

Feb. 16, 1960

F. D. CABE

2,925,200

COMBINED FLUID CONTAINER AND COOLING CORE THEREFOR

Filed Aug. 15, 1958

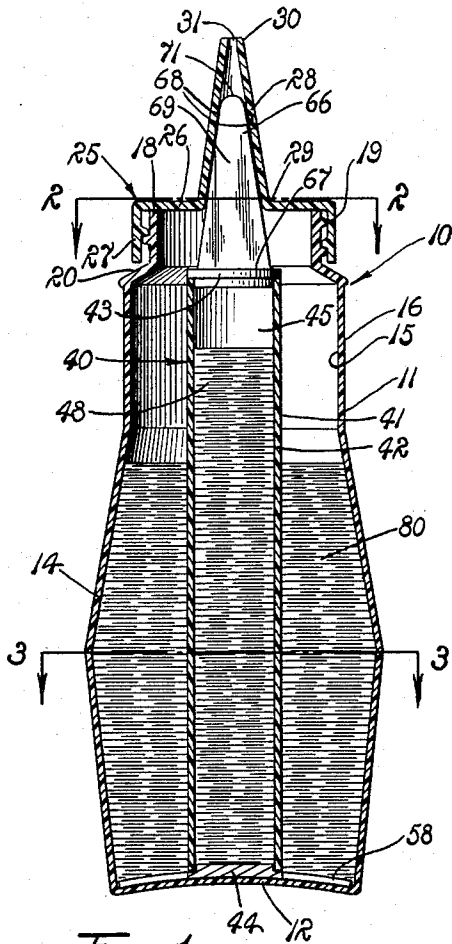


FIG. 1.

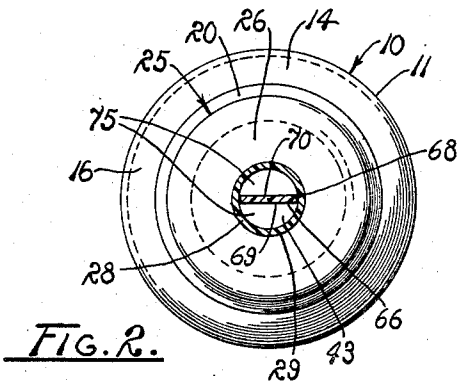


FIG. 2.

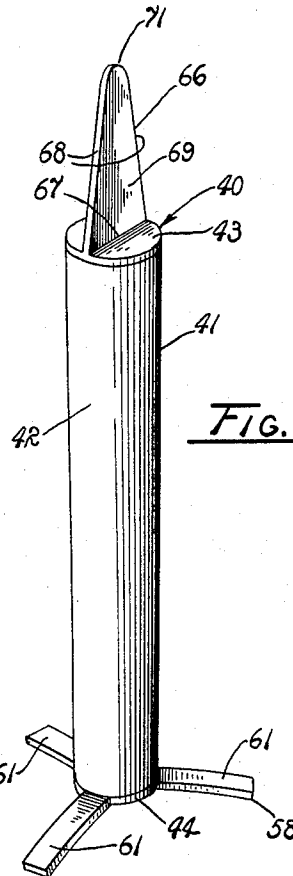


FIG. 4.

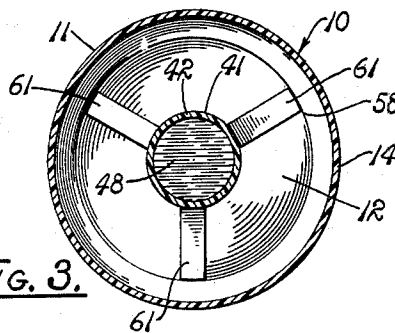


FIG. 3.

FRANK D. CABE

INVENTOR

HUEBNER & WORREL

ATTORNEYS

BY *Richard M. Howell*

1

2,925,200

COMBINED FLUID CONTAINER AND COOLING CORE THEREFOR

Frank D. Cabe, Fresno, Calif.

