United States Patent [19]

Newby

[11] **3,856,188**

[45] **Dec. 24, 1974**

[54] **DISPENSER FOR LIQUIDS AND SOLIDS WITH SELF-CONTAINED SPOUT**

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[22] Filed: **Feb. 21, 1973**

[21] Appl. No.: **334,240**

[52] **U.S. Cl.** ..... **222/535,** 222/541, 220/85 SP

[51] **Int. Cl.** **B65d 17/24**

[58] **Field of Search** ..... 222/535, 540, 541, 566, 222/569; 220/85 SP, 53, 54

[56] **References Cited**

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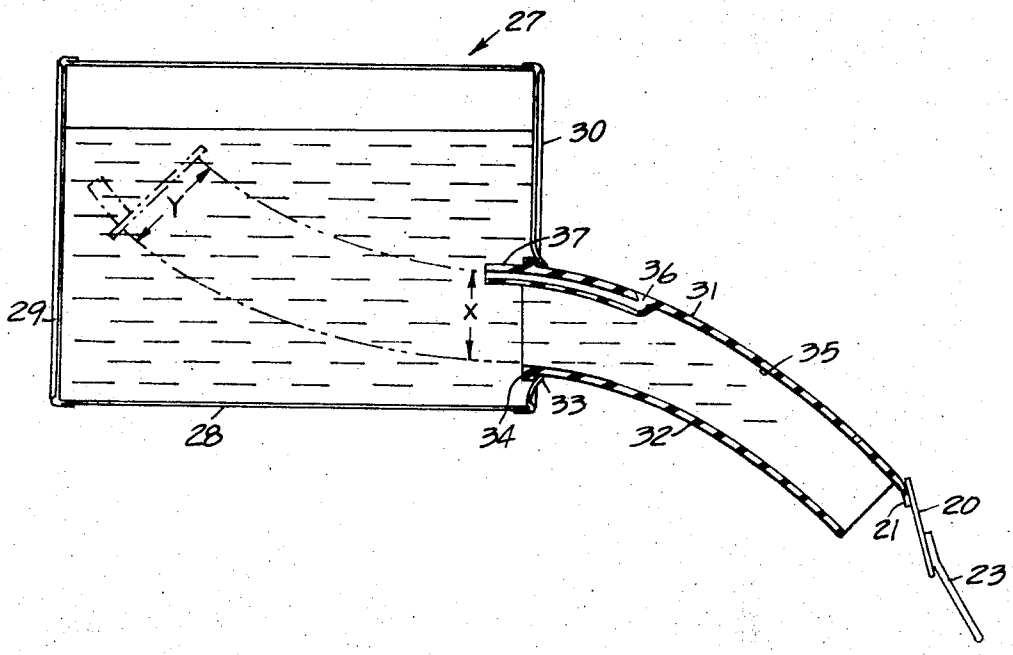
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[57] **ABSTRACT**

A dispenser for liquids and solids or the like includes a container body with inter-connected top and bottom walls to form the container with a break-open aperture formed in the top wall and a hollow spout located within the dispenser beneath the aperture so that it can be pulled therethrough after the aperture is opened to form a spout for the dispenser. When the aperture is opened the spout is usually lifted or pulled out of the container body with the portion of the aperture broken free from the top wall and the spout is tapered so the periphery of the aperture will wipe the exterior of the spout clean of and liquids or solids as it is pulled from the container to form a pourable spout through which the contents within the container body may be dispensed.

