ABSTRACT OF THE DISCLOSURE

A strainer apparatus including a strainer element in the shape of an open-top basket, which basket is mounted within the mouth of a swimming pool floor drain by means of a support lip attached to the top of the basket. A solid, disc-shaped lid is connected to the top of the basket in spaced-apart relative relationship to the support lip, thus defining an annular entrance channel. The purposes of the lid (and of the annular entrance channel defined thereby) are to (1) hide the debris caught in the strainer basket, (2) minimize any chance of losing debris from the basket when it is lifted out of the pool, and (3) act as a flow-directing means to cause the water entering the drain to pick up any debris deposited on the floor of the swimming pool in the region adjacent to the drain. The lid is removable secured to the basket by a screw, the screw including a relatively large ring handle which can be easily hooked in order to raise the strainer for cleaning purposes.

BACKGROUND OF THE INVENTION

The field of the invention

This invention relates to strainers and in particular to a strainer screen or grating for use in the floor drain of a swimming pool.

Description of the prior art

Flat, disc-shaped strainers, are conventionally used in swimming pool floor drains, and have several disadvantages associated with their use. For one thing, since such strainers have only a limited surface area, frequent cleaning is necessary to assure free flow through the water circulating system of the pool. Further, since the known strainers are readily visible from the surface of the pool, the debris deposited thereon forms an eyesore in an environment one of the main purposes of which is to provide an aesthetically pleasing scene. This eyesore problem is aggravated by the fact that the water on the floor of the pool adjacent to the drain is in a relatively stagnant area, such that any debris deposited there is likely to remain. Further, it is difficult to completely clean such previous strainers by the usual vacuum cleaning method. If it were attempted to raise such a strainer to the surface, by means of a long pole for example, since the strainer is flat much of the deposited debris would fall or be washed off in the process.

SUMMARY OF THE INVENTION

The strainer and flow-directing means of the present invention includes a strainer element made in the shape of an open-top cylindrical basket, the side and bottom walls of which are constructed as screens or gratings. Connected to the top edge of the side wall of the basket is a flat, ring-shaped, solid support lip projecting radially outwardly a predetermined distance. The basket is of such a size that it fits completely into the floor drain of the swimming pool. Since the support lip is larger than the drain opening, the support lip maintains the basket at the entrance to the drain. A lid, in the form of a solid disc provided with a plurality of leg spacers, is secured to the basket in spaced, parallel relationship to the support lip. The circumference of the lid is approximately equal to that of the support lip. The lid and the support lip form an annular entrance channel (of a height determined by the length of the leg spacers) to the interior of the strainer basket. A central support post extends upwardly from the bottom of the basket and terminates just above the support lip (a distance equal to the length of the leg spacers). A screw, integrally connected to a relatively large ring handle, extends through a central hole in the lid and screws into an internally threaded portion of said post. The screw is readily visible from the surface of the pool and can be hooked in order to remove the basket for cleaning purposes.

It is thus an object of this invention to provide a swimming pool floor drain strainer which can be easily, quickly and simply brought to the surface of the pool, which can be brought to the surface without losing any of the collected debris (the lid prevents any loss), which has an aesthetically pleasing appearance especially since, when mounted in position, it hides the debris caught by the filter element, which provides an enlarged filtering area whereby the cleaning of the strainer element does not have to be done as often, and which is designed as a flow-directing means to cause the water entering the floor drain to move along the floor of the swimming pool and pick up any debris deposited thereon in the region adjacent to the drain.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a cross-sectional view through the strainer of the present invention shown installed in a swimming pool floor drain; FIGURE 2 is a perspective view showing the assembled strainer; FIGURE 3 is an exploded perspective view showing the three components of the strainer; FIGURE 4 is a sectional view taken on line 4—4 of FIGURE 2, showing the lid of the strainer basket; and FIGURE 5 is a vertical cross-sectional view taken on line 5—5 of FIGURE 4 showing the construction of the strainer basket of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the figures, the strainer apparatus and flow-directing means 2 of the present invention is made in three parts, a strainer basket 4, a flow-directing lid 6 and a screw 8 for removably connecting the lid 6 to the basket 4. The strainer 2 is constructed so as to be mounted within the opening of a drain 12 in the floor 10 of a swimming pool, as shown in FIGURE 1.

The strainer basket 4 comprises a cylindrical side wall 14, a bottom wall 16, a support lip 18 connected to the top edge of the side wall 14, and an axial support post 20. The post 20 is internally threaded at its upper end 22 in order to receive the screw 8.

As FIGURES 4 and 5 illustrate, both the side wall 14 and the bottom wall 16 have evenly spaced, perpendicular rows of substantially identical, square openings 23. The mesh size of the strainer walls 14 and 16 is approximately three openings per linear inch with a percentage open area of about sixty percent. Other suitable screens, gratings and opening patterns having the above mesh sizes and percentages of open area can be employed in place of the one illustrated and described herein.

The flow-directing lid 6 comprises a solid (imperforate), disc-shaped section 24 having a central opening 25 to accommodate the screw 8, and an outer solid ring section 26 which inclines upwardly from the lip 18 to provide an annular entrance channel 32 between the lid 6 and the lip 18.

The walls of channel 32 are thus inwardly convergent, in the manner of a nozzle. The lid 6 is provided with a
plurality of legs 28 having indent projections 30, which legs provide, along with the post 20, the means for supporting the lid 6 in parallel, spaced relationship to the lip 18 of the basket.

The screw 8 is constructed with a handle in the shape of a relatively large ring 34 connected at its outer circumference to a screw shank extending radially therefrom. Such shank has an unthreaded end 36 which serves as a pilot, and a threaded portion 38 which mates with the post end 22. The screw 8 incorporates the two features of a handle and a connecting means into a single element.