Application August 15, 1958, Serial No. 755,232

6 Claims. (Cl. 222—130)

The present invention relates to a combined fluid container and cooling core therefor and more particularly to a freezable core for such a container having a pouring spout and which core is adapted to be held in a predetermined position in the container to avoid blocking flow of fluid from the container out of the spout.

Plastic squeeze bottles, usually made of polyethylene, are well-known and are in wide commercial use for a variety of purposes. One type of such bottle includes a substantially cylindrical, somewhat barrel-shaped body having a bulged portion to facilitate holding the bottle in the hand, and a cap screw-threadably connected to the upper end of the body. Further, the cap incorporates an integral substantially frusto-conical spout upwardly convergently extended concentrically from the body to a relatively minute dispensing opening. The bottles referred to are frequently approximately six inches in overall length and vary from about two to two and one-half inches in diameter. These bottles have been found to be highly convenient for holding and dispensing coffee cream, catsup, mustard, salad dressings, lotions, and other liquid products. In use, the bottle is manually grasped, inverted, and squeezed to eject a charge of the contents thereof.

Despite the many advantages of such squeeze bottles, they have not been entirely satisfactory for certain purposes. As stated above, such bottles are adapted to release their contents incident to manual squeezing centrally thereof. Such bottles are usually designed to fit comfortably and at least partially to be enclosed in the palm of the hand of the person grasping and squeezing the bottle. Obviously, each time such a bottle is held in the hand, the heat from the hand is transferred through the bottle walls to the contents in the bottle and thereby increases the temperature of such contents. Particularly where these squeeze bottles have been employed for holding and dispensing cream in drive-in restaurants, whipped cream, and other heat deteriorable materials and in warm summer temperatures of the South and the West, the spoiling and/or deterioration as a result of the described handling and environmental temperatures has discouraged the use of such bottles.

Although the subject invention is intended to counteract the inadequacies of plastic squeeze bottles as described above, it is to be understood that its use is not to be so limited. In fact, the core of the present invention is useful in a more general way for cooling the contents of containers of various types and for holding and dispensing a variety of fluids.

Accordingly, it is an object of the present invention to cool the contents of a fluid container by means within the container.

Another object is to provide a freezable core for a container.

Another object is to hold a cooling core for a container having a spout in a predetermined position in the container and without undesirably impeding flow of the contents of the container through the spout.

2

Another object is to increase the length of time during which liquids may be held without spoiling or deterioration in squeeze bottles, particularly of the type made of polyethylene, and notwithstanding frequent grasping of such bottles by users to discharge their contents.

Another object is to minimize temperature increases internally of plastic squeeze bottles as a result of high environmental temperatures and other heat transfer through the walls of the bottle.

Another object is to provide a core adapted to be held against movement in a bottle having a spout.

Another object is to provide a core for a plastic squeeze bottle which core contains a heat exchange medium which is non-toxic and which otherwise does not intermingle or affect the contents of the bottle.

Another object is to provide a cooling core for a squeeze bottle which does not appreciably interfere with squeezing of the bottle to obtain the contents thereof.

Another object is to provide a core of the type described which is easily insertable into, and releasable from, a container.

Other objects are to provide a core for a container of the type described which is simple and economical to construct and use, dependable in action, durable in construction, and highly effective for accomplishing its intended purposes.

These, together with other objects, will become more fully apparent upon reference to the following description and accompanying drawing.

In the drawing:

Fig. 1 is a longitudinal cross-section of a container including a core embodying the principles of the present invention and showing a liquid in the container.

Fig. 2 is a transverse section taken on a plane at a position represented by line 2—2 of Fig. 1.

Fig. 3 is a transverse section taken on a plane at a position represented by line 3—3 of Fig. 2.

Fig. 4 is a perspective view of the core alone.

