March 3, 1970 J. DIEMOND ET AL 3,497,877

POOL WITH INTEGRAL SLIDE

Filed April 29, 1969 3 Sheets-Sheet 1

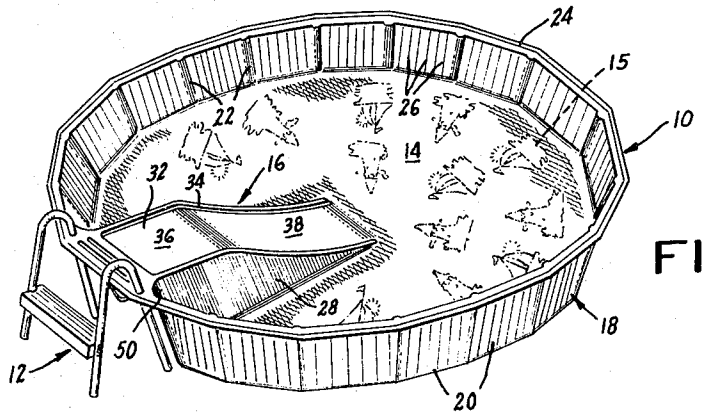
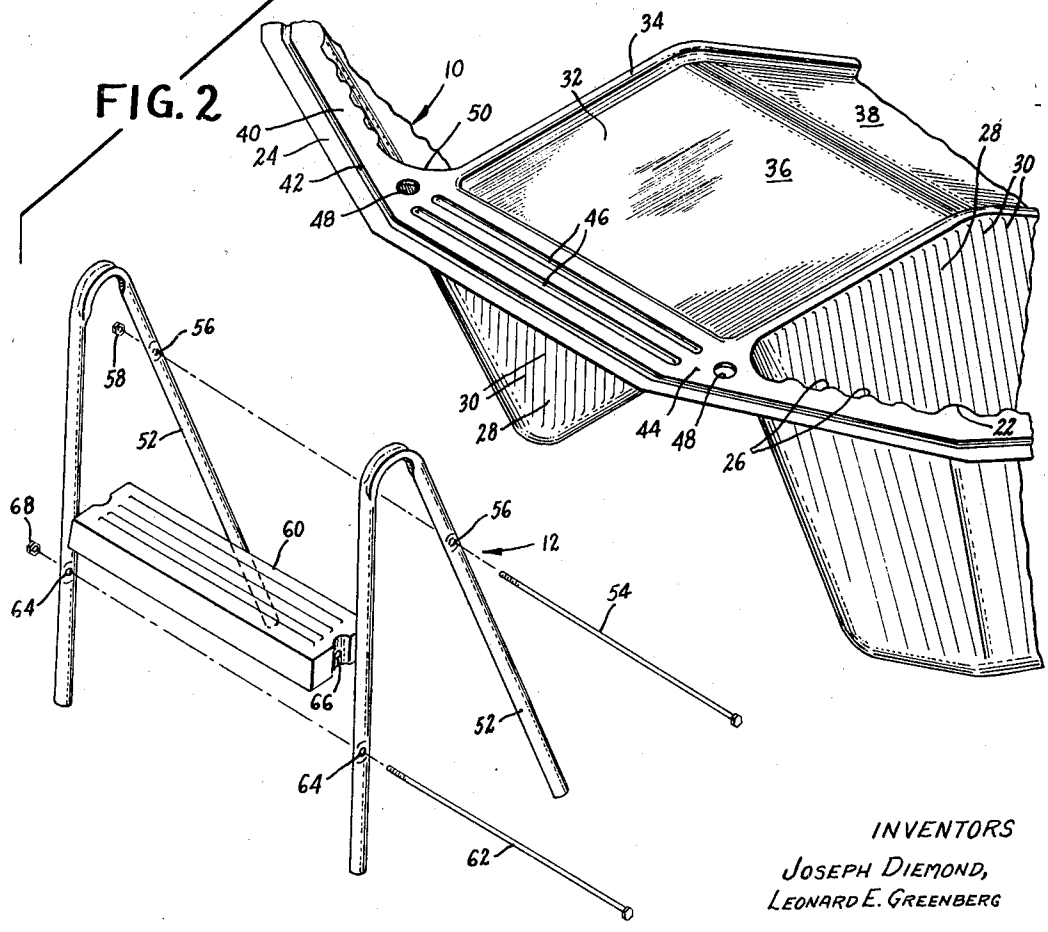


