FLUID TRANSPORT LINE CLEANING DEVICE AND SYSTEM

Fig. 1

Fig. 2

Fig. 3

INVENTOR.

Anthony Marino

By

Attorneys
FLUID TRANSPORT LINE CLEANING DEVICE AND SYSTEM

This invention relates to devices and systems for cleaning fluid transport lines and is particularly suitable for cleaning multiple lines which transport beverages for human consumption.

LINES WHICH TRANSPORT FLUIDS FROM ONE POINT TO ANOTHER AFTER EXTENDED PERIODS OF USAGE WILL FREQUENTLY COLLECT MATERIAL DEPOSITS WHICH RESULT IN DETERIORATIVE EFFECTS SUCH AS LINE CLOGGING OR AN EFFECT ON THE QUALITY OF FLUIDS BEING TRANSPORTED.

PRESENTLY THESE LOCATIONS ARE FURNISHED BEVERAGES SUCH AS SOFT DRINK SYRUPS AND BEER COMMONLY FOUND IN RESTAURANTS, TAVERNS, AND CONCESSION LOCATIONS.

This invention is commonly referred to as a tap rod or keg tap inclusive of a hollow elongated rod which extends down into the keg and has a beer outlet and an air or carbon dioxide inlet for introducing the same into the keg. This tap rod is normally coupled to the transport line and faucet at the bar and is arranged to couple and uncouple in a joint at the top of the keg so as to permit removal of an empty keg and replace it with a full keg. As a result of such repeated use of the tap rod, transport line and faucet over extended periods, cleaning is required.

Accordingly, it is an object of this invention to provide a simple, durable and efficient device suitable for cleaning various types of fluid transport lines or pipes.

Another object of this invention is to provide a novel device having a high volume capacity which is particularly suitable for selectively cleaning a plurality of separate fluid transport lines or pipes.

It is still a further object of this invention to provide a novel fluid transport line cleaning device which may be installed as a wall or floor mounted assembly at a convenient location.

It is still a further object of this invention to provide a fluid transport line and faucet cleaning system having a high volume capacity for a dispensing system having multiple lines such as a dispensing system for beverages including soft drinks and beer.

Other objects, advantages and capabilities of the present invention will be more apparent as the following description proceeds taken in conjunction with the accompanying drawings in which:

FIG. 1 is a perspective view of a fluid transport line cleaning device embodying features of the present invention.

FIG. 2 is a sectional view taken along lines 2-2 of FIG. 1 showing the interior of the cleaner reservoir and mixing chamber, the associated valve controlled fluid inlets and outlets thereof.

FIG. 3 is a sectional view taken along lines 3-3 of FIG. 2 further illustrating the fluid flow at the intake and outlet of the reservoir.

FIG. 4 is a generally schematic perspective view showing a typical dispensing system commonly found at the bar of a tavern having the device of FIG. 1, mounted under the bar counter for cleaning lines which transport soft drinks and beer from containers to dispensing faucets mounted on the counter.

Referring now to the drawings in FIGS. 1 through 3 there is illustrated a cleaning device embodying features of the invention and in FIG. 4 a line cleaning system incorporating such device interconnected with typical fluid transport lines commonly associated with soft drink and beer faucets at a counter location. As shown in FIGS. 1 through 3, the fluid transport line cleaning device generally designated numeral 9 includes an upright container or reservoir 11 having a hollow interior or chamber of generally cylindrical shaping having a top opening 12 through which a quantity of cleaning material is introduced which is normally covered by a lid 13.

The lower or base portion 14 of the container is of substantial thickness and has an inlet passage 15 which extends downwardly and then upwardly into the interior of the chamber adjoining one side wall. A fluid input line or conduit 16 is connected to the container in a fluid discharging relation to passage 15 and has a line fitting or coupling 17 at its intake end for attachment to a fitting of preferably a water source line (not shown). A valve 18 is provided in the line for controlling the rate of water input to the container 11 or shutting off all water input when desired.

A discharge passage 21 is formed in the base portion 14 distant from and preferably oppositely of the inlet passage 15 which extends downwardly adjoining another side wall and outwardly through that side wall. A screen 22 is preferably disposed in the discharge passage 15 to hold unmixed particles of cleaning material and foreign matter if present in the container which might otherwise plug the lines.

