

Sept. 20, 1971

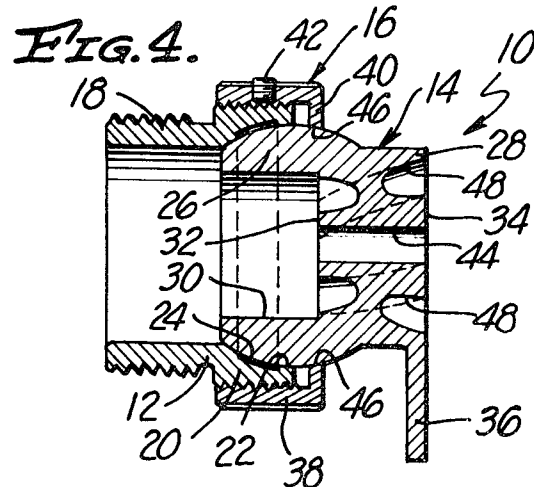
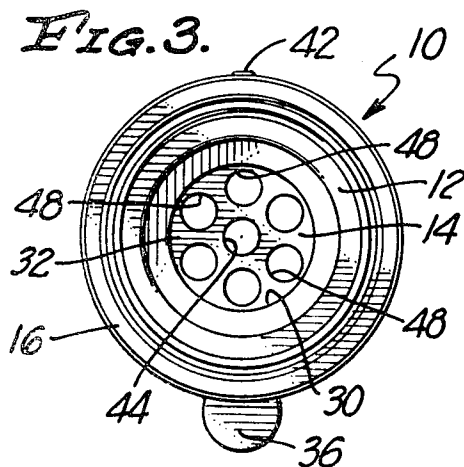
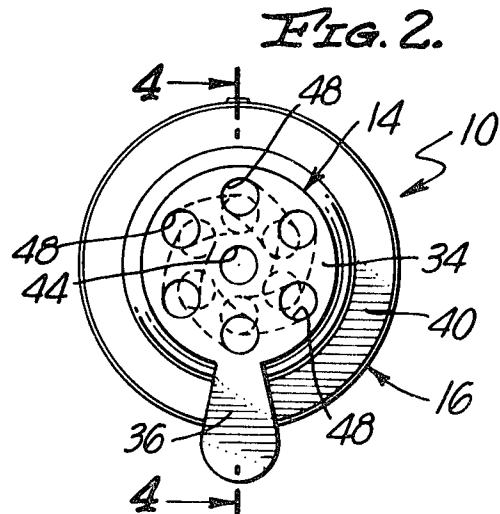
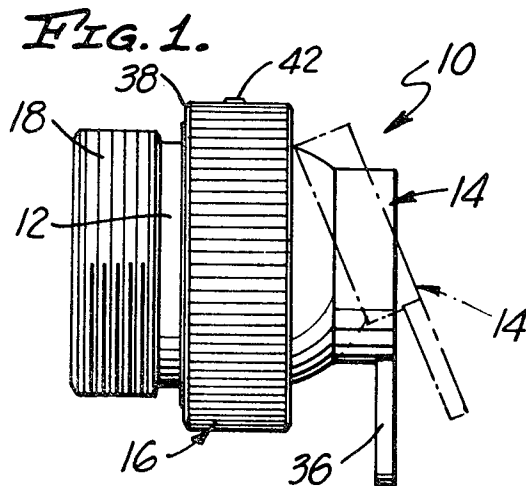
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NOZZLE, AND POOL INCORPORATING SAME

