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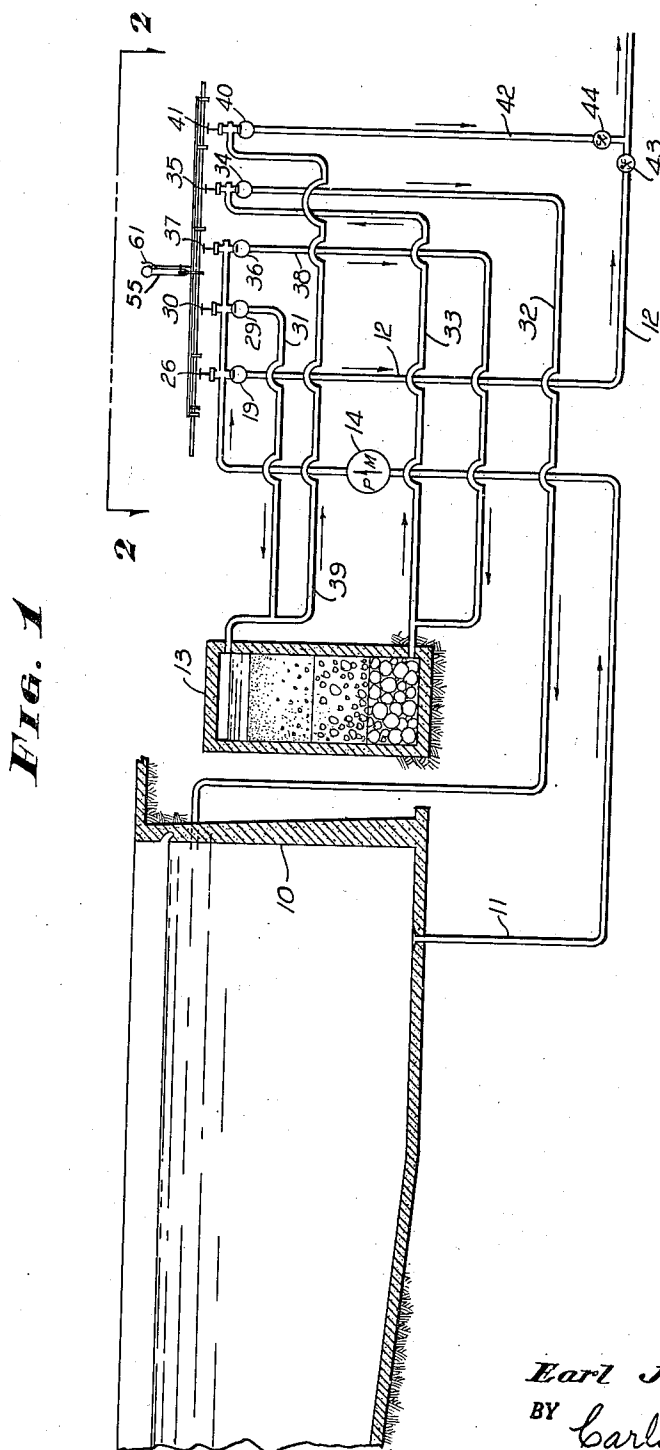
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SWIMMING POOL APPARATUS

