Oct. 26, 1971 A. NEMIROFF 3,614,793

BATHTUB RENOVATING APPARATUS AND METHOD

Filed Sept. 4, 1968 2 Sheets-Sheet 1

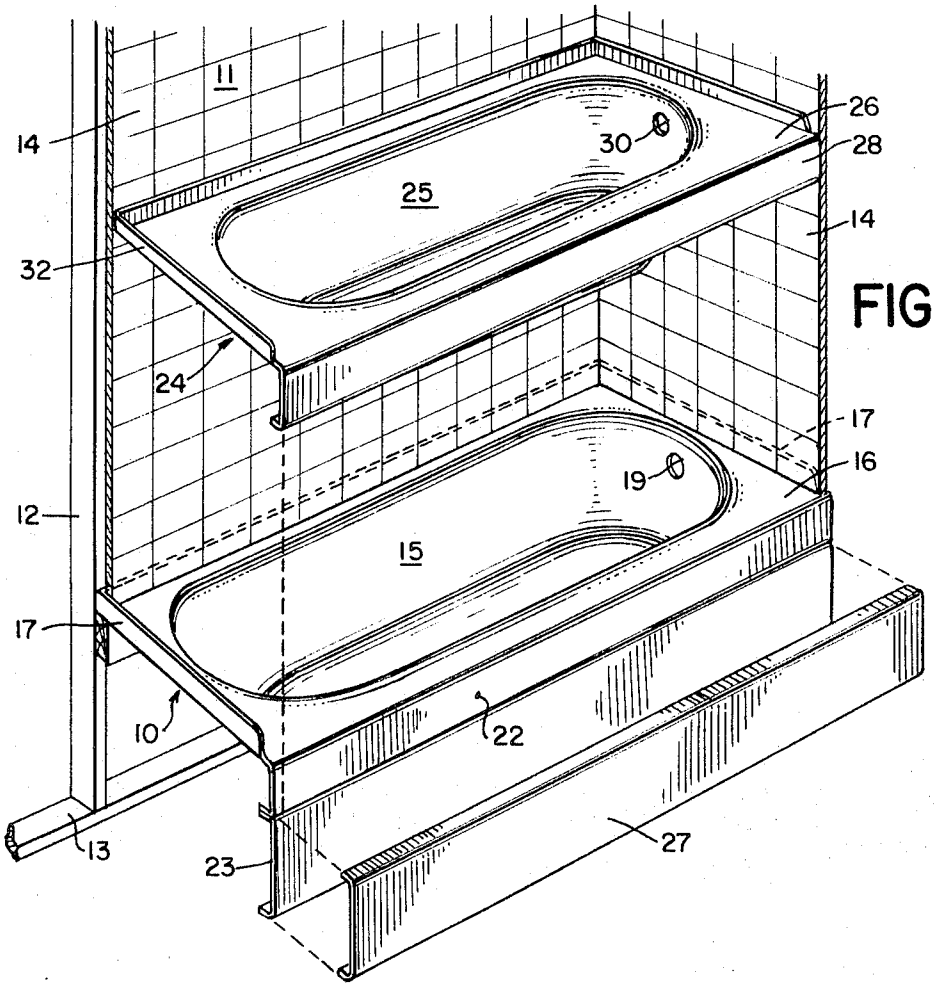
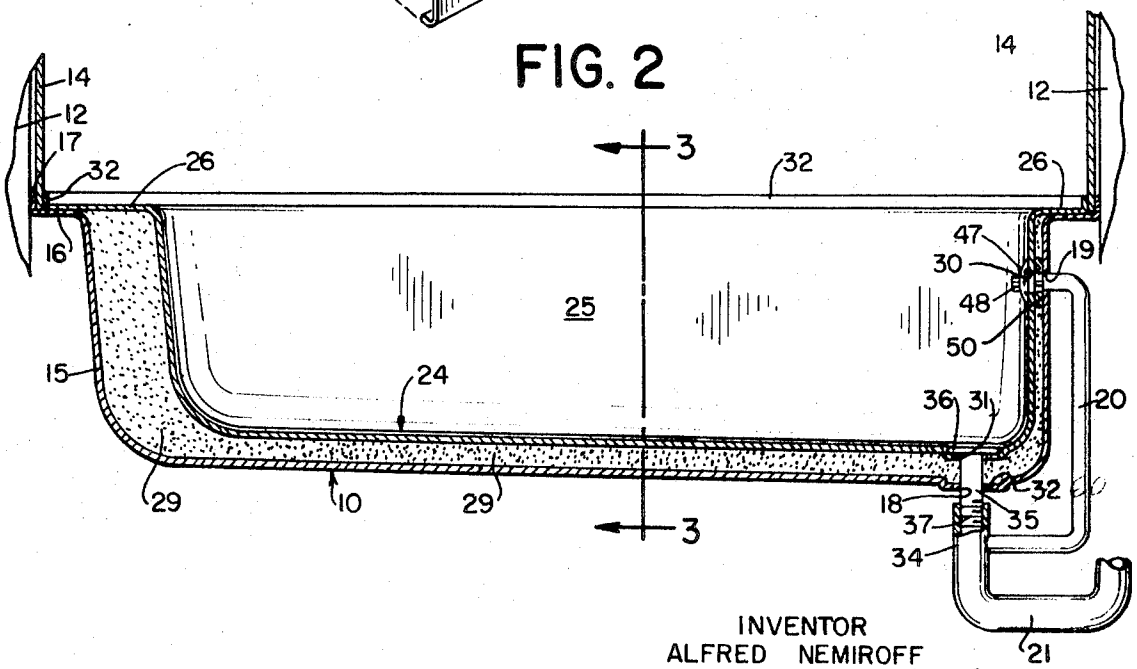


