

2,979,733

SWIMMING POOL CLEANING METHOD AND APPARATUS

Maurice W. Saint Clair, 425 Encinal Ave., Apt. B, Menlo Park, and Robert S. Spencer, 169 Arbuelo Way, Los Altos, Calif.

Filed Jan. 18, 1960, Ser. No. 2,896

13 Claims. (Cl. 4-172)

The present invention relates in general to swimming pool plumbing and in particular to method and apparatus for supplying water under pressure to a water utilization device within an existing swimming pool through existing submerged plumbing without disturbing the pool sides or bank. The present invention is especially useful for supplying water under pressure to swimming pool cleaning devices which utilize the principle of discharging water under pressure against the sides and bottom of the pool to put silt deposits into suspension for removal by the normal pool water filter system.

A swimming pool cleaning device utilizing a self-propelled silt agitating hose has recently been made available to the public for automatically cleaning silt deposits from the bottom and sides of swimming pools. This hose forms a water utilization circuit which discharges water under pressure through a nozzle against the sides and bottom of the pool.

Such silt agitating hoses are preferably supplied with water pressures ranging between 5 and 16 p.s.i. at flow rates of between 5 and 1/4 gallons per minute. The existing circulating pool water inlet typically supplies water to the pool at relatively low pressures as of less than three pounds per square inch and relatively fast flows as of ten gallons or more a minute. Therefore, the existing water inlet is typically unsuitable for supplying water for operation of the silt agitating hose.

A problem is thus created in providing a proper supply of water for actuation of the silt agitating hose. Of course, a separate hose may be laid over the pool bank and connected to the typical water tap for supplying water at substantial pressures and desired flow rates to the silt agitation hose within the pool. However, this method for supplying water to the silt agitating hose requires a hose to be laid over the pool bank thereby creating a hazard to persons using the pool as they are likely to be tripped by the hose. In addition, the hose creates an unsightly appearance. Moreover, continuous discharge of water into the pool from the outside source tends to overflow the pool.

The output of the existing pool water circulating pump typically supplies water pressures of between ten and twenty-five pounds per square inch at flow rates of between ten and eighty gallons per minute. A portion of the output of the pump could be tapped and a hose laid over the pool bank and connected to the silt agitating hose. This would eliminate the pool overflow problem but would not solve the problems of the unsightly hose or the personal injury hazard.

The present invention provides method and apparatus for supplying pool water at substantial pressure to a water utilization circuit within the swimming pool via existing submerged plumbing without disturbing the pool sides or bank. More particularly, the present invention contemplates tapping the high pressure side of the pool water circulating pump and feeding the tapped water back to the pool side via existing submerged plumbing whereby the pool bank need not be disturbed.

The principal object of the present invention is to provide method and apparatus for supplying water under pressure to a water utilization device within an existing swimming pool without disturbing the pool sides or bank nor seriously interfering with the normal functioning of the existing plumbing.

One feature of the present invention is the provision of method and apparatus for tapping pool water from the high pressure side of the pool water circulating pump and feeding the tapped water back to the pool side via an existing submerged pipe whereby the pool bank need not be disturbed.

Another feature of the present invention is the provision of method and apparatus for feeding relatively high pressure water from the pressure side of the water circulating pump back to the pool side through a pliable relatively small diameter tubing threaded through the interior of the existing submerged plumbing.

Another feature of the present invention is the provision of method and apparatus for feeding high pressure water tapped from the high pressure side of the pool circulating pump back to the pool side through submerged existing plumbing wherein a portion of the tapped high pressure water is fed into a suction pipe leading to the pool, said suction pipe being closed off between the pump and the point where the tapped water is fed in whereby the existing suction pipe may be pressurized to provide water under pressure to the pool side.

Another feature of the present invention is the method of threading a relatively small diameter pliable pressure tubing through the existing submerged plumbing wherein a plurality of successively stronger line segments are drawn through the existing plumbing, the initial line segment being drawn through by a relatively light member drawn through the existing plumbing by the flow of water therethrough, and the pliable pressure tubing being drawn through the plumbing by a second heavier line segment.

Other features and advantages of the present invention will become apparent upon a perusal of the specification taken in connection with the accompanying drawings wherein,

Figure 1 is a schematic diagram of a portion of a swimming pool including the associated pool water circulation and filtering plumbing utilizing the features of the present invention,

Figure 2 is an enlarged perspective view of a portion of the water circulation plumbing of Figure 1,

Figure 3 is a side elevational view partially foreshortened showing apparatus for threading a pliable hose through a larger diameter pipe.

Referring now to Figure 1 there is shown in block diagram form and partly schematic a portion of swimming pool 1 having disposed therein a water utilization circuit 2 as of, for example, 30 to 40 foot length of 3/8" I.D., 0.030" wall thickness pliable vinyl tubing marketed under Minnesota Mining Company's trademark, Airflex, and supplied with pool water at a relatively high pressure of approximately 16 p.s.i. the free end of the hose 2 being neck down to form a 1/16" nozzle 3 and having a flow rate therethrough of approximately one quart per minute.