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2 Sheets-Sheet 1



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FIG. 4

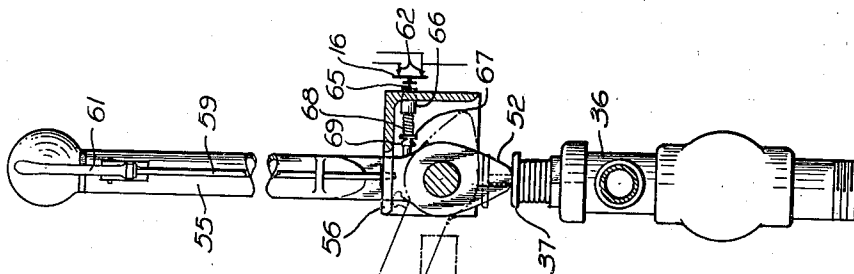


FIG. 2

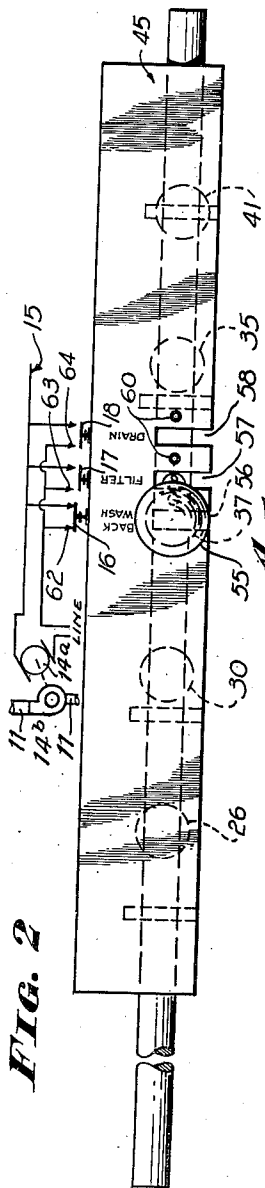
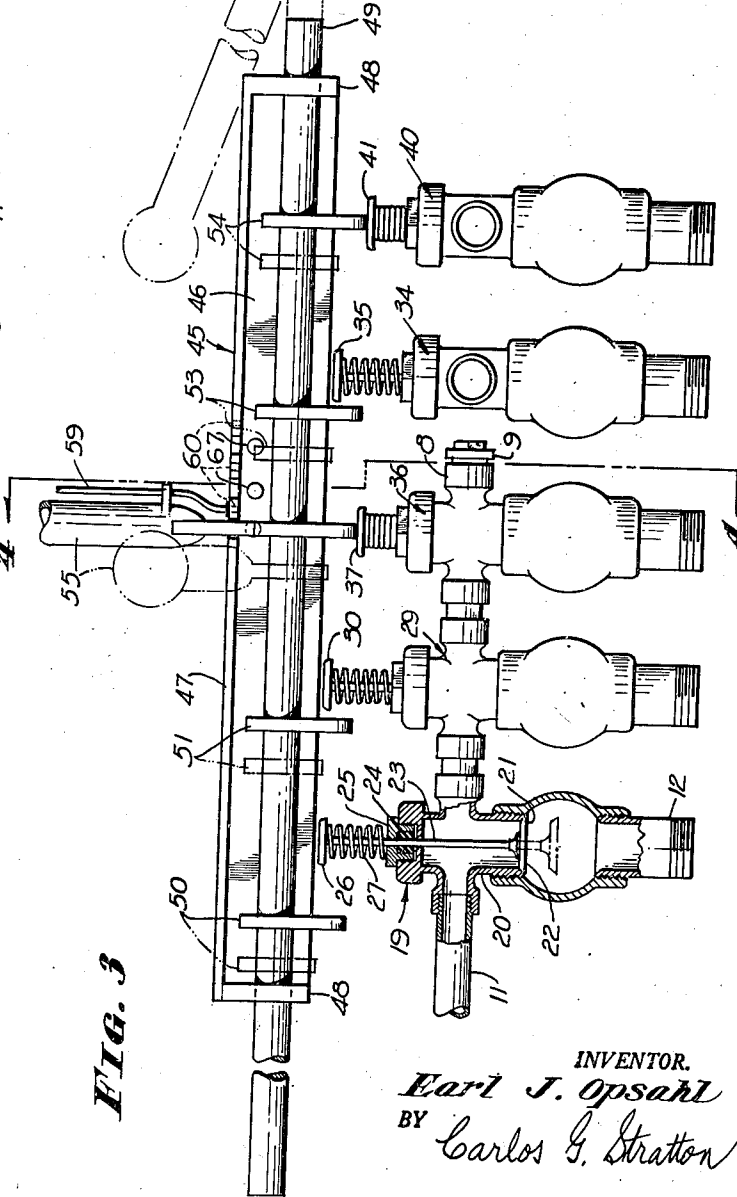


FIG. 3



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SWIMMING POOL APPARATUS

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8 Claims. (Cl. 210-11)

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My invention relates to a system for treating the water of a swimming pool to filter and purify the same and render it fit and sanitary for re-use, and for cleaning the filter of sludge, obstructions and dirt, and it has particular reference to a means by which these operations and the operation of draining the pool may be controlled by anyone, whether familiar with mechanical constructions or not.