FIG. 1

FIG. 2



INVENTOR
ALFRED NEMIROFF
BY Darby & Darby
ATTORNEYS

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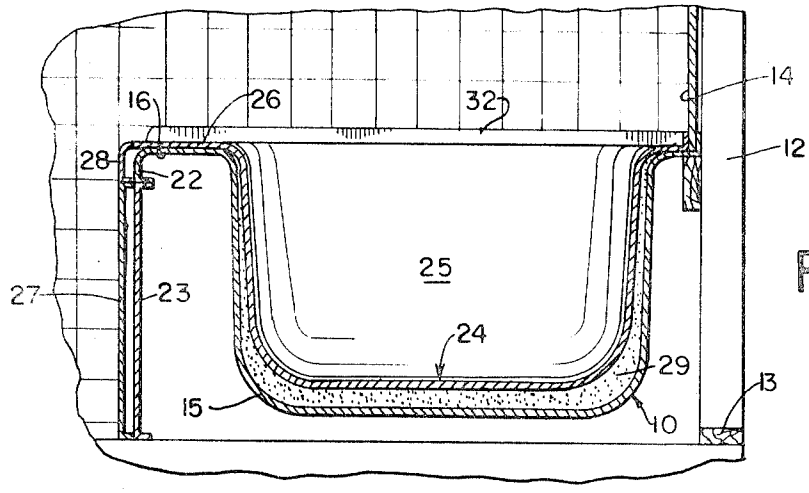


