

April 7, 1959

T. L. HANSON ET AL
EMPTY INDICATING DEVICE AND GAS PURGING
SYSTEM FOR DRINK VENDING MACHINES

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2 Sheets-Sheet 1.

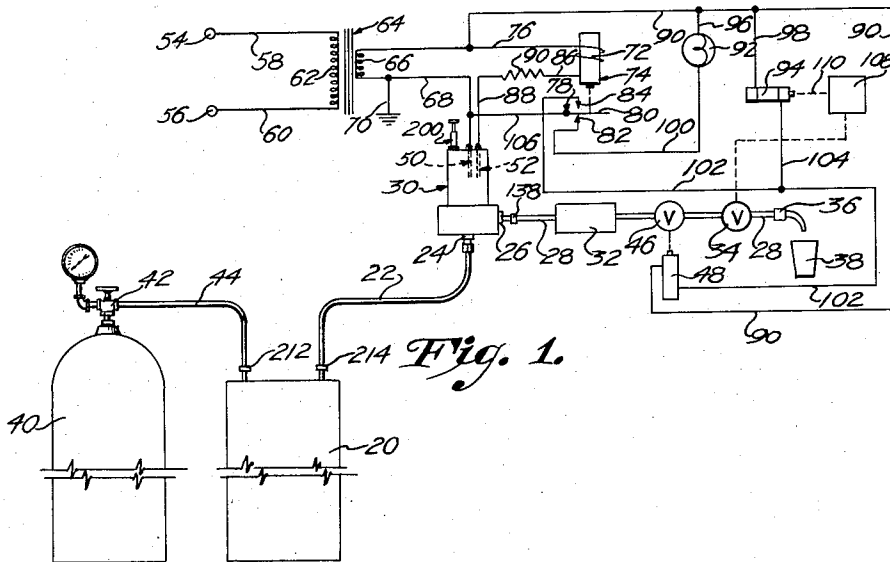


Fig. 1.

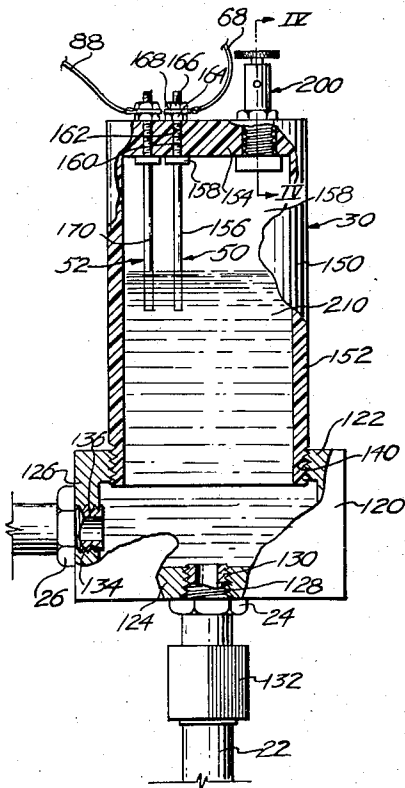


Fig. 2.

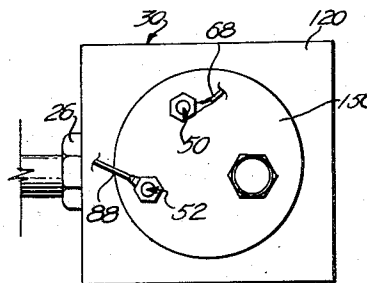


Fig. 3.

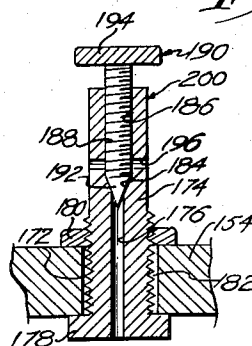


Fig. 4.

