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[54] **POOL SKIMMER**
11 Claims, 4 Drawing Figs.

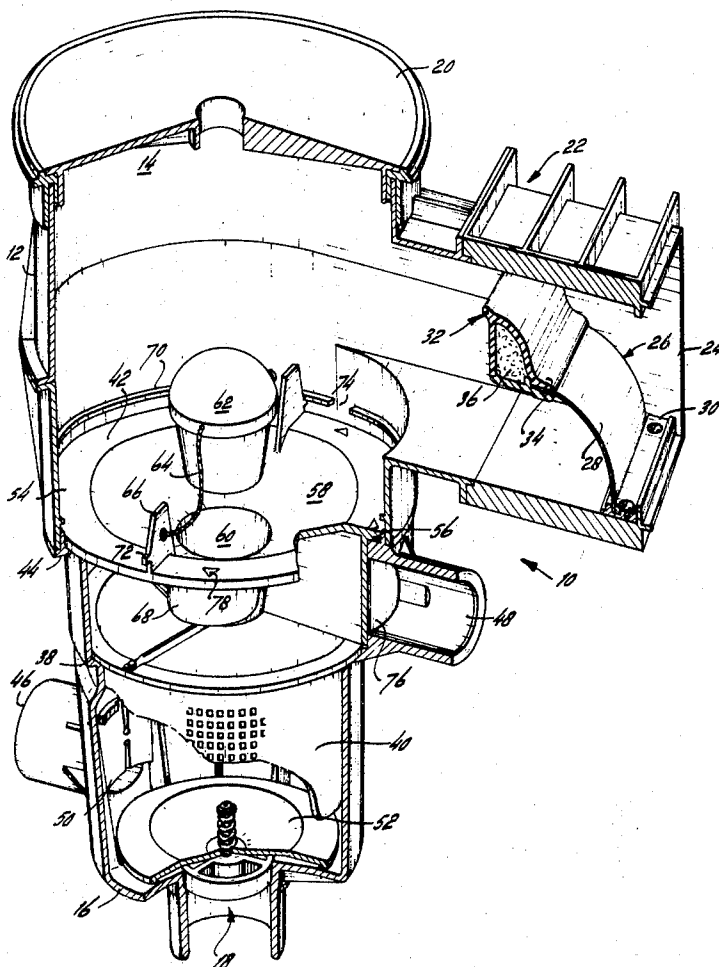
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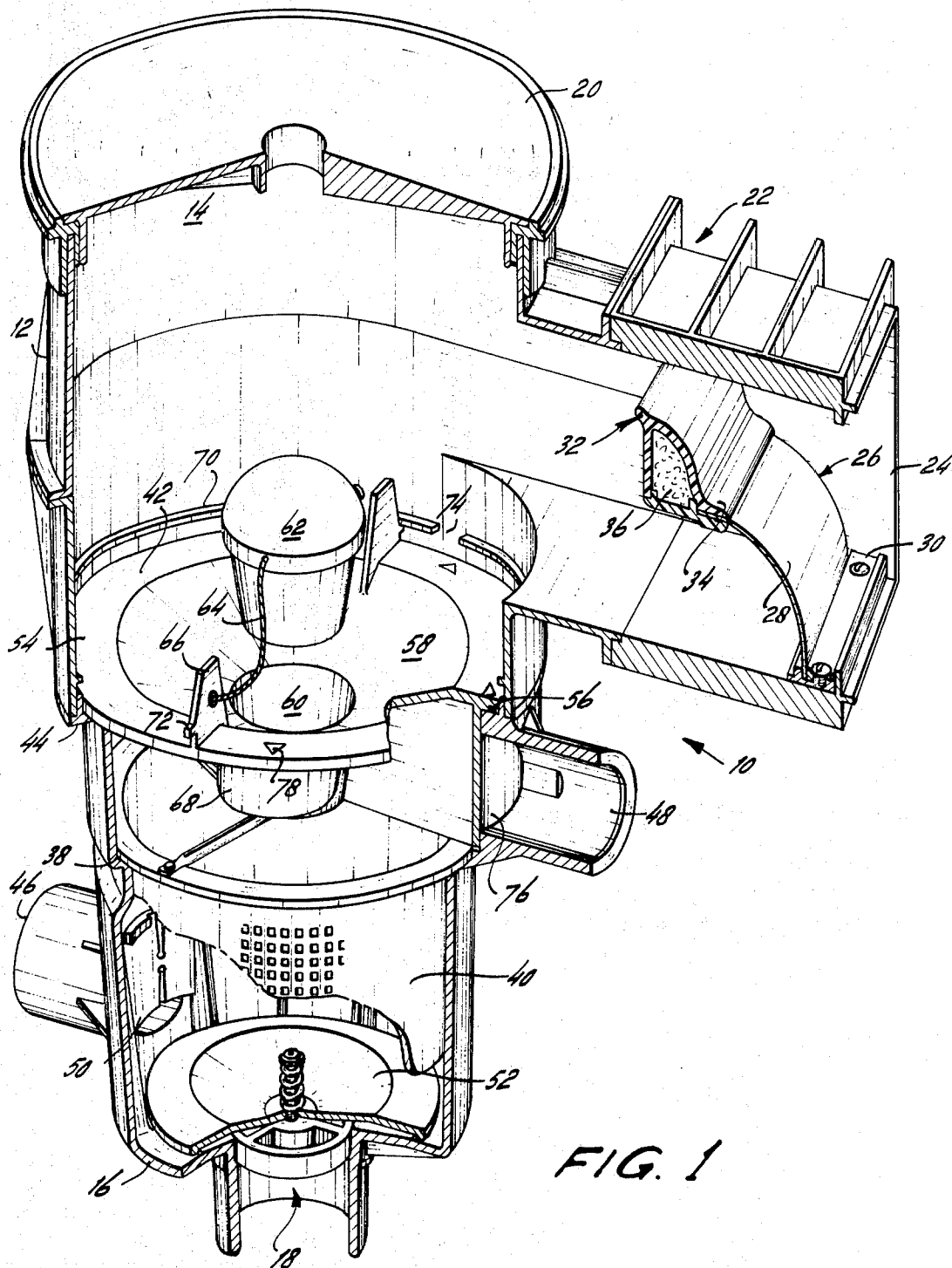
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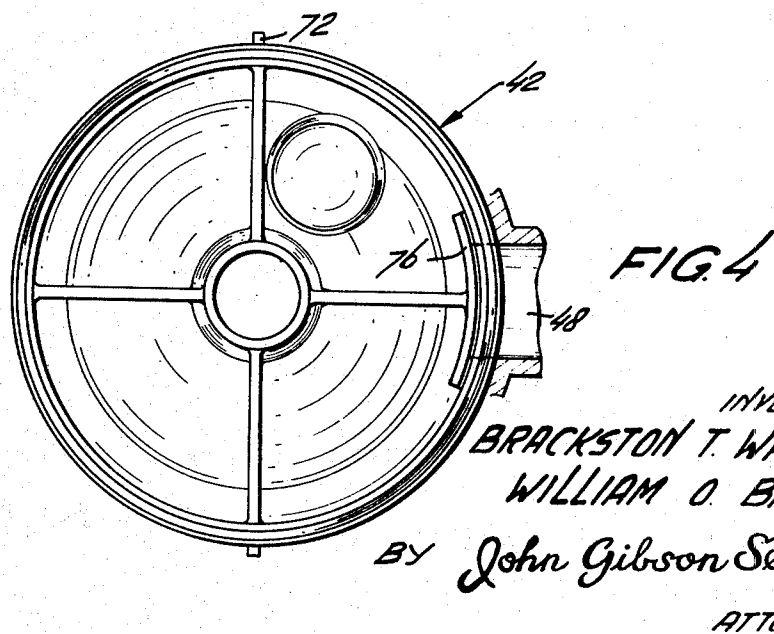
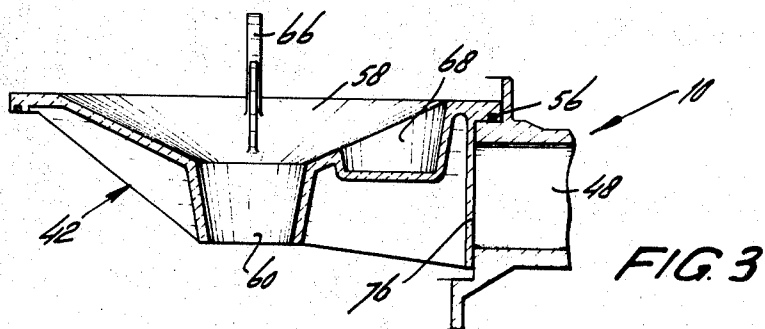