Filed Jan. 9, 1969

2 Sheets-Sheet 1



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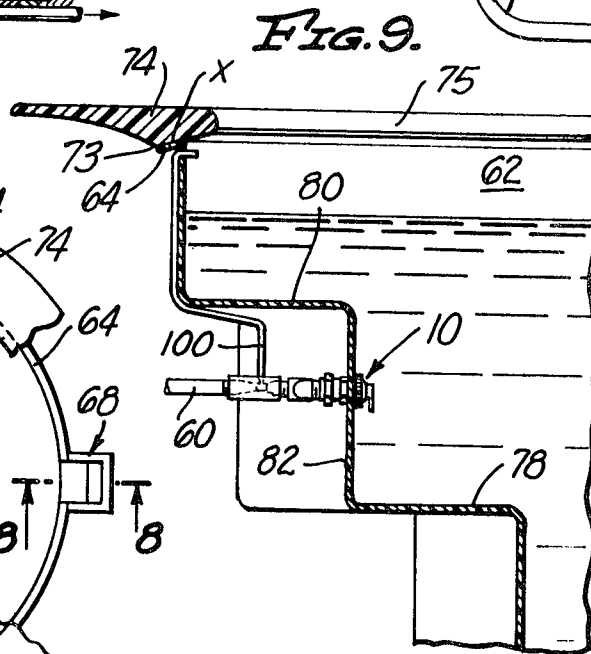
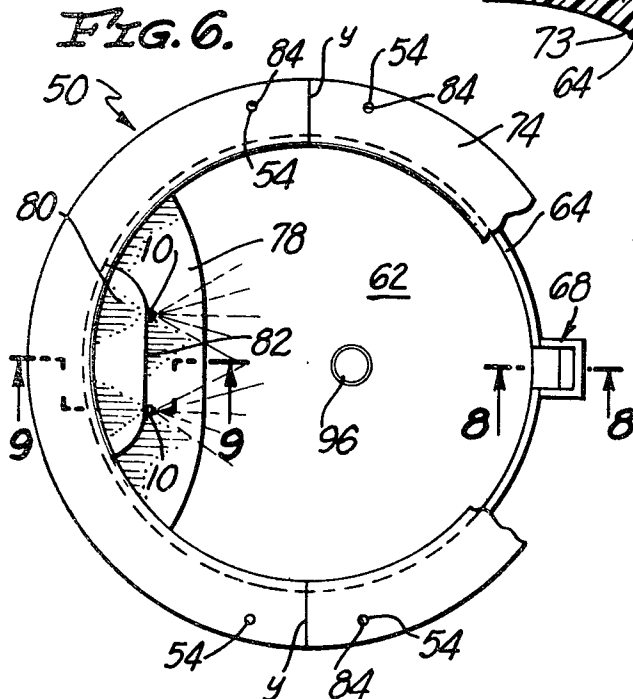
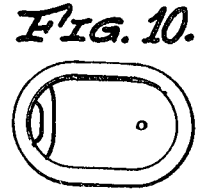
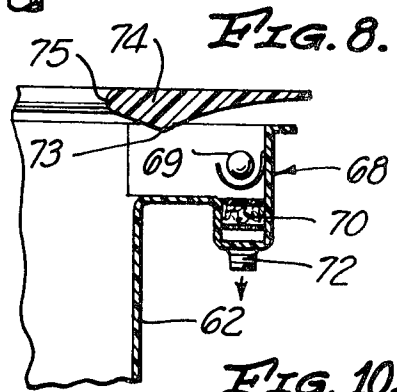
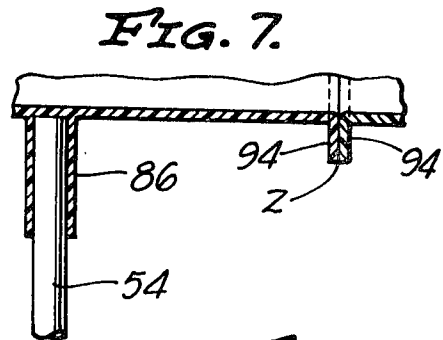
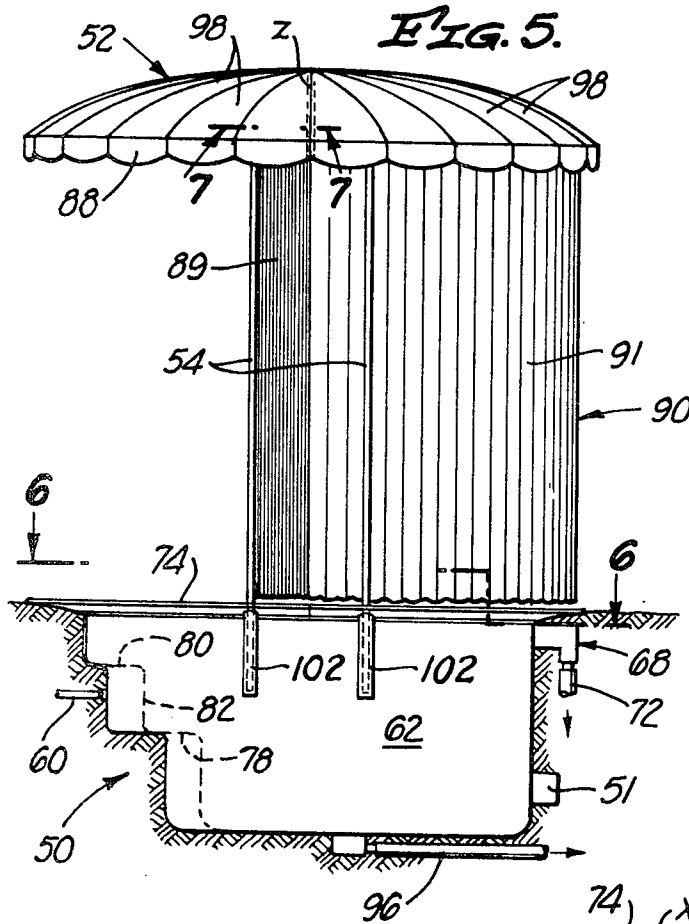
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NOZZLE, AND POOL INCORPORATING SAME

