United States Patent [19]

Flider

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[54] **PLASTIC JERRY CAN**

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[52] **U.S. Cl.**..... **215/10,** 215/1 C, 215/100 A, 222/466, 222/468, 222/479, 222/482

[51] **Int. Cl.**..... **B65d 11/10,** B65d 21/02

[58] **Field of Search**..... 222/466, 467, 468, 222/479, 482; 215/1 C, 10, 100 R, 100 A

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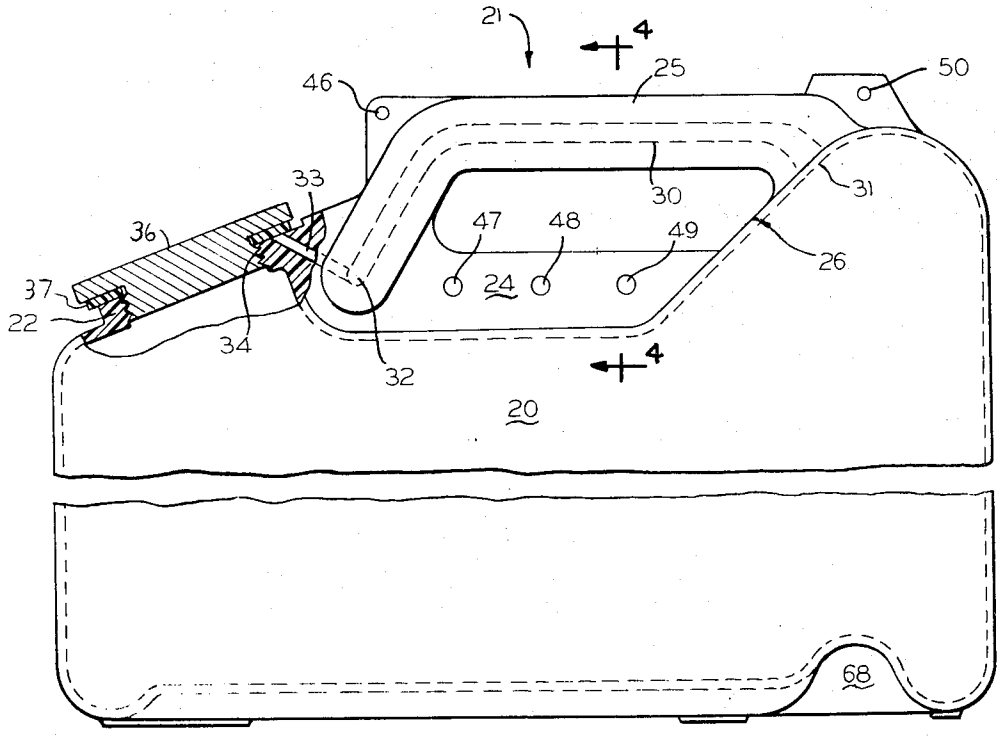
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[57] **ABSTRACT**

An all-plastic "Jerry Can" is made with a recessed handle and a screw-top opening. A breather tube extends from the highest part of the inside of the can, through the recessed plastic handle, to a point on the upper ledge surface of the single screw-top opening which point is sealed by the cap, when in place. When the cap is removed, air may pass from the exposed end of the breather tube and into the highest part of the can, thereby allowing the gasoline or other fluid to flow smoothly from the can, without surging caused by the successive creation and breaking of a vacuum pocket inside the container.