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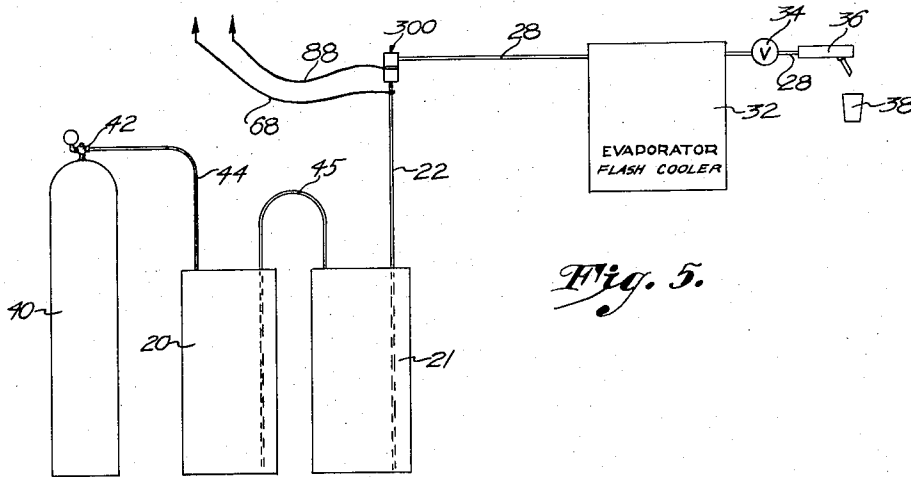


Fig. 5.

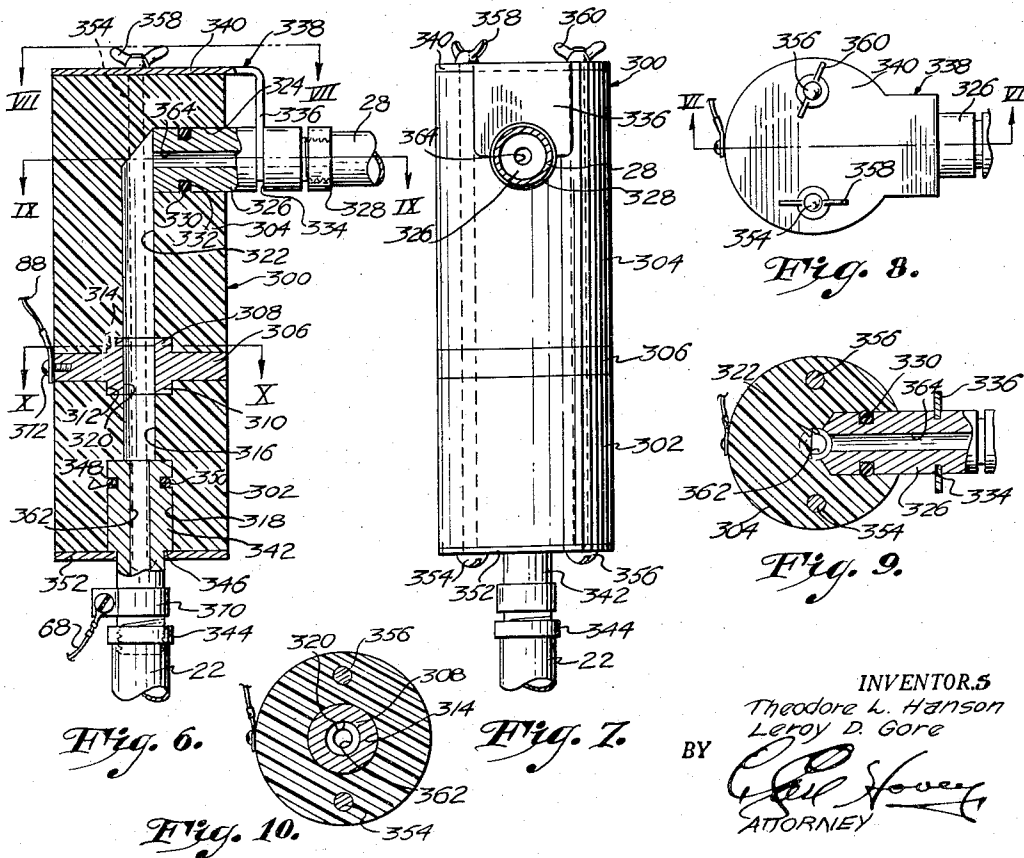


Fig. 6.

Fig. 7.

Fig. 10.

Fig. 8.

Fig. 9.

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EMPTY INDICATING DEVICE AND GAS PURGING SYSTEM FOR DRINK VENDING MACHINES

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3 Claims. (Cl. 222—65)

This invention relates generally to apparatus for the bulk dispensing of liquid material. Although it will be apparent to those skilled in the art that the novel concepts and structures contemplated by the invention may find useful application in connection with equipment for dispensing or vending various liquid materials, the invention has particular utility when employed in a machine for the bulk vending of liquid beverages. Accordingly, for purposes of illustration, the invention will be described and explained with reference to its application in such beverage vending type of equipment.

