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Stillman, Jr.

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[54] **FOUNTAIN SPRAY SYSTEM FOR SWIMMING POOLS**

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[51] **Int. Cl.**..... **B05b 15/06**, B05b 1/20, E04h 3/20

[58] **Field of Search**..... 239/200–202, 239/207, 268, 266; 4/172, 172.17, 172.18, 172.21

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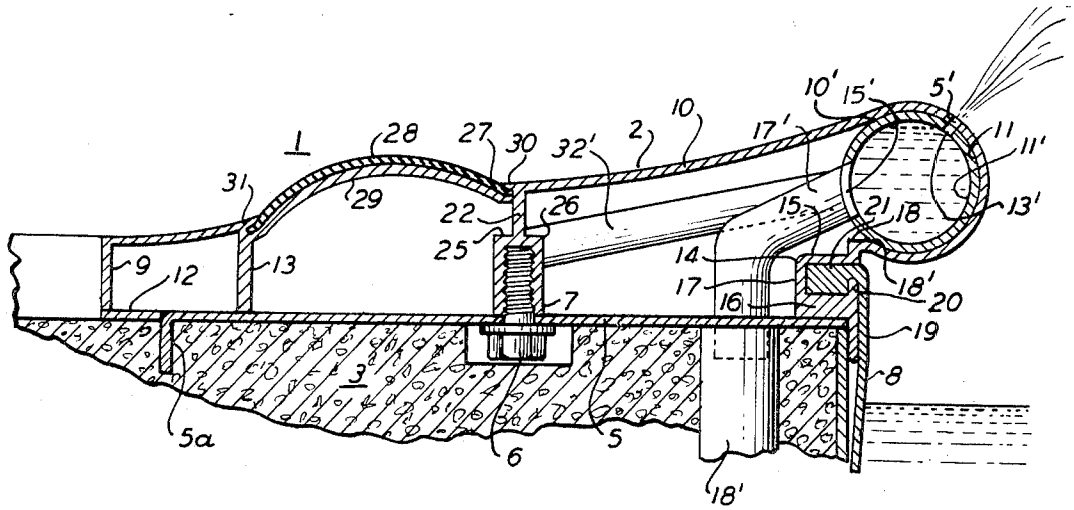
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[57] **ABSTRACT**

A spraying means for spraying water in a fountain effect into a swimming pool is disclosed. Water is pumped through a tubing means positioned inside the coping that surrounds the swimming pool and sprayed out through openings in the coping. These openings may be located completely around the periphery of the swimming pool or at separated locations such as the corners. The openings are flush with the outside surface of the coping so that there are no projections extending beyond the coping. The water is pumped into the spraying means by the pump for the filtering system of the pool. A valve may be provided which is connected to the pump so that some or all of the water which is pumped through the filtering means can be returned to the pool through the spraying system instead of through the normal filtering route. The spraying system aerates and filters the water and also tends to heat or cool the water, depending upon the temperature of the water and the temperature of the sourrounding air.

