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[54] RETRACTABLE FOUNTAIN ASSEMBLY

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[52] **U.S. Cl.** **239/17**, 239/165, 239/204

[51] **Int. Cl.**.....**B05b 15/10**, B05b 17/08

[58] **Field of Search**.....239/17, 18, 19, 20, 21, 22, 239/23, 165, 203, 204, 587

[56] **References Cited**

UNITED STATES PATENTS

1,612,135	12/1926	Lorraine	239/204
3,335,959	8/1967	Lockwood	239/204
3,425,633	2/1969	Stout	239/204 X
3,104,822	9/1963	Muschett	239/165 X
2,706,134	4/1955	Wilson et al.	239/204
219,946	9/1879	Huber	239/23
1,370,252	3/1921	Williams	239/165 X
2,091,790	8/1937	Mueller et al.	239/204
2,269,919	1/1942	Scherrer	239/204
2,325,280	7/1943	Scherrer	239/204
2,360,203	10/1944	Cox	239/204
2,501,910	3/1950	Oughton	239/204
2,912,111	11/1959	Kovac	239/204
3,002,696	10/1961	Jenkins	239/204 X

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[57] **ABSTRACT**

A fountain assembly suitable for installation in a swimming pool made up of a plurality of extendable and retractable telescoping conduit sections. A portion of said assembly is anchored in the swimming pool bottom so that conduit sections may be extended upward therefrom to form a fountain or retracted therein flush with the pool bottom so as to present no swimming or diving hazards. The fountain is extended by activation of pressurized liquid engaging liquid seals in said conduit sections to maintain said assembly in its extended position. Said telescoping conduit sections being adapted for bleeding when said pressurized liquid ceases thereby allowing said conduit sections automatically to settle back to their retracted positions.

2 Claims, 4 Drawing Figures

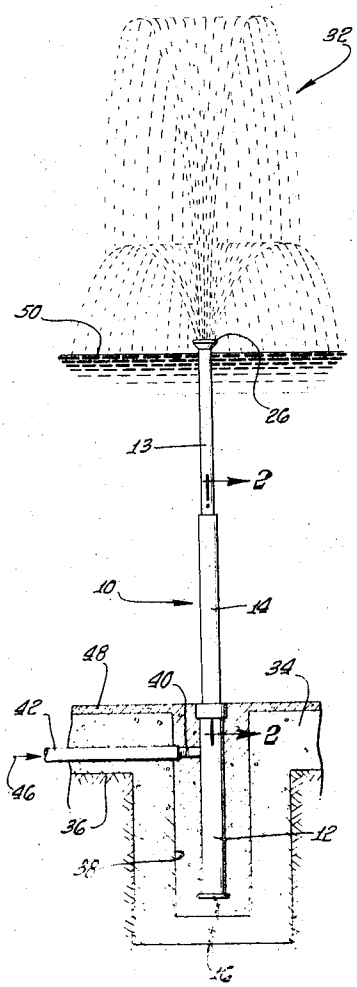


FIG. 1.

