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DISPOSABLE CONTAINER, CONTAINER PACKAGE
AND DISPENSING STRUCTURE
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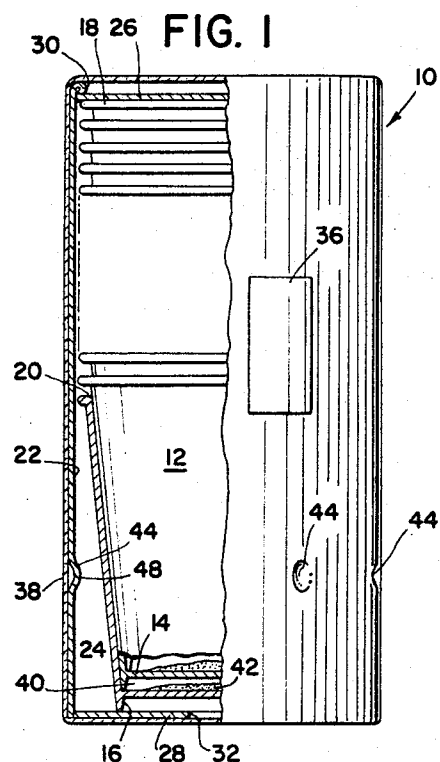
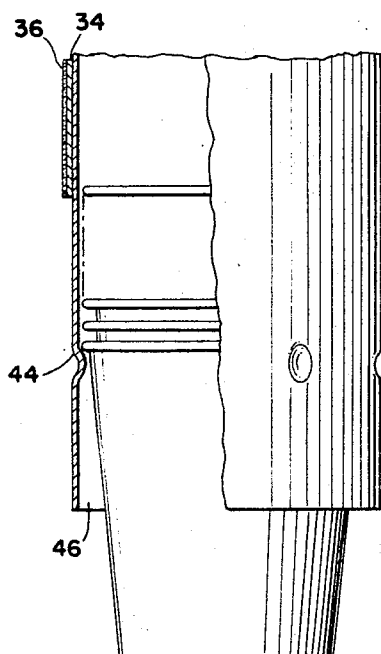