5 Claims, 5 Drawing Figures



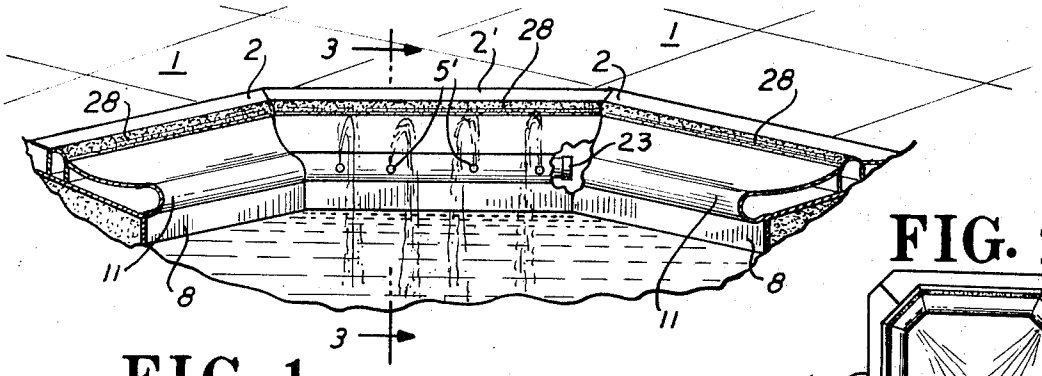


FIG. 1

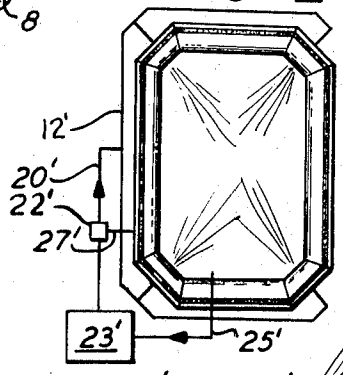


FIG. 2

FIG. 3

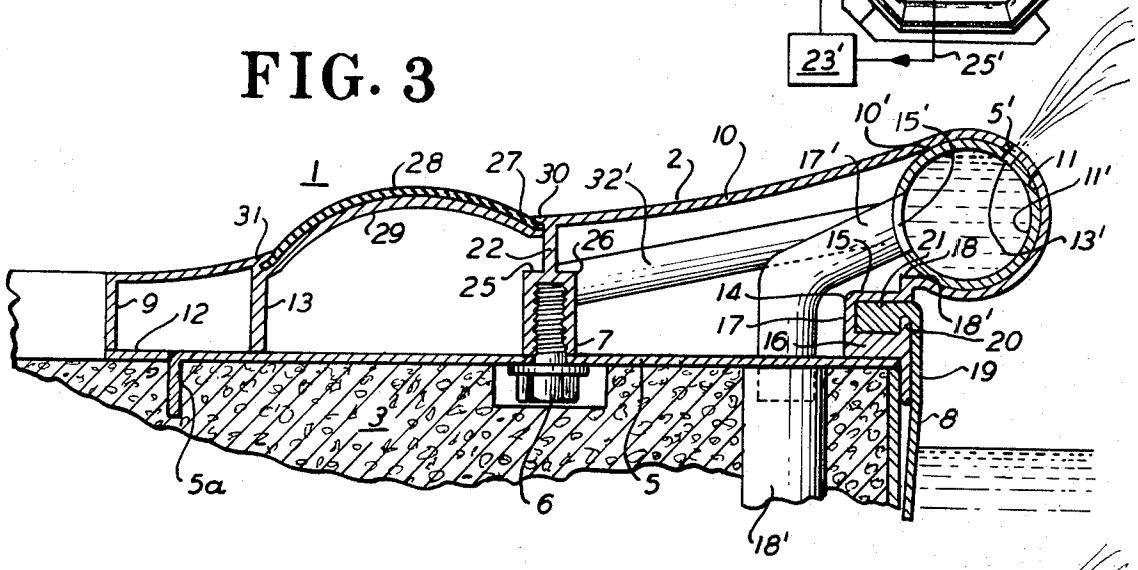
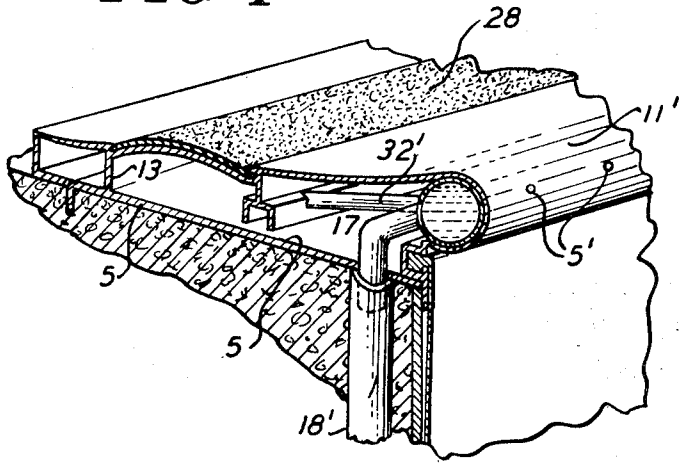