Referring more particularly to the drawing, a container is generally indicated by the numeral 10 in Fig. 1 and is conveniently illustrated as a polyethylene squeeze bottle. This bottle provides an elongated body 11 having a substantially flat bottom wall 12, an upwardly extended annular side wall 14 providing an inner surface 15 and an outer surface 16, a neck 18 upwardly extended from the side wall and having external threads 19 thereon. The neck is diametrically smaller than the side wall and is connected thereto by means of a radially inwardly extended annular shoulder 20. The neck circumscribes an open top for the body of the bottle. Although of no particular significance insofar as the present invention is concerned, the side wall of the bottle includes an outwardly bulged portion for convenience in manually grasping and holding the bottle in the hand.

The bottle 10 also has a cap 25 providing an upper circular wall 26 and a downwardly extended annular rim 27 releasably screw-threaded on the neck 18 of the body 11. The cap also includes an upwardly extended frusto-conical dispensing spout 28 providing a base portion 29 of maximum diameter connected to the upper wall 26 and an upper tip 30 of minimum diameter circumscribing a dispensing opening or orifice 31 for the bottle. The side wall 14 of the body 11 concentrically circumscribes a longitudinal axis for the bottle, and the spout is concentric to this axis.

The bottle 10 described above is conventional and well-known and merely typifies one type of container with which the present invention is adapted for use.

The subject invention provides a cooling core 40 for the bottle 10 and includes a receptacle 41 providing an elongated cylindrical tubular wall 42, an upper end wall

43 connected in fluid-tight relation to the tubular wall, and a lower end wall 44 similarly connected to the tubular wall in spaced relation to the upper end wall. The receptacle is preferably of relatively rigid transparent plastic material but it is not limited to such material. The receptacle thus encloses a fluid-tight chamber 45 and contains a heat exchanged medium 48. In the described embodiment, this medium is freezable or congealable and preferably takes the form of plain water which is frozen for cooling purposes.

A lower positioning spacer 58 includes a plurality of resiliently flexible arms 61 integrally outwardly radially extended from the lower end wall 44 in substantially equally angular spaced relation to each other. The length of each of the arms measured from the center of the lower wall is approximately equal to the radius of the bottom wall 12 of the body 11 and, therefore, is greater than the radius of the neck 18. The arms are made of resiliently flexible plastic material, such as polyethylene.

An upper, flat, substantially triangular, positioning blade 66 includes a base edge 67 secured substantially diametrically to the upper end wall 43 of the receptacle 41, a pair of opposite side edges 68, opposite surfaces 69 and 70, and an upper slightly rounded apex 71. The blade extends endwardly from the tubular wall 42 at the opposite end thereof from the spacer 58 and is substantially symmetrical about the axis of the tubular wall. Both the receptacle 41 and the blade 66 may be made of relatively more rigid plastic material than the spacer, which should be capable of substantial flexing, and may be molded integrally with each other. It is to be understood, however, that the entire core 40 may be integrally molded and may be of the same material throughout. In order to accommodate expansion of the heat exchanging medium 48 incident to heat absorption, the receptacle 41 is preferably somewhat elastic. It will be appreciated that when ice is employed for the heat exchanging medium, very little elasticity is necessary unless after melting the water is permitted to warm substantially. Polyethylene is a material excellently suited to the purpose. In the event the receptacle is made of a material which is insufficiently elastic to accommodate freezing and melting of the medium 48, volumetric changes thereof can be accommodated by leaving an air space within the receptacle when placing the medium therein, as shown.

Operation

The operation of the described embodiment of the subject invention is briefly summarized at this point. The cap 25 is unthreaded from the body 11, and the receptacle 41 of the core 40 inserted through the open top of the body 11. Inasmuch as the arms 61 are flexible, they bend upwardly toward the tubular wall 42 to allow the receptacle 41 to be forced through the neck 18 of the body. The receptacle is rested on the bottom wall 12 of the body 11 and the arms 61 extend outwardly into engagement with the side wall 14 adjacent to the bottom wall 12 so as to position the receptacle 41 substantially concentrically within the body.