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2 Sheets-Sheet 2



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NOZZLE, AND POOL INCORPORATING SAME

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6 Claims

ABSTRACT OF THE DISCLOSURE

A nozzle for ejecting warm water into a water exerciser pool in a pattern of expanding, swirling turbulence for body massaging purposes, and an exerciser pool system incorporating the nozzle. The nozzle is of the swivel-ball type, having a movable ball member with several water passageways spaced equidistantly apart around its axis. The passageways diverge, and spiral at a common angle of twist, between their inner and outer ends, so that water is discharged from the nozzle in streams moving in conically diverging and twisting pathways to create a condition of widespread turbulence in the pool water.

BACKGROUND OF THE INVENTION

This invention relates generally to water exercising systems of the type comprising an exerciser pool, usually installed at ground or floor level, and one or more nozzles through which water is discharged into the pool to create a turbulent condition therein for body massaging purposes. More particularly, the invention relates to a nozzle of improved design for creating a more effective body massaging turbulence than heretofore attainable in such a pool.

The general idea of utilizing underwater turbulence for body massaging and exercising purposes is not new, and various means for accomplishing this, ranging from simple agitator devices for creating whirlpool currents in conventional bathtubs to complicated plumbing and heating systems for the circulation of warm water, under conditions of turbulence, through sunken pools, have been devised. The latter type of system includes, typically, one or more nozzles through which warm water is fed into the pool under sufficiently high pressure to create the necessary turbulence in the pool water. Subjecting the body to the massaging influence of such turbulent water is a pleasantly stimulating experience which benefits tired, aching muscles; eases minor tensions; and leads to a feeling of general well-being. Where used regularly, water massage is said to help tone the muscles, improve blood circulation, and otherwise upgrade the health.

All nozzles heretofore employed for water massaging purposes have, insofar as I am aware, been of the straight bore type, from which water under pressure is discharged in straight paths, like shot fired from a shotgun. Pumps are generally employed to create the necessary water pressure for satisfactory use of such nozzles, and, as will be apparent, the massaging benefits of the resultant water jets come largely from their pounding impact on the body where they come into contact therewith. Sometimes the nozzles are provided with means for the introduction of tiny bubbles of air into their discharge streams.

As will be evident from the foregoing, the discharge streams from conventional nozzles of presently known type perform their massaging function by direct impingement on relatively small areas of the body. The result of this is vigorous stimulation (sometimes to the point of discomfort) of the impinged areas and contrasting lack of stimulation (at least to any significant extent) of the remaining, and generally much larger, body areas. While the balance between the stimulated and nonstimulated areas of the body undergoing water massage treatment with

2

such conventional nozzles can be optimized by employment of a plurality of nozzles; the use of swivel-ball nozzles which can be aimed in different directions to cover various parts of the body; etc.; these measures do not solve the whole problem since they still leave a disturbing contrast between the pounding stimulus of the nozzle streams to certain body areas and a complete lack of stimulus in adjoining areas.

SUMMARY OF THE INVENTION

As indicated above, the improved nozzle of this invention is adapted to create a plurality of diverging, swirling streams which cooperate to form zones of expanding, twisting turbulence in bodies of water into which they are ejected. Such a zone of turbulence, I have discovered, is extensive enough (even a relatively short distance from the nozzle) to envelope a large part of the body of a person exposed thereto. Also, the turbulence, possibly because of the diverse movements of its contributory nozzle streams, has a more effective massaging, or kneading, action on the body than the jet-like streams of conventional water massage nozzles, with their localized pounding action, have. Thus, my new nozzle offers important advantages over presently known nozzles in water exercising effectiveness, by providing substantially greater body coverage and far better massaging action than do the latter.

The discharge stream pattern created by the nozzle of this invention results from a unique arrangement of water passageways therethrough which route the water to ejection as a plurality of diverging jets traveling in paths of twist around the nozzle axis line. In a preferred form of my invention, the nozzle has an additional passageway, coaxial therewith, which provides a central jet stream about which the other streams are grouped. This novel arrangement of passageways results in a plurality of discharge streams which diverge and twist about an axial center to create a widening area of vigorous turbulence in an exerciser pool, or other body of water, into which they are ejected.

My new nozzle is suitable for use anywhere adequate water pressures from pump, or other, sources are available. Optimum nozzle pressures can vary, depending upon the degree of water exercising turbulence desired, but will generally fall within the range of pressures provided by existing pumping equipment of the sort with which those skilled in the art are familiar. While the nozzle of my invention can be employed to create turbulence in any body of water, it is primarily intended for use in this capacity as a compound of a warm water exercising pool system.