One of the serious problems encountered in connection with bulk beverage vending apparatus has been the necessity for providing means to render the machine inoperable or warn potential customers when an exhaustible supply of product material in a container within the machine and from which the beverage to be dispensed or some component thereof is secured has been exhausted. Prior attempts at solution of this problem have all been subject to serious disadvantages involving either lack of reliability of operation or unreasonable complexity resulting in unreasonably high costs.

It is, therefore, the primary object of this invention to provide means adapted to detect exhaustion of the supply of a fluid essential to presentation at the dispensing point of a proper beverage product which is adapted for operable coupling with control or indicating portions of the vending machine and which is capable of extreme reliability in operation while being of essentially simple character permitting manufacture and installation at a minimum cost.

It is another important object of the invention to provide such means which are of character requiring little or no maintenance.

It is another important object of the invention to provide such means utilizing the completion or interruption of an electrical circuit including an electrolytic path through the liquid to be vended or dispensed within a conduit leading from the supply thereof to the dispensing point or spigot, for actuating or controlling other parts of the vending machine such as a "sold out" indicating device, mechanism for preventing further insertion of coins or attempts to operate the machine by potential customers or other suitable control or indicating apparatus.

It is another important object of a preferred form of the invention to provide such means usable in a machine wherein the liquid product is delivered through a conduit line under pressure in which structure is provided for bleeding off any undesired accumulation of gas within the product line resulting from the changing of product supply tanks which might otherwise impair the operation of the apparatus.

It is another important object of such preferred form of the invention to provide such means which may be adjusted to detect or be responsive to not only an exhaustion of the supply of liquid product material, but also an

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absence of a predetermined pressure thereon required for satisfactory dispensing operation of the machine.

It is another important object of a modified form of the invention to provide still simpler means adapted for operation in the detection of exhaustion of the supply of liquid product without, however, being responsive to changes in the pressure existing on such liquid product within the conduit line leading from the supply containers to the dispensing point or spigot.

Still other important objects of the invention, including a number of important details of construction, will be made clear or become apparent as the following description of two illustrative embodiments of the invention progresses.

In the accompanying drawings:

Figure 1 is a diagrammatic representation illustrating the general relationship between the device particularly contemplated by this invention and other portions of an overall vending machine system with which it is operably associated;

Fig. 2 is a fragmentary, enlarged, elevational view of the currently preferred form of empty indicating device per se, parts being broken away and shown in section for clarity of illustration;

Fig. 3 is a fragmentary, top-plan view of the device shown in Fig. 2;

Fig. 4 is an enlarged, fragmentary, cross-sectional view taken on line IV—IV of Fig. 2;

Fig. 5 is an abridged, schematic representation similar to Figure 1 showing the general disposition within a vending machine system of a modified form of empty indicating device;

Fig. 6 is an enlarged, fragmentary, side-elevational view of a modified form of device, parts being broken away and shown in section for clarity of illustration;

Fig. 7 is a side-elevational view of the device of Fig. 6 taken from the side thereof from which the outlet connection extends;

Fig. 8 is a fragmentary, top-plan view of the device of Fig. 6 taken along line VIII—VIII of Fig. 6, the line VI—VI in Fig. 8 indicating the plane along which the sectioned portion of Fig. 6 is taken;

Fig. 9 is a cross-sectional view taken on line IX—IX of Fig. 6; and

Fig. 10 is a cross-sectional view taken on line X—X of Fig. 6.

Referring first particularly to Fig. 1, the vending machine system chosen for illustration is of the so-called "premix" type wherein premixed, normally carbonated, liquid beverage is supplied to the machine within a product tank 20, which is coupled through an outgoing conduit line 22 with the inlet port 24 of an empty indicating device generally designated 30 having an outlet port 26 coupled through a conduit line 28 normally having interposed therein at least cooling means 32 and a dispensing valve 34 with a dispensing spigot 36 from which the beverage may be delivered into any suitable cups or the like 38. Conventionally, a tank 40 of carbon-dioxide gas under pressure is coupled through a manual shut-off valve 42 and a pressure line 44 with the product or beverage tank 20. It will be understood that when the shut-off valve 42 is opened and there is an existing supply of beverage product within the tank 20, carbon-dioxide gas under pressure will flow from tank 40 through valve 42 and line 44 into tank 20 forcing the product from the latter into line 22 under pressure, such pressure further forcing the product from line 22 through device 30 and line 28, including the cooler 32 and the valve 34 (when opened) to a point of delivery from the spigot 36 into cup 38. It will be noted that, if desired, a second valve 46 having an electrically responsive operating solenoid

48 could be interposed in the line 28 for purposes hereinafter to be described.