FIG. 1

FIG. 2



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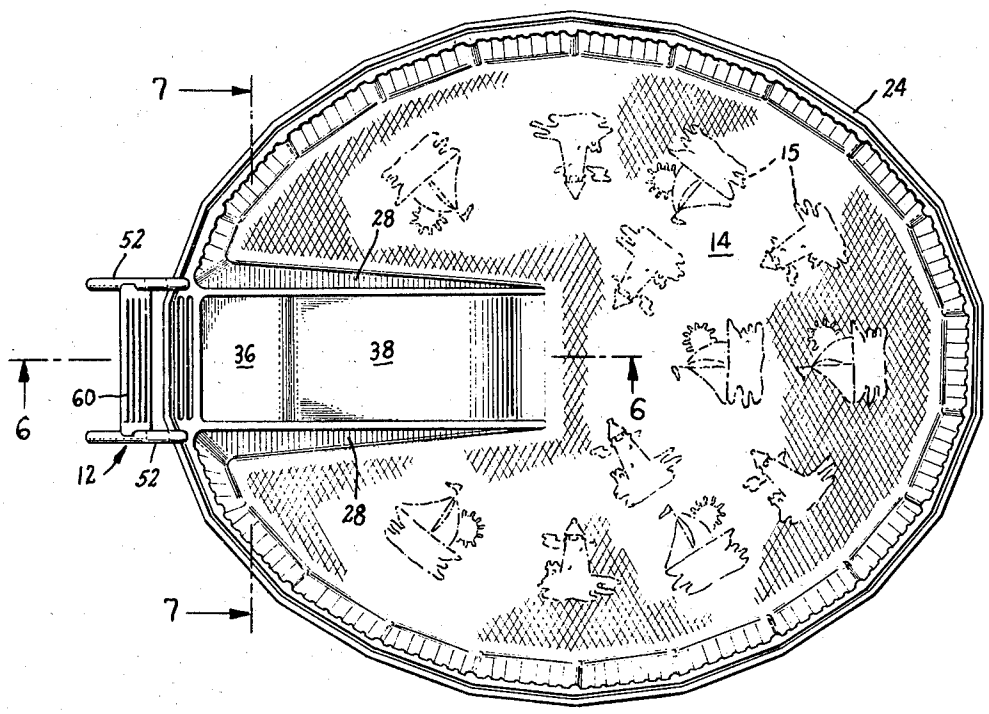


FIG. 3

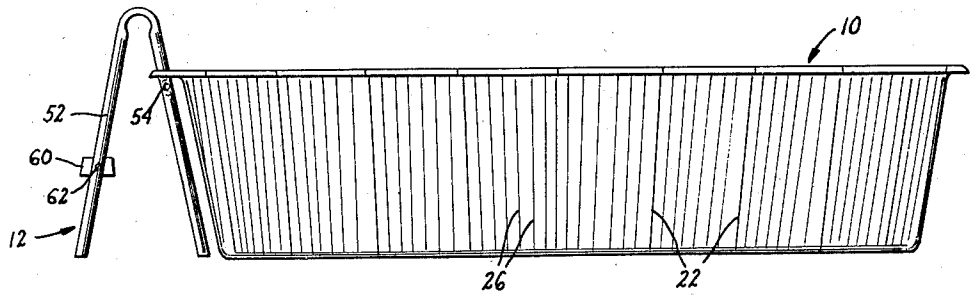


FIG. 4

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Filed April 29, 1969 3 Sheets-Sheet 3