9 Claims, 7 Drawing Figures



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3 Sheets-Sheet 1

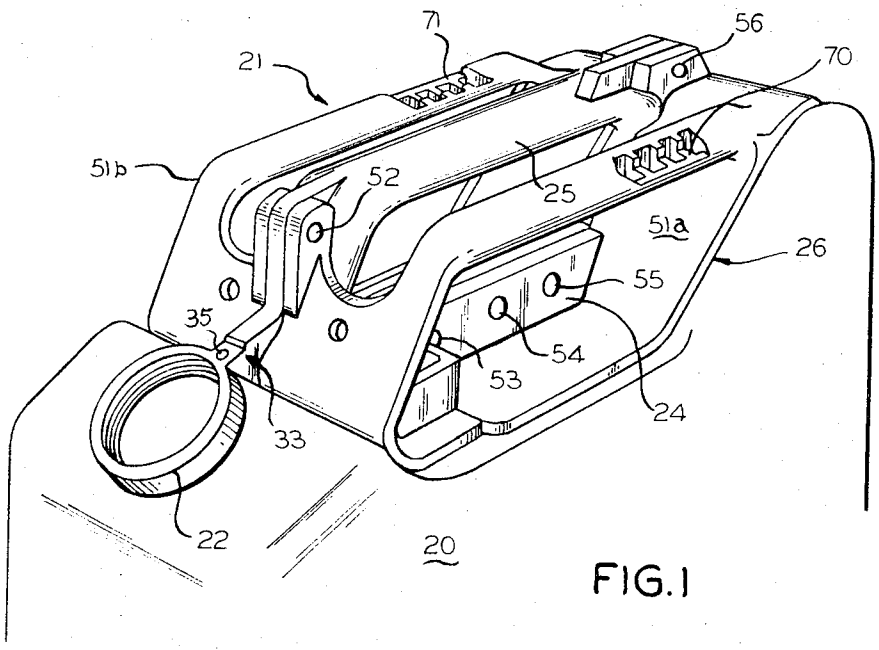


FIG. 1

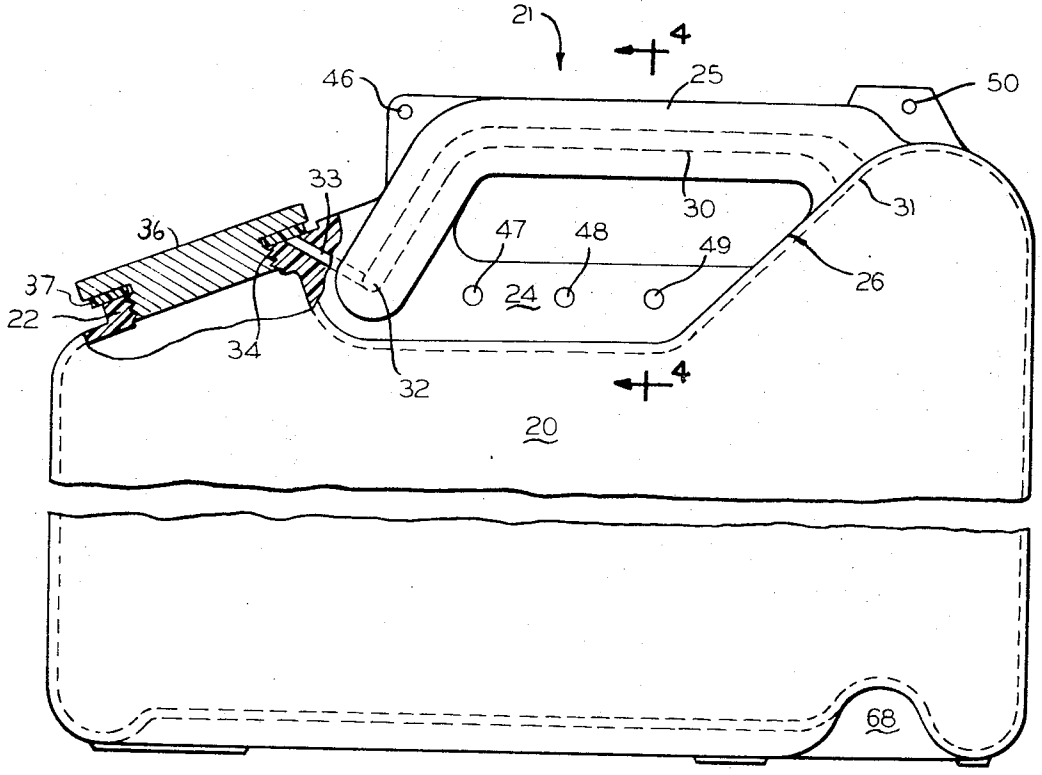


FIG. 2

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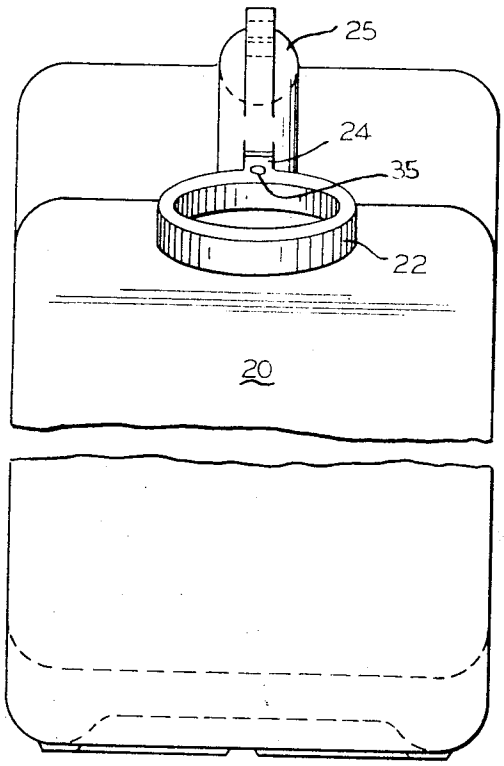


FIG.3

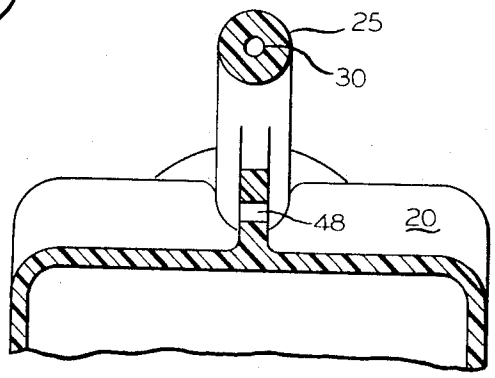


FIG.4

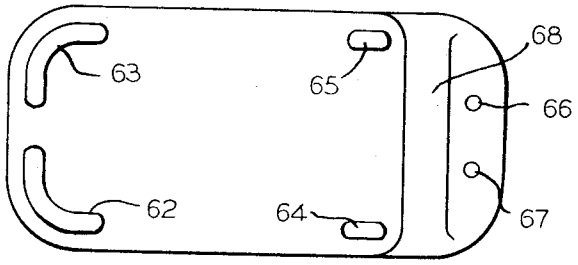


FIG.5

