

April 9, 1940.

E. H. BRIGHAM

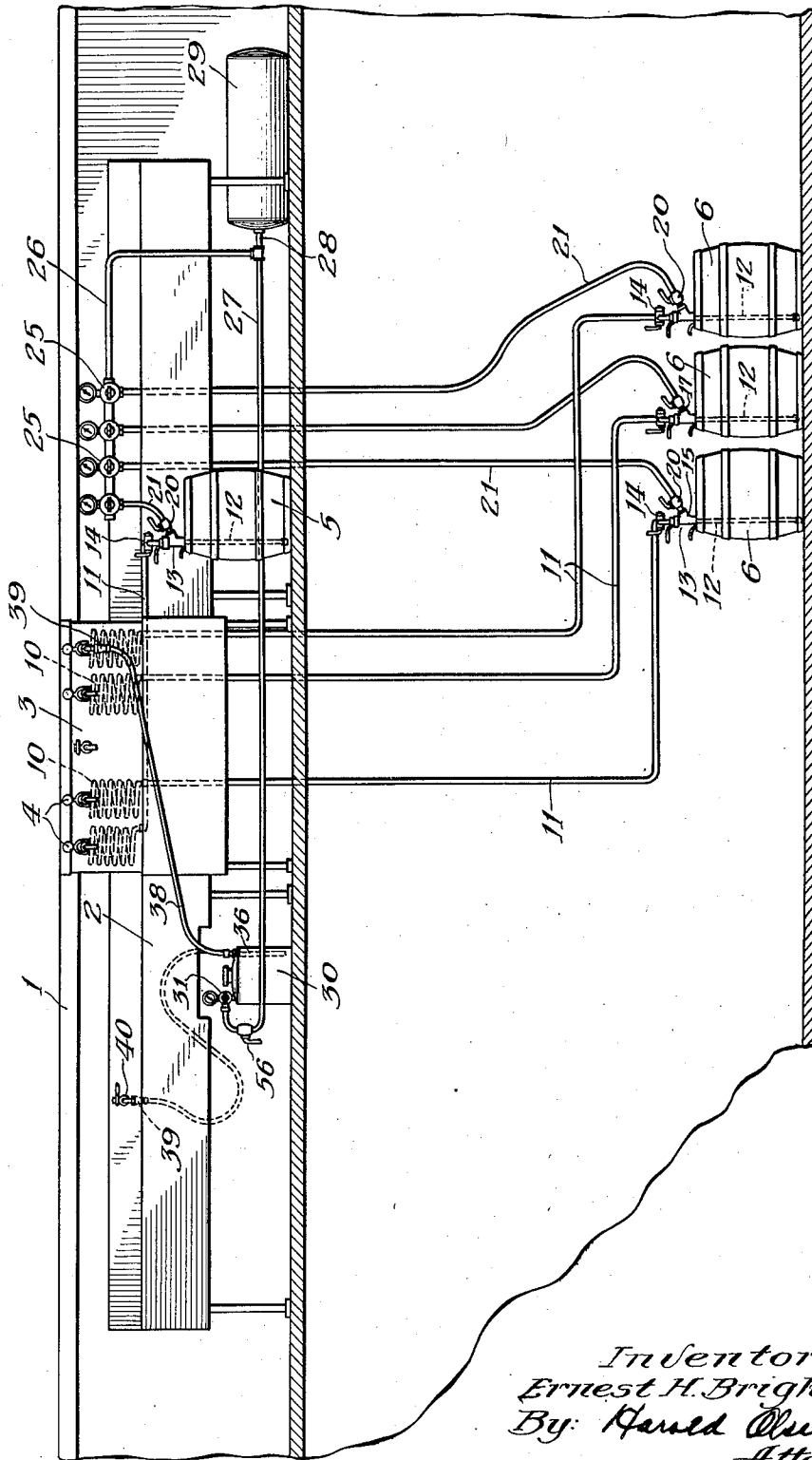
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METHOD AND MEANS FOR CLEANING BEER LINES

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Fig. 1.



