June 25, 1968 S. WILBURN 3,389,716

DRAFT BEER CLEANING AND FLUSHING APPARATUS

Filed July 19, 1965 2 Sheets-Sheet 1

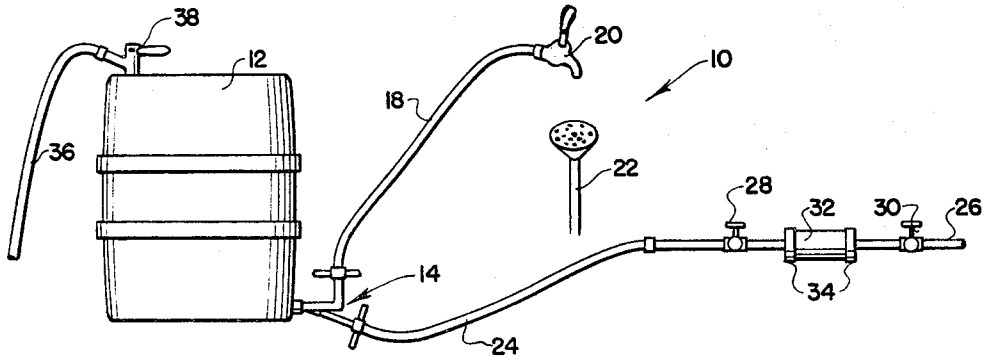


FIG. 1.

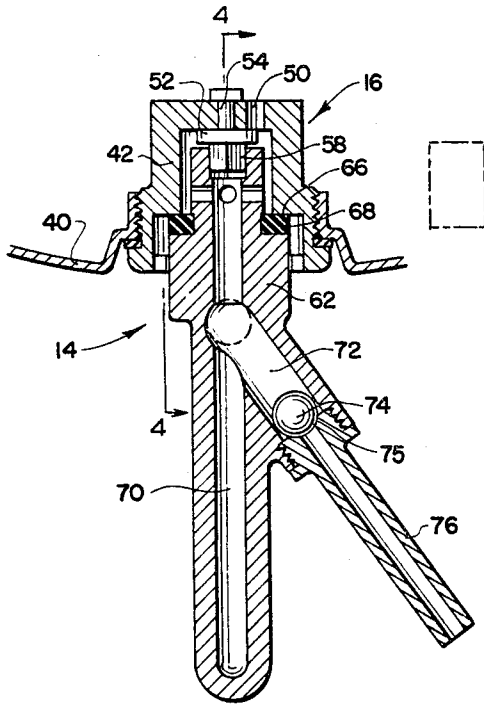


FIG. 3.

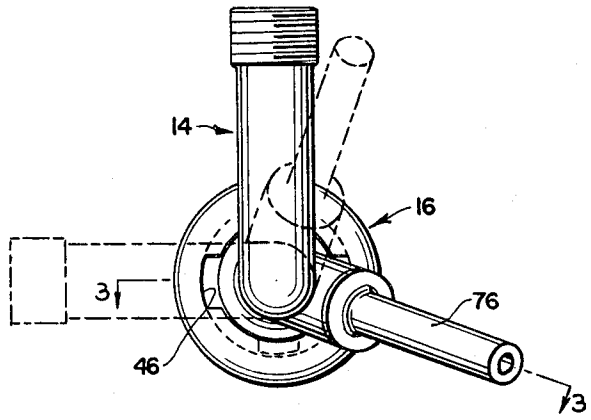


FIG. 2.

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DRAFT BEER CLEANING AND FLUSHING APPARATUS

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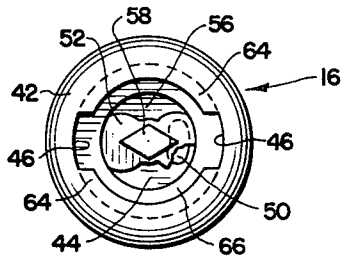


FIG. 5.

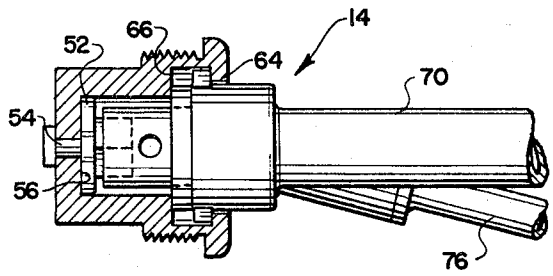


FIG. 4.

