

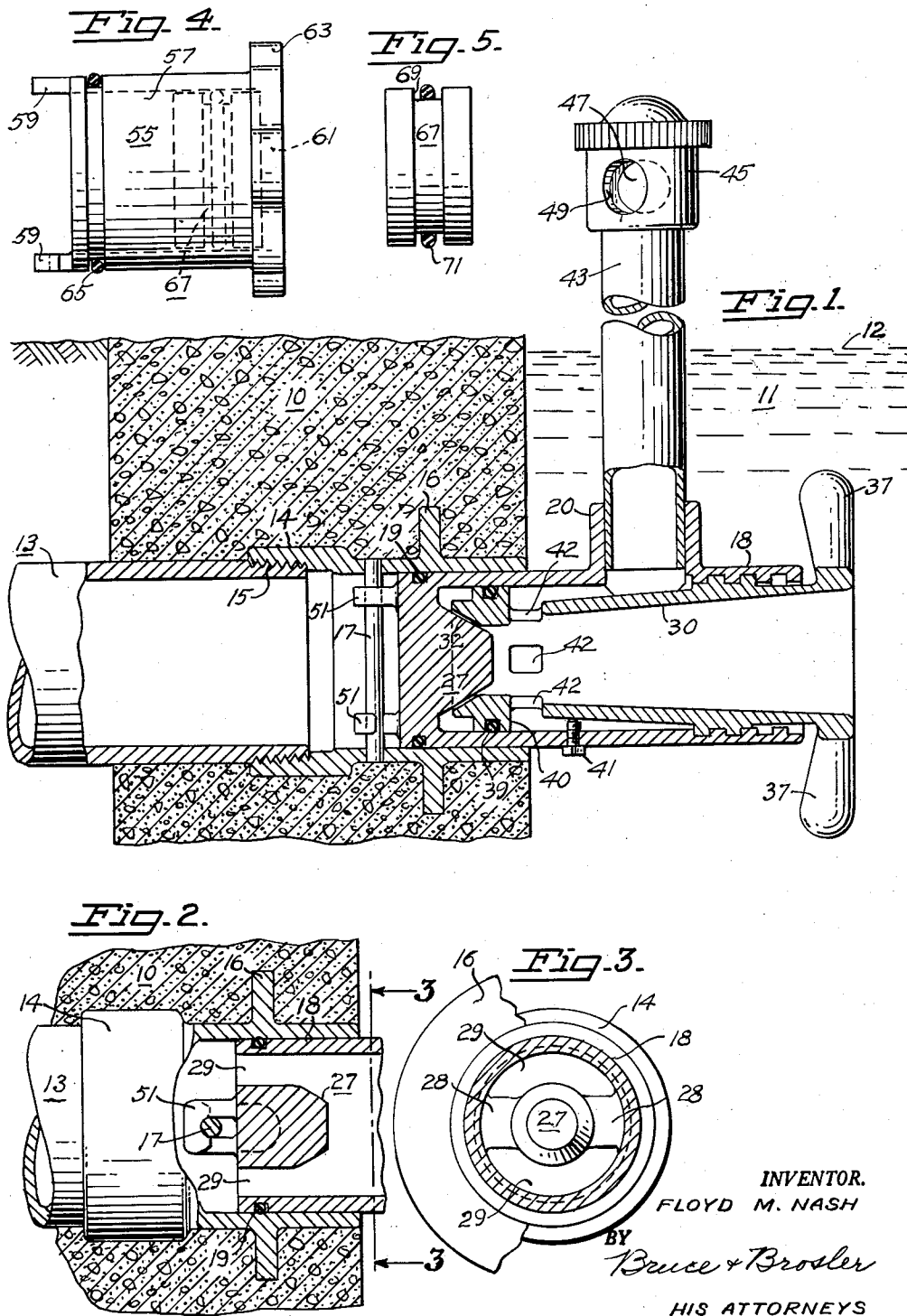
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F. M. NASH

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HYDROTHERAPEUTIC INSTALLATION FOR SWIMMING POOLS AND THE LIKE

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HYDROTHERAPEUTIC INSTALLATION FOR SWIMMING POOLS AND THE LIKE

Floyd M. Nash, Kensington, Calif., assignor to Jacuzzi Bros., Incorporated, a corporation of California
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This invention relates to hydrotherapeutic devices and more particularly to an installation for creating controlled zones of agitated and aerated water in a larger body of water, such as a swimming pool provided with a pressure supply or recirculation system, whereby a number of patients may be simultaneously given beneficial hydrotherapeutic treatment.

