United States Patent

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[15] **3,641,594**

[45] **Feb. 15, 1972**

[54] GUTTER AND WATER SUPPLY SYSTEM FOR SWIMMING POOLS

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[22] Filed: **Dec. 18, 1969**

[21] Appl. No.: **886,110**

[52] **U.S. Cl.** **4/172.17**

[51] **Int. Cl.** **E04h 3/16**, E04h 3/18

[58] **Field of Search** 4/172.17, 172.15, 172.18, 172.16, 4/172.21; 210/169

[56] **References Cited**

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[57] **ABSTRACT**

A gutter and water supply system for swimming pools wherein the gutter is cast into a concrete sidewall of the swimming pool and provided with a slotted cover preferably formed from molded plastic sections having integral seating lugs which fit into the top of the gutter to hold the sections in place. A water supply conduit for the swimming pool is carried beneath the cover and above the gutter floor and provided with inlet nozzle assemblies which feed filtered return water into the pool. The water supply conduit can be disconnected quickly from the nozzle assemblies by quick-disconnect couplings and removed without the necessity for excavating around the pool or providing a passageway around the entire periphery of the pool.

8 Claims, 5 Drawing Figures

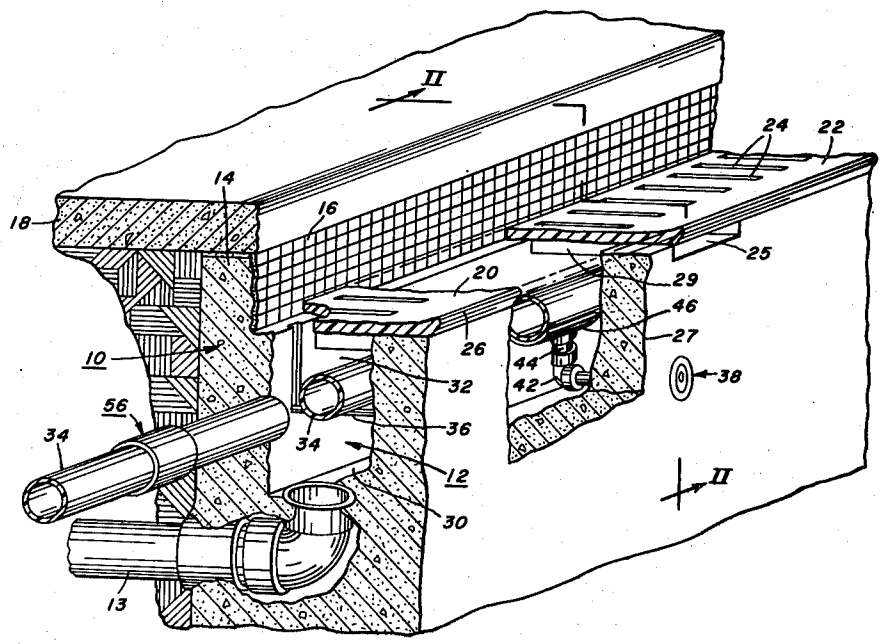


FIG. 1.