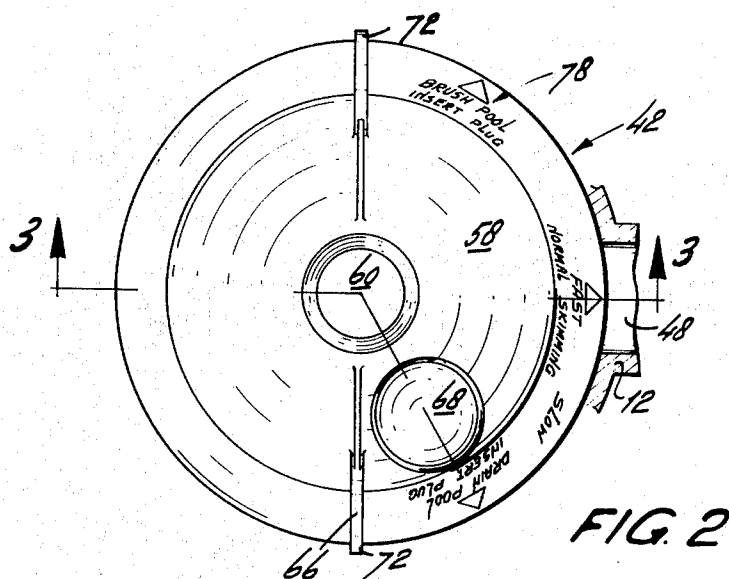
ABSTRACT: A pool skimmer and the like including a skimmer assembly adapted for use with residential and commercial installations with means for selectively operatively connecting various lines and apparatus in a system for liquid surface skimming, vacuuming and liquid draining having means for cleaning and filtering pool liquid for reuse thereof, wherein means are provided for simplifying establishing all necessary conduit connections for main outlet plumbing, skimmer plumbing and vacuum connections, the assembly including selectively usable and operable control and vacuum plate and float stopper to establish desired operating conditions.