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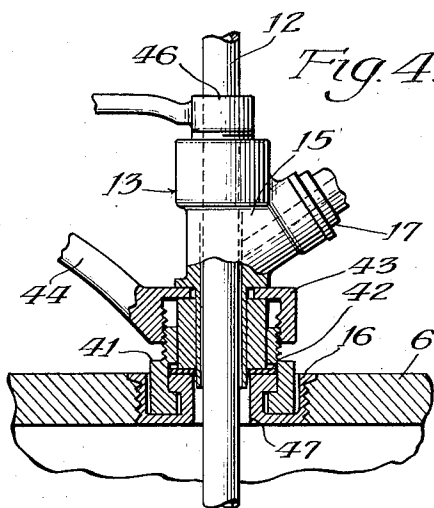
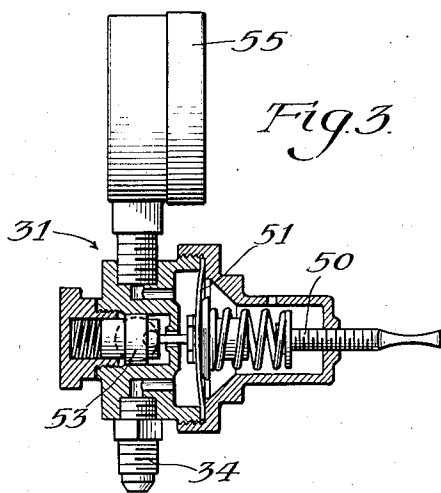
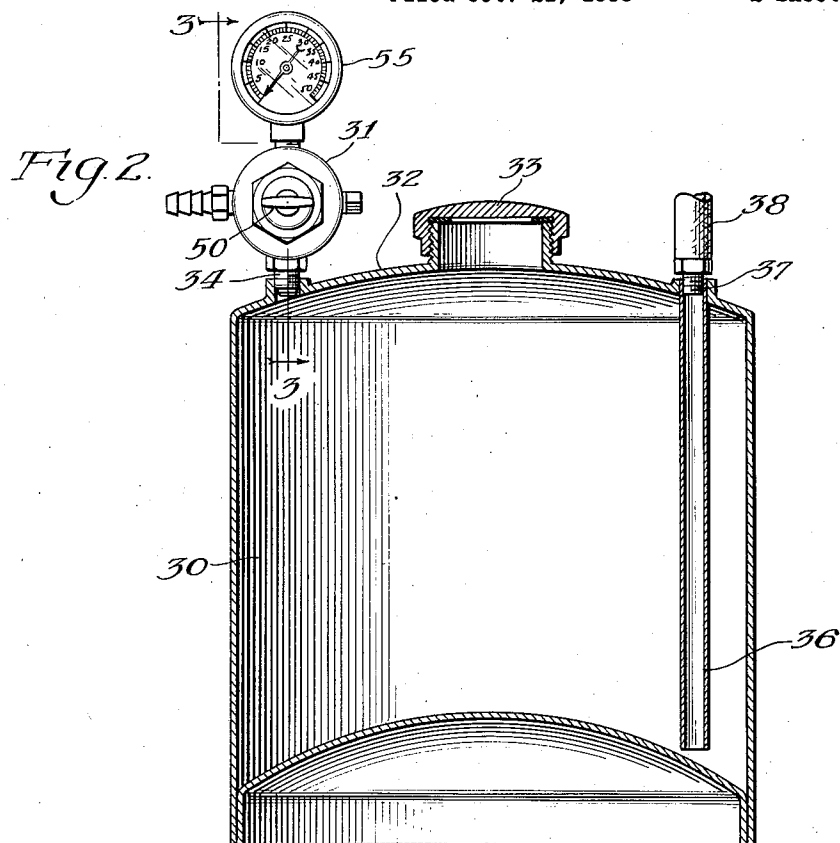
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METHOD AND MEANS FOR CLEANING BEER LINES

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5 Claims. (Cl. 225—12)

This invention relates to a method and means for removing, from beer dispensing lines or beer handling systems, material which is deposited therein from the beer solution, as said solution travels through the system. The character of the objectionable residue in these systems, which in sufficient quantity is, unsanitary, odorful, unpleasant to taste, and even toxic, is well known to those skilled in the art. There has heretofore, for some years, existed the problem of obtaining thorough cleaning, quickly, with the proper frequency and at sufficiently small expense.

Various schemes have been proposed and used for accomplishing the above purpose, but none has been entirely satisfactory. Such schemes include the running of shot through the system, or of the running of small sponges or steam therethrough, but these methods not only involve a considerable amount of work, but require specialists and considerable time to perform, and involve waste of beer, and are generally expensive and unsatisfactory.

