July 17, 1962 S. WILBURN 3,044,483

TAP BEER CLEANING INSTALLATION

Filed Aug. 10, 1959 2 Sheets-Sheet 1

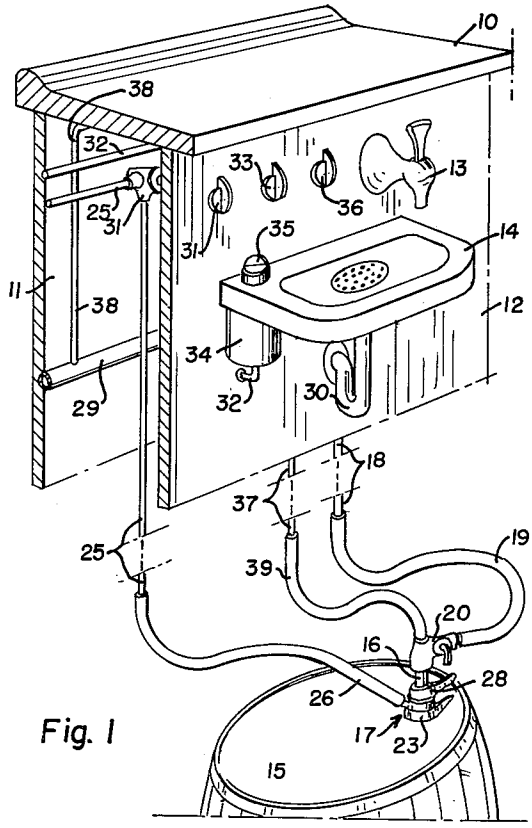


Fig. 1

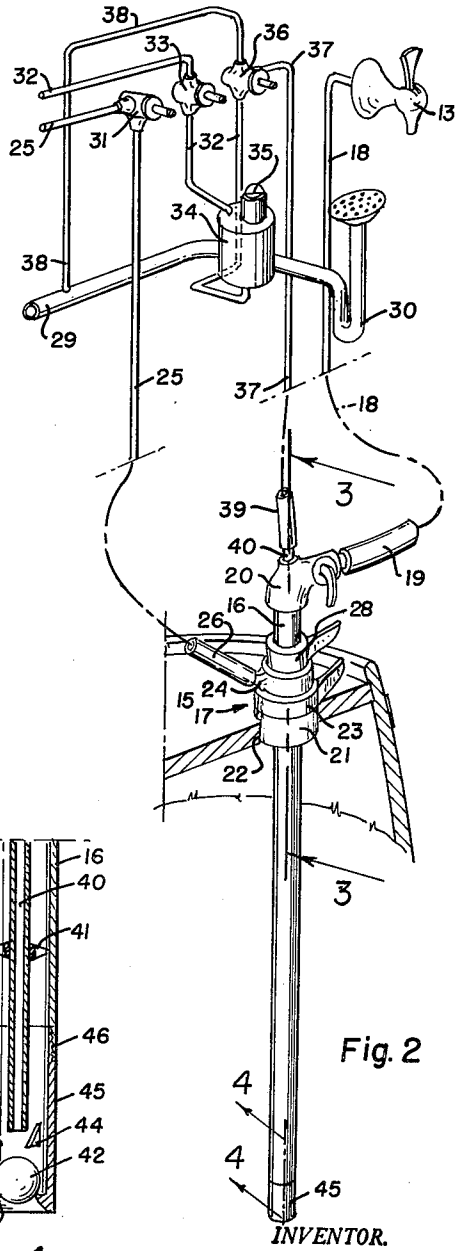


Fig. 2

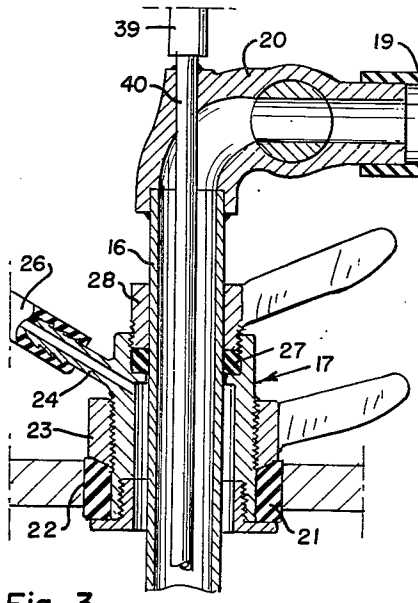


Fig. 3

Fig. 4

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TAP BEER CLEANING INSTALLATION