A conduit or pipe section 23 is connected at its intake end in receiving relation to the base portion of a container to pass fluid flow from the container and specifically from discharge passage 21. This conduit or pipe section 23 has a plurality of pipe outlets herein designated 24, 25, 26 and 27 with two illustrated in detail and the other two indicated in dash lines to pass fluid in separate streams from the conduit or pipe section 23. The number of these pipe outlets from pipe 23 may vary but in the system hereafter described four are referred to in order to correspond to four faucets shown and being used for explanation purposes in FIG. 4. Each of these pipe outlets have a similar control valve 28 in pipe section 23 reg-
ulating flow therethrough and a line coupling or fitting 29 at the discharge end is provided for attachment to a transport line such as a flexible line to be cleaned as hereafter described.

Another conduit or pipe section 31 forming a down stream portion of and in receiving relation to pipe section 23 is provided. Pipe section 31 has a generally uniform internal diameter as indicated in dash lines in FIG. 1 and is shaped for slidably receiving a hollow rigid pipe or line which in the form illustrated and described herein is a pipe 30 to conduct beer from a beer keg or drum. Sufficient space is provided between the inner wall of pipe section 31 and the outer diameter of the tap rod fitted therein to allow the mixture of cleaning material to pass therethrough to clean the exterior of the tap rod. A valve 30 at the discharge end of section 23 controls the flow through the pipe section 31.

Pipe section 31 has a line coupling or fitting member 32 similar to that found on a typical beer keg for connecting to a tap rod fixture coupled to the transport line passing to the beer faucet as hereafter described. Upper and lower brackets 33 and 34 are preferably secured to the pipe section 31 to provide a wall mounted assembly. Preferably pipes 16, 23, 31 are all of a rigid material such as brass and joined by welding to each other and to the container 11 by welding so as to form an integral assembly which may be mounted on an upright wall to dispose the entire cleaning assembly in an upright position as shown in FIGS. 1 and 4. A wall mounting is preferred to locate the device 9 so that it will not interfere with personnel movement behind the bar and be supported for ease and convenience for coupling the lines thereto.

The liquid dispensing system shown in FIG. 4 is associated with a counter 49 of the type frequently found at the bar of a tavern and which usually includes a plurality of soft drink faucets herein illustrated as four and faucets 41, 42, 43 and 44 mounted in spaced relation on the inner side of the counter and a plurality of beer dispensing faucets 46 and 47 similarly mounted. Soft drink syrup is furnished from a supplier in containers such as containers 51 and 52 which are normally disposed under the counter 41 and are connected to the faucets such as faucets 44 and 45 through fluid transport lines 53 and 54 usually of a plastic tubing or the like. Suitable conduits or fittings 51a and 52a are provided on the outlet lines of containers 51 and 52 respectively for connecting to the intake ends of transport lines 53 and 54. An air inlet 55 is provided for container 51 and air inlet 56 is provided for container 52 to force the syrup through the lines and associated faucets. A pair of beer kegs 57 and 58 are shown with keg 57 being illustrated in an operative position for delivering beer from the keg through a fluid transport line 59 through faucet 46. A typical tap rod fixture 61 is illustrated in FIGURE 4 having a tap rod portion 62 extending downward into keg 48 disposed under the counter and an air line 63 is also interconnected to deliver air under pressure or carbon dioxide into the beer keg 57.

A tap rod fixture 64 which is normally connected to keg 58 has been removed and its rod portion 65 inserted into the cleaning device 9 for cleaning which is mounted in an upright position on a wall section 66 of the counter. A fluid transport line 67 is connected between the tap rod fixture 64 and faucet 47 and an air inlet 68 to the fixture is shown. Fluid transport lines 53 and 54 associated with the soft drink faucets 43 and 44 respectively is interconnected to the outlet lines 24 and 25 of the cleaning device 9.

With the supply containers disconnected and the line cleaning device 9 as connected in a line cleaning system as shown in FIG. 4, a quantity of cleaning material such as caustic soda, sal soda or like materials which are at least partially soluble in water is first placed in the container 11 and a valve 18 is opened so as to pass water through the inlet passage 15 upwardly into the container 11. The water and cleaning material are mixed in the container 11 and this mixture is passed through the discharge passage 21 into lines or pipes 28 and 31 under pressure provided by the water source.