Features of the invention include: The moving of a detergent and germicidal mixture through the beer line; movement of said mixture under a pressure which is greater than the pressure used to dispense the beer; the use of compressed air for forcing the fluid through the dispensing system; the use of the specific material; the use of any mixture of detergent and germicidal or fungicidal material for cleaning beer lines; the use of a dual purpose material as an element or step in the method; and the details of the construction of the apparatus, as well as all broader ideas of means and method inherent in the disclosure.

Another feature of this invention relates to the use of my device and its convenient placement, so that it is only necessary for the bartender to reach under the counter of the bar, pull out the delivery pipe or hose of the device herein, and connect the pipe to the beer dispensing spigot. This convenient operation is applicable whether a short beer line or a long beer line is used. The delivery line from my device to the spigot may be a long one, coming from the cellar. In the case of the short line the beer keg may be under the bar, in which case all that is necessary is for the bartender (as soon as the keg is empty) to reach under and disconnect the air from the keg, leaving the air line for the keg open to allow displacement of air from the keg, and then connect the end of the chemical delivery conduit of the invention herein with the spigot. Then turn on the com-

pressed air to force the cleaner from the reservoir through the system, and into the keg, as a catch-all. Note that whether the keg is under the bar or in the cellar, it can be used as a receptacle for receiving the cleaning liquid and its contained impurities.

This invention has considerable advantage over steam cleaning and other known systems, first, because they require the employment of professional cleaners, second, because they require a system which must be furnished by a contractor, and third, because the operator may come when the beer line is full, and in such a case the beer must be blown out and lost, and fourth, because all of these old systems are relatively expensive to use.

Objects, features and advantages of the invention will be set forth in the drawings forming a part of this specification; and in said drawings:

Figure 1 is a diagrammatic view showing my system and apparatus applied to a bar;

Figure 2 is a vertical section of a part of the system;

Figure 3 is a vertical section through one form of pressure and indicating valve for the receptacle which contains the cleaning fluid; and

Figure 4 is a section illustrating one form of tap-rod assembly, as applied to the top of a keg.

The numeral 1 generally indicates the bar, having a work table 2, a beer coil box 3, and beer dispensing faucets 4. A keg which is back of the bar is indicated at 5, and other kegs are indicated at 6, and are in the cellar. Any arrangement of kegs, of course, may be had. The illustration shows that the kegs can be arranged either under or at the bar or in the cellar, or in both places.

Each faucet 4 is connected with a beer line, each line including therein a cooling coil 10 connected by suitable piping 11 with a tap-rod 12, the tap-rod assembly being generally indicated at 13. The tap-rod has a valve 14. This tap-rod assembly may be of any well known construction and it is adapted to be so manipulated that the pressure in the keg can be relieved. It is also so arranged that the tap-rod can be withdrawn separately, and also so arranged that the body indicated at 15, can be attached to and detached from a bushing 16 (see Figure 4) of the keg. The body 15 of the tap-rod assembly has an air intake nipple 17, having an air control valve 20, and this air valve is connected by a line 21 with a pressure regulator generally indicated at 25. The pressure regulators are of

well known construction and a separate regulator is used for each barrel because each barrel may require individual pressure regulation. The regulators are generally made up in batteries of two or more and have a common pressure intake connected with a source of gas pressure, either air or carbon dioxide. In this instance the regulator is connected by pipe 26 with a second pipe 27 which is in turn connected at 28 with a compressed air tank 29. The tank 29 may be in the basement instead of behind the bar, as shown. This air supply tank also furnishes air for a device forming a part of the system of this invention. This device includes a receptacle indicated at 30. This tank or receptacle has an adjustable pressure regulator which may of the same kind indicated at 25. The tank regulator is generally indicated by the numeral 31.

