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POOL CLEANING DEVICE

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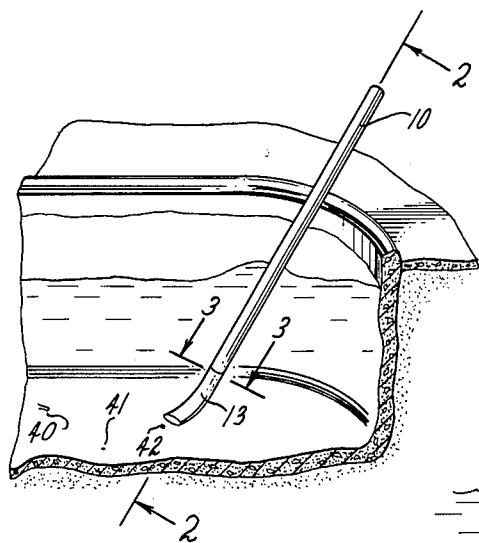


fig. 1

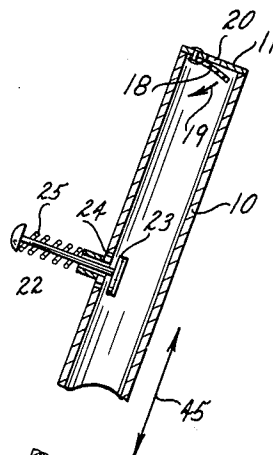
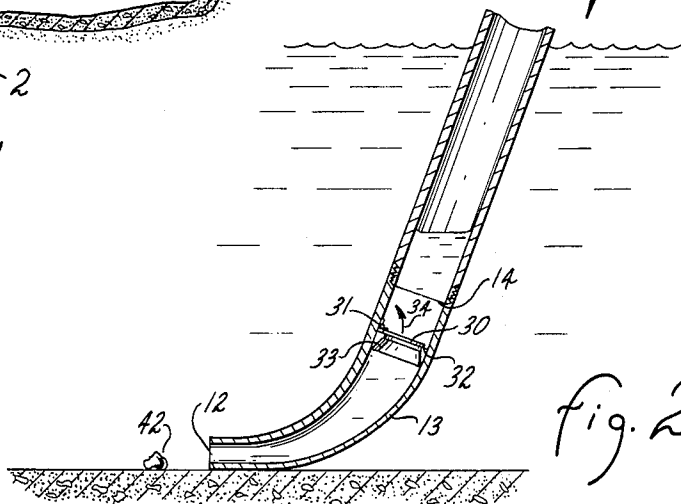


fig. 2

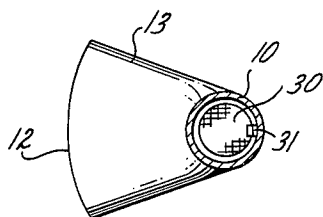


fig. 3

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POOL CLEANING DEVICE

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3 Claims. (Cl. 15—1.7)

The present application pertains to pool cleaning devices, and more specifically, to a pool cleaning device particularly adapted for retrieving specific objects that have fallen into the pool and rest on the bottom thereof.

Pool cleaning apparatus usually includes the utilization of vacuum devices connected to the recirculating pool pump. The pools are customarily brushed and vacuumed at periodic intervals to insure debris and dirt have been thoroughly removed from the walls and bottom of the pool. In those instances where specific objects such as hair pins, coins, insects that have become saturated and rest on the bottom of the pool, pebbles, etc., are to be removed, it is extremely cumbersome to assemble the vacuuming equipment merely to remove a few of these items. Also, it is not always convenient to attempt to recover these articles by swimming after them—it is extremely infeasible to put on a bathing suit merely to retrieve a pebble or a hair pin.

It is therefore an object of the present invention to provide a pool cleaning device that is readily portable and easily operated to retrieve small articles from the bottom and sides of the pool.

It is another object of the present invention to provide an inexpensive and dependable pool cleaning device that requires no attachment and may readily be manually operated.

It is still another object of the present invention to provide a pool cleaning device specifically adapted to retrieve small articles from the bottom of the pool by entrapping the articles on a screen or mesh.

Other objects and advantages of the present invention will become apparent to those skilled in the art as the description thereof proceeds.

Briefly, in accordance with one embodiment of the present invention, a tubular member is provided having an open end and a closed end. The closed end is provided with a unidirectionally openable air supply valve to permit air to enter the tube but prevent air from escaping. The open end of the tube is flared and is detachably secured to the remainder of the tube. A unidirectionally openable screen or wire mesh is secured proximate the open end of the tubular member and is arranged to move out of the way of incoming debris and water entering the tube from the open end. A venting valve, positioned remote from the open end of the tube, is provided to permit the operator to control the flow of water into the tubular member. The present invention may more readily be described by reference to the accompanying drawings in which:

FIGURE 1 is a schematic illustration of a pool cleaning device constructed in accordance with the teachings of the present invention and shown lowered into a swimming pool in an operating position.

FIGURE 2 is a cross-sectional view of the pool cleaning device of FIGURE 1 taken along line 2—2.

FIGURE 3 is a cross-sectional view of the pool cleaning device shown in FIGURE 1 taken along line 3—3.