FIG. 4



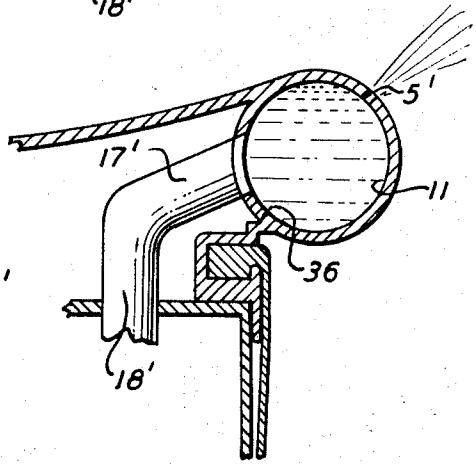


FIG. 5

FOUNTAIN SPRAY SYSTEM FOR SWIMMING POOLS

BACKGROUND OF THE INVENTION

This invention relates to swimming pools and more particularly to spraying type systems which are used in swimming pools. These systems are used to produce a decorative fountainlike effect to spray water into the pool. The systems often involve complicated apparatus which extend from the coping of the swimming pool into the swimming pool itself, or on the other hand, comprise separate structures which extend into the swimming pool area. These structures very often have sharp edges or dangerous projections that can lead to injuries to swimmers and of course, breakage of the spraying structure itself. The connecting system for the fountain is also very often quite complicated, having extensive structure extending around and through the pool and the surrounding structure.

This complicated piping and tubing very often results in the tubing being exposed in a manner such that damage can occur to it easily. This will also result in extensive damage to the entire system and to rupture and breakage of parts of the water pumping and filtering system to which it is connected. It would then be most desirable if a fountain system for swimming pools could be developed where the piping was located entirely within the coping so as to be protected from injury and damage and also to provide extremely simple and structurally sound construction. It would also be desirable if the fountain system presented a smooth nonprojecting configuration so that there were no sharp edges projecting into the pool.

It would further be desirable if the system could be connected to the filtering system and regulated so that water can be bled from the filtering system to be sprayed out through the spraying system in any amounts desired. In bleeding off water from the filtering system the water will be aerated and its temperature regulated to some extent by the fountain effect.

SUMMARY OF THE INVENTION

This invention discloses a fountain spraying system for swimming pools whereby the piping for the system is encased in the leading edge of the coping around the swimming pool so that it is structurally protected from damage and also so that the openings through which water projects are smooth and do not project into the pool itself. The piping for the system is connected into the pumping and filtering system for the swimming pool so that water can be bled off and pumped directly through the fountain system to create the fountain effect. The spray aerates and filters the water by the interaction between the water and the air.

Thus, the primary object of the invention is to provide a compact structurally sound fountain system for swimming pools.

It is also another object to aerate and control the temperature of the water by use of the fountain spray means. As the water is being sprayed out, it will be cooled by the surrounding air if the air temperature is cooler than the water temperature. This method of spraying will quickly cool the water in the pool if it is too warm. On the other hand, if the water in the pool is colder than desired, and there is sufficient sunlight, this method will tend to heat the water going back to the pool. Also, the coping may be constructed so that the water is in a thermal transfer relationship to the outside air. The water travelling through the coping thus will be in heat conducting relationship with the outside air, and thus can be quickly cooled or heated as it passes therethrough.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an illustration of a section of coping showing the location of the spray openings.

FIG. 2 is an overall view of a pool showing the fountain effect in operation, and showing the interconnection to the pumping system.

FIG. 3 is a cross-sectional view taken along line 3—3 of FIG. 1, showing the piping for the fountain system.

FIG. 4 is a cut-away perspective of FIG. 1 showing piping for the fountain system.

FIG. 5 is an alternative embodiment of the piping for the fountain system of this invention.

PREFERRED EMBODIMENT OF THE INVENTION

This invention relates to a fountain system for swimming pools and more particularly a system whereby a water spray is emitted from openings in the coping surrounding a swimming pool.

FIG. 2 shows a typical pool having the fountain system inside the coping. The particular pool illustrated has angled corners and thus it is convenient to place the spray system in the corner sections. It will be appreciated that the pool can be any desired shape and can be above or below ground The spray effect can be produced in any place desired in any pool as long as there is a coping at the point at which the spray is to be produced. To provide the spray, suitable piping simply has to be provided at the desired places in the coping.

FIG. 1 illustrates one of the corner sections 2' in more detail. A section of tubing 11' is placed in the curved part of forward wall 11 for the corner section and suitably sealed at each of its ends by end closures 23 shown in the cut away portion of FIG. 1. This section of tubing is placed in the corner section in the pool illustrated, however, it can be placed anywhere in the coping as desired.

