Oct. 12, 1937. J. MARSHALL 2,095,823

COIL AND HOSE CLEANER

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Fig. 1.

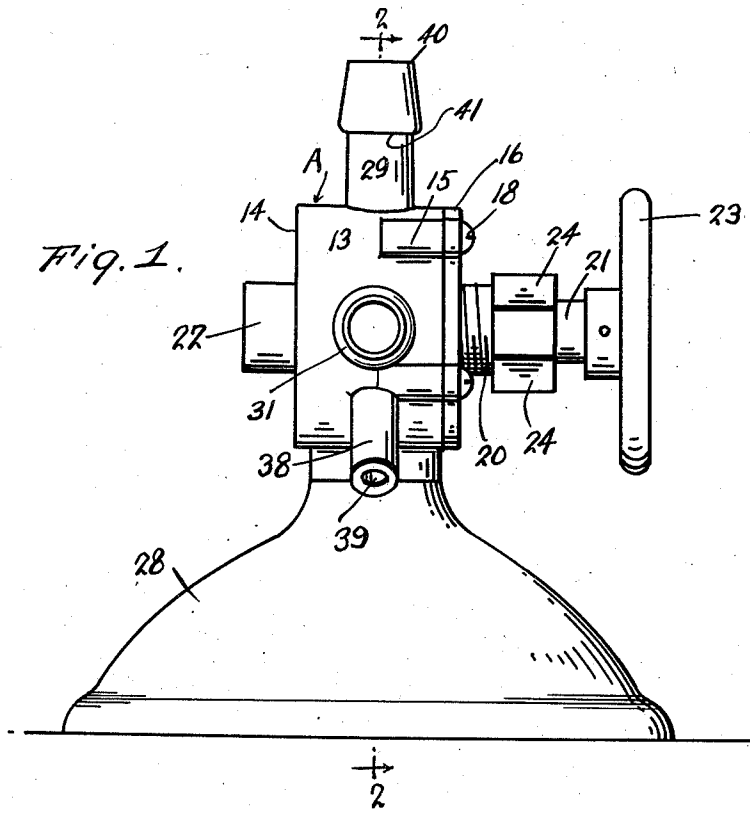


Fig. 7.

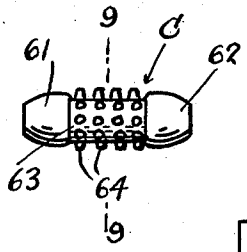


Fig. 8.

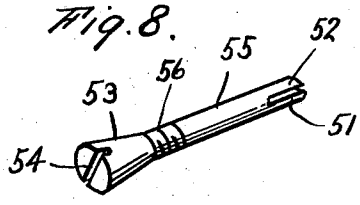


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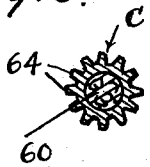


Fig. 10.

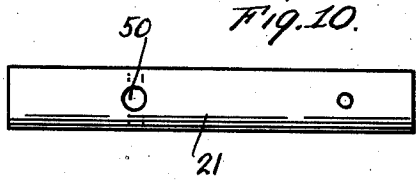
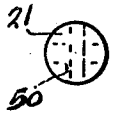


Fig. 11.



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Fig. 2.