FIG. 3

FIG. 4

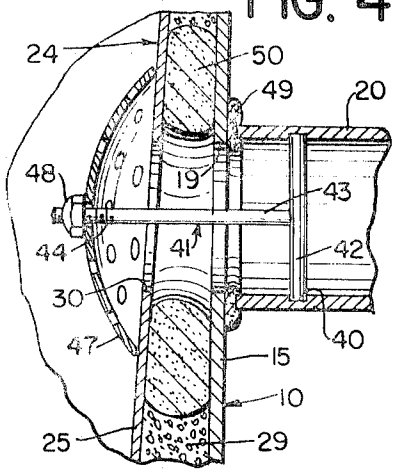


FIG. 5

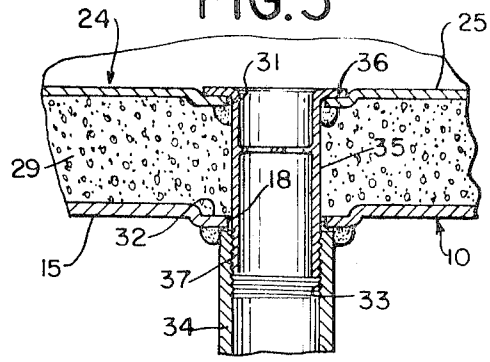
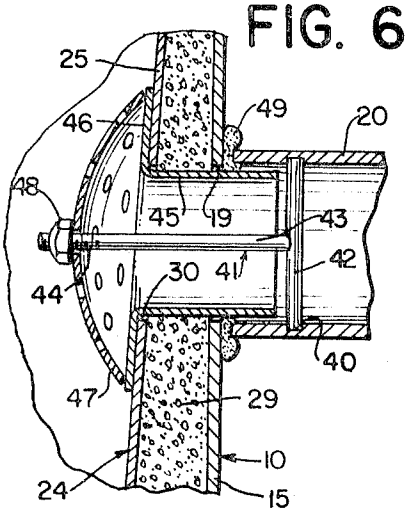


FIG. 6



INVENTOR
ALFRED NEMIROFF

BY Darby & Darby
ATTORNEYS

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BATHTUB RENOVATING APPARATUS AND METHOD

Alfred Nemiroff, New York, N.Y., assignor to The P. I. Nemiroff Corporation, New York, N.Y.

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ABSTRACT OF THE DISCLOSURE

The present invention includes a method and apparatus for renovating existing bathtubs. A bathtub liner assembly including tub and ledge portions is inserted into and supported by the existing bathtub, said liner assembly covering and obscuring the existing bathtub from sight. Waste and overflow connections are made between the liner assembly and an existing plumbing system to which the existing bathtub was previously connected.

Present methods of renovating and refurbishing multiple unit housing, for example, include the removal and disposal of the previously existing bathtubs. A great majority of such bathtubs have been built into and are partially supported by the bathroom walls and are of a size which prevents their removal through doorways. Quite often such bathtubs and their associated plumbing have been installed during the construction of the housing prior to the erection of surrounding walls and framework. Thus a great deal of demolition work must be performed in order to effect their removal, together with timely and costly reconstruction. During the time of such demolition and reconstruction, the bathroom is rendered unavailable to a family occupying the unit.

Apart from renovation of housing, recent interest in decorating and redecorating bathroom fixtures has increased. Damage and wear have rendered many bath tubs unsightly and in need of replacement. However replacement costs are relatively high due to the demolition and reconstruction work presently required. In addition, the selection of possible color schemes for a bathroom has always been limited by the color of porcelain fixtures such as the bathtub. The homeowner is faced with substantial costs if he desires to change the basic color of such fixtures.

Accordingly it is an object of the present invention to provide a method of and apparatus for refurbishing existing bathtubs.

Another object of the invention is to provide a bathtub liner for use with existing bathtubs which will completely cover and abscure the existing tub and which provides a new bathing container without requiring the removal of the old one.

A further object is to provide means for eliminating the need to remove existing bathtubs from housing being renovated and the accompanying demolition. A relatively inexpensive liner is added to the existing bathtub to form a composite structure which utilizes existing plumbing fixtures.

The present invention fulfills the aforementioned objects and overcomes limitations and disadvantages of prior art solutions to problems. According to one aspect of the present invention, a bathtub liner assembly having integrally formed ledge and tub portions is supported by and covers an existing bathtub which may have become unsightly or non-functional. The outer shape of the liner assembly is made to conform to the shape of the inside surfaces of the existing tub such that the liner is supported by its ledge portion upon the existing tub with its tub portion hanging therewithin. Waste and overflow holes

extending through the liner assembly tub portion are thereafter connected with plumbing fixtures to which the waste and overflow outlets of the existing tub were connected. Voids between the liner assembly and the existing tub are filled with perlite or other material having sound-deadening and cushioning properties.

