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COMBINED AERATION AND HYDROTHERAPY APPARATUS

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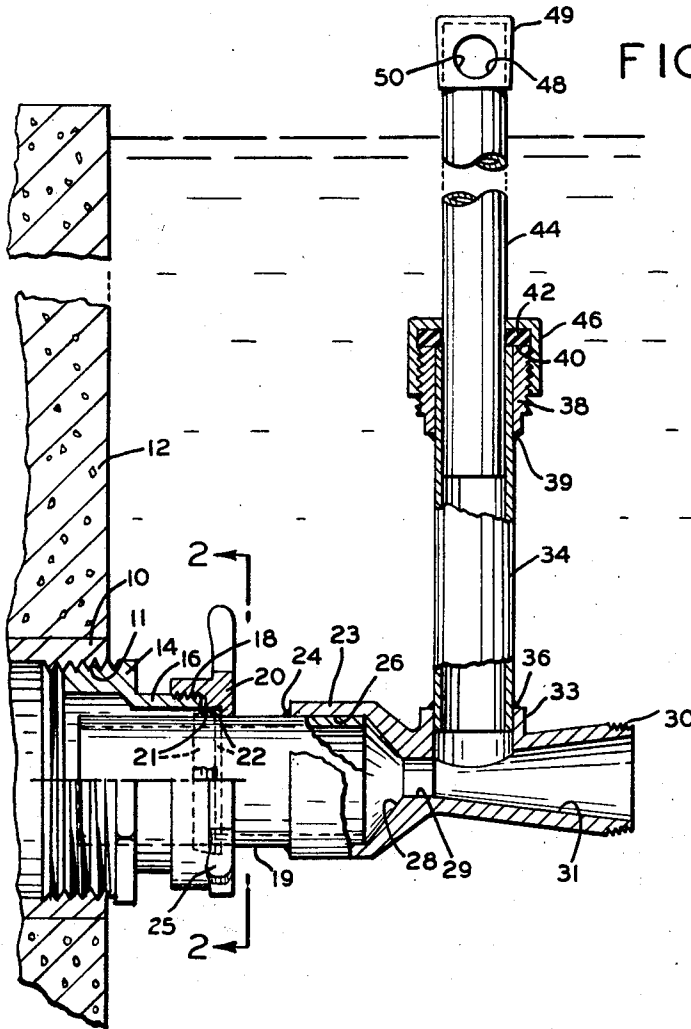


FIG. 1

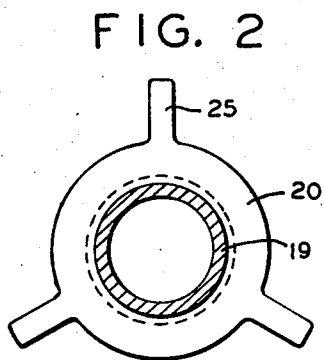


FIG. 2

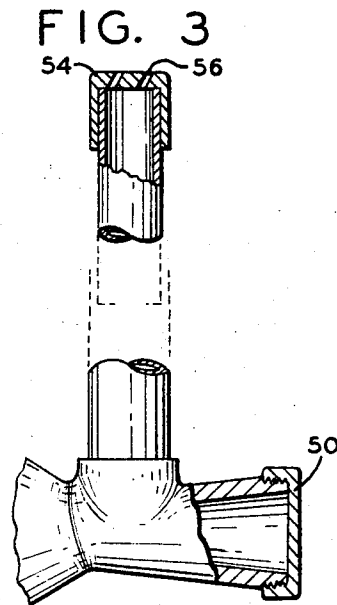


FIG. 3

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COMBINED AERATION AND HYDROTHERAPY APPARATUS

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ABSTRACT OF THE DISCLOSURE

Combined aeration and hydrotherapy apparatus for pools having a source of water leading into an inlet in the pool at a distance below its highest water level having an adapter for attachment to said inlet, an expansion venturi tube connected at one end with the adapter and a vertical tube extending from the adapter to a point above the water level of the pool. The opposite end of the venturi tube can be closed with a removable cap whereby the water entering the adapter tube flows through the vertical tube or the cap can be removed from the venturi tube whereby the water entering the adapter tube flows out the other end of the venturi tube along with air which is drawn into the venturi tube through the vertical tube.

This invention relates to a combined aeration and hydrotherapy apparatus for use in swimming pools where in a source of water flowing under pressure into the pool from a filtering or chlorinating apparatus, or from the prime source of supply of water used for filling the pool, is utilized, either intermittently or continuously for hydromassage, purposes, either with air bubbles incorporated in the stream or without the air. It can also be used for the purpose of maintaining a high percentage of free oxygen dissolved in the water to give a high measure of purity.

An important object of the invention is to provide a simple and inexpensive hydrotherapy apparatus which directs a stream of water under pressure into a prescribed area of the pool so that it can be enjoyed by a number of swimmers at one time, and without the need for a separate pump.

It is customary in the construction of pools to feed water through a supply line whose exit is positioned twelve inches, more or less, below the water line of the filled pool and this line is similarly used to return water to the pool after it has passed through a water purifying apparatus. In many installations, this flow is continuous during use of the pool for swimming purposes.

In accordance with the present invention, the apparatus is provided with a male adapter for easy attachment to an internally threaded water supply line installed in the cement wall of the pool and with a female adapter should the waterway terminate in an externally threaded fitting.

A novel expansion venturi has a vertical air pipe connected at its inner end and the upper end of the pipe is open and disposed above the water level. In this fashion, by moving water into the pool under normal pressure, through the venturi, there is set up a suction which draws air down the vertical pipe and incorporates a myriad of air bubbles in the water, thus giving patients standing in front of this outlet a beneficial hydrotherapeutic treatment. Conversely, the outer end of the venturi may be closed off and the water travels up the vertical tube under considerable pressure and into the air in a plurality of jets, and thence into the pool. By this arrangement, it has been found that the oxygen content of the water is much higher than normal, thus enlarging the purity of the water.