FIG. 2

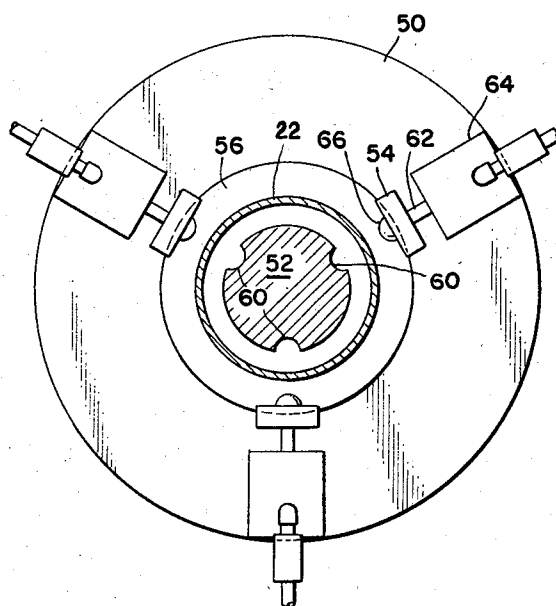


FIG. 3

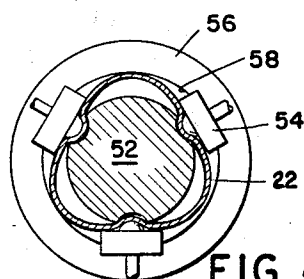


FIG. 4

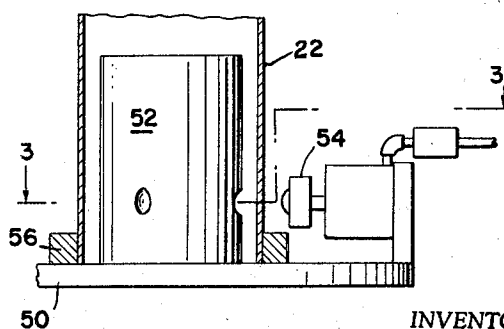


FIG. 5

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DISPOSABLE CONTAINER, CONTAINER PACKAGE AND DISPENSING STRUCTURE

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ABSTRACT OF THE DISCLOSURE

Container dispensing structure comprising a stack of frusto-conical cup-like containers, each of said containers comprising a closed bottom portion and wall means extending generally upwardly and outwardly thereof, each of the containers being nested with an adjacent container of the stack with the bottom portion thereof being spaced apart to define a chamber therebetween; a quantity of soluble material disposed within each chamber, the wall means of each container being in closely overlying relationship with the wall means of the adjacent container to retain the quantities of material within the chambers; and means for retaining the containers in stacked relationship with the wall means in such closely overlying relationship and for enabling sequential removal of the containers and the associated quantity of soluble material from the stack.

The present invention pertains, generally, to disposable containers, container package and dispensing structure, and methods and apparatus for making the same, and more particularly, to a container packaging and dispensing structure comprising a plurality of nested disposable containers and methods and apparatus of making the same.

It is a primary object of the present invention to provide a plurality of disposable containers that are disposed in a nested relationship with respect to one another and within a packaging sleeve adapted to function as a dispenser therefor.

Another primary object of the present invention is to provide a plurality of disposable containers that are disposed in a nested relationship with respect to one another, each of said nested containers having a pre-determined quantity of water-soluble material located at the bottom thereof, each succeeding container cooperating with each preceding container to form an effective air-tight seal therebetween, enabling the bottom of each succeeding container to comprise the only separating member between that container and the material in the next preceding container.

Yet another primary object of the present invention, in addition to the foregoing objects, is to provide an effective package for maintaining a pre-determined quantity of water-soluble material in the bottom of each of a plurality of nested containers, and a seal protecting the material until a succeeding container has been removed.

A further primary object of this invention, in addition to the foregoing objects, is to provide a container dispensing structure for enabling the individual sequential removal of a plurality of nested containers which is economical and reliable, and methods and apparatus for making the same.

The invention resides in the combination, construction, arrangement and disposition of the various component parts or elements incorporated in an improved disposable container, container package and dispensing structure and methods and apparatus for making the same constructed in accordance herewith. The present invention will best be understood, and objects and important features other than those specifically enumerated above, will become apparent when consideration is given to the following detailed

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description, which, when taken in conjunction with the annexed drawing, describes, discloses, illustrates and shows a preferred embodiment of the present invention and what is presently considered to be the best mode of practicing the principles thereof. Other embodiments or modifications may be suggested to those having the benefit of the teachings herein, and such other embodiments or modifications are intended to be reserved especially as they fall within the scope and spirit of the subjoined claim.

In the drawings:

FIG. 1 is an elevational view of a container package structure constructed in accordance herewith, some parts being broken away and shown in section;

FIG. 2 is an elevational view similar to the preceding figure showing the container package structure in the dispensing configuration thereof;

FIG. 3 is a top plan view, partially in section of the apparatus and the first step of the method of making the package of the preceding figures in accordance with the present invention;

FIG. 4 is a partial plan view similar to the preceding figure of the second step of the present method; and

FIG. 5 is a sectional elevational view of the apparatus of FIGS. 3 and 4.

With reference now to the drawing, it will be understood that one exemplary use to which the present invention is particularly suited is in connection with oral hygiene. More particularly, in the case of a hospital, the normal procedure is to purchase liquid mouthwash, pour it into a conventional container, and bring it to the patient. This obviously is an inefficient procedure. The present invention contemplates placing a pre-determined quantity of water-soluble mouthwash in powder form at the bottom of each of a plurality of nested containers. The powdered mouthwash would be antiseptic, and might comprise, as its active ingredient, a benzethonium chloride in a flavored effervescent base. One-half gram of this antiseptic powder would be sufficient to produce a one ounce mouthwash. The nested containers may be of any suitable and conventional construction and, for example, may comprise a three ounce wax-impregnated paper cup that is, in addition, designed to present an aesthetic appearance not only for use in hospitals, but more general use as well. The cups may, however, be formed also of paper, a plastic material, a plastic coated paper, or the like, and the water-soluble material might also comprise, for example, dehydrated soups, beverages such as coffee, tea and chocolate, or the like, or the container package and dispensing structure is equally suitable for nested cups which are not pre-packaged with such water-soluble material.