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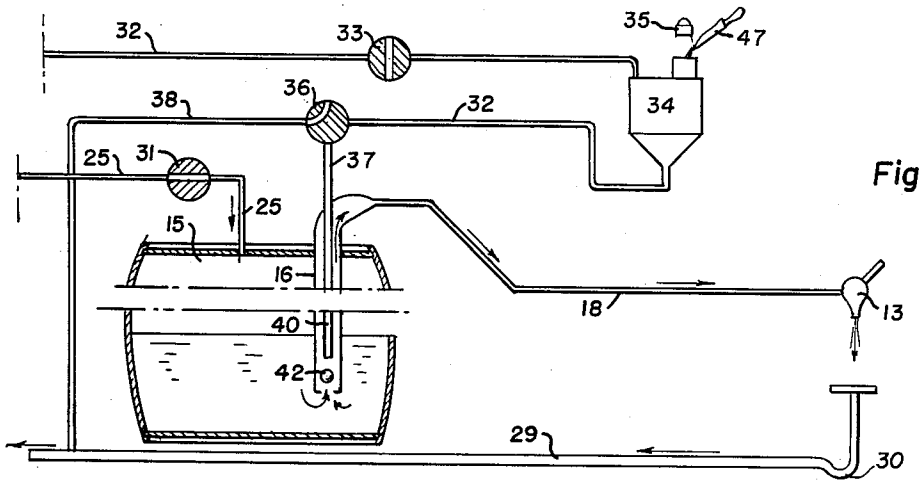


