

[54] FLOATING FOUNTAIN

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Related U.S. Application Data

[60] Division of Ser. No. 304,244, Nov. 6, 1972, Pat. No. 3,814,317, which is a continuation-in-part of Ser. No. 87,886, Nov. 9, 1970, Pat. No. 3,705,686.

[52] U.S. Cl. 239/18; 239/23

[51] Int. Cl. B05b 17/08

[58] Field of Search 239/16-23

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[57] ABSTRACT

A support base for an ornamental water fountain includes a base housing having at least one water inlet opening to an internal chamber from an upper portion of which an outlet opening is formed through the housing. A fountain nozzle is coupled to the housing via the outlet opening. A plurality of lamp support arms are each connected at one end thereof to the housing to extend radially from the housing substantially normal to the axis of the chamber outlet opening. At least one lamp is mounted to each arm to illuminate the fountain pattern produced by water discharged from the nozzle. The base and lamps may be installed as a unit in a fountain bowl. By connection of floats to the support arms or to the housing, the assembly may be used as illuminated floating fountain in lakes and the like.

6 Claims, 11 Drawing Figures

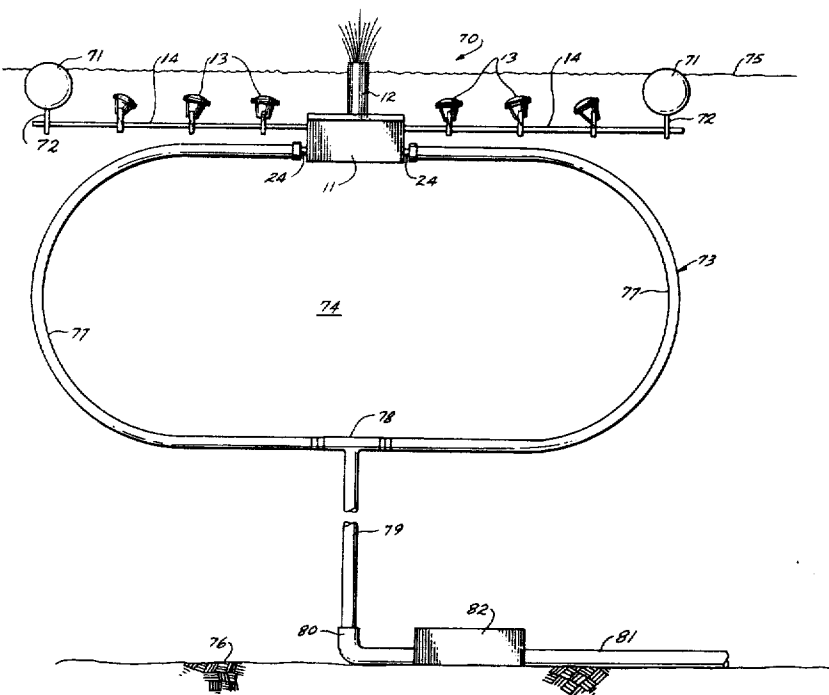


Fig. 1

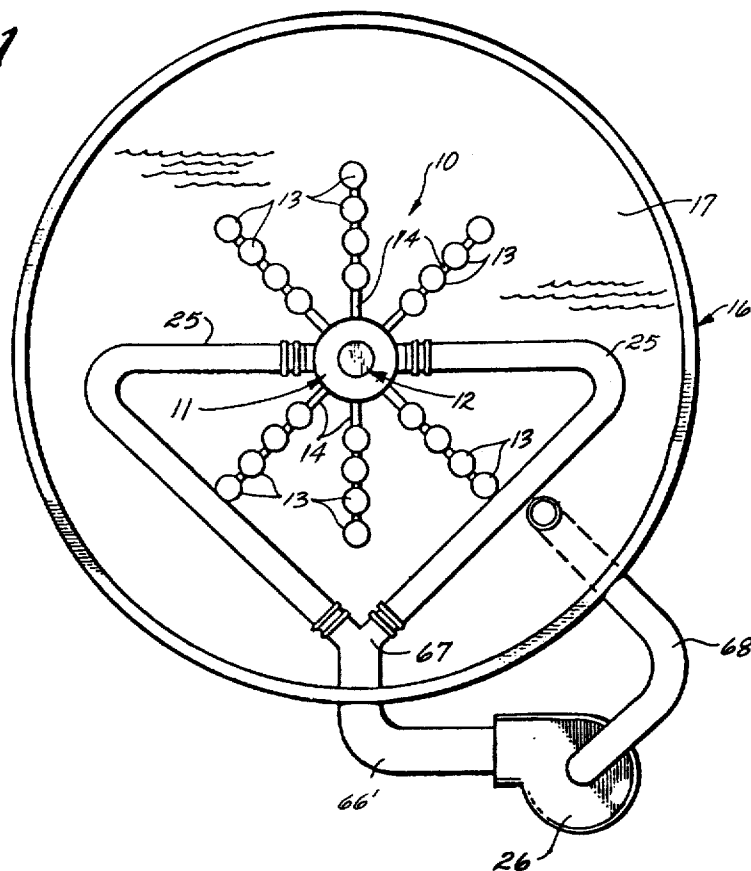


Fig. 4

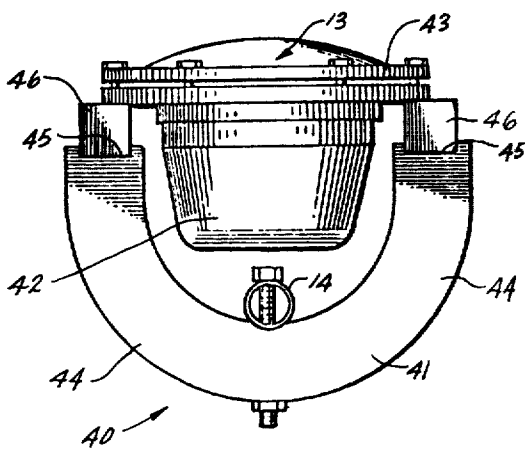


Fig. 6

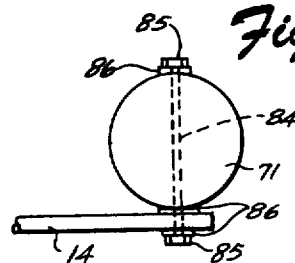
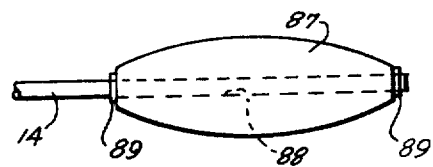
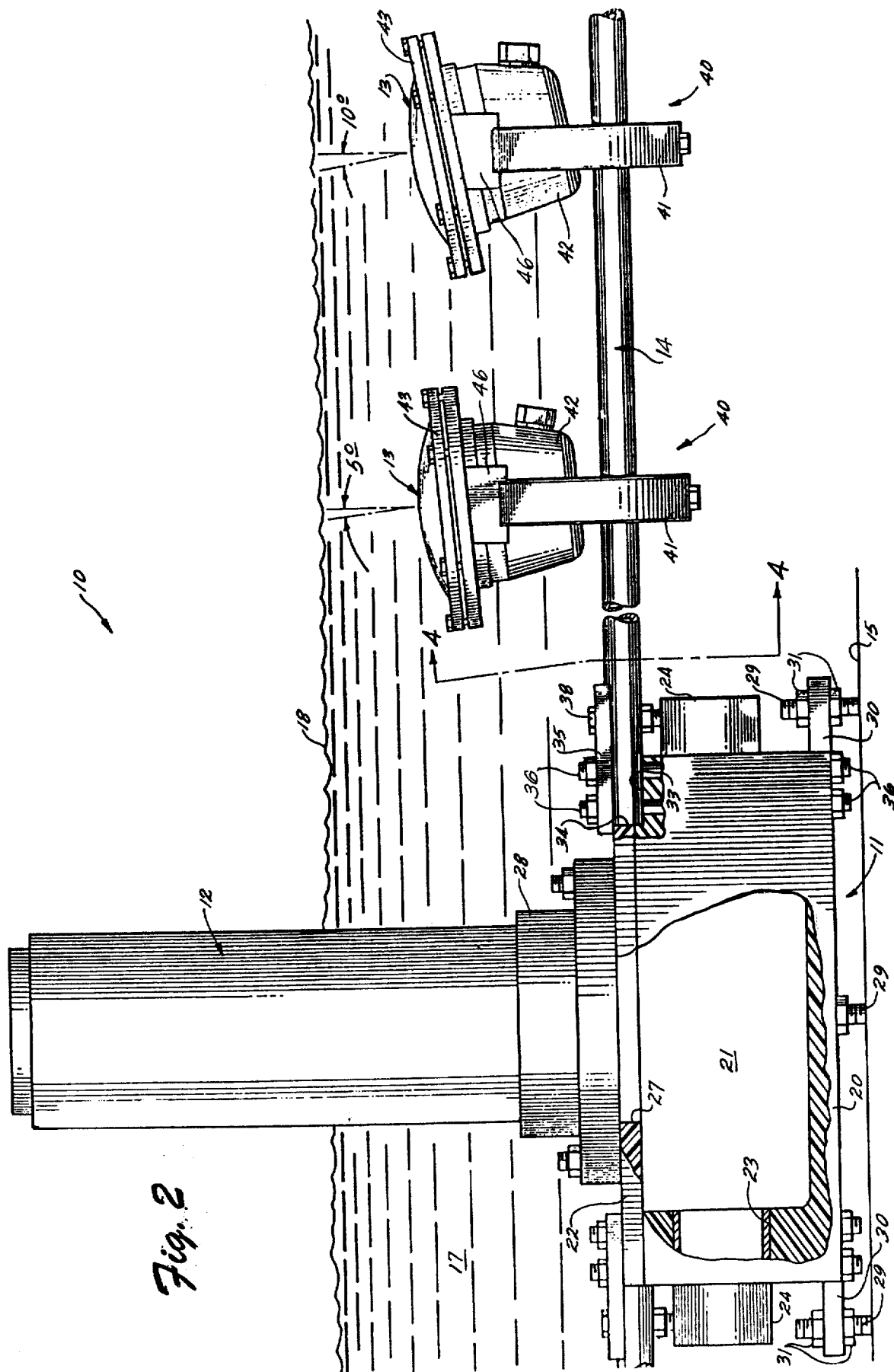


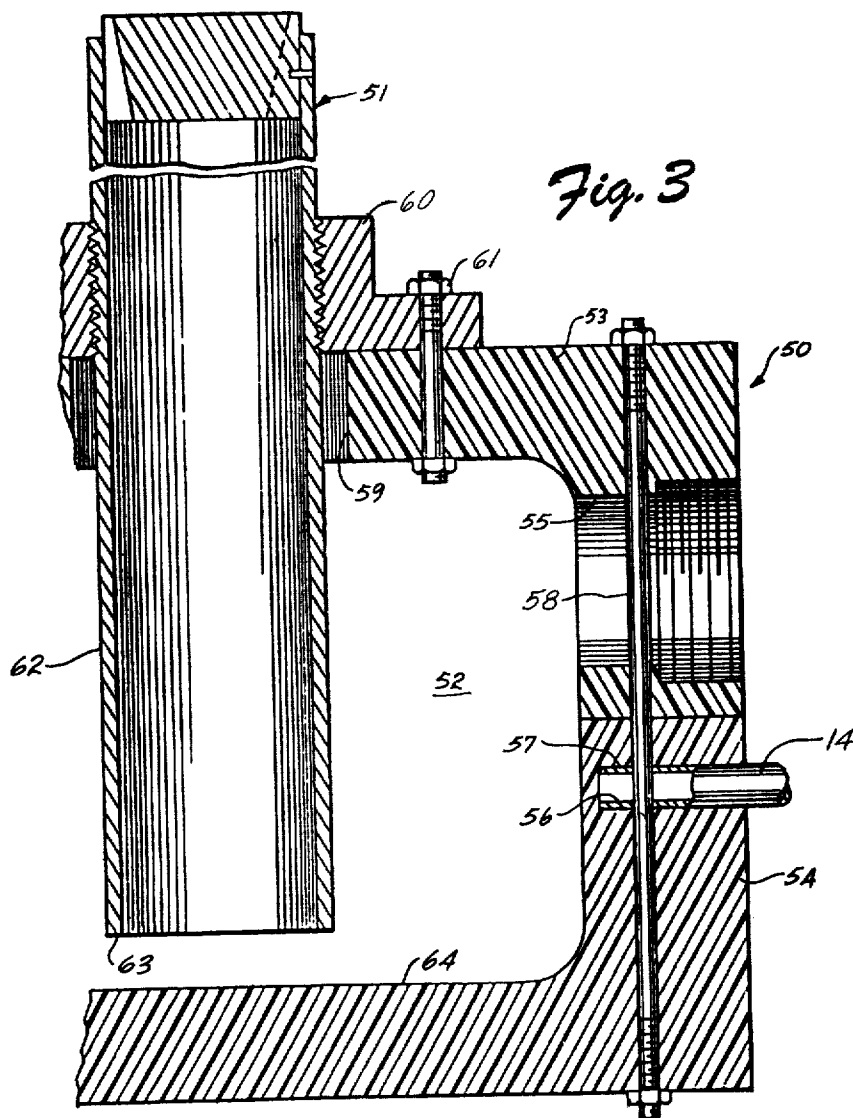
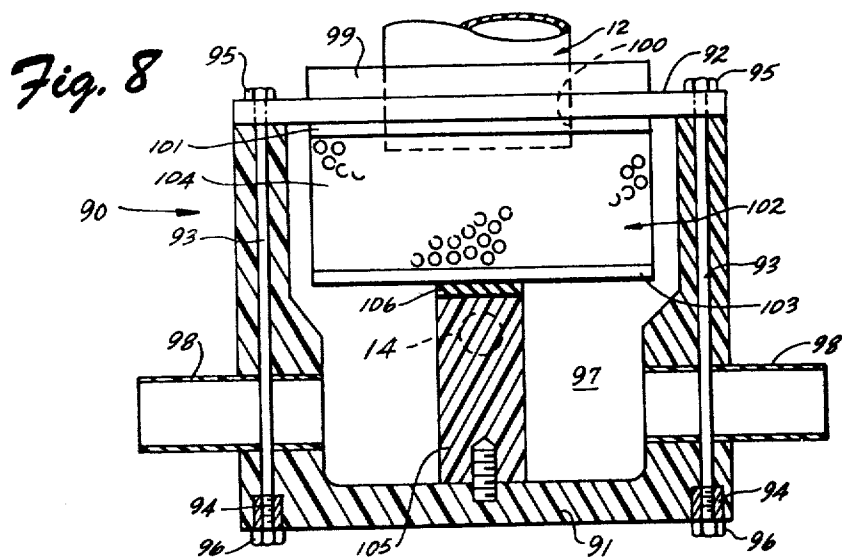
Fig. 7