With particular reference now to FIG. 1, a shipping, storage and dispensing package or structure 10 constructed in accordance herewith is illustrated therein. The package of structure 10 comprises a plurality of preferably disposable cup-like containers 12 disposed in a nested relationship with respect to one another. Each container 12 comprises a recessed bottom wall 14, enabling each container 12 to thus define a bottom completely peripheral lip 16. The containers 12 further each comprise a lip or bead 18 extending completely peripherally around the mouth 20 thereof. Each package or structure 10 might, for example, comprise twenty of the nested disposable containers 12 and a sleeve 22 is adapted to be disposed about the group of containers. The sleeve 22 is preferably disposable and may, like the containers 12, be fabricated of any suitable and conventional material, and for example, may be fabricated of a rolled foam styrene or a felted fibrous material such as paperboard, cardboard, and the like. The sleeve or tube 22 is of such a length that it ex-

tends at least from the lip 16 of the first or outermost container 24 to be dispensed to the lip or bead 18 of the last container to be dispensed and is of a transverse cross section as to enable free axial movement therewithin of the stack of containers 12 while substantially precluding lateral movement thereof. The sleeve or tube 22 is also provided with closure or cap means such as an end disc 26 and a removable plug 28. The end disc 26 may be precluded from movement outwardly of the sleeve 22 as by a rolled edge or lip 30 provided at one end thereof and the removable plug 28 may be secured within the other end of the sleeve 22 as by friction or by an adhesive and may be provided with a finger hole 32 to enable the plug 28 to be readily removed therefrom. The caps or closures 26 and 28 may likewise be fabricated of any suitable and conventional material, such as, for example, plastic or a felted fibrous material such as cardboard or paperboard. Adhesive means, such as a strip of pressure sensitive adhesive 34 covered by a protective strippable layer 36 may be mounted on the sleeve 22 to enable the package or structure 10 to be readily secured with a mounting surface by merely removing the protective layer 36 therefrom and adhering the adhesive 34 to such mounting surface.

A protective overwrap 38 which may, for example, be fabricated of a moisture impervious material such as a plastic film may also be provided. The protective overwrap 38 may be fabricated, for example, of a transparent heat sealable film which is wrapped completely therearound. The film 38 may likewise be fabricated of any suitable material, and for example, may be fabricated of a three quarter mil polypropylene film which may be subjected to a heat shrinking process to contour itself completely around and conform to the package 10 for neat appearance.

As is considered readily apparent, the recessed bottom 14 and bottom lip 16 of each succeeding cup or container 12 cooperates with the bottom wall 14 of the preceding container to define a cavity or enclosed compartment 40 within which a pre-determined quantity of powdered water-soluble material such as powdered mouthwash 42 is disposed. The last container to be dispensed will not, of course, have the bottom of a succeeding container within which to form another cavity or compartment 40. But the cap or cover disc 26 cooperates with the bead or lip 18 of the last container to be dispensed to preclude the pre-determined quantity of mouthwash located therein from falling out. It will be understood, at this point, that the present invention is not limited to use in hospitals, as pointed out above, but can be dispensed in hotels, motels, restaurants, the home, and in any other establishment. In addition, neither is the present invention limited to use with powdered mouthwashes, but is equally capable of use with any other water-soluble material such as food-stuffs, drinks, and the like, as pointed out above, while the material may be such as to be soluble in other liquids.

In addition, it is a salient feature of the present invention that the removable plug or disc 28 cooperates with the sleeve or tube 22 and the end disc 28 to provide an axial or endwise pressure on the stack of nested containers 12 to firmly and securely define a pressure fit between the containers 12 to provide a seal about the compartments or cavities 40 and thereby about the liquid soluble material 42.

