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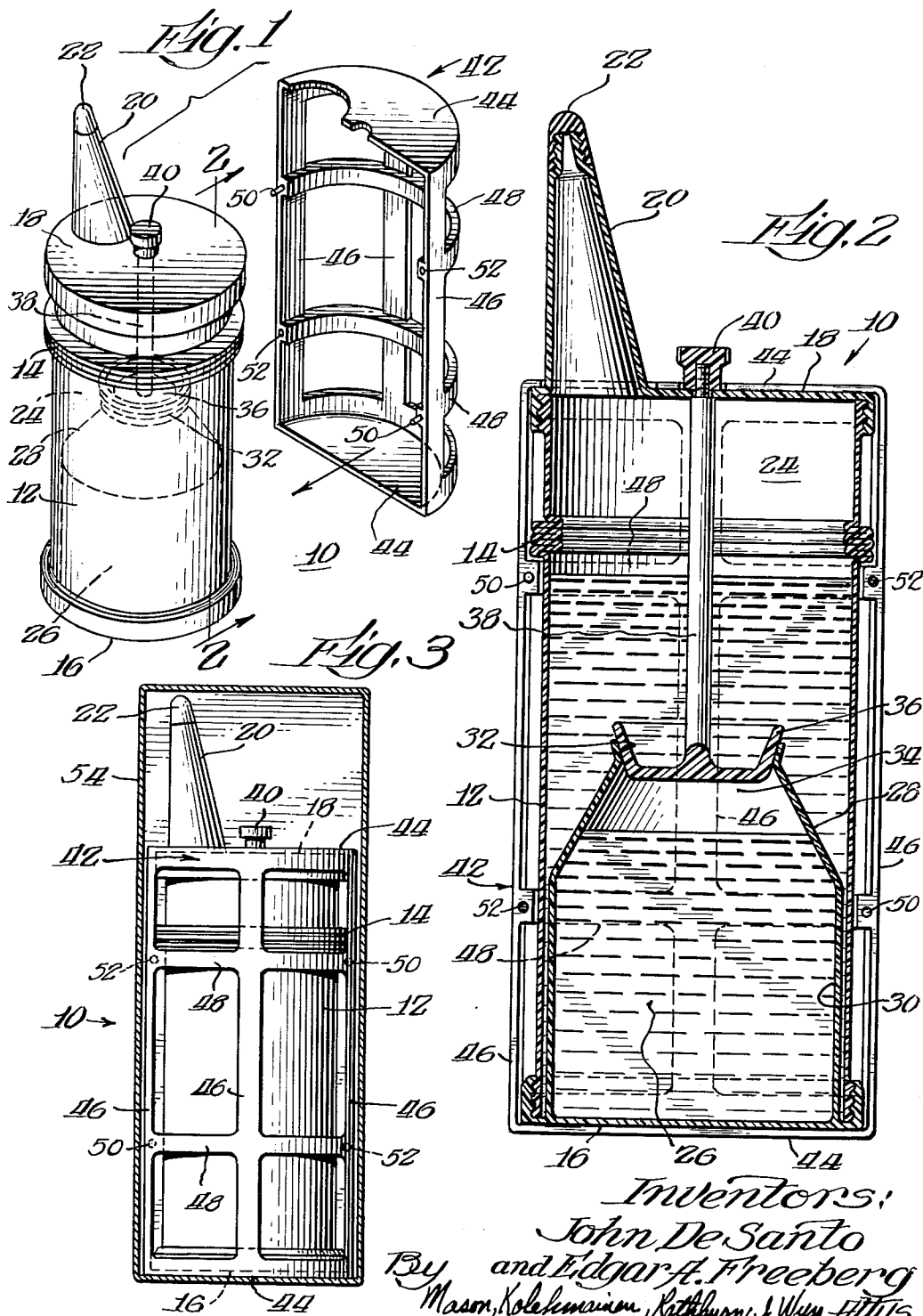
J. DE SANTO ET AL