The invention will be more clearly understood from the following description of specific embodiments of the invention, together with the accompanying drawings, wherein similar reference characters denote similar elements throughout the several views, and in which:

FIG. 1 is an exploded perspective view of a bathtub liner assembly and an existing bathtub according to the present invention;

FIG. 2 is a sectional elevational view of the apparatus of FIG. 1;

FIG. 3 is a sectional elevational view looking along line 3—3 of FIG. 2;

FIG. 4 is an enlarged fragmentary sectional elevational view of an overflow plumbing connection useful in the present invention;

FIG. 5 is an enlarged fragmentary sectional elevational view of a waste plumbing connection useful in the present invention; and

FIG. 6 is an enlarged fragmentary sectional elevational view of another overflow plumbing connection useful in the present invention.

Referring now in more detail to the drawings, in FIG. 1 an existing bathtub **10** is shown installed in a bathroom and is partially built into bathroom wall **11** of the partition type, for example. Studding **12** is supported on horizontal planks **13** and provides the supporting means for lathing, plaster and (in some cases) tile indicated generally as **14**. While bathtub **10** is here illustrated for convenience as in a corner installation, it is more commonly in an alcove installation, enclosed in walls on three sides. Bathtub **10** includes a hollow tub portion **15** which is integrally formed, such as by deep drawing or casting with a ledge portion **16** extending around the cavity of tub portion **15**. Ledge portion **16** includes on three sides thereof an upstanding or upturned flange **17** which is normally hidden and overlapped by or sealed into lathing, plaster, and tile **14** which, in turn, extends vertically downward to the upper surface of ledge portion **16** adjacent flange **17**. Tub portion **15** is formed with an ordinary drain or waste hole **18** therethrough as well as an overflow hole **19**. Holes **18** and **19** are interconnected with the conventional type of bathroom waste plumbing. An overflow pipe **20** conventionally connects overflow hole **19** with a T-junction having one branch extending down to a plumbing trap **21** and another branch extending up to drain hole **18**.

At the entrance side of bathtub **10**, a depending extension **22** of ledge portion **16** forms a smooth vertical surface, extending partly or wholly to the floor. Where it extends only partly to the floor, an apron **23** is secured, such as by bolting, or welding to the bottommost part of extension **22** and extends to the bathroom floor so as to hide from view the usually unfinished underportions of bathtub **10**. Apron **23** further acts as a support for the entrance side of tub **10** which is not supported within wall **11**.

The size of an existing bathtub such as bathtub **10** depends upon the size of the bathroom in which it is accommodated. For illustrative purposes, a porcelain enameled bathtub according to U.S. National Bureau of Standards Product Standard PS 5–66 has been widely used and has an overall length of 60 inches with an overall width of 37⅞ inches. The tub cavity portion thereof includes a 52½ inch length by 23⅜ inch width with a a maximum sloping inside depth of 17⅞ inches. The overall height of such a bathtub including the apron **23** is 16

inches. Upturned flange heights are 1 inch. When such a conventionally installed bathtub has to be repaired or renovated, a great deal of difficulty and expense is created. The tub is generally installed directly on the building framing, so that to remove it requires demolitions and later reconstructions generally of three walls. Also, such tubs are exceedingly heavy weighing several hundreds of pounds, and their removal and replacement through doorways and halls, elevators, and the like, is awkward and difficult. Moreover, new tubs are generally of different design from 20 or 30 year old tubs being replaced, and require different mountings, and supports, and are difficult to position with respect to the existing piping. It is also practically impossible to connect such new tubs to existing piping without breaking through the ceiling below, to get at the piping below the tub, and without breaking through the wall alongside the tub, to get at the overflow connection.