The sleeve or tube 22 is further provided with detent means such as a plurality of indentations or dimples 44 to inhibit the movement of the containers 12 within the sleeve 22 to enable the structure 10 to function not only as a shipping and storage container for the cups or containers 12 but also to function as a dispenser therefor, enabling the individual sequential removal of the cups or containers 12 therefrom. The protective overwrap or wrapper 38 and the plug 28, as pointed out above may be readily removed to provide the sleeve 22 with a generally open and unobstructed end or dispensing opening 46 and the dimples 44 are preferably spaced therefrom a dis-

tance less than the height of the cups or containers 12 to enable the cups or containers 12 to project outwardly through the open and unobstructed end 46 when the lip or bead 18 engages the dimples 44. The dimples 44 are preferably of generally tear-drop configuration to define convex projections 48 extending inwardly of the sleeve 22 and the convex projections 48 are preferably smooth to enable the dimples or indents 44 to perform as smooth dispensers. In use, with the plug 28 removed, the cups or containers 12 will fall freely in the tube or sleeve 22 until the cup lips or beads 18 reach the dimples or indents 44. The lowermost lip or bead is then engaged by the dimples 44 to stop the cup or container 12 from falling out of the open and unobstructed end 46 of the tube or sleeve 12. However, at this point, as pointed out above, and as more clearly shown in FIG. 2 of the drawing, the cup protrudes past the bottom of the tube or sleeve 22 through the open and unobstructed end 46 thereof thereby permitting a user to pull a cup or container from the dispenser 10. As one cup or container 12 is pulled from the bottom of the dispenser or structure 10, the next or succeeding cup drops to the dimples 44, again is stopped and held until a user removes this cup. This procedure continues until the tube or sleeve 22 is empty.

As hereinbefore pointed out, the tube or sleeve 22 may be fabricated of a felted fibrous material such as paperboard, cardboard, or the like. Such materials fracture easily, and as also pointed out above, it is important that the indents or dimples 44 be smooth, especially on the interior or convex projections 48 thereof and accordingly the tube or sleeve 22 be indented without fracturing the inner wall thereof as an indent fracturing the inside of the tube or sleeve 22 will not permit the indents or dimples 44 to perform as smooth dispensers. If the inside of the indents or dimples 44 be fractured, then the indents or dimples 44 may cause the cup lips 18 to tear and may cause the cups to cling together preventing proper individual sequential pulling or dispensing of one cup at a time. Accordingly, and with reference now to FIGS. 3-5 of the drawing, it is within the ambit of this invention to provide novel apparatus and methods for forming the indents or dimples 44 in the sleeves 22 formed of felted fibrous material such as paperboard, cardboard, or the like.

With continued reference to FIGS. 3-5 an apparatus or tool suitable for forming the dimples 44 comprises a base 50, fixed die means 52, and movable die means 54. The support means 56 positions the tube or sleeve 12 relative to the fixed die means 52 and the movable die means 54. The support means 56 preferably defines an engirdling support and may be constructed of a solid metal ring or annulus containing a cavity 58 therein of substantially equal diameter to the outside diameter of the tube or sleeve 12 and the fixed die means or mandrel 52 is preferably formed of a second metal ring positioned substantially centrally and axially of the outside metal ring 56. The inside metal ring or mandrel 52 has a diameter somewhat less than the inside diameter of the tube or sleeve 12 to enable the tube or sleeve 12 to flex during indentation thereof as clearly shown in the appended drawing. For example, if the tube or sleeve 12 has a diameter of approximately 2.35 inches, then the outside metal ring 56 will have an inside diameter also of approximately 2.35 inches and the second metal ring 52 may be approximately two inches in diameter. The fixed die means or mandrel 52 is provided with a plurality of cavities or depressions, for example, three cavities 60 spaced approximately one hundred twenty degrees apart and being approximately $\frac{3}{32}$ inch in depth. The cavities 60 are also, preferably, of substantially tear drop configuration and equally spaced from the base 50. The movable die means 54 are mounted on drive shafts or plungers 62 which are driven by air pressure from air cylinders 64. The movable die means 54 are provided with tear drop shaped pieces of metal 66 adapted to engage the de-

pressions or cavities 60 of the fixed die means or mandrel 52. The air cylinders 64 are equal in number to the number of cavities 60 and may be mounted on the base 50 again one hundred twenty degrees apart around the circ- sleeve 12 being spaced from the fixed die or mandrel 52. thereof protruding radially of the rings 52 and 56.

