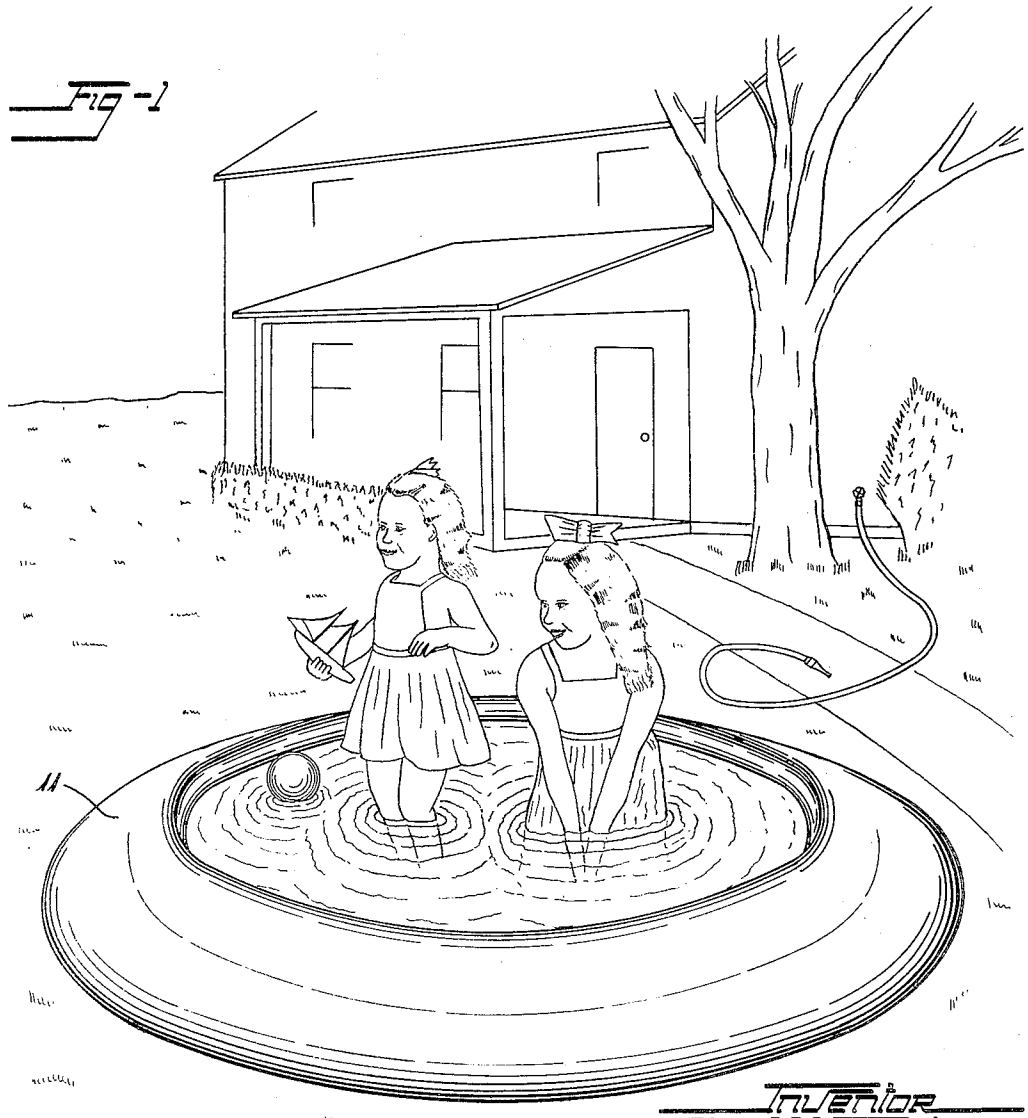
Nov. 14, 1950 V. H. HASSELQUIST 2,529,872