The foregoing difficulties are overcome by the present invention, with a consequent saving in materials and labor of at least 50% over prior methods of renovating such tubs. As will be seen from the following further description, the old tub need not be removed at all, requiring no breaking through or demolition of walls or ceiling. A new tub is simply placed within the old, and specially adapted for ready connections to existing piping and for sealing to existing walls.

A bathtub liner assembly **24** is shown in exploded form in FIG. 1 as including a tub portion **25** integrally formed with ledge portion **26**. Liner assembly **24** is similar in shape to bathtub **10**, tub portion **25** being smaller in size and weight than tub portion **15**. Liner assembly **24** is adapted to be quickly and easily inserted into bathtub **10** as shown in FIG. 2 such that the ordinarily exposed surfaces of tub portion **15** are entirely hidden, these surfaces possibly having been damaged, worn or being of an undesirable color. Ledge portion **26** is simply supported upon ledge portion **16** such that tub portion **25** is suspended within the hollow or cavity of tub portion **15**. No further means of supporting the weight of liner assembly **24** is necessary, although of course any number of alternative supporting means are obvious. A liner assembly apron **27** is shown in FIG. 3 to obscure original apron **23**, and is secured to a downwardly depending flanged extension **28** of ledge portion **26** by bolting, or other suitable means. Apron **27** is preferably secured to extension **28** prior to placement of liner assembly **24** over bathtub **10**, although such attachment may in some cases be made afterwards.

The overall size of liner assembly **24** is such that it is easily transported within fully constructed buildings and through conventional sized doorways. There is no need to chop away or destroy existing partition walls, nor is there need to enter apartment units other than the unit within which the liner assembly is to be installed. Conventional methods of removing existing bathtubs in multiple unit housing, on the other hand, require detachment or destruction of existing waste and overflow plumbing, access to such plumbing being gained only through the apartment immediately beneath that in question. In addition, such conventional methods often include the extrication of the old tub through an adjoining bedroom partition wall, which must be destroyed since the existing finished bathroom lathing, plaster, and tile **14** surrounds and overlaps tub flanges **17** in order to afford waterproofing and to avoid crevices which are difficult to keep clean. All of these costly, time consuming, and debris causing steps are unnecessary when employing liner assembly **24**.

Thereafter, interconnections between an overflow hole **30** and a waste or drain hole **31** formed through tub portion **25** are made with overflow pipe **20** and trap piping **21**. Methods of making these interconnections are described below.

Since great numbers of existing bathtubs are made to identical specifications and since bathroom sizes for multiple dwelling units have become standardized, it is possible according to this invention to provide liner assemblies which very accurately fit over such tubs and against finished bathroom walls. Thus, minor calking may be all that is required of the installer. Liner assembly **24** includes an upturned flange **32** similar to flange **17** which abuts lathing, plaster, and tile **14**, may be sealed thereto by such calking.

Bathtube liner assembly **24** is preferably made from sheet steel which is coated with porcelain enamel. A 14 or 16 gage sheet is a desirable thickness. Porcelain enamel coatings are preferably at least .007 inch thick to supply a durable, glossy, abrasion- and chemical-resistant surface. Other materials may be used, such as stainless steel or molded plastics or the like, but these are not considered desirable. Of course, every dimension of liner assembly **24** may be easily varied in order to accommodate varying bathtub sizes and shapes.

The liner assembly **24** may be formed so as to have sufficient rigidity to be supported solely from ledge **16**. However, for economy and lightness of weight, it is desirable to use a relatively thin liner, which may yield under the weight of water ad a person in the tub. Where this is deemed a disadvantage a filler material **29** such as perlite or other inert granules may be introduced between tub portions **25** and **15** until substantially all voids therebetween are filled at least for the bottom and parts of the sides of the space between tub portions **15** and **25**. Filler material **29** is selected to include favorable non-combustible, sound-insulating and vermin-resistant properties. If desired, a liquid or viscouse material which sets into a solid form, such as epoxy-containing material, may be used.