In a preferred embodiment pool water is supplied to the water utilization circuit 2 via a pliable relatively small diameter tubing 4 as of, for example, tubing similar to that utilized for the water utilization circuit 2, previously described, but preferably of stiffer consistency to prevent backing up in the plumbing. This tubing 4 is threaded back through only a portion of the existing plumbing. The existing plumbing includes a skimmer drain 5, skimmer suction pipe 6, valve 7, and main suction pipe 8. A lint trap 9 is disposed in the intake side of a pool water circulating pump 11 and in series with

3

the main suction pipe 8. The water supply tubing 4 enters the plumbing at the skimmer drain 5 and leaves the skimmer suction pipe 6 upstream of the valve 7 via a suitable fitting as of, for example, a bushing 12. The tubing 4 is thence connected into the pressure side of the pool water circulating pump 11 via another bushing 13. A valve 14, if desired, is placed in series with the tubing 4 for controlling the flow of water to the water utilization circuit 2, as desired.

In a typical pool installation, the pool water circulating pump 11, trap 9 and a portion of the skimmer suction pipe 6 are readily accessible from above ground at a point disposed remotely from the pool as of, for example, between 10 and 100 feet distant, depending upon the particular pool installation.

The pliable pressure tubing 4 is pulled through the submerged plumbing for a typical distance of between 10 and 100 feet in and around several bends and elbows and is installed in the plumbing, preferably, in the following way: A $\frac{3}{4}$ " diameter cork 15, see Figure 3, having affixed thereto a suitable line as of, for example, heavy gage nylon fishing line 16 is inserted from the pool side through the skimmer drain 5 into the submerged mouth of the typically $1\frac{1}{2}$ to 2 inch diameter skimmer suction pipe 6. The cork 15 and line 16 are drawn through the submerged plumbing via the flow of water therethrough to the pump 11. The cork 15, carrying behind it the line 16, is caught in the trap 9. The pump 11 is turned off and the trap is opened. The skimmer suction pipe 6, at the upstream side of the valve 7, is then suitably bored, as indicated in Figure 2, and tapped to receive the bushing 12. A suitable fishing tool is then inserted into the opening in the pipe 6 and the line 16 grasped and pulled through the opening. The cork 15 is removed and the line 16 with a heavier line 17 as, for example, a $\frac{1}{4}$ " woven nylon rope, attached to the other end thereof, is drawn through the plumbing. The rope 17 has the pliable pressure tubing 4 fixedly secured thereto, at the other end thereof. The rope 17 is then pulled through the suction pipe 6 until the attached pressure tubing 4 emerges from the opening. A sufficient length of tubing 4 is then further pulled through the opening to make the connection back to the pressure side of the pump 11.

The bushings 12 and 13 are then slipped over the free end of the pressure tubing 4 and threaded into their respective tapped opening in the plumbing. A suitable cement is applied to the tubing 4 and it is cemented into the bushings 12 and 13 in a water tight fashion. The valve 14 may be connected into the pressure tubing 4 and sealed therein by a suitable cement. The other end of the pressure tubing 4, at the pool side, is provided with a suitable fitting for mating with a fitting carried by the water utilization circuit 2.

In operation, the skimmer drain 5 operates in a normal fashion drawing water from the pool through suction pipes 6 and 8, and trap 9 to the pump 11. The relatively high pressure water output of the pump 11 has a portion of its output tapped therefrom and fed via valve 14 and pressure tubing 4 back through the existing suction pipe 6 and the skimmer drain 5 to the pool side whence it delivers this water under pressure to the water utilization circuit 2.

It has been found that the existing suction pipes may be employed in the manner as above described for performing the two fold function of drawing water from the pool while at the same time allowing water under pressure to be applied back through these pipes via the tubing 4 contained therewithin to a water utilization circuit within the pool. In this manner separate water supply lines for water utilization circuits within the pool need not be stretched over the pool bank nor the pool bank disturbed to accommodate separate pipes.

In another embodiment of the present invention the pliable water pressure tubing 4 is threaded back from

4

the pool 1, in the manner as previously described, through the main drain pipe 18 and/or vacuum cleaner pipe 19, emerging therefrom via bushings 12 and thence to the pressure side of the pump 11, as previously described.

In an alternative embodiment of the present invention the pressure tubing 4, connected to the output side of the pump 11, is threaded back through a pool overflow drain pipe 21 or a make up water pipe 22 by cutting into or disconnecting and installing suitable fittings in these pipes where they are accessible. The pressure tubing 4 may be threaded through the interior of these existing pipes 21 and/or 22 by the use of a plumber's snake. The plumber's snake is inserted into the respective pipe from the pool end thereof. A pull line, if necessary, is attached and pulled through the pipe otherwise the tubing 4 is pulled through by pulling out the snake with tubing attached from the pool side.