COLLAPSIBLE CONTAINER

Filed Sept. 1, 1945 2 Sheets-Sheet 1

Fig -1



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COLLAPSIBLE CONTAINER

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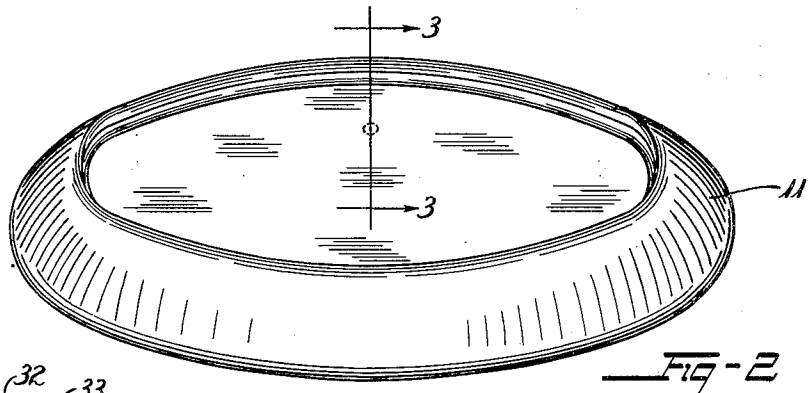


Fig-2

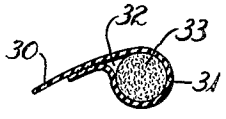


Fig-7

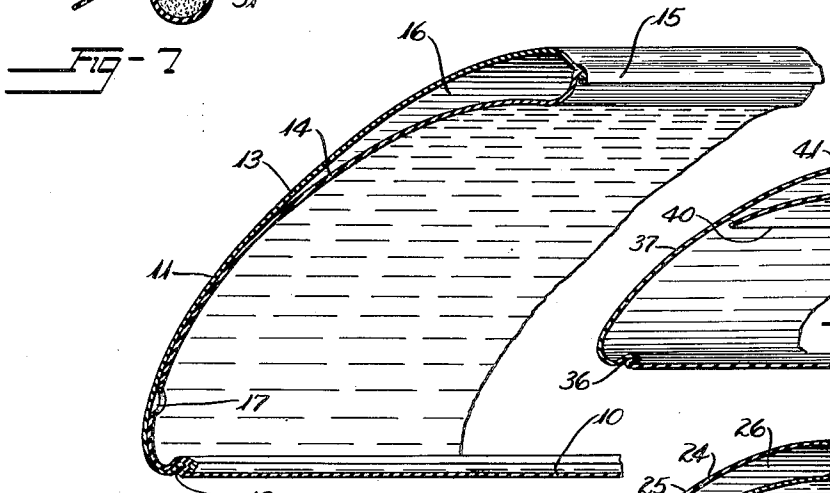


Fig-3

Fig-8

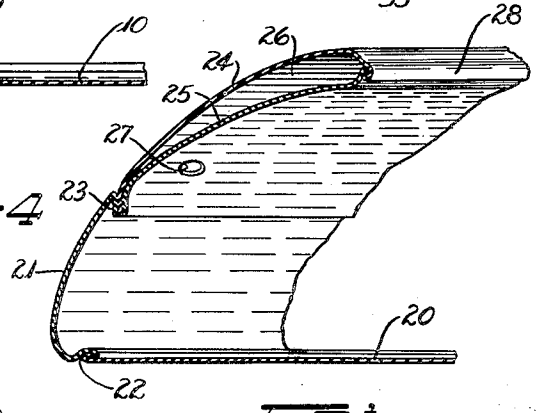
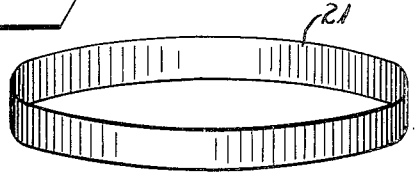


Fig-4

Fig-5



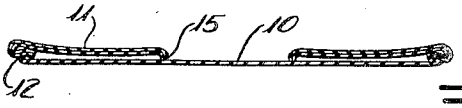


Fig-6

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UNITED STATES PATENT OFFICE

2,529,872

COLLAPSIBLE CONTAINER

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Application September 1, 1945, Serial No. 613,994

17 Claims. (Cl. 4—177)

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This invention relates to collapsible containers for liquid and is especially useful in manufacture of portable wading pools, although the invention is also useful in relation to portable baths, wash tubs, stock watering tanks and tanks for similar purposes.

The principal objects of the invention are to provide a collapsible container having a buoyant marginal wall for supporting it on or above the liquid in the container; to provide liquid-supported means for the marginal wall; to provide collapsibility; to provide a construction of adequate strength and light weight readily transportable; and to provide simplicity of inflation of the marginal wall.

These and other objects will appear from the following description and the accompanying drawings.

