ABSTRACT: A pool fountain display consists of a primary central nozzle around which a plurality of secondary nozzles orbit in concentric relation thereto. Water is supplied from the bottom of the pool to a water pump and from the pump it is forced directly to the central nozzle and simultaneously to all of the secondary nozzles by means of a plenum chamber. A motor drives the pump and simultaneously rotates the secondary nozzles about the central nozzle. All of the nozzles have individual angularly adjustable heads. Some of the secondary nozzles rotate about their own axes as they travel concentrically around the central nozzle, this by means of a sun and planetary gear arrangement, and others are rotated about their own axes by the rotating planetary gears. Colored lenses rotate about the central nozzle along with the secondary nozzles. Stationary lights, mounted below the lenses, illuminate the moving fountain spray through the rotating lenses.
FOUNTAIN DISPLAY HAVING A MOVING SPRAY

BACKGROUND OF THE INVENTION

1. Field of the Invention
   Display water fountains.

2. Description of the Prior Art
   Illuminated fountains present a most enjoyable sight and serve to beautify many fairs, parks, airports, buildings, and other structures. It has been hereto known to utilize, in conjunction with illuminated fountain displays, a series of colored lenses which pass over stationary underwater lights to vary the color of the light illuminating the water spray. Such fountains produce colorful and somewhat attractive display effects at a reasonable cost, but lack the ability to vary the direction and/or pattern of the fountain spray.

   It has been additionally known heretofore to provide an automatically variously adjustable spray in conjunction with display fountains. Some of these prior devices did, additionally, include colored light effects. There were, however, quite elaborate and involved a multiplicity of parts and systems for controlling and varying the fountain spray. Accordingly, prior devices which varied the spray were extremely costly and because of their high costs, the use of fountains which produced a moving-type water display was limited to municipalities and establishments with sufficient budgetary allotments for such equipment.

   An additional difficulty encountered with these prior devices was the fact that they consisted of so many parts and systems that they were frequently disabled. This was due to the fact that a single particle, for instance, carried with the water, could clog and impede one of the many various components of the prior fountains. Thus, in addition to high initial costs, the maintenance costs for such equipment were also an impediment to widespread acceptance.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide an illuminated fountain display which is so constructed that it is not subject to any of the foregoing disadvantages.

More specifically, it is an object of the invention to provide an illuminated fountain display of the character described which is simple and rugged in construction, and which can be fabricated at an appreciably lower cost than prior devices designed to serve the same function.

It is another object of the invention to provide a fountain display of the character described wherein a plurality of operating springs move concentrically about a stationary central spray.

Yet another object of the invention is to provide a fountain display of the character described wherein a series of nozzles travel in concentric relation about a central nozzle and additionally rotate about their individual axes.

Still another object of the invention is to provide a fountain display of the character described wherein a plurality of threads carry a plurality of colored lenses and water spray nozzles move concentrically about a stationary nozzle.

It is another object of the present invention to provide a fountain display of the character described wherein two series of secondary nozzles move concentrically about a central nozzle and simultaneously rotate about their own axes.

It is another object of the invention to provide a fountain display of the character described wherein a series of secondary nozzles are swivelably mounted upon a disc and move concentrically about a central nozzle while rotating about their individual axes.

Other objects of the invention in part will be obvious and in part will be pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangements of parts which will be exemplified in the illuminated fountain display hereinafter described and of which the scope of application will be indicated in the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings in which is shown one of the various possible embodiments of the invention:

FIG. 1 is an isometric view of the fountain display in a pool, showing the spray created;

FIG. 2 is a plan view of the fountain display of the present invention with a portion thereof broken away;

FIG. 3 is a sectional view taken along line 3–3 of FIG. 2 with portions deleted for clarity; and

FIG. 4 is an enlarged fragmentary axial sectional view of one of the secondary spray nozzles, and showing in dashed lines, various possible positions of the nozzle during the course of its operation and the swirl spray generated.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The fountain display 10 generates a central stationary spray and a series of sprays which circularly orbit the stationary spray in concentric relation thereto. The orbiting sprays can be angularly inclined with respect to a vertical axis running through their respective spray nozzle seats and as they orbit the central spray, the orbiting spray generating nozzles rotate about vertical axes running through their respective nozzle seats to generate individual swirl spray patterns. The nozzles of the orbiting sprays are located to a plate and are supplied with water by a plenum chamber secured to and below the plate. Both the plate and the base rotate about a central spindle to which the central nozzle is directly mounted.