The scope of the present invention embraces not only the above-described nozzle, but water exerciser pools incorporating one or more such nozzles, including, in particular, a unique type of canopied pool hereinafter to be described.

It is thus a principal object of the invention to provide simple, practical and economical means for creating zones of underwater turbulence, suitable for body massaging purposes, in warm water exerciser pools.

It is another object of the invention to provide such means for the creation of zones of underwater turbulence greatly superior in body massaging action to those presently available in warm water exerciser pools or the like.

It is another object of the invention to provide an inexpensive, easily installed nozzle of simple construction, conveniently adjustable by hand for aiming purposes, as the means for accomplishing the foregoing objects.

It is yet another object of the invention to provide warm water exerciser pool means incorporating at least one nozzle of the above-described type for the creation of water massaging turbulence therein.

Still another object of the invention is to provide such warm water exerciser pool means with attached canopy for outdoor use.

A further object of the invention is to provide such warm water exerciser pool means with attached canopy having cooperating side curtain means for enclosing the pool area, as desired, for privacy or protection from the weather.

Other objects, features, and advantages of the invention will become apparent to those skilled in the art in the light of subsequent teachings herein.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevation of a nozzle in accordance with this invention having a swivel-ball member by means of which the nozzle discharge can be directionally controlled, the swivel-ball member being shown in solid lines in an axially horizontal position, and in phantom outline form in a position of maximum tilt, or swivel, away from said axially horizontal position;

FIG. 2 is a front view of the FIG. 1 nozzle with its swivel-ball member in said axially horizontal position, and showing, in broken lines, the rear openings and defining edges of six diverging, twisting passageways running through that member;

FIG. 3 is a rear view of the FIG. 1 nozzle;

FIG. 4 is a longitudinal view of the nozzle, taken mostly in section along line 4—4 of FIG. 2 and showing certain hidden features in broken lines for better illustrative effect;

FIG. 5 is a side elevation of a circular water exerciser pool in accordance with this invention, shown in a position of outdoor installation at ground level, fitted with a protective canopy and an adjustable side curtain, the ground hiding the underground portion of the pool being omitted to permit illustration of its shape and plumbing particulars;

FIG. 6 is a sectional view of the pool installation, taken along line 6—6 of FIG. 5 and showing a portion of a coping around the top of the pool broken away for improved illustrative effect;

FIG. 7 is a fragmentary view, taken mostly in section along line 7—7 of FIG. 5, illustrating the manner in which the aforesaid canopy is supported and showing a joint between segmental halves of the canopy;

FIG. 8 is a fragmentary view taken mostly in section along line 8—8 of FIG. 6, showing the particulars of a skimmer forming a part of the pool;

FIG. 9 is a fragmentary sectional view of the exerciser pool, taken along line 9—9 of FIG. 6, showing a stepped configuration at one side of the pool and a nozzle discharging water under pressure into the pool for water massaging purposes; and

FIG. 10 is a plan outline of an embodiment of an exerciser pool in accordance with this invention similar to the FIG. 5 pool but of oblong, rather than circular, configuration.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Considering now the drawings in greater detail, with emphasis first on FIGS. 1 through 4, there is shown generally at 10 a preferred embodiment of a swivel-ball nozzle in accordance with this invention. The nozzle is made up of three parts, namely, a stationary base member 12, a swivel-ball member 14, and a clamping, or retaining, ring member 16. Stationary base member 12 is of generally cylindrical form, having an externally threaded rear segment 18 and an enlarged externally threaded forward segment 20. The base member is hollow, and similar to a reducing nipple in shape, except for a bell-like internal wall 22 diverging from a plane near the rear of its forward segment 20 to the front of that segment, where it forms a mouth, or opening, therein. This bell-like configuration serves as a seat for swivel-ball member 14, for a purpose presently to be revealed, and will hereinafter

be referred to as seat 22. There is an annular groove, or recess 24, in seat 22 which serves to reduce the area of contact between the seat and swivel-ball member 14, and thereby minimize frictional drag between those parts, when the nozzle is assembled and operating as described hereinbelow.

Swivel-ball member 14 has a forward segment 28, of generally cylindrical outer shape, and a toroidal rear segment 26, of greater axial length than the forward segment, which fits snugly into seat 22 of the stationary base member 12. When thus brought together, the swivel-ball and stationary base members of the nozzle form a ball-and-socket joint, and the working surfaces of the joint are highly polished to assure low frictional contact therebetween for easy joint manipulation purposes.