SHEET

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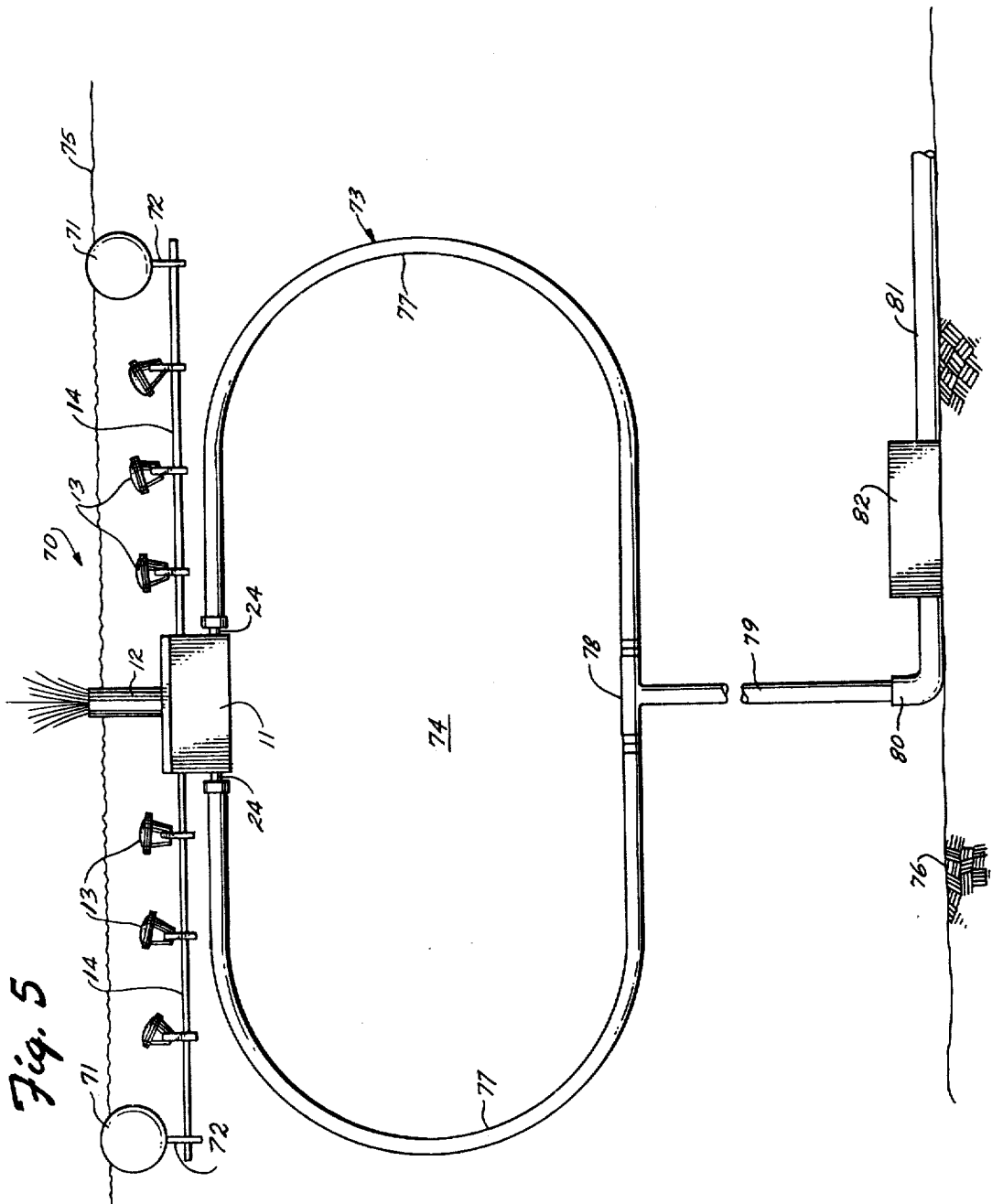


