SWIMMING POOL LEDGE STRUCTURE

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ABSTRACT

A ledge for a swimming pool having side walls and a plurality of upright reinforcing posts includes a plurality of ledge segments extending between pairs of posts, with each ledge segment having generally complementary formed first and second end portions. The first end portion of each ledge segment is adapted to mate with the second end portion of an adjacent ledge segment and means are provided for pivotally interconnecting the ledge segments at the mating end portions thereby to permit relative movement between the ledge segments so that the angular relation between the segments may be varied. One end of each segment includes structure for operatively interconnecting that end of the ledge segment directly to its associated upright post.

24 Claims, 7 Drawing Figures
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The present invention relates to swimming pool constructions, and more particularly to a ledge structure for use with above the ground swimming pools.

In recent years there has been a substantial increase in demand for home swimming pools, particularly of the above the ground type which are adapted to be installed or set up by the homeowner in a relatively small back yard area. Such pools have become extremely popular, but suffer from a number of disadvantages particularly in that they are relatively difficult to erect. Typically, such pools are formed from numerous elements, including a vinyl plastic flexible liner, a somewhat flexible side retaining wall which is normally formed of sheet metal or relatively thick plastic, and a series of vertical posts or uprights located around the periphery of the side wall which serve to reinforce the side wall against water pressure on the interior of the pool.

In addition to these elements, the above ground pools are normally provided with an edge member or ledge which covers the upper edge of the pool's side wall and, when formed of sufficient width, provides a seat about the periphery of the pool. Such ledges are typically formed of rolled sheet metal or the like, and are difficult to assemble and secure to the pool. Generally, the ledges are secured at their ends between pairs of upright posts, with one or more cooperating cap members used to cover the abutting edges of the ledge and the upper ends of the posts. In order for these various elements to be properly assembled, the upright posts must be spaced in exact relative position to one another so that the screw or bolt holes in the ledges, caps, and posts are in proper alignment with each other to permit proper interconnection between these elements. However, exact positioning of the uprights is difficult to accomplish, particularly in circular or oval pools where the upright posts must be arrayed in an arc.

Accordingly, it is an object of the present invention to provide a swimming pool with a ledge structure which is substantially simpler to assemble than previously proposed above the ground pool structures.

Yet another object of the present invention is to provide a ledge structure for swimming pools which is relatively inexpensive to manufacture and has substantial strength.

Another object of the present invention is to provide a ledge structure which permits the homeowner to accurately assemble a swimming pool having arcuate side wall portions.

In accordance with one aspect of the present invention, a ledge structure is provided for use with an otherwise conventional above the ground swimming pool having a vertically extending side wall and a plurality of vertically extending reinforcing posts located in predetermined spaced locations along the outside of the side wall. Preferably, the ledge structure consists of a plurality of individual one piece ledge members each of which is formed as a relatively straight elongated frame member having first and second end portions which are spaced longitudinally from each other a distance substantially equal to the distance between two adjacent uprights or posts. The one piece ledge members have upper and lower surfaces, with the upper surface defining a relatively wide seat overlying the upper edge of the pool's side wall, and the lower surface thereof including means at the first end portion of the ledge for operatively connecting that end portion of the ledge to the reinforcing post. In one embodiment of the present invention this is accomplished by providing a pocket in the lower surface of the first end of the ledge which is adapted to receive the upper end of the post. In addition, the upper surface of the first end portion of the ledge and the lower surface of the second end portion thereof have generally complementary and mating configurations so that the second end portion of one ledge member is adapted to be directly connected to the first end portion of an adjacent ledge member, whereby it is supported by that adjacent ledge member on its associated post. This mating relationship, in the preferred embodiment of the present invention, permits limited arcuate movement of the ledge members with respect to one another so that slight misalignments made by the homeowner in assembling the pool or slight misalignments due to production tolerances can be accommodated by arcuate movement of the ledge members with respect to one another during the assembly procedure.