Referring now to FIG. 3, the coping 1 which includes the spray system includes top wall 2 and bottom wall 5, rear wall 9 and forward wall 11 (as aforementioned). The remainder of the coping without the spray system can be the same as shown in U.S. application Ser. No. 312,695, filed Dec. 9, 1972, now U.S. Pat. No. 3,777,318, mentioned subsequently. The rear wall 9 has an inwardly extending support flange 12 and an outwardly depending flange 13, providing additional support for the rear wall of the coping. The forward end wall 11 of the coping is convex in shape to protect the pool and to provide a deflection means for splashing from the pool. This curve also provides a protecting structure for tube 11' which is inserted within the convex curve of the forward wall and is positioned so that the tube touches the outer surface of the wall along about 200° of its circumference, that is, from point 10' to point 18'.

A suitable opening, or plurality of openings 5' and 13' are provided in pipe 11' and in the top edge of the forward wall 11. These openings are concentric so that water flowing into 11' can be emitted through these

combined openings 5' and 13' and be discharged in a spray stream towards the pool. As illustrated in the drawings these apertures are near the top part of the forward wall so that the stream is emitted in a generally upwardly, arching, curved manner so as to provide the most pleasing visual effect and also at the same time to provide a large contact between the water being emitted and the air so that the water can be aerated as it is passing down into the pool and thereby filtered on its way down. It will also be appreciated, as previously discussed, that this manner of spraying the water into the pool will also tend to cool or heat the water, depending upon the temperature of the air and of the pool water as it is being returned to the pool. Also, by having tube 11' in the convex section of the coping, it is protected from damage by being entirely positioned within the coping. There are also no projecting members from the coping for spray nozzles of the like; the apertures are flush with the outside of the coping and thereby do not present obstructions which could injure swimmers in the pool.

The coping is placed on the ground adjacent the pool in the case of an in-ground pool and on the top outside wall in the case of an above-ground pool. The pool itself as shown in FIG. 2 has vertical steel walls designated 4 in FIG. 3. Bottom Wall 5 is attached to the wall 4 and positioned on the ground adjacent the pool. Flange 5*a* extending from bottom wall 5 also holds this wall in position. A socket member 7 is connected to the coping so that bolt 6 can be used to secure the coping in place. In above-ground pools, there will be a similar connection between the top of the wall and the coping.

In FIG. 3 a member 14 is provided on the forward end wall 11 of the coping for holding a pool liner for the pool. This member comprises leg portions 15 and 16 and a back portion 17. Leg portion 15 is connected to a flange 18 which is connected to the round outer end 11 of the forward wall. A flange 19 extends downwardly from leg 16 and bears against side wall 4 to prevent inadvertant shifting of the coping. Flange 20 extends upwardly from leg 16 to define a restricted opening into recess 14 which is adapted to receive bead 21 of the pool liner 18. In the interior of the coping, there is a downwardly extending flange 22 which is connected to member 7 for strengthening the coping.

The coping may also be provided with a recess 27 above wall 29 which is adapted to receive a contrasting insert 28. The insert 28 is easily removable and thus can be replaced. The insert can be of a contrasting color with the remainder of the pool, or can be of a contrasting coefficient of friction, or both. This is more adequately described in pending U.S. application Ser. No. 312,695 filed 12/06/72, which is a division of U.S. application Ser. No. 184,295, filed 09/27/71, which is a continuation of U.S. application Ser. No. 793,862, filed 01/24/69. These applications are all invented by Albert H. Stillman, Jr. the inventor of the present application.

To connect tube 11 to the water supply an opening 15' is provided in the rear side of tube 11'. A suitable pipe such as L-shaped pipe 17' is securely fastened to the opening and to a larger pipe 18' which extends through the bottom wall 7' and the plates of the coping and into the ground. This pipe 18' is connected to tubing 20' and through a valve 22' to pump 23', which can be any suitable pump used for the filtering system of a pool.

Briefly, the water from the pool is removed in the usual manner, through suitable piping 25' to the pump and then from the pump through the filter, through another pipe 27' back to the pool, through the inlet. However, a proportion of this returning water can be removed and fed through pipe 20' into pipe 12' and through the fountain system of this invention. The water is sprayed out through openings 5' and 13', to provide the fountain effect of this invention. The valve 22' may be any of the standard mixing valves, such as a globe valve and is designed so that it is operated by a simple hand rotatable lever. As aforementioned, by the use of this valve, some of the water returning to the pool can be input to this fountain system. However, the valve can also be turned off so that the system does not function at all and all the water is returned to the pool through line 27' or it can be adjusted so that all the water will be directed through the fountain system to be sprayed into the pool.