At present, an elaborate array of individual valves, separately operable, is employed to accomplish these various purposes. So also separate switch means are provided for the motor that operates the pump. This multiplicity of valves, together with the electric switch, each of which must be manipulated individually to open or closed position, is highly confusing and the operation of the valves frequently results in error, with undesirable consequences.

The prime object of the present invention, therefore is to eliminate the necessity for individually operating the respective valves in the system for controlling the draining of the water from the pool, filtering the water therein and returning it to the pool, and re-circulating the water through the filter in a reverse direction to remove impurities therefrom and accumulations therein and to obviate the need for manually throwing the switch to close the circuit of the motor which operates the pump.

Another object of the invention is to provide a simple, convenient and safe means in which the operation of the various valves to open position may be selectively accomplished.

A further object of the invention is to provide, in a system of the type referred to, a single means in which the valves may be quickly, positively and accurately operated simultaneously with the operation of the switch means to control the motor driven pump.

Other objects of the invention are to provide a simplified valve installation; to provide a single means for operating all the valves selectively; to provide a single means by which the valve operating means may be shifted to a position selected and manipulated to effect the operation of the selected valve or valves independently of the other; to provide a means in which no overlap of operation of the selected valves is possible, and to provide an operating control for all the valve operating means, in which the movement in one direction unseats the valves selected and closes the motor switch, and in another direction causes the operated valves to seat and the switch to open.

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My invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom, economical of manufacture, relatively simple and of general superiority and serviceability.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description. However, the drawings merely show, and the following description merely describes one embodiment of the invention, which is given by way of illustration or example only.

In the drawings, like reference characters designate similar parts in the several views.

Fig. 1 is a sectional elevational view showing a tank or pool basin, a filter and a diagram of the water flow lines, with my invention as applied thereto.

Fig. 2 is a plan of the invention as viewed on line 2-2 of Fig. 1, looking in the direction of the arrows.

Fig. 3 is an elevational view of the valve assembly and operating means therefor.

Fig. 4 is a section on line 4-4 of Fig. 3, looking in the direction of the arrow.

Referring to the drawings, the tank 10 is shown provided with an outlet pipe 11, through which the water in the tank is arranged to be directed, by means and in manner presently described, to a drain 12 to empty the tank, or to a filter 13 to purify the water, which is then returned to the tank, or to flush and clean the filter, the wash water with the impurities and accumulations being then disposed of through the drain 12.

Removal of the water from the tank is effected by a motor driven pump unit, generally indicated at 14, the motor 14a thereof being in an electric circuit 15, which includes a plurality of contacts 16, 17 and 18, Fig. 2, more specifically detailed hereinafter, and the pump 14b thereof controlling flow in line 11.

Connected to the outlet pipe 11 is a valve 19. Since several valves are embodied in the assembly and each involves identical construction, the description of the valve 19 will suffice for all.

This valve 19 comprises a chamber 20 having oppositely disposed and axially aligned branches for affording an unobstructed flow of fluid there-through and is provided with a seat 21, for a valve member 22, that is secured to the end of a valve stem 23, which extends through a packing 24 and closure 25, and is provided with a head 26. A spring 27 surrounding the stem 23 and positioned

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between the top of the closure 25 and the stem head 26, maintains the valve member 22 in normally closed position. A coupling 28 may be provided to connect the drain pipe 12 with the chamber 20. The outlet pipe 11 is connected to one of the branches of the chamber 20, as shown. Also in the outlet pipe 11 is a valve 29 having a head 30. To this valve is connected a line or pipe 31 which leads to and is connected to the top of the filter 13, through which the water from the supply line 11 is caused to travel downwardly under the pressure of the pump unit 14. The filtered water is returned to the top of the tank, as shown in Fig. 1, through a pipe or line 33 and a valve 34 provided with a head 35 on the stem thereof, it being obvious that both valves 29 and 34, which control the flow of the tank water to and from the filter 13 must be opened simultaneously, while the valve 19, controlling the drain line 12, remains closed.

