end of the discharge tube and the other end operatively associated with the diaphragm.

12. An automatic filling nozzle comprising a body portion, a discharge tube communicating with the interior thereof, a valve for controlling the flow of liquid through the nozzle, vacuum means acting directly upon the valve for maintaining it in open position, a sensing tube having one end positioned adjacent the outer end of the discharge tube, and means operated by pressure created in the sensing tube for breaking the vacuum.

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