The retaining ring member of nozzle 10 has a cylindrical segment 38, properly sized and tapped to threadedly engage the forward segment 20 of stationary base member 12, and an annular flange 40 extending perpendicularly inwardly around the rim of its front side far enough to contact the bulging surface of toroidal rear segment 26 of the swivel-ball member forwardly of its equator, when the parts of the nozzle are assembled in the manner illustrated in FIG. 4 with retaining ring member 16 tightened on stationary base member 12 to the point of such contact. The inner edge of flange 40, shown at 46 on FIG. 4, is axially curved to fit matingly against the toroidal surface of rear segment 26 of the swivel-ball member and permit easy movement of the swivel-ball member relative to the flange as the former is worked through its various positions of swivel within seat 22 of stationary base member 12 during usage of the nozzle as taught herein. Retaining ring member 16 can be fixedly secured to stationary base member 12 of nozzle 10 at any desired degree of tightness against swivel-ball member 14 by means of a set screw 42 mounted in a tapped opening in the wall of its cylindrical segment 38, the set screw and tapped opening being shown in FIG. 4.

The parts of nozzle 10, as so far described, are similar to the corresponding parts of a swivel-ball nozzle of conventional type, and cooperative in the same way as the latter parts to permit directional control of the nozzle discharge, hence will be comprehensible, as to these aspects, to those skilled in the art, without the need for further elaboration here. All swivel-ball nozzles of the type under present consideration, including the conventional as well as that of the present invention, have restrictive passageways in their swivel-ball members through which liquid is forced under pressure to discharge in the form of fast moving streams or jets. In conventional nozzles, these passageways generally run straight, that is, coaxially with, or in the axial direction within, the swivel-ball members. The passageways of the swivel-ball nozzle of the present invention, however, deviate from this pattern of travel in a unique manner to achieve a unique result. This deviation, hereinafter described, constitutes the principal point of difference between the nozzle of this invention and its closest prior art counterparts.

Proceeding now from the general to the specific, and focusing on swivel-ball member 14 of nozzle 10, that member has, as FIG. 4 shows, a concentric hollow, or depression 30, extending from its rear side partway therethrough. The swivel-ball member has a flat front face 34, and the bottom of hollow 30, shown at 32 on FIG. 4, is flat and planarly parallel to this face. Running between the bottom 32 of hollow 30 and front face 34 of the swivel-ball member are seven passageways, six of which (shown at, and hereinafter referred to as passageways 48) are arranged in a circular pattern of symmetry about the seventh (shown at, and hereinafter referred to as passageway 44), which is coaxial with the swivel-ball member, all as illustrated in FIGS. 2 and 3 of the drawings, where the relative positions of the front and rear openings of the passageways are shown. As will be apparent from a comparison of the respective spacings of the front and

rear openings of the passageways on these two figures, passageways 48 diverge outwardly in an expanding pattern of circular distribution between their inner, or rear, and outer, or front, ends. Additionally, the passageways turn through equivalent angles of spiral, or twist, in the clockwise direction, as viewed from the rear between their inner and outer ends. The angles of divergence and spiral, or twist, of passageways 48 are preferably, but not necessarily, of about 10 degrees and 30 degrees magnitude, respectively.

As will be evident from the foregoing, the seven passageways through swivel-ball member 14 provide a nozzle discharge of seven jets, six of which form a circular pattern about the seventh. This results in a zone of expanding, whirling turbulence in a pool, or other body of water, fed by the nozzle from an underwater point of discharge, which is excellently suited for body massaging purposes. Because of its expanding, whirling pattern of movement, the turbulent water subjects the body to widespread, vigorous, and fairly uniform massage action with pleasantly stimulating results. By comparison, the turbulence created by nozzles with one or more conventional passageways contacts relatively small areas of the body, sometimes pummeling them unmercifully, to the substantial exclusion of the remaining body areas. As a result of the divergent character of the jet streams from nozzle 10, the turbulence created by these streams in a pool, or the like, hits the body from many angles, to knead or massage it with masseur-like effectiveness, in contrast to the shotgun-like impact on the body of the turbulent streams from nozzles with conventional passageways.

Swivel-ball member 14 of nozzle 10 is provided with a flat, laterally projecting handle 36 at its forward end. This handle is best shown in FIGS. 1, 2 and 4, and serves to permit easy fingertip adjustment of the nozzle for flow-direction control purposes. No other nozzle, to my knowledge, has a handle of this sort, and it comprises an important, though not critical, feature of my invention.

The nozzle of this invention is, as previously indicated, suitable for water-massaging use in any warm water exerciser pool. FIGS. 5 through 9 illustrate such a pool installation of my own design, comprising a round exerciser pool 50; a canopy 52 supported over the pool by four uprights 54; and a retractable curtain, or partition 90, mounted to hang from the canopy, which can be drawn around the pool area to enclose it, or pushed back, like a traverse drapery, to expose that area to favorable weather, permit easy access to the pool, etc.