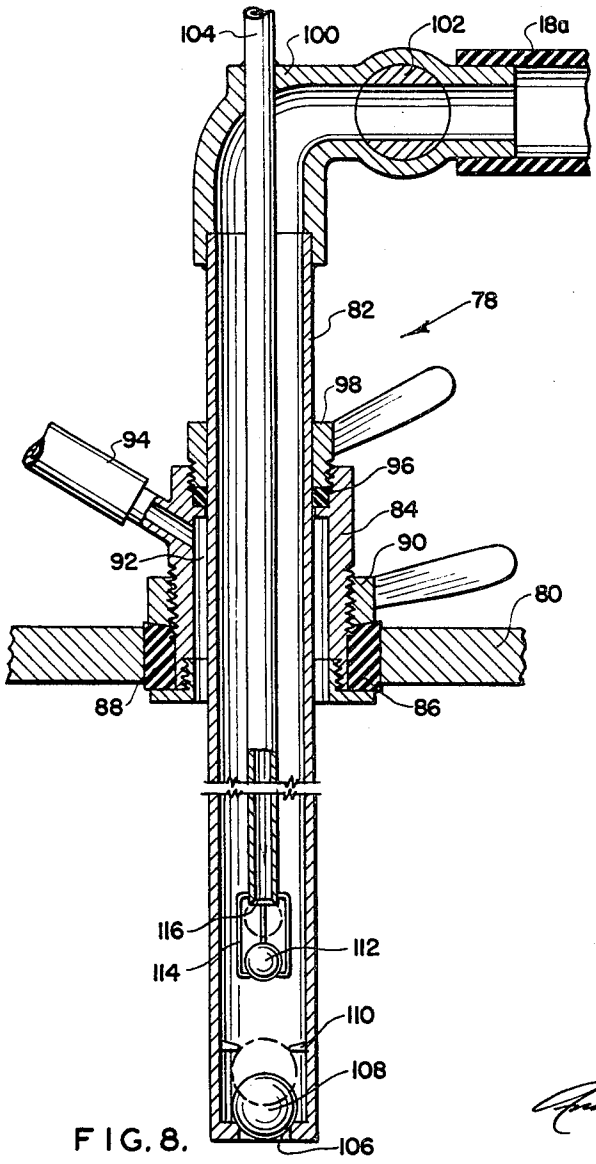


FIG. 8.

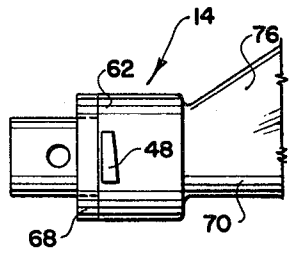


FIG. 6.

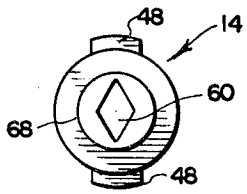


FIG. 7.

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3,389,716

DRAFT BEER CLEANING AND FLUSHING APPARATUS

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Filed July 19, 1965, Ser. No. 472,922
3 Claims. (Cl. 137—240)

ABSTRACT OF THE DISCLOSURE

A semi-automatic cleaning and flushing apparatus for a draft beer system having valve means at the end of the wash line to completely isolate the wash line from the flowing beer, which valve means is adapted to seat before the tap is removed from the keg.

Draught or keg beer is perishable and must be kept cold, usually between +36° and +40° Fahrenheit. The dispensing apparatus through which the beer flows requires special attention at various times to prevent any organic action which will spoil the taste of the beer. Usually between each keg change the lines must be washed out and flushed to prevent any such action from taking place. A similar problem is also created if the beer is allowed to set in the lines for an extended period.

Draught beer is currently being sold in stainless steel barrels in which the beer is kept refrigerated and under pressure. There are two basic types of tapping apparatus, one being the top draw tap rod and the other the more recent bottom draw "Golden Gate" valve tap, both of which are illustrated in the drawings and will be discussed in the material following.

The earliest method used for cleaning the lines was merely to disconnect both ends and run water through the system. This method entailed special washing lines and couplings to connect onto the system. Another method was to remove the tap rods from several kegs and interconnect them in pairs to obtain circulation from one faucet to another. To make up and remove the necessary connections in the above method was very time-consuming and cumbersome. The methods were also very inflexible in that the lines could not be cleaned until the kegs were empty.