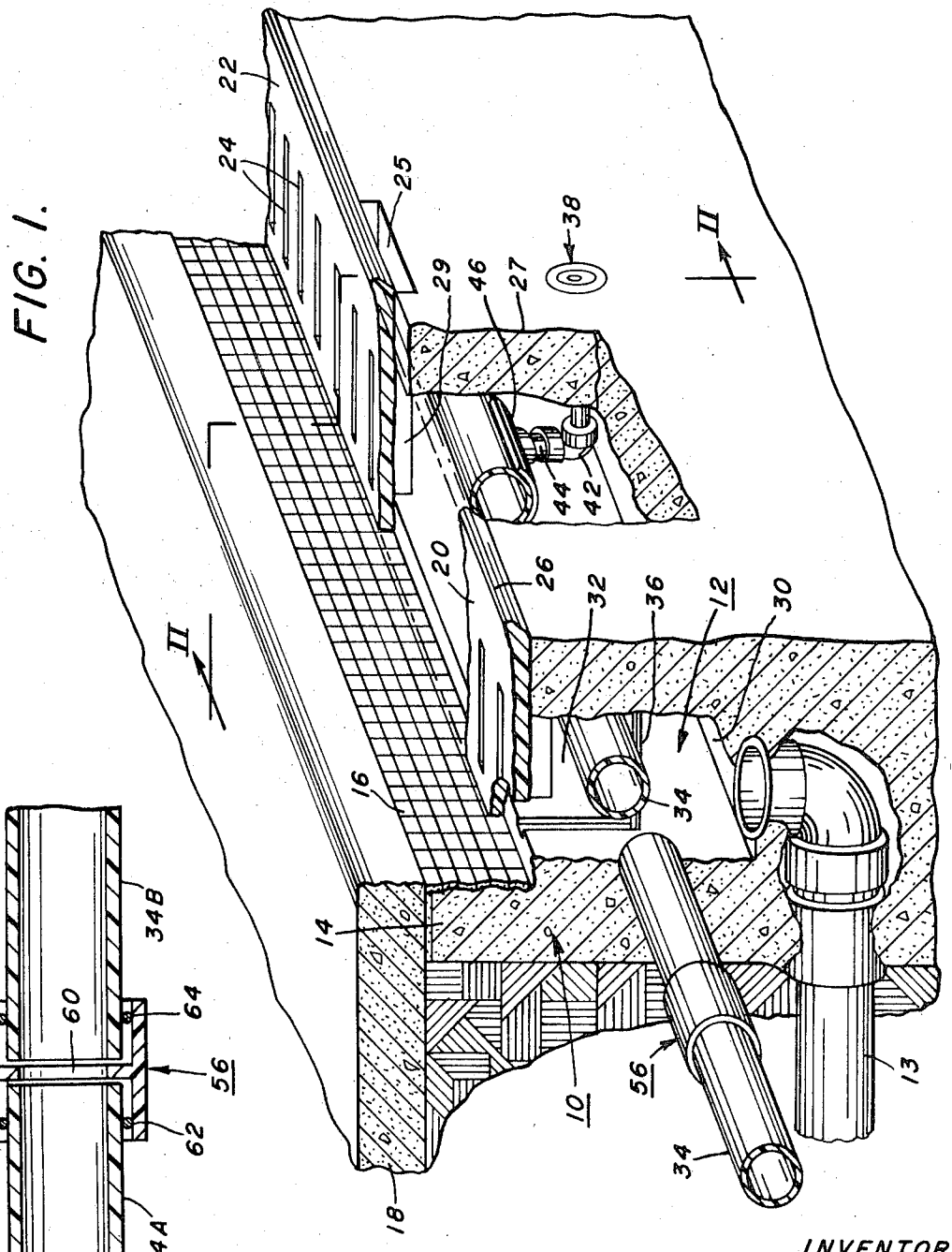


FIG. 3.

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FIG. 4.

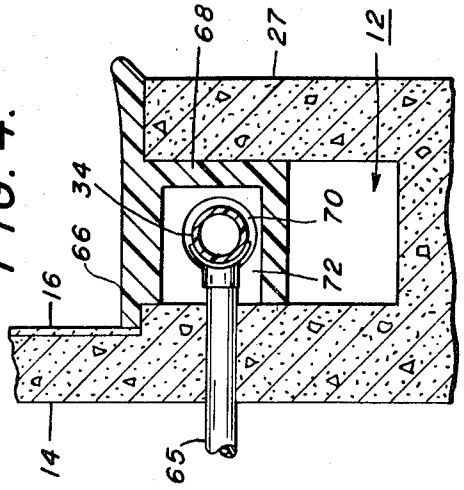


FIG. 5.