Heretofore, devices for hydrotherapeutic purposes have generally consisted of a small recirculating pump driven by a submersible power source, and appropriate jet-forming and aerating means. This present invention, however, involves an adaption of the principle of hydrotherapy to larger bodies of water such as swimming pools, and for a number of individuals simultaneously. It utilizes the normal water pressure supply or recirculating means usually associated with filtering and chlorinating system for such installations, and is adapted to be installed or removed with a minimum of alterations to the existing piping or disturbance of the hydraulic characteristics of the system.

Among the objects of the invention are:

- (1) To provide a simple and inexpensive inlet fitting and hydrotherapeutic device that may be installed in a swimming or bathing pool having a recirculating or water pressure system of suitable flow characteristics;
- (2) To provide a novel and improved hydrotherapeutic device and associated fittings that may be temporarily installed in a pressure supply or recirculating water system of a swimming or bathing pool, and subsequently replaced without affecting the normal operation of the system, or that of ancillary equipment such as trash removers, skimmers and the like; and
- (3) To provide an improved and economical hydrotherapeutic device that may be used safely, and adjusted by unskilled persons, children or invalids, with a minimum of effort.

These and other objects and advantages will be further apparent from the following description of a preferred embodiment of the same, taken in connection with the accompanying drawing, wherein:

FIGURE 1 is a vertical longitudinal sectional view of an assembled device embodying the invention, shown installed in a water pressure supply or recirculation inlet conduit of a swimming or bathing pool;

FIGURE 2 is a horizontal longitudinal sectional view of the inlet end of the device of FIGURE 1;

FIGURE 3 is a vertical sectional view taken in the plane 3—3 of FIGURE 2, showing only the central cone and annular water inlet passages;

FIGURE 4 is a side view of a partial closure flow control plug for the wall inlet fitting illustrated in FIGURE 1, for use when the aerating device is to be removed;

FIGURE 5 is a side view of a closure plug for use with the wall fitting of FIGURE 4 to effect complete blocking of liquid flow through the inlet fitting.

Referring to the drawings, reference numeral 10 designates the wall of a swimming or bathing pool containing water 11 having a surface 12. An inlet piping system, including a discharge line 13 from any suitable source of water under pressure (not shown), which may be recirculated through the pool or may be continuously admitted and wasted as by an overflow, and a tubular water inlet or discharge coupling element 14 threaded

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thereto as at 15, terminates about one foot below surface 12. The coupling element is preferably provided with a retaining flange or lugs 16 embedded in the pool wall 10, and a transverse anchor pin 17, for a purpose to be described below.

A tubular component 18, has an inlet portion adapted to be received in and anchored to the coupling element 14, to be removably sealed therein by an O-ring 19.

The inner end of the tubular component is partially closed off by a conical surfaced element 27 centrally supported by radial webs 28 to leave arcuate flow openings 29.

Within the tubular component and in line with the conical surfaced element 27, is a tapered Venturi tube 30, made longitudinally adjustable by threadedly engaging it at its outer end with the exposed end of the tubular component.

At its inner end, the Venturi tube is adapted to encircle and receive the conical surfaced element 27, to adjust for volume flow through the Venturi tube, with rotation of the Venturi tube, rotational adjustment of which is facilitated by providing radial spokes 37 on the Venturi tube at its exposed end.

An O-ring 39 in a grooved flange 40 about the inner end of the Venturi tube serves to stabilize this end of the tube as well as prevent leakage at this point.

A rotatable cap 45 having an alignable port 47, is provided to control the amount of air drawn from the atmosphere into the body of the fitting. This air is mixed with the high-velocity water jet entering the main body of water 11 in the pool through the Venturi, the mixture of air and water creating an extensive zone of turbulence and bubbles that have been known to have very desirable hydrotherapeutic properties for individuals suffering from various forms of paralysis, multiple sclerosis, arthritis, etc.