Referring now to the electrical portion of Fig. 1, it will be sufficiently initially to note that the device 30 includes a pair of electrodes 50 and 52 between which an electrical circuit may be electrolytically completed when the supply of beverage product within tank 20 is not exhausted and the pressure of carbon dioxide gas being delivered from tank 40 is at a proper level. The terminals 54 and 56 represent a source of alternating current power such as an ordinary supply line. Terminals 54 and 56 are respectively coupled by conductors 58 and 60 with the primary winding 62 of an isolating or step-down transformer 64 having a secondary winding 66. One side of the secondary winding 66 is coupled by a conductor 68 with the electrode 50 of device 30 and is preferably grounded as at 70. The other side of secondary winding 66 is coupled with one side of the operating coil 72 of a relay generally designated 74 by a conductor 76, relay 74 including a single pole double-throw switch generally designated 78 having a movable contact 80 normally engaged with a stationary contact 82 but adapted for shifting out of engagement with contact 82 and into engagement with a second stationary contact 84 when the coil 72 is energized. The other side of coil 72 is coupled through conductors 86 and 88 and a limiting resistor 90 with the electrode 52 of device 30, resistor 90 being provided to limit the flow of current through the beverage between electrodes 50 and 52. The conductor 76, which is coupled with the hot or ungrounded side of transformer secondary 66, is coupled through a conductor 90 with one or more of a "sold out" indicating lamp 92, a coin reject solenoid 94 and the operating coil 48 of valve 46, the connection to lamp 92 being further through a conductor 96 and the connection to solenoid 94 being further through a conductor 98. The other side of lamp 92 is coupled with stationary contact 82 of relay 74 through a conductor 100. The other side of valve operating solenoid 48 is coupled with stationary contact 84 of relay 74 by a conductor 102, and the other side of coin reject solenoid 94 is coupled with contact 84 through a conductor 104 and the conductor 102. The shiftable pole 80 of relay switch 78 is coupled through a conductor 106 with the conductor 68 and the grounded side of transformer secondary 66. At 108 is schematically represented a portion of the coin handling mechanism of the vending machine, the dotted line 110 indicating a mechanical connection or relationship between the solenoid 94 and the mechanism 108 by which the latter may be rendered in condition to either reject and return any further coins deposited in the machine or to refuse to accept any further coins.

Referring now to the operation of the circuitry described, it will be seen that whenever there is an adequate supply of product within the tank 20 which is delivered to the device 30 under appropriate pressure, the electrolytic connection between electrodes 50 and 52 will be completed and the coil 72 of relay 74 will be energized through a circuit traceable from the secondary 66 of transformer 44, through conductor 76, coil 72, conductor 86, limiting resistor 90, conductor 88, electrode 52, the beverage within device 30, electrode 50 and conductor 68 back to the opposite side of secondary winding 66. Energization of coil 72 of relay 74 operates switch 78 to move pole 80 thereof into contacting engagement with the stationary contact 84. This closes operating circuits for either or both of the coin reject solenoid 94 and the valve operating solenoid 48 which are present in the particular installation, the energizing circuit for solenoid 94 being traceable from secondary winding 66 through conductor 76, conductor 90, conductor 98, coil 94, conductor 104, conductor 102, contact 84, pole 80, conductor 106 and conductor 68 back to the opposite side of secondary winding 66. Since the valve operating solenoid

48 is obviously connected in parallel with the coin reject solenoid 94, its energizing circuit will be apparent.

It will be understood that the coin reject solenoid 94 is so coupled as at 110 with the coin handling mechanism 108 that coins are refused, rejected or returned only when the solenoid 94 is de-energized, and that, when the solenoid 94 is energized, mechanism 108 will accept coins for actuating the general operating circuitry of the vending machine (which may be of any conventional character and is, therefore, not shown in detail), which operating circuitry it will be further understood is normally operably coupled with the dispensing valve 34 for operating the latter to dispense a given quantity of beverage from the spigot 36 responsive to deposit of the proper amount of currency in the coin handling mechanism 108. It will be appreciated that the provision of the solenoid 94 or other equivalent control means for the coin handling mechanism 108 is usually advisable, even though a "sold out" indication lamp 92 is also provided and operable as hereinafter described. More of an optional character, although desirable in some instances, is the valve 46 which is, of course, normally open whenever the operating solenoid 48 is energized and closes only upon de-energization of such solenoid 48. It will be understood that those skilled in the art will interpret the solenoid 48 and valve 46 controlled thereby in the illustrative embodiment as representative of any suitable control structure for rendering the actual operating circuits of the vending machine inoperable when a "sold out" condition obtains.

