

[54] ILLUMINATED AQUATIC FOUNTAIN

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[22] Filed: **Jan. 8, 1973**

[21] Appl. No.: **322,067**

[52] U.S. Cl. .... **239/18, 239/22**

[51] Int. Cl. .... **F12p 7/00**

[58] Field of Search ..... 239/17, 18, 23, 20, 16, 239/22

[56] **References Cited**

**UNITED STATES PATENTS**

2,726,117	12/1955	Barber .....	239/18
3,071,326	1/1963	Benak .....	239/23 X
3,235,877	2/1966	Grob .....	239/17
3,337,133	8/1967	Duerkob .....	239/18
3,542,292	11/1970	Chase .....	239/18 X
3,622,074	11/1971	Frohwerk .....	239/23 X

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[57] **ABSTRACT**

An illuminated aquatic fountain apparatus to be disposed within a body of water in order to provide an aesthetic water display, the apparatus comprising a floatable support structure having a plurality of extended arms, each of said arms supporting light fixtures; and wherein the central portion of the structure is adapted to receive a central tubular housing which is affixed therein, a rotatable color wheel cover having alternatively arranged thereon a plurality of various colored translucent panes and means for rotating the wheel about the central housing, to impart color to the water spray being discharged by a sprinkler nozzle head attached to the central housing, the housing being connected to a water-pressure system.

**11 Claims, 6 Drawing Figures**

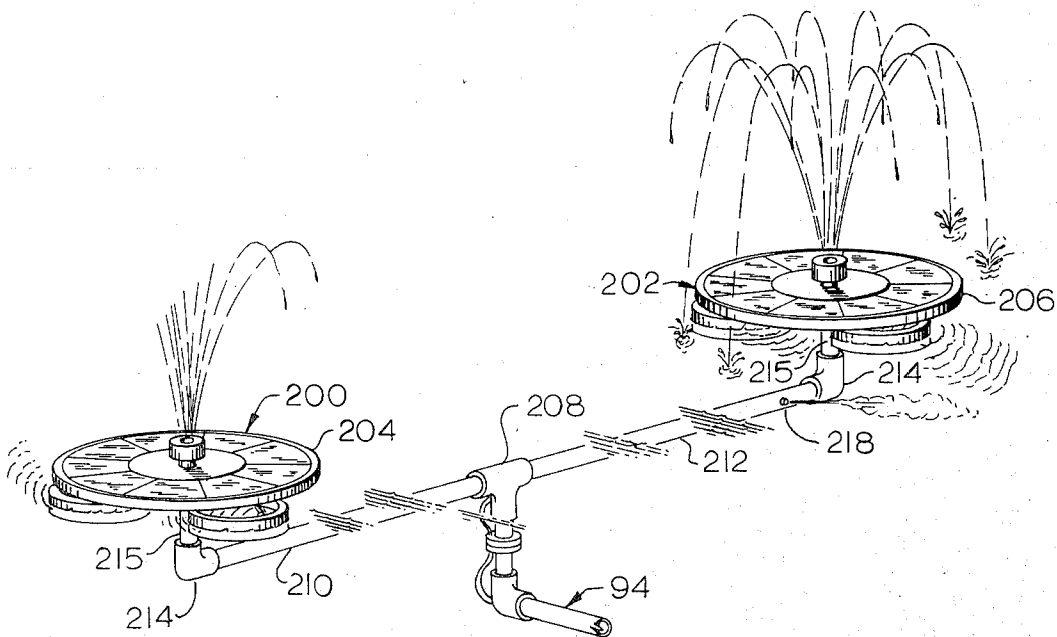




Fig. 2.

