Jan. 16, 1968 H. P. POWELL 3,363,807

FLEXIBLE DISPENSING BAG AND SEMI-RIGID CONTAINER THEREFOR

Filed Jan. 22, 1965 2 Sheets-Sheet 1

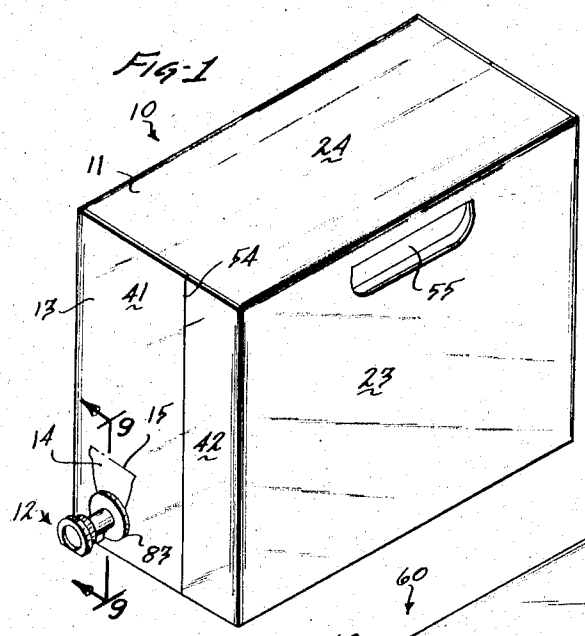


FIG-1

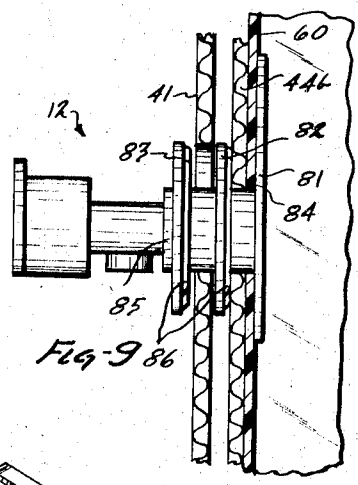


FIG-9