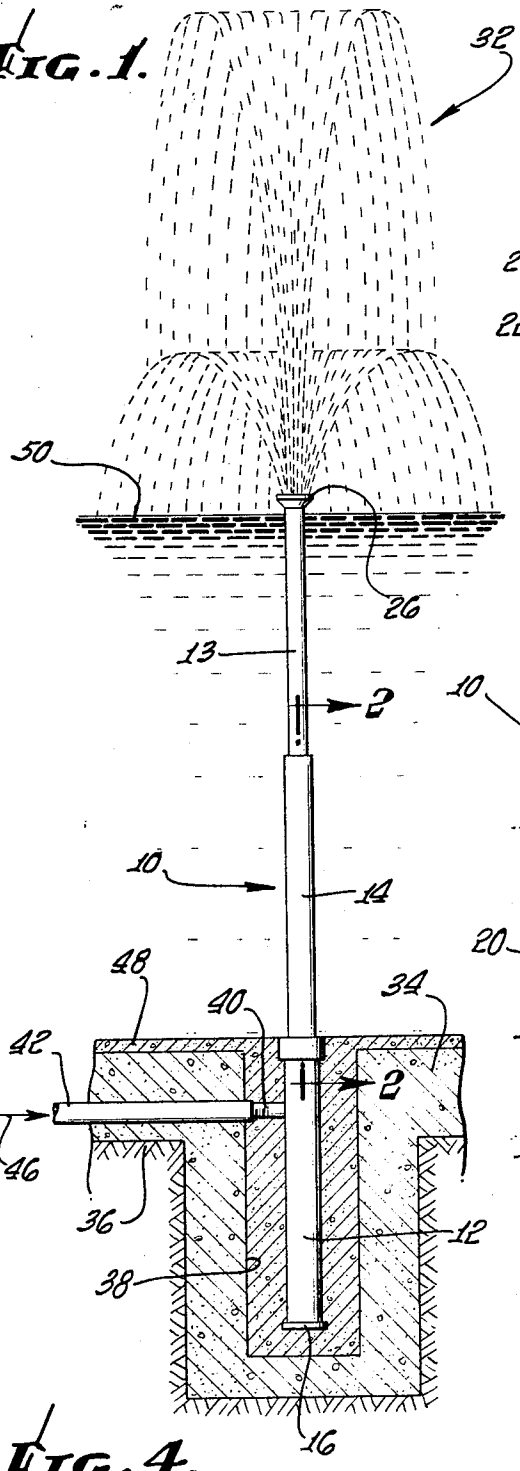


FIG. 2.

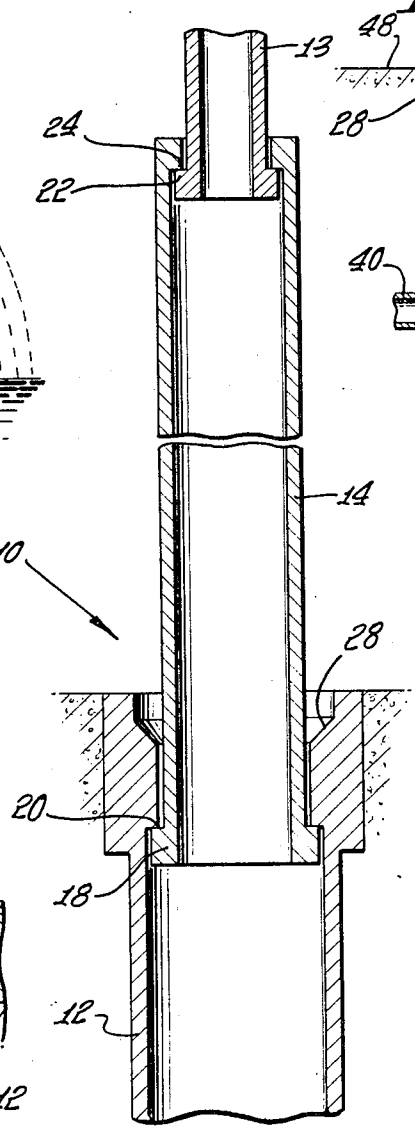
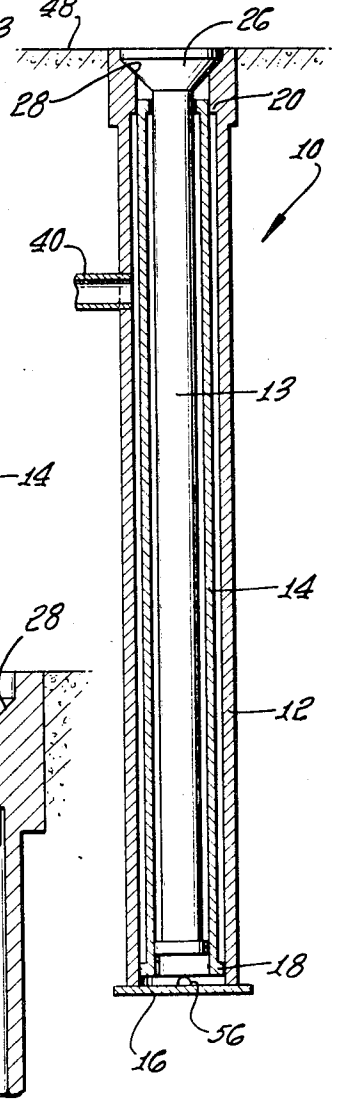
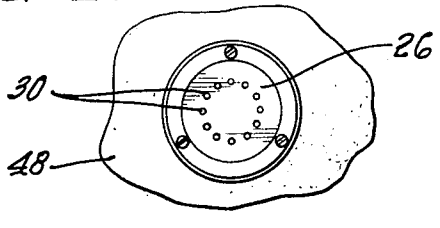


FIG. 3.