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In the drawing:

FIG. 1 is a central section taken through a hydrotherapeutic apparatus of the present invention;

FIG. 2 is a section taken on line 2—2 of FIG. 1;

FIG. 3 is a broken section similar to FIG. 1 and showing the use of the system for aerating the water by shutting off the venturi.

In FIG. 1 there is shown a water inlet 10 having an internally threaded forward end 11 and embedded in the concrete wall 12 of a pool and emerging therefrom about 12" below the highest water level of the pool. The apparatus of the present invention includes a male adapter 14 externally threaded at each end. This adapter is received in threaded section 11 and has a reduced outer section 16 externally threaded at 18. An extension pipe 19 of smaller diameter than section 16 is received in the open end of reduced section 16 and can be moved inwardly and outwardly to an adjusted fixed position where it is secured by means of a nut 20 which is internally threaded and received on externally threaded section 18. In order to facilitate screwing nut 20 inwardly, it is provided with radial handles or spokes 25 and it can be tightened without a wrench or other tool. A seal is effected by means of a tapered plastic sealing ring 21 and a brass pressure washer 22.

A body member of special contour is received in secured relation at the outer end of pipe 19 and this includes an external sleeve section 23, soldered to pipe 19 at 24 and having a bore 26 for receiving the pipe. The bore has an intermediate conical section 28 at the forward end of which is a short section 29 of uniform diameter and from thereon to the forward end there is a tapered section 31 forming an expansion venturi tube. The outer end of the tube is externally threaded at 30 for a purpose to be described. The body section has on its top surface a boss 33 which receives an air pipe 34 in sealed relation as by soldering at 36. The upper end of this pipe has an externally threaded fitting 38 which is secured to the pipe by soldering or welding as shown at 39. The upper end 40 of fitting 38 receives a sealing gasket 42 forming a seal between pipe section 34 and an upper telescopic pipe section 44 of lesser diameter and which fits snugly within lower air pipe 34. A cap 46 forces the gasket 42 downwardly into sealing relation so as to prevent water or air from passing outwardly from the telescopic pipe sections 34, 44. At the upper end of extension section 44, there is a side wall opening 48 which can be partially or completely closed by means of a cap 49 having a hole 50 which can be aligned with hole 48 in the cap.

FIG. 3 shows the manner of using the system for aeration of the water. A cap 50 is screwed on the forward end of the venturi tube, thus closing it. The cap 49 at the upper end of the vertical air tube is replaced by a cap 54 having a plurality of jet openings 55 at varying angles to the tube so as to spray streams upwardly at different angles.

While there have been described herein what are at present considered preferred embodiments of the invention, it will be obvious to those skilled in the art that many modifications and changes may be made therein without departing from the essence of the invention. It is therefore to be understood that the exemplary embodiments are illustrative and not restrictive of the invention, the scope of which is defined in the appended claims, and that all modifications that come within the meaning and range of equivalency of the claims are intended to be included therein.

What I claim is:

1. A hydrotherapeutic apparatus for pools having a source of water leading into an inlet in the pool at a distance below its highest water level and comprising a male

adapter to be received in fixed relation in the inlet, an extension pipe leading into the adapter and which can be moved inwardly and outwardly to an adjusted, fixed position, means for effecting a seal between the extension pipe and adapter, a hollow body member secured to the pipe and having an inner section leading to an expansion venturi section, a boss on the upper side of the venturi section, an air pipe secured within the boss to draw air into the venturi section from above the pool.

2. A combined aeration and hydrotherapy apparatus for pools having a source of water leading to an inlet in the pool and comprising an adapter for attachment to said inlet, an expansion venturi tube connected with said adapter, and a vertical tube to a point above the water level of the pool so as to draw air downwardly from the atmosphere to incorporate bubbles into the water flowing through the venturi, a cap removably carried at the outer end of the venturi tube for optionally closing off the outer end of the venturi tube and a multi-jet spray nozzle removably positioned at the upper end of the vertical tube so that when the venturi tube is closed the water from the source will flow up the tube and out of the jets of the spray nozzle to aerate the same.

3. A combined aeration and hydrotherapeutic apparatus for pools having a source of water leading into an inlet in the pool at a distance below its highest water level and comprising an adapter to be screwed into the inlet, an extension pipe leading into the adapter and which can be moved inwardly and outwardly to an adjusted, fixed position, a nut and gasket for effecting a seal between the extension pipe and adapter, a hollow body member secured to the pipe and having a tapered section leading to an expansion venturi section, a boss on the upper side

of the body section at the inner end of the venturi section, an air pipe secured within the boss to draw air into the venturi from above the pool, and means for optionally closing the outer end of the venturi to force water from said source out into the air above the air tube to aerate the same.

4. A combined aeration and hydrotherapeutic apparatus for pools having a source of water leading into an inlet in the pool at a distance below its highest water level and comprising a male adapter to be screwed into the inlet, an extension pipe leading into the adapter and which can be moved inwardly and outwardly to an adjusted, fixed position, a nut and gasket for effecting a seal between the extension pipe and adapter, a hollow body member secured to the pipe and having an inner section connected to the extension pipe and an outer venturi section, a boss on the upper side of the body member, a vertical pipe secured within the boss to draw air into the venturi section from above the pool and to convey water to the air above the pool when the outer end of the venturi section is closed.

5. The structure recited in claim 4 wherein said vertical pipe has a telescopic extension.

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