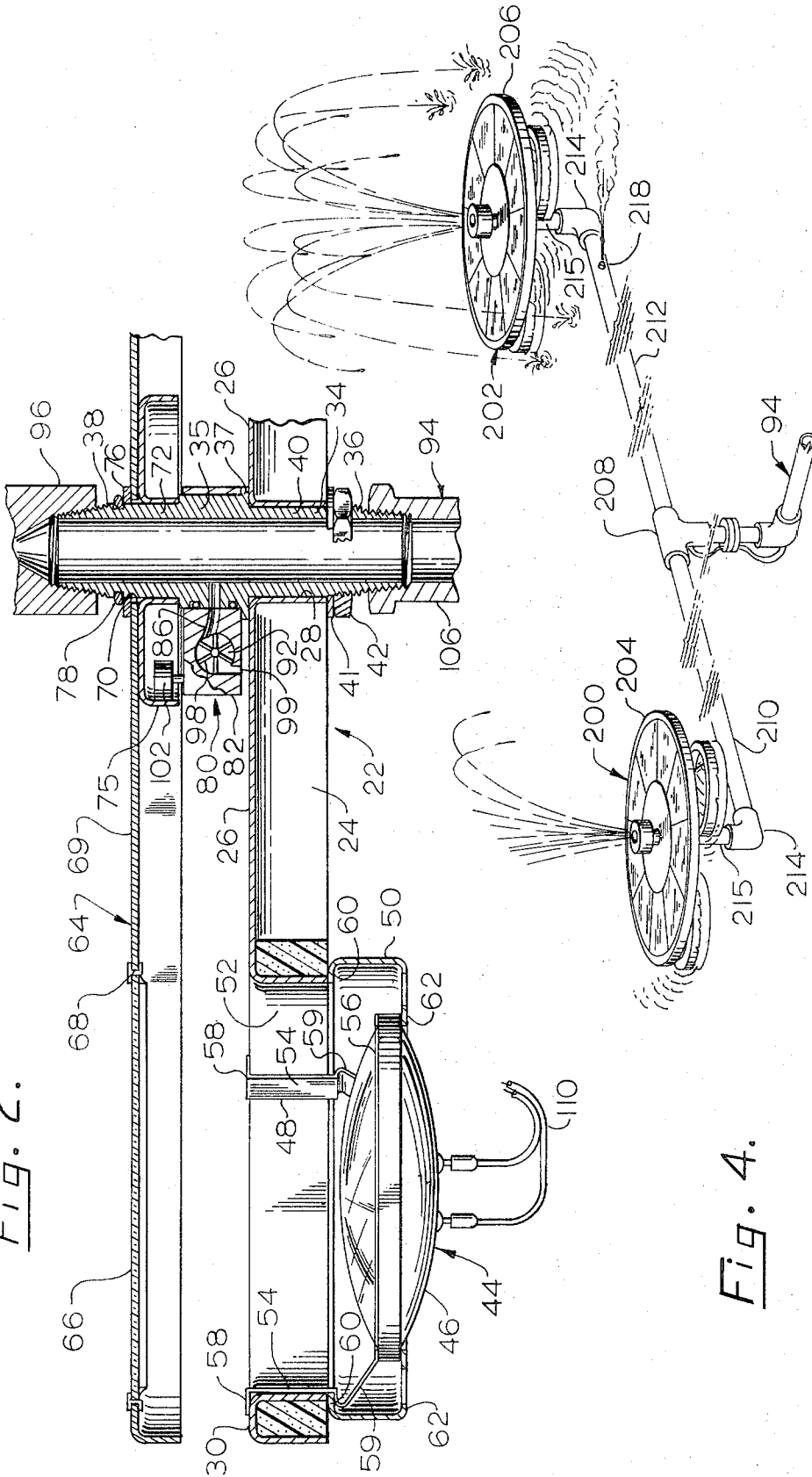


Fig. 4.

Fig. 3.

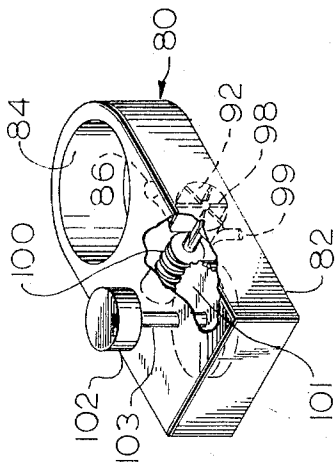


Fig. 5.