3,221,917

FLUID CONTAINER

Filed July 2, 1963

2 Sheets-Sheet 1



Inventors:
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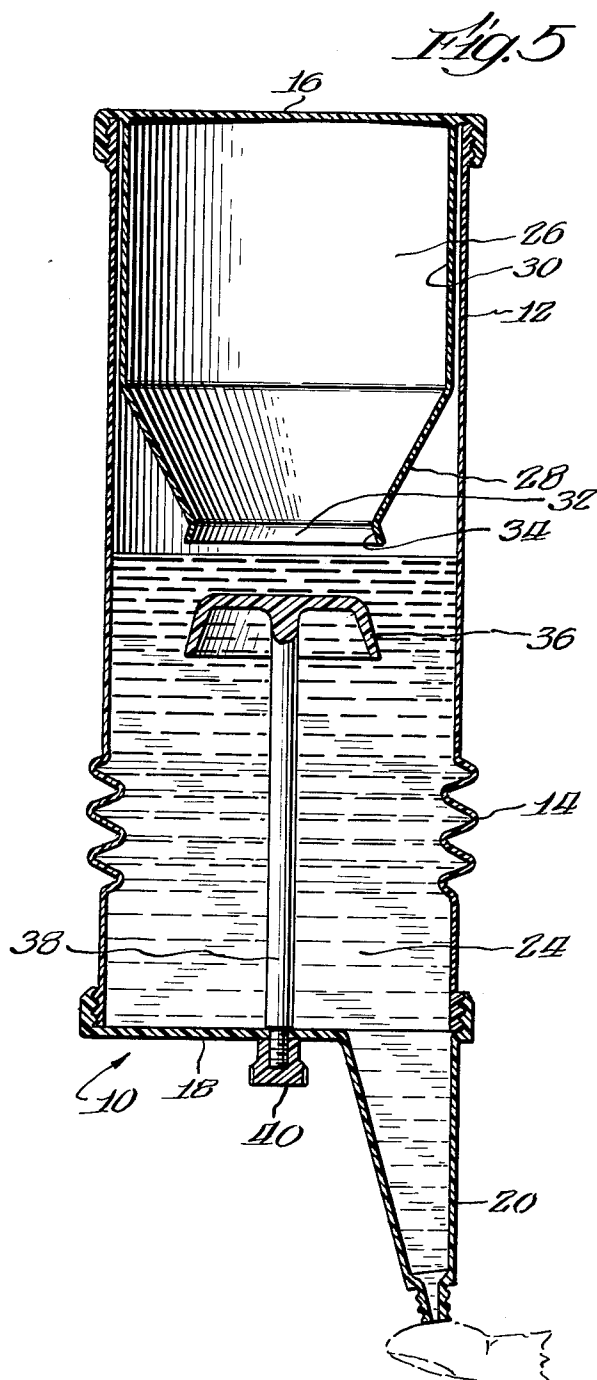
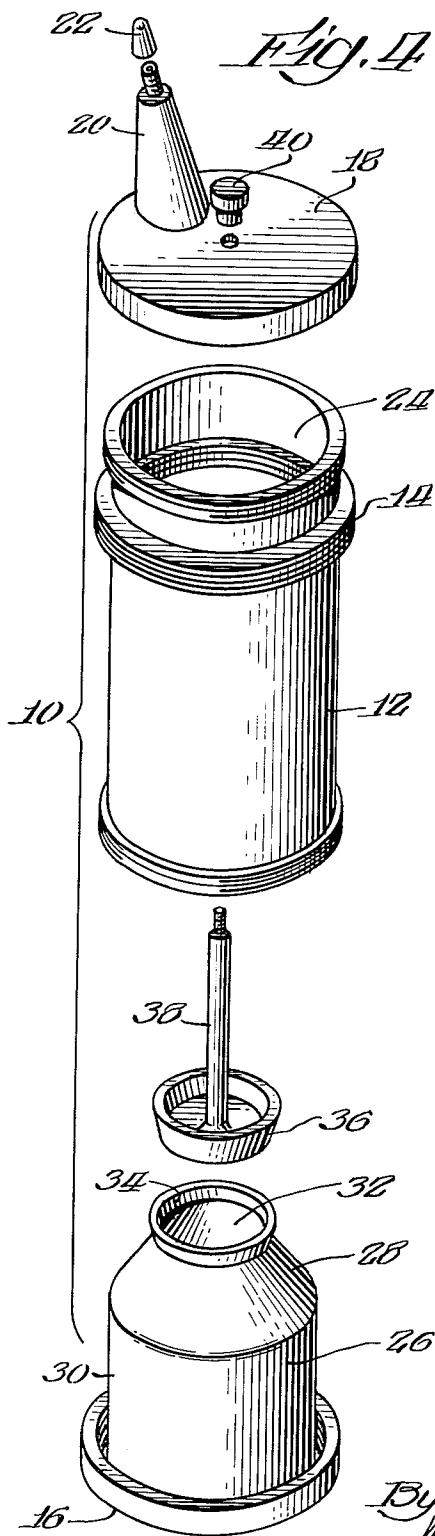
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FLUID CONTAINER

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The present invention relates generally to fluid containers and more particularly to a new and improved fluid container adapted to contain two different types of fluid in separate compartments therein with means whereby the fluids can be mixed together when desired for use.