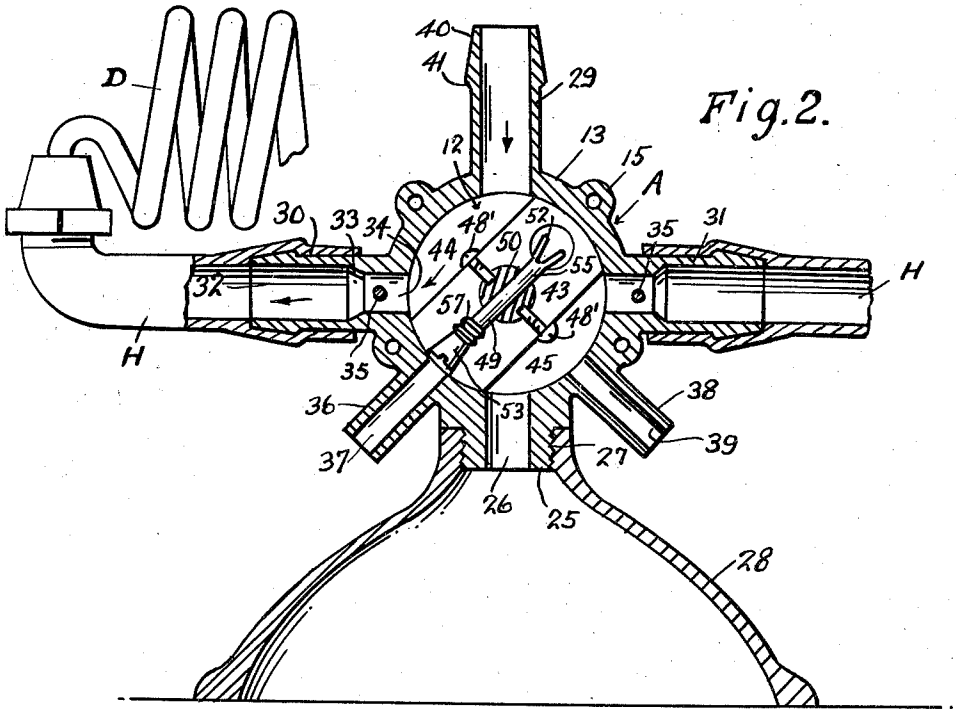


Fig. 3.

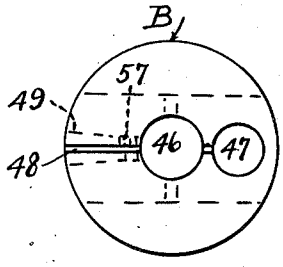


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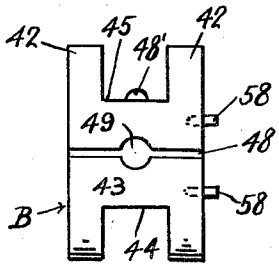
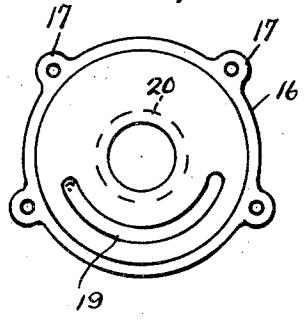


Fig. 5.



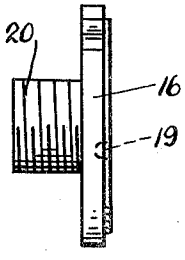


Fig. 6.

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COIL AND HOSE CLEANER

John Marshall, Fort Frances, Ontario, Canada

Application September 16, 1935, Serial No. 40,866

2 Claims. (Cl. 225—12)

This invention relates to a coil and hose cleaner.

The primary object of the present invention is to devise an apparatus for cleaning a rigid or flexible conduit circuit by utilizing water pressure to force a scavenging member through the conduit circuit which member is fashioned to scrape the incrustations from the inside of the conduit as it travels back and forth through the conduit circuit. The invention finds particular application to cleaning beer hoses and coils used for dispensing beer in hotels.

Another feature of the present invention is to provide a flow reversing device in the cleaning circuit in the form of a valve member wherein the valve body is provided with means for expanding the same against the walls of the valve chamber so as to insure a tight fit in the valve.

Another feature of the present invention is to provide a multi-way valve with flow indicating nipples that inform the operator when the scavenging element has reached the end of the circuit and at the same time enable the operator to inspect the wash-water to determine when the cleaning operation is complete.

Further objects of the invention are to provide a device of the character referred to that is simple and easy to operate, very economical to manufacture, that has no easily breakable parts, that can be quickly and easily connected up with the conduit circuit to be cleaned, and that eliminates the use of cleaning powders and solution with their attendant corrosive results, and that may be made in sizes to meet the demand for cleaning standard equipment.

With the foregoing and other objects in view the invention consists of a novel construction, combination and arrangement of parts as will be hereinafter more specifically described and illustrated in the accompanying drawings, wherein is disclosed an embodiment of the invention, but it is to be understood that changes, variations, and modifications may be resorted to without departing from the spirit of the claims hereto appended.

In the drawings wherein like reference of characters denote corresponding parts throughout the several views:—

Figure 1 is a side elevation of the flow reversing device constructed in accordance with the present invention.

Figure 2 is a detailed vertical section taken substantially on the plane of line 2—2 of Figure 1.