To flush the filter 13 and remove therefrom dirt, hair and other accumulations, the course of the tank water is reversed and this is accomplished by directing the water flowing through the outlet pipe 11, through a valve 36, having a stem head 37, and through a back wash line or pipe 38, leading to the bottom of the filter 13, in which the water then travels upwardly under pressure of the pump unit and out from the filter at the top thereof through a pipe or line 39, a valve 40, having a stem head 41, and through a pipe 42 to the drain pipe 12, both drain pipes 12 and 42, being preferably provided with check valves 43 and 44, respectively.

The heads 26, 30, 37, 35 and 41, of the stems, are, as seen in Fig. 3, disposed in the same horizontal plane, and the valves 19, 29 and 34 and 36 and 40 are selectively and independently operable by a single means to accomplish singly or in a desired sequence, the draining of the tank, the filtering of the water in the tank and return of the filtered water to the tank, or the flushing and cleaning of the filter and the removal of the impure water to the drain.

A means for effecting these ends is illustrated in Figs. 2, 3 and 4, of the drawings, and includes a frame, housing or other support 45 that may be attached to any desirable and convenient wall or structure. This housing 45 has a back wall 46, a top wall 47 and end walls 48, in the latter of which is journaled a shaft 49 for oscillation therein and longitudinal movement relatively thereto. The shaft 49 mounts a plurality of members 50, 51, 52, 53 and 54, which are substantially cams and which are spaced thereon in such relation that by the longitudinal movement of the shaft, they may be selectively aligned with the stems of heads of the valves for subsequent operation by said cams. The dotted lines in Fig. 2 show the neutral position of these members or cams. The cam member 52 of the series is preferably a part of a handle or lever 55, which therefore is rigidly secured to the shaft 49. The cover or top wall 47 of the housing 45 is provided with a plurality of slots or notches 56, 57 and 58 for the accommodation of said lever or handle 55 and these notches or slots preferably extend inwardly from the front edge of the top a distance sufficient to enable the lever to be moved to a substantially vertical position, as shown in Fig. 4, in which the dotted line indicates the inoperative position of the lever, or that position in which the lever is entirely removed from the slots or notches. In this latter position, the lever 55, and the shaft 49, with which it is connected, may be moved

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laterally in either direction to aline with one of the slots or notches, to effect any one of the functions indicated by legends shown in Fig. 2 and aligned with the respective notches 56, 57 and 58, and simultaneously to aline the cam members with the heads of those valves that govern the function selected to be accomplished.

In Fig. 3, the lever 55 is shown positioned in the slot 56 of the top 47 of the housing. During the movement of said lever to this position, the cams or members 52 and 54, which have been shifted concurrently with the shifting of the lever or handle 55 and shaft 49 into alignment with the valve stems or heads 37 and 41, are depressed, against the tension of the springs 27, to open the valves 36 and 40, which control the backwash or reverse flow of the tank water through the filter 13 and from the filter to the drain line 42. The valves 19, 29 and 34 remain closed during this operation. Similarly the valves 29 and 34 are opened, to filter the tank water and to return the filtered water to the tank, by shifting the shaft 49 through the medium of the handle 55, when in the inoperative position shown in dotted lines in Fig. 4, whereby the handle 55 is brought into line with the notch 57 and the cam members 51 and 53 are aligned with the valve stems or heads 30 and 35. The movement thereupon of the handle into the slot 57, oscillates the shaft 49 and causes the cam members 51 and 52 to open the valves 29 and 34. In like manner, the cam 50 is caused to operate the valve 19 to drain the water from the tank.

It will be apparent that the single valve 19 and the pairs of valves 29 and 34 and 36 and 40 are selectively operable independently.

Any desirable means for maintaining the lever 55 in vertical or operative position may be employed, and one such means is shown as comprising a pawl bar or rod 59 on the handle for engagement in holes 60 in the top 47 of the housing and under the control of a manually operable lever 61.