Also, when functioning, these hydrotherapy assemblies keep the surface of the water in motion, which enhances the ability of skimmer equipment in a pool to function in maintaining the upper strata of the water clear and free of debris.

The maximum inward travel adjustment of the Venturi tube 30 may be selectively set by an adjusting screw 41 through the wall of the tubular component 18 at a point enabling it to be engaged by the outer surface of the Venturi tube when the tube has reached the desired limit of its inward movement.

Air ports 42 in the throat region of the Venturi tube permit of intake of air into the tube through Venturi action, for mixture with the water flowing therethrough, provision being made for drawing such air into the Venturi from above the surface of the water by an inlet pipe 43 coupled to the tubular component 18, and of a length extending above the surface 12 of the water in the pool.

It is contemplated that a number of these assemblies will be made available for treatment of a number of individuals simultaneously in an average pool. Also, it is contemplated that they should be individually removable when not being used.

Accordingly, the inner end of the tubular component 18 is provided with diametrically located reversely directed hooks 51. By inserting the component 18 into the coupling 14 as far as permissible, followed by a partial rotation thereof, the assembly may be readily installed, and by a reverse procedure, removed.

When the assembly is disengaged and removed, the hydraulic characteristics of the water supply system are greatly modified, due to the reduction in back pressure resulting therefrom, and this has been found to interfere with the operation of the associated pumps, filters, chlorinators, etc.

To compensate for this, a partial closure plug 55, de-

picted in FIGURES 4 and 5, and designed to offer substantially the back pressure presented by the assembly, is provided. Such plug consists essentially of a hollow cylinder 57 provided at one end with diametrically located reversely directed hooks 59, similar to those previously referred to, for removably anchoring the partial closure plug to the transverse anchor pin 17.

At its opposite, or discharge end, the cylinder opening is partially restricted to form an orifice 61 of reduced diameter to provide the desired back pressure. A serrated rim 63 at this end will facilitate installation and removal of the plug while an O-ring 65 about the cylinder will serve to seal against leakage thereby. With such plugs installed, surface movement of the water is maintained with resulting improved skimmer action.

At times, it may be desirable to completely block some of these inlet openings, and for this purpose, there is provided a solid plug 67 adapted to slidably fit into a partial closure plug 55. This solid plug has a circumferential groove 69 to receive an O-ring 71 to preclude leakage flow thereby.

In conclusion, it will be apparent that novel and useful improvements in fittings for hydrotherapy have been described and illustrated herein, characterized essentially by the provision of means adapted for larger installations than heretofore contemplated, utilizing the available water supply or recirculation systems already installed, and whereby a large number of individuals, grouped in a swimming pool or bathing pool around the individual fittings as described herein, and adequately and comfortably supported by the water in the pool, will receive maximum benefit.

Although only a single example has been described and illustrated, it is understood that numerous changes and modifications could be made without departing from the spirit of the invention, and all those that fall within the scope of the appended claims are intended to be embraced thereby.

I claim:

1. In combination, a pool including a wall having a discharge line terminating therein slightly below normal water level in such pool, and said wall also having anchoring means for removably anchoring a fitting in flow communication with said discharge line; a hydrotherapy fitting assembly for use in such pool, said fitting assembly having means for removably anchoring the same to said anchor means and in flow communication with said discharge line, and means for automatically sealing said fitting assembly during anchoring of said fitting assembly to said anchoring means, to minimize leakage in the flow of said discharge line.

2. In combination, a pool including a wall having a discharge line terminating therein slightly below normal water level in such pool, and said wall also having anchoring means for removably anchoring a fitting in flow communication with said discharge line, said anchoring means comprising an anchor pin transversely of said discharge line; a hydrotherapy fitting assembly for use in such pool, said fitting assembly having means for removably anchoring the same to said anchor means and in flow communication with said discharge line, including a pair of diametrically disposed reversely facing hooks extending from an end thereof and adapted to straddle said anchor pin and retain said fitting assembly in an installed position on said wall, and means for sealing said fitting assembly during anchoring of said fitting assembly to said anchoring means, to minimize leakage in the flow of said discharge line.