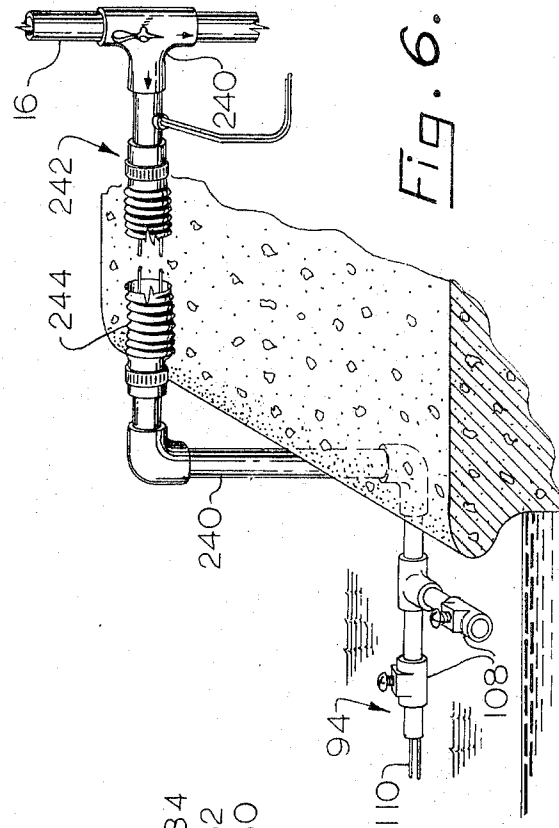
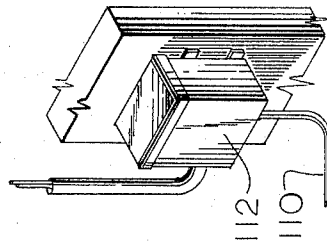
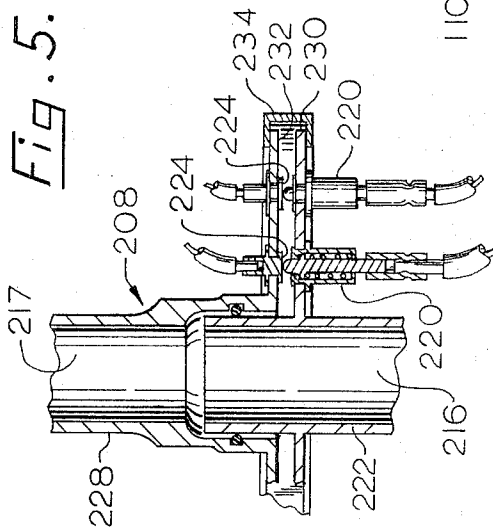


Fig. 6.

## ILLUMINATED AQUATIC FOUNTAIN

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

This invention relates to display fountains, and more particularly to a water fountain adapted to be readily connected to existing water-pressure and filter systems found in swimming pools.

#### 2. Description of the Prior Art

As is well known in the art, various problems and difficulties have been encountered in providing a novel, maintenance-free, water-display fountain that is suitably adapted to the various existing water-pressure and filter systems of swimming pools, reflecting ponds, and like bodies of water, wherein decorative and aesthetic features can be easily added. For the average individual who owns a swimming pool or a large pond, it is difficult to obtain a water-display apparatus to enhance his pool or pond which can be easily incorporated into the existing water-supply system. This is the case with respect to swimming pools wherein the water-filtering system is a large unit set apart from the pool area, requiring complex plumbing connections and, in addition, a complex electrical system which in a body of water could create a safety hazard. Thus, a very limited number of water displays can be found for use in such bodies of water wherein they are to be used in conjunction with swimming or similar aquatic activities. Conventional hardware and plumbing items do not permit a simple initial installation, nor do they provide for ease of repair and maintenance.

Hence, to the applicants' knowledge, there is at the present time no suitable, versatile, water-display unit that can be adapted to operate in existing pools and ponds; and will, in addition, provide an aesthetic water-display unit that can operate in conjunction with varied pool water-filtering systems and can be easily installed, eliminating the necessity for unsightly, complex plumbing.