Referring now in detail to the drawings, the reference numeral 10 denotes the fountain display of the present invention, submerged within a pool 11 of water as seen in FIG. 1. The display 10, is mounted to a base plate 12 below the water level. The base plate 12 is shaped to support the various components of the display 10 and is fastened to the bottom of the pool.

As seen in FIG. 3, the display is actuated by means of an electric motor 14, suitably mounted within a submersible motor casing 16 which, in turn, is secured to the base plate 12 by any conventional fastening arrangement such as nuts and bolts.

A centrifugal pump 18 has a pump casing 19. The pump casing 19 is constructed with an inlet port 20 and a female threaded outlet port 22. The pump casing 19 is secured to the motor casing 16. The casing 16 has inlets 23 through which water is drawn from the bottom of the pool to the pump through the pump inlet 20. Impeller blades 24 of the pump 18 are driven by a shaft 26 connected to the motor 14 and rotated thereby.

A hollow supply pipe 28 having male threads adjacent its inlet end 30, threadingly engages the pump outlet 22, and projects vertically upward therefrom being supported thereby. The upper end 32 of said water supply pipe 28 has an enlarged female threaded bore. The outer diameter of the supply pipe 28 is enlarged from the end 32 to a stepped shoulder 34 from which point downwardly the outer diameter of the pipe 28 is constant.

A portion of the water flow from the pump 18 escapes from the pipe 28 before reaching the upper end 32 thereof through a plurality of radial holes 36 slightly above the shoulder 34.

A coupling 38 having male threaded inlet 40 and outlet 42 ends and an axial bore 44 engages the upper end 32 of the pipe 28. The diameter of said bore 44 is slightly larger than that of the circular holes 36 and the bore 44 is cylindrical throughout the length of the coupling 38. The outer diameter of the coupling 38 increases from that at the male threaded inlet end 40 to a stepped shoulder 46 which abuts the upper end 32 of the pipe 28. Said external diameter then decreases at a step 48 and again at a step 50, from which point it remains constant upwardly to its male threaded outlet end 42.

A sun gear 51 having a centrally located opening is fixed to the upper portion of the coupling and is seated upon the shoulder of the step 50. The function of the sun gear 51 will be described hereinafter.
A hollow elongated nozzle seat 52 threadingly engages the coupling outlet end 42 at its female threaded inlet end 54. The external diameter of the seat 52 decreases at a shoulder 56, from which point a male threaded portion extends upwardly to a spherically dished outlet end 58. The bore 60 of the nozzle seat 52 is enlarged at its internally threaded inlet end 54 to threadingly engage the outlet end 42 of the coupling 38. The inlet end 54 of the nozzle seat 52 engages the upper face of the sun gear 51 to lock the sun gear between the nozzle seat and the coupling against both vertical and rotational movement. The diameter of the bore 60 is reduced at a step 62 from which point the bore extends cylindrically to the outlet end 58.

A primary central nozzle 64 is seated over the bored portion of the dished outlet end 58 of the nozzle seat 52. The nozzle 64 is composed of an elongate tubular portion 66 which projects integrally from a spherical base 68 whose curvature matches that of the dished end 66. A cylindrical hollow bore 70 of restricted diameter passes centrally through the longitudinal axis of the nozzle 64 and the body 66 and the base 68.