3. In combination, a pool including a wall having a discharge line terminating therein slightly below normal water level in such pool, and said wall having anchoring means therein for removably anchoring a fitting in flow communication with said discharge line, said anchoring means comprising an anchor pin transversely of said discharge line; a hydrotherapy fitting assembly for use in

such pool, said fitting assembly having an end adapted to fit into said discharge line, and means for removably anchoring the same to said anchor means in flow communication with said discharge line, including a pair of diametrically disposed reversely facing hooks extending from said end and adapted to straddle said anchor pin and retain said fitting assembly in an installed position on said wall, and means for sealing said fitting assembly to said discharge line when so installed, said means including an O-ring about said end and in sealing contact with said discharge line.

4. In combination, a pool including a wall having a discharge line terminating therein slightly below normal water level in such pool, and said wall also having anchoring means therein for removably anchoring a fitting in flow communication with said discharge line; a hydrotherapy fitting assembly for use in such pool, said fitting assembly having an end adapted to fit into said discharge line, means for removably anchoring the same to said anchor means in flow communication with said discharge line, and means for sealing said fitting assembly to minimize leakage in the flow of said discharge line when so installed; a partial closure plug adapted to replace said hydrotherapy fitting assembly and re-establish back pressure in said discharge line upon removal of said hydrotherapy fitting assembly, said partial closure plug having means for retaining said plug in an installed position, and being partially closed to provide a restricted orifice of smaller area than said discharge line; and means for closing said orifice so as to completely block said discharge line.

5. In combination, a pool including a wall having a discharge line terminating therein slightly below normal water level in such pool, and said wall also having anchoring means therein for removably anchoring a fitting in flow communication with said discharge line, said anchoring means comprising an anchor pin transversely of said discharge line; a hydrotherapy fitting assembly for use in such pool, said fitting assembly having an end adapted to fit into said discharge line, and means for removably anchoring the same to said anchor means in flow communication with said discharge line, including a pair of diametrically disposed reversely facing hooks extending from said end and adapted to straddle said anchor pin and retain said fitting assembly in an installed position on said wall, and means for sealing said fitting assembly to minimize leakage in the flow of said discharge line when so installed, said means including an O-ring about said end and in sealing contact with said discharge line; a partial closure plug adapted to replace said hydrotherapy fitting assembly and re-establish back pressure in said discharge line upon removal of said hydrotherapy fitting assembly, said partial closure plug comprising a hollow cylinder adapted at one end for insertion into the said discharge line, said cylinder at its insertable end having diametrically disposed reversely facing hooks extending therefrom and adapted to straddle said anchor pin and retain said plug in an installed position, and at its other end being partially closed to provide a restricted orifice of smaller area than said cylinder, an O-ring about said cylinder to seal the same in said discharge line, and a serrated rim about the orifice end of said cylinder to facilitate the insertion and removal of said partial closure plug; and means for closing said orifice so as to completely block said discharge line, said closing means comprising a closure plug adapted to fit within said partial closure plug and block the restricted opening therein, and an O-ring about said closure plug and adapted for sealing contact with the interior wall of said partial closure plug when inserted into said partial closure plug.

6. For use in combination with a pool including a wall having a discharge line terminating therein slightly below normal water level in such pool and said wall also having anchor means for removably anchoring a fitting in flow communication with said discharge line; a hydrotherapy

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fitting assembly for use in such pool, said fitting assembly having means for removably anchoring the same to said anchor means and in flow communication with said discharge line, and means for automatically sealing said fitting assembly during anchoring of said fitting assembly to said anchoring means, to minimize leakage in the flow of said discharge line.

7. For use in combination with a pool including a wall having a discharge line terminating therein slightly below normal water level in such pool and including anchor means in the form of a transverse anchor pin for removably anchoring a fitting in flow communication with said discharge line; a hydrotherapy fitting assembly for use in such pool, said fitting assembly having means for removably anchoring the same to said anchor means, including a pair of diametrically disposed reversely facing hooks extending from an end thereof and adapted to straddle said anchor pin and retain said fitting assembly in an installed position on said wall, and means for sealing said fitting assembly during anchoring of said fitting assembly to said anchoring means, to minimize leakage in the flow of said discharge line.