A more recent method has been developed to alleviate the problems, which method is the subject matter of my U.S. Patent No. 3,044,483. Briefly, it includes a built-in wash line which passes down through the center of the tap rod with a check valve at the end of the rod to prevent the wash water from entering the keg. Water is introduced into the wash line, passing back up the tap rod and out through the tubing to the draw box. There are no special connecting or disconnecting operations. It is not necessary to remove the tap rod from the keg. The only disadvantage of the system is that as the beer is being used it has a tendency to slowly move up the open end of the wash line. After it sets in the line for a certain length of time it begins to stagnate. If the beer then passes back out the end of the wash line it will taint the taste of beer drawn from subsequent kegs.

In the bottom draw type kegs there is also a problem of spillage when the tap is removed. When the tap is disconnected from the keg a certain amount of beer which is in the lines, leaks by the ball check valve before it seats. The amount of leakage is small but its accumulation necessitates cleaning the refrigerator floor periodically for sanitary reasons.

The present invention is an improvement upon applicant's previously mentioned patent. It alleviates the problem of stagnation in the wash line by adding an additional

check valve at the end of the wash line to completely isolate the wash line from the flowing beer. The present invention has also eliminated the problem of spillage by constructing the check valve so that it seats before the tap is removed from the keg.

It is therefore the principal objective of the present invention to provide a novel and improved cleaning and flushing apparatus for the lines and rods of a draught beer installation.

Another object of the invention is to provide a cleaning and flushing apparatus which is integral with the beer dispensing installation so as to permit the cleaning without setting up and connecting separate flushing lines to the system.

Still another object of the invention is to provide a cleaning and flushing apparatus which is adapted to clean the entire conduct system from the base of the tap rod to the dispensing faucet without disconnecting the keg or any of the component parts thereof.

Another object of the invention is to provide an integral cleaning and flushing apparatus in a tap beer installation which is completely isolated from the flowing beer when it is not in use.

Still a further object of the invention is to provide in a draught beer installation a tapping coupling which prevents any spillage of beer from the disconnected lines.

Other objects of the invention are to provide a novel and improved cleaning and flushing apparatus for a draught beer installation which is semi-automatic, easy to install, simple to operate, reliable, low cost and durably constructed.

Other objects which will be in part apparent and in part pointed out specifically hereafter in connection with the description of the drawings that follows and in which;

FIGURE 1 is a perspective partially diagrammatic view of a bottom draw draft beer installtion illustrating the relative locations of the tap coupling, the tap lines and faucets, the gas line, and the wash line with its related components.

FIGURE 2 is an end view of the tap coupling shown in solid line in locking engagement with its corresponding valve and in dotted line in the release position.

FIGURE 3 is a sectional view of the coupling and valve in locking engagement taken along lines 3—3 of FIGURE 2.

FIGURE 4 is a partial sectional view of the coupling and valve taken along lines 4—4 of FIGURE 3.

FIGURE 5 is an end view of the Golden Gate type valve with the tap coupling removed.

FIGURE 6 is a fragmentary side view of the engaging end of the tap coupling.

FIGURE 7 is a fragmentary end view of the engaging end of the tap coupling.

FIGURE 8 is a fragmenetary sectional view of applicant's invention in a modified form.

Referring now to the drawings and more specifically to FIGURE 1, a draft beer system is shown in simplified form and is generally identified by reference numeral **10**. Various details of the system such as the coil box, refrigeration means, and gas source have not been shown in the interest of simplicity since they have no bearing on the present invention. In most commercial beer installations, more than one keg is used and these are connected in parallel with one another. These kegs are generally housed in a large refrigeration unit which is located remotely of the dispensing taps. In some installations the kegs are kept in the basement or in a separate room which entails a substantial distance that a beer must travel through its connecting lines. The keg **12** shown in FIGURE 1 is a modern bottom draw type keg. The tap coupling **14** attaches at the bottom edge of the keg