The nozzle 52 is secured against the outlet end 58 of the nozzle seat 52 by a hollow cylindrical cap 71 having a bore running through the length thereof. The bore is female threaded from the lower end 72 of the cap 71. The threads matingly engage the male threads at the outlet end 58 of the nozzle seat 52. At the opposite end 74 of the cap 71 the internal wall of the bore taper inwardly and upwardly in an arcuate path and are constricted to a diameter at the end 74 of the cap 71 which is less than the major diameter of the spherical base 68. The tapered walls of the cap bore form a bearing surface which mates with the spherical base 68 of the nozzle 64 so that the nozzle is secured in a ball-and-socket joint which permits inclination of the nozzle 64 with respect to the common longitudinal vertical axis of nozzle seat 52, the nozzle coupling 38 and the water supply pipe 28.

The nozzle coupling 38 and the supply pipe 28 form a stationary spindle 75 about which orbiting secondary nozzles 76 and 78 rotate. The nozzles 76 and 78 are carried by a horizontal plate 80 which is rotatably journaled to the coupling 38 of the spindle 75. The journaled connection between the plate 80 and the coupling 38 comprises a cylindrical bearing 82. The outer cylindrical surface 83 of the bearing 82 is stepped outwardly to an enlarged diameter at a shoulder 84, spaced from the lower end of the bearing. The outer cylindrical surface 83 is of a diameter which is equal to or slightly greater than a circular opening 86 in the center of the plate 80 so that the bearing 82 is pressed fitted in the plate 80. The shoulder 84 abuts the bottom of the plate 80 when the bearing 82 is firmly seated. When the plate 80 is mounted on the spindle 75, the lower end of the bearing 82 rotatably abuts the shoulder of the step 48 on the coupling 38 so that said step acts as a thrust bearing.

A plenum chamber 87 supplies water to the orbiting nozzles 76 and 78. The plenum chamber sidewall 88 is concentrically connected to and depends from the bottom of the plate 80. The chamber wall 88 has a stepped groove adjacent the bottom thereof to accommodate a circular plenum base 90. The base 90 is constructed with a central circular opening 91 into which is forced a stepped cylindrical bearing 92. The outer cylindrical surface 93 of the bearing 92 is stepped outwardly to an enlarged diameter at a shoulder 94, spaced from the lower end of the base 90. A hollow cylindrical bore 95 passes through the bearing 92. The outer cylindrical surface 93 is of a diameter which is equal to or slightly greater than the mating circular opening 91 in the center of the plenum chamber base 90 so that the bearing 92 is press fitted in the base 90. When the bearing 92 is firmly seated, the shoulder 94 will abut the bottom of the base 90.

A stepped pipe bearing 96 is mounted upon the outer surface of the supply pipe 28. The diameter of the bore running through the bearing 96 is such as to accommodate the outer diameter of the supply pipe 28. The upper end of the bearing 96 abuttingly engages the shoulder 34 of the pipe 28 and is maintained in such position by a nut 100. The nut 100 threadingly engages the male threaded surface of the supply pipe 28 and abuts the lower end of the bearing 96, forcing the upper end of the bearing 96 against the shoulder 34.

The outer cylindrical surface 102 of the pipe bearing 96 is stepped outwardly to an enlarged diameter at a shoulder 104 spaced from the lower end of the bearing. The outer cylindrical surface is of a diameter which is slightly less (e.g. 0.005 inches) than the diameter of the bore 95 running through the bearing 92. Thus, when the bearings 92, 96 are interengaged, rotation of the bearing 92 around the bearing 96 is permitted. When the bearing 92 is rotatably seated on the pipe bearing 96, the shoulder 104 of the pipe bearing 96 will rotatably abut the bottom of the bearing 92 and provide a step to prevent downward movement of the plenum chamber 87 with respect to the spindle 75. The pipe bearing 96 is held against downward movement with respect to the spindle 75 by means of the nut 100.