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POOL SKIMMER

BACKGROUND OF THE INVENTION

Heretofore skimming apparatus and systems have been used in connection with swimming pools and the like adapted to permit varying operations with respect to operation and maintenance of a pool. The apparatus and system are normally operable for filling or draining a pool and additionally provide for liquid surface skimming, pool brushing and pool vacuuming with means in the system for cleaning and filtering pool liquid to permit reuse thereof. Such systems and apparatus are well known in the art but in most such installations have required complex conduit systems and laborious and distasteful operations were required to switch from one operating condition to another or for setting up the apparatus for any given phase or type of operation. Such operations include for example manually closing or opening of various conduit outlets from a skimmer body by manipulation of removable closures, some of which necessitated immersion of a hand into a skimmer assembly for removal of a strainer basket and proper insertion of plugs and/or removal thereof and interchanging from one conduit opening to another.

SUMMARY OF THE INVENTION

It is accordingly a principal feature of the present invention to provide a pool skimmer and the like including a skimmer assembly having a plurality of conduit or line openings therein and which includes a selectively operable and usable control and vacuum plate which can be simply operated to selectively partially or completely close one conduit opening from the skimmer assembly by a simple operation of rotating a plate and a float stopper is coactable with the plate and operable to open or close an inlet into the skimmer assembly from a surface skimmer portion of the construction. Means are also incorporated whereby the skimmer body can be incorporated in either residential or commercial pool establishments or installations with varying structures as required for operating under these conditions. Utilization of the assembly and its construction minimize required conduits in the system and the various connections required for all functions of maintaining a pool with respect to liquid filling or draining and cleaning thereof for normal operations are incorporated in and through a single fixture.

The present invention while overcoming undesirable features or characteristics of heretofore known constructions also provides a highly simplified and compact unit susceptible of easy and rapid operation to place in condition for varying phases of operation as normally required in connection with pools and systems therefore. While a preferred embodiment of the invention will be specifically described with reference to swimming pools including residential and commercial types, the skimmer is adapted for wider usage in connection with any form of contained liquid bodies such as ponds, lakes, etc., where analogous operations are desirable.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view, parts being broken away, of a skimmer assembly in accordance with the present invention;

FIG. 2 is top plan view of a control and vacuum plate as incorporated in the invention;

FIG. 3 is a vertical sectional view taken on line 3-3 of FIG. 2; and

FIG. 4 is a bottom plan view of the control and vacuum plate.

Referring now in more detail to the drawings, there is shown a skimmer assembly generally designated 10 adapted for installation in a normal manner in the concrete or the like surrounding a swimming pool and/or connection with the various conduits incorporated in such a system and leading to a pump and filter assembly of a known type. The skimmer assembly 10

includes a generally cylindrical skimmer body 12 of any desired material preferably of plastic and having an open top 14 and a bottom 16 which can be formed, preferably, with an equalizer inlet, generally designated 18 which is utilizable in connection with multiple skimmer installations such as most normally found in public pool installations, and which as will be hereinafter pointed out can be rendered inoperable when the invention is used for residential pool installations. A closure lid 20 of a standard removable type is adapted to close open top 14. A skimmer throat 22 is formed as a projecting extension on skimmer body 12, opening into the interior of the assembly and having a surface skimming inlet opening 24 which, as in normal practice, is located in the pool construction so as to open through a sidewall thereof and is so placed as to be partially immersed in liquid in the pool under normal operating conditions. A weir generally designated 26 includes a weir spring hinge 28 consisting of metal or plastic, secured in skimmer throat by securement means 30 in proximity to opening 24. The upper end 32 incorporates a weir block 34 with weir fill material 36 therein which serves to weight the upper free end of the weir hinge to facilitate operation in conjunction with water flow thereover. Preferably the material of weir block 34 has a specific gravity such that in conjunction with the tension of the weir spring 28 operates to permit surface liquid or water flow and is sufficient to maintain a differential liquid level to insure substantially continuous high velocity surface skimming irrespective of normal variations of liquid level. It is to be understood that in lieu of the shown and described type of weir, a floating weir of a known type can be used or other forms of spring tension weir blocks can be incorporated.

