June 29, 1937. E. SCHAER 2,085,453

CLEANING DEVICE FOR HOSE, PIPES, AND THE LIKE

Filed June 29, 1935 2 Sheets-Sheet 1

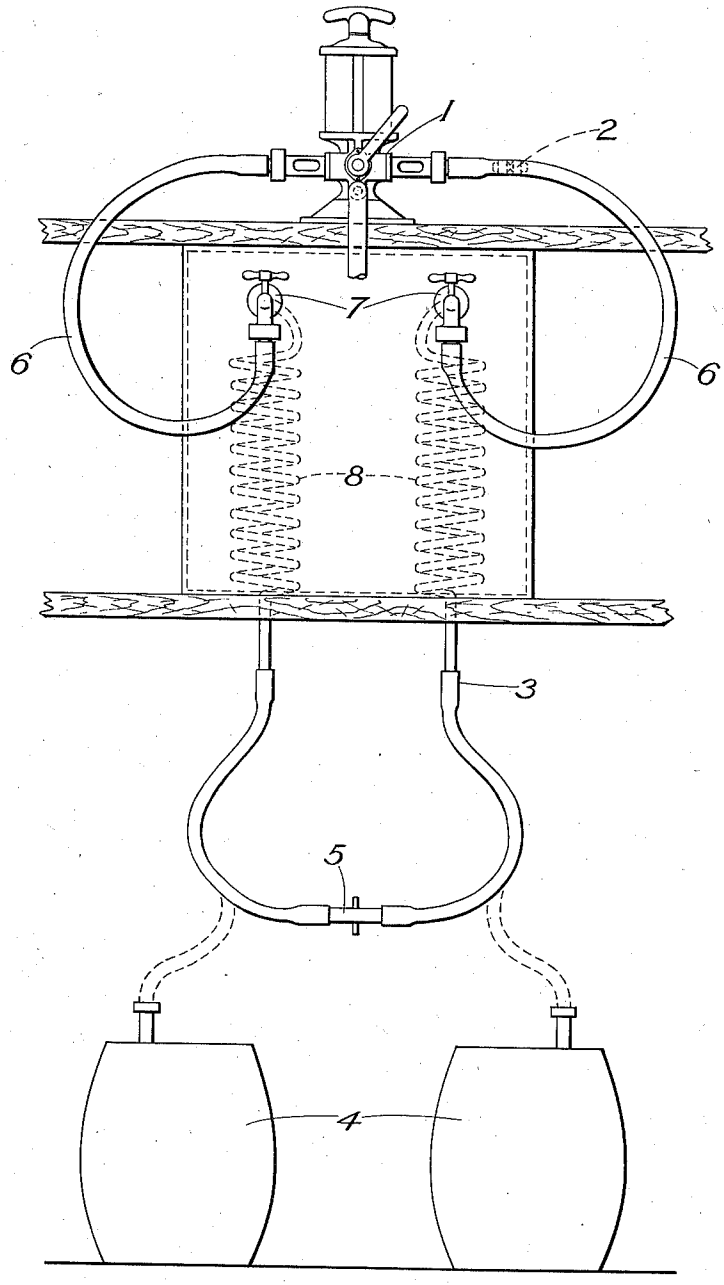


Fig. 1

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CLEANING DEVICE FOR HOSE, PIPES, AND THE LIKE

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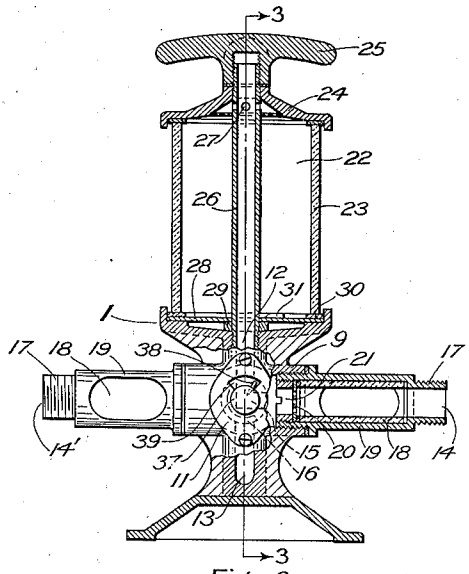