Of the drawings:

Fig. 1 is a perspective view showing a container constructed in accordance with and embodying the invention in use as a wading pool,

Fig. 2 is a perspective view of the container in filled condition,

Fig. 3 is a sectional view of a portion thereof taken on line 3—3 of Fig. 2,

Fig. 4 is a similar view showing a modification thereof,

Fig. 5 is a perspective view of a cross section of the marginal wall of Fig. 4,

Fig. 6 is a sectional view of the container of Figs. 1 to 3 in its collapsed condition, and

Fig. 7 is a sectional view of a modified construction of a marginal wall of the container.

Fig. 8 is a sectional view of another modification of the invention.

Referring to the drawings, the numeral 10 designates the bottom member of the container and the numeral 11 the marginal wall member thereof which is secured to the bottom member about the periphery of the bottom member as by a seam 12.

In the form of the invention shown in Figs. 1 to 3 the wall member 11 is of double walled construction and consists of a normally flat annular sheet 13 and a similar sheet 14 of flexible material which are adapted to lie flat upon the bottom when the container is in the collapsed condition, as illustrated in Fig. 6, the sheets 13 and 14 being united to each other at their outer peripheries and to the periphery of the bottom member by the seam 12 and being united to each other by the seam 15 at their inner peripheries, which are unattached at this position to the bottom member.

This construction provides an inflatable chamber 16 between the sheets 13 and 14 which thus constitute inner and outer wall portions in continuation of each other at the upper margin, whereby the marginal wall member may be inflated to increase its buoyancy in the presence of liquid within the container whereby to be held

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above the surface of the liquid to retain the same.

While valve means may be provided in either the wall 13 or 14 for inflating the wall cavity 16, applicant finds that inflation thereof may be simply provided for by an aperture 17 through the sheet 14 near the seam 12, so that by separating the sheets 13 and 14 slightly, before the container is filled with liquid, air at atmospheric pressure is permitted to enter the vent aperture 17 and become entrapped between the sheets 13 and 14 by the hydrostatic pressure of the liquid in the container.

The container may be constructed from any waterproof flexible material such as rubberized, oiled, varnished, or plastic-treated fabric, or may be made entirely of flexible plastic material such as vulcanized sheet rubber, plasticized polyvinyl chloride composition, or in some cases may be constructed entirely of substantially air-tight woven fabric. Where the container is constructed of fabric or fabric reinforced plastic, the seams may be constructed by sewing or cementing or both, and where the container is made of plastic sheet material or fabric coated with such plastic sheet materials, such as rubber compositions and plasticized polyvinyl chloride, the seams may be constructed by cementing the parts together. In cases where the container is made of plasticized polyvinyl chloride the sheet material may be united at the seams by applying heat and pressure to soften the material and weld it together permanently. The inflatable chamber reinforces the flexible wall at the rim opening without interfering with flexibility of the wall member.

In the form of the invention shown in Figs. 4 and 5, the bottom member 20 is of flexible sheet material preferably of single ply construction, the marginal wall 21, in the form of a band as shown in Fig. 5, is made of similar sheet material and is secured to the bottom member by a seam 22 about the periphery of the bottom member. The upper margin of the wall member 21 is peripherally seamed as at 23 to an upper marginal wall portion, which is preferably normally flat, so that its buoyant portion extends over the bottom member, and comprises an outer sheet 24 and an inner sheet 25. Such sheets are united by an inner peripheral seam as at 28 to provide an inflatable cavity 26 about the rim of the margin. A vent aperture 27 is provided through the inner layer 25 near the seam 23 for the purpose of admitting air to the space 26 for buoyantly supporting the marginal wall member at or above the level of the liquid in the container as in the form illustrated in Figs. 1 to 3. The form of the invention illustrated in Fig. 4 is especially of advantage where a high marginal wall member is desired.

Referring to the modification shown in Fig. 7, this illustrates a rim portion of a marginal member having a single marginal wall 30 of sheet material formed at the rim with a looped or tubular

margin 31 enclosing a space 32 in which a body 33 of material having less specific gravity than the water or other liquid to be used in the container, such as a body of sponge rubber, cork, kapok or other buoyant material is enclosed. The marginal wall member is secured to a bottom member in similar manner to the bottom member 10 of Figs. 1 to 3 and the material enclosed in the covered rim serves to buoy up the upper margin of the wall member without the necessity of inflation, and keep it above the level of the liquid.

In the form of the invention shown in Fig. 8, a bottom member 35, preferably of flat construction, is secured about its periphery, as by a seam 36 to a wall member 37 of flexible sheet material. The wall member is preferably normally flat so as to lie upon the bottom member when the article is not in use, and is preferably in the form of a flat ring. Its inner periphery is secured by a seam 38 to a normally flat ring 39 of flexible sheet material, extending under the wall 37 with its outer periphery 40 unattached to the wall member so as to provide a space 41 in which air may be entrapped.