When the supply of beverage in tank 20 is exhausted, or should the pressure of carbon-dioxide from tank 40 fall below the required level, the beverage liquid within device 30 would be lowered to a level below that necessary for completing the electrolytic circuit between electrodes 50 and 52, as will hereinafter be more fully treated. The opening of such electrical circuit between electrodes 50 and 52 by removal of the electrolytic connection therebetween opens the energizing circuit for coil 72 of relay 74 and permits the relay switch 78 to return to its normal condition wherein the pole 80 engages the stationary contact 82 and is no longer engaged with the stationary contact 84.

Breaking of the contact between pole 80 and stationary contact 84 of relay switch 78 opens the energizing circuits for solenoid 94 and solenoid 48. De-energization of solenoid 94 actuates the coin handling mechanism 108 to reject, refuse or return any further coins attempted to be deposited by a potential customer. De-energization of the solenoid 48 would close the valve 46, preventing any possibility of an abortive vending operation in which only carbon-dioxide gas would be vended. The engagement of pole 80 with stationary contact 82 of relay switch 78 completes an energizing circuit for the "sold out" indicator lamp 92, which is traceable from the secondary 66 of transformer 44 through conductor 76, conductor 90, conductor 96, lamp 92, conductor 100, relay contact 82, relay pole piece 80, conductor 106 and conductor 68 to the opposite, grounded side of secondary winding 66. The lamp 92 is preferably disposed in a conspicuous place on the vending machine and has written words or indicia for indicating to a potential customer when the lamp 92 is energized that the machine is not in condition for normal vending operation. It will be understood that the lamp 92 may be considered as contemplating any equivalent, electrically responsive indicating structure for advising potential customers of the inoperative condition of the machine.

Obviously, when the empty tank 20 is replaced by a new tank 20 containing a supply of beverage liquid therein, such liquid will be forced into the device 30 under the pressure of gas from the tank 40 closing the electrolytic circuit between electrodes 50 and 52 and again energizing the coil 72 of relay 74 to restore the solenoids 94 and 48 and the lamp 92 to their above described conditions for normal operation of the vending machine.

Reference is next made particularly to Figs. 2, 3 and 4, wherein the detail of the device 30 per se is illustrated. Device 30 includes a hollow, box-like base 120 having a top wall 122, a bottom wall 124 and a number of side walls of which one is designated by the numeral 126. Bottom wall 124 is provided with a threaded inlet opening 128 into which is fitted the inlet port coupling 24, which includes a threaded portion 130 received within opening 128. Coupling 24 is in turn connected with the conduit line 22 by means of a fitting 132. The side wall 126 is similarly provided with an internally threaded opening 134 into which is threadably fitted the portion 136 of the outlet port coupling 26. Coupling 26 is in turn connected with the conduit line 28 by means of a fitting 138 (see Fig. 1).

The top wall 122 of base or body 120 is provided with an internally threaded opening 140 of considerably larger diameter than either the inlet opening 128 or the outlet opening 134.

Threadably fed into the opening 140 is an upright, open bottomed, elongated, cylindrical body 150 having a side wall 152 and a top wall 154. The body or cap 150 is preferably formed of electrically insulating material, such as any suitable plastic, capable of withstanding the pressures encountered in the system with which the device 30 is to be used.

The electrode 50 is elongated and rod-like and includes an elongated lowermost portion 156 extending downwardly from the top wall 154 into the interior 158 of body 150 a substantial distance, an outturned flange 158 adapted to abut against the lower face of top wall 154, a threaded portion 160 extending through an opening 162 in the top wall 154 and threadably receiving above the latter a nut 164 and a lock nut 166 between which is gripped a lug 168 connected with the wire 68. Electrode 52 is similarly formed and mounted on the top wall 154 with its lower portion 170 extending into the interior 158 of body 150 in spaced relation to the portion 156 of electrode 50. The wire 88 is coupled with the electrode 52 in the same manner as described in connection with the coupling of wire 68 to electrode 50. It will be understood that the electrodes 50 and 52, and particularly the flange portions 158 thereof, close the openings 162 to seal the top wall 154. It will further be understood that the electrodes 50 and 52 are, of course, formed of electrically conductive material and are insulated from each other by virtue of the insulating character of the material of which body 150 is formed. Should it be desired to form body 150 of metal, obviously the electrodes 50 and 52 could be mounted in the top wall 154 with insulating sleeves or the like adapted for sealing the openings 162 but electrically isolating the electrodes 50 and 52 from the body 150.