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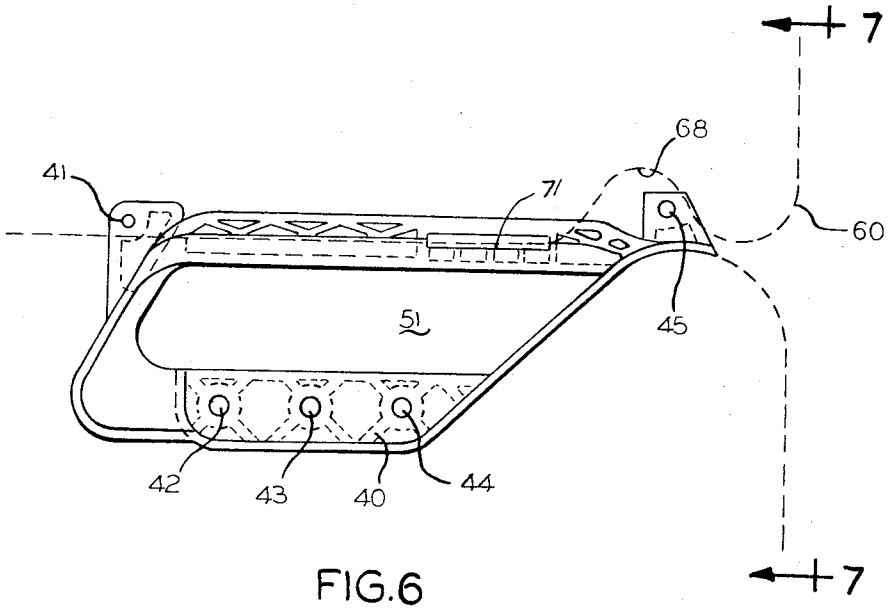


FIG.6

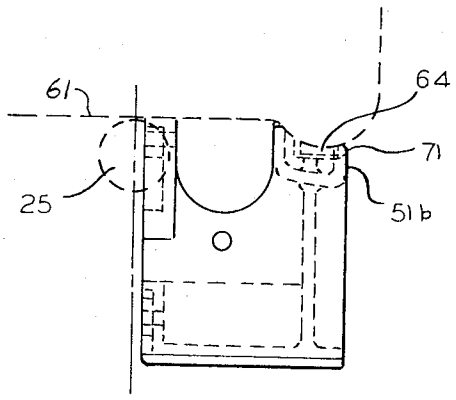


FIG.7

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PLASTIC JERRY CAN

This invention relates to plastic safety cans or containers and especially — although not exclusively — to containers for inflammable fluids, and more particularly to the so-called "Jerry Can" usually associated with military application.