Fig. 2

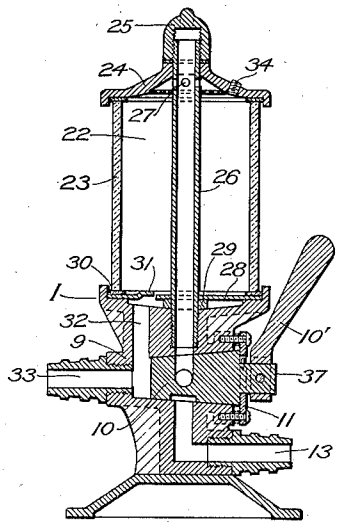


Fig. 3

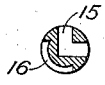


Fig. 5

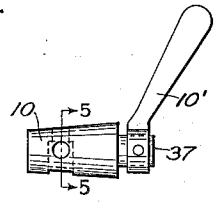


Fig. 4

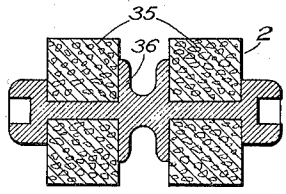


Fig. 6

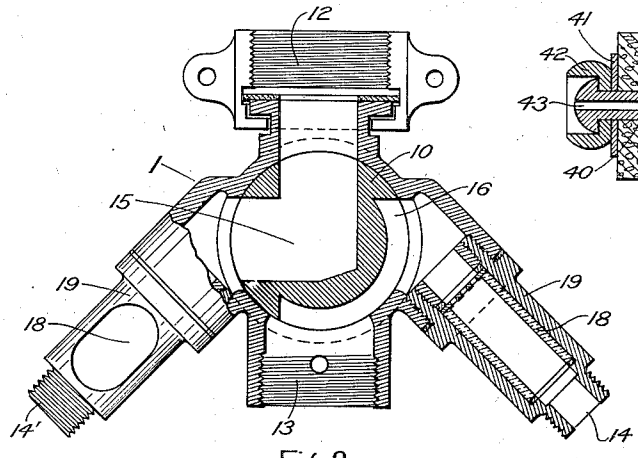


Fig. 8

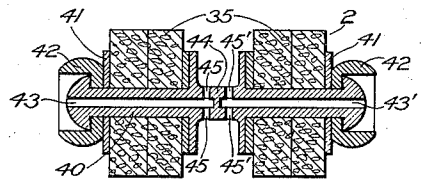


Fig. 7

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CLEANING DEVICE FOR HOSE, PIPES, AND THE LIKE

Eugene Schaer, Fort Frances, Ontario, Canada

Application June 29, 1935, Serial No. 29,059
In Canada May 9, 1935

3 Claims. (Cl. 225—12)

This invention relates to a cleaning device for hose, pipes, coils and the like and more particularly to a cleaner for brewers' beer hose and pipes.

The object of the invention is to provide a cleaning device which is effective in action and semi-automatic in operation.

Another object of the invention is to provide a novel valve means which may be used in connection with a cleaning device and which requires a minimum actuating movement for placing in a plurality of operating positions.

Another object is to provide a novel means for incorporating a sterilizing compound in the liquid employed in the cleansing operation.

Another object is to provide a novel frictional cleansing medium for a cleaning device.

The invention will now be described with reference to the accompanying drawings, in which,

Figure 1 is a diagrammatic view of the cleaning device as applied to the treatment of a beer hose,

Figure 2 is a sectional elevation of the valve means and associated parts,

Figure 3 is a section on line 3—3 of Figure 2,

Figure 4 is an elevation of a rotary valve member,

Figure 5 is a section on line 5—5 of Figure 4,

Figure 6 is an elevation of a frictional cleansing body,

Figure 7 is an elevation of another form of cleansing body, and

Figure 8 is a sectional elevation of another form of valve means.