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FIG. 4.



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RETRACTABLE FOUNTAIN ASSEMBLY

BACKGROUND OF THE INVENTION

Heretofore, it has been found desirable to install fountains in swimming pools to provide a decorative effect whenever the pool is not being used, such as during the evening. Prior art fountain structures generally have been considered unsuitable for use in most swimming pools since they cluttered up the pools with both below and above water obstructions, and were not readily removable and if allowed to remain constituted diving and swimming hazards for people using the pool.

SUMMARY OF THE INVENTION

The present invention relates to fountains, and more particularly to a novel fountain assembly suitable for installation in a pool, such as a swimming pool or even a fish pond.

It is, accordingly, an object of the present invention to provide an improved fountain assembly suitable for installation in swimming pools which when not in use provides no obstructions in a pool so as to be safe and obviate the aforementioned disadvantage of prior art swimming pool fountains.

Further, it is an object of the present invention to provide an improved fountain assembly which is characterized by being selectively extendable to an operative position and retractable to a storage position when not in use.

In accomplishing these and other objects, there is provided in accordance with the present invention a fountain assembly made up of a plurality of telescoping conduits or conduit sections. The lower conduit section is anchored or cast in the bottom of a swimming pool and functions as a housing. Means in the form of a pump for supplying pressurized fluid is provided for extending the other conduit sections upward therefrom to position the fountain in an operative position. Structure is formed on the conduit sections at their ends which mate when the sections are maintained by liquid pressure in an extended position to define fluid seals therebetween. Means are further provided for retracting the fountain from its extended position which preferably takes the form of loose couplings between the telescoping conduit sections so that water bleeds from the fountain assembly once pressurized water ceases to be pumped therethrough. Thereby, the extended conduit sections automatically settle to their retracted positions. A fountain head or nozzle is connected to the outer end of the upper conduit section to project water pumped through the communicating conduit sections. The fountain assembly is suitable for installation in the bottom of a swimming pool since when retracted it is flush with pool bottom and presents no swimming or diving hazards.

Additional objects of the present invention reside in the specific construction of the exemplary fountain assembly hereinafter particularly described in the specification and shown in the several drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of a fountain assembly according to the present invention in its extended position shown installed in the floor of a swimming pool;

FIG. 2 is an enlarged section view taken along the line 2—2 of FIG. 1;

FIG. 3 is a side elevational view of the fountain assembly of FIG. 1 in its retracted position with a portion of the assembly cut away to expose internal parts; and

FIG. 4 is a top view of the fountain assembly of FIG. 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings in more detail, there is shown a fountain assembly generally designated by the numeral **10**. The assembly **10** has a lower conduit section **12**, an upper conduit section **13** and may have one or more intermediate conduit sections **14**. For purposes of illustration, one intermediate conduit section **14** is shown in the drawings. The conduit **12** provides a housing or outer body for the assembly **10** and preferably is substantially cylindrical in shape. The lower end of the conduit **12** has a cap **16** secured thereon to seal closed the lower end of the cylindrical cavity defined therein.

The conduits **13** and **14** are also preferably cylindrical and are designed to telescope within the conduit **12** of the assembly **10** with the longitudinal axes of the conduits **12** and **14** being concentric. The conduit **14** is formed to have a diameter smaller than the diameter of the inner cylindrical cavity defined within the conduit **12** and has a lateral projecting annular rim or flange **18** on its lower end which mates in fluid sealing relationship against an annular shoulder portion **20** formed on the upper end of the conduit **12**. The rim **18** and shoulder **20** prevent the intermediate conduit **14** from sliding out of the conduit **12**. The conduit **13** is mounted within the conduit **14** in substantially the same manner that the conduit **14** is mounted within the conduit **12**. An annular flange **22** is formed on the lower end of the conduit **13** to mate in fluid sealing relationship with a shoulder **24** formed on the upper end of the conduit **14** and the conduit **13** is dimensioned to fit within the cylindrical cavity formed within the conduit **14**.