### SUMMARY OF THE INVENTION

The present invention discloses an illuminating, aquatic display fountain adapted to be installed within existing swimming pools, fish ponds, and like bodies of water, wherein an aesthetic water display is provided with a minimal amount of problems. The display fountain comprises a floatable support structure forming a channeled frame having a plurality of outwardly-extending, radiating arms, each of which is adapted to receive light fixtures, such as light bulbs, capable of being submerged in water during their operation. There is a central tubular housing fixedly secured within a central hole of the support structure and positioned vertically, to rotatably receive a color wheel cover, said wheel being formed as a circular frame having spaced openings in which are disposed various colored panes of translucent material. In addition, there is provided a means by which the wheel is rotated about the central housing, causing the various color panes to pass over the light emanating from the bulbs. During the rotation of the wheel, water is supplied by a water-pressure system to pass through the central housing by means of conduits from the water-supply system connected to the lower inlet of said housing into a sprinkler-head nozzle. At this time, the water spray is illuminated by the various colors emanating from the light fixtures.

Since most swimming pools are provided with built-in, water-filter systems in which the filtered water is returned under pressure, there is already provided the required pressure and water flow to operate the apparatus effectively. Thus, the conduits of the apparatus can be connected to the existing system by various means, such as coupling the conduit line to the outlet opening of the filter system which is normally found in the side wall of the pool. However, it can be readily understood that this display unit can be designed to be incorporated as an integral part of the filter system of any pool during construction. Or, it can be incorporated within any type of body of water by adding its own pressure-supply system.

### OBJECTS AND ADVANTAGES OF THE INVENTION

The present invention has for an important object a provision whereby an aesthetic water fountain can be incorporated within existing swimming pools or the like bodies of water.

It is another object of the invention to provide an illuminated, aquatic-display fountain that can be operated during the day or night, with or without the use of its light fixtures, and still provide a pleasing, effective display.

It is still another object of the invention to provide an illuminated aquatic fountain that is equally capable of being connected with an existing water-pressure system, such as a filter system of a swimming pool, or being adapted with its own integral pump system.

It is a further object of the present invention to provide an apparatus of this character that is easy to install, service and maintain.

It is still a further object of the invention to provide an apparatus of this character that is relatively inexpensive to manufacture.

Still another object of the present invention is to provide an apparatus of this character that is simple and rugged in construction.

It is still another object of the invention to provide an apparatus of this character wherein the electrical system operates on a high voltage input and a low voltage output, such as 12 volts or 28 volts, and wherein the wire thereof can be disposed within the water conduit leading from the pool to the apparatus.

Other characteristics, advantages and objects of this invention can be more readily appreciated from the following description and appended claims. When taken in conjunction with the accompanying drawings, this description forms a part of the specification wherein like references and characters designate corresponding parts in several views.

### DESCRIPTION OF THE DRAWINGS

Referring more particularly to the accompanying drawings, which are for illustrative purposes only:

FIG. 1 is an exploded perspective view of the preferred embodiment showing a portion of a swimming pool;

FIG. 2 is an enlarged cross-sectional view of one portion of the apparatus to illustrate its operational mode;

FIG. 3 is an enlarged perspective view of the rotating means wherein a portion thereof is broken away;

FIG. 4 is a perspective view of an alternative embodiment;

FIG. 5 is an enlarged cross-sectional view of the electrical, rotating, contact means adapted for use with the alternative embodiment; and

FIG. 6 shows an alternative arrangement of connecting the water conduit to an existing pool water-filter system.

### DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings and particularly to FIG. 1, there is shown a portion of a swimming pool, indicated generally at 10, represented by a small fragment of a pool coping 12 and a body of water 14. The pool is understood to be adapted with a recirculating water-filter system, which is not shown, but is suitably connected with the pool water 14 through return pipe system 16 provided with a typical outlet receptacle 18 located below the water line and generally found on the side wall of said pool 10. Generally, recirculating water-filter systems in swimming pools include a conventional motor, pump, filter and interconnecting plumbing whereby water from said pool is drawn therefrom, circulated through said system, and finally returned back into said pool at a controlled rate of flow and pressure. Thus, such a system could ideally incorporate a display fountain unit, generally indicated at 20, with the required operating means to effect an aesthetic water display, either by night or day.

The water fountain 20, as seen in FIGS. 1 and 2, comprises a floatable support structure, indicated generally at 22, formed as a channeled frame 24 having a plurality of radially extending arms 26 which are centrally interconnected, at which point a central opening 28 is therein disposed. Each outer free end of each arm is provided with support brackets formed as annular rings 30, said rings having a cross section of an upside-down, U-shaped channel in which a floatable means is inserted therein, thereby providing the support-frame structure 22 with the necessary buoyancy to float said structure at water level. The floatable means can be of any suitable material capable of floating in a body of water without damage, such as cork, fiberglass, etc., but preferably a polyurethane closed-cell foam. Thus, the floatable material, as indicated at 32, has an annular configuration adapted to be fixedly received in the channel of rings 30.