14 Claims, 5 Drawing Figures



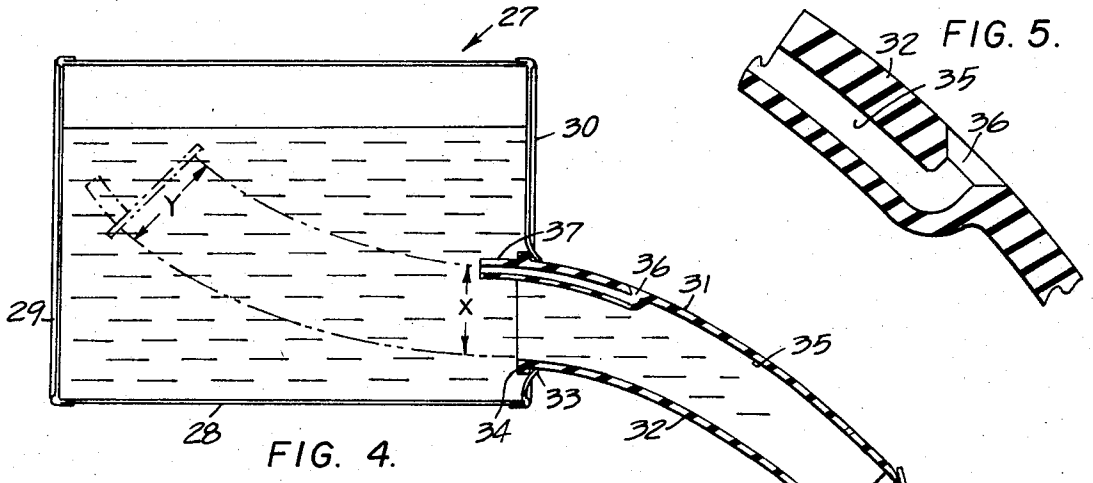


FIG. 4.

FIG. 5.

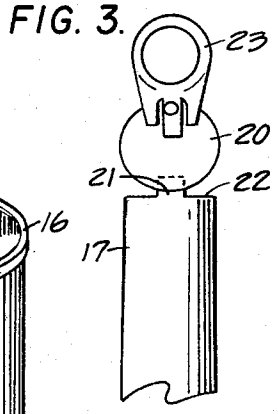


FIG. 3.

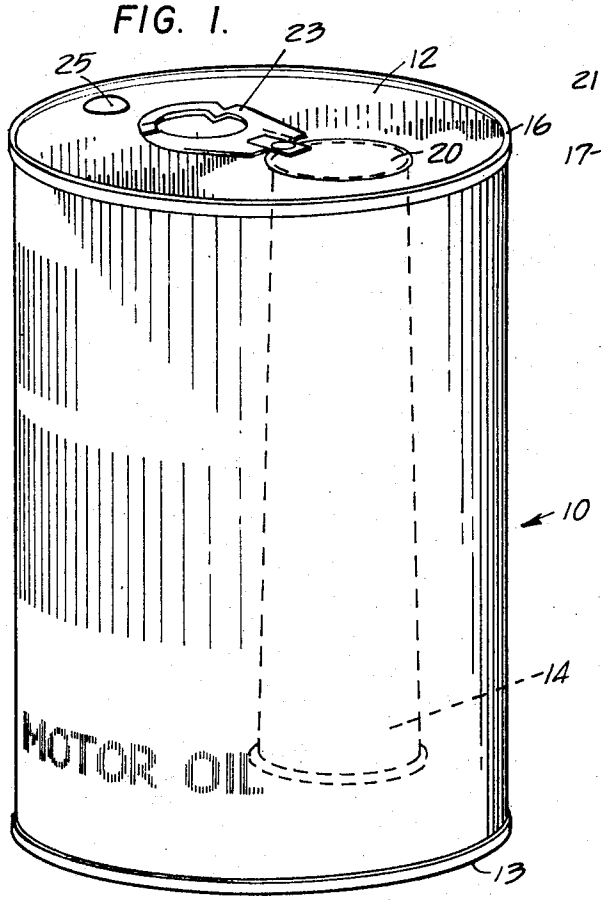


FIG. 1.

FIG. 2.

DISPENSER FOR LIQUIDS AND SOLIDS WITH SELF-CONTAINED SPOUT

BACKGROUND OF THE INVENTION

This invention relates to containers having attached dispenser systems and more particularly to a dispenser having a self-contained spout with a break-away aperture for opening the container which is normally sealed hermetically or otherwise.

Containers for dispensing liquids or solids are well known and may have serviceable spout systems whereby the contents of the container may be dispersed or dispensed through the spout. In such devices the spout is often integrally formed with the container and primarily designed to pour the contents of the container therefrom in a controlled manner. Typical of such systems are the common table salt container which has a liftable spout from which salt can be poured into salt shakers for table use. However, many of these prior art containers do not include a self-contained spout which will allow the contents of the container to be dispensed in hard to reach locations, such as the oil filler aperture of an automobile engine or the like. Particularly with reference to containers for liquids, such as oil, it has been the more conventional practice to employ a separate spout which is inserted into the oil can so the liquid contents can be poured into openings which are difficult to reach. In the typical dispensing of oil from oil cans, a separate spout both punctures the top wall of the container and provides a means by which the contents may be poured into openings in confined locations which are difficult to reach without the use of this auxiliary spout. While the separate spout systems are completely adequate for the purpose for which they are designed, they are relatively expensive and much time can be lost in service stations and the like looking for the spout in order that oil may be added to the crankcase of a conventional piston engine. Further, often the separate spouts leak a good deal of oil onto the outer surfaces of the engine when they are utilized and many times are accidently thrown away with the can to which they have been inserted.