In all of the forms of the invention the marginal wall member is inclined inwardly and upwardly from the bottom member when the container is filled so that the buoyant means at the upper margin of the wall, such as the hollow chamber 16 of Fig. 3, the hollow chamber 26 of Fig. 4, the buoyant body 33 of Fig. 7, or the chamber 41 of Fig. 8, is normally within the vertically projected area of the bottom member when the container is filled and floats at or above the level of the liquid within the container when in use.

As in each form of the invention the rim adjacent the opening in the wall member is flexible, any part of the rim may rise or fall with the level of the water as where by movement of the water laterally caused by movement of the waders the wall rises and falls locally with the surge of the water and prevents overflow. When surging ceases, the rim seeks a level position.

While the bottom member is ordinarily of flexible sheet material, a stiff bottom member may be employed. Where the bottom member is of flexible material, its margin curves upwardly to merge with the wall member and assumes a cross-sectional curvature due to hydrostatic pressure when the container is filled.

In filling the container, which normally is in a flattened condition with its marginal wall member lying against its bottom member, air is admitted through the vent 17 or 27, or about the margin 40 of Fig. 8, to the wall space 16, 26, or 41, preliminary to filling the container. This may readily be accomplished by grasping the outer and inner sheets 13, 14 of the container of Fig. 3, the outer and inner sheets 24, 25 of the container of Fig. 4, or the sheets 37, 39 of Fig. 8, with the hands and separating them sufficiently to permit air to enter the vent at atmospheric pressure. The container may then be filled from a hose or other source and as the liquid rises above the vent, the vent is shut off by the liquid and the air in the hollow wall is entrapped and slightly compressed by hydrostatic pressure. As the container is filled, the rim of the marginal wall rises with the liquid in the container. When the liquid is to be discharged from the container the marginal wall may be depressed at one or more positions about its extent, causing the liquid to be discharged over the rim of the wall.

The invention is especially useful in providing a portable wading pool for children, as illustrated in Fig. 1, as it may be placed on the lawn and filled from the garden hose. Where the container is made of transparent or translucent flexible plastic material, such as plasticized polyvinyl chloride composition, the sun's rays may penetrate the container and reach the lawn thereunder and thereby reduce damage to the lawn, and the transparent appearance of the article adds greatly to its attractiveness as the lawn may be seen through the transparent material. The portable nature of the container permits the container to be moved readily from place to place so that no part of the lawn is covered for a great length of time and in emptying the container the water refreshes the part of the lawn which has been covered and is not wasted. The container is readily flattened and folded so as to take up little space when not in use.

As the wall member extends inwardly from the periphery of the bottom member both when the container is in flattened or collapsed position and when the container is filled, the rim of the container defined by the inner margin of the wall member is always above the projected area of the largest diameter of the container and the tension in the rim holds the buoyant portion thereof at the rim within and above the base of the container where the rim is buoyed up by the liquid under it. Tension of the walls induced by pressure of the liquid together with the buoyancy of the marginal wall fully supports the container when filled without the necessity of stiffening supports.

Variations may be made without departing from the scope of the invention as it is defined by the following claims.

I claim:

1. A collapsible liquid container comprising a bottom member, a marginal wall member of flexible material secured thereto about its periphery and overlying the bottom member, said wall member having a flexible margin, and means at the margin for buoyantly supporting the wall above the bottom member in the presence of a liquid within the container, said means comprising a double walled pocket of said wall member having in the unfilled condition of the container communication with the atmosphere at a position below the upper margins of the container and in the filled condition of the container being sealed by the liquid within the container.

2. A collapsible liquid container comprising a bottom member, a marginal wall member of flexible material secured thereto about its periphery and overlying the bottom member, said wall member having a flexible margin, and means at the margin for buoyantly supporting the wall member above the bottom member in the presence of a liquid within the container, said means comprising a buoyant body provided by a double walled portion of said wall member sealed by pressure of the liquid against the same for trapping air in said portion.

3. A collapsible liquid container comprising a substantially flat bottom member of flexible sheet material and a marginal wall member of flexible sheet material adapted normally to lie in superimposed relation upon said bottom member, said wall member being secured to said bottom member about its periphery and having a double walled portion, said double-walled portion extending to said periphery and being apertured at the inner face of said wall member for admission of air to buoyantly support said

wall above said bottom in the presence of liquid within the container.