Containers for inflammables usually have prescribed safety specifications, which are enforced by governmental, industrial, or trade agencies. In the case of military specifications, the containers must also meet very rigidly prescribed specifications, very often dating back many years. For example, in the case of the so-called "Jerry Can," the original specifications were written, at least as early as World War II, and as a result, they are drawn to steel cans having particular types of hardware associated therewith. Thus, there has been little improvement in "Jerry Cans" during the last 25 or 30 years. Accordingly, there is a growing need for updating the techniques used to make the cans so that new and superior materials may be used and, at the same time, the cost may be lowered.

Thus, the improved "Jerry Can" must meet or exceed the existing military specifications. Ideally, it appears that some of the newer plastics may have the best opportunity to advance the state of this heretofore static art. For example, the steel containers have drawbacks in that they were not only expensive to make, but hazardous in explosive atmospheres, and short-lived in use. They tended to rust, corrode, or otherwise deteriorate. They create hazardous sparks and deface the surfaces which they contact. Moreover, when the cans are bumped or dropped, they sometimes leak air and thereafter fail while in service.

Another problem which has been encountered in the manufacture of "Jerry Cans" and similar containers relates to the storability of filled containers. They should be designed so that they may stack neatly and stably in a service or warehouse area. The cans should fit together when placed side by side, front to back, and top to bottom, and there should be a minimum amount of waste space. Moreover, when so stacked, the aggregate of cans should be a stable mechanical arrangement. There should be very little danger that a can on the top of the stack would fall off if the entire stack is shook or jarred.

If the can is a heavy one, such as the conventional 5-gallon "Jerry Can," for example, it should be easy to handle and to manipulate while pouring gasoline into or out of the can. The handle should be arranged to withstand a severe pull, such as the 800-pound pull. This is an exacting requirement for a plastic can.

Accordingly, an object of the invention is to provide plastic containers having new and improved characteristics which meet the military specifications for a "Jerry Can."

Another object of the invention is to provide a can having a completely internal venting system, controlled from a single screw-type cap.

Yet another object of the invention is to prevent surging during the pouring of gasoline from a plastic "Jerry Can," which surging might otherwise occur if vacuum pockets build in the emptying can.

Still another object of the invention is to provide an all-plastic "Jerry Can" which may be manufactured by blow-molding techniques. Here, an object is to provide a can having an internal breather vent inherently molded therein.

A further object of the invention is to provide a "Jerry Can" which stacks uniformly and stably.

A still further object of the invention is to provide a low-cost, explosion-resistant, automatically venting gasoline can.

These and other objects are accomplished by a blow molded, all-plastic "Jerry Can" having a completely plastic wall, with an integral handle molded thereon. Molded adjacent the handle is an opening, terminating in screw threads for receiving a cap having a peripheral lip thereon. A breather tube is molded inside the handle to extend from the highest point inside the can (when tipped to a pouring condition) to the screw threaded opening. Thus, when the screw cap is tightened against its lip, it seals both the gasoline within the can and outside vent of the breather tube, to prevent escape of explosive or inflammable fumes from the can.

The nature of a preferred embodiment of the invention for accomplishing these and other objects may be understood best from a study of the following description of the attached drawings, in which:

FIG. **1** is a perspective view of the top of the inventive "Jerry Can";

FIG. **2** is a side elevation view of the inventive "Jerry Can", showing the bottom with a gripping and lifting portion molded therein, showing the top with the handle, and showing in cross section the screw type opening;

FIG. **3** is a front elevational view of the "Jerry Can";

FIG. **4** is a cross-sectional view, taken along line **4—4** of FIG. **2**, showing the breather vent in the handle portion;

FIG. **5** is a bottom plan view showing the feet on the can and the bottom handle, forming part of the lifting arrangement;

FIG. **6** is (i) a side elevation view of one of two supplemental handles used in combination with the integrally molded handle and (ii) how two cans stack top to bottom; and

FIG. **7** is a fragmentary view of the front of a can having the handle shown in FIG. **6**, and taken along line **7—7** thereof.