Fig. 5

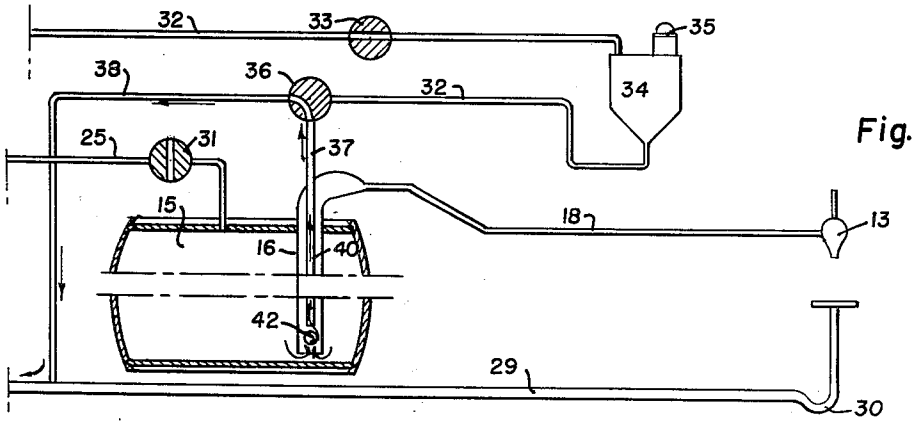


Fig. 6

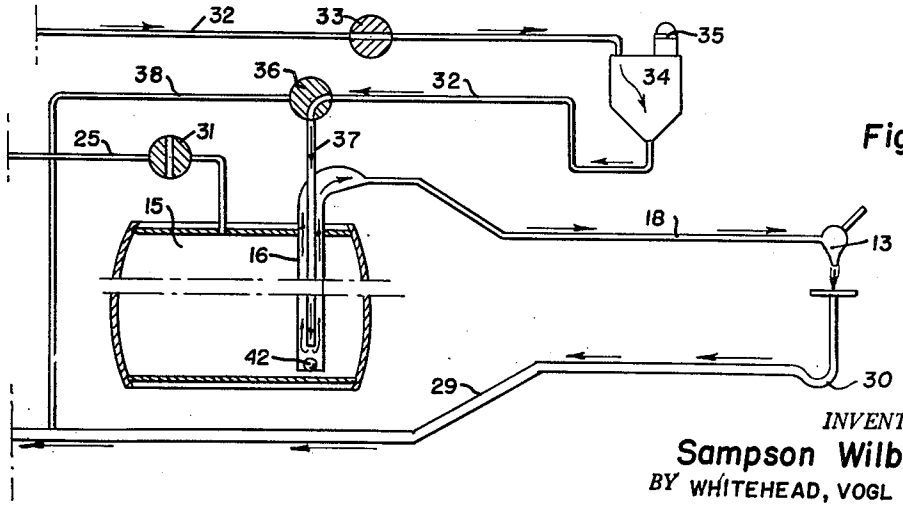


Fig. 7

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TAP BEER CLEANING INSTALLATION

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3 Claims. (Cl. 137—239)

This invention relates to means and apparatus for cleaning beverage dispensing equipment and more particularly to apparatus for cleaning tap beer installations, a primary object of the invention being to provide a novel and improved apparatus which is especially adapted for the cleaning and flushing out of the rods and lines which constitute a tap beer installation, and the invention will be described with reference to such installation.

Another object of the invention is to provide a novel and improved apparatus for cleaning and flushing a tap beer installation which is formed as an integrated part of the installation to thereby permit the cleaning and flushing operations to proceed without special preliminary setting-up of the apparatus.

Another object of the invention is to provide in a novel and improved cleaning and flushing apparatus for a tap beer installation, means for venting the compressed gas and beer fumes in an empty beer keg directly into a waste line or a sewer line and thereby avoid filling the room wherein the tap beer installation is located with the undesirable fumes from the empty keg.

Another object of the invention is to provide an improved cleaning and flushing apparatus in a tap beer installation which vents excess gas pressure from an empty beer keg and thereby avoids the danger of a blowing-out of the tap rod as it is removed from the keg.

Another object of the invention is to provide a novel and improved cleaning and flushing apparatus for a tap beer installation which is adapted to clean the entire conduit system of the installation, from the base of the tap rod to the faucet, without the necessity of disconnecting any of the component parts of the installation and is further adapted to permit such cleaning operations to occur before removing the tap rod from the keg or even while changing the tap rod from one keg to another in order to save time.

Another object of the invention is to provide such improved cleaning and flushing apparatus in combination with a tap beer installation which is further adapted to be operated by a simple charging with cleaning chemicals and then an opening and closing of a few valves in a simple sequence, all to thereby vent an empty keg, chemically sterilize and clean the conduits constituting the tap beer installation and then flush all chemicals out of the installation with fresh water preparatory to connecting the tap rod of the installation into a new keg of beer.

Yet other objects of the invention are to provide a novel and improved cleaning and flushing apparatus for a tap beer installation which is combined into the installation as a low-cost, neat-appearing, reliable, easily-operated, rugged and durable arrangement.

With the foregoing and other objects in view, all of which more fully hereinafter appear, my invention comprises certain novel and improved constructions, combinations and arrangements of parts and elements as hereinafter described, defined in the appended claims and illustrated in a preferred embodiment, the accompanying drawing in which:

FIGURE 1 is a perspective, somewhat diagrammatic view, of a tap beer installation, illustrating a portion of the beer keg wherein the tap rod is placed, portions of the tap line and other lines connected to the rod and keg, a portion of a bar whereon the dispensing faucet is located and certain lines and valves necessary for the operation of the unit, and with portions of certain lines between the bar and keg being broken away to conserve space.

FIGURE 2 is a perspective, diagrammatic view, somewhat similar to FIG. 1 but with the bar structure removed to illustrate the system of lines and valves at the bar section and showing only an enlarged fragmentary sectional portion of a beer barrel with a tap rod extending therein, and with broken lines illustrating the connection of the lines at the tap rod with the various lines and valves at the bar.

FIGURE 3 is a fragmentary sectional detail as taken from the indicated line 3—3 at FIG. 2.