After covering tub **10** with liner assembly **24** and after adding filler material **29**, new drain and overflow holes **31** and **30** are connected to the existing waste plumbing system. In a preferred method of installation, the existing drain and overflow fittings which connect the existing bathtub **10** to the waste plumbing system of a house, for example, are removed prior to insertion of liner assembly **24**. These fittings ordinarily include a flanged cylindrical sleeve (not shown), in the case of the drain opening, with its flange seated within a depression **60** formed around hole **18** and its sleeve extending into threaded engagement with internal threads of a pipe **34**, forming part of the T-junction leading to trap **21**. This existing sleeve is unscrewed and removed. A new cylindrical drain sleeve **35** similar in shape to that removed is supplied as in FIG. 5. It includes an annular flange portion **36** at one end and external threads **37** formed at its opposite end. The underside of flange portion **36** is coated with a plumbing sealing compound and sleeve **35** is threaded into threads **33**. Fluid is thereby prevented from entering the voids between tub portions **25** and **15** occupied by filler material **29**. Sleeve **35** may be of the type removed with an identical or longer overall length which will facilitate bridging the distance between holes **31** and **18**.

Illustrative interconnections of overflow pipe **20** with overflow hole **30** are shown in FIGS. 4 and 6. It is conventional for the overflow pipe **20** to be held in place by a T-bar having a cross-bar held in a groove or recesses in the inner wall of the overflow pipe, and having an axial-rod-portion passing through a perforated escutcheon plate within the tub and secured thereto by a nut threaded on the end. This is removed and a new T-shaped tie rod **41** is inserted with a T portion **42** supported within groove or recess **40** in pipe **20**. A leg portion **43** extends integrally from T portion **42** through holes **19** and **30** and into the hollow of tub portion **25**. Leg portion **43** is formed with external threads **44** at its free end.

In a preferred embodiment shown in FIG. 6, a cylindrical flanged sleeve **45** having an annular flange **46** extends coaxially with respect to leg portion **43** through holes **30** and **19** such that flange **46** abuts the surface of

tub portion 25 immediately surrounding hole 30. Sealing compound may be added between flange 46 and the tub. A perforated escutcheon or ornamental plate 47 having a curved cross-sectional shape is located with its peripheral edges in contact with and compressing flange 46 against tub portion 25. A locking nut 48 is threaded onto threads 44 and maintains the assembly as shown in FIG. 6. Tightening of nut 48 causes a pulling of tub portion 25 and overflow pipe 20 closer together, thus forming a tight joint therebetween. An optional O-ring type gasket 49 is located and compressed between the free end of pipe 20 and outer surfaces of tub portion 15. Gasket 49 further insures against leakage of fluid into the voids occupied by filler material 29. Liquid in tub portion 25 reaching escutcheon 47 is free to flow due to gravity therethrough, thereafter through sleeve 45 and into pipe 20, such that liner assembly 24 will not overflow.

In another embodiment of the invention, shown in FIG. 4, sleeve 45 is eliminated and a sealing ring or loose sealing compound 50 is compressed between tub portions 25 and 15 by tightening locking nut 48. Sealing ring 50 prevents fluid from entering the spaces between the tub and liner. It will also be understood that similar liner assemblies may be used for refurbishing other household plumbing fixtures, such as sinks, toilets, bidets and the like.

The liner assembly 24 covering the bathtub 10, as insalled, provides a new bathing container of any desired color with but a minor reduction in bathtub hollow volume, as compared with bathtub 10. The refurbishing just described may be effected with a few hours of labor with but a fraction of the inconvenience and cost presently experienced by removing and replacing an existing tub.

The embodiments of the invention particularly disclosed are presented merely as examples of the invention. Other embodiments, forms and modifications of the invention coming within the proper scope of the appended claims, will, of course, readily suggest themselves to those skilled in the art.