As shown in Figure 2, the regulator is attached in the top wall 32 of the tank 30 and air is delivered through the nipple 34 into the top of the tank, to act on the top of the liquid (not shown) of the tank. The top of the tank is provided with a tubular filling opening closed by cap 33. Leading upwardly from the bottom of the tank and through the solution (not shown) is a delivery pipe 36 which passes through and is fixed in the top wall 32 and has attached thereto a tubular fitting 37. In communication with the fitting 37 and attached thereto in any suitable manner, is a flexible connection 38 having terminally thereof preferably a rubber cup 39 of any well known construction, adapted to be slipped or forced over the end of the faucet 4, as shown in Figure 1, to form a non-leak connection therewith. This connection 39 can also be slipped over the end of a water spigot 40, as shown in Figure 1, for the purpose of running water into the receptacle 30 for making up the line cleaning liquid. This is a feature of the invention related to the facility with which the method can be carried out. The invention is broader than the details, but these are also claimed. One of the problems has been to so simplify the system as to make it very easy for a bartender or his helper to clean out the line as often as it should be cleaned out. The object, of course, is to save time and expense by having the bartender or his helper clean the pipes. This should be done regularly and so as to have a clean line for each new keg.

In Figure 3 a sectional view of the pressure regulating valve 31 for the tank has been shown. It is, of course, understood that any form of valve may be used for this purpose. However, a suitable valve, in combination with the other elements, is believed to be new. By turning the valve stem 50 the diaphragm 51 and valve 53 are moved so as to regulate the pressure. The degree of pressure in the air line is readable from the pressure indicator 55. A valve 56 controls air from the supply tank 29 to the regulator 31.

Referring to Figure 4 and to the operation to be performed for relieving the air pressure in the empty keg preparatory to cleaning and sterilizing the beer line: Associated with the body 15 of the tap-rod assembly is a coupling member 41 which has elements (which are well known and need not be described in detail) which co-operate with other elements on the bushing 16 to attach the coupling member 41 to the bushing 16, a gasket 42 being interposed as shown. A rotatable collar 43, having a handle 44, is in threaded engagement with the coupling member 41, and the arrangement is such that by loosening the collar 42 and then rotating the coupling

member 41, with respect to the bushing, the connection is made so loose that air can escape from the keg. This much of the operation is well known and is merely explained in some detail because it forms one of the steps in one phase of the process herein. It is, of course, understood that the body 15 of the tap-rod assembly, along with the collar 41 may be entirely removed, the gasket clamp 46 may be turned to loosen the tap-rod 12, and the rod may be removed and again passed into the keg through the opening 47 of the bushing 16. Meanwhile, the body or assembly 15 with its element 41 can be connected to a new keg ready for insertion of the tap-rod 12 as soon as cleaning of the system has been accomplished.

In this invention there is first introduced into the receptacle about two ounces of a powdered detergent and germicidal mixture, then about two quarts of warm water are added, and then there is added enough cold water to make a total of three gallons of solution. While various gases or liquids may be used, the following material has been found very efficient and is claimed herein as a step in the method. The mixture comprises about 40% of tri-sodium phosphate, about 55% of sodium metasilicate, and about 5% of ortho-phenylphenate (a germicide). The solution is odorless, non-toxic and does not dis-flavor the beer. There is no intention to be entirely limited to this formula, although it is claimed per se.

After the lead-out conduit of the receptacle has been put into communication with the dispensing line, the air is turned on and the fluid is run through the beer line at a pressure of about five pounds greater than the pressure previously used in the line. For example, if the pressure was seventeen pounds, then the fluid is run through at a pressure of about twenty-two pounds. No rinsing is necessary; all cleaning and sterilizing is done in one operation.

In operation of the method, the proper quantity of the proper cleaning material is placed in the receptacle 30. If material of the kind disclosed herein is used, about two ounces of the mixture are first placed in the receptacle and then about three gallons of water are added to complete the solution.

It is a feature of this invention that the same hose or connection by which the cleaning material is led into the beer line is also used to bring water from a water-tap for the purpose of completing the solution of the cleaning substance used. This connection is not only attachable to the beer spigot or to any other suitable part of the beer line, but is attachable to a water spigot which is generally conveniently located on the work board, as shown in Figure 1. The positioning of my device and the arrangement by which this alternate connection can be made is believed new.

After the cleaning material has been placed in the receptacle 30 the attendant first attaches the element 39 to the faucet, then turns on the pressure to the receptacle by means of the valve 56, and then opens the faucet 4, thus conditioning the cleaning unit for operation as soon as certain manipulations are made, either at a keg which is under the bar, or at a keg which is in the cellar. Where cleaning is done with the line empty (which is the preferred method), the manipulations at the keg consist in first turning off the air to the keg by means of valve 20. The tap-rod fitting is then loosened to allow escape

of air from the keg, and immediately that this is done the pressure on the fluid of tank 30 forces the fluid through the system, and it is received by the keg. The tap-rod may be removed from its fitting and the fitting may be removed and then the rod may be again inserted in the opening of the keg.