The above, and other objects, features and advantages of the present invention, will be apparent in the following detailed description of an illustrative embodiment thereof which is to be read in connection with the accompanying drawings, wherein:

FIG. 1 is a perspective view of a swimming pool incorporating a ledge structure constructed in accordance with the present invention;

FIG. 2 is an exploded perspective view of a ledge assembly presently used in commercially available pool constructions;

FIG. 3A is an exploded perspective view, similar to FIG. 2, of the ledge assembly of the present invention;

FIG. 3B is a perspective view, with parts broken away, of an inverted ledge member constructed in accordance with the present invention;

FIG. 4 is a bottom view of a ledge member of the present invention, taken along line 4—4 of FIG. 1;

FIG. 5 is a sectional view taken along line 5—5 of FIG. 3A; and

FIG. 6 is a sectional view taken along line 6—6 of FIG. 3A.

Referring now to the drawing in detail, and initially to FIG. 1 thereof, an above the ground swimming pool 10 is seen which includes a ledge structure 12 constructed in accordance with the present invention. Pool 10 is generally of conventional construction in that it includes a flexible side wall 14 which may be formed of sheet metal or relatively hard plastic sheeting, and a plurality of vertical upright posts 16 spaced in predetermined locations about the periphery of the side wall 14, on the exterior thereof. As is conventional, the pool is provided with an inner liner 17 whose free edge is folded over the top edge 18 of side wall 14, as described hereinafter. Liner 17, of course, serves to retain water in the pool.

For illustrative purposes, pool 10 has been shown as having a generally oval shape, including semi-circular end portions 20 and relatively straight side portions 22. However, it is contemplated that the present invention may be used in other pool configurations and it is particularly adapted for pool configurations having curved side walls, e.g., circular pools.

As mentioned above, previously proposed pool constructions require relatively complex ledge connections in order to complete the pool and secure the seating
A ledge element 50 constructed in accordance with the present invention, is more clearly illustrated in FIG. 3B of the drawing wherein a bottom view thereof is provided. As seen therein, ledge element 50 has a generally channel-shaped configuration including a bight portion 56 which forms the seat portion of the ledge element in the completed construction on which users of the pool may sit. In addition, the ledge has a pair of legs 58, 60 with the leg 58 being somewhat longer than the leg 60 and forming the exterior leg of the ledge, i.e., the leg which is located on the outside of the pool (see FIG. 1). This longer leg 58 also serves to conceal the top edge of the side wall 14 in the completed pool, thereby to provide a more complete and pleasing appearance; the leg 60, on the other hand, provides a bumper on the interior of the pool to prevent inadvertent contact by the swimmers with the top edge of the pool side wall.

The ends 52, 54 of the ledge 50 are of generally circular configuration, with the end 54 thereof having a depending semi-circular wall member 62 formed integrally therewith. This wall member has an inner wall surface 64 which, as seen in FIG. 4, has a plurality of integral pads or extensions 65 formed thereon. Wall 62 opens towards (i.e., inner wall 64 faces) a longitudinally extending wall 66 (more fully described hereinafter) to define therewith a pocket 68 in which the upper end 26 of the channel-shaped post 16 is received in the manner shown in FIG. 6.

In assembling a pool using a ledge construction in accordance with the present invention, posts 16 are arrayed in the pattern prescribed by the manufacturer as carefully as possible by the homeowner. He then takes one of the ledges (e.g., 50a), properly associated with a given post, as described hereinafter, and inserts the upper end portion 26 of that post (e.g., 16a) in the pocket 68 of the ledge. This connection is then secured permanently by bolting the wall 62 to the post 16a through apertures 70 formed in wall 62 with bolts or sheet metal screws 71. Apertures 70 are located to extend through pads 65 which engage the sides of channel shaped post 16a to insure proper relative positioning of the post and ledge.

Thus, for example with reference to FIG. 3A, the person erecting the pool first places the ledge 50a in engagement with and secured to the post 16a. Thereafter, the ledge 50b at the right in FIG. 3A is superimposed upon the end 54 of the previously mounted ledge 50a, so that the ends 52 and 54 are in mating relation, as seen in FIGS. 5 and 6.

Proper mating relation of the ends 52 and 54 is insured by the configuration of the end portions of the ledge. Thus, for example, as seen in FIGS. 3A, 5 and 6,
the upper surface 69 of end portions 54 is provided with an annular rib 72 located about the periphery thereof, and a central post 74 which acts as a pivot post in the completed construction. The lower surface 76 of end 52 on the other hand, has a pocket or well 78 formed therein which is generally circular in configuration and which is adapted to receive rib 72. In addition, end 52 includes a female pivot member or socket 80 formed therein which receives post 74.