What is claimed:

1. A method of refurbishing an existing conventional bathtub having a substantially horizontal peripheral circumscribing ledge portion connected to conventional existing plumbing, comprising the steps of supporting portions of a liner assembly comprising a liner having a ledge portion corresponding to said bathtub ledge portion and including an external vertical extension on and within the entire existing bathtub direct bearing contact between said bathtub and said liner being made only between the bottom of said liner ledge and the top of said bathtub ledge, thereby forming new liquid-containing surfaces and obscuring the entire existing container from view, and interconnecting portions of said liner assembly adjacent said existing plumbing with said existing plumbing.

2. A method as in claim 1, where said existing tub has a liquid outlet, and said liner assembly has a corresponding aperture, comprising the further steps of positioning said liner assembly with its aperture in substantial register with said outlet, said interconnecting step including interconnecting said outlet and aperture with a liquid-conveying channel and sealing said channel to said aperture.

3. A method of refurbishing according to claim 1, wherein said bathtub includes substantially horizontal ledge surfaces, said step of supporting including supporting the weight of said liner assembly on said ledge surfaces.

4. A method of refurbishing according to claim 1, wherein said step of interconnecting comprises removing at least one first conduit member interconnecting said existing bathtub and portions of said plumbing and installing at least one second conduit member between said liner assembly portions and said plumbing portions.

5. A method as in claim 3, including the step of at least partially filling the space between said existing bathtub and liner assembly with a granular material.

6. A refurbished conventional bathtub for use with a conventional household-type plumbing system, comprising a first container including substantially horizontal first ledge portions, and a first tub portion connected to said ledge portions; a second container supported by said first container, including a second tub portion disposed within the cavity of said first tub portion, and second ledge portions integral with said second tub portion having lower bearing surfaces on the undersides of said second ledge portions, sole direct contact between said first and second containers occurring between said lower bearing surfaces and said first ledge portions; and said second tub portion being formed to accept means interconnecting said second container with said plumbing system.

7. A liquid container according to claim 6, wherein said second tub portion is formed with a drain hole, said interconnecting means including a first flanged sleeve extending through said drain hole and through said first tub portion into engagement with a portion of said plumbing system.

8. A liquid container according to claim 6, wherein said second tub portion is formed with an overflow hole and said interconnecting means further includes a perforated escutcheon covering said overflow hole, and a tie rod supported at one end by a recessed portion of said plumbing system and at its opposite end by said escutcheon, said tie rod extending through said first tub portion and through said overflow hole.

9. A liquid container according to claim 8, wherein said interconnecting means further includes a flanged flanged sleeve having a cylindrical portion extending substantially coaxially with said tie rod through said first tub portion and said overflow hole, said second flanged sleeve including a flange portion disposed between the periphery of said escutcheon and portions of said second tub portion surrounding said overflow hole.

10. A liquid container according to claim 8, wherein said interconnecting means includes a seal ring compressed between said first and second tub portions around said overflow hole for conducting fluids between said first and second tub portions.

11. A liquid container according to claim 6, further comprising a particulate filler material occupying at least part of the space between said first and second tub portions.

12. A liquid container according to claim 11, wherein said filler material is perlite.

References Cited

UNITED STATES PATENTS

938,102	10/1909	Wise	4—191
D. 143,767	2/1946	Stanitz	4—173
1,445,101	2/1923	Niedecken	4—199
1,919,354	7/1933	Anderson	4—173 UX
2,080,601	5/1937	Cappuccio	4—173
2,468,347	4/1949	Restall	4—173
2,919,449	1/1960	Bowden	4—173
3,045,254	7/1962	Cook et al.	4—173
3,065,473	11/1962	Sporck et al.	4—166

FOREIGN PATENTS

27,572	6/1914	Great Britain	4—166
376,981	7/1932	Great Britain	4—173
366,353	7/1906	France	4—166

LAVERNE D. GEIGER, Primary Examiner

D. B. MASSENBERG. Assistant Examiner