The skimmer body 12 is provided with an interior lower flange 38 adapted to removably support a strainer basket 40 in a usual manner. A removable control and vacuum plate generally designated 42, the construction of which will be hereinafter set forth in detail, is supported on interior upper flange 44. A pump suction outlet 46 is provided on skimmer body 12 and a skimmer inlet 48 likewise opens into the skimmer body. The outlet 46 is in proximity to the bottom of the skimmer body in a region within the extremities of strainer basket 40 and is provided with a flow balance slide valve 50 and which is installed for use in connection with commercial pools or where multiple skimmers are installed requiring an equalizer line. This slide valve can be used to control flow from each of the plurality of skimmers to establish a balanced flow from each skimmer. While this slide valve is normally not required for residential pool installations it is incorporated in the present construction so as to render the device operable for both residential and commercial installations and can be used as desired. Equalizer inlet 18 is adapted to be closed by a spring loaded equalizer valve 52 when the invention is to be installed on commercial pools or where multiple skimmers are installed requiring an equalizer line. When using the device for residential pools, this equalizer valve can be omitted and the opening closed by a plug of any desired construction as will be obvious. Operation of the equalizer valve will be obvious and when utilized in commercial applications will permit adequate water to pump under limited flow rates, such as for example, up to 25 gallons per minute. If higher flow rates are required the control and vacuum plate, as will be described hereinafter, is necessary to create a positive circuit utilizing mechanism serving as a low water seal.

The control and vacuum plate 42 includes a rim 54 having in proximity to its outer periphery sealing means such as an O-ring 56 engageable with the upper surface of flange 44. An inner portion of the plate is preferably or desirably of truncated conical configuration as indicated at 58 in the nature of a funnel. A tapered opening 60 is provided opening into the strainer basket 40. A float stopper 62 is secured to plate 42 by means of a cord or the like as shown at 64, attached at its free end to a hand ear 66 on the upper surface of the plate. The plate is also provided with a float stopper holder 68, the operation of which will be described hereinafter. The float can

under differing conditions of operation be free to float in liquid entering the skimmer assembly from the pool and/or settle, when liquid is low, into opening 60 or selectively be placed in holder 68. A retainer ring 70 is provided in vertically spaced relationship to upper flange 44 in the skimmer body and coacts with retainer lug 72 to hold the plate in the installed position as shown in FIG. 1 and to effect a seal therebetween and the body as will be obvious. An opening 74 is provided in ring 70 to permit insertion or removal of the plate in an obvious manner.

A trimmer valve shoe 76 is formed as a partial or segmental depending flange on the plate adapted to partially or completely close the skimmer inlet 48 upon rotation of the plate by means of the hand gears 66 without an operator being required to deeply immerse his hand into liquid in the skimmer assembly. The shape and dimensions of the shoe 76 will be more readily apparent from the showing thereof in FIGS. 3 and 4. The upper surface of the control and vacuum plate 42 is provided with indicia as indicated at 78 which facilitates rotation of the plate for different phases of operation in pool servicing and maintenance. The indicia are more or less self-explanatory and will be more readily understood from the following descriptive material. The control and vacuum plate is preferably constructed of an optically clear material to permit viewing the strainer basket. A vacuum hose connection is establishable through tapered opening 60 with the trimmer valve shoe 76 closing skimmer inlet 48 thereby creating a direct circuit from the aperture through the strainer basket 15 and thence through pump suction outlet 46. The valve shoe is made a part of the control and vacuum plate in such a manner that flow from the main outlet through inlet 48 can be metered or closed off entirely by a simple rotation of the control and vacuum plate.

The control and vacuum plate can create a seal operating for sealing off the upper throat section and upon insertion of float stopper 62 and rotation of plate 42 will open skimmer inlet 48 whereupon all of the flow will be drawn from inlet 48 for brushing the pool or for lowering the pool water level or for draining the pool without the necessity or use of extra valves such as in known installations and all of the water will pass through the basket 40.

The buoyant float stopper 62 during normal operation permits flow of surface waters traveling over weir block 34 to enter the opening 60, through the strainer basket, through pump suction outlet 46, and should water level in the pool drop below an effective skimming level whereby water level in the throat section lowers drastically, the float stopper will be drawn into the opening 60 creating a sealed circuit from skimmer inlet 48 through strainer basket to pump through suction outlet 46. In normal operation, water from the pool surface is drawn through opening 60 while a lesser amount is drawn through inlet 48.