In assembling the pool with the ledge members of the present invention, after the ends 52 and 54 of adjacent ledge members are superimposed in the manner described above, they are pivotally secured together by a bolt 82, which is threaded into the post 74 at the end portion 54. By this arrangement, the uppermost ledge member 50 (50b in FIG. 3A) is adapted to pivot slightly about the bolt 82 so that its opposite end 54 (not shown in FIG. 3A) can be adjusted with respect to the next post 16. The pivotal movement of that ledge 50b achieves the proper positioning of the ledge with respect to the other post, (e.g., 16b in FIG. 1) and that other post (16b) can then be inserted in the pocket 68 of the end 54 of ledge member 50b.

Relative pivotal movement between adjacent ledges 50 is limited by the provision of one or more arcuate slots 84 in the end 54 of the ledge members. These slots 84 are preferably located to cooperate with a pair of bosses 86 in the end 52 of the ledge and into which bolts 88 may be connected. By securing the ledges together with bolts 88 in this manner, the pivotal movement of the ledges with respect to one another will be limited by the engagement of the bolts with the edges of the slots 84. Because of the provision of bolts 88 connected between the ledges, the bolt 82 may, if desired, be eliminated. In any case, by this construction of the invention the pool ledges are relatively easily connected with a minimum of parts and the permissible adjustment which can be made between adjacent ledges allows the homeowner to compensate for slight errors in post placement and variations in the elements due to permitted manufacturing tolerances.

In accordance with another feature of the present invention, lower surface 77 of the bight or seat portion 56 of each ledge member 50 is provided with longitudinally extending spaced walls 66, 90 as seen most clearly in FIGS. 4 and 6. These walls define a slot or track 92 therebetween which is adapted to receive the upper edge 18 of side wall 14. This track takes the place of the conventional coping used with previously proposed pool constructions for holding the top edge of the vinyl liner on the top edge of the side wall. Typically, previously proposed copings are in the form of a generally U-shaped elongated clip which simply snap over the top edge of the side wall 14 and hold the top edge of the vinyl liner, which has been previously folded over the top edge of the side wall, against the side wall. Track 92, integrally formed in the ledge 50 of the present invention, takes the place of this coping in that the side walls 66, 90 thereof serve the same function as the coping since they wedge the top edge 94 of the vinyl liner 17 against and around the top edge 18 of the side wall 14.

Track 92 is longitudinally curved, as seen in FIG. 4, in order to accommodate the curved side wall section of a predetermined curved section of the pool. Since it is usually preferable that the curved portions of the pool conform to arcs of a common circle, the ledge sections for the curved portions of the pool will all have substantially the same track configuration. The ledge members used at the straight sections 22 of the oval pool, on the other hand, as illustrated in FIG. 1, have tracks 92 formed therein which are relatively straight. Thus, in the pool supplied to the purchaser, a variety of ledges 50 will be provided, each having a track 92 of a particular configuration adapted to be used at a specific location on the periphery of the pool. By providing the integrally formed track in the ledge member in this manner, not only is the previously required coping eliminated, but also the side wall 14 is guided in the proper curve between posts 16 without any additional guide structure at the top of the pool. Moreover, the ledge and integral track form a tension hoop at the top of the pool to reinforce the pool walls when the pool is filled.

As illustrated also in FIG. 4, it is seen that the track 92, i.e., walls 66, 90, pass through and up to a position adjacent the end of the end portion 54 of the ledge. In this manner the side wall 14 and the edge 94 of the liner 17 are fully guided throughout their entire extent. In addition, the wall 66 is located across the open side of the curved wall 62 so as to form the pocket 68 in which post 16 is received. On the other hand, the other end of the track 92, adjacent the end portion 52 of the ledge member, ends adjacent the edge of well 78 so as not to interfere with the placement of the end 52 of the ledge over the end 54 thereof, as seen in FIGS. 4 and 5.

Track 92 is reinforced and supported by a plurality of transverse rib members 100 located in spaced relation to each other along the longitudinal axis of the ledge, and extending transversely of the ledge and substantially perpendicularly to the track. These reinforcing ribs extend between flanges 58, 60 of the ledge, on opposite sides of track 92, and thereby strengthen walls 66, 90 of the track. The reinforcing ribs 100 also assist spreading of the walls 66, 90 as the track 92 is moved over the top edge of the side wall and, in addition, they hold the flanges 58, 60 of the channel-shaped ledge member against spreading apart; thereby maintaining a neat and uniform appearance for the ledges. Moreover, the ribs 100 provide a transverse support for the right portion 56 of the ledge member, stiffening and strengthening the ledge so as to improve its strength characteristics to enable it to be used as a seat for individuals using the pool.