Top wall 154 of body 150 is further provided with an opening 172 through which extends an elongated valve member 174 provided with a longitudinal passage 176 therethrough. At the lowermost end of valve member 174 is an outturned flange 178 underlying the lower face of wall 154 and thereabove the member 174 is externally threaded to receive a nut 180 on the opposite or upper face of wall 154, the mentioned threads on the member 174 being identified by the numeral 182. When nut 180 is properly tightened upon threads 182, the flange 178 will seal the opening 172 in top wall 154, except for the path of communication presented by the bore 176 through valve member 174.

The bore 176 of valve member 174 is outwardly tapered intermediate its ends to present a valve seat at 184 and is threaded thereabove as at 186 to receive the externally threaded, elongated portion 188 of a valve operating element generally designated 190 and provided with a conical nose portion 192 adapted to cooperate with valve seat 184. A manually operable knob 194 is provided at the uppermost end of the portion 188 for rotating the latter to move the nose 192 of element 190 to and away from

a seated position upon seat 184 closing the passage 176. A laterally extending bore or passage 196 is provided in valve member 174 and communicates with the vertical bore or passage 176 slightly above the seat portion 184 of the latter. Bore 196 communicates with the atmosphere exteriorly of valve member 174 and is adapted for placing the bore 176, and thereby the interior 158 of body 150, in communication with the atmosphere when the valve element 190 is rotated to reciprocate nose 192 upwardly away from valve seat 184.

In installing the device 30 in a vending machine as indicated in the system depicted in Fig. 1, the bleed-off valve assembly 174—194, which is hereinafter generally designated 200 for convenience of identification, will be closed. As the valve 42 is opened to force liquid beverage material from the tank 20 through line 22 and into device 30, the quantity of air within the interior 158 of body 150 will be entrapped within the latter and compressed an amount depending upon the pressure applied from tank 40 to the liquid beverage within the system. As such air is compressed, the level of liquid beverage, designated 210 in Fig. 2, will rise within the interior 158 of body 150 normally, upon initial installation of the device 30, it will be necessary to open the bleed-off valve 200 briefly to permit some of the air within interior 158 of cap-like body 50 to escape, the amount of such air thus bled off being only so much as is sufficient to permit the level of the liquid 210 to rise into contacting engagement with the electrodes 50 and 52 for effecting an electrolytic connection therebetween when the beverage 210 is subjected to the minimum, desired, operating pressure for the system.

Thereafter, the valve 42 may be opened further to place the system under a somewhat higher pressure chosen for optimum operating conditions for the system as a whole. Should the pressure fall below the aforesaid, preselected minimum pressure, at any time, the compression of the air entrapped within the interior 158 of body 150 above the liquid 210 will lessen and the level of liquid 210 therein will fall to a point breaking the electrolytic connection between electrodes 50 and 52, thereby producing the results above described in connection with the operation of the electrical portions of the apparatus illustrated in Fig. 1.

When the supply of liquid beverage or the like 210 is exhausted in the tank 20, obviously gas from the tank 40 rather than further liquid 210 from the exhaust tank 20 will be passed upwardly along line 22 into the inlet port connection 24 at the lowermost extremity of the base 120 of device 30. Such gas will bubble upwardly into the interior 158 of the cap or body 150 until sufficient liquid 210 has been displaced from the interior 158 to break the electrolytic connection between electrodes 50 and 52. As mentioned before, the various "sold out" responsive indicating and control portions of the apparatus will then be actuated.

The machine may then be serviced by replacing the empty product or liquid beverage tank 20 with a new, filled tank 20, by means of the releasable couplings as illustrated at 212 and 214 on the lines 44 and 22, respectively. During such substitution of a new tank 20, a certain amount of air or gas normally finds its way into the line 22 and thence into the interior 158 of body 150, which it will be noted is preferably disposed, as illustrated, at the physically uppermost point of the hydraulic portion of the system. The bleed-off valve 200 may then be utilized to permit the escape from interior 158 of that portion of the entrapped air or gas necessary to establish an electrolytic connection between electrodes 50 and 52 under conditions of minimum operating pressure.

The preferred embodiment of the invention particularly illustrated in Figs. 2, 3 and 4 is thus perceived to be adapted for responding either to the emptying of the tank 20 or conditions causing the pressure within the system to drop to an abnormally low value, although in

practice the latter situation is much more infrequently encountered.