The bearings which journal the plenum chamber 87 to the spindle 75 form a rotatable watertight connection. At the journal between the plenum base 90 and the water supply pipe 28 of the spindle 75, the pipe bearing 96 acts as a stator bearing and is constructed of brass, nylon or any other material having suitable physical properties. Additionally, the mating stepped bearing 92 acts as a rotor bearing and is press fitted into the plate 90. This bearing may also be constructed of brass, nylon or any other material having suitable physical properties.

At the journal between the plate 80 of the plenum chamber and the coupling 38 of the spindle 75, the stepping bearing 82 acts as a rotor bearing which is press fitted into the plate 80. The coupling 38 and the bearing 82 may both be constructed of brass, nylon or any other material having suitable physical properties.

Referring now to FIG. 4, the nozzles 76 are carried by the circular plate 80 and are mounted in concentric relation around the spindle 75 by a plurality of threaded openings 106 in the plate 80. A bored nozzle seat support 108 having a male threaded lower end is engaged in each of the openings 106. Each nozzle seat support has an intermediate peripheral flange 110. The flange 110 projects radially outwardly from the cylindrical outer wall 112 of the nozzle seat support 108 with shoulders 114 and 116 serving as top and bottom faces thereof. Adjacent the upper end 118 of the nozzle seat support 108, a shoulder 120 is formed which joins the male threaded upper end 118 to the cylindrical outer wall 112. The male threaded upper end 118 is of a diameter which is less than that of the cylindrical outer wall 112.

A planetary gear 122 having a central circular bore is rotatably mounted on the cylindrical outer wall 112 of the nozzle seat support 108 with the lower surface of the gear 122 abutting the shoulder 114 of the nozzle seat support. The upper portion of the gear 122 is cylindrically joined to the threaded portion 123 adjacent the upper end thereof. An annular shoulder 124 extends from the threaded portion to a section of increased diameter 126 and a second shoulder 128 extends to the gear teeth 130. The planetary gear 122 is held against axial movement on the nozzle seat support 108 and against shoulder 124 by a stop nut 132 which threadingly engages the upper end 118 of the nozzle seat support 108 and overlays a portion of the upper face of the gear 122. The maximum width of the nut 132 is, however, less than the diameter of the male threaded upper portion 123 of the gear 122. The fit between the bore of the planetary gear and the wall 112 permits rotation of the said gear about the nozzle seat support 108.

A hollow elongated nozzle seat 52a threadingly engages the threaded upper portion of the gear 122 at its female threaded inlet end 54a. The nozzle seat 52a is identical in structure to the nozzle seat 42 except that the threads in the inlet end 54a do not extend the full length of the enlarged inlet bore 60a. The bore 60a is further enlarged after the threads terminate to provide additional clearance for the nut 132 which threadingly secures the gear 122 against vertical movement as previously described.

The remainder of the nozzle mounting structure and the nozzle 76 itself is identical to that of the nozzle 64.
The auxiliary planetary nozzles 78 are also carried by the plate 80 and are mounted in concentric relation around both spindle 75 and planetary nozzles 76. The diameter of a circular centerline passing through the centers of the auxiliary planetary nozzles 78 is greater than the diameter of a circular centerline passing through the centers of the planetary nozzles 76. The structure of the nozzles 78 and their associated mountings are identical to that of the nozzles 76 with their associated mountings, the single exception being the gear diameter and number of teeth on the gear portions 134 which are used in lieu of the gear 122. As can be seen in the drawings, the gear 134 is of smaller gear diameter and has less teeth than the gears 122. In assembled position, the gears 122 mesh with the stationary sun gear 51 and the gears 134 mesh with the gears 122.

In operation, the plate 80 carrying the nozzles 76 rotates about the spindle 75 (being driven in a manner soon to be described) turning the nozzles 76 and their associated gears 122 concentrically about the central nozzle 64 and its associated sun gear 51.