The tubular wall 42 is of a length substantially equal to the length of the body 11 measured from the bottom wall 12 to the shoulder 20 so that the upper end wall 43 of the receptacle 41 is substantially in the same plane transversely of the body as the shoulder 20. As such, the upper positioning blade 66 extends upwardly through the neck 18 and out of the open top of the body when the cap 25 is removed.

In order to position the core 40 precisely concentrically of the bottle 10, the cap 25 is fitted downwardly over the blade 66 and the rim 27 screw-threaded on the neck 18 in the normal manner. The blade 66 extends upwardly diametrically within the spout 28 and the opposite side edges 68 of the blade diametrically engage the spout thereby holding the core in a position coaxial with the

bottle. The apex 71 of the blade terminates below the tip 30 of the spout and a pair of fluid passageways 75 are provided between the opposite surfaces 69 and 70 of the blade and the spout. These fluid passageways establish fluid communication between the interior of the body and the dispensing opening 31 in the spout so as to allow the contents of the bottle to travel past the blade toward the dispensing opening 31.

In actual use, the core 40 is initially separated from the bottle 10 and is subjected to refrigeration so as to freeze the water 48 in the receptacle 41. Assuming that the bottle 10 is employed for holding and dispensing cream 80, the freezable core 40 may be utilized for maintaining the cream at a desirable low temperature for an extended length of time. The cream is placed in the body 11 of the bottle also preferably under initial refrigeration so that it is at a desirable preserving temperature of from 40° to 50° F. With the water 48 in the receptacle 41 frozen, the core 40 is inserted into the body 11 and immersed in the cream. Obviously, the body is not completely filled with cream so as to allow for the displacement volume of the core. Thereafter, the cap 25 is connected to the body so as to position the core in the bottle and hold it against movements therewithin.

It will be evident that the presence of a substantial volume of ice immersed in the cream 80 in the bottle 10 succeeds in minimizing or retarding temperature increase in the liquid. Experiments have demonstrated that the utilization of the core of the type described maintains coffee cream at a desirable preserving temperature for protracted periods even in hot environments.

The core does not interfere with desirable use of the bottle 10 for obtaining portions of the contents thereof. In order to obtain a quantity of cream, the bottle is grasped in the hand and inverted. The body 11 is squeezed to force cream through the passageways 75 between the blade 66 and the spout 28 and through the dispensing opening 31 in the tip 30. The blade, of course, also prevents the receptacle 41 from moving longitudinally of the bottle incident to tipping or inverting of the bottle because of its cooperative engagement with the spout. When the bottle is shaken, the core remains substantially concentrically positioned and does not move unnecessarily in the bottle to agitate its contents.

Although the blade 66 does not prevent or unduly restrict flow of liquid out of the bottle 10, it does have beneficial retarding effect on the liquid. When the bottle is used for dispensing cream, for example, without the core, it is found that the cream sometimes is dispensed too fast or in too large quantities incident to improperly controlled squeezing. The blade reduces the cross-sectional area of the spout somewhat and aids in proper directing of the fluid flow.

When the ice in the receptacle 41 has melted, the cap 25 is unscrewed and the thawed core 40 removed by grasping the blade 66 or upper end of the tubular wall 42. The thawed core is preferably externally washed and refrigerated for subsequent use.

From the foregoing it will be evident that a device has been provided for cooling the contents of a liquid container. The core of the subject invention is particularly adapted for use with plastic squeeze bottles and is intended to retard the temperature increase of fluids held within such bottles notwithstanding their frequent handling and/or use in relatively high environmental temperatures. Of greatest significance is the manner in which the core is positioned in the bottle so as to prevent its movement therein without undesirably impeding the flow of fluid out of the bottle incident to squeezing thereof. Although the device is primarily described in connection with maintaining edible liquids at desired temperatures, it has utility for use with any other liquid or flowable material which it is desired to cool during limited periods of storage or use.