rather than in the top center as does the older type tap rod fitting which is shown in FIGURE 8. The coupling **14** attaches to and opens a valve **16** which is mounted in the keg. The valve **16** is commonly known in the trade today as a "Golden Gate" type valve. Releasably attached to the coupling **14** are two flexible lines. The first line **18** carries the beer from the keg to the dispensing faucet **20**. In the drawing, line **18** is simply illustrated but in actual use sometimes its length is well over a few hundred feet. Usually the beer is run through a set of cooling coils immediately preceding the faucet which are not shown in the present drawings. Positioned below the faucet **20** is a common waste drain **22**. Also connected to the coupling **14** is a wash line **24** which carries the cleaning chemicals and flushing water through the lines of the system. The opposite end **26** of the wash line is connected to a common water line. The valves **28** and **30** are kept closed while the flushing operation is not in use. Receptacle **32** contains the cleaning chemicals which are washed through the system by opening valves **28** and **30**. The ends **34** of the recetpacle are removable so that a new charge of chemicals can be inserted after each cleaning operation. To begin the cleaning operation, faucet **20** and valves **28** and **30** are opened. This releases water pressure through end **26** of the wash line. The water passes through the receptacle **32** carrying the chemicals and down the wash line **24**. The dissolved chemicals pass through the tap coupling **14**, up the beer line and out the faucet **20**. Valve **30** is left open until the beer lines **18** are completely flushed of any trace of the cleaning chemicals. Valves **28** and **30** are then closed and the system is ready for use. Line **36** which attaches to the top of the keg by means of fitting **38**, is an air line which supplies compressed air or gas to the keg **12**.

The novel and improved tap coupling **14** attaches to the keg **12** by means of a Golden Gate valve **16** as seen in detail in FIGURES 2 through 6. The valve **16** is mounted flush with the wall **40** of the keg, as can be seen in FIGURE 3. An end view of the valve **16** with the tap removed is shown in FIGURE 5. The valve body **42** has a centrally disposed recessed opening **44** in its outer end which is adapted to accept the end of the tap coupling **14**.

Peripherally spaced in the opening are a pair of oppositely positioned notches **46** which permit the tabs **48** on the tap coupling **14** to enter the opening **44**.

The valve entails a sliding plate **52** which covers a valve opening **50**. The oblong plate **52** is piovtally mounted at its center and held tightly against the valve body surface **56** by means of a pin or valve stem **54**. Formed at the outward end of the valve stem is a diamond-shaped operating lug **58**. When the stem and plate are rotated 90° the valve is fully open. The valve is operated by a lug **58** engaging opening **60** in the end of the tap coupling **14**.

The improved tap coupling is substantially L shaped with the wash line connection branching off from the main passage. The end portion **62** of the coupling which engages the keg is the standard fitting used with a Golden Gate type valve. Oppositely spaced around the periphery of the end portion **62** are a pair of wedge-shaped locking tabs **48**. As the tap coupling **14** is inserted in the valve opening **44** the tabs **48** must be aligned with the corresponding notches **46** in the opening. Once the tabs **48** are inside the flange **64** of the valve body, the tap coupling **14** is free to rotate into sealed engagement with the valve.

Because of the wedge shape of the flanges **64**, as the coupling is rotated it is forced inward toward the valve. A rubber washer **68** carried on the coupling is pressed into sealing engagement with the shoulder **66** of the valve body, as can be seen in FIGURE 3. As the tap coupling **14** is introduced into the valve opening **44** it is in the dotted line position shown in FIGURE 2. The coupling is rotated through a 90° arc to its fully locked position as seen in full line in the same figure. As the coupling is inserted in the valve opening **44** the lug engaging opening **60** engages the operating lug **58** of the valve stem. As the tap coupling **14** is rotated into sealing engagement the valve **16** is opened at the same time. Conversely as the tap coupling is rotated for removal the valve is closed, which permits the tap to be engaged or disengaged when the keg is not empty. In the old tap rod type fittings once the keg was tapped the rod could not be removed until the keg was empty.

The wash line **76** which intersects with the tap line **70** has a enlarged intersection portion **72** which contains a two-way ball type check valve **74**. In the prior art type wash lines, such as shown in Patent No. 3,044,483, there is only a one-way check valve to prevent the water from the wash line from entering the keg. The present invention incorporates a second check valve in the wash line to prevent any beer from flowing into the wash line and creating the stagnation problem previously mentioned. Attention is again directed to the solid line position of the tap coupling **14** in FIGURE 2. The wash line **76** is tilted downwardly at approximately a 20° angle from a horizontal plane. This angle is sufficient to cause the ball in the check valve **74** to roll down and seat against the passage opening **75** in the wash line. As the beer flows out of the keg and through the tap line **70** the wash line **76** is closed. When it comes time to disconnect the tap the coupling **14** is rotated to the disconnect position, as indicated in dotted line in FIGURE 2. In this position the wash line **76** is tilted upward causing the ball in the check valve **74** to roll downward and seat in the tap line **70**. This prevents any spillage of beer which is standing in the tap line as the tap coupling **14** is removed from the keg. The wash lines of the prior art in bottom draw type fittings are positioned axially down the center of the tap line. The check valve is also horizontally disposed and is therefore not seated when the fitting is disconnected. In these types of check valves a certain amount of beer will get around ball check valves before the flow causes it to seat. This undesirable feature is one of the problems the present invention corrects.