As a result there is a need for a container or dispenser having a self-contained spout which is so inexpensive that it can be discarded with the container. However, such an inexpensive composite spout with the container must be retractable so that it does not prevent economic shipping and transport of the container, and further, it should not leak when being utilized. Also, it is desirable that the spout itself when confined in containers or dispensers with liquids, be free of such liquids on the outer surfaces of the spout when it is extracted to prevent difficulties in handling the container and to prevent the dripping of the liquid off its surfaces onto areas where the contents of the container are not desired.

Another need for such a container with a self-contained spout is the ability to return the spout to the container to avoid the otherwise increase in bulk due to the spout's extension from the container so the refuse volume will be reduced.

Thus it is an object of the instant invention to provide a container for dispensing liquids or solids which has a selfcontained spout within the container that can be quickly and easily extracted from the container to form a composite pourable spout with the container, providing more flexibility and easier access in pouring the contents of the container in openings which are in difficult or confined locations.

It is also an object of this invention to provide a container having a self-contained spout which is confined within the container but which is wiped free of the material contained within the container as it is extracted therefrom.

Another object of this invention is to provide a container having vent holes or the like, so when liquids are poured from the container a vacuum will not occur within the container.

SUMMARY OF THE INVENTION

The above objects and other objects can be accomplished by providing a container for dispensing liquids and solids or the like that includes inner-connected top and bottom walls closing the container with a break-open aperture formed in the top wall and a hollow spout mounted within the container having one end connected to the break-away portion of the aperture. This break-away portion normally seals the aperture and when opened allows the spout, which is connected to this portion, to be pulled out of the container body through the aperture. With a tapered spout the periphery of the aperture can wipe any liquids and/or solids from the surface of the spout so that the spout is free of any liquids and/or solids which are confined in the container as it is extracted. Subsequently the contents of the container can be poured therefrom through the spout into openings in other vessels. In a preferred embodiment, the spout is generally frustoconical shaped so it has improved sealing and wiping action when it is withdrawn through the aperture. Also a separate vent hole may be formed in the top of the dispenser to enhance the flow of liquids from the container through the spout by breaking any internal vacuum that might result therefrom.

In another embodiment the spout is generally both cylindrical and arcuate and includes an integral vent passage in its cylindrical body to break any internal vacuum as the liquid egresses from the container.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a container which is equipped with the self-contained spout of this invention shown in phantom, as it is configured for shipping and transport;

FIG. 2 is a vertical section of the dispenser shown in FIG. 1 with the self-contained spout withdrawn through the break-away aperture;

FIG. 3 is a broken-away elevation of the upper portion of the self-contained spout, illustrating the attachment of the break-away portion of the aperture and its connection to one end of the self-contained spout;

FIG. 4 is a cross section of a container with the internal self-contained spout of the invention withdrawn therefrom which spout includes an integral vent aperture to enhance the flow of liquids through the spout and shows the spout in the operable condition; and

FIG. 5 is an enlarged broken-away cross section of the end of the spout shown in FIG. 4 to show the details of the vent passage.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now to FIG. 1 of the drawings, an embodiment of the invention is illustrated showing a dispenser

or container **10** in accordance with this invention having a self-contained, extendable spout. The container **10** includes a cylindrical body **11** with interconnected top and bottom walls **12** and **13**, respectively that close the ends of the cylindrical body and are crimped to the circular periphery of the ends of the cylindrical body to seal the container. While the body **11** of the container is illustrated as a hollow cylindrical member, it is to be appreciated that the shape of the container may have any other well-known configuration, known in the container art. However, it is preferable that the top wall of the container be generally of a flat configuration in order that the top wall thereof may be broken open to provide access to the contents of the container and to remove the internally disposed spout. Because the instant invention is designed primarily for liquids, for the purposes of illustration only, the container **10** will be described as being the type of can used for dispensing motor oils or the like. These containers generally have a paperboard cylindrical body and top and bottom walls made of aluminum or similar metallic or plastic materials.