As is apparent, the ledge construction of the present invention substantially reduces the cost of manufacturing swimming pool structures for sale to the home market and for erection by the homeowner himself. This is accomplished by the specific ledge construction described above, which ledge is preferably formed of a one-piece molded plastic construction. In this connection, foam structural high impact styrene plastic may be highly suitable for use as the ledge member of the invention. In any case, the use of a plastic material to form the ledge structure is highly advantageous since the plastic ledge will be corrosion resistant, have a longer life and will not be affected by pool chemicals. In addition, the plastic ledge will be more comfortable to sit on than previously proposed metal ledges since they will not absorb as much heat and the plastic ledges require far less maintenance then metal. These advantages are achieved by the structure of the present invention since that structure can be readily molded in a
one piece plastic construction whereas the more complicated prior art ledges could not. The ledge of the present invention, as described, is substantially easier to assemble for the homeowner than previously proposed constructions. Moreover, by the track arrangement 92 it insures that the side wall itself follows the proper arcuate path for which it has been designed. As a result, the swimming pool structure is assembled in a more professional manner, with greater assurance to the homeowner that it is properly assembled and safe for use.

Although an illustrative embodiment of the present invention has been described herein with reference to the accompanying drawings, it is to be understood that the invention is not limited to that precise embodiment and that various changes and modifications may be effected therein by one skilled in the art without departing from the scope or spirit of this invention.

What is claimed is:

1. A ledge for a swimming pool having a side wall, a plurality of upright reinforcing posts, and a plurality of ledge segments, wherein the improvement comprises, each of said ledge segments having generally complementary first and second end portions each having upper and lower surfaces with the upper surface of said first end portion of each ledge segment and the lower surface of said second end portion having complementary male and female guide surface portions of predetermined configuration, the upper surface portion of one ledge segment being adapted to matingly engage the lower surface of an adjacent ledge segment, with said complementary surface portions thereof engaging each other in mating relation for preventing longitudinal movement of said ledge segments with respect to one another while allowing relative pivotal movement therebetween; means for pivotally interconnecting said ledge segments at said mating end portions to permit relative pivotal movement therebetween thereby to adjust the angular relation between said ledge segments, and separate means on the lower surface of said first end portion of the ledge segment for operatively interconnecting the first end portion of said ledge segments to their associated upright posts in a relatively fixed position whereby the position of adjacent ledge segment may be adjusted by pivoting the second end portion of the adjacent ledge segment with respect to the first end portion of an associated ledge segment.

2. The ledge as defined in claim 1 wherein said ledge segments are each formed in a one piece molded plastic construction.

3. The ledge as defined in claim 1 wherein each of said ledge segments comprises an elongated frame member of one piece construction; said upper surface of each of said ledge segments being relatively flat to define a seating surface.

4. The ledge as defined in claim 3 wherein said first and second end portions of said ledge segments are generally circular in plan and said male and female guide surface portions comprise an annular rib formed on the upper surface of said first end portion of the ledge segments and an annular wall member formed on the lower surface of the second end portion of the ledge segments defining an annular pocket which is adapted to receive said annular rib in mating pivotal relation.

5. The ledge as defined in claim 3 wherein said means for interconnecting the first end portions of said ledge segments to their associated uprights comprises a pocket formed in the lower surface of the first end portion of each of said ledge segments, said pockets each having a configuration which is generally complementary to its associated upright to receive the upper end of said upright therein.

6. The ledge as defined in claim 3 wherein said first and second end portions of said ledge segments are generally circular in plan, said first end portion having an annular rib formed on the upper surface thereof and said second end portion having an annular wall member formed on the lower surface thereof defining a pocket which is adapted to receive said annular rib in mating pivotal relation.

7. The ledge as defined in claim 6 including means for limiting pivotal movement of adjacent ledge portions with respect to one another.

8. The ledge as defined in claim 7 wherein said limiting means comprises at least one arcuate slot formed in one of said first and second end portions and fastening means extending through said slot for securing the first end portion of one ledge to the second portion of an adjacent ledge.