Fig. 9

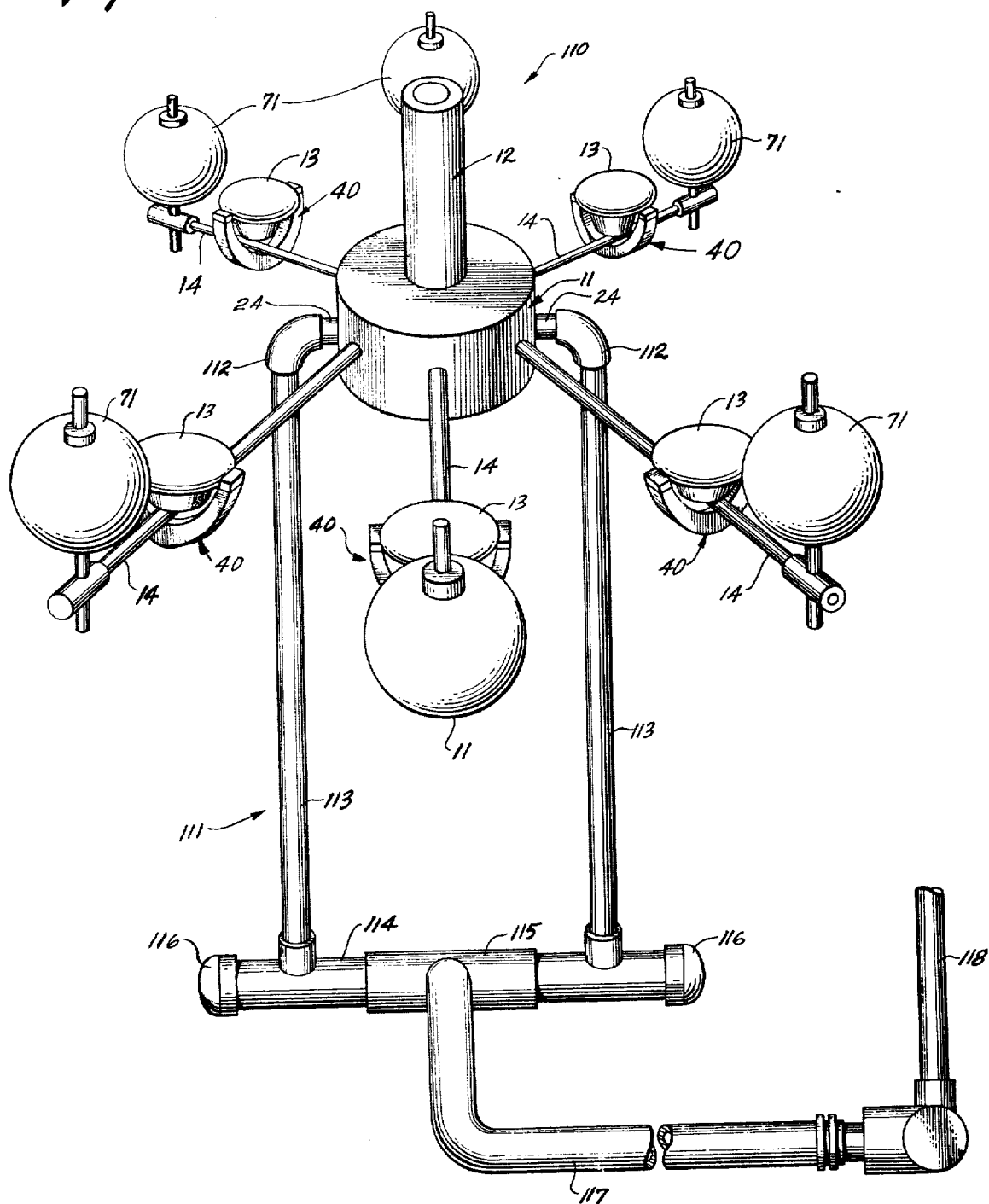


Fig. 10

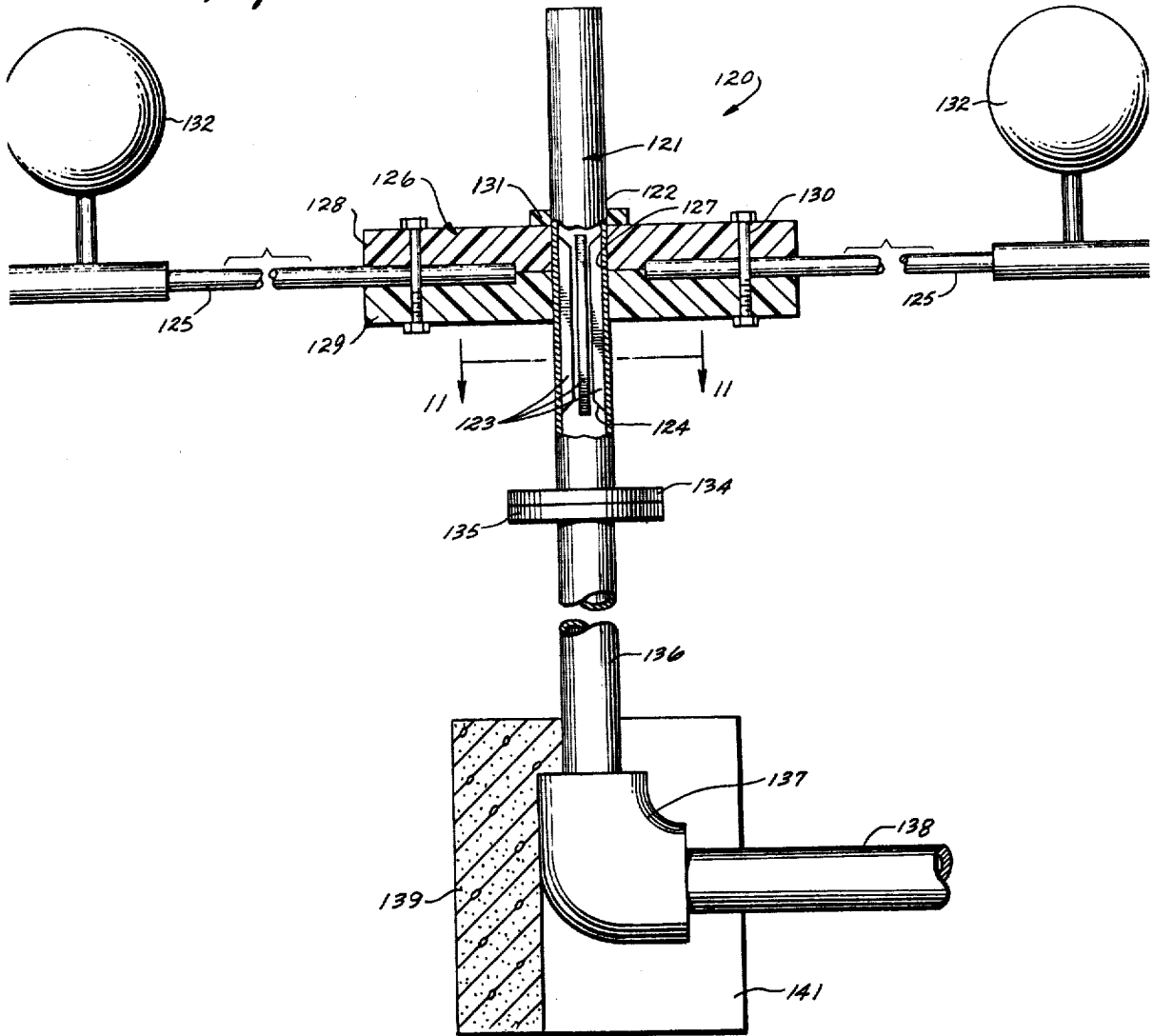
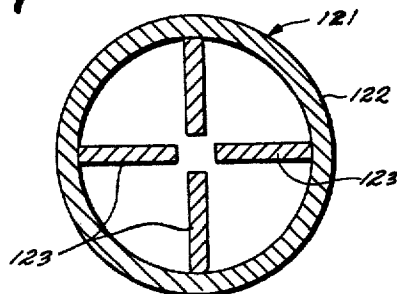


Fig. 11



FLOATING FOUNTAIN

CROSS REFERENCE TO RELATED APPLICATIONS

This application is a division of my copending application Ser. No. 304,244, filed Nov. 6, 1972, now U.S. Pat. No. 3,814,317 which, in turn is a continuation-in-part of copending application Ser. No. 87,886 filed Nov. 9, 1970, now U.S. Pat. No. 3,705,686.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to ornamental water fountains. More specifically, it pertains to lighting support arrangements for ornamental fountains, including floating fountains.

2. Description of the Prior Art

Heretofore, in the construction of artificially illuminated water fountains, it has been conventional to separately mount the water discharge nozzle or nozzles in the fountain pool separately from the mounting of the illuminating lamps in the pool. This practice has several disadvantages. First, each lamp must be separately wired, mounted and adjusted at the fountain site to cast its light on the desired portion of the water pattern which is produced as the fountain is operated; this process normally involves skilled personnel of the fountain manufacturer and adds to the cost of the fountain installation. Second, this practice makes it difficult to install an improved or substitute fountain assembly in the pool bowl because the nature and positioning of the mounting hardware in the bowl for the original fountain arrangement may interfere with the proper mounting of the new fountain and its lamps. Also, best performance of this practice requires that the fountain bowl be carefully defined as to smoothness and levelness if the separate mounting elements are to be installed properly.

A need exists for a combination of a fountain nozzle assembly and illuminating lamps which may be installed as a unit in a fountain bowl, particularly where the unitary combination is a replacement or substitute fountain. Where unitary mounting is available, it is possible for the overall assembly to be prefabricated at the facilities of the manufacturer and shipped either assembled or partially disassembled to the fountain site. At the fountain site, the assembly may be disposed as a unit in the bowl by relatively unskilled personnel without adverse effect upon the predefined aesthetically determined orientation of the individual lamps relative to the water discharge nozzles. A unitary installation makes the fountain assembly essentially insensitive to inattention to precision in the construction of the fountain bowl and makes it possible to install the fountain in the midst of previously installed mounting hardware and plumbing for a predecessor fountain.