The cleaning and flushing operation is normally accomplished after the tap coupling is disconnected from the keg. As the dissolved chemicals enter the wash line **76** the ball check **74** has already seated in the tap line **70** preventing any of the wash water from passing out the disconnected end of the coupling **14**. As the tap coupling **14** is connected to a new keg the ball check **74** again seats in the end of the wash line and the cycle is repeated.

FIGURE 8 sets forth a modified form of the persent invention for use in a conventional tap rod type draft beer installation. The tap rod apparatus generally designated by reference numeral **78**, is centrally disposed in the top of a beer keg **80**. The removable tap rod **82** extends downwardly to the bottom of keg at a point where the beer is drawn. The tap rod **82** is held in the keg by means of a releasable sleeve coupling **84**. The coupling includes an expander ring **86** of rubber-like material which fits into the opening **88** in the keg. The coupling **84** is locked into sealed engagement with the keg by means of a threaded sleeve **90** which is tightened against the expander ring **21**. Passing through the coupling **82** to the interior of the keg is an air passage **92** which connects with an air pressure line **94**. The coupling **82** includes a second expander ring **96** which holds the tap rod **82** in sealing engagement when the threaded sleeve **98** is tightened against the expander ring **96**. At the upper end of the tap rod **82** is a right angle connecting head **100** to which the flexible tap line **18***a* is connected. Also included in the connecting head **100** is a common plug type valve **102** which is used to shut off the flow of the beer. All of the previously mentioned elements of the tap rod apparatus are conventional and well known in the trade.

The wash line **104** passes down through the center of the tap rod **82** to approximately the bottom of the rod.

Positioned in the opening **106** at the bottom of the rod is a ball check valve **108** which allows beer to enter the tap rod but prevents any of the wash water from entering the keg. Tabs **110** attached to the inside of the rod **82** act as limit stops for the ball **108**. Positioned at the bottom end of the wash line **104** is a second ball check valve **112** which prevents the beer from entering the wash line. Surrounding the ball **112** is a wire guard **114** which keeps the ball in alignment with the opening **116** in the wash line. The ball **112** is constructed of a plastic or similar material which has a lighter density than beer. When the beer enters the tap rod the ball **112** will float upward and seat in the opening **116** thus preventing the beer from entering the wash line.

It is understood that variations from the form of this invention disclosed herein may be made without departure from the spirit and scope of the invention and that drawings and specification are to be considered as merely illustrative rather than limiting.

What is claimed is:

1. A tap coupling for use in connecting both a wash line and a beer dispensing line to a key having a shut-off valve, in a draft beer installation comprising: a body portion having means for releasably and rotatably connecting the coupling to the shut-off valve of the beer keg in a fluid-tight relation, a pair of intersecting first and second passages in said body both of which connect and form a common passage to the interior of the keg via the shut-off valve, a first valve seat located at the intersection of said passages, a second valve seat located in the second passage remote from the first valve seat, ball check means positioned within said second passage for movement therein between the first and second valve seats and being adapted to selectively close either said common passage to flow into the keg via the shut-off valve while permitting fluid to flow from said second passage into said first passage or close said second passage to flow out of the keg while permitting fluid flow from said keg through said first passage wherein the ball of said ball check means is adapted to be selectively gravity actuated into seating relation with either one of said first and second seats upon selected rotational positioning of said coupling with respect to the shut-off valve.

2. A tap coupling as set forth in claim **1** including means on said body portion adapted to releasably connect with the beer keg shut off valve and move same between its open and closed positions by rotational movement of the fitting from a first position adapted to close the shut-off valve wherein the second passage is downwardly inclined toward said first valve seat causing the ball to seat in said first valve seat to a second position adapted to open the shut-off valve wherein the second passage is downwardly inclined toward the second valve seat causing the ball to seat therein.

3. A tap coupling as set forth in claim **1** wherein said releasable connecting means is engaged by rotating said coupling from a first position wherein the second passage is downwardly inclined toward said first seat to a second position wherein the second passage is downwardly inclined toward the second seat.

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