Referring now to the modified and somewhat more simple embodiment of the invention shown in Figs. 5-10, inclusive, the general over-all system is depicted in Fig. 5, wherein it will be noted that a second product tank 21 is coupled in series with the product tank 20 by means of a line 45, as is common in actual practice. The modified empty indicating device is generally designated by the numeral 300 the other components illustrated corresponding to those shown and described in connection with Fig. 1. It will be understood that the electrical portion of the apparatus may be identical to that shown in Fig. 1 and is omitted from Fig. 5 for simplicity, the purpose of the figure being merely to indicate the general disposition of the modified device 300 within the hydraulic portion of the over-all system.

Referring now more particularly to Figs. 6-10, inclusive, it will be seen that the device 300 includes an essentially solid, cylindrical body 302 of suitable plastic or other electrical insulating material, and a similarly formed second body 304. Body 302 is disposed as the lowermost or base section of the device 300, while body 304 forms the uppermost section thereof. Between the sections 302 and 304 is disposed an annular, electrically conducting element 306 having an upwardly extending, central, annular flange 308 and a downwardly extending, central, flange 310 thereon. The upper extremity of the lower section 302 is recessed as at 312 to receive the flange 310, and the upper section 304 is recessed at its lowermost extremity as at 314 to receive the flange 308 of element 306.

The lower section 302 is provided with an elongated vertical bore 316 having a stretch of enlarged diameter 318 adjacent the lowermost extremity thereof. The annular member 306 has a vertical bore 320 of exactly the same diameter as the upper portion of bore 316. Similarly, the upper section 304 is provided with a vertical bore 322 extending upwardly from the lowermost extremity thereof in alignment with the bores 316 and 320 and of equal diameter thereto. Bore 322 terminates, however, below the uppermost extremity of section 304. Communicating with the bore 322 adjacent its upper extremity is a passage 324 extending laterally to the exterior of the section 304.

A tubular, cylindrical fitting 326 is connected with line 28 by a coupling 328 and extends at its opposite extremity into the passage 324 of upper section 304. Fitting 326 is provided with a peripheral groove 330 containing an O-ring 332 within the passage 324 for effecting a fluid-tight seal between the fitting 326 and the upper body section 304 of device 300. Fitting 326 is also provided with a peripheral groove 334 exteriorly of the section 304 which receives the yoke-like downwardly extending leg 336 of a generally L-shaped bracket generally designated 338 having a horizontal leg portion 340 overlying the top of body section 304. Such bracket 338 is removable to permit removal of fitting 326 from passage 324, as will hereinafter become clear.

An inlet fitting 342 is connected with inlet line 22 by means of a coupling 344 and includes an uppermost cylindrical portion of increased diameter disposed within the enlarged portion 318 of bore 316 of body section 302, a downwardly facing shoulder on the fitting 342 being presented as at 346. Fitting 342 is provided with a peripheral groove 348 receiving an O-ring 350 within bore portion 318 for effecting a seal between the fitting 342 and the body section 302. The fitting 342 is releasably retained within the bore section 318 by a bottom plate 352 underlying section 302 and the downwardly facing shoulder 346 of fitting 342. The bracket 340, upper body section 304, annular element 306, lower section 302 and bottom plate 352 are releasably retained in the assembled dispositions illustrated in Fig. 6 by means of a pair of elongated bolts 354 and 356 ex-

tending vertically through the parts mentioned and secured at their opposite ends by wing nuts 358 and 360 respectively. When in such disposition, the sections 302 and 304 and the annular element 306 are held together in fluid-tight relationship, a continuous fluid passage being traceable from the line 22 through passage 362 of fitting 342, bore 316 of section 302, bore or aperture 320 of element 306, bore 322 of element 304, and passage 364 of fitting 326 to outlet line 28.

With the device 300, the electrolytic circuit is accomplished by means of a connection of wire 68 with the metal, conductive fitting 342 by means of a clamp 370, and the connection of wire 88 with metal, conductive, annular element 306 by means of a screw 372 threaded into the latter. Thus, as liquid flows through the inlet fitting 342, and simultaneously through the annular element 306 an electrolytic connection is effected between the wires 68 and 88 in obvious manner, it being noted that fitting 342 and element 306 are electrically insulated from each other, except for the electrolytic connection through a liquid within the system, by virtue of the insulating nature of the lower body section 302.