To brace and support tube 11', a short tube 32 or a plurality of short tubes or other braces may be provided. These braces hold tube 11' in position while the coping is being assembled. However, once the coping is assembled they may not be needed at all, depending on the shape of the coping. They also may be used for supporting tube 11' in the finsihed product if desired. In other words, they can remain after tube 11' is inserted into position, or they can be removed at the option of the construction technique. These braces are positioned between member 7, member 22, and tube 11'. Also tube 11' may be secured into the coping by any adhesive such as epoxy or other suitable securing material. It also may be simply snapped into position depending on the shape of the forward wall of the coping. It also can be held in position by the support brace

In operation, the water from the pool passes through tube 25 and into the pump 23'. It then passes from pump 23' to a valve 22 which controls the amount of water that is returned through tube 27' to the pool, and the amount of water input to the fountain system. It will be appreciated that valve 22', as aforementioned, is positioned to control these relative amounts of water input to the fountain system and returned to the pool in the regular manner. It will also be appreciated that the fountain system not only provides an appealing visual display but permits the aerating of the water as it is shot up into the air by this spray technique. Also, the spray tends to cool or heat the water depending upon the condition of the air surrounding the pool, for exmaple, if the water in the pool is unusually hot, by spraying it out in this manner, it will be cooled to a large extent very quickly. If desired, all of the water in the pool can be quickly fed through this system and sprayed out and thereby cooled very quickly. In a similar manner, if the pool water is very cool, and the surrounding air is very warm, spraying it out in this manner will tend to warm it very quickly. Thus, the entire pool water can be very quickly heated or cooled by spraying it out in the fountain effect, since only a small amount of water flows through the tube at any given time.

FIG. 5 discloses an alternate form of the invention. In this case tube 11' has been eliminated, and a back section 36 has been added to wall 11, to form a tube as an integral part of the coping through which the water

passes. This embodiment operates in exactly the same manner as the previous embodiment, however, it has the added advantage of eliminating the separate tube 11'. Further it places the water in direct contact with the wall 11 which is also in contact with the atmosphere. Heat transfer through the wall can thus readily take place in either direction. The water in tube 11 can then be heated or cooled by thermal transfer through the wall, in a fairly rapid manner. Thus, with this embodiment, the water will be heated or cooled by the atmosphere both as it is passing through the coping and also as it is being sprayed out into the pool.

It is also noted that in the embodiment of FIGS. 3 and 4 tube 11' can be made of metal or plastic. If it is made of metal, and the coping is made of metal, heat transfer will readily take place through tubes 11' and wall 11 (they are in contact) to heat or cool the pool water by heat transfer in the same manner as described with respect to the embodiment of FIG. 5. Thus a means of readily heating and cooling the pool water can be provided.

It will be appreciated that as aforementioned, the spray openings can be placed at any point of the coping and can be placed so that many interesting and asthetic patterns result.

It is noted that pipes 21' leading from pipe 20' to tube 18' in the coping can be placed completely inside the coping, in the same manner as tube 11', if so desired.

It will also be appreciated that the pool can be any desired shape. Thus, a very simple, efficient swimming pool fountain system is described.

While specific embodiments of the invention have been described, it will be appreciated that many modifications thereof may be made by one skilled in the art which comes within the true spirit and scope of the invention.

I claim:

1. In combination a swimming pool, coping and fountain comprising

an integral hollow coping for a swimming pool having

a top wall

an end wall, and

a rounded forward wall integral with said top wall and provided with a member for holding a liner for a swimming pool and having at least one small opening positioned proximate said top wall and directed upwardly, the edge of the opening being flush with the outer surface of the forward wall

a fountain including

a tube horizontally positioned in said coping proximate to the forward wall and having at least one small opening therein aligned with the opening in the forward wall and

piping means for connecting said tube to a source of water.

2. The combination of claim 1 wherein the forward wall and the tube are integral with the tube being formed from the forward wall and a rounded rear section of wall inside the coping.

3. The combination of claim 1 wherein the tube and the forward wall are secured together.

4. The combination of claim 3 wherein the coping surrounds a swimming pool and the tube is provided in only certain sections of the coping.

5. The combination of claim 4 wherein water is input to a filtering system from a pump and wherein an adjustable valve is positioned to control the amount of water supplied to an inlet and the amount of water supplied to the fountain.

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