Also, a unitary fountain assembly can be used to advantage in lakes, reservoirs or ponds where water level may vary from time to time. This advantage is provided because a unitary nozzle and lamp assembly may be buoyantly supported in the water to follow changes in water level so as to always produce the best possible aesthetic effect. While floating fountain nozzle arrangements are known, it is not believed to be known to provide a floating unitary combination of fountain nozzle and illuminating lamps.

SUMMARY OF THE INVENTION

This invention effectively, efficiently and economically fills the needs described above by providing a combination of fountain nozzles and illuminating lamps which may be mounted as a unit in a fountain bowl. Also, the combination may be used in a floating arrangement of follow variations in water level in a lake, for example, in which the combination is installed.

Generally speaking, this invention provides a base for an ornamental water fountain. The base includes a housing which defines therein a chamber having at least one water inlet opening thereto. A water outlet opening is defined through the housing from an upper portion of the chamber. The base assembly further includes means for coupling a desired fountain nozzle to the housing in water flow communication with the chamber via the chamber outlet opening. A plurality of arms are each connected at one end thereof to the housing to extend radially from the housing substantially normal to the axis of the chamber outlet opening.

DESCRIPTION OF THE DRAWINGS

The above-mentioned and other features of this invention are more fully set forth in the following detailed description of presently preferred embodiments of the invention, which description is presented with reference to the accompanying drawings, wherein:

FIG. 1 is a plan view of a fountain assembly according to this invention;

FIG. 2 is an enlarged fragmentary elevation view, partially in cross-section, of a portion of the fountain assembly shown in FIG. 1;

FIG. 3 is a fragmentary cross-section elevation view of another fountain base housing and nozzle assembly;

FIG. 4 is a view taken along line 4—4 in FIG. 2;

FIG. 5 is an elevation view of a floating fountain assembly;

FIG. 6 is a fragmentary elevation view of a float mounting arrangement which may be used in a floating fountain;

FIG. 7 is a fragmentary elevation view of another float mounting arrangement which may be used in the practice of this invention;

FIG. 8 is a cross-section elevation view of another fountain base housing;

FIG. 9 is a perspective view of another floating fountain assembly;

FIG. 10 is a cross-section elevation view of still another floating fountain assembly; and

FIG. 11 is an enlarged cross-section view taken along line 11—11 in FIG. 10.

DESCRIPTION OF THE ILLUSTRATED EMBODIMENTS

An illuminated fountain assembly 10 (see FIGS. 1 and 2) includes a base housing 11, a water discharge nozzle 12 carried by the base housing, and a plurality of lamps 13 mounted to a plurality of support arms 14 which extend radially from the housing. The housing is disposed on the floor 15 of a bowl structure 16 which contains a quantity of water defining a fountain pool 17. The fountain assembly is disposed substantially wholly below the surface 18 of the fountain pool with only the upper portion of nozzle 12 extending above the water surface.

Housing 11 is composed of a body 20 which defines a major portion of volume of the housing. An internal chamber 21 is formed within the body and opens to the top of the body and, in the assembled housing, is closed by a cover plate 22. At least one inlet opening 23 is formed through a sidewall of the housing body to chamber 21 and receives a tubular connection nipple 24 which has its outer end disposed outside the body. The connection nipple is provided to permit a water supply conduit 25 (see FIG. 1) to be connected to the housing for supply of water from a suitable source, such as pump 26, to the interior of the base. Where, as shown, chamber 21 has plural inlet openings, it is preferred that the inlet openings be distributed at equal intervals around the circumference of the body so that water entering the chamber 21 from the several inlet openings interacts with each other sufficiently to provide substantially uniform flow characteristics of water from the housing through an outlet opening 27 formed in the cover plate coaxially of the axis of symmetry of the chamber.

Water discharge nozzle 12 is disposed coaxially of chamber 21 and is carried in an annular coupling member 28 which is bolted, for example, to the upper surface of cover plate 22. Water, supplied from chamber 21 through outlet opening 27 to the interior of nozzle 12, in a characteristic discharge pattern which is discharged upwardly is defined by the structure of the nozzle. Nozzle 12 is not per se an aspect of this invention, and any of the nozzle structures shown in commonly owned U.S. Pat. Nos. 3,558,053, 3,602,434, 3,612,396, 3,630,443, 3,633,822, 3,644,642 or 3,645,449, for example, may be used in fountain assembly 10 as desired.

Preferably, the discharge pattern produced by operation of nozzle assembly 12 is a symmetrical discharge pattern. Proper vertical alignment of the nozzle assembly in the installed fountain is assured by appropriate adjustment of a plurality of the leveling studs 29 which are threaded through a corresponding plurality of support lugs 30 extending radially outwardly from body 20 adjacent its lower end. The leveling studs are held in adjusted position in their corresponding lugs by jamb nuts 31.

The inner end of each lamp support arm 14 is received in a suitable recess formed in housing 11. Each arm-receiving recess is defined by a recess 33 in the upper surface of the body and by a notch 34 in the cover plate. A clamp member 35 is engaged with the upper surface of the cover plate and with the upper extent of the inner end of the support arm. A pair of through-bolts 36 are passed through the clamp member, the inner end of the support arm, and through the entire vertical extent of the housing body. Additional mounting bolts 38 are passed through the clamp member and the support arm adjacent the outer surface of the housing. This mounting of the several support arms to housing 11 is a cantilever mounting in which each support arm extends substantially radially from the housing perpendicular to the axis nozzle assembly 12.

Each lamp 13 is a component of a lamp assembly 40 which also includes a U-shaped yoke 41 connected intermediate its ends to the corresponding lamp support arm 14 by a nut and bolt as shown in FIG. 4. Each lamp includes a circumferentially flanged casing 42 to which a lens retaining ring 43 is bolted, a suitable gasket (not shown) preferably being interposed between the lens

retaining ring and the casing flange to render the lamp water-tight. The upper end of each arm 44 of each yoke 41 is recessed, as at 45, to receive, in mating engagement, a mounting block 46. The lamp of lamp assembly 40 is connected between the upper extents of the mounting blocks so as to be disposed between the upper ends of yoke arms 44, as shown best in FIG. 4.

At least one lamp assembly 40 is mounted to each lamp support arm 14. To achieve maximum efficiency from each lamp in fountain assembly 10, it is desirable that the lamp be properly focused upon the water discharge pattern produced by nozzle 12. The proper focusing of each lamp is determined by several factors, notably the size and configuration of the water discharge pattern and the location of the lamp radially from the axis of the discharge pattern, which factors in turn define the optimum angle at which any given lamp should be mounted relative to the axis of nozzle 12. For any given nozzle, the size and shape of the water discharge pattern is known within fairly narrow limits. In this context, then, proper focusing of each lamp 13 of fountain assembly 10 is assured by disposing that lamp at a predetermined distance from the axis of the nozzle assembly, and by mounting that lamp to its supporting yoke member by mounting blocks 46 which are particularly tailored, for that radial distance from the nozzle centerline, to dispose the corresponding lamp at the proper angle relative to the nozzle axis. This is illustrated in FIG. 2 where the mounting blocks 46 for the lamp assembly closest to base housing 11 are defined to give a nominal five degree declination of the lamp optical axis from a vertical reference line. The mounting blocks for the next lamp assembly, proceeding away from the housing on that lamp support arm, are configured to produce a ten degree declination of the lamp axis from the vertical reference line. The positions of the several lamp assemblies on each lamp support arm radially from the axis of the nozzle is predetermined to correspond to lamp axis declination angles of 5°, 10°, 15° and 20°, for example.