The principal elements in FIG. **1** and **2** are an all-plastic, preferably blow-molded container **20**, having thereon a handle arrangement **21**. The container **20** is filled and emptied by pouring fluids through a screw threaded necklike opening **22** which is integrally molded in the container **20**. Preferably, this opening is internally threaded to receive the conventional "Jerry Can" cap.

The plastic container **20** may be formed by any suitable means — such as blow-molding inside a mold cavity formed by two-piece parts, with a parting line which is thickened, in part, to form an upstanding fin or rib **24** and handle **25**. For strength and support, the fin **24** may be made integral with the neckline opening **22** and with a rising portion of the can, shown in **26**. The handle **25** is fairly massive structure in the order of an inch in diameter.

Means are provided for preventing the formation of vacuum pockets in the can. More particularly, formed within a handle is longitudinally molded breather tube **30** which extends from point **31**, in the interior of the can, at the highest portion thereof, to a point **32** in fin **24**, near the threaded opening **22**. A hole **33** is drilled at an angle from the ledge forming the top of opening **22**, through the fin **24**, and into the molded breather

tube opening **30**. In this manner, air may pass into the highest part of the can **26** via the path traced from the opening **31**, through the hollow tube **30**, and the drilled hole **33** to the opening **35** on the top ledge of the neck **22**.

The conventional "Jerry Can" cap **36** has screw threads which fit into the internal threads **34** inside the neck opening **22**. When this cap **36** is tightly drawn into its closed position, its lip covers the opening **35** of hole **33** and prevents any escape of vapors from the inside of the can. A gasket **37** may be provided to complete the seal at the top of the neck **22** and opening **35**. However, when the cap **36** is unscrewed, the top **35** of opening **33** is exposed to the atmosphere, so that air may pass freely from outside the can to the inside of the can.

Thus, as the can is tipped to pour, a space is formed in the high part **26** of the can **20** where air must displace the fluid poured from the container if a vacuum pocket is to be avoided. Since air may be drawn in through the opening **35** and the tube **33**, no vacuum is formed, and the fluid pouring from the container flows smoothly, without surges.

Means are provided for enabling the "Jerry Can" handles to withstand the severe pulling test required by the military specifications. In greater details, as shown in FIGS. **6** and **7**, two supplemental handle sections are made from a very strong plastic or other material, such as a glass-fiber filled nylon. Preferably, these handle supplements are injection molded pieceparts. Each of the handle supplements comprises a series of strengthening ridges, such as **40**, and a series of openings **41–45**. These openings are arranged in position to meet with and be superimposed over similarly situated openings **46–50** (FIG. **2**) in the blow-molded plastic can.

Accordingly, it is a fairly simple matter to attach the fiberglass handle supplements by placing a piecepart similar that shown in FIGS. **6, 7**, on opposite sides of the fin **24**. A rivet is passed through an opening **41** on the left handle supplement, opening **46** on the blow-molded fin part, and an opening **41** on the right handle supplement. Thereafter, handle supplement rivets are used in a similar manner to attach the handle supplements of FIG. **6** on opposite sides of the blow-molded handle **25**. More particularly, as shown in FIG. **1**, the fiberglass handle **51***a* is on the right and the fiberglass **51***b* is on the left. The rivets **52–56**, used for attaching the two handle supplements, are clearly seen in the drawing. The strength of these handle supplements, together with a multiplicity of attachment points, makes a strong and rigid structure capable of withstanding very severe pull tests.

Means are provided for enabling the cans to stack easily and stably when in storage. More particularly, FIG. **6** and **7** use dotted lines **60, 61** to show how the bottom of the top can fits into the top of the bottom can when two cans are stacked, one above the other. The details of this arrangement may be best understood by a comparison of the FIGS. **6, 7** and **5** (which is a bottom plan view) with FIG. **2**, which shows the hand grip **68** in side elevation.