4. A collapsible liquid container of translucent flexible plastic material, said container comprising a bottom member and a marginal wall member seamed thereto about its periphery, said wall member being adapted normally to lie flat upon said bottom member and having a flexible margin of double walled construction defining an inflatable cavity at the rim of the container, and vent means normally submerged in a liquid when the container is filled for admitting air to said cavity to float the flexible margin of said wall member on said liquid.

5. A collapsible container comprising a round bottom member, a marginal wall member of flexible material extending thereabout, said wall member comprising two layers of flexible sheet material united to each other and to the peripheral margin of said bottom thereabout and having their upper margins seamed to each other to provide a double wall having a smaller upper perimeter than said bottom and defining an air space between its layers, and means below the top of said wall providing communication between the interior of the container and said air space below the level of fluid in the filled condition of the container.

6. A collapsible container comprising a round bottom member, a marginal wall member of flexible normally flat material having a round central opening smaller than said bottom, said wall member and said bottom being united to each other about their outer peripheries, and inflatable means about the inner margin of said wall member at said opening for floating said margin of the wall member above the surface of liquid within the container, said inflatable means comprising an annular marginal pocket of which said wall member provides a wall thereof, said pocket being open to the interior of the container below the filled level thereof, and said normally flat wall member being adapted to arch upwardly and inwardly when the container is filled.

7. A collapsible liquid container comprising a bottom having a wall rising therefrom, said wall comprising flexible sheet material in spaced-apart inner and outer wall portions providing an air-pocketing chamber overlying said bottom and adapted to be buoyed upon the liquid, means providing free communication between the space in said chamber and the liquid-receiving space at a position below the uppermost surface of the container, and said inner wall portion at a position below said chamber being conformable laterally against said outer wall portion by the pressure of the liquid.

8. A collapsible container as defined in claim 7 in which said inner wall portion is secured to said outer wall portion and to said bottom at the outer margin of said bottom.

9. A container as defined in claim 7 in which said inner wall portion terminates short of said bottom.

10. A container as defined in claim 7 in which said inner wall portion has a lower margin secured to said outer wall portion and terminates short of said bottom.

11. A collapsible container for liquid comprising a substantially circular bottom having a peripheral wall rising therefrom of flexible sheet material in double thickness providing inner and outer wall portions with an air-pocketing chamber between them at the upper margin of the container, said upper margin being of substantially less diameter than said bottom and said chamber overlying said bottom so as to float upon the liquid and rise and fall with the level thereof, said inner wall portion having a passage through the same providing communication between the chamber space and the liquid-receiving space.

12. A collapsible container for liquid comprising an impervious base and a peripheral wall of flexible material secured thereto, said wall comprising inner and outer wall members of impervious material joined to each other along their outer peripheries and to said base, and joined together along their inner peripheries above said base to provide an air-pocketing chamber between them, the inner peripheries of said wall members being smaller than the enclosed area of said base so that the center of buoyancy of any cross-section of said air-pocketing chamber is within and above the wall-enclosed area of said base for support of the peripheral wall on a liquid in the container by buoyancy of said chamber.

13. A collapsible container for liquid comprising an impervious base and an annular collapsible wall of flexible impervious material directed upward from said base and then inward and downward upon itself providing an inner periphery and an air-pocketing chamber within and above the wall-enclosed area of said base so that outward collapse of said wall from contained liquid is resisted at said inner periphery while the wall outwardly thereof bulges from the liquid pressure and said air chamber supports the wall on the liquid by buoyancy of said chamber.

14. A collapsible container as defined in claim 13 in which the wall portion that is disposed inward and downward extends to said base.

15. A collapsible container as defined in claim 13 in which the wall portion that is disposed inward and downward terminates substantially short of said base.

16. A collapsible container for liquid comprising an impervious base and a peripheral collapsible wall of flexible impervious sheet material joined to said base and extending upwardly and inwardly over the base in the filled condition of the container, said wall comprising an outer portion extending upward and inward and then continuing downward in an inner portion along said outer portion providing between said portions a buoyancy chamber at the upper part of said wall.

17. A collapsible container for liquid as defined in claim 16, in which the bottom part of said inner wall portion is disposed to lie along and be pressed into contact with the outer wall portion by the liquid to an extent governed by the amount of air in said chamber resisting such contact.

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