The appropriate lamp declination angle is determined by the included angle between the upper and lower surface of each mounting block 46. To assure proper assembly of the fountain assembly at its site of use, it is preferred that the mounting blocks corresponding to a particular lamp declination angle be color coded to be distinguishable from the mounting blocks associated with all other lamp declination angles present in the fountain assembly. In this manner, the personnel installing the fountain assembly need only know that the red mounting blocks are to be used in conjunction with the yoke assembly connected to lamp support arm 14 at the first predrilled location along the lamp support arm, and that the yellow mounting blocks, for example, are to be used in conjunction with the next outward predrilled hole, and so on.

From the foregoing, it will be apparent that lamp assembly 10 can be manufactured for shipment in a disassembled condition to a remote site of use where it may be assembled and installed by relatively unskilled personnel with minimum concern that the fountain, as ultimately assembled, will have all of the desired adjustments therein to the same extent as if the fountain assembly were installed by highly skilled personnel supplied by the manufacturer. Also, as is apparent from FIG. 2, the entire fountain assembly is supported on pool floor surface 15 at essentially a single point; it is

therefore not necessary to worry about special hardware and precise locations of hardware on the floor surface in installing the fountain assembly. Instead, the entire fountain assembly may be installed on the pool floor surface as a unit, following which the only necessary adjustment is appropriate leveling of the assembly so that the axis of nozzle 12 corresponds to a plumb line. The area occupied by base housing 12 on the pool floor surface is small; is fountain assembly 10 is a replacement fountain to be installed in an existing fountain pool structure following removal of predecessor lamps and nozzles, fountain assembly 10 can be readily installed with only minimum removal of the mounting hardware for the predecessor fountain.

If desired, the outer ends of lamp support arms 14 may be supported above pool floor surface by appropriate adjustable feet, not shown.

FIG. 3 is a fragmentary cross-sectional elevation view of another base housing 50 and a nozzle 51 which may be used in an illuminated fountain assembly similar to that illustrated in FIGS. 1, 2 and 4. Housing 50 defines an internal chamber 52 which is enclosed by upper and lower housing parts 53 and 54, respectively. The housing parts have mating surfaces at about the middle of the height of chamber 52. An inlet opening 55 is formed through the upper housing part and preferably is internally threaded at its outer end to receive a suitable connection nipple for a water supply conduit, as described above. Lower housing part defines a plurality of outwardly open holes 56 in its side walls, which holes are essentially perpendicular to the vertical axis of symmetry of chamber 52. Holes 56 are provided as receiving sockets for the inner ends of corresponding lamp support arms 14. Each lamp support arm is diametrically drilled, as at 57, adjacent its inner end to receive a through-bolt 58. A plurality of through-bolts 58 are connected through the upper and lower housing parts, as shown in FIG. 3, and appropriate ones of these bolts extend through support arm holes 57 to securely retain the arms in the housing. Thus, through-bolts 58 serve as members for securely connecting together the upper and lower parts of housing 50 and also as part of the connection mechanism of lamp support arms 14 to the housing.

An outlet opening 59 is formed through the upper housing part from an upper portion of chamber 52. Preferably, outlet opening 59 is located coaxially of the chamber. An annular coupling member 60, which preferably resembles a pipe flange, is secured to the upper housing part by suitable bolts 61 to mount fountain nozzle 51 in coaxial alignment with chamber 52.

A comparison of FIGS. 2 and 3 will show that in the fountain assembly 10 the lower end of nozzle 12 is disposed within the vertical extent of coupling member 28. In the structure illustrated in FIG. 3, however, nozzle 51 has a tubular body 62 which is engaged with the coupling member 60 intermediate the length of the nozzle such that the nozzle has a lower end 63 disposed within chamber 52 in close proximity to the floor 64 of the chamber. This disposition of the fountain nozzle within the base housing is preferred where only a single water inlet opening is provided through to the housing internal chamber. The portion of the nozzle body within the internal chamber acts as a stream-straightening and energy-distributing baffle within the chamber. Thus, particularly where only a single water inlet opening is provided, the extended length of the

nozzle body within the chamber and the proximity of the lower end of the nozzle body to the floor of the chamber assures that water approaching the structure of the nozzle which defines the discharge characteristics of that nozzle has a substantially laminar flow characteristic and has a uniform velocity profile. The term "uniform velocity profile" means that if the velocity gradient of the water flowing through the tubular nozzle body is evaluated in any plane radially of the nozzle, that gradient has the same profile as the gradient taken in any other radial plane for the nozzle.

In housing 50, the connection of lamp support arms 14 to the housing body is below the location at which the water supply conduits are connected to the housing. Accordingly, housing 50 may be used to particular advantage where the fountain pool is relatively shallower than is illustrated in FIG. 2.

Referring again to FIG. 1 it was mentioned that fountain assembly 10 is readily mountable as a unit on the floor of fountain pool 17. The overall fountain installation is completed by coupling suitable water supply conduits to the connection nipples associated with the water inlet openings of the base housing, and by connecting the opposite ends of water supply conduits to a suitable source of water under pressure, such as pump 26. FIG. 1 shows that two or more water supply conduits may extend from the base housing to a pump discharge duct 66 via a suitable Y or plural arm fluid flow fitting 67. A duct 68 is connected from water pool 17 to the suction port of the pump.

A floating fountain assembly 70 (see FIG. 5) includes a base housing 11, a nozzle 12 carried by the base housing, and a plurality of the illuminating lamps 13 which are mounted to corresponding ones of a plurality of lamp support arms 14. The lamp support arms extend radially in cantilever fashion from the base housing. A float member 71 is connected to the outer end of each lamp support arm by a suitable connecting member 72. The aggregate buoyancy of the several float members is sufficient, in terms of the buoyant effect of the base housing, the lamp assemblies, and the water supply conduits (described below), to cause the fountain assembly to float in a body of water 74 with only the upper portion of nozzle 12 above the water surface. Water body 74 may be a natural or artificial body of water such as a lake in a golf course, park or the like. In such bodies of water, the distance between the water surface 75 and the bottom 76 may fluctuate widely, particularly where the water body is an artificial lake intended primarily as a source of irrigation water.

With ornamental water fountains, whether they be installed in a lake or in the pool of a more conventional fountain such as that shown in FIG. 1, it is desired that the structure of the fountain be disposed a known predetermined distance below the water surface for best aesthetic effect. It is particularly desirable that the illuminating lamps be disposed below the water surface for best aesthetic effect both during daylight hours when the lights are not in use and during the evening and night when the lamps are in use.