In forming the dimples 44 in the tube or sleeve 12, the tube or sleeve 12 is inserted within the aperture or cavity 58 of the outer ring 56 with the outside circumference of the tube or sleeve 12 fitting snugly into the inside of the outer ring 56 with the inside of the tube or sleeve 12 being spaced from the fixed die or mandrel 52. The space between the tube or sleeve 12 and the fixed die or mandrel 52 is necessary to permit the tube to flex inwardly toward the inner ring as the movable dies 54 strike the tube and force the tube 12 against the inner ring 52, driving the cardboard into the tear drop cavities 60 of the inner ring 52. A sufficient space necessary to allow this flexure and thereby prevent inside fracture of the dimples 48 has been found to be effective even when the space is as small as one eighth inch or much as one quarter inch. The sharp striking motion of the movable die means, when driven by air pressure admitted to the cylinders 54 causes the permanent indentation or dimpling of the tube. As above mentioned, cardboard fractures easily if not permitted to flex. Should the space between the tube or sleeve 12 and the fixed die or mandrel 52 be omitted then the tube or sleeve 12 would be held firmly between the inner and outer rings and the tube would be completely rigid. If the tube is struck by the movable dies 54 when held rigid, the cardboard often fractures. However, the space is provided in the present novel apparatus between the inner and outer rings permits the tube or sleeve 12 to flex and thereby permits the cardboard to stretch when struck by the movable die means, and permits the dimples to be struck into the tube without fracturing the tube. If it is desired to form six dimples, as shown in FIG. 1, then this may be accomplished with the present apparatus in two steps, rotating the tube or sleeve 12 sixty degrees between strokes of the movable dies 54 and in either case, the flexural deformation of the tube or sleeve 12 by the apparatus of the present invention produces a smooth dimple as explained above.

While the invention has been shown, illustrated, described and disclosed in terms of an embodiment or modification that it has assumed in practice, the scope of the invention should not be deemed limited by the precise embodiment or modification herein shown, illustrated, described or disclosed, such other embodiments or modifications being intended to be reserved especially as they fall within the scope and breadth of the subjoined claim.

What is claimed is:

1. Disposable container, container package and dispensing structure comprising, in combination, an elongated, generally rigid self-supporting and nonelastic tu-

bular sleeve fabricated of a material having the characteristics of paperboard, cardboard, and the like; a plurality of similar truncated right circular cone cup-like containers, each of said containers comprising a closed bottom portion and tapered wall means extending generally upwardly and outwardly thereof to a rim spaced apart from said closed bottom portion to define a generally open and unobstructed circular mouth, each of said containers being nested with an adjacent container with the tapered wall means of the superjacent container extending through the mouth of the subjacent container into engagement with the tapered wall of the subjacent container over substantially the entire surface areas thereof with the adjacent bottom portions thereof being spaced apart to define a stack of containers provided with a plurality of closed chambers between adjacent containers, said sleeve being of such diameter as to closely encompass said stack of a length at least as great as the length of said stack, enabling the containers to be shipped and stored therewithin; a quantity of powdered soluble material disposed within each of said chambers; and top and bottom generally rigid and non-elastic closure means engageable with said sleeve for closing the end portions thereof adjacent the top and bottom of said stack of containers, said bottom closure comprising a generally annular plug fabricated of a material having the characteristics of paperboard, cardboard, and the like, frictionally engaged within the dispensing opening of said sleeve for holding said stack in endwise pressurized state, to retain said tapered walls wedged one within the other for sealing said chambers and being adapted for ready and easy removal from said sleeve to define a dispensing opening for enabling outward and downward passage of said containers, said sleeve being provided with a plurality of generally vertically extending tear-drop shaped smoothly convex projectives extending generally inwardly thereof at a distance from said dispensing opening less than the height of the tapered walls of said containers to enable a portion of the outermost container to project outwardly of said sleeve and through said dispensing opening upon removal of said bottom closure, and to further enable the individual sequential engagement of the container rims with the projectives and removal of the containers and associated powdered soluble material through the dispensing opening.

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