FIGURE 4 is a fragmentary sectional detail as taken from the indicated line 4—4 at FIG. 2.

FIGURE 5 is a diagrammatic view of the system of lines and valves constituting the tap beer installation and the improved cleaning system combined therewith, with the valves being positioned for normal use as for drawing beer from the keg.

FIGURE 6 is a diagrammatic view similar to FIG. 5 but showing the valves shifted to vent the compressed gas from an empty keg.

FIGURE 7 is a diagrammatic view similar to FIG. 5 but showing the valves shifted to clean and flush the lines constituting the tap beer installation.

In the use of the numerous tap beer installations over the country several problems of maintenance have become manifest which are centered about the changing of beer kegs as the kegs are emptied. To connect a keg in an installation, a cylindrical tap rod is forced into the keg through a special conventional locking valve. Compressed air or carbonated gas is also directed into the keg to pressurize it to provide pressure for flowing the beverage therefrom with the flow being upwardly from the bottom of the keg through the tap rod and through the lines connected thereto which constitute the tap beer installation. The first problem is to keep the lines and the faucet of the system clean, and it is often desirable to clean this installation every time there is a change of beer kegs, especially where the beer has not been pasturized and where it is possible for organic action to occur to form scum and the like in the tap lines. A failure to keep the lines clean will taint the taste of beer drawn from subsequent kegs. Also there is a difficult problem in handling the compressed gas within the keg when it is emptied. The fumes in an empty keg do not have a desirable odor and should not be released in a room where the tap beer installation is located. Moreover, the removal of a tap rod from a gas-charged keg may be actually dangerous, for the compressed gas will blow the tap rod out of the keg with a considerable force when the locking valve holding the rod in the keg is released. Yet this may be necessary when the kegs are located in one room and the dispensing faucet is located in another room where it is undesirable to release the gas and fumes from the keg by opening the faucet.

Considerable study has been given to these problems. For example, chemical combinations have been developed which effectively wash out the lines of a tap beer installation. However, in so using such chemicals the common practice has been to remove the tap rods of several installations and then interconnect them in pairs to obtain circulation from one faucet to another to pass the chemicals therethrough. The making up of such connections is time consuming and such a system is not practicable where an odd number of installations or a single installation is being used.

With such in view the present invention was conceived and developed to provide a cleaning and flushing apparatus within a tap beer installation which will ordinarily not be used while the apparatus is being used for drawing off of the beer through the installation in an ordinary manner. However, the apparatus may be operated when a keg is emptied in selective succession of valving operations to first bleed out the compressed gas from the empty

keg. Then, to chemically wash and finally flush out the entire installation to have the installation clean and ready for use when another keg of beer is tapped.

Referring more particularly to the drawing and to FIG. 1 thereof, a tap beer system is generally set up as at a bar **10** which may include a front skirt **11** and a rear skirt **12** with various pipe lines being disposed in the space between the skirts. The beer is drawn from a faucet **13** mounted on the rear skirt **11** of the bar above a drain sink **14** in any of a number of conventional arrangements.

The beer is supplied from a keg **15** and is drawn therefrom through a tap rod **16** which extends through a tapping sleeve-valve **17** of a conventional type which is adapted to be normally closed as by a plug that may be pushed out of the valve as the tap rod is pushed therein. The tap rod **16** is connected to a tap line **18** that extends to the faucet **13** and this line includes a flexible section **19** at the tap rod to permit the tap rod to be removed from and inserted into a keg without having to disconnect the tap line **18**. The tap rod **16** is formed as a simple tubular member having a valved connecting head **20** which remains normally open but may be closed to close off the flow from the keg to the tap line **18**.

The sleeve valve **17** is a conventional type formed of several components, and will include an expander ring **21** of a rubber-like material which fits into the bung hole **22** at the top of a keg and is expansively locked therein by turning a threaded sleeve **23** against the expander ring **21**. The valve also includes an air line connector **24** which communicates through the valve **17** to the interior of the keg. An air line **25** is connected to this connector **24**, and this air line includes a flexible section **26** adjacent to the valve **17** to permit it to be connected to or removed from a keg without the necessity of disconnecting the air line. Another component of the valve **17** is a resilient ring **27** which is compressively locked against a tap rod **16** by a threaded sleeve **28** when a tap rod is inserted therein.