In case it is desired to clean the line before the keg is empty, the manipulations at the keg consist in turning the valve 14 so as to prevent escape of beer (the pressure to the keg remaining as is usual), then element 11, which is generally flexible, is disconnected from the tap-rod, and is placed in a drain or other suitable receptacle. In this case, of course, the beer in the line is lost.

The usual gas and air pressure regulators are used and are diagrammatically indicated in the drawing. They are conveniently placed on or above the work table, under the bar. These regulators are in number corresponding to that of the kegs and can be separately set for the pressure desired. They are equipped with pressure indicators. These regulators are generally all connected to a common line, and this line is put in communication with the air or carbon dioxide supply wherever located. This supply has been shown in Figure 1 as located beneath the bar. Ordinarily the gas and air pressure regulators, or regulators as they are commonly called, are connected with a multiple, valve-controlled air distributor (not shown), and the nipples of the distributor are connected with the tap-rods of respective barrels or kegs. In the drawing valves 20 have been substituted for this distributor, a valve for the air line to each tap-rod. This arrangement, of course, is the equivalent of the air distributor, in that the air to the tap-rod (keg) can be cut off while the cleaning fluid is being run through the beer dispensing system or beer line. Where a keg is back of or under the bar, as shown in Figure 1, of course the air valve is easily accessible. It will, of course, be understood that the air distributor with its valves may be used and placed directly beneath the gas and air pressure regulators.

With the present invention the cleaning is done as soon as the line is empty, and thus every keg is connected to a clean line. Another advantage of the present system is convenience to the bartender, so that he will not be so likely to neglect it. No employment of a professional is necessary.

Insofar as I am aware, no one has before, in a single operation, forced through a beer line a fluid which has both detergent and germicidal properties. I am aware that chlorine has been used as a germicide, but it has been forced through separately after the line has been cleaned by steam.

When chlorine is used as a germicide or disinfectant, a strong, thorough after-flushing is necessary, because of the toxic nature of this substance. Therefore, three operations are required, to wit: running the detergent through the line, running the chlorine through, and running the flushing material, generally water, through. Such a triple operation requires special operators, considerable time, and is correspondingly expensive. Of course, such a system requires special equipment and a professional to operate it. Steam, because of its high heat, is also objectionable for use with a refrigerating system. The cleaning material is, in this system, run through cold.

Another advantage of this system is that the

keg can be used as a receptacle for the cleaning liquid and its contained impurities, and thus it is unnecessary to use a drain. This is particularly advantageous when the keg is under the bar or on the same floor as the bar or in the cooler.

In this system the chemical cleans and sterilizes, and no rinsing is necessary. Another advantage is that the solvent reaches all parts of the system which the beer reaches, and thoroughly removes all of the gelatinous beer fungus and other objectionable material from valves and tap-rod. In some of the other systems it is necessary to separately clean the tap-rod. These systems cannot operate to dump the cleaning fluid into the keg, after the fluid has performed its cleansing function.

In cleaning tap-rods in the old system it is necessary to clean the rods separately and to do this the perforated cap at the bottom has to be removed. The lead shot and sponge systems cannot be used at all to clean the tap-rod when in the keg or without removal of this perforated terminal fitting. Beer dispensing lines vary from ten to one hundred and fifty feet in length. My method is applicable to all of them, as well as to other lines in which beer is handled.

Where it is desired to clean out the line before the beer keg or barrel is empty, the valve of the tap-rod is turned to prevent escape of the air from and reduction of pressure in the partly filled keg, then the beer line is disconnected from the tap-rod and the end of the line (which is usually flexible) can be inserted into a drain, or sink, or lavatory, and the process herein claimed can be carried out in the usual way after connecting the cleaning solution tank with the beer faucet and opening the faucet. Of course, in such a case the tap-rod is not cleaned and the beer in the line is lost. In my process the above procedure need not be used because a keg is generally emptied in twenty-four hours, and thus the empty line, including the tap-rod, can be cleaned, and the empty keg used as a catch-all.