Referring to the drawings, the present invention contemplates the utilization of a tubular member 10 which, in the embodiment chosen for illustration, is of cylindrical form. It will be obvious to those skilled in the art that a variety of cross-sectional forms may be used to implement the teachings of the present invention without resorting to the cylindrical form shown in the drawings. The tubular member includes a closed end 11 and an open end

12. The open end 12 includes a flared member 13 which is detachably secured, such as by screw threads, to the straight portion of the tube 10 such as shown at 14. In the embodiment chosen for illustration, the closed end 11 of the tubular member 10 includes a unidirectionally openable air supply valve 18 which, in the drawings, is shown as a simple, flexible member riveted to the inside of the tube in such a manner as to be able to flex in the direction of the arrow 19 to admit air to the interior of the tube 10 through an opening 20. The same valve, depending on the internal pressure within the tube 10, may close against the end 11 and prevent the escape of air through the opening 20. The present invention may readily be practiced without the utilization of the valve 18 as will become apparent when the description of operation is given.

A venting valve 22 is positioned remote from the open end 12 of the tube 10 and permits communication of air into and out of the interior of the tube 10. The valve chosen for illustration includes a gasket 23 which is spring-urged against openings 24 in the tube 10 by a coil spring 25.

A unidirectionally openable screen or wire mesh 30 is pivotally attached to the interior of the tube 10 at 31 and abuts the shoulder 32 of a stop member 33. The screen 30 is thus free to pivot upwardly as indicated by the arrow 34 but is restrained from moving downwardly past the shoulder 32. The description of operation of the embodiment shown in the accompanying drawings will be given assuming valves 22 and 18 are in the closed position and that the tube 10 contains no water and has not been inserted into the swimming pool.

It will also be assumed that debris such as a hair pin 40 and pebbles 41 and 42 are to be removed from the pool. The tube 10 is inserted into the pool in a manner suggested by FIGURE 1. Since both valves 22 and 18 are closed, air is trapped within the tube and water cannot enter the open end 12 (except to the extent that the air within the tube may be compressed by the pressure of the water). The flared member 13 is positioned so that the opening 12 is adjacent the pebble 42. The valve 22 is opened by compressing the spring 25 to thus permit air to escape through the openings 24. Water thus rushes into the opening 12 into the tube with a force depending on the depth of the water from the top of the pool to the pebble 42 and the depth of the water inside of the tube 10. The water rushing into the tube carries the pebble with it; the rushing water also causes screen 30 to pivot about the pivot 31, as indicated by the arrow 34, thus admitting the pebble 42 to the interior of the tube 10. The valve 22 may then be closed by permitting spring 25 to expand, thus closing the openings 24. Since air is once again trapped within the tube, no further water will be admitted to the interior of the tube and the screen 30 will pivot by gravity back to its original position against the shoulder 32. The pebble 42, having been forced into the interior of the tube 10 will then be trapped inside the tube together with the water admitted during the previously described operation.

The above operation may be repeated until the water level within the tube 10 closely approximates the level of the water in the pool. When the tube 10 is withdrawn from the pool, water is permitted to flow through the screen 30 by virtue of the fact that the valve 18 will automatically open to uncover the opening 20 and admit air to the top of the tube. The debris such as pebble 42 will be unable to pass through the screen 30 and will thus be trapped within the tube. The debris may readily be removed by detaching the flared end 13 from the straight portion of the tube. An interesting feature of the present invention resides in the fact that the water within the tube

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may be removed without completely removing the tube from the pool. When the tube contains water and extends into the pool as shown in FIGURE 1, a quick "jog" in the direction indicated by the arrow 45 will impart acceleration to the water contained in the tube; since the water moving in accordance with the "jog" will have substantial inertia, the quick reversal of the axial motion of the tube during the "jog" will result in the expulsion of the water since it can only move outwardly of the tube and not inwardly (remembering that the valve 18 will permit air to enter but not exit from the tube 10). Thus, the tube may effectively be emptied of water while it extends into the pool merely by rapidly jogging the tube as described above.

It will now be apparent to those skilled in the art that the present invention may be practiced without the use of the valve 18. Air may be admitted into or may be permitted to exit from the tube 10 merely through the proper use of the valve 22. Thus, when it is desired to permit water to escape from the tube 10, the coil spring 25 is compressed to permit air to enter the tube through the openings 24. When it is desired to permit water to enter the tube, the same valve may be opened in the same manner while the tube is held in an appropriate position.

The present invention thus provides an inexpensive and convenient means for retrieving small articles from the bottom of a pool without the necessity of connecting vacuum pipes, reversing pump motors, etc., or other time-consuming and bothersome tasks. It will be obvious to those skilled in the art that many modifications may be

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made in the present invention without departing from the spirit and scope thereof.

I claim:

1. A pool cleaning device comprising: a tubular member having an open end; a unidirectionally openable screen member positioned in said tubular member proximate to said open end and adapted to move out of the way of debris being carried into said tubular member by inflowing liquid; a closable opening in said tubular member positioned remote from said open end to permit the passage of air to and from said tubular member.

2. A pool cleaning device comprising: a tubular member having an open end and a closed end, said closed end including an air supply valve to permit air to enter said tubular member but not permit air to leave said tubular member; a screen member pivotally attached within said tubular member proximate said open end and adapted to pivot out of the way of debris being carried into said tubular member by inflowing liquid; a closable opening in said tubular member positioned remote from said open end to permit exit of air from said tubular member.

3. A pool cleaning device as defined in claim 2 wherein said opened end includes a detachable flared member.

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