Because the sun gear 51 is stationary and in continual intermeshing engagement with the gears 122 and the planetary nozzles 76, the gears 122 and their associated nozzles 76 will rotate about the axis of the gears 122 while axes of said gears 122 orbit with the plate 80 about the spindle 75. As the nozzles 76 rotate about the stationary nozzle 64, and with the nozzles 76 inclined with respect to the longitudinal axes of the nozzle seats 52a, the sprays from the nozzle 76 will be varying in direction forming a conical swirl pattern about the axis of rotation of the gears 122 with respect to the plate 80 illustrated in the dashed lines of FIG. 4. Additionally, even if a nozzle 76 is in vertical alignment with the vertical axis of the nozzle seat 52a, the spray from the rotating nozzle 76 will swirl in a vertical pattern about the vertical axis of the spindle 75 so that whether a nozzle 76 is inclined or absolutely vertical, the spray issuing therefrom will have a compound swirl pattern.

The nozzles 78 are also carried on the plate 80 and rotate about the spindle 75 with said plate. Hence the nozzles 78 and their associated gears 134 orbit concentrically about the stationary sun gear 51. The gears 134 of nozzles 78 are in continual intermeshing engagement with the gears 122 as seen in FIG. 3. Additionally, the stationary sun gear 51 is in continual intermeshing engagement with the gears 122 of nozzles 76 so that as the plate 80 turns with a gear 122 around the spindle 75, the gears 122 rotate about their own axes and, in turn, drive the gears 134 which will rotate about their own axes. Thus, the nozzles 78 rotate about the axes of the gears 134 as they orbit the stationary nozzle 64. With a nozzle 78 angularly inclined with respect to the longitudinal axis of the nozzle seat 52a, the spray from such nozzle 78 will be varying in direction and form a conical swirl pattern similar to that formed by a nozzle 76 which is illustrated in the dashed lines of FIG. 4. Additionally, if a nozzle 78 is in alignment with the vertical axis of the nozzle seat 52a, the spray from the rotating nozzle will swirl in a vertical pattern about the vertical axis of the nozzle seat 52a. In either event, the swirl will be modified by a further swirl about the vertical axis of the spindle 75.

The plate 80 is driven around the spindle 75 by a gear train which is powered by the motor 14 in the following manner:

A power shaft 135 is connected to the outer end of and is driven as an axial extension by the shaft 26 which drives the impeller blades 24 of the water pump 18. The power shaft 135 is journaled for rotation in and extends through the pump casing 19 by a bearing 138 with a flange 140 at the end thereof abutting the outer surface of the pump casing 19. A shoulder 142 on the shaft 135 abuts the flange 140 on the face opposite the pump casing 19. The diameter of the shaft 135 outside of the pump casing 19 is greater than that inside the casing; the end of the shaft 135 within said casing 19 engages the outer end of the shaft 26. The outer peripheries of the shafts 26 and 135 engage the hollow hub of the impeller blades 24 from the opposite ends of the axial length of said hub and are secured therein.

A worm 144 is secured to the outer end of the shaft 135 and concentrically disposed along the same longitudinal axis. As the motor spine 26 turns the impeller blades 24 it simultaneously turns the power shaft 135 which directly engages the worm 144. The worm 144 rotates the plenum chamber 89 and plate 80 through a power train 146 consisting of a vertically disposed drive shaft 148 which is rotated by the worm and which rotates the base 90 of the plenum chamber 87.

The drive shaft 148 is vertically supported by a U-shaped bracket 150 which is secured to the pump casing 19 by a clamp 151. The drive shaft is journaled for rotation within appropriate openings of the parallel arms 151 of the U-shaped bracket 150 by means of suitable bearings 152. A worm gear 154 is secured to the bottom end of the drive shaft 148 in concentric relation thereto and positioned below the lower arm 151 of the bracket 150. The worm gear 164 is intermeshed with the worm 144 of the power shaft 135 so that rotation of the power shaft 135 will cause rotation of the drive shaft 148.