In another embodiment of the present invention threading a separate pressure tubing 4 back through an existing suction pipe can be avoided by tapping into the high pressure side of the pool circulating pump 11 with a suitable pressure tubing 23 similar to the previously described pressure tubing 4. The other end of the pressure tubing 23 is tapped into the vacuum cleaner suction line 19 between a valve 24 therein and the pool side via, for example, a bushing 12. A valve 25, if desired, is connected into the pressure tubing 23 in the same manner as valve 14 was connected into pressure tubing 4. A suitable threaded pipe cap 26 is affixed at the poolside over the outlet to vacuum cleaner pipe 19, said cap 26 is bored to accommodate a mating fitting on the end of the water utilization circuit 2.

To provide water under pressure to the utilization circuit 2, valve 24 is closed and valve 25 opened, water under pressure is then fed from the output of the water circulating pump 11 via pressure tubing 23, valve 25 and the now pressurized vacuum cleaner line 19 to the water utilization circuit 2. When it is desired to utilize a pool vacuum cleaner, not shown, valve 25 is closed and valve 24 is opened and the vacuum cleaner device is connected into the vacuum line 19 in the normal fashion. Suction is thereby applied from the suction side of the pool circulating pump 11 back through suction pipes 8 and 19 to the vacuum cleaner.

In all embodiments, the remaining untapped high pressure water flow from the pump 11 is fed via pipe 27 through filter 28 and heater 29 and thence back to the pool 1.

Since many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. Method of supplying water under pressure to a water utilization device within a swimming pool through existing submerged plumbing without disturbing the pool sides or bank comprising the steps of, tapping into an existing pressure water line on the pressure side and downstream of the pool water circulating pump and drawing water therefrom, tapping into an existing submerged water pipe which connects into the pool at a point removed from the pool bank, and running water under pressure drawn from the pressure side of the pump back to the poolside through the existing tapped submerged water pipe thereby supplying water under pressure to the water utilization device within the pool.

2. Method according to claim 1 wherein the step of running water under pressure drawn from the pressure side of the pump back to the pool side comprises, the step of pressurizing a portion of the length of an existing submerged vacuum cleaner supply line with water drawn from the high pressure side of the circulating pump.

3. Method according to claim 1 wherein the step of

5

running water under pressure drawn from the pressure side of the pump back to the poolside through the existing submerged water pipe comprises, the step of running a separate pliable pressure tubing back through the interior of the existing submerged water pipe to the poolside.

4. The method according to claim 3 wherein the step of running a separate pliable pressure tubing back through the existing submerged pipe includes the steps of, drawing a float with a first attached line through the submerged pipe, utilizing the first line for drawing at least one additional heavier line through the pipe, and utilizing said additional heavier line for drawing pliable pressure tubing through the submerged pipe.

5. Apparatus for supplying water under pressure to a water utilization circuit within an existing swimming pool having a pool water circulating pump and existing submerged plumbing connected into the pool comprising, means interconnecting the high pressure of the pool water circulating pump and the submerged plumbing for tapping a portion of the water flow output of the pump and directing this tapped portion into the existing plumbing, and means for running the tapped water output portion back to the pool side through the submerged existing plumbing.

6. The apparatus according to claim 5 wherein the existing submerged plumbing having the tapped water directed therethrough includes, a water pipe interconnecting the pool and the vacuum side of the pool water circulating pump.

7. The apparatus according to claim 6 wherein said means for running the tapped water output portion

6

through the submerged water pipe includes, means for closing off the submerged water pipe between the point where said tapped water portion is directed into said submerged pipe and the low pressure side of the circulating pump whereby said existing submerged pipe may be pressurized from the point of tapped water entry to the poolside.

8. The apparatus according to claim 5 wherein said means for running the tapped water output portion back to the poolside through the submerged existing plumbing includes, a pliable tubing inserted within the interior of the existing submerged plumbing.

9. The apparatus according to claim 8 wherein said existing plumbing is a skimmer drain pipe.

10. The apparatus according to claim 8 wherein said existing plumbing is a vacuum cleaner suction pipe.

11. The apparatus according to claim 8 wherein said existing plumbing is a main drain pipe.

12. The apparatus according to claim 8 wherein said existing plumbing is a make up water pipe.

13. The apparatus according to claim 8 wherein said existing plumbing is an overflow drain pipe.

References Cited in the file of this patent

UNITED STATES PATENTS

1,762,314	Sutphen et al. -----	June 10, 1930
2,073,784	Day -----	Mar. 16, 1937
2,915,085	Walker -----	Dec. 1, 1959
2,919,027	Blumenfeld -----	Dec. 29, 1959