Floating fountain assembly 70 is arranged to accommodate wide variations in the depth of lake 74 without effect upon the position of the discharge nozzle and illuminating lamps relative to the water surface. This is achieved by the use of flexible water supply conduits 77 directly adjacent base housing 11 in the flow path of water to the housing; in this context it is preferred that

a base housing having two or more water inlet openings distributed at equal intervals around the circumference of the housing be provided as a component of the floating fountain assembly. Each flexible conduit 77 has one connected to the outer end of a corresponding connection nipple at base housing 11. The other end of each conduit is connected to a corresponding leg of a multi-leg water distribution fitting 78 which is disposed at a fixed distance above lake bottom 76. Fitting 78 is disposed at the upper end of a pipe 79 which has its lower end connected to an elbow 80 of a supply pipe which extends across the bottom of the water body to a suitable water source. Supply pipe 81 may itself be a length of flexible conduit. In any event, the location of elbow 80 on lake bottom 76 is maintained by a ballast mass 82 disposed over the water supply pipe adjacent the elbow.

Each flexible supply conduit 77 has a length between its opposite ends which is substantially greater than the expected variation in the depth of lake 74. Also, the several conduits 77 are of equal length. When connected between fitting 78 and base 11 in the manner described above, the terminal portions of each conduit 77 are substantially horizontal. Thus, as the level of water surface 75 varies from time to time, the vertical distance between the opposite ends of each conduit 77 varies correspondingly so that the submersion of nozzle 12 stays constant. Because the several flexible water conduits 77 are essentially identical, the base housing is maintained above fitting 78 and does not move from side to side with changing water levels.

FIG. 6 shows one manner of mounting float members 71 to lamp support arms 14 which has been found to be effective. Float member 71 is a commercially available spherical fishing float or the like. The float member is mounted to the lamp support arm by passing a rod 84 vertically diametrically through the float member. The opposite ends of the rod are threaded to receive suitable nuts 85. Appropriate washers 86 are disposed between the nuts and the float member, and between the float member and the lamp support arms, as desired. The lower end of rod 84 is passed through a hole drilled vertically through the lamp support arm adjacent its outer end.

It is often desired to provide a floating fountain assembly for use only during daytime hours. In an unilluminated floating fountain assembly, it is necessary to provide some mechanism for buoyantly and stably supporting the fountain assembly in the water. Accordingly, where fountain assembly 70 is used only during daylight hours, lamp support arms 14 are retained but no lamp assemblies are mounted to them; the overall length of nozzle 12 may be reduced and a float member 87 like that shown in FIG. 7 used in lieu of float members 71. Float member 87 is an elongate member which is formed as a solid of rotation, such as a cylinder or with the substantially elliptical form like that shown in FIG. 7. Float member 87 is axially bored, as at 88, to receive the outer end of lamp support arm 14. The float member is held in position along the support arm by suitable retaining members 89, such as nuts, cooperating with external threads defined by the support arm.

When a fountain is installed in a bowl structure as shown in FIG. 1, it is conventional to supply purified water to the fountain nozzle. The situation is often quite different with floating fountains installed in a lake, for example; the fountain water may be pumped

from the lake itself. The water used to operate a floating fountain may include solid matter such as leaves, twigs, pieces of paper and small fish. Particularly in the case of a floating fountain, it is desirable to provide a particulate matter strainer at some location in the water supply path, preferably at a location adjacent the nozzle assembly where the strainer can be reached for cleaning as needed. FIG. 8 illustrates a base housing 90 which is particularly useful in a fountain where the water supplied to the nozzle may contain particulate matter of sufficient size to clog or otherwise impair the proper operation of the nozzle.

Nozzle base 90 is comprised of a body 91 and a cover plate 92 which are secured together by through-bolts 93. The opposite ends of the bolts are externally threaded, and the lower ends of the through-bolts are received in and project through internally threaded members 94 fixed within the lower portion of the body. The cover plate is held down on the upper portion of the body by nuts 95 and the lower ends of the through-bolts receive lock nuts 96. Through-bolts 93 are not rotatable within body 91 so that the cover plate 92 may be removed from the body by removal of nuts 95. The cover plate is removable from the nozzle base without removing the base itself from a lake or fountain pool; this top-opening feature of base 90 may be incorporated into the previously described fountain bases as desired. The body and cover plate cooperate to enclose an internal chamber 97 formed within the body. A plurality of connection nipples 98 extend through the side walls of the body adjacent its lower extent to define inlet openings to the chamber. The connection nipples are disposed at equally spaced intervals about the circumference of the body and preferably are so disposed in the body that one of through-bolts 93 extends diametrically through each connection nipple to secure the nipple in the base.

An annular coupling member 99 is carried by the upper surface of cover plate 92 concentric to the axis of symmetry of chamber 97 for coupling a suitable fountain nozzle 12 to the base. Preferably, as shown in FIG. 8, the coupling member and the nozzle body are cooperatively arranged so that, when the nozzle is secured to the base via the coupling member, the lower end of the nozzle body is disposed below the lower surface of the cover plate to cooperate within a suitably sized opening 100 formed in an upper plate 101 of a strainer 102 in the upper portion of chamber 97. The strainer includes the solid upper plate 101 and a solid lower plate 103 which are of circular annular and circular configuration, respectively, and are located at opposite ends of a cylinder 104 of perforated metal or the like. The strainer is supported within chamber 97 on a pedestal 105 which extends upwardly from the floor of the chamber along the chamber axis of symmetry. A resiliently deformable cushion member 106 is carried by the upper end of the pedestal for cooperation with the bottom of the strainer for urging the strainer against the bottom of the cover plate when base 90 is assembled. A plurality of lamp support or float support arms 14, one of which is represented in FIG. 8, extend radially from base 90 in the manner described above with respect to base 11, for example. To provide the desired water flow area within chamber 97, the upper portion of the chamber, within which the strainer is disposed, is of enlarged diameter relative to the remainder of the chamber to which connection nipples 98 communicate.

The regular spacing of the connection nipples about the circumference of the base, the presence of pedestal 105 which functions as a baffle within chamber 97, and the strainer, all cooperate in base 90 to assure that water entering the lower end of nozzle 12 has a substantially laminar, uniform liquid flow pattern productive of best operation of nozzle 12.

Servicing of strainer 102 is a simple matter and can be performed from a rowboat or the like without removal of base 90 from the water. All that is necessary is that nuts 95 be removed from the upper end of through-bolts 93 to enable nozzle 12 to be removed with cover plate 92 from the base. The strainer is then readily removable for cleaning in any manner desired. Reassembly of the fountain assembly is a simple matter and involves merely repositioning the strainer on resilient cushion pad 106 in rough alignment with the axis of symmetry of chamber 97, following which the cover plate is fitted over the upper ends of through-bolts 93. Positioning of the cover plate on the base body requires that the lower end of nozzle body 12 be engaged with opening 100 in the strainer upper end plate; such engagement automatically aligns the strainer concentric to the axis of chamber 97. As nuts 95 are reengaged with the through-bolts, the strainer assembly is forced down against the resilient bias provided by cushion member 106.