Figure 3 is an end view of the valve member removed from the valve casing.

Figure 4 is a side elevation of Figure 3.

Figure 5 is an inside face view of the cap of the valve casing.

Figure 6 is a side elevation of Figure 5.

Figure 7 is a side elevation of the scavenging member.

Figure 8 is a perspective view of the expanding pin.

Figure 9 is a vertical section taken substantially on the plane of line 9—9 of Figure 7.

Figure 10 is a side elevation of the valve shaft.

Figure 11 is an end elevation of the valve shaft.

Referring to the drawings in detail A indicates, in the form of the invention shown, a round valve casing with a round internal chamber 12. The casing is preferably formed of brass and has a peripheral wall 13 integral with a flat end wall 14 and at spaced points around the outside of the peripheral wall there are spaced internally threaded axially extending bosses 15 preferably four in number. There is a cap plate 16 formed with peripheral apertured lugs 17 which forms a removable end wall for the other end of the chamber 12. Screws 18 extend through lugs 17 and anchor in the bosses 15. The inside of cap plate 16 is smooth and there is an arcuate marginal slot 19 extending around an arc less than 180 degrees. There is an opening in the center of the cap plate 16 registering with an outwardly extending peripherally threaded neck 20. An intermediate portion of the valve operating shaft 21 is journaled in the neck 20, extends through the opening and across the axis of the chamber 12, and the inner end thereof is journaled in a bearing 22 on the end wall 14. The projecting end of valve shaft 21 has a hand wheel 23 keyed to the shaft. Embracing the outside of the shaft 21 is a gland packing nut 24 which is threaded on the neck 20.

The casing A is adapted to be supported in upright position and for this purpose there is a peripherally threaded radially projecting neck 25 on the peripheral wall 13 having an outlet port 26 therein for the water. This neck is connected to a threaded opening 27 on the top of a rigid dome base 28 preferably formed of a zinc alloy metal to resist rusting. Diametrically opposite neck 27 is an inlet nipple 29 having an inlet port through which water is introduced from the pressure water supply into chamber 12. At right angles to the neck and inlet nipple are formed on the peripheral wall 13 the radially projecting ported members or sleeves 30 and 31, respectively. Each sleeve has a large outer port or bore 32, and an intermediate tapered seat 33, the latter merging with a reduced inner port or

bore 34 that opens into the chamber 12. In each bore 34 is a diametrically extending pin 35 which bridges the passage to stop the scavenging member as will hereafter appear. Equi-distantly located between ported member 30 and outlet port 26 there is a flow indicating nipple 36 formed on the peripheral wall 13 and this tube has a passage 37 venting the chamber 12, while there is a like nipple 38 with a passage 39 similarly located between the ported member 31 and the outlet 26. The free end of the inlet nipple 29 and said members 30, 31 are formed with beveled peripheries 40 merging with radial shoulders 41 adapted to form a water-tight union with the respective hose line which are connected thereto as will hereafter appear.

The rotary valve body B has a limited rotation in the chamber 12. This body is formed with circular disks 42 at each end which conformably fit in the ends of chamber 12, and wipe against the inside of end wall 14, cap 16 and the margins of the peripheral wall 13. Between the disks there is a block or web 43 integral with the disks and bridging the valve chamber 12 in an axial direction. This web forms the peripheral port channels 44, 45 on the opposed segments of the valve body B. The valve body is formed with an axial bore 46 and a smaller eccentric bore 47. The valve body is partially split along the diameter by a slot 48 which extends from the smaller bore 47 through the center bore 46 and terminates on the periphery of the body. The valve shaft 21 extends through the center bore 46 and is keyed therein by set screws 48'. There is a radial bore 49 extending through the slot 48 and terminating in the eccentric bore 47 which is made to receive a pin which expands and tightens the valve body. The bore 49 registers with a diametric bore 50 in shaft 21.