In the drawings 1 represents the valve means and 2 the cleansing body, shown in Figure 1 as positioned in a beer hose circuit 3, formed by disconnecting the usual hose lines from the kegs 4 and connecting the ends of the same by means of the coupling 5, and short auxiliary lengths of hose 6 connecting the usual taps 7 to the valve. The usual cooling coils 8 may also be included in the circuit.

Referring to Figures 2 to 5, the valve means 1 comprises a housing 9 and a circular tapered valve member 10 mounted for rotation in a corresponding bearing surface within the housing 9, being held therein by the retaining flange 11 screwed to the housing 9. A handle 10' is provided for rotating the member 10 and, as shown, is keyed to a stem 37 on the member 10. Means are provided for positioning the member 10 in two operative positions and comprises a stop 38 carried by the stem 37 and adapted to engage the sides of an opening 39 in the flange 11 as shown. The housing 9 is provided with an inlet port 12, an outlet port 13 and two additional ports 14 and 14' oppositely disposed. The valve member 10 is provided with a channel 15 and a grooved portion 16. It will be noted that the channel 15 is adapted to register ports 12 and 14 or 14', while the grooved portion 16 is adapted to register ports 14 or 14' and 13.

Hose or pipe couplings 17 are provided in the ports 14 and 14' and incorporated therewith are observing glass assemblies comprising glass tubes 18 and metal covers 19. Screens 20 are located at the inner ends of the glass tubes 18 and retaining plugs 21 serve to hold the screens 20 and tubes 18 in place.

Means may be provided for adding a sterilizing compound or solution to the liquid supply and in this instance includes a mixing chamber 22 mounted on the housing 9 and consisting of a glass body portion 23 and a cover 24 positioned thereon by means of a screw handle 25. A tube 26, having threaded engagement with the inlet port 12 of the valve housing extends upwardly and centrally through the chamber 22 and is provided with a plurality of apertures 27 adjacent the upper portion of the chamber. A plate 28 forms the bottom of the chamber 22 and seats on the ring 29 surrounding the tube 26 and resting on the housing 9. A rubber gasket 30 may be provided for the purpose of maintaining the plate 28 and glass body 23 in liquid sealing engagement. A liquid distributing nozzle 31 is formed in the plate 28 adjacent the opening of a channel 32 formed, as shown, in the housing 9 and leading to an inlet 33. A priming plug 34 is located in the cover 24.

A cleansing body 2 is provided and, as shown in Figure 6, consists of a number of sponge rubber brushes 35 mounted on a rubber frame member 36. The cleansing body shown in Figure 7 is somewhat similar to that shown in Figure 6 and includes a brush retaining shaft 40 on which is mounted the brushes 35 with supporting washers 41 and a pair of guiding and propelling cup members 42 at either end thereof. Channels 43 and 43' are formed centrally in the shaft 40, being separated by a wall 44 in the shaft. Each channel is provided with a pair of ports 45 and 45' adjacent the wall 43.

In operation, the device is positioned in a hose circuit to be cleaned as shown in Figure 1, the hose lengths 6 being connected to the couplings 17 and a cleansing body 2 having been previously inserted therein. A suitable amount of sterilizing compound or solution is placed in the

chamber 22 by means of the priming plug 34. The inlet 33 is connected to a source of water, under pressure, which may be the usual water line. The water flows through the channel 32 and nozzle 31 which imparts a swirling motion to the water as it enters the chamber 22, thus ensuring a thorough mixing or dissolving of the sterilizing solution or compound in the water. The water, rising in the chamber 22, flows through the apertures 27, into the tube 26 and into the valve housing through inlet port 12. With the valve member 10 in the position shown in Figure 2, the water flows through channel 15, port 14 and into the hose where it engages the cleansing body 2 and propels the same through the hose circuit to frictionally cleanse the same of slime and sediment. The liquid ahead of the cleansing body 2 is forced into the housing 9 through port 14', around the grooved portion 16 and out of outlet port 13. When the cleansing body 2 arrives at the other end of the circuit, it engages the screen 20 and may be observed through glass tube 18. The handle of valve member 10 is then given a quarter turn or until the stop 38 engages the opposite side of opening 39, which registers ports 12 and 14' and 14 and 13, thus reversing the flow of water through the circuit and forcing the cleansing body back through the circuit again. The operation is repeated until clear water flows from the outlet port 13.