Pool 50 is designed primarily for outdoor installation, at, or slightly above, ground level, and is shown so installed in FIG. 5, with a connecting warm water input line 60 and drain and overflow lines. These lines connect, in turn, with heating, pumping, etc., facilities, not shown, but of a type familiar to those skilled in the art as adjuncts of warm water exerciser pools. When the pool is in operation for water exercising purposes, overflow water therefrom is continuously circulated to a suitable heating facility, such as just mentioned, where it is brought to a predetermined temperature level. The water is then returned to the pool through water input line 60 and two nozzles of similar design to nozzle 10, positioned as shown at 10 in FIG. 6 and referred to hereinafter as nozzles 10. The pool drain line, shown at 96, allows easy drainage of the pool for water changing, or other, purposes.

Pool 50 comprises a molded fiber glass (fiber glass-reinforced plastic) pool shell 62, provided with a surface finish adequate to seal it against water leakage and give it an attractive appearance. Pool shell 62 is generally circular at the top, and has two steps molded into its left side, as viewed in FIG. 2. The steps are symmetrical about the bisecting diameter of the pool shell (there is only one such diameter, this being, as FIG. 6 makes clear, a diameter line coincident with section lines 8—8 and 9—9 of that figure), and each curves gracefully, at its ends, from

contiguity with the adjacent pool shell wall into a straight center segment, as best illustrated in FIG. 6. The lower of the steps is shown at 78, and the upper at 80, and will be hereinafter referred to as lower step 78 and upper step 80, respectively.

The aforesaid steps serve to permit easy access to, and egress from, and as seats for persons using the pool. The above-mentioned nozzles 10 are mounted in the back of the lower of the seats formed by steps 78 and 80, hereinafter referred to as seat back 82, equidistantly either side of the aforesaid bisecting diameter of pool shell 62 and at the same depth in the pool water. The diverging broken lines on FIG. 6 symbolically represent zones of turbulence created in the pool water by the nozzles adjusted to a position of aim straight across the pool. An air intake fitting 100 (essentially a Venturi valve with an air line attached) is provided in the warm water input line to pool 50, as best shown in FIG. 9. This is an optional feature of the pool assembly, not critically necessary to its proper functioning, which serves to draw outside air into the circulating pool water for dispersal, in the form of fine bubbles, in the discharge streams from nozzles 10. The resulting air bubbles in the turbulent water created in pool 50 by these streams add significantly to the titillating effect of that water on the pool user's body.

Pool 50 can, of course, vary in size within the scope of the present invention, but is preferably of small enough size for individualized usage yet sufficiently large to accommodate three or four persons at a time. I have found a pool depth of about 45 inches, and an inside pool shell diameter of about 7 feet 10 inches, to be optimally consistent with these aims. The pool can be fitted with additional nozzles, over and above the two shown in FIG. 6, and, in fact, would probably have greater practical and commercial appeal with a matching pair of such nozzles located opposite the first-mentioned ones.

The pool shell 62 has a squarish skimmer 68, offset to the right as seen in FIG. 6. This skimmer serves the same purpose as that of a conventional swimming pool, and is fitted with float means 69, for water level control purposes, a strainer 70, and an overflow outlet 72 through which water is induced to flow from the pool to the aforesaid heating facility. In addition to the skimmer, the pool has an underwater light 51 to permit its use when light conditions are poor, give it a more attractive appearance at night, etc. These parts are all sufficiently similar to their counterparts in conventional pools to require no further comment here.

There is a downwardly sloping lip, or flange 64, extending outwardly from the circular portion (see FIG. 6) of the rim of pool shell 62 the same distance all around. Seated on the upper surface of this flange is a molded fiber glass coping 74, formed from a pair of symmetrical halves with ends adapted to abut, as shown at y on FIG. 6, the halves being fastened together at their abutting ends by epoxy glue means. Coping 74 is relatively wide, with a flat upper surface; a rounded, beadlike inner edge 75 which extends over the pool water to provide a splash guard and for a more finished appearance; and a downwardly and outwardly slanting strip of undersurface, contiguous with the undersurface of the beadlike strip 75, terminating at its outer periphery, in a sharp, downturned edge 73, which curves in a circle diametrically equal to the circle formed by the outer periphery of downwardly sloping pool shell flange 64. As will now be apparent, coping 74 is designed to fit on this flange with its downwardly and outwardly slanting strip of undersurface, referred to above, flush against the upper surface of the flange. To ensure maximum strength and rigidity in the pool structure, prevent rattles, and minimize the possibility of separation of the two halves of coping 74, or slippage of the coping relative to the pool shell, the coping is fastened in place on flange 64 of the pool shell by epoxy glue means, the surfaces of the coping and pool shell flange thus fastened being shown in cross section at x on FIG.