8. For use in combination with a pool including a wall having a discharge line terminating therein slightly below normal water level in such pool and said wall also having anchor means therein in the form of a transverse anchor pin for removably anchoring a fitting in flow communication with said discharge line; a hydrotherapy fitting assembly for use in such pool, said fitting assembly having an end adapted to fit into said discharge line, and means for removably anchoring the same to said anchor means in flow communication with said discharge line, including a pair of diametrically disposed reversely facing hooks extending from said end and adapted to straddle said anchor pin and retain said fitting assembly in an installed position on said wall, and means for sealing said fitting assembly to said discharge line when so installed, said means including an O-ring about said end adapted to establish sealing contact with said discharge line when said fitting assembly is installed therein.

9. For use in combination with a pool including a wall having a discharge line terminating therein slightly below normal water level in such pool and said wall also having anchor means therein for removably anchoring a fitting in flow communication with said discharge line; a hydrotherapy fitting assembly for use in such pool, said fitting assembly having an end adapted to fit into said discharge line, means for removably anchoring the same to said anchor means in flow communication with said discharge line, and means for sealing said fitting assembly to said discharge line when so installed, said means including an O-ring about said end adapted to establish sealing contact with said discharge line when said fitting assembly is installed therein; a partial closure plug adapted to replace said hydrotherapy fitting assembly and re-establish back pressure in said discharge line upon removal of said hydrotherapy fitting assembly, said partial closure plug having means for retaining said partial closing plug in an

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installed position, and being partially closed to provide a restricted orifice of smaller area than said discharge line; and means for closing said orifice so as to completely block said discharge line when said partial closure plug with said closing means is anchored in said discharge line.

10. For use in combination with a pool including a wall having a discharge line terminating therein slightly below normal water level in such pool and said wall also having anchor means therein for removably anchoring a fitting in flow communication with said discharge line; a hydrotherapy fitting assembly for use in such pool, said fitting assembly having an end adapted to fit into said discharge line, and means for removably anchoring the same to said anchor means in flow communication with said discharge line, including a pair of diametrically disposed reversely facing hooks extending from said end and adapted to straddle said anchor pin and retain said fitting assembly in an installed position on said wall, and means for sealing said fitting assembly in said discharge line when so installed, said means including an O-ring about said end adapted to establish sealing contact with said discharge line when said fitting assembly is installed therein; a partial closure plug adapted to replace said hydrotherapy fitting assembly and re-establish back pressure in said discharge line upon removal of said hydrotherapy fitting assembly, said partial closure plug comprising a hollow cylinder adapted at one end for insertion into the said discharge line, said cylinder at its insertable end having diametrically disposed reversely facing hooks extending therefrom and adapted to straddle said anchor pin and retain said partial closing plug in an installed position, and at its other end being partially closed to provide a restricted orifice of smaller area than said cylinder, an O-ring about said cylinder to seal the same in said discharge line, and a serrated rim about the orifice end of said cylinder to facilitate the insertion and removal of said partial closure plug; and means for closing said orifice so as to completely block said discharge line when said partial closure plug with said closing means is anchored in said discharge line, said closing means comprising a closure plug adapted to fit within said partial closure plug and block the restricted opening therein, and an O-ring about said closure plug and adapted for sealing contact with the interior wall of said partial closure plug when inserted into said partial closure plug.

References Cited in the file of this patent

UNITED STATES PATENTS

1,526,179	Parr et al.	Feb. 10, 1925
2,007,036	Cornell	July 2, 1935
2,073,784	Day	Mar. 16, 1937
2,416,829	Hartley	Mar. 4, 1947
2,629,403	Allen	Feb. 24, 1953
2,738,787	Jacuzzi et al.	Mar. 10, 1956

FOREIGN PATENTS

154,956	Australia	Sept. 11, 1952
1,095,006	France	Dec. 15, 1954