The frictional cleansing action of the sponge rubber brushes of the cleansing body is augmented by a suction action created by the vacuum where the brushes come in contact with the lining of the hose or coil due to the porousness of the brushes. Since the cleansing body is formed entirely of rubber, it possesses the necessary flexibility for proper negotiation of the bends and turns in the hose and coils.

The cleansing body shown in Figure 7 is particularly well adapted for the purpose required. In use, the cup members 42 assist in the propulsion and guiding of the body. Moreover liquid is permitted to enter the channel 43 and to flow out through ports 45, thus supplying a sufficient amount of water for lubrication of brushes 35. This liquid, together with any accumulation of dirt and slime, enters the ports 45' and emerges through channel 43' into the drainage portion of the circuit. The formation of vacuum in the space between the brushes is also avoided by this construction. The same action takes place in a reverse direction when the brush is travelling in the opposite direction.

The valve means shown in Figure 8 is similar to that shown in Figures 2 and 3 but differs somewhat in design and does not include a mixing chamber. The valve member 10 is the same as that employed in the modification shown in Figures 2 and 3 and the operation thereof is identical. Obviously a prepared sterilizing solution may be pumped through inlet port 12 in this modification instead of the usual water supply. On the other hand, the use of a sterilizing solution in the mixing chamber 22 of the modification shown in Figures 2 and 3 may be omitted.

It will be observed that the invention provides a most effective and convenient cleaning means, not only for beer hose and pipes, but for any type of hose, pipes or coils.

Only a small actuating movement (a one-quarter turn) of the operating handle of the valve means is necessary to effect the flow reversal, the neutral or closed position of the valve means being at the one eighth turn of the handle.

Various additional modifications of the cleansing body and valve means may be made without departing from the spirit of the invention as defined in the appended claims.

I claim:

1. A cleaning device for hose, pipes and the like comprising, in combination with a hose or pipe circuit to be cleaned a valve structure interposed therein having a liquid inlet and means for admitting a sterilizing solution to said inlet comprising a mixing chamber mounted upon said structure, means for placing a sterilizing material in said chamber, a liquid distributing nozzle in the bottom of said chamber connected to a source of water under pressure and a tube extending centrally through said mixing chamber, said tube having communication with said liquid inlet at its lower end and having a plurality of apertures at its upper end for the admission thereto of sterilizing solution from said mixing chamber.

2. A cleaning device for hose, pipes and the like comprising, in combination with a hose or pipe circuit to be cleaned, valve means interposed therein including a valve housing having ports communicating with said circuit, a liquid inlet, a waste outlet and a valve member adapted to place said liquid inlet and said waste outlet in direct communication with each of said ports, and means for admitting a sterilizing solution to said liquid inlet comprising a mixing chamber mounted upon said housing, a liquid distributing nozzle in the bottom of said chamber, a channel in said housing connecting said nozzle with a source of water under pressure and a tube extending centrally through said mixing chamber, said tube having communication with said liquid inlet at its lower end and having a plurality of apertures at its upper end for the admission thereto of sterilizing solution from said mixing chamber.

3. In a cleaning device for a hose or pipe circuit, a valve structure interposed therein having a liquid inlet and means for admitting a sterilizing solution to said inlet comprising an upright cylindrical mixing vessel mounted above said valve structure, a liquid distributing nozzle in the bottom of said mixing vessel, a channel in said valve structure connecting said nozzle with a source of water under pressure and a tube extending centrally through said mixing chamber, said tube having communication with said liquid inlet at its lower end and having sterilizing solution admitting means at its upper end.

EUGENE SCHAER.