9. As will be evident from FIG. 8, the upper rim of the skimmer 68 portion of the pool shell is shaped to accommodate the bottom surface of the coping where the latter passes thereover.

Where the pool 50 is installed out of doors at ground level, as illustrated in FIG. 5, an encircling decking of brick, concrete, or the like, can be laid to extend outwardly from coping 74, or from an inner periphery small enough to permit the outer edge of the coping to overlie the decking. While the pool is designed primarily for ground level emplacement, it also lends itself to installation at higher levels, as, for example, levels of up to 18 inches above the ground. The pool can, of course, be installed indoors, or in a partially protected area, rather than out of doors, in which case coping 74 can, if desired, be dispensed with. The pool canopy and side partition hereinafter described can likewise be dispensed with at indoor, or other, pool locations where their presence is unnecessary, or for some reason undesirable.

Pool canopy 52 is an umbrella-shaped cover of molded fiber glass construction, formed from two symmetrical half segments with downturned lips 94 adapted to meet in flush relationship in the manner illustrated at z in FIG. 7. The half segments of the canopy are held together at their meeting lips by epoxy glue, nut and bolt fastening means, both epoxy glue and nut and bolt fastening means, or in any other suitable fashion. The canopy has a downwardly depending peripheral fringe, or skirt, 88, scalloped along its lower edge for decorative effect, and is marked off in gore-shaped segments 98, as shown in FIG. 5, to give it a gaily ornamental appearance. While segments 98 are, as indicated, purely ornamental, the canopy can, if desired, be made with segments which arch between their radial boundaries, to contribute strength, as well as ornamentation, to the canopy structure.

Canopy 52 is supported above pool 50 by means of four tubular aluminum uprights 54, positioned in four receptive openings 84 therefor in the pool coping. In order to keep the area around the pool, especially in the vicinity of steps 78 and 80, as free of obstruction as possible, the uprights are positioned in pairs either side of the ends of the pool diameter perpendicular to the bisecting diameter of the pool shell, with the members of each pair spaced fairly closely together, as best illustrated in FIG. 6. Uprights 54 are preferably made of anodized aluminum tubing, but any suitable substitute material, aluminum or otherwise, can be employed in lieu thereof, if desired.

The uprights 54 are of equal length and each is securely anchored at its lower end to prevent it from wobbling or tilting. A particularly effective way of anchoring the uprights, I have found, is by means of integral sleeves on the underside of coping 74, formed coaxially with the openings 84 in the coping and sized to snugly receive the uprights, with cast bronze wedge anchors laminated therein. Two such sleeves are shown at 102 in FIG. 5. These sleeves must, of course, be embedded in the ground, or otherwise positioned below ground level, during installation of the pool. Although four uprights have been found optimally suitable for the support of canopy 52, there is nothing critical about this particular number, and any other number of uprights capable of supporting the canopy in the manner taught herein can be employed within the scope of the invention. The canopy could, for example, be supported by eight uprights, instead of four, positioned in pairs either side of two perpendicularly intersecting diameters of the pool shell, with the members of each pair about the same distance apart as those of each pair of uprights 54, or by any alternatively suitable arrangement of such uprights.

Canopy 52 is provided, on its underside, with four tubular sockets 86, sized and positioned to receive the tops of the anchored uprights 54 and hold the canopy in sheltering position over pool 50 in the manner illustrated in FIG. 5. As that figure makes clear, the sockets are spaced equidistantly from the edge of the canopy, and

the latter (canopy) is sized to cover the pool to the outer edge of its coping. Suitable means for locking, or otherwise securing, the upper ends of the uprights in sockets 86 can be provided, to lend greater strength and rigidity to the canopy structure if desired. It is well within the ordinary capabilities of one skilled in the art to improvise such means, should the need or desire for same arise.

Fastened to the inner side of peripheral skirt 88 of canopy 52, by means of brackets (not shown), is a circular track for the overhead support of partition 90. Partition 90 is made of a heavy, weather-resistant cloth, such as a suitable awning cloth, and is suspended from the track in such fashion as to follow it, like a drapery following a traverse rod, when moved therearound. The partition is adapted to expand and contract, through a plurality of accordion-like folds, between a closed position, in which it stretches completely around the pool, and a fully open position, in which it is laminatingly folded into a relatively small space. It can, of course, be intermediately positioned between its fully open and closed positions, with part expanded and part folded, as illustrated in FIG. 5, where the expanded portion is shown at 91 and the folded portion at 89.