The structure of the coupling member 39 can be varied to adapt it, for example, for connection to a tap-rod, the tap-rod being removed from the keg, and the coupling from tank 30 made directly to the rod instead of to the faucet 4. The flow is thus reversed in the sense that it starts through the tap-rod and ends at the spigot, rather than starting at the spigot and ending at the tap-rod.

I believe it new to so place this system that all of the manipulations can be made by the bartender while he is in his position behind the bar. To this extent I claim the combination with a bar, of my device and the connections by which the method can be so conveniently carried out.

In the drawings, the ordinary form of work table has been shown with its beer dispenser unit, including the ice box in which the beer coils are contained. Of course, there are systems in which automatic refrigeration is used, but it will be understood that in either case the advantage of the present system is that the cleaning and germicidal solution is run through cold, so that no heating of the coils occurs, as when steam is run through. In the case of automatic mechanical refrigeration there is no interruption to nor interference with the operation of the same.

Therefore, objects of this invention are to provide a method and means by which an entire beer line, including the cooling coils, can be more quickly, more cheaply, more easily, and more thoroughly cleaned and freed from contami-

nating flavors and odors incident to beer dispensing.

The device is most conveniently placed beneath the work board or bar interior, out of the way, but in conveniently accessible position. As soon as a keg is empty the nozzle of the device herein can be attached to the beer spigot, the air pressure can be turned on, and the solution caused to flow through the entire line, and this can be done quickly while another keg is being made ready to tap.

The present invention provides means which can be used just as soon as a keg is emptied, and before a new keg is attached to the line. The cost of the cleaning is materially reduced; is not more than the cost of a glass of beer. There is no interruption of service, because no service man is necessary, with his equipment, such as steam hoses and other apparatus, which he generally brings with him. There is no loss of the beer in the line, because the present cleaning method is applied after the line is empty of beer; there is no melting of the ice on the cooling coils; no flushing or rinsing is necessary; there is nothing harmful to the metal of the line, and the entire line, including spigots, cooling coils, tap-rods, valves and tubing, are thoroughly cleaned, because the cleaning fluid reaches thoroughly every part that is reached by the beer, when the line is in use. The material used will not flavor the beer, is not toxic, and is cheap.

In cleaning with old methods and with old apparatus, as with steam, sponges or shot, the cleaning is generally done only about once a week, and with the loss of beer. With other methods there is inconvenience, loss of time (about one hour), and the line remains clean only about twenty-four hours.

With the present invention, cleaning can be accomplished every day at a total weekly cost of about eighty-seven cents (one half of the cost of cleaning by other methods), and without time loss of not more than five minutes per operation.

A particularly good feature about the methods herein is that preliminary manipulations are first made at one station and then at another, and that after making the second manipulation (at the barrel), cleaning starts automatically without further manipulations at the bar. Thus there is no unnecessary running back and forth from one station to the other. In a case where the barrel is in the cellar it is seen that running back and forth would be quite objectionable. So the first manipulations are made by attaching the cleaning line to the faucet, opening the faucet, and then turning on the air at 56, after which the only thing that is necessary is to make such manipulations at the keg as are necessary to either release keg pressure or let it remain on and prevent escape of beer from the keg.

It is here noted that the forcing pressure of the cleaning liquid is greater than the keg pressure. The reason for this is that after attachment of the cleaning line to the faucet and opening of the faucet there are two opposing pressures in the line, since the dispensing pressure in the beer line is still on until the operator makes the proper manipulations at the keg. Therefore, the pressure in the line 27 and through the tank 30 and line 33 is made about five pounds greater than pressure to the beer keg coming through the line 24, valve 20 and the tap-rod fitting.

It is contemplated herein that the system of this invention be incorporated or built into a

bar and for that reason claims have been made to this combination.

As before stated, the attendant ordinarily opens the faucet 4, after the pressure to the receptacle is turned on, by means of the valve 56, and before the beer line pressure is turned off. However, this is not always necessary, though it is desirable. The faucet may remain closed until the line pressure is turned off, but also in such a case it will be necessary for the faucet to be opened after the proper manipulations are made at the keg. In case the keg is in the cellar, this will necessitate either another trip to the faucet, or a second person at the faucet who will open the faucet as soon as these manipulations are made by the first person at the keg. It is, therefore, an object of this invention to provide a method by which the beer line can be cleaned, either by opening the faucet, or closing the faucet, after the pressure to the receptacle has been turned on.