Connected to the upper or outer end of the conduit **13** is a fountain head or nozzle **26** of any suitable type having spray openings **30** formed therein, selected ones of which are designated. The fountain head **26** functions to project water pumped through the conduit system provided by the communicating conduits **12, 13** and **14** from the holes **30** in a predetermined decorative pattern such as the water spray pattern **32** illustrated in FIG. **1**. It is noted that the fountain head **26** is preferably of an interchangeable type so that different water spray patterns may be provided by merely changing the fountain head being used. A seat **28** is formed in the upper end of the body of the conduit **12** for receiving the fountain head **26**. The fountain head **26** and the upper end of the conduit **12** are preferably both substantially flat so that the fountain head **26** when mated with or seated the seat **28** is flush with the upper end of the conduit **12**.

The fountain assembly **10** as illustrated in FIG. **1** is installed in the floor or bottom portion of a swimming pool. The pool floor structure is formed upon a layer of gunnite **34** reinforced with steel in the ground area **36** where the pool is being constructed. In order to accommodate the fountain assembly **10**, a well **38** having a

sufficient depth to receive the fountain assembly **10** is formed in the gunnite layer **34**. The assembly **10** is positioned in place in the well **38** in the true vertical and means for pumping water or another liquid into the cylindrical cavity of the conduit **12** are connected thereto. As shown in the drawings, these means include a stem pipe **40** which is connected through an inlet defined in the side of the conduit **12** to communicate with the interior thereof and a piece of piping or conduit **42** which is laid in the gunnite layer **34** and connected on one end to the stem pipe **40**. The piping **42** is connected at its other end with a source of pressurized liquid indicated by the arrow **46**, such as a valve controlled filter pump on a remote circulating pump. With the fountain assembly **10** properly positioned in the well **38**, i.e., with its longitudinal axis positioned to extend vertically, the finishing plaster **48** of the pool is poured over the gunnite layer **34** to fill the well **38** thereby to lock the fountain assembly **10** in position and form a pool floor which is flush with the upper end of the conduit **12**.

In describing the operation of the fountain assembly **10**, it is assumed that the assembly **10** is initially in its retracted position as shown in FIG. **3** with the pool floor **48**, the upper end of the conduit **12** and the upper surface of the fountain head **26** forming a flat bottom surface. To operate the fountain **10**, the liquid source designated by the arrow **46** is selectively operated to pump water under sufficient pressure into the pipe **42**. The pressurized water flows through the pipe **42** and the pipe stem **40** into the cavity of the conduit **12**. It is noted, as shown in FIG. **3**, that with the conduits **13** and **14** retracted into the conduit **12** that the fountain head **26** seated in the seat **28** makes a fluid seal at the upper end of the conduit **12**. Further, the annular flange **18** on the conduit **14** has a diameter smaller than the inner diameter of the conduit **12**. Therefore, the pressurized water entering the conduit **12** from the stem pipe **40** flows down the side wall of the conduit **12** past the flange **18** on the conduit **14** and then progresses upward through the lower ends of the conduits **14** and **13**. The boss **56** shown mounted on the cap **16** in FIG. **3** is provided to hold the lower end of the conduit **14** above the cap **16** so that water entering through the pipe **40** may gain access to the lower ends of the conduits **13** and **14** and exert pressure thereon. Since the water is under pressure, which is applied to the lower ends of both the conduits **13** and **14**, the conduits **14** and **13** are forced upward to their extended positions as shown in FIGS. **1** and **2**. With the conduits **14** and **13** maintained in their extended positions, the associated flanges and shoulders **18**, **20**, **22** and **24** are forced against each other forming tight fluid seals so that substantially all the water pumped into the fountain **10** is projected from the fountain head **26** to form the decorative spray **32**. It is noted that the lengths of the conduits **12** and **14** should be appropriately dimensioned so that when the fountain **10** is extended and in use the fountain head **26** is positioned just above the water line **50** in the pool.