It is to be further appreciated in these type of containers that either the top or bottom wall can be assembled with the cylindrical body and thereafter the container filled prior to the assembly of the other end wall thereto. Conventionally these containers are filled in the above manner and it should be appreciated that the instant invention is compatible with such operations which will not be further described.

More particularly as can be seen in FIG. **1** a spout **14** is mounted beneath an aperture **15** formed on the top wall of the container so that the spout is completely contained within the container when the aperture is closed. While the exact location of aperture **15** is a matter of choice, it is preferably located adjacent to the top peripheral edge **16** of the cylindrical container so that substantially all the contents of the container can be poured therefrom without manipulating the container and to facilitate the egress of the contents. As can be seen in drawings and particularly in FIGS. **1** and **2**, the spout has a generally frustoconical hollow body portion **17** which tapers from one end to the end. For convenience of the description the portion of the spout directly adjacent to aperture **15** will be referred to as the top of the spout while the portion thereof is located remotely therefrom and will be referred to as the bottom end of the spout. As indicated in FIG. **2**, the outer diameter X of the top portion of the body portion **17** is less than the bottom outer diameter Y of the bottom portion of the body portion of the spout. As the diameter Y is generally much larger than the diameter of aperture **15** and the diameter X is only slightly smaller than the diameter of the aperture it can be appreciated as the spout **14** is extracted from the container, from the position illustrated by the dotted lines in FIG. **1** to the extended position shown in FIG. **2**, the body portion of the spout will expand the diameter of the aperture and in so doing the outer surface about the body portion **17** of the spout will be wiped clean of any of the liquid contents of the container. Usually the top wall of the container will be constructed of a light gauge metal, such as aluminum, and as the tapered spout is extracted from the container it will "cold work" the metal (stretching it) about the aperture and allowing the spout to be pulled out of the container to its fully extended position shown in FIG. **2**. As the metal is actually forcefully expanded because of the tapered body it will provide a suitable seal about the body portion of the spout at any degree of extension from the container. Generally, the cross section of the spout will be cylindrical and therefore relatively light gauge material can be used for the spout and still have suitable strength to achieve the expansion of the aperture, as indicated above. However, it should also be appreciated that the spout itself can employ other cross sectional configurations and indeed the top wall of the container itself need not necessarily be metal, as previously indicated. Material such as plastic or the like may function in the manner described above so that the advantages of the invention can be realized.

To prevent complete separation of the spout from the container as it is being extracted, the body portion **17** of the spout at its bottom end includes a stop flange **18** which ultimately engages the inside surface **19** of the top wall as the spout is extended and prevents further extension therof from the container. The functions of the stop flange can be appreciated by referring to FIG. **2**, showing it abutting against the surface **19** of the top wall **12** of the container. It should be appreciated that the expanding action of the diameter of the aperture by virtue of the tapered construction of the spout, allows the spout to form a non-leaking seal even though it is only partially extended from the container and the stop flange has not engaged the underside of the top wall as shown in FIG. **2**.

Referring to FIG. **1** it can be seen that aperture **15** is normally closed by a break-away portion **20** of the top wall **12**. Generally the break-away feature is obtained by scribing, grooving or die-cutting the top wall in a generally circular manner so that a force applied to the break-away portion will cause it to separate from the rest of the top wall leaving an open aperture **15**. In one sense the break-away feature is well known in the soft drink and beer can art where "pop tabs" openers are employed for customer convenience.

More particularly a ring-shaped tab member, shown best in FIGS. **1** through **3**, is spot welded to the break-away portion **20** of the top wall **12** of the container **10** and includes a ring which enables the user to grasp the tab member to lift it from the surface of the top wall **12**. Normally the tab is configured so that it will highly localize the forces on the break-away portion as it is lifted to cause partial separation of this portion from the top wall, along the scribe or die cuts in an area immediately adjacent to the tab member so that the break-away portion can then be completely "peeled" from the associated portion of the top wall. From the above description it can be appreciated that the break-away portion of the top wall is integral therewith until the tab member is lifted to commence separation of this portion from the top wall. In view thereof the can is completely sealed prior to the lifting of tab member **23** and no leakage is possible through the aperture during shipment and transport of the spout equipped container according to this invention.