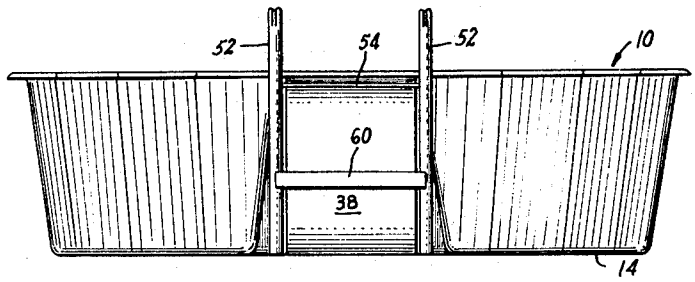


FIG. 5

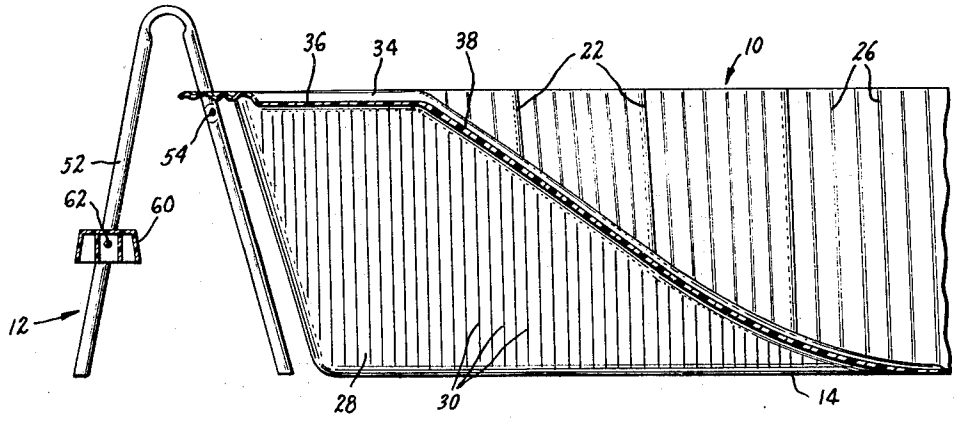


FIG. 6

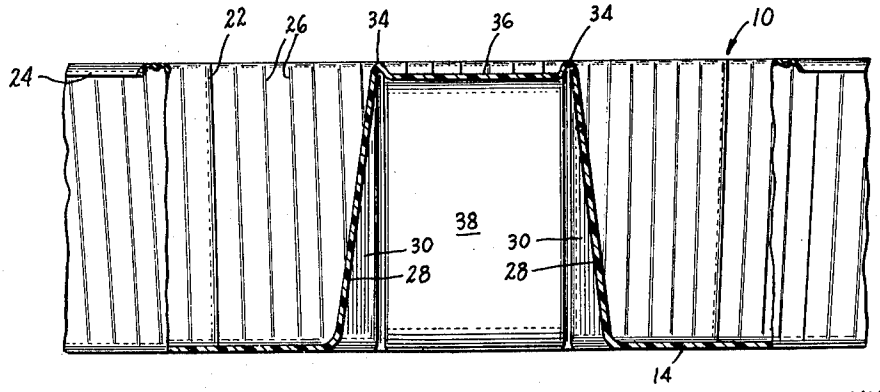


FIG. 7

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POOL WITH INTEGRAL SLIDE

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U.S. Cl. 4—172 11 Claims

ABSTRACT OF THE DISCLOSURE

A water-retaining recreational structure has a container member integrally formed from synthetic plastic material with a slide portion extending between the sidewall and the bottom wall thereof. A peripheral flange extends outwardly about the container member and the slide portion includes a pair of side walls and a top wall providing a hollow structure. The structure may also include a ladder member which can serve to reinforce the slide portion.

BACKGROUND OF THE INVENTION

Use of synthetic thermoplastic materials for the production of children's toys and recreational products has been constantly increasing but has been limited for some applications primarily by the necessity to obtain sufficient structural strength to withstand the applied stresses and loads. In the manufacture of pools and like structures, a generally circular configuration has been preferred because the stresses are more readily distributed thereabout.

Structures which are thermoformed with hollow portions represent a particular problem from the standpoint of providing sufficient strength and rigidity. In some instances, structures have used separate elements to reinforce a hollow or other readily distorted portion when it was designed to support a child or to carry any particular load. In thermoforming techniques, various modifications have been proposed in die design and pressure assisted equipment has been devised to facilitate forming into more complex configurations.

It is an object of the present invention to provide a water-retaining recreational structure with an integrally formed synthetic plastic container member having a slide as a part thereof.

Another object is to provide such a recreational structure with a separate ladder member by which the child may safely climb upon the slide.

Still another object is to provide such a recreational structure which may be readily and relatively economically manufactured and which is durable and attractive.

SUMMARY OF THE INVENTION

It has now been found that the foregoing and related objects may be readily attained in a water-retaining recreational structure including a container member integrally formed from synthetic plastic material with a bottom wall and a hollow slide portion extending upwardly from the bottom wall and inwardly from the periphery of the container member at one point thereabout. The container member has a peripheral sidewall extending from the slide portion in both directions about the remainder of the periphery thereof. An outwardly extending flange extends about the entire periphery of the container member about the upper ends of the slide portion and the sidewall and provides a band-like member.