To retract the fountain **10** to its storage position shown in FIG. **3**, the water source **46** is simply shut down to stop the supply of pressurized water to the fountain assembly **10**. With the supply of pressurized water stopped, the fluid seals provided by the shoulders and flanges **18** and **24** are broken since the water in the fountain **10** no longer exerts sufficient pressure to hold the flange **18** against the shoulder **20** and the flange **22** against the shoulder **24**. Gravity then acts to pull the conduits **13** and **14** downward, and the water in the fountain **10** bleeds or leaks out the upper ends of the conduits **12** and **14** to permit the fountain **10** to settle back to its retracted position. It is noted that the lengths of the conduits **13** and **14** are made slightly shorter than that of the conduit **12** in order to permit the complete retraction of the conduits **13** and **14** into the conduit **12**. Additionally, it is noted that the coupling or fit between the upper end of the conduit **12** and the cylindrical outer wall of the conduit **14** and between the upper end of the conduit **14** and the cylindrical outer wall of the conduit **13** are deliberately made to be somewhat loose or sloppy so as to permit the water in the fountain **10** to readily leak out the tops of the conduits **12** and **14** once the supply of pressurized water to the fountain **10** is stopped. It is this construction permitting the leaking of the seals formed by the shoulders and flanges **18** and **24** which provides the means which function to retract the fountain **10** once the pressurized water supply **46** is selectively turned off.

In the construction of an exemplary fountain assembly **10** for installation in a swimming pool at a point where the water depth was 3½ feet, a fountain unit was constructed to have a length of slightly over 2 feet when retracted and almost 6 feet when extended. Thereby, a fountain assembly was constructed which was dimensioned so that its fountain head **10** would be positioned when extended just above the pool water line **50**. A pump was used in this installation which supplied water at 12 pounds of pressure, which pressure was found to be sufficient to extend the conduit sections **13** and **14** of the fountain assembly **10** and provide a water spray of the pattern **32** shown in FIG. **1** having an optimum height of 8 feet and a radius of 5 to 6 feet.

It is noted that various modifications may be made in the exemplary fountain assembly in the spirit of the present invention. For example, in shallow pools, it may be desirable to omit the intermediate conduit section **14** and employ only one telescoping section, i.e., the upper conduit section **13**. Alternately, in extremely deep pools, it may be desirable to incorporate several intermediate sections **14** in the fountain assembly.

Concerning the material used in the construction of the fountain assembly, any suitable material may be employed which will form conduits of sufficient rigidity to be extendable vertically upward from a pool bottom with a fountain head mounted thereon. The conduit material, however, should be no heavier than necessary in order to minimize the liquid pressure necessary to force the fountain assembly to its extended position. Also, other types of equivalent means may be conceivably used for selectively extending and retracting the fountain.

Thus, there has been provided an improved fountain assembly characterized by being selectively extendable to an operative position and retractable to a storage position which is suitable for installation in the floor of a swimming pool since when retracted to its storage position the fountain assembly is flush with pool bottom. Thereby, diving and swimming hazards are

eliminated from the pool when the fountain is not in use.

Although we have herein shown and described our invention in what we have conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of our invention.

We claim:

1. A fountain assembly, comprising: fountain head means having a top and bottom portion for spraying liquid received under pressure through its bottom portion out its top portion in a selected spray pattern, said top portion of said fountain head means defining a flat surface;

a cylindrical inner conduit having open top and bottom ends, said inner conduit having its top end secured to the bottom portion of said fountain head means and defining a liquid conducting channel between its top and bottom ends in liquid conducting communication with said fountain head means;

an annular flange of selected diameter formed around the outer periphery of the bottom end of said inner conduit to extend radially therefrom;

an outer conduit having a wall portion and open top and bottom ends, the wall portion of said outer conduit defining a cylindrical liquid conducting channel between its top and bottom ends of a selected diameter larger than the diameter of said annular flange, said inner conduit having its bottom end inserted within the cylindrical channel defined by said outer conduit and said outer conduit being dimensioned longitudinally to receive said inner conduit whereby said inner conduit may be extended from or retracted into said outer conduit, said outer conduit having an inlet defined in its wall portion;