As can best be seen in FIG. **2**, after the break-away portion **20** is separated from the aperture **15**, the spout **14** can be extracted from inside the container body because the top end **22** of the spout includes a hinge tab **21** that is secured to the break-away portion **20** through spot welding or the like. Since this is a small tab it can function as a hinge and this allows the ring-shaped tab member and the break-away portion **20** of the top wall

to be swung away from the top end of spout **14** as the break-away portion is lifted from the top wall of the can so that the hinge tab may be utilized to extract the spout axially out of the container, since the tab member, the break-away portion and the hinge tab **21** will be in a generally aligned condition.

The top end **22** of spout **14** can be rounded (not shown) to facilitate the entry of the top end of the spout through the aperture. However, since the top wall **12** is a light gauge metal or the like it will tend to flex outwardly (cone) as tap member **23** is pulled upwardly from the top wall and thus align the end of the spout with the aperture opening. As previously pointed out, as the top end **22** of the spout **14** is pulled through the aperture **15** the tapered body portion **17** of the spout will commence expanding the peripheral wall of the aperture providing a seal about the body portion of the spout for any degree of extension until such time as the flange **18** contacts the inside surface **19** of the top wall as best shown in FIG. **2.** In addition to the positive sealing action developed by this arrangement, the body portion is also wiped clean of all liquids so that when the spout is extracted it is in a liquid-free clean condition.

In general, hinge tab **21** may be constructed in a manner so that the break-away portion **20** and the tab member **23** are retained on the end of the spout as the liquid is poured from the container. In this manner the pop-open parts of the system do not become litter and are retained with the container. Further, as previously indicated, the spout may be pushed back into the can after the liquid has been extracted therefrom with the break-away portion and tab member **23** attached and of course could be re-extended for subsequent use. In fact, depending on the length of the spout, the whole assembly can be returned to the inside of the container once all the liquid has been removed therefrom.

In order to facilitate the egress of liquid contents in the containers of this invention it may be desirable to provide them with a separate air vent to prevent vacuum lock within the container as the contents are poured therefrom. In view thereof reference is made to FIGS. **1** and **2** wherein the top wall **12** is equipped with a small aperture **26** which is normally closed by a mushroom-shaped plug **25** to seal the can during transport and storage conditions. However, after the spout **14** has been extracted from the container, as described above, the mushroom plug may be lifted with a fingernail or a bladed instrument so that the interior of the container is provided with an air vent as the liquid flows out the spout. This facilitates smooth flow of the liquids from the container by eliminating a vacuum therein, as otherwise might be the case. It also should be appreciated, if desired, that the break-away portion **20** and the tab member **23** can be separated from the end **22** of the spout **14** by bending the hinge tab **21** back and forth until it breaks. While this is undesirable from the standpoint of creating additional litter, or small portions thereof, in some applications it may be desirable to breakaway these parts to facilitate access to confined openings. However, even in this case these portions could be returned to the interior of the container through the aperture when the spout is returned to the interior of the container.

A somewhat more complicated embodiment of the invention is shown in FIGS. **4** and **5** which illustrate a dispenser **27** having a similar cylindrical body **28** that is closed by top and bottom walls **30** and **29,** respectively, as described above. The principal difference in the embodiment shown in these figures is the presence of a curved spout **31** which still has a cylindrical body portion **32** but also includes an arcuate curve configuration to allow the spout to be more easily manipulated in confined locations. With the exception of the arcuate configuration of the spout the construction of the spout is quite similar to that of spout **14,** as previously described except it is shown constructed of an elastomeric material such as plastic. It has the same tapered relationship with the outer diameter X at the top of the spout being smaller than the outer bottom diameter Y thereof and the relationship of the diameter the top of the spout to the size of the aperture **33** in this alternate embodiment is the same as previously described. Further, the alternate embodiment is opened in the same manner as described above but is different from the spout previously described is that spout **31** includes its own air vent system so that it is unnecessary to use a separate air vent in the top wall of the container, as previously described. In this respect reference is made to FIG. **5** showing that the spout has molded therein an internal passage **35** which vents on the outer surface of the spout through port **36.** This spout runs the length of the spout and opens into the interior of the container through its projecting end **34.** As a result, when the spout is extended in substantially the same manner as previously described and liquid is poured therefrom, as illustrated in FIG. **4,** the egress of the liquid will cause a decrease in pressure within the container allowing atmospheric air to enter port **36,** traverse passage **32** and fill the volume within the container which is being vacated by the liquid. As a result vacuum will not build up within the container and disturb the flow of liquid therefrom.