Means to energize the pump driving motor 14a simultaneously with the movement of the lever 55 into any one of the slots 56, 57 and 58, to force the tank water through the system as outlined herein, is provided by contacts 16, 17 and 18, heretofore referred to, which are arranged to be moved selectively into engagement with terminals 62, 63 and 64, included in said electrical circuit 15. Each of these contacts comprises an insulated stem 65 that extends through the back wall 46 of the housing 47 and through a boss or other bearing 66 on the inside of said wall. The stem 65 is provided with a head 67, between which and the boss 66 is disposed a spring 68 that holds the contact normally in inoperative position or away from the terminals 62, 63 and 64. The lever or handle 55 is provided with a post or abutment 69 to engage the head 67 of the stem 65 and move it and the contact thereon into engagement with the selected terminal when the handle is moved to vertical or operating position. When the handle 55 is moved to inoperative position, as shown in dotted lines in Figs. 3 and 4, the abutment 69 is moved away from the head 67 of the stem, thereby causing the spring to move the stem and contact away from the terminals and interrupt the circuit.

It will be noted that the valves 19, 29 and 36 are connected by their branches in the outlet line or pipe 11, and that the branches of all of said valves are always in open communication

75 with one another to receive the water from the

tank for direction through the various courses, herein explained. The branch 8, however, of the valve 36 is closed, as by a plug 9, to hold the water from the tank in the line 11 and in the chambers of said valves, from which it is caused to travel in the desired direction for the purposes set out.

It will be obvious that the movement of the lever 55 out of the slots 56, 57 and 58, will rotate the shaft 49 and remove the valve operating cam members from engagement with the stem heads of the valves, which therefore, under the tension of the springs 27, move the valves to closing position, simultaneously with the cessation of the operation of the pump unit. When the lever 55 is in the position indicated by dotted lines in Figs. 3 and 4, no movement upwardly or rotatively to operate any of the valves is possible, because of the forward edge of the housing top 47, and such movement is possible only when the lever or handle is alined with one of the slots.

While I have illustrated and described what I now regard as the preferred embodiment of my invention, the construction is, of course, subject to modifications without departing from the spirit and scope of my invention. I, therefore, do not wish to restrict myself to the particular form of construction illustrated and described, but desire to avail myself of all modifications that may fall within the scope of the appended claims.

It is to be understood that my present combination is very useful in purifying and deodorizing water in the swimming pool by introducing proper chemicals at a desired point in the system, and then operating the valves and mechanism in the manner desired for circulating the chemicals through the water for the pool.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is:

1. In a filtering and draining system, having a series of filter and drain lines, the combination of; a plurality of valves in said lines, a pump to force the water through said lines and said filter, a motor to drive the pump, an electric circuit for the motor, and common selective means for operating said valves selectively and simultaneously closing said circuit to energize said motor to operate said pump upon each selective operation of the common selective means.
2. In a filtering and draining system, having a series of filter and drain lines, the combination of; a valve in said drain line, a pair of valves in said filter lines, a pump to force the water through said lines and said filter, selective means for independently operating said drain valve or one of said pair of valves, a motor to operate said pump, an electric circuit for the motor, and means controllable by said selective means for closing said circuit to energize said motor simultaneously with each selective operation of said selective means.
3. In a valve operating mechanism of the character and for the purpose referred to, including a motor driven pump, the combination of; a plurality of valves having stems disposed in the same plane, a support, a shaft journaled in said support to move in two directions, one for oscillatory and the other for lateral movement, said shaft being provided with a plurality of stem operating members, means for moving said shaft in one of said directions to selectively aline said members with said valve stems and sequentially in the other direction to operate the valve stems selected, means controlled by the shaft for operating said motor driven pump simultaneously

with each operation of said valves, and flow conduits connected to said valves and controlled thereby, said pump being operatively connected in one of said conduits to induce flow through those of the valves of which the stems are operated.

4. In a valve operating mechanism of the character and for the purpose referred to, including a motor driven pump and an electrical circuit for the motor of said pump; the combination of a plurality of valves, flow lines connected to and controlled by said valves, said pump being operatively connected in one of said lines, a housing, means journaled in said housing for operating said valves, and a lever movable in one direction to aline said valve operating means selectively with said valves, and in another direction to cause said valve operating means to open the valves selected, and switch means in said circuit and operable by said lever simultaneously with the operation of said valves to close said motor circuit, energize said motor and drive said pump to induce flow in the line and through the valves that are open.