The drain sink **14** is interconnected with a trapped sewer line **29** having a suitable trap **30** at the sink to prevent a reverse flow of gas from the sewer line and through the sink.

In the environment of these conventional elements, which may be arranged in several ways, the invention herein disclosed includes a supplementary system of lines and control valves therefor which are conveniently located in the space between the front skirt **11** and rear skirt **12** of the bar **10**. The necessary valve controls, hereinafter described, may be conveniently located on the face of the rear skirt **12** adjacent to the faucet **13**, although it is to be understood that other desirable arrangements are possible. The compressed air or gas line **25** includes an air line valve **31** at the bar and extends thence directly to the connector **24** for connection to a keg. When the keg is in use this valve will be open, however, when the keg is empty, the valve **31** will be closed.

For the cleaning and flushing operations, a water line **32** extends to a valve **33** at the bar **10**. A chemical container tank **34** is interconnected in this line, and this container may be conveniently mounted at the sink **14**. The tank **34** includes an opening and a cap **35** for closure thereof, so that the cap may be removed to charge the tank with a chemical and then closed for a cleaning operation.

This water line extends from this tank **34** to a side connection of a three-way valve **36**. A circulating line **37** is connected to the central connection of this valve **36** and to the tap rod **16**, as hereinafter described while a bleed-off line **38** is connected to the other side connection of this valve **36** and to the sewer line **29**. With this arrangement, the water line **32** may be shut off at the three-way valve **36** or connected with the circulating line **37** and the circulating line **37** may be shut off or, alternatively connected with either the water line **32** or the bleed-off line **38**.

The circulating line **37** extending to the tap rod **16** includes a flexible section **39** at the tap rod to permit the tap rod to be removed from or inserted into a beer keg without having to disconnect the line from the tap rod the same as hereinbefore described. This circulating line **37** includes a tube **40** which extends through the connecting head **20** of the tap rod **16** and thence downwardly into the tap rod, the connection at the head being soldered or otherwise secured in a conventional manner. The extension of the tube **40** into the rod is preferably in a concentric manner and several spider-like spacers **41** may be used to so hold the tube **40**.

This tube **40** extends substantially to the bottom of the tap rod and to a check valve at the intake at the bottom of the tap rod. Any conventional check valve may be used such as a ball **42**, an inwardly-turned, annular seating edge **43** at the bottom of the tap rod **16** and an array of lugs **44** above the ball seating position to hold the ball in alignment for movement to the seat **42**. This valving arrangement is conveniently affixed to the end of the tap rod as by forming it in a short tubular section **45** which may be threaded or otherwise fastened to the bottom of the rod as at connection **46**.

The operation of this cleaning and flushing apparatus in connection with the lines of the tap beer installation is comparatively simple. Starting with the ordinary set-up for drawing-off a keg of beer with the tap rod **16** therein and with the valve **31** of the compressed air line being open and other valves closed, beer is drawn through the faucet **13** as desired. With the three-way valve **36** and the water valve **33** turned off, no circulation can exist through the cleaning and flushing apparatus, and the tap line is operable in an ordinary manner. The beer flow from the keg is upwardly through the tap rod, with the check valve ball **41** being lifted off its seat. Flow is controlled by opening the faucet **13** to fill a glass or to drain into the sewer line **29**, all as clearly indicated at FIG. 5.

While the water-line valve and the three-way valve are closed, the cap **35** of the chemical tank **34** may be opened and a charge of chemicals poured therein as from a scoop **47**, as indicated at FIG. 5. This is preparatory for a subsequent cleaning operation after a beer keg is emptied.