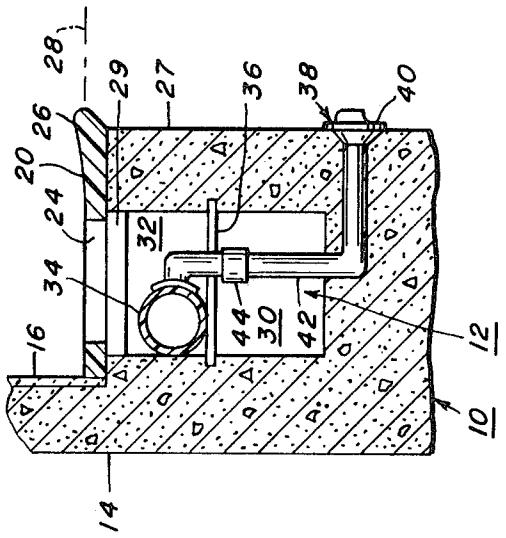
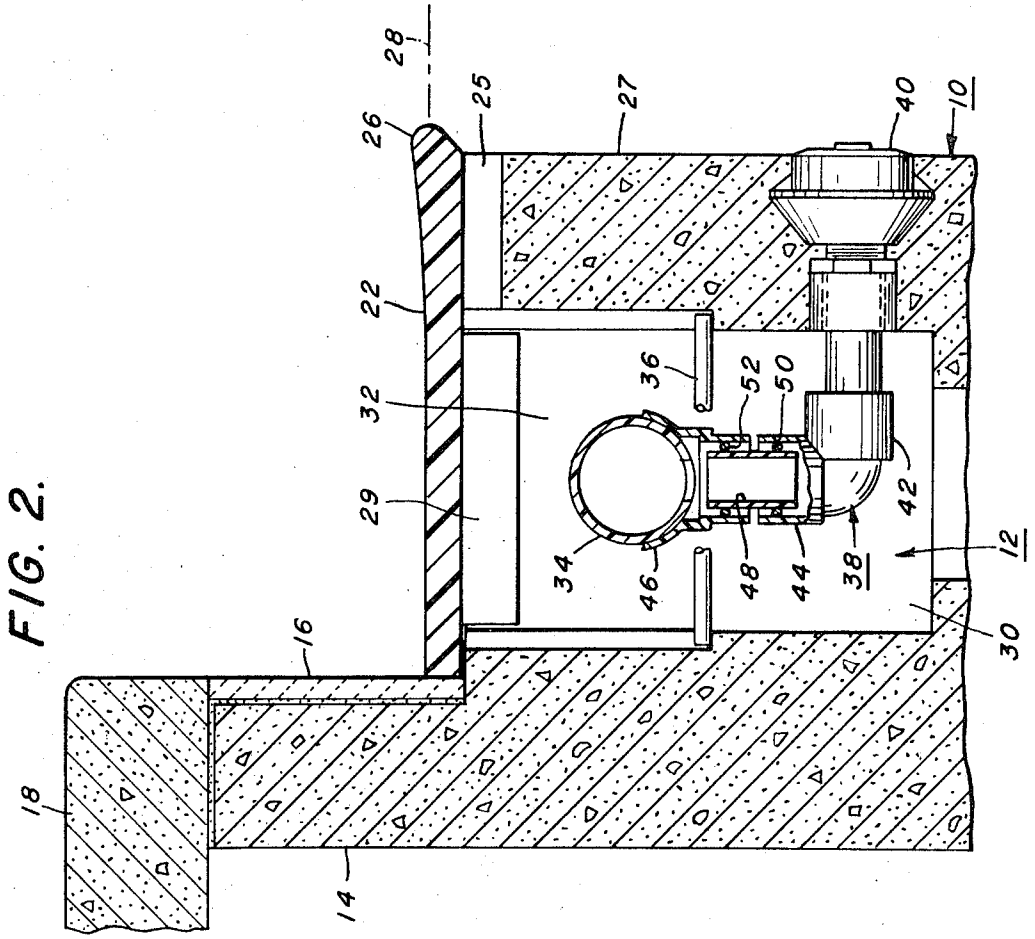


FIG. 2.



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GUTTER AND WATER SUPPLY SYSTEM FOR SWIMMING POOLS

BACKGROUND OF THE INVENTION

In the usual swimming pool construction, filtered water enters the pool through nozzle assemblies passing through the pool walls; while the main drain returning to the filtering equipment is at the bottom of the pool. In addition to the main drain, it is also necessary to provide an overflow gutter or skimmer system around the upper periphery of the pool to "skim off" surface water and return it to the filtering unit since this surface water contains most of the contaminants such as bacteria, oil and debris.

In the past, it has been common to bury a water supply conduit for the nozzle assemblies as well as a gutter drain header in backfill around the periphery of the pool. However, with this arrangement, it is necessary to excavate and breakup a concrete deck around the pool should it become necessary to repair a section of the supply conduit. Furthermore, the weight of the fill around the supply conduit imposes stresses which may cause failures, particularly where the nozzle assemblies connect to the supply conduit. All of this can be avoided by building a pipe access tunnel around the pool wall, but this is expensive and necessitates a pool wall of greater strength than would otherwise be the case.

Recently, swimming pool gutter and water supply systems have been devised wherein the gutter is provided with a removable slotted cover, and the water supply conduit is carried within the gutter itself, the arrangement being such that the entire supply conduit can be exposed by removing the gutter cover, and then removed by disconnecting it from the inlet nozzle assemblies without the need for excavation. Heretofore, such systems have been formed from stamped or formed stainless steel sections welded together to form a complete gutter. An example of such a system can be found, for example, in U.S. Pat. No. 3,432,867, issued Mar. 18, 1969.

One difficulty with such systems is that they must be constructed from stainless steel, an expensive item, and necessitate welding the sections together in the field by highly skilled welding technicians. In addition, steel gutters have the inherent characteristic of inducing undesirable electrolytic conditions leading ultimately to corrosion. The condition requires the expensive installation of cathodic protection and special grounding apparatus as a safeguard against corrosion, magnetic field buildup and dangerous electrical conductivity.