As previously mentioned above, there is provided a central opening 28 in said support structure 22 in which there is fixedly received therein a central tubular housing 34 having an enlarged body portion 35 arranged intermediate the threaded ends 36 and 38, respectively. In addition, the enlarged body 35 is provided with an annular flange 37 at its lower portion (as seen in FIG. 2) adjacent the lower, reduced-diameter member 40 of said housing 34, said member 40 being provided with an outer diameter substantially equal to the inner diameter of opening 28 whereby said member 40 is received therein and is secured in fixed relationship to said support structure 22 by means of a washer 41 and a nut 42 threaded to end 36.

Each of said annular rings 30 is adapted to removably support a light fixture, generally indicated at 44, wherein said light fixture comprises a light bulb 46 of the sealed-beam type which is compatible for use in or out of water and operates within a low-voltage system of between 6 volts and 28 volts. Said light is interdisposed between a retainer clip 48 and a retainer-support

shield 50, as can be seen in FIG. 2, and is held in a central position relative to the annular opening 52 of ring 30. The clip is formed preferably of spring metal having a plurality of upstanding, flexible fingers 54 integrally attached to an annular band 56 adapted to receive the lens portion of the light bulb 46. Said fingers are formed to include a tongue member 58 at its upper free end, which hooks over the top area of ring 30 when said fingers are inserted within opening 52. The lower part of the fingers are then formed with an annular clasp portion 59 which projects outwardly just below the lower, inner edge of ring 30 and provides a holding means for the annular shield 50, whereby said shield is held against the lower edge of ring 30 by means of the inwardly bent annular lip 60. The shield also includes an annular flange 62 that projects inwardly, thereby providing the means by which light bulb 46 is held against the band 56. To allow for water circulation about the light 46, a plurality of holes are disposed circumjacent within flange 62.

Thus, it can be readily understood that when the bulbs are so positioned light will shine upwardly through opening 52 in ring 30 and pass through a rotatable color wheel, generally indicated at 64. This color wheel covers each bulb because the radius thereof is at least equal to the length of each arm 26. Color wheel 64 comprises a circular frame formed from either metal or plastic, and has a plurality of radially-juxtaposed, translucent panes 66 disposed in corresponding radial apertures 68, said apertures being formed in the flat surface plate 69. Hence, it is contemplated that panes 66 will be made from various colored sheets of plastic.

There is a central hole 70 disposed within the surface plate 69 whereby said wheel 64 fits over the upper, reduced-diameter member 72 of said tubular housing 34.

To provide a means by which the wheel is rotated, there is interposed between the wheel 64 and the enlarged body portion 35 of the housing 34 a drive ring 74 fixedly secured to the underside of plate 69. Said drive ring has an outer depending flange 75 and an inner depending flange 76 which defines an opening axially aligned with hole 70 for rotation about central housing 34. Said wheel cover 64 is thus held in operable placement by means of a washer 77 disposed over hole 70 and locked into position by a keeper, such as a snap ring or a rubber grommet 78. (See FIG. 2.)

There are various operating means that can be employed to rotate the wheel 64, one being an electric motor and another being a water operated drive means, indicated generally at 80. Accordingly, the water operated drive means is formed in such a manner as to have a housing 82 provided with a bore 84 vertically disposed therein, whereby said housing is received on said enlarged body portion 35 of said central housing 34 and supported by said annular flange 37. As the housing 82 is positioned thereon, a passage 86 horizontally disposed therein is aligned with a second passage 88 disposed in said body portion 35, as seen in FIG. 2. Therefore, communication between bore 90 of the central tubular housing 34 and chamber 92 of the motor housing 82 is established. Thus, water flows from the pool's water-pressure supply system through conduits 94 and enters the central housing 34 under pressure, passing into and out of a sprinkler nozzle head 96 which is threaded to end 38 of said housing 34. As the