In cosmetics such as hair rinses and the like it is necessary to maintain the dye solution separate from the hydrogen peroxide until such time as it is desired to use the rinse. At this time the two solutions are then mixed together for immediate use.

Accordingly, it is an object of the present invention to provide a new and improved fluid container for containing two different fluids in separate compartments therein so that there is no mixing together of the fluids until the desired time.

More specifically, it is an object of the present invention to provide a fluid container of the type described wherein the separate fluids can be rapidly and thoroughly mixed together at the desired time without opening the container externally, thus eliminating the possibility of spillage or contamination of the fluid by air.

Another object of the present invention is the provision of a new and improved fluid container of the type described in the preceding paragraphs which is expendable, can be economically mass-produced, and can be rapidly and easily filled with the desired fluids.

Yet another object of the present invention is the provision of a new and improved fluid container of the type described which is constructed of light, flexible plastic material yet is foolproof in operation in that the different fluids contained therein cannot be inadvertently mixed because of rough handling and the like.

These and many other objects and advantages of the present invention are accomplished by the provision of a new and improved container for holding two different fluids comprising an exterior wall which is longitudinally extendable between a compressed and an extended position. Preferably, the container is cylindrical in shape and the wall thereof is provided with a pleated or bellows-like portion to accomplish the longitudinal extension. Within the container there is provided a partition which separates the container into two separate compartments for containing the two different fluids without the mixing thereof. The partition is provided with an opening forming a valve seat which cooperates with a valve member to open and close the partition as desired. The valve member is secured to the exterior wall and moves therewith in such a manner that when the pleated portion of the wall is compressed the valve closes the opening in the partition preventing the mixing of the liquids from the compartments. When the exterior wall is elongated or extended to the extended position, the valve member moves out of engagement with the seat allowing the fluids in the compartments to mix freely.

In order to maintain the exterior wall in the compressed position until it is desired to use the contents of the container, there is provided releasable means which may take the form of an outer jacket or housing. This housing maintains the wall of the container in a compressed position until it is unmoved therefrom at which time the container wall may be extended allowing the two fluids to mix. The container is preferably provided with a pouring spout which can be opened to allow the fluid in the container to be used without spillage.

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For a better understanding of the present invention, reference should be had to the following detailed description when taken in conjunction with the drawings, in which:

FIG. 1 is an exploded perspective view of a fluid container constructed in accordance with the features of the present invention;

FIG. 2 is a sectional view of the container taken substantially along line 2—2 of FIG. 1;

FIG. 3 is an elevational view of the container of FIG. 1 showing the container as it is packaged for commercial use with the package therefor shown in cross section;

FIG. 4 is another exploded perspective view of the container of FIG. 1 showing the various internal parts thereof; and

FIG. 5 is a sectional view of the container of FIG. 1 illustrating the container as it is being used to dispense the mixed fluids therein.

Referring now to the drawings, there is illustrated a new and improved fluid container constructed in accordance with the features of the present invention and indicated generally by the reference numeral 10. The container comprises a generally cylindrical, tubular exterior wall 12 having a pleated or bellows-like portion 14 which permits the wall to be extended longitudinally from a shortened or compressed position (as shown in FIGS. 1, 2, 3, and 4) to a lengthened or extended position (as shown in FIG. 5). Accordingly, the wall 12 is constructed of a material such as a thin, flexible, polyvinyl plastic which will not rupture easily and can be pleated as shown.

At opposite ends of the extendable cylindrical wall 12 there are provided end walls 16 and 18 which form the fluid-tight container 10. The end walls 16 and 18 are also constructed of plastic material and are joined to the cylindrical wall 12 by appropriate means such as by threaded connections as shown in the drawings or by heat-sealing. The upper end wall 18 is provided with an integrally formed pouring spout 20 for dispensing the fluid from the containers. The spout 20 may be provided with a threaded cap 22 or may be of the sealed type which requires that the end be cut off with a knife or the like as is common in plastic dispensers of food stuffs.