To transmit rotary motion from the power train to the nozzles a gear 156 is secured to the top end of the drive shaft 148 in concentric relation thereto and is positioned above the upper arm 151 of the bracket 150. The gear 156 engages a meshing gear 158 which is affixed to the undersurface of the plenum base 90. Any suitable means may be used to secure the gear 158 to the undersurface of the plenum base 90, such as screws as illustrated in FIG. 3 for example. The gear 158 is concentrically positioned on the plenum base 90 and when caused to rotate by the gear 156, it turns the entire plenum chamber 87 about the spindle 75.

Of course, the plate 80 with the planetary nozzles 76, 78 carried thereon, will rotate with the plenum chamber 87 since the base 90 and plate 80 are rigidly interconnected by means of the plenum sidewalk 88.

In operation, the motor 14 drives the pump 18 which forces water from the bottom of the pool through the stationary nozzle 64 and additionally into the plenum chamber 87. From the plenum chamber 87 the water is ejected through the planetary nozzles 76, 78 carried on the plate 80.

As the motor 14 drives the pump 18, it actuates (through the pump) the power train 146 which causes the plenum chamber 87 and plate 80 to rotate about the spindle 75. The planetary nozzles 76 and 78 thereby actuate the stationary sun nozzle 64 and, additionally, rotate about the longitudinal axes of their respective nozzle seats.

In addition to the moving fountain sprays the invention provides means to illuminate the orbiting swirling sprays to enhance the water display. Also incorporated in the invention means to provide for varying the color of the fountain illuminating lights.

These illumination effects are produced by apparatus including a pair of diametrically opposed submersible lamp housings 160 each with a suitable electric lamp contained therein and connected to an electrical supply. The lamp housings 160 are supported from the display base 12 by any suitable connection such as the threaded connection 162 shown in FIG. 3. The lamp of the lamp housing 160 is oriented to direct its illumination upwardly toward the water spray of the display fountain 10.

The lamp housing 160 is positioned beneath the plate 80, said plate extending beyond the peripheral limits of the plenum sidewalk 88. The illumination passes through a series of equiangularly spaced openings 164 in the plate 80 which are concentrically located about the center of the plate 80.

Differently colored filters 165 are positioned over and secured to the top of the plate 80 covering each of the openings 164.

Thus, the light rays illuminating the fountain will pass through the colored filters 165 and, when the fountain is operating, the plate 80 rotates in the manner previously described causing successive filters 165 of varying colors to pass over the lamps thus causing the colors of the illuminating lights to vary accordingly.
A depending circular skirt 168 projects downwardly from the peripheral edge of the circular plate 80 to a point below the lamp openings of the submersible lamp housings so that stray light may not be visible from the side of the display fountain 10.

In a typical application of the fountain device 10, the motor 14 rotates at approximately 3,500 r.p.m., the worm gear 154 has 50 teeth and turns the drive shaft at about 70 r.p.m. With a 12 to 1 gear reduction ratio between the drive shaft gear 156 and the plenum chamber gear 158, the plenum chamber and plate 80, carrying the secondary nozzles 76 and 78 and the colored filters 165 will orbit the spindle 75 at about 6 r.p.m. If a stationary sun gear having 72 teeth is used and the gears 122 of the nozzles 76 have 48 teeth, the nozzle 76 will rotate at about 9 r.p.m. about the vertical axis of the nozzle seats 52a. Additionally, if the gears 134 of the nozzles 78 have 36 teeth each nozzle 78 will rotate at about 12 r.p.m. about the vertical axis of its nozzle seat 52a. Thus, all of the moving nozzles 76, 78 will orbit at 6 r.p.m. about the stationary central sun nozzle 64 and the nozzle 76, 78 will rotate about the vertical axes of the nozzle seats 52a at 6 and 9 r.p.m., respectively. The effect of the latter rotation of the moving nozzles will produce considerable swirling of the individual sprays of these nozzles and aid in producing an effective spray pattern.