water flow passes through bore 90, water therefrom is allowed to enter passages 88 and 86, respectively, entering chamber 92 in which there is operably mounted a vane-pump means 98. The incoming pressurized water rotates the vanes as it passes through chamber 92 and out of outlet 99. At this time, a worm gear 100 attached to said rotatable vanes 98 causes gear 101 to move, thereby imparting a rotational torque movement to drive disc 102 through shaft 103. In FIG. 2 it is thus shown that drive disc 102 engages the outer depending flange 75, thereby propelling the color wheel about said central housing 34. When light bulbs 46 are lit, the light beams therefrom are projected through the various colored window panes as they pass over each bulb during rotation. Hence, the light beams are reflected upon the droplets of water emitted from the sprinkler head 96.

Referring now to the conduit 94, there is provided a plurality of pipes that are interconnected end-to-end wherein one end thereof is arranged with a connecting coupling means which is adapted to be coupled to the outlet 18 of said water-supply system of the pool, as seen in FIG. 1. This coupling means may vary from pool to pool, but is shown herein as a plug adapter 103 which is fitted to outlet 18 in a somewhat permanent manner, and wherein pipe 104 of the conduit 94 is shown as having means, such as a pair of extending pins 105, to engage plug 103 which is provided with slots, not shown. As mentioned, other suitable coupling arrangements can be incorporated in place thereof. The opposite end of the conduit includes and upright pipe 106 having threaded means whereby it is directly secured to said end 36 of said central housing 34.

However, valves will most likely be required to adjust water flow when more or less pressure is required in the system. Therefore, valves 108 are shown disposed within the conduit 94.

In addition, there is also included a wiring system 110 that is connected at one end to the light bulbs and the opposite end thereof is attached to a low-voltage transformer 112. The provide for ease of installation and safety, the wires are inserted and passed through the water-flow conduits at any suitable point and are shown entering through coupling tube 114 before ending in outlet 18. Since the voltage in the wiring originates from low-voltage transformer 112, there is no danger from the electrical system.

#### Alternative Embodiment

Reference is made now to FIGS. 4 and 5 in which there is shown an alternative arrangement for a plurality of water-display fountains wherein each is provided with its own color-illuminating device operably mounted thereon. Even though the apparatus is illustrated with only two display units 200 and 202, respectively, it should be understood that more units can be added, depending on the body of water in which the apparatus is to be used.

Each unit 200 and 202 operates identically to display fountain 20 and is constructed in the same manner. However, as each color wheel 204 and 206 rotates about its own axis, both are interconnected to a central, rotatable, carriage means, generally indicated at 208, thereby providing a secondary simultaneous rotation for both displays 200 and 202 about the rotational axis of said carriage 208. The lower portion of carriage 208 is connected to the water-filter system in the same man-

ner as described hereinabove for the preferred form. That is, by use of said conduit system 94, booms 210 and 212 extend oppositely from carriage 208, forming a somewhat T-shaped configuration and having their outer ends adapted with L members 214 in which upright members 215 are supported.

Thus, as water flows into carriage 208 through passages 216 and 217 (See FIG. 5.), then through booms 210 and 212, said water is discharged from jets 218. Said jets 218 are positioned adjacent the outer ends of the booms, wherein the jet 218 is disposed in boom 212 opposite the jet in boom 210 (not seen). It, therefore, can be understood that the force from said jets will impart a rotating movement to both displays as the water is sprayed under pressure.

In order to provide electrical continuity, said carriage 208 includes a pair of electrical contacts 220, said contacts being affixed to the stationary lower member 222 of said carriage (See FIG. 5.), and engage circular contact bands 224 secured to the upper rotatable member 228 of said carriage. Said contacts 220 and 224 are mounted oppositely to each other on extended horizontal flanges 230 and 232, respectively, said flanges being held in parallel relationship to each other by an annular guide rail 234. Thus, a continuous electrical contact is maintained at all times during the rotation of the boom members together with the display units mounted thereto.

Referring to FIG. 6, there is shown an alternative arrangement for connecting the water-display units to a water-pressure system where it is not feasible to couple the conduit 94 within the body of water. Thus, if a pool or other body of water does not have a direct outlet, the conduit is then provided with additional elements, such as pipe 240 which extends upward to a point just above the pool's edge and is at the point demountably coupled to a water-pressure system 16 by means of fittings, generally indicated at 242. These fittings would include a flexible housing 244 that is adapted to follow various configurations, depending on the conditions between the pool's edge and the pressure system. It is also contemplated that a two-way valve 246 will be disposed within the pressure-return system, thereby permitting the flow of water to be diverted to the display fountain when so desired.