When the keg is empty and it becomes desirable to release the compressed gas therefrom, to do this the air valve **31** is closed and the three-way valve **36** is shifted to a position interconnecting the circulating line **37** with the bleed-off line **38**, as indicated at FIG. 6. Then the compressed gas within the keg will immediately flow therefrom and into the sewer line **29**. No fumes will be released into the room wherein the bar **10** is located and the tap rod may then be safely removed from the keg. Also, the water-line valve may be opened to fill the chemical container with water and commence the dissolving of the chemical preparatory for the cleaning operation.

The cleaning and flushing operation is then accomplished by turning the three-way valve **36** to interconnect the water line **32** with the circulating line **37** and the opening faucet **13**. The water flow is directed in the manner illustrated by arrows at FIG. 7. In the previous operations the ball **42** at the base of the tap rod **10** was lifted to open the check valve and to permit flow from the keg into the tap rod. However, in this operation the flow is downwardly through the tube **40** to the base of the tap rod and the check valve is closed. The resulting flow from tube **40** is upwardly through the tap rod and through the tap line **18** and out of the faucet and then into the sewer line. This water flow is continued for a period sufficient to completely dissolve the chemicals within the container **34** and to then flush all traces of chemical out of the tap line through the faucet. The entire operation need not consume any more time than that which is required to change beer kegs by inserting the tap rod **16** into the new keg. Actually, the flushing opera-

tion may be started and may be continued without interruption while the tap rod 16 is being removed from one keg and being inserted into another keg so that the time consumed in chemically cleaning and flushing out the tap-line system is not lost time.

Many other variations to this construction are possible. For example, the manner in which the tube 40 is installed into the tap rod can be varied and several forms of the check valves may be used at the base of the tap rod. Also, should it is desirable, other valving systems may be included in the water line to bypass the chemical tank when the flushing operation commences.

Thus, while I have described my invention in considerable detail, it is obvious that others skilled in the art can devise and build alternate and equivalent constructions which are within the spirit and scope of my invention. Hence, I desire that my protection be limited, not by the constructions illustrated and described, but only by the proper scope of the appended claims.

I claim:

1. A closed-circuit venting and flushing apparatus including a tap beer system of the type having a pressurized beer keg, a tap rod having its base end extended into the keg, a tap line extending from the rod and a dispensing faucet at the end of the tap line, and including, in combination therewith:

(*a*) a check valve at the base of the tap rod adapted to open to permit flow from the keg and into the rod and to close to prevent flow from the rod and into the keg,

(*b*) a three-way valve having a central connection, a first and a second side connection and a shiftable control between the connections adapted to selectively shift from a closed position where the connections are closed off from each other, to a first open position where the central connection communicates with the first side connection with the second side connection being closed off and to a second open position where the central connection communicates with the second side connection with the first side connection being closed off,

(*c*) a circulating line having one end extending into the tap rod and terminating at a point near the base thereof and the other end connected to the central connection of the three-way valve,

(*d*) a venting line having one end connected to the said first side connection of the three-way valve and

the other end extending to a point remote from the tap beer system at a distance and at a location sufficient to prevent the accumulation of vent fumes in the vicinity of the tap beer system, and

(*e*) a cleaning-water line having one end connected with a pressurized water supply and the other end connected with the said second side connection of the three-way valve, whereby, in normal use of the system with the keg being drained of its contents the three-way valve is in its closed position and flow is from the keg, past the check valve and through the tap rod, tap line, and from the dispensing faucet; however, when the keg is emptied, the three-way valve is first shifted to said first open position to permit the pressurized gas and fumes within the keg to flow past the check valve, into the tap rod and through the circulating line and venting line to be vented therefrom, and then the three-way valve is shifted to said second open position to permit a backflow of cleaning water through the circulating line and into the tap rod to close the check valve and permit the tap rod and tap line to be flushed out by a subsequent opening of the dispensing faucet.

2. In the apparatus set forth in claim 1, wherein said venting line extends to and includes a trapped sewer line waste, having water traps at its intake fixtures adapted to prevent a back flow of gas within the sewer line.

3. In the organization defined in claim 1, a chemical tank in the cleaning water line having a lid means adapted to be opened to place a chemical charge therein and a valve upstream from the tank adapted to cut-off the cleaning water flow when the lid means is open.

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