SUMMARY OF THE INVENTION

As an overall object, the present invention seeks to provide a gutter and water supply system for a swimming pool wherein the gutter is formed in a concrete sidewall and provided with removable slotted cover sections formed from an inexpensive but strong plastic material or precast concrete.

Another object of the invention is to provide improved means for removably securing a slotted plastic or concrete cover to a concrete swimming pool side wall having a gutter cast therein.

Still another object of the invention is to provide a unique system for disposing a filtered water supply conduit in a cavity above a gutter of the type described whereby the supply conduit is readily accessible when the aforesaid cover sections are removed. However, by virtue of the fact that the supply conduit is above the gutter rather than in the gutter itself, there is little opportunity for debris to collect around the supply conduit.

In accordance with the invention, a swimming pool construction is provided of the type having cast concrete walls, together with a cavity cast into the walls and surrounding the upper periphery of the swimming pool. Slotted, removable cover sections are fitted over the cavity, which sections are formed from plastic or concrete material and are preferably but not necessarily provided with integral seating lugs which fit into the cavity to hold the sections in place.

Further, in accordance with the invention, a water supply conduit is disposed in the cavity beneath the cover sections but above a drain at the bottom of the cavity whereby debris or other material in the drain will not collect around the water supply conduit. The water supply conduit, in turn, is removably connected by quick-disconnect couplings to water nozzle assemblies which feed water into the pool.

A plurality of plastic or concrete water supply manifolds is located in the upper cavity beneath the covers to transfer the filtered water from the main supply line into the water conduit. Finally, the pool wall profile provides for easy, safe bather access into and out of the pool, a convenient sitdown ledge for instruction and a readily visible horizon for competitive events.

The above and other objects and features of the invention will become apparent from the following detailed description taken in connection with the accompanying drawings which form a part of this specification, and in which:

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. **1** is a perspective view of one embodiment of the gutter and water supply system of the invention;

FIG. **2** is a cross-sectional view taken along line II—II of FIG. **1**;

FIG. **3** is a cross-sectional view of the quick-disconnect couplings for the water supply conduit shown in FIGS. **1** and **2**;

FIG. **4** is a cross-sectional view of the water supply manifold of the invention; and

FIG. **5** is a cross-sectional view of an alternative embodiment of the invention.

With reference now to the drawings, and particularly to FIG. **1**, the swimming pool construction shown includes a cast concrete wall **10** having a cavity **12** formed therein. As will be understood, the cavity **12** extends around the entire periphery of the swimming pool and forms a lower drain gutter provided with a plurality of gutter drain assemblies **13** along its length to return the water to the filtering unit for the swimming pool. The cast wall **10** is provided with an upstanding portion **14** faced with ceramic tile **16** or the like. Carried above the upstanding portion **14** is a concrete deck **18**.

Covering the upper open end of the cavity **12** is a plurality of removable, precast concrete or plastic slotted overflow gutter caps, two of which are shown in FIG. **1** and identified by the reference numerals **20** and **22**. The gutter caps **20** and **22** are preferably formed from a plastic material, such as high-density polyethylene, or from precast concrete, and may be of solid cross section as shown in FIG. **2** or cast with an interior cavity. Spaced along the gutter caps are slots **24** which, of course, permit water to flow over a forward lip **26** of the gutter caps and through the slots **24** into the cavity **12**. The normal pool water level is indicated in FIG. **2** by the line **28**; and it will be appreciated that any disturbance in the surface of the water will cause a flow over the lip **26** and through the slots **24** into the cavity **12**. Scupper slots **25** are formed in the forward wall **27** of the cavity **12** to provide continuous surface skimming of the pool water in the event the water level drops below normal line **28** in FIG. **2**.

The gutter caps **20** and **22** are provided with integral seating lugs **29** which are set into the cavity opening formed in the wall **10**. There are a plurality of such lugs spaced along the bottom of each gutter cap and separated by spaces above which are the slots **24**. Thus, in order to lock the gutter caps in place, it is necessary only to press the seating lugs **29** into the cavity **12** with a slight amount of pressure. Similarly, the gutter caps can be removed by applying a slight amount of upward pressure.

As best shown in FIG. **2**, the cavity **12** is divided into a lower drain gutter chamber **30** and an upper water supply chamber **32** which carries a water supply conduit **34**. The conduit **34** is carried on supports **36** which span the width of the cavity **12** and elevate the supply conduit **34** above the drain gutter

chamber 30. In this manner, oil and debris will not collect around the supply conduit 34. The supply conduit 34 is connected at spaced points along its length to inlet nozzle assemblies 38 which feed water into the pool. As shown in FIG. 2, the inlet nozzle assemblies 38 include the nozzle 40 itself together with an elbow 42 connected through a quick-disconnect coupling 44 to a saddle 46 connected to the water supply conduit 34.