The invention and its attendant advantages will be understood from the foregoing description and it will be apparent that various changes may be made in the form, construction and arrangement of parts of the invention without departing from the spirit and scope thereof or sacrificing its material advantages, the arrangement hereinbefore described being merely by way of example, and we do not wish to be restricted to the specific forms shown or uses mentioned, except as defined in the accompanying claims.

We claim:

1. An illuminated aquatic-display fountain apparatus for placement within a body of water, and including a pressurized watersupply system, wherein said apparatus comprises:

a floatable display unit, said unit including:

a floatable support structure having a plurality of radially-extending arms,

support brackets integrally attached to said extending arms, and formed with a channel therein, floatable means disposed within said channel of said brackets,

a central tubular housing to which said floatable support structure is mounted thereon,  
 a plurality of light fixtures, each of which is supported by said extending arms of said support structure,  
 a rotatable color wheel having a plurality of colored transparent panes through which light is passed from said light fixtures, said wheel being rotatably mounted to said central tubular housing,  
 drive means affixed to said central housing and having direct engagement with said color wheel, whereby said wheel is rotated about said housing;

a conduit means interconnecting said floatable display unit with said pressurized water-supply system; and  
 an electrical power source for operating said light fixture.

2. An illuminated aquatic-display fountain apparatus as recited in claim 1, wherein said light fixture comprises:

a clip member removably attached to said support bracket;  
 a retainer support shield held in place by said clip member; and  
 a light bulb interdisposed between said clip and shield members whereby said light bulb, when illuminated, shines a light beam through said rotating transparent panes.

3. An illuminated aquatic-display fountain apparatus as recited in claim 1, including a sprinkler head mounted to one end of said tubular body whereby water is sprayed therefrom.

4. An illuminated aquatic-display fountain apparatus as recited in claim 2, wherein said conduit means includes valve means whereby water flow and pressure can be regulated.

5. An illuminated aquatic-display fountain apparatus as recited in claim 4, wherein said electrical power source includes a low-voltage transformer having an output between 6 volts and 28 volts.

6. An illuminated aquatic-display fountain apparatus as recited in claim 5, including electrical wires leading from said transformer to said light bulbs, said wires being substantially interposed within said conduit means.

7. An illuminated aquatic-display fountain apparatus as recited in claim 6, wherein said pressurized water-

supply system includes an outlet within said body of water which includes a plug adapter to be demountably received therein; and engaging means provided at one end of said conduit means for direct engagement with said plug adapter.

8. An illuminated aquatic-display fountain apparatus as recited in claim 7, wherein said drive means comprises:

a housing having a bore disposed therein whereby said central housing is fixedly received therein;  
 a chamber in said housing;  
 a passage provided in said housing for communication between said chamber and water flow through said central housing;  
 a pump operably disposed within said chamber and operated by said water flow;  
 an outlet passage leading from said chamber;  
 a gear drive operable by said pump; and  
 a drive disc coupled to said gear drive and engaging said color wheel, thereby imparting rotation thereto.

9. An illuminated aquatic-display fountain apparatus as recited in claim 1, wherein said apparatus includes:

a plurality of floatable display units oppositely arranged to each other for rotation about their separate axis; and  
 a plurality of booms connected to said conduit means and extending horizontally outward therefrom whereby said display units are mounted to the ends thereof, said booms being rotatable about the central vertical axis of said central tubular housing, whereby said floatable display units rotate separately but simultaneously with the rotation of said booms.

10. An illuminated aquatic-display fountain apparatus as recited in claim 9, including a carriage means interconnecting said booms to said conduit means wherein water can pass through said booms from said conduits, and wherein said carriage means is rotatable about its central vertical axis.

11. An illuminated aquatic-display fountain apparatus as recited in claim 10, wherein each of said booms includes a water jet adjacent its outer end whereby rotational movement is imparted to said booms for rotating said display units about said central vertical axis of said carriage means.

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