The invention can be used to simultaneously clean out two beer lines, in which case the lines from two kegs are detached from the tap-rod and are so connected that the cleaning fluid entering at the spigot of one line passes through that line into the other line and out of the spigot of the other line. All methods of manipulation are claimed. It is again to be noted that the cleaning fluid can be run in from that end of the line which is connected to the tap-rod, in which case the rod will have to be cleaned separately. However, under these conditions the fluid pressure valve of the tap-rod is turned off and the air to the keg is left on. Thus, the pressure remains on the keg but no liquid escapes when the line is disconnected from the tap-rod.

I claim as my invention:

1. A method for cleaning a beverage dispensing line which has a fluid pressure system for dispensing the beverage and for which dispensing line there is a receptacle from which a cleaning and sterilizing substance is forced into the dispensing line by pressure supplied by the pressure dispensing system, which consists, in connecting the cleaning substance receptacle with the dispensing line while said line is under pressure supplied by its pressure dispensing system, then applying pressure from the said same pressure system to the cleaning substance in said receptacle sufficient to be capable of forcing said substance into and through the dispensing line, then so manipulating some part of the dispensing line as to release the pressure therein to allow such pressure action on the cleaning substance as to force said substance through and out of said dispensing line.

2. A method for cleaning a beverage dispensing system, which system includes, a dispensing faucet, a pressure source for dispensing the beverage, and a beverage supply receptacle having a tap-rod assembly, which assembly can be loosened to release pressure in the receptacle, which consists in operating the system to empty the receptacle, then establishing communication between a cleaner supply receptacle and the dispensing nozzle of the faucet, then applying pressure sufficient to force the cleaner through the faucet and system into the beverage supply receptacle, then manipulating the tap-rod assembly to release pressure in the beverage supply receptacle whereby with the faucet open, cleaning fluid is promptly forced through the system, through the tap-rod and into said empty keg.

3. A method for cleaning a beverage dispensing

ing system, which system includes, a dispensing faucet for dispensing the beverage, and a beverage supply receptacle having a tap-rod assembly, which assembly can be loosened to release pressure in the receptacle, which consists in operating the system to empty the receptacle, then establishing communication between a cleaner supply receptacle and the dispensing nozzle of the faucet, then applying pressure greater than the normal pressure of the dispensing system to force the cleaner through the faucet and system into the beverage supply receptacle, then manipulating the tap-rod assembly to release pressure in the keg, whereby with the faucet open, cleaning fluid is promptly forced through the system, through the tap-rod and into said empty keg.

4. In a dispensing system, a beverage dispensing faucet, a source of pressure supply, a keg, a tap-rod assembly for the keg, including a first valve controlling entry of dispensing fluid to the keg, a second valve controlling exit of the beverage from the keg to the dispensing faucet, and means for releasing keg pressure independently of the operation of said valves, a pressure line from said pressure supply source to said tap-rod including therein said first valve, a dispensing line from said tap-rod to said dispensing faucet including therein said second valve, a cleaning fluid receptacle adjacent said faucet having means thereon for regulating the pressure of fluid entering the receptacle, a pressure line from said pressure supply source to said regulator and having therein a valve which is adjacent said

regulator, a cleaning fluid supply line leading from the receptacle to said dispensing faucet, said pressure regulator being set to control the pressure entering said supply tank so that it is greater than the pressure from said source to said dispensing system.

5. In a dispensing system, a beverage dispensing faucet, a water supply faucet thereadjacent, a source of pressure supply, a keg, a tap-rod assembly for the keg including a first valve controlling entry of dispensing pressure fluid to the keg, a second valve controlling exit of the beverage from the keg to the dispensing faucet, and means for releasing keg pressure independently of the operation of said valves, a pressure line from said pressure supply source to said tap-rod including therein said first valve, a dispensing line from said tap-rod to said dispensing spigot including therein said second valve, a cleaning fluid receptacle adjacent said faucets having means thereon for regulating the pressure of fluid entering the receptacle, a pressure line from said pressure supply source to said regulator having therein a valve which is adjacent said regulator, a flexible cleaning fluid supply line leading from the receptacle to said dispensing faucet, and being of such length that it is adapted to also connect to said water faucet, said pressure regulator being set to control the pressure entering said supply tank so that it is greater than the pressure from said source to said dispensing system.

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