5. In a filtering and draining system, having a series of filter and drain lines, valves in said lines provided with alined stems disposed in the same plane, a housing having slots, a shaft journaled in said housing and provided with valve operating means, said shaft being longitudinally movable in said housing, a lever on and movable with said shaft in a lateral direction in line with one of said slots in said housing to aline said valve operating means selectively with the stems of said valves, said lever being rotatively movable into the slot alined with it to cause said valve operating means to open the valve or valves selected, means to hold the lever in its operative position, a pump in one of said lines, and means on the shaft and operable by said lever concurrently with the operation of said valves to control the operation of said pump.

6. In a pool having a drain line, a filter, lines, including a portion of the drain line and in communication with the filter, for circulating the water in the pool back therinto, whereby the pool water may be either drained or filtered and the filter backwashed; a pump in the drain line, a motor for operating the pump, an electric circuit having a plurality of switches for closing said circuit to operate the motor, a series of normally closed valves, each having an operating stem and said stems being physically alined, said valves being embodied in the mentioned lines to control flow therethrough, and unitary means for simultaneously closing one of the circuit switches and selectively opening not more than two of said valves to control water flow between the pool, the filter and the drain, said unitary means embodying an operating element associated with each valve stem, a switch-closing element associated with all of the plurality of switches, and a single handle-controlled member mounting all of said elements for first shifting the latter endwise to, selectively, aline not more than two of the operating elements with a selected valve stem or stems and simultaneously aline the switch-closing element and one of the mentioned switches, and then rocking said elements whereby those valve stems that are selected are actuated to open their respective valves and the mentioned one switch is closed.

7. In a pool having a drain line, a filter, lines, including a portion of the drain line and in communication with the filter, for circulating the

water in the pool back thereinto, whereby the pool water may be either drained or filtered and the filter backwashed; a pump in the drain line, a motor for operating the pump, an electric circuit having a plurality of switches for closing said circuit to operate the motor, a series of normally closed valves, each having an operating stem and said stems being physically alined, said valves being embodied in the mentioned lines to control flow therethrough, and unitary means for simultaneously closing one of the circuit switches and selectively opening not more than two of said valves to control water flow between the pool, the filter and the drain, said unitary means embodying an operating element associated with each valve stem, a switch-closing element associated with all of the plurality of switches, a single handle-controlled member mounting all of said elements for first shifting the latter endwise to, selectively, aline not more than two of the operating elements with a selected valve stem or stems and simultaneously aline the switch-closing element and one of the mentioned switches and then rocking said elements whereby those valve stems that are selected are actuated to open their respective valves and the mentioned one switch is closed, and a support mounting said handle-controlled member for endwise and rocking movement and formed with a plurality of notches in which a portion of the member is adapted to be selectively positioned.

8. In a pool having a drain line, a filter, lines, including a portion of the drain line and in communication with the filter, for circulating the water in the pool back thereinto, whereby the pool water may be either drained or filtered and the filter backwashed; a pump in the drain line, a motor for operating the pump, an electric circuit having a plurality of switches for closing said circuit to operate the motor, a series of normally closed valves, each having an operating stem and said stems being physically alined, said valves being embodied in the mentioned lines to control flow therethrough, and unitary means for simultaneously closing one of the circuit switches and selectively opening not more than two of said

valves to control water flow between the pool, the filter and the drain, said unitary means embodying an operating element associated with each valve stem, a switch-closing element associated with all of the plurality of switches, a single handle-controlled member mounting all of said elements for first shifting the latter endwise to, selectively, aline not more than two of the operating elements with a selected valve stem or stems and simultaneously aline the switch-closing element and one of the mentioned switches and then rocking said elements whereby those valve stems that are selected are actuated to open their respective valves and the mentioned one switch is closed, a support mounting said handle-controlled member for endwise and rocking movement and formed with a plurality of notches in which a portion of the member is adapted to be selectively positioned, and detent means inter-connecting the handle of said member and the support for releasably holding the member in the positioned placed.

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