first structure means closing the bottom end of said outer conduit in a liquid tight seal;

second structure means mounted on the top end of said outer conduit having a flat upper surface and defining in communication with the liquid conducting channel of said outer conduit an opening through which said inner conduit may be extended from and retracted into said outer conduit, said second structure means also defining an upwardly opening seat recessed below its flat upper surface designed to mate with the bottom portion of said fountain head means in a liquid sealing relationship by engaging and supporting said fountain head means with its flat top surface aligned flush with the flat upper surface of said second structure means, said seat being positioned above said first structure means a predetermined distance greater than the length of said inner conduit whereby engagement of said fountain head means by said seat holds the lower end of said inner conduit above said first structure means so that liquid can flow thereunder;

third structure means for engaging said annular flange to stop the extension of said inner conduit in a selected extended position and form a liquid tight seal between the liquid conducting channels of said inner and outer conduits, said third structure means including at least one intermediate conduit loosely coupling said inner and outer conduits together in a telescoping relationship so that liquid may bleed out of said fountain assembly through the loose coupling whenever said inner conduit ceases to be maintained in its extended position by pressurized liquid received through said inlet, said third structure means additionally including a shoulder formed on said intermediate conduit adjacent said inner conduit to mate with said annular flange to form a liquid tight seal between said inner and intermediate conduits whenever said inner conduit is maintained in its extended position by pressurized liquid received through said inlet, said third structure means also including shoulder and flange means formed on said intermediate and outer conduits to mate with each other to form liquid seals between said intermediate and outer conduits whenever said inner conduit is maintained in its extended position by pressurized liquid received through said inlet, said third structure means further including structure for holding said intermediate conduit above said first structure means closing the bottom end of said outer conduit so that liquid may flow thereunder; and

means for connecting said outer conduit through said inlet in its wall portion to a source of pressurized liquid whereby pressurized liquid received through said inlet operates to extend said inner conduit to its extended position by flowing under the bottom end of said inner conduit through the liquid conducting channel of said inner conduit out said fountain head means.

2. A fountain assembly, comprising: fountain head means having a top and bottom portion for spraying liquid received under pressure through its bottom portion out its top portion in a selected spray pattern, said top portion of said fountain head means defining a flat surface;

a cylindrical inner conduit having open top and bottom ends, said inner conduit having its top end secured to the bottom portion of said fountain head means and defining a liquid conducting channel between its top and bottom ends in liquid conducting communication with said fountain head means;

an annular flange of selected diameter formed around the outer periphery of the bottom end of said inner conduit to extend radially therefrom;

an outer conduit having a wall portion and open top and bottom ends, the wall portion of said outer conduit defining a cylindrical liquid conducting channel between its top and bottom ends of a selected diameter larger than the diameter of said annular flange, said inner conduit having its bottom end inserted within the cylindrical channel defined by said outer conduit and said outer conduit being dimensioned longitudinally to receive said inner conduit whereby said inner conduit may be extended from or retracted into said outer conduit, said outer conduit having an inlet defined in its wall portion;

first structure means closing the bottom end of said outer conduit in a liquid tight seal;

second structure means having a flat upper surface mounted on the top end of said outer conduit defining in communication with the liquid conducting channel of said outer conduit an opening through which said inner conduit may be extended from and retracted into said outer conduit, said second structure means also defining an upwardly opening seat recessed below its flat upper surface designed to mate with the bottom portion of said fountain head means in a liquid sealing relationship by engaging and supporting said fountain head means with its flat top surface aligned flush with the flat upper surface of said second structure means, said seat being positioned above said first structure means a predetermined distance greater than the length of said inner conduit whereby engagement of said fountain head means by said seat holds the lower end of said inner conduit above said first structure means so that liquid can flow thereunder;

third structure means for engaging said annular flange to stop the extension of said inner conduit in a selected extended position and form a liquid tight seal between the liquid conducting channels of said inner and outer conduits; and

means for connecting said outer conduit through said inlet in its wall portion to a source of pressurized liquid whereby pressurized liquid received through said inlet operates to extend said inner conduit to its extended position by flowing under the bottom end of said inner conduit through the liquid conducting channel of said inner conduit out said fountain head means.

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