The hollow slide portion has a top wall extending downwardly from the flange and blending into or joining with the bottom wall at its inner end; it also has a pair of side walls extending between the bottom wall and the top wall and blending thereinto. The peripheral sidewall extends

outwardly upwardly from the bottom wall and blends into or joins with the side walls of the slide portion.

In its preferred aspect, the peripheral sidewall has a polygonal cross section formed by a multiplicity of rectilinear segments with generally vertically extending ribs at the intersection thereof. To further enhance the strength of the sidewall and the appearance of the structure, the sidewall is desirably formed with a plurality of generally vertically extending ribs spaced along the length of the segments between the ribs formed at the intersections thereof.

Similarly, the side walls of the slide portion are provided with a taper but in this instance the taper is upwardly and inwardly from the bottom wall and the side walls also taper toward each other inwardly from the flange. This double taper provides a high degree of strength and an attractive appearance. To further enhance the strength of the side walls of the slide portion, they are formed with a multiplicity of generally vertically extending ribs spaced along the length thereof.

In accordance with the most desirable embodiment, the structure includes a ladder member at the slide portion which has a pair of vertical members each with a leg portion extending through apertures in the flange or container portion adjacent the slide portions, and a step portion extending therebetween. By forming the vertical members of generally inverted U-shaped configuration with the inner legs thereof extending through the flange or container portion and with the step extending between the outer legs thereof, the ladder may include a support element extending between the inner legs below the flange or container portion to provide support for the upper end of the slide portion.

The terminology "water-retaining recreational structure" as used herein, includes pools, sandboxes and like closed container structures which are inherently adapted to retain water although they may be used for sand or other particulate material or be used as a slide only without any material disposed therein.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 is a perspective view of a water-retaining recreational structure embodying the present invention;

FIGURE 2 is a fragmentary exploded perspective view to an enlarged scale of the slide end of the structure of FIGURE 1;

FIGURE 3 is a plan view of the structure of FIGURE 1 to an enlarged scale;

FIGURE 4 is a side elevational view thereof on the same scale as FIGURE 3;

FIGURE 5 is an end elevational view of the slide end of the structure to the same scale as FIGURE 3;

FIGURE 6 is a fragmentary sectional view to an enlarged scale along the line 6—6 of FIGURE 3; and

FIGURE 7 is a fragmentary sectional view to an enlarged scale along the line 7—7 of FIGURE 3.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENT

Turning first to FIGURE 1, a water retaining recreational structure embodying the present invention has a container or body member generally designated by the numeral **10** formed from an integral sheet of synthetic plastic material and a ladder generally designated by the numeral **12**. The container **10** has a bottom wall **14**, a slide generally designated by the numeral **16** and a sidewall of polygonal cross section extending from the outer end thereof generally designated by the numeral **18** and formed by a multiplicity of relatively short, straight sided or rectilinear segments **20**.

As illustrated, the sidewall segments **20** slope upwardly and outwardly from the bottom wall **14** and inwardly

projecting ribs **22** are provided at the intersections of segments **20** extending from the circumferential flange **24** at the upper end of the sidewall **18** to adjacent the bottom wall **14** where they fade into the radius at the juncture thereof. A multiplicity of shallower and narrower inwardly projecting ribs **26** in each segment **20** extend from the flange **24** to adjacent the bottom wall **14** and fade out similarly. The bottom wall **14** has designs **15** thereon which may be thermoformed therein or printed thereon and has a mesh pattern **17** formed therein to minimize slipping.

As best seen in FIGURE 7, the slide **16** has sidewalls **28** which slope upwardly and inwardly from the bottom wall **14** and converge as they decrease in height towards the center of the container **10**. Vertically extending inwardly projecting ribs **30** are spaced along the sidewalls **28** to provide enhanced rigidity thereto as best seen in FIGURE 2. The top wall **32** of the slide **16** is joined to the side walls **28** by the longitudinally extending ribs **34** as best seen in FIGURE 7, and the ribs **34** space the upper surface thereof below the upper end of the side walls **28**. The slide top wall **14** has a relatively horizontal portion **36** adjacent the flange **24** and then has a sloping portion **38** which blends into or joins with the bottom wall **14**.