Another floating fountain assembly 110 according to this invention is shown in the perspective view of FIG. 9. Assembly 110 includes a base housing 11 for a suitable fountain nozzle 12. A plurality of lamp and float arms 14 extend radially from the housing and support lamp assemblies 40 and floats 71. A rigid water supply manifold and ballast assembly 111 depend from the case housing via coaxially aligned connection nipples 24 on opposite sides of the housing. The manifold and ballast assembly includes a pair of elbows 112 connected to the outer ends of the connection nipples and a pair of rigid riser pipes 113 connected at their upper ends to each of the elbows. The riser pipes are aligned parallel to the axis of nozzle assembly 12 and are connected at their lower ends to a transverse manifold pipe 114 having a T-fitting 115 intermediate its ends between the lower ends of the riser pipes. The opposite ends of the manifold pipe are closed by ballast caps 116 which are weighted to place the center of mass of the fountain assembly well below its center of buoyancy. A flexible conduit 117 extends from T-fitting 115 to a supply pipe 118 connected to a suitable source of water. Riser pipes 113 have a length which is substantially less than the depth of water in the lake, pond or the like in which fountain assembly 110 is used. Conduit 117 is flexible so that the fountain assembly, when installed in the lake, can follow changes in the elevation of the water surface. By locating the assembly center of mass substantially below its center of buoyancy, the axis of the fountain nozzle is maintained vertical. This arrangement enables the use of substantially shorter lamp and float support arms than would otherwise be the case where the stability of the fountain assembly is provided only by float members 71.

Another floating fountain assembly 120 is shown in FIG. 10 and includes a nozzle unit 121 having an elongated tubular body 122. The upper end of the nozzle unit incorporates the features of any U.S. Pat. Nos. 3,558,053, etc. Intermediate its length and adjacent its lower end, the nozzle body is fitted with a plurality of

fin-like stream-straightening and flow-directing baffle elements 123 which have lengths many times the inner diameter of the body tube and widths less than the radius of the body tube. As shown best in FIG. 11, the baffle elements 123 are secured at their outer ends to the inner walls of the body tube to extend toward the axis of the body tube. Preferably the lower ends 124 of the baffle elements are inclined upwardly toward the axis of the tube to prevent any solid matter entering the nozzle unit from being caught by the lower ends of the baffle elements.

A plurality of float support arms 125 extend in a common plane radially from nozzle unit 121 and have their inner ends connected in a carrier 126. The carrier is centrally bored as at 127 to receive the outer diameter of nozzle body 122. The carrier is composed of essentially identical upper and lower plates 128 and 129 which are cooperatively recessed to receive the inner ends of the float support arms. A plurality of bolts 130 are passed through the mated carrier plates of the carrier to clamp the plates together around the inner ends of the float support arms; preferably the bolts pass diametrically through the float support arms. The carrier may be secured directly to the outer circumference of the nozzle body tube, as where the nozzle body and the carrier plates are fabricated of synthetic material such as polyvinyl chloride, in which case the connection may be made by a solvent welding process. Alternatively, the carrier can be slidable vertically along the nozzle body for cooperation with the bottom of an annular stop ring 131 suitably affixed to the nozzle body. A suitable float member 132 is carried by each arm 125 at its outer end. If desired, one or more lamp assemblies 40 may be connected to each support arm between carrier 126 and the corresponding float.

A bolting flange 134 or the like is carried by the lower end of the nozzle body for cooperating with a corresponding flange 135 connected to an end of an elongated flexible riser conduit 136. The opposite end of riser conduit 136 is connected to an elbow fitting 137 at the end of a flexible water supply conduit 138 which extends toward but not to the bottom of the water body. A concrete ballast mass 139 is provided for mating cooperation with elbow 137 and the adjacent portions of conduits 136 and 138. Ballast mass 139 defines a recess 141 which opens to one side of the mass and which is configured so that elbow 137, with conduits 136 and 138 attached, can be inserted into the mass through the lower portion of the recess and thereafter be held upwardly in secure mating engagement to the appropriate contours of the recess by reason of the buoyant effects of float members 132. The negative buoyancy of mass 139 is less than the positive buoyancy of the remaining structure of fountain assembly 120 so that the assembly has its center of gravity located below its center of buoyancy and floats in a stable vertical position.

Preferably the internal structure provided in the upper end of nozzle unit 121 is in accord with the disclosure of U.S. Pat. No. 3,705,686, which patent describes a nozzle structure which is well suited for use as a fountain nozzle in situations where the water supplied to the nozzle structure contains entrained solid matter.

Workers skilled in the art to which this invention pertains will appreciate that the embodiments described above and illustrated in the accompanying drawings are merely examples of some of the forms and configura-

tions which structures according to this invention may take. It will be appreciated that the foregoing description has been presented for the purposes of illustration and example and is not intended as an exhaustive catalogue of all possible embodiments of this invention. Accordingly, the foregoing description should not be regarded as limiting the scope of this invention to less than that defined in the appended claims and the fair equivalents thereof.

What is claimed is:

1. A floating fountain assembly comprising a mounting base defining a chamber therein and a plurality of inlet openings to the chamber formed through side walls of the chamber at regularly spaced intervals around the base, a water discharge nozzle mounted to the base for receiving water from the chamber, float means coupled to the base for buoyantly supporting the base and nozzle in a body of water with at least a part of the nozzle disposed above the water surface, a flexible water supply conduit connected to each chamber inlet opening at one end thereof and extending to a fountain water source common to the other conduits and disposed at a submerged location in the body of water substantially directly below the base, the several conduits being of substantially equal length and each having a length greater than the vertical distance between the base and the water source.

2. A fountain assembly according to claim 1 including a plurality of arms connected to the base and extending away from the body substantially parallel to the surface of the body of water, and wherein the float means comprises a float member connected to each arm remote from the base.

3. A fountain assembly according to claim 2 including at least one lamp connected to at least one of the arms for illuminating the water discharge pattern from the nozzle.

4. A floating fountain assembly comprising a nozzle adapted to produce a desired discharge pattern when water at a desired pressure is supplied thereto, buoyant means coupled to the nozzle for buoyantly supporting the nozzle in a predetermined attitude in a body of wa-

ter, water supply means coupled to the nozzle and adapted to extend via the bottom of a body of water in which the nozzle is floatable to a source of water under pressure, the supply means including a multi-outlet water distribution assembly adapted to be disposed at a fixed submerged location in said water body a substantial distance below the water, and a plurality of substantially identical flexible conduits each connected at one end to a corresponding outlet of the water distribution assembly and at its other end to the nozzle support base, the connections of the flexible conduits being symmetrically distributed around the base, the base and distribution assembly being arranged so that the terminal portions of each flexible conduit are substantially horizontal, the buoyant means comprising a plurality of float members located in spaced relation to the nozzle and distributed substantially symmetrically about the nozzle.

5. A floating fountain assembly comprising a nozzle adapted to produce a desired discharge pattern when water at a desired pressure is supplied thereto, buoyant means coupled to the nozzle for buoyantly supporting the nozzle in a predetermined attitude in a body of water, water supply means coupled to the nozzle and adapted to extend via the bottom of a body of water in which the nozzle is floatable to a source of water under pressure, the supply means including a support base to which the nozzle is coupled, a manifold assembly coupled at diametrically opposed locations to the base and extending downwardly from the base partially toward the bottom of said body of water, and a flexible water supply conduit connected to the lower extent of the manifold assembly and extending to the bottom of said body of water, the buoyant means comprising a plurality of float members located in spaced relation to the nozzle and distributed substantially symmetrically about the nozzle.

6. A fountain assembly according to claim 5 wherein the manifold assembly is arranged to have its center of mass substantially below the nozzle base.

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