The interior of the container is divided into an upper compartment 24 for containing one of the fluids to be dispensed and a lower compartment 26 for containing a different fluid by means of a partition indicated generally by the numeral 28. The partition 28 can be secured to the lower end wall 16 by a cylindrical wall 30 as shown or can be secured directly to the interior of the cylindrical wall 12. In case of the former, the partition 28, wall 30, and end wall 16 are integrally formed in one piece which can be filled separately with fluid before the other parts of the container are assembled therewith.

The partition 28 is provided with a central opening 32 defining an annular valve seat 34 which is engageable with a valve member 36 to open and close the partition as desired. The valve member 36 is supported on a central valve stem 38 which can be secured to the upper end wall 18 by means of a threaded connection and cap nut 40 or can be integrally formed with the end wall. The length of the stem 38 is such that when the pleated portion 14 of the cylindrical wall 12 is compressed as shown in FIG. 2 the valve 36 is tightly seated in the seat 34 closing the partition 28 and preventing any mixing of the liquids from the compartments 24 and 26. When the pleats 14 are extended as shown in FIG. 5, the valve 36 moves away from the seat 34 opening the partition and allowing the different fluids from compartments 24 and 26 to freely mix.

In order to maintain the extensible wall 12 in the compressed position to keep the fluids in the compart-

ments 24 and 26 from intermixing, there is provided an outer housing or removable containment means 42 which may take the form shown in FIGS. 1 to 3. As illustrated, the outer housing 42 is constructed of identical halves, each being provided with opposed semi-circular end walls 44 adapted to abut the end walls 16 and 18 of the container. The end walls 44 are secured to each other by means of longitudinal members 46 which are of the proper length to maintain the container in the compressed condition when enclosed by the containment means 42. In addition, there are provided annular ribs 48 which stiffen the structure and reduce the tendency of the wall 12 of the container to bulge in the center. The upper end wall 44 is provided with appropriate holes to accommodate the spout 20 and nut 40 when the identical halves are joined together around the container. To aid in aligning the identical halves of the housing 42, there are provided matching pins 50 and holes 52. When the two halves are joined together as shown in FIG. 3, the pins 50 from one half are engaged in the opposed holes 52 in the other half. The two halves may be held together by a circumferential piece of tape and packed in an appropriate carton or box 54.

When it is desired to use the contents of the container 10, the container is removed from the box 54 and the circumferential tape is stripped from around the outer housing 42 which is then separated into halves. When this is accomplished, the cylindrical exterior wall 12 is extended which moves the valve 36 away from the seat 34 allowing the fluids in the two compartments 24 and 26 to mix freely. The cap 22 is then removed or the top of the spout 20 cut off and the mixed liquid in the container is dispensed through the spout as desired.

The container 10 is easily assembled and filled with fluid as follows. The desired amount of fluid is placed in the compartment 26 before the top end wall 18 is secured to the cylindrical wall 12. The top end wall 18 is then secured in place as by heat-sealing or screw threads and the pleated portion 14 is collapsed sealing the valve 36 against the seat 34. The top compartment 24 is then filled with fluid as desired through the spout which is then sealed off. The compressed container is then fitted with the outer housing 42 as described and packaged in a box ready for use.

While particular embodiments of the present invention have been shown and described, it will be under-

stood that many changes and modifications may be made and it is, therefore, intended by the appended claims to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed as new and is desired to be secured by Letters Patent of the United States is:

1. A container for holding two different fluids in separation from each other comprising a cylindrical exterior wall and a pair of opposed end walls, said exterior wall having a pleated portion therein for longitudinally extending said wall between a normally compressed position to an extended position, a partition in said container intermediate said end wall dividing said container into separate fluid containing compartments, said partition having an opening therein defining a valve seat, a valve member secured to one of said end walls and movable therewith from a seated position on said valve seat when said exterior wall is in a compressed position to an open position away from said seat when said exterior wall pleats are extended to said extended position and release means for maintaining said exterior wall pleats in a compressed position and manually releasable to allow said wall pleats to be extended to open said valve member.

2. Apparatus defined in claim 1 wherein said release means includes a housing having opposed end walls engageable with the end walls of said container for maintaining said pleats in said compressed position, said housing including two opposed halves separable from each other along a longitudinal axis thereof to allow said pleat exterior wall to extend to an extended position.

3. Apparatus as defined in claim 1 wherein said pleated portion is positioned between said partition and said one end wall and said valve member includes an axial stem secured to said one end wall.

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