The flange **24** about the peripheral sidewall **18** has a planar portion **40** immediately adjacent the sidewall **18** and an inverted U-shaped stiffening rib portion **42** about the outer end thereof. At the slide **16**, the flange **24** has an enlarged planar portion **44** with ribs or corrugations **46** extending longitudinally thereof. A pair of apertures **48** are provided adjacent the ends of the planar portion **44** to seat the ladder **12**. As best seen in FIGURES 1–3, the ends of the sidewall **18** are blended into or joined with the side walls **28** of the slide **16** by connecting webs **50** of arcuate cross section which increase in width upwardly from the bottom wall **14** due to the slope of the side walls **28**.

The ladder **12** has two vertical members **52** of generally inverted U-shaped configuration, the inner legs of which extend through the apertures **48** in the flange planar portion **44**. A connecting rod **54** extends through apertures **56** therein adjacent the lower surface of the planar portion **44** and is secured therein by the nut **58**. In this manner, the rod **54** also acts as a brace for the flange portion **44** and thereby the upper end of the slide **16**. A step **60** is secured on the outer legs of the members **52** by the connecting rod **62** which extends through apertures **64** in the members **52** and apertures **66** in the step **60** and which is secured by the nut **68**.

Although the cross section of the container may assume a variety of configurations including circular, FIGURE 8, trilobal or rectangular, the preferred structures have a polygonal configuration defined by a multiplicity of short segments, at least six and desirably at least ten and even more. The polygonal configuration enables the provision of relatively deep ribs or corrugations at the intersections at relatively short spaces about the periphery of the sidewall and the reinforcement provided by the ribs at these points of intersection greatly rigidifies the sidewall. Depending upon the thickness of the sheet material from which the container is formed, the ribs may continue into the bottom wall for the maximum rigidity. However, the depth of the sidewall drawn from the sheet materials and factors of economy will generally dictate the use of a radius at the point of intersection between the sidewall and the bottom wall, in which case the ribs will blend into the radius and terminate adjacent to but at a slight distance therefrom.

The relatively shallow ribs formed in the sidewall between the principal ribs at the points of intersection of the segments serve to rigidify further the sidewall and enhance the appearance thereof. As in the case of the main ribs, these blend into the radius at the juncture of the sidewall and the bottom wall. Indicative of the dimensions which may be employed for the main ribs are a width of about ½ to 1 inch and a depth of ¼ to 1 inch; for the small ribs, a width of about ⅛ to ¾ inch and a depth of ⅛ to ½ inch may be employed. The amount of the taper or inclination of the sidewall may vary but is desirably about 10 to 30 degrees.

Although the side walls of the slide portion may be essentially vertical and parallel, it has been found extremely beneficial to the strength of the slide portion to taper these walls inwardly as they extend upwardly from the bottom wall and also to have them converge as they extend inwardly from the peripheral flange. This appears to provide a highly efficient distribution of load and stress to the remainder of the container. Shallow vertical ribs along the length of the side walls are also beneficial to the rigidity and strength thereof. As in the case of the ribs in the peripheral sidewall, these will normally fade into the radius at the juncture of the side walls and the bottom wall; dimensions are in width about ¼ to ¾ inch and in depth about ⅛ to ½ inch.

By joining the top wall of the slide portion to the side walls thereof with ribs of generally inverted U-shaped configuration, the juncture therebetween is strengthened and the top wall is disposed between guide ribs to prevent the child from falling off. The length of the downwardly tapering portion of the slide will vary with the size of the container and it may be concave or essentially rectilinear in its longitudinal configuration.

The flange extending about the periphery of the container member is of particular significance to the strength thereof since it ties together the sidewall and the slide portion. The flange itself is stiffened by the generally inverted U-shaped rib at the outer edge thereof, and the widened portion thereof at the slide is further stiffened by forming stiffening deformations therein such as one or more parallel extending ribs spaced inwardly from the flange at the outer edge thereof.

To minimize the chance of a child slipping on the bottom wall when the structure is used as a swimming or wading pool, the bottom wall is desirably formed with a slip resistant surface. This can be done by treating the inner surface thereof to make it relatively rough or it can be formed with stiffening deformations such as corrugations or ribs therein, such as may be formed by use of a mesh structure in the appropriate portion of the forming mold.