The dispensers or containers described above are relatively inexpensive to manufacture and the spouts can be easily made of aluminum or elastomers, such as plastic so that the total cost of the lid or top wall equipped with such a spout is only slightly more than comparable dispensers not so equipped. Also since these types of cans are normally discarded in current practice and the spout of the instant invention is not separated from the container before or after use, no additional or separate discardable parts are generated by the utilization of this concept.

One of the features of this dispenser is that it has a very clean profile and could be easily sized to fit conventional coin operated machines that dispense cans. As a result oil and engine additives could be automatically dispensed in self-service gas stations or the like since each would have its own spout when this invention is utilized.

Having described my invention I claim:

1. A fluid tight dispenser for materials which has a pop-open feature with a self-contained spout comprising:

a container having a hollow body portion closed at its opposite ends respectively by a plate-like top wall and a bottom wall;

a break-away portion formed in said top wall;

pull means attached to said break-away portion on its outer surface operable when manually manipulated to force a partial separation between said break-away portion and said top wall thereby forming an

aperture in said top wall when the break-away portion is removed; and

tubular hollow rigid spout means located within said hollow body portion, said spout means having a smooth outer wall and also having one end thereof attached to the inside surface of said break-away portion so said spout means can be extracted through the aperture formed as said break-away portion is separated from said top wall, said spout means sized to said aperture so its smooth outer wall continuously engages and expands the periphery of the aperture in a sealing relationship along a substantial portion of the length of said spout means as said spout means is extracted whereby an exterior service spout is formed as said spout is extracted through which materials within the dispenser can be poured therefrom without leakage between the spout means and the aperture.

2. The dispenser defined in claim **1** wherein the spout means includes an integral air vent allowing atmospheric gases to enter the container as fluid egresses therefrom through said spout means.

3. The dispenser defined in claim **1** wherein the break-away portion is connected to the spout means with a tab extending from the latter whereby said break-away portion can be swung clear of the outer opening of said spout means after its extraction.

4. The dispenser defined in claim **1** wherein the spout means has a stop located on its end remote from the break-away portion that limits its extension when said stop engages said top wall when said spout means is extracted.

5. The dispenser defined in claim **1** wherein the pull means includes a ring member whereby it may be manually raised and utilized to extract the spout means from the dispenser when the break-away portion of the top wall has separated therefrom said ring member being connected to said spout means through said break-away portion.

6. The dispenser defined in claim **5** wherein the pull means includes lever means to assist in separating the break-away portion from the top wall as the pull means is manually lifted.

7. The dispenser defined in claim **1** wherein the container includes an air vent means which can be opened to prevent a vacuum from occurring within the dispenser when the dispenser contains liquids.

8. The dispenser in claim **7** wherein the vent means includes a rubber grommet located in an aperture in the container which grommet can be removed to provide the air vent means.

9. The dispenser as defined in claim **1** wherein a generally circular groove defines the break-away portion in the top wall of the dispenser which weakens the connection therebetween and wherein the tubular hollow spout is generally cylindrical, said tubular spout sized so its smooth outer wall continuously expands the area of the aperture as it is extracted along a substantial portion of its length, thereby forming a continuous seal therebetween.

10. The dispenser as defined in claim **9** wherein the elongated spout means tapers to larger diameter from the end connected to the break-away portion to the end remote from the top wall so its cross sectional area continuously increases along its length, with said end of said spout means connected to the break-away portion having a cross sectional area substantially equal to the cross sectional area of the aperture so a substantial portion of said spout means has a greater cross sectional area than said aperture.

11. The dispenser defined in claim **9** wherein the break-away portion is located adjacent to one edge of the container.

12. The dispenser defined in claim **9** wherein the spout means is curved and has a length approximating the height of the container.

13. The dispenser defined in claim **9** wherein the top wall thereof is formed of a light gauge metal.

14. The dispenser as defined in claim **13** wherein the light-gauge metal is aluminum.

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