The pin is split on one end to form the bendable prongs 51, 52 that when in the assembled relation lie within the eccentric bore 47 and are spaced apart as shown in Figure 2. The other end of the pin is formed with a peripherally beveled head 53 having a kerf 54 on the outer face to receive a screw-driver blade for adjusting the valve body. Between the ends there is a smooth round shank 55 that extends through bore 50 in the shaft and the juncture of the smooth shank and head is threaded at 56 which threaded portion engages threads 57 in radial bore 49. The end of the bore 49 may register with outlet passage 26 in a certain position so that the kerf 54 on the adjusting pin may be reached by a screw-driver. In the lateral face of one disk 42 are a pair of spaced controlling pins 58 which ride in slot 19 in the confronting face of cap 16 and they are arranged to form limit stops to stop the valve body in the proper position.

The flexible scavenging member is indicated at C. This member is elongated axially and formed with a sponge rubber core 60. On each end are bullet-shaped heads 61, 62. Between the heads is a cylindrical reduced section 63 formed with spaced solid rubber teats 64. The terminals of the teats are tangent to a common circle and generate a cylinder whose diameter is greater than the largest diameter of the heads.

In using the device it is placed in the sink in front of the beer taps to be cleaned. The scavenging member C, Figure 7, is placed in passage 32 in ported member 30. The device is connected in circuit with a coil D as, for instance, by hose sections H connecting the ported members 30 and 31 to said coil D as shown in Figure 2. The inlet 29 is suitably connected with a source of water supply under pressure for instance, a faucet not shown. With the parts positioned as shown in Figure 2 of the drawings, the valve body is at the extremity of its stroke in one direction, and in this relation water under pressure passes through port channel 44 into the ported member 30 thereby forcing the scavenging member C through the coil and hose circuit and back into passage 32 in the opposite ported member 31. As the member C travels through the conduit circuits it cleans the hoses and coils through which it passes. While scavenging member is traveling through this cycle of cleaning, water will be exhausting through outlet port 26 and running through flow indicating nipple 38. When water ceases to flow through the said nipple 38 the operator will know that scavenging member C is resting against pin 35 in member 31 and seating against beveled shoulder 33 after having completed a cleaning cycle through the conduit circuit. Wheel 23 is then turned to the end of its stroke in the opposite direction whereupon the valve member is set in a position opposed to that shown in Figure 2 and in this position flow indicating nipple 38 is closed and flow indicating nipple 36 is exhausting as well as the outlet passage 26.

When the change is thus effected member C is forced through the conduit circuit on a return cycle from ported member 31 through the coils D and back into passage 32 in ported member 30 whereupon water stops flowing from nipple 36 when the member C has completed its cycle, and is resting in seat 33 against the pin 35. The scavenging process is repeated until the water flowing from the flow indicating nipples is clear. A quarter turn of wheel 23 shifts valve body B from one open position to the other, and shifting the wheel one-eighth of a turn from either open position the inlet and outlet ports are closed and in this position the hoses H and coils D in the conduit circuit are relieved of water pressure at which time the apparatus may be disconnected therefrom. If the scavenging member gets stuck in the coils or hoses in the circuit, water will run slowly from the flow indicating nipples. By turning wheel 23 to the limit of its stroke in the other direction the scavenging member will be forced loose and back to its starting point.

Having described my invention, what I claim is:—

1. The combination with a beverage coil, of a flow reversing device, means connecting said device to said coil to form a circuit therewith, and a scavenger device movable through said circuit under fluid pressure; said reversing device comprising a casing having a pair of opposed inlet and discharge ports therein, the inlet port for connection to the source of fluid supply under pressure, a pair of ported members extending from said casing intermediate said ports, respectively, at opposite sides of the casing, said connecting means engaging said members, each member having a seat shaped to cooperate with said scavenger device to close the port in said member, a flow indicating nipple between each member and the outlet port, a valve member rotatable in said casing to different set positions to selectively establish communication between said inlet port and one of said members, and to place the other member in communication with the discharge port and the associated flow nipple while stopping flow through the other flow nipple.

2. A flow reversing device comprising a cylindrical valve casing closed at its ends and having an inlet port for admitting fluid into said casing and an outlet port for discharging fluid therefrom, a pair of ported members intermediate said ports and arranged upon opposite sides of said casing, respectively, a flow indicating nipple between each of said members and the outlet port and communicating with the interior of the casing, a valve member in said casing rotatable to selectively place one of said members in communication with the inlet port and the other member in communication with the outlet port and the indicating nipple inter-posed between the same, and to block communication between the other indicating nipple and said casing.

JOHN MARSHALL.