The side edges of partition 90 can, if desired, be fitted with a zipper to permit them to be fastened together when the partition is drawn to full encirclement of the pool. The supporting track for partition 90 is spaced between skirt 88 of canopy 52 and sockets 86 on the underside of the canopy into which the upper ends of uprights 54 fit, consequently the partition girds the uprights, in its closed position, and the latter help to brace the partition against excessive blowing or flapping on windy days. As FIG. 5 illustrates, partition 90 falls nearly to the level of pool coping 74, and is positioned to ride over the coping near its outer periphery. The pool surface, and most of the coping, is thus left clear of the partition as the latter rides back and forth between its open and closed positions in use.

FIG. 10 shows the plan outline of a pool and coping similar to pool 50 and coping 74, except of oblong, rather than round, peripheral shape. Such a pool lends itself to installation and use in sizes large enough for swimming, as well as water exercising, purposes, and can be fitted with a plurality of nozzles in accordance with this invention to suit it for communal usage by larger than family-sized groups. While pool 50 can also be made large enough for such communal usage, it lends itself better to smaller scale operability as a family unit, or the like.

A sheltering canopy for an oblong pool such as that of FIG. 10 can be improvised from two semicircular end segments, similar to the two halves of canopy 52, and one or more center segments, each with downturned side lips cooperable to permit fastening of the segments together in essentially the same manner as that in which the two halves of canopy 52 are fastened together. The center segment of such a canopy fits between its two semicircular end segments similarly to the way in which a dining table leaf fits between the halves of the tabletop to extend the length of the latter.

The present invention has been described in considerable detail in order to satisfy the statutory requirements for a full public disclosure thereof. Such detailed disclosure is not, however, intended to unduly limit the scope of the patent monopoly sought to be granted. While my unique nozzle and pool incorporating same have been herein illustrated and described in what are considered to be preferred embodiments, it is emphasized that various changes can be made in these embodiments within the scope of the invention. Certain of these changes have already been mentioned, and others will occur to those skilled in the art in the light of present teachings. Exemplary of the latter are noncritical variations of the shapes of various features of the nozzle, noncritical positional changes of such features, etc. More specifically, examples of such permissible deviations from the illus-

trated forms of my invention include number, size and/or positional changes in the arrangement of restrictive passageways through the swivel-ball member of the nozzle, consistent with satisfactory performance of said nozzle (in which connection, I have found differing pump sizes in water circulating systems of the pool installations of this invention to require nozzles of varying sizes and numbers of passageways—some requiring 5, some 6 and some 7 passageways, for example—for optimum nozzle effectiveness); changes in the shape of adjusting handle 36 of the nozzle; the substitution of internal threads for the external threads on the rear segment of stationary base member 12 of the nozzle (to permit installation of the nozzle on an externally threaded fixture); etc. While many other examples of permissible modifications of the illustrated embodiments of my invention could be given, the foregoing are believed adequately illustrative for the purpose.

Although the above disclosure heavily underscores the importance of my new nozzle for warm water exercising purposes, the nozzle has broader use potential than this, and can be employed in any capacity for which its unique capabilities suit it. It is emphasized, in final summary, that the scope of the present invention includes all variant forms of that invention encompassed by the language of the following claims.

I claim:

1. Water exercising means for subjecting the body to the massaging action of turbulent water, comprising, in combination:

- pool means for containing a body of water;
- water input means; and
- improved nozzle means adapted to create an expanding zone of whirling turbulence in the body of water for body massaging purposes, said nozzle means having a plurality of passageways for imparting a spiraling motion to streams of water passing therethrough under pressure and discharging underwater, said passageways being of circular cross section and having upstream and downstream openings respectively oriented in a generally circular pattern of distribution, said passageways diverging, in an expanding pattern of circular distribution about a central axis, and

concurrently spiralling, in a common direction of twist, between their upstream and downstream ends.

2. Water exercising means in accordance with claim 1 in which said plurality of passageways are spaced equidistantly about said central axis and each has a diameter substantially greater than the spacing distance between adjacent upstream openings.

3. Water exercising means in accordance with claim 2 in which each of said plurality of passageways diverges outwardly about 10 degrees, and spirals about 30 degrees, between its upstream and downstream ends.

4. Water exercising means in accordance with claim 2 in which said diameter is at least twice as great as said spacing distance.

5. Water exercising means in accordance with claim 1 further including a passageway coaxial with the central axis for providing a central coaxial stream of water from which said first-named streams of water diverge downstream.

6. Water exercising means in accordance with claim 1 further including an air intake means serving to draw in air for dispersal into the pool of water, in the form of fine bubbles, through the streams of water, to provide titillating body massaging effect.

References Cited

UNITED STATES PATENTS

3,066,312	12/1962	Reavis	128—370UX
3,279,705	10/1966	Stiefel	239—490
3,336,921	8/1967	Lloyd	128—66

FOREIGN PATENTS

445,354	9/1926	Germany	239—478
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