The means providing retention of the control and vacuum plate permits, by retaining ring 70, rotation while preventing the plate from being dislodged by air bubbles or air buoyancy of the plate when the pump is not in operation. The stopper holder 68, integral with the plate, permits insertion of and securement therein of the float stopper during vacuuming operation or when not in use for any reason.

It is believed that operation of the present invention will be obvious from foregoing description to permit the desired functions of the skimmer assembly in a pool system for the various desired maintenance and operating phases or operations.

Manifestly changes in details of construction can be effected in the apparatus as shown and described without departing from the spirit and scope of the invention as defined in and limited solely by the appended claims.

We claim:

1. A pool skimmer and the like comprising:

A. a skimmer body;

B. a surface liquid weir operably opening into said skimmer body;

C. a removable strainer basket positioned in said body below said weir;
D. a pump outlet port in said body adjacent said basket;
E. a skimmer inlet port in said body above said basket;
F. a control and vacuum plate rotatably supported above said inlet port and having an opening therethrough;
F₁. a trimmer valve shoe depending from said plate;
G. means for selectively closing said plate opening; and said valve shoe, upon rotation of said plate, selectively partially or completely opening or closing said skimmer inlet port.

2. A pool skimmer as claimed in claim 1, and including seal means between said plate and said body for sealing off an upper portion of said body into which said weir opens from a lower portion of said body, in conjunction with closure of said plate opening by the closure means therefor, and wherein upon rotation of said plate to open said skimmer inlet all liquid flow will be drawn through said skimmer inlet when brushing a pool, or lowering pool water level or draining a pool, with all water passing through said strainer basket.

3. A pool skimmer as claimed in claim 1, said plate opening closure means comprising a buoyant float stopper floatingly attached to said plate and operable during normal pool operation to permit flow of surface waters traveling over said weir to flow through said plate opening, through said strainer basket and through said pump outlet port, and further being so operable when water level in a pool drops below an effective skimming level whereby water level in said body lowers drastically, that said float stopper is drawn into said plate opening, thereby creating a sealed circuit from said skimmer inlet port through said strainer basket and through said pump outlet port.

4. A pool skimmer as claimed in claim 3, said plate opening being tapered, and said buoyant float stopper being of a corresponding configuration and size, facilitating positive sealing engagement with said opening and being operable upon lowering of water level in said body to automatically seat in said tapered opening.

5. A pool skimmer as claimed in claim 4 and further including a float stopper holder in said plate in which said float stopper may be securely wedged during pool vacuuming operations or when otherwise not in use.

6. A pool skimmer as claimed in claim 2, and further including a retaining ring in said body for coaction with said plate to lock said plate in position, while permitting rotation thereof, and serving to prevent plate dislodgment by air bubbles or plate buoyancy during inoperable pump conditions.

7. A pool skimmer as claimed in claim 1, said plate opening being adapted for establishing a vacuum hose connection therethrough, and with said trimmer valve shoe closing said skimmer inlet port creating a direct circuit from said plate opening through said strainer basket and through said pump outlet port.

8. A pool skimmer as claimed in claim 1, said body having an equalizer inlet in the lower end thereof, a spring loaded equalizer valve in said equalizer inlet, a flow balance slide valve in said body slidably juxtaposed over said pump suction outlet, said flow balance slide valve being operable to meter and control flow from a plurality of skimmers to establish a balanced flow from each skimmer.

9. A pool skimmer as claimed in claim 8, said flow balance slide valve being operable to regulate flow through said skimmer in conjunction with controlled flow through said skimmer inlet.

10. A pool skimmer as claimed in claim 1 wherein said control and vacuum plate is constructed of optically clear material for permitting visual inspection therethrough of said strainer basket.

11. A pool skimmer as claimed in claim 1, said control and vacuum plate and said body having coactable indicia thereon to visually indicate different operating positions of said plate and said trimmer valve shoe.