The strainer 2 of the present invention is assembled (see FIGURE 3) by placing the lid 6 onto the strainer basket 4, which lid 6 centers itself by virtue of the indent projections 30, and then inserting the screw 8 through the opening 25 in the lid 6 and into the internally threaded upper end of the post 20. The strainer can be easily raised from the floor of the swimming pool for cleaning purposes by using the ring 34 as a handle, or by means of a hook, since the ring 34 is easily visible from the surface of the pool. The ring 34 projects upwardly from the bottom of the pool and, if desired, the ring can be constructed of a flexible material to prevent any possibility of injury in the event that a swimmer would strike the ring.

The strainer as illustrated is of molded plastic construction. FIGURE 4, for example, shows the use of relatively larger ribs 40 in the bottom wall 16 for purposes of added strength. The two illustrated ribs 40 are perpendicular to each other, and radiate from the post 20. FIGURE 5 shows the construction of the bottom wall 16 comprising an outer larger ring-shaped section 42 having a circular top grooved 44 therein. The cylindrical side wall 14 of the strainer basket 4 fits into the groove 44 and is permanently affixed therein, as by means of a suitable cement. The support lip 18 is also provided with an annular groove 46 opening downwardly and into which the top edge of the cylindrical side wall 14 is seated and permanently cemented or otherwise locked.

The support post 20 can be made solid, if desired. However, in the preferred embodiment shown in the drawings, see FIGURES 1 and 4 for example, the post 20 is hollow. The reason for this construction is that it has been found to be desirable to add weight to the strainer 2 to aid in holding it in position and also to make the filter more stable when raising and lowering it. For this reason a lead weight 48 is maintained in the cavity 50 of the post 20. The weight 48 is maintained in the cavity 50 by a plastic disc 52 (having an air/water hole therein) cemented in the cavity 50.

The foregoing detailed description is to be clearly understood as given by way of illustration and example only, the spirit and scope of this invention being limited solely by the appended claims.

What is claimed is:

1. A strainer basket and flow-directing apparatus for mounting in the drain opening at the bottom of a swimming pool, said drain opening having a predetermined relatively large diameter, said apparatus comprising:

- support means having an outer diameter larger than said predetermined diameter of said drain opening, whereby said support means may seat removably on the horizontal bottom wall of said swimming pool around said opening,
- a strainer basket having perforated side and bottom walls,
- the upper edge of said basket being connected to said support means in inwardly-spaced relationship from the extreme outer regions of said support means whereby said basket may be disposed in said drain opening in suspended relationship from said support means,
- the outer diameter of said basket being somewhat smaller than said diameter of said drain opening,
- a substantially imperforate and generally disc-shaped flow-directing lid having a diameter at least as great as the outer diameter of said basket,
- means to removably mount said basket in horizontal relationship and spaced thereabove whereby to define a radially-outwardly facing annular entrance channel adapted to receive water and debris flowing horizontally along the pool bottom, through said basket and into said basket,
- said entrance channel being sufficiently large to receive objects which will not pass through the perforated side and bottom walls of said basket, and
- means provided above said lid to receive a hook at the end of a pole whereby to permit removal of said basket from said drain opening by a person standing at the side of the pool.

2. The invention as claimed in claim 1, in which said support means comprises an annular lip adapted to seat on said horizontal bottom wall of said swimming pool around said opening, and in which said flow-directing lid has a diameter greater than that of said opening whereby it extends radially-outwardly over said support lip and cooperates therewith in providing said radially-outwardly facing annular entrance channel.

3. The invention as claimed in claim 2, in which the peripheral portion of said lid inclines upwardly and radially-outwardly whereby the cross-sectional area of said entrance channel decreases progressively in a radially inward direction, so that the water flowing through said channel increases in velocity as said strainer basket is approached.

4. A strainer basket and flow-directing apparatus for mounting in the drain opening at the bottom of a swimming pool, said drain opening having a predetermined relatively large diameter, said apparatus comprising:

- an annular support lip formed of plastic and having an outer diameter substantially greater than said predetermined diameter of said drain opening, and having an inner diameter substantially smaller than said predetermined diameter of said drain opening,
- said lip having an annular groove formed in the underside thereof,
- the diameter of said annular groove being only slightly greater than the inner diameter of said support lip,
- a generally cylindrical strainer element formed of plastic and having a multiplicity of perforations therein, the upper edge of said cylindrical element being seated and secured in said annular groove in said support lip,
- a generally disc-shaped bottom wall formed of plastic and having a multiplicity of perforations therein, the upper portion of said bottom wall adjacent the outer edge thereof being formed with an annular groove into which the lower edge of said cylindrical strainer element is seated and mounted,
- an axial support post extending upwardly from the center of said bottom wall,
- the upper end of said support post being provided with an interiorly-threaded opening adapted to receive a fastening element,
- a generally disc-shaped imperforate lid formed of plastic and having an outer diameter substantially greater than said diameter of said drain opening,
- said lid having formed on the underside thereof a plurality of support legs adapted to seat on said support lip at the inner edge thereof,
- said legs being sufficiently long to maintain said lid spaced a substantial distance above said support lip whereby the peripheral portion of said lid cooperates with said lip in defining a radially-outwardly facing annular entrance channel,
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5. The invention as claimed in claim 4, in which said post is hollow at the lower portion thereof, and in which a weight is mounted in said lower portion of said post to maintain the apparatus in dependent stable condition during passage thereof through the water after a hook is inserted through said hook-receiving element.

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