Depending on the settings of the plurality of valves 28 and valve 30 this mixture or solution of cleaning material is passed into the lines 53 and 54 and around the tap rod portion 65 and into the fluid line 67 to fill these lines. After the lines have been flushed for an extended period of time and the cleaning mixture or solution is given ample time to provide a cleaning effect, the faucets 44, 45 and 47 will be open and the mixture will pass from these faucets. If no additional cleaning material is introduced into the container a continuous flow of water may then pass through the transport lines to flush the lines and faucets and clean out all excess cleaning material to leave the lines in a cleaned condition.

I claim:

1. A fluid transport line cleaning device comprising an upright container having an inlet in an upper portion for passing a quantity of cleaning material into the container and an inlet passage in a lower portion for passing a stream of water under pressure into the container for mixing with the cleaning material delivered into the container, said container having a discharge passage in a lower portion distant from said intake passage for delivering the mixture from the container to the fluid transport line and said conduit means coupled in a flow receiving relation to the discharge passage of said container and having at least one valve controlled outlet including means for connection with a fluid transport line so that when said valve controlled outlet is connected to a fluid transport line said conduit means selectively delivers controlled quantities of said mixture from said container into said transport line for cleaning said line, said conduit means including a valve controlled pipe having a downstream portion disposed in an upright position, said downstream portion having coupling means at its downstream end for connection with a tap rod fixture coupled in a discharging relation to a beer transport line and having a hollow rod portion arranged for extending within said downstream portion for cleaning said rod portion and said line.

2. A fluid transport line cleaning device comprising an upright container having an inlet at an upper portion for passing a quantity of cleaning material into the container, an inlet passage in the lower portion for passing a stream of water under pressure into the container for mixing with the cleaning material delivered thereto and a discharge passage in a lower portion distant from the intake passage for delivering the mixture from the container, an essentially rigid, generally L-shaped conduit attached at its lower end to the side of the container in a flow receiving relation to said discharge passage, said conduit including a generally horizontal discharge section extending outwardly from the side of the container above the bottom of the container and a generally upright, tap rod receiving conduit section sized to receive a hollow tap rod, said upright section having a releasable coupling at its discharge end for connecting with a tap rod fixture to hold the tap rod in place while the cleaning mixture is passed upwardly along both its inner and outer sides.

3. A fluid transport line cleaning device comprising an upright container having an inlet at an upper portion for passing a quantity of cleaning material into the container, an inlet passage in the lower portion for passing a stream of water under pressure into the container for mixing with the cleaning material delivered thereto and a discharge passage in a lower portion distant from the intake passage for delivering the mixture from the container, a generally horizontal, discharge conduit section extending outwardly from the side of the container and a generally upright conduit section branching from said discharge section sized to receive a hollow tap rod in
5 spaced proximity to its inner surface, said upright section having a releasable coupling at its discharge end for connecting with a tap rod fixture to hold the tap rod in place while the cleaning mixture is passed upwardly along both its inner and outer sides, said discharge section having a closable outlet branching therefrom to discharge the cleaning mixture.

4. A fluid transport line cleaning device comprising an upright container including a relatively thick, broad supporting base with a flat bottom having an inlet in an upper portion for the passage of a quantity of cleaning material into the container, an inlet passage formed in the base for passing a stream of water under pressure into the container for mixing with the cleaning material delivered into the container and a discharge passage formed in the base distant from the intake passage for delivering said mixture from the container at a controlled rate, said discharge passage having screening means disposed therein; an essentially rigid, generally L-shaped conduit attached at its lower end to the side of the container in a flow receiving relation to said discharge passage and supported upright by the container, said conduit including a generally horizontal discharge section extending outwardly from the side of the container above the bottom of the container and a generally upright section sized to receive a hollow tap rod, said upright section having a releasable coupling at its discharge end for connecting with a tap rod fixture to hold the tap rod in place while the cleaning mixture is passed upwardly along both the inner and outer sides of the inserted tap rod.

References Cited

UNITED STATES PATENTS

988,899 4/1911 Ryan et al. 134—93
1,931,527 10/1933 Burkett et al. 134—93 XR
2,016,926 10/1935 Joepowitz 134—93 XR
2,146,895 2/1939 Hirsch et al. 134—93 XR
2,371,188 3/1945 Russell 134—167 XR
2,777,452 1/1957 Zwosta et al. 134—171 XR
2,827,070 3/1958 Gatz 134—93 XR

ROBERT L. BLEUTGE, Primary Examiner

U.S. Cl. X.R.

134—166