To further enhance the ornamental effect, the openings of the nozzles desirably are so proportioned that the various spray jets are projected at different heights, preferably as an inverse function of their distance from the spindle 75. For instance the central jet may have a vertical rise of 24 feet, the inner circle of secondary jets issuing from the nozzles 76 a vertical rise of 16 feet and the outer circle of jets issuing from the nozzles 78 a vertical rise of 8 feet. A typical spread of the spray is 30 feet.

Thus it will be seen that there has been provided a fountain display which achieves the various objects of the invention and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the present invention and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein described or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

1. A fountain display for generating a decorative moving spray from a pool of liquid, said fountain display comprising a pump, a pump casing, motive means driving said pump, said pump casing having a liquid inlet in communication with the liquid in the pool, and a liquid outlet, a stationary central spray nozzle, hydraulic coupling means communicating between said liquid outlet and said central nozzle, a first series of movable spray nozzles in hydraulic communication with said liquid outlet, means for orbiting said first series of movable nozzles about a first vertical axis passing through said central nozzle, means for individually rotating each of said nozzles in said first series of movable nozzles about a first vertical axis parallel to the first vertical axis and orbiting about said first vertical axis, said power train additionally rotating said second series of movable nozzles about said different vertical axes.

2. A fountain display for generating a decorative moving spray from a pool of liquid, said fountain display comprising a pump, a pump casing, motive means driving said pump, said pump casing having a liquid inlet in communication with the liquid in the pool, and a liquid outlet, a stationary central spray nozzle, hydraulic coupling means communicating between said liquid outlet and said central nozzle, a first series of movable spray nozzles in hydraulic communication with said liquid outlet, means for orbiting said first series of movable nozzles about a first vertical axis passing through said central nozzle, means for individually rotating each of said nozzles in said first series of movable nozzles about a first vertical axis parallel to the first vertical axis and orbiting about said first vertical axis, said power train additionally rotating said second series of movable nozzles about said different vertical axes.

3. The fountain display of claim 1 wherein said means mounting said first series of movable nozzles includes a supporting surface journaled for rotation about said central nozzle and carrying the first series of movable nozzles.
8. A fountain display for generating a decorative moving spray from a pool of liquid, said fountain display comprising a pump, a pump casing, motive means driving said pump, said pump casing having a liquid inlet in communication with the liquid in the pool, and a liquid outlet, a stationary central spray nozzle, hydraulic coupling means communications between said liquid outlet and said central nozzle, a first series of movable spray nozzles in hydraulic communication with said liquid outlet, means for orbiting said first series of movable nozzles about a first vertical axis passing through said central nozzle, means for individually rotating each of said nozzles in said first series of movable nozzles about a different vertical axis orbiting about said first vertical axis, and a power train connected to said motive means for rotating said first series of movable nozzles about said first vertical axis, said central nozzle and said first series of orbiting nozzles being supported by said pump casing.

9. The fountain display of claim 5 wherein said central nozzle, said first series and said second series of movable nozzles are supported by said pump casing.

10. The fountain display of claim 5 including means for varying the angle of inclination of each of the nozzles in said second series with respect to said second different vertical axes.

11. A fountain display for generating a decorative moving spray from a pool of liquid, said fountain display comprising a pump, a pump casing, motive means driving said pump, said pump casing having a liquid inlet in communication with the liquid in the pool, and a liquid outlet, a stationary central spray nozzle, hydraulic coupling means communicating between said liquid outlet and said central nozzle, a first series of movable spray nozzles in hydraulic communication with said liquid outlet, means for orbiting said first series of movable nozzles about a first vertical axis passing through said central nozzle, means for individually rotating each of said nozzles in said first series of movable nozzles about a different vertical axis orbiting about said first vertical axis, a second series of movable nozzles orbiting about said first vertical axis, and means for individually rotating each of said nozzles in said second series of movable nozzles about a second different vertical axis orbiting about said first vertical axis.

12. The fountain display of claim 11 wherein each of said second different vertical axes passes through its associated nozzle in said second series of nozzles.