Although injection molding from thermoplastic materials and compression molding from thermosetting materials may be used to form the container, it is most desirably and conveniently formed by pressure and heat from synthetic plastic sheet material in a conventional thermoforming operation. This may include various kinds of mechanical assistance in addition to air or other fluid pressure to effect the displacement of the sheet material. Exemplary of the thermoplastic resins which may be employed are polyethylene, polypropylene, nylon, impact polystyrene, ABS (a graft blend of styrene/acrylonitrile copolymer upon a butadiene rubber substrate), and various olefin copolymers.

Although the ladder member may have the step secured to a single vertical member or between a pair of single legged vertical members, it is most conveniently fabricated from two vertical members of generally inverted U-shaped configuration so that one leg thereof may extend through the flange of the container and the other extend outwardly thereof for mounting of one or more steps. By having the vertical members of sufficiently greater height than the container, they will project thereabove and provide a pair of rails which the child may grip while climbing up the ladder and while positioning himself at the top of the slide. The number of steps will vary with the height of the container and the age of the children who are to use it. By providing a connecting or support rod between the vertical members immediately below the flange or upper portion of the slide, the two

vertical members are held together more firmly and the flange is given added support which in turn adds support to the upper end of the slide. As a result the entire structure is rigidified.

Thus it can be seen that the present invention provides a water-retaining recreational structure with an integrally formed synthetic plastic container having a slide as a part thereof. The structure is highly attractive and durable, and it may include a separate ladder member by which the child may safely enter upon the slide and which may serve to enhance the structural strength and rigidity of the assembly. The container member may be readily formed by conventional thermoforming techniques so as to provide a relatively economical unit.

Having thus described the invention, we claim:

1. A water-retaining recreational structure including a container member integrally formed from synthetic plastic with a bottom wall, a hollow slide portion extending upwardly therefrom and inwardly from the periphery of said container member at one point thereabout, a peripheral sidewall extending about the remainder of the periphery thereof, and an outwardly extending flange about the entire periphery at the upper ends of said slide portion and sidewall, said hollow slide portion having a top wall extending downwardly from said flange and joining with said bottom wall at its inner end and also having a pair of sidewalls extending between said bottom wall and said top wall and joining therewith, said peripheral sidewall extending outwardly and upwardly from said bottom wall and joining with the side walls of said slide portion.

2. The water-retaining recreational structure of claim 1 wherein said peripheral sidewall is polygonal in cross section and formed by a multiplicity of rectilinear segments with a generally vertical extending rib at the intersections thereof.

3. The water-retaining recreational structure of claim 2 wherein said peripheral sidewall has a plurality of generally vertically extending ribs formed therein spaced along the length of each of said segments between the ribs formed at the intersection thereof.

4. The water-retaining recreational structure of claim 1 wherein said sidewalls of said slide portion taper upwardly and inwardly from said bottom wall and taper towards each other inwardly from said flange.

5. The water-retaining recreational structure of claim 1 wherein said sidewalls of said slide portion have a multiplicity of generally vertically extending ribs formed therein spaced along the length thereof.

6. The water-retaining recreational structure of claim 1 wherein said top wall of said slide portion has a generally horizontal portion adjacent said flange and is joined with said side walls thereof by ribs of generally inverted U-shaped configuration providing longitudinally extending guides.

7. The water-retaining recreational structure of claim 1 wherein said structure includes a ladder member at said slide portion, said ladder member having a pair of vertical members each with a leg portion extending through apertures in said container adjacent said slide portion and a step portion extending therebetween.

8. The water-retaining recreational structure of claim 7 wherein said vertical members are of generally inverted U-shaped configuration with the inner legs thereof providing said leg portions extending through said container and with the step extending between the outer legs thereof, said ladder member including a support element extending between said inner legs below said container to provide support thereunder.

9. The water-retaining recreational structure of claim 8 wherein said vertical members are of greater height than said container member and extend above said container to provide a hand hold.

10. The water-retaining recreational structure of claim 1 wherein said flange has an inverted generally U-shaped rib extending about the outer edge thereof and wherein said flange is of greater width at said slide portion.

11. The water-retaining recreational structure of claim 10 wherein the greater width portion of said flange at said slide portion has at least one rib extending longitudinally thereof inwardly from said U-shaped rib at the outer edge thereof.

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U.S. Cl. X.R.

D13—1; 272—56.5