9. The ledge as defined in claim 3 wherein said pool includes a liner folded over the upper edge of said side wall and said lower surface of each of said ledge segments has a pair of depending generally longitudinally extending wall members defining a track therebetween which is adapted to receive the upper edge of said side wall and said pool liner folded thereover.

10. The ledge as defined in claim 9 including reinforcing walls depending downwardly from the lower surface of said ledges and extending transversely of said longitudinally extending wall members.

11. The ledge as defined in claim 10 wherein said longitudinally and transversely extending wall members are integrally formed in said frame member.

12. The ledge as defined in claim 10 wherein the track in each of said ledge segments has a predetermined longitudinal configuration conforming to a predetermined segment of said side wall.

13. A ledge member for use with a swimming pool having a vertically extending side wall, a pool liner folded over the upper edge of said side wall, and a plurality of vertically extending reinforcing posts located in predetermined spaced locations along the outside of said wall, said ledge member comprising a relatively straight elongated frame member having first and second end portions spaced longitudinally from each other a distance substantially equal to the distance between two adjacent posts; said ledge member having upper and lower surfaces, said upper surface defining a relatively wide seat overlying the upper edge of said side wall and said lower surface including means at said first end portion for operatively connecting the first end portion of the ledge member to a reinforcing post; the upper surface of said first end portion of the ledge member and the lower surface of said second end portion thereof having generally complementary and mating configurations, separate from said connecting means, for preventing relative longitudinal movement of said ledge members while permitting pivotal movement therebetween; whereby the second end portion of one ledge member is adapted to be directly connected to the first end portion of another ledge member, thereby to be supported by said another ledge member and its associated post.
14. The ledge member as defined in claim 13 wherein said ledge member is integrally formed as a one piece member.

15. The ledge member as defined in claim 14 including a pair of integrally formed spaced and generally longitudinally extending depending wall members defining therebetween a track which is adapted to receive the upper edge of said side wall and a liner folded over said edge thereby to retain said liner along said upper edge.

16. The ledge member as defined in claim 15 including a pair of integrally formed spaced and generally longitudinally extending depending wall members defining therebetween a track which is adapted to receive the upper edge of said side wall and said liner thereby to retain said liner along said upper edge.

17. The ledge member as defined in claim 16 wherein said ledge member has a generally channel-shaped configuration in section including a bight portion defining said relatively wide seat and a pair of depending legs, said transverse walls extending between said track walls and said depending legs and being formed integrally therewith, thereby to reinforce said track, walls, legs and seat.

18. The ledge member as defined in claim 15 wherein said track has a predetermined longitudinal configuration conforming generally to a predetermined segment of said side wall.

19. The ledge member as defined in claim 18 wherein said means for operatively connecting said first end portion thereof to an associated post comprises means for defining a pocket on the lower surface of said first end portion having a configuration which is generally complementary to said associated post to receive said post.

20. The ledge member as defined in claim 19 wherein said pocket defining means comprises a generally arcuately shaped wall member depending from the lower surface of said first end portion and having an inner surface which is generally complementary to the periphery of said post, said track extending through said first end portion substantially to the free end of the ledge member, and said arcuate wall member opening towards said track and cooperating with one of said longitudinally extending wall members to define said pocket.

21. The ledge member as defined in claim 19 including means for pivotally interconnecting the first end portion of said ledge to the second end portion of another ledge.

22. The ledge member as defined in claim 21 wherein said pivotal interconnecting means comprises cooperating male and female pivot members formed on said first and second end portions and for permitting said ledge to be pivoted in a horizontal plane with respect to and adjacent connected ledges thereby to vary the angle therebetween.

23. The ledge member as defined in claim 22 including means for limiting pivotal movement of said ledge members with respect to and adjacent connected ledge member comprising an arcuate slot formed in one of said first and second end portions and fastening means extending through said slot for securing the first end portion of said ledge to the second end portion of another ledge, said slot defining the limits of permissible pivotal movement between the ledges.

24. The ledge member as defined in claim 21 wherein said first and second end portions of said ledge segments are generally circular in plan, said first end portion having an annular rib formed on the upper surface thereof and said second end portion having an annular wall member formed on the lower surface thereof defining a pocket which is adapted to receive said annular rib in mating pivotal relation.