The only difference between the operation of the device 300 and that above described for the device 30 is that the device 300 does not utilize an entrapped pocket of compressed air or gas for controlling a liquid level by which the shorting or non-connection of the electrodes is determined. In the device 300, the electrodes, which consist of fitting 342 and annular element 306, are disposed directly along the normal flow path of the liquid in proceeding from the inlet line 22 to the outlet line 28. As a consequence, it will be manifest that the device 300 is not responsive to changes of pressure in the system, with the obvious exception of a complete absence of pressure sufficient to raise the liquid in conduit line 22 to the level of the annular electrode element 306 of device 300. As to the emptying or exhaustion of the supply tanks 20 and 21 of liquid, however, the device 300 operates similarly to the device 30 with the electrolytic connection between the electrodes 342 and 306 being broken when the liquid supply is exhausted and gas from the tank 40 is passed into the element 300.

The two embodiments of the invention chosen for illustration have been selected to illustrate the rather wide variance which is permissible in respect of certain details of construction while still presenting apparatus operable for the purposes and within the concepts contemplated by the invention. It will, accordingly, be understood that many minor variations or modifications could be made from the exact structural details disclosed for illustrative purposes without departing from the true spirit or intention of the invention. It will, therefore, be further understood that the invention should be deemed limited only by the fair scope and intention of the claims that follow.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a machine for the bulk vending of liquid material, means for providing an exhaustible supply of said material under pressure; a dispensing spigot; a conduit line having a control valve interposed therein, said line coupling the supply with the spigot when the valve is open; a device for detecting the exhaustion of said supply of material, said device comprising a hollow body having an inlet port and an outlet port interposed in series with the line for passage of said material into the body, a pair of electrically separated electrode elements extending into the body for contacting said material within the body for electrolytically effectuating an electrical connection between the elements, and means for coupling the elements in an electrical circuit operably associated with said valve for controlling the operability of the latter, said body including an upper portion having a quantity of gas entrapped therein, said gas being

compressed by the pressure exerted by said material there below, said electrodes extending downwardly through said gas to a level normally within said material prior to exhaustion of said supply of the latter and as long as said material is maintained under a predetermined minimum pressure; and a manually operable bleeder valve on said upper portion of the body for placing the interior of the latter in which said gas is entrapped in communication with the atmosphere, said bleeder valve comprising an elongated valve member mounted on the body and having a longitudinal bore therethrough communicating with the interior of said upper portion of the body and a lateral passage interconnecting the bore intermediate its extremities with the exterior of the member exteriorly of the body, said bore being provided with a seat therein and being threaded adjacent the extremity thereof remote from the body, and an externally threaded valve element shiftably received in the threaded portion of the bore and provided with a nose adapted to engage said seat for closing the bore between the body and the passage.

2. In a machine for the bulk vending of liquid material, means for providing an exhaustible supply of said material under pressure; a dispensing spigot; a conduit line having a control valve interposed therein, said line coupling the supply with the spigot when the valve is open; a device for detecting the exhaustion of said supply of material, said device comprising a hollow body having an inlet port and an outlet port interposed in series with the line for passage of said material into the body, a pair of electrically separated electrode elements extending into the body for contacting said material within the body for electrolytically effectuating an electrical connection between the elements, and means for coupling the elements in an electrical circuit operably associated with said valve for controlling the operability of the latter, said electrode elements being tubular, the path of flow of said material in proceeding from the inlet port to the outlet port being through said elements, said body including a pair of sections of insulating material each having a bore therein, one of said electrode

elements comprising a metallic body section disposed between the pair of insulating sections and having an opening therethrough communicating with the bores of both of said pair of sections, the other electrode element comprising a metallic fitting mounted on one of said pair of sections in spaced relation to the metallic body section and provided with a passage therethrough in communication with the bore of said one section, there being means holding said sections and said fitting to present a fluid-tight path for the flow of said material through the passage, the bore of said one section, the opening and the bore of the other of said pair of sections.

3. In a machine for the bulk vending of liquid material, means for providing an exhaustible supply of said material under pressure; a dispensing spigot; a conduit line having a control valve interposed therein, said line coupling the supply with the spigot when the valve is open; a device for detecting the exhaustion of said supply of material, said device comprising a hollow body having an inlet port and an outlet port interposed in series with the line for passage of said material into the body, a pair of electrically separated electrode elements extending into the body for contacting said material within the body for electrolytically effectuating an electrical connection between the elements, and means for coupling the elements in an electrical circuit operably associated with said valve for controlling the operability of the latter, at least one of said electrode elements being tubular, the path of flow of said material in proceeding from the inlet port to the outlet port being through said one element, said one element comprising a metallic fitting mounted on the body in spaced relation to the other electrode element and electrically insulated from the latter, said fitting having a passage therethrough providing one of said ports for the body.

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