As shown in FIG. 2, the quick-disconnect expansion coupling 44 includes an inner cylindrical plastic sleeve 48 which carries, on its outer periphery, a pair of O-ring seals 50 and 52. With this arrangement, the ends of the supply conduit 34 are simply slipped into the cylindrical sleeve 48 until they are engaged by the O-ring seals 50 and 52. In order to remove the supply conduit 34 from the cavity 12, it is necessary to only remove the gutter caps, and disengage the conduit from the quick-disconnect expansion couplings, then pull the supply conduit 34 upwardly. Conversely, the saddles 46 can be readily connected to the elbows 42 by exerting a downward pressure on the conduit 34.

Sections of the conduit 34 are connected by means of expansion couplings 56 (FIG. 1), the details of which are shown in FIG. 3. It includes an outer sleeve 58 having a radially inwardly extending flange 60 against which the conduit sections 34A and 34B abut. The inner periphery of the sleeve 58 carries a pair of O-ring seals 62 and 64 which engage the outer peripheries of the pipe sections 34A and 34B. In this manner, the O-ring seals 62 and 64 will maintain a fluidtight seal while, at the same time, a limited amount of expansion and contraction can occur between the two pipe sections 34A and 34B without breaking the seal.

With reference now to FIG. 4, a water supply manifold is shown for connecting the conduit 34 to the main supply conduits 65 passing through the upstanding wall portion 14. It includes an upper surface 66, designed to conform to the upper surface of the gutter caps 20, 22, and an integral lower block 68 having a transverse opening 70 therethrough which receives the conduit 34, and an intersecting rear opening 72 of larger diameter which receives the main supply conduit 65. The manifold blocks are preferably formed from plastic; and are spaced around the gutter at spaced points coinciding with the locations of the main supply conduits. These manifold blocks also provide support for conduit 34 along with the supports 36 shown in FIG. 1.

In FIG. 5 an alternative embodiment of the invention is shown wherein elements corresponding to those of FIGS. 1 and 2 are identified by like reference numerals. In this case, however, the elbow 42 extends through the bottom of the cavity 12 and then through the side of wall 10 instead of through the front wall 27 of cavity 12.

Although the invention has been shown in connection with certain specific embodiments, it will be readily apparent to those skilled in the art that various changes in form and arrangement of parts may be made to suit requirements without departing from the spirit and scope of the invention.

I claim as my invention:

1. In a swimming pool construction of the type having concrete walls, the combination of an open-ended cavity cast into the tops of said concrete walls and surrounding the periphery of said swimming pool, a vertical wall behind said cavity also surrounding the periphery of the swimming pool, and a plurality of removable cover sections fitted over said cast cavity along each wall of the swimming pool and extending between the edge of each wall of the swimming pool and the vertical wall behind the cavity, said removable sections being formed from a material selected from the group consisting of plastic and cast concrete and having generally horizontally extending slots in the tops thereof to permit substantially the entire volume of water in the pool to be skimmed from the surface of water in the pool through said slots and into said cavity from whence it can be recirculated back to the pool.

2. The swimming pool construction of claim 1 including a water supply conduit carried within said cavity above the bottom hereof, the bottom of said cavity forming a drain gutter chamber, and nozzle assemblies permanently fixed in said cast wall and connected at spaced points to said water supply conduit.

3. The swimming pool construction of claim 2 including quick-disconnect couplings connecting said water supply conduit to said nozzle assemblies.

4. The swimming pool construction of claim 1 wherein said water supply conduit is carried on support rods spanning said cavity above the drain gutter chamber.

5. The swimming pool construction of claim 3 wherein said quick-disconnect couplings comprise an inner cylindrical sleeve having O-ring seals spaced about its periphery for receiving a conduit connected to said water supply conduit and a conduit forming a portion of said nozzle assemblies respectively.

6. The swimming pool construction of claim 1 wherein said cover sections have seating lugs spaced along the bottom of each cover section between said slots.

7. The swimming pool construction of claim 2 including manifold blocks of plastic material insertable into said cavity and having an outer surface conforming with that of said cover sections, said blocks having openings therein which receive said water supply conduit and openings transverse to said first-mentioned openings for receiving main water supply conduits which extend through concrete walls of the swimming pool and connect to said first-mentioned water supply conduit.

8. The swimming pool construction of claim 2 wherein said nozzle assemblies are beneath the bottom of said cavity.

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