More particularly, the bottom of the can is molded with six feet **62–67** which raise the can above any floor or other flat surface on which it is resting, allowing air to circulate underneath it. The feet **64, 65** also provide stable points for making a cleated connection between the top and the bottom of two stacked cans. Adjacent the end of the bottom of the can which is held by the person who is pouring fluid from the can, is an arched or recessed grip portion **68**, adapted to receive the fingers of one hand. Thus, it is easy to pour from the can by holding the handle **25**, or one of the handle supplements **51**, with one hand and by holding the area **68** with fingers of the other hand. As best seen in FIG. **6**, the finger-gripping area **68** rises above a mating contour where rivet **56** passes through by the upstanding tabs on the blow-molded container **20** and on the handle supplements **51**. The feet portions **64, 65** fit down into recesses **70, 71** in the handle supplements **51** (FIG. **1**). These intermeshing feet and recessed configurations cleat together when two cans are stacked vertically, thereby adding greatly to the stability of the stack.

Among other things, the described structure enables the use of plastic parts and provides a stronger "Jerry Can." For example, the can may be dropped from greater heights than steel cans and yet not break or spill. There is a resistance to dents, and if dentally or subjected to mechanical abuse, any deformation of the can body tends to disappear when the deforming force is removed. This would not be true of a steel can. Plastic has great strength, it resists dents, and it is cooler in handling. The method used for attaching the handle supplement to the upstanding fin makes a good, strong, and durable connection without piercing the walls of the container. There are no spot welds which may break or give way under use (as might occur on steel cans). If any hardware parts are used, they may be dip coated with plastic to preclude exposure bare metal surfaces which rust, corrode or generate sparks.

While the principles of the invention have been described above in connection with specific embodiments, apparatus, and applications, it should be understood that this description is here made only by way of example. It is not to be construed as a limitation upon the scope of the claims. Therefore, the appended claims are to be construed to cover all equivalent structure falling within the true scope and spirit of the invention.

I claim:

1. A safety container comprising an all plastic wall having a continuously closed inner surface terminating at a threaded neck-like opening having an upper ledge surface at the top thereof, a handle and fin combination integrally formed in the outer surface of the wall,

at least one handle supplement attached to said fin,

a breather tube extending from the interior of said wall, through the handle to the upper ledge surface of the neck-like opening,

said breather tube extending from the point of the container which is the highest geometric point inside the container when it is tipped to a pouring position,

said breather tube and neck-like opening sealed by a cap threaded into said opening and opening when the cap opens.

2. The container of claim **1** wherein said highest geometric point is formed by said all-plastic wall having an upstanding contoured part giving a high fluid level inside the container which is above the level of the pouring neck when the container is resting in a storage position, whereby an air pocket is formed inside said container, said breather tube extending from said upstanding contoured part.

3. The container of claim 1 wherein the bottom of said container has integrally molded feet formed therein, and means on the top of said container shaped to receive said feet in cleated interlock when said container are stacked vertically.

4. The container of claim 1 wherein said handle supplement is an injection molded plastic piecepart, there being two of said handle supplements, one being attacked to either side of said fin.

5. The container of claim 4 wherein each of said handle supplements is a glass fiber filled nylon material, or the equivalent thereof.

6. The container of claim 5 wherein each of said handle supplements has trusses molded therein for giving added strength.

7. The container of claim 4 wherein said handle supplements and the bottom of said containers have complementary cleating parts molded therein, whereby the containers are interlocked when one is stacked atop another.

8. The safety container comprising an all-plastic wall having a continuously closed inner surface terminating at a threaded neck-like opening having an upper ledge surface at the top thereof,

a handle and fin combination integrally formed in the outer surface of the wall,

a breather tube extending from the interior of said wall, through the handle to the upper ledge surface of the neck-like opening,

said breather tube extending from the point of the container which is the highest geometric point inside the can when it is tipped to a pouring position,

said breather tube and neck-like opening sealed by a cap threaded into said opening and opening when the cap opens said fin being integral with and extending from the neck to the handle, and said breather tube is completed at the neck end by a passageway extending from said ledge through the fin to the tube in the handle.

9. The container of claim 8 wherein said cap has a lip edge which projects over said ledge opening thereby sealing said breather tube opening when said cap is tightened in position in said opening.

* * * * *