Although the invention has been herein shown and de-

scribed in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of the invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent devices and apparatus.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In combination with a container having a body 10 circumscribing an interior for the container, and adapted to hold a liquid, and an upper annular spout connected to the body in fluid communication with the interior thereof and upwardly extended to a dispensing opening; means for cooling the temperature of the liquid in the 15 container comprising a fluid-tight receptacle positioned in the interior of the body, a heat exchanging medium within the receptacle, a flat blade connected to the receptacle and upwardly substantially diametrically extended and substantially complementarily fitted within 20 the spout, the blade having opposite side edges engaging the spout and opposite surfaces spaced from the spout to define passageways establishing fluid communication between the interior of the container and the dispensing opening in the spout, and lower positioning means on the 25 receptacle engaging the body of the container in spaced relation to the spout, the blade and said lower positioning means serving to prevent movement of the receptacle in the container.

2. In combination with a container having a body 30 circumscribing an interior for the container, and adapted to hold a liquid, and an upper frusto-conical spout connected to the body in fluid communication with the interior thereof and convergently tapered upwardly to a tip circumscribing a dispensing opening; means for cooling the temperature of the liquid in the container comprising a fluid-tight receptacle positioned in the interior 35 of the body, a heat exchanging medium within the receptacle, a flat substantially triangular blade connected to the receptacle and upwardly substantially diametrically extended and substantially complementarily fitted within the spout, the blade having opposite side edges engaging the spout and opposite surfaces spaced from the spout to define passageways establishing fluid communication 40 between the interior of the container and the dispensing opening in the spout, and lower positioning means on the receptacle engaging the body of the container in spaced relation to the spout, the blade and said lower positioning means serving to prevent movement of the 45 receptacle in the container.

3. The combination of claim 2 wherein the body of the container includes an elongated annular side wall

substantially concentric to a longitudinal axis for the container and a bottom wall; wherein the receptacle is an elongated substantially cylindrical tube having a lower end portion rested on the bottom wall of the container; 5 and wherein the lower positioning means includes a plurality of arms outwardly extended from the lower end portion of the tube into engagement with the side wall, the blade and the arms holding the tube substantially concentrically within the container.

4. In combination with a plastic squeeze bottle including an elongated body having a side wall concentric to a longitudinal axis for the bottle adapted to contain a liquid to be dispensed from the bottle having a bottom wall and an open top, and a cap releasably connected 10 to the body in covering relation to said open top and providing a generally endwardly upwardly tapered spout terminating in a tip circumscribing a dispensing opening and being concentric to said axis; a freezable core for the bottle comprising an elongated enclosed fluid-tight hollow tube longitudinally substantially concentrically extended within the body of the bottle providing 15 an internal chamber adapted to contain a freezable medium for cooling the liquid in the bottle having a lower end portion engaging the bottom wall of the bottle and an upper end portion adjacent to the open top, lower positioning means mounted on the lower end portion of the tube and outwardly extended therefrom in releasable engagement with the body, and an upper positioning 20 means mounted on the upper end portion of the tube, extended therefrom, and releasably engaging the bottle, said upper and lower positioning means cooperating substantially to prevent movement of the core within and relative to the bottle.

5. The combination of claim 4 wherein the upper positioning means is a substantially flat blade upwardly 35 substantially diametrically extended within the spout of the bottle having opposite side edges engaging the spout and providing a passageway with the spout establishing fluid communication between the interior of the body and the dispensing opening in the spout.

6. The combination of claim 4 wherein said lower positioning means includes a plurality of resiliently flexible arms outwardly extended from the lower end portion 40 of the tube engaging the body of the bottle adjacent to the bottom wall and being inwardly foldable to permit insertion and release of the tube into and out of the body of the bottle.

References Cited in the file of this patent

UNITED STATES PATENTS

1,775,400	Kramer	Sept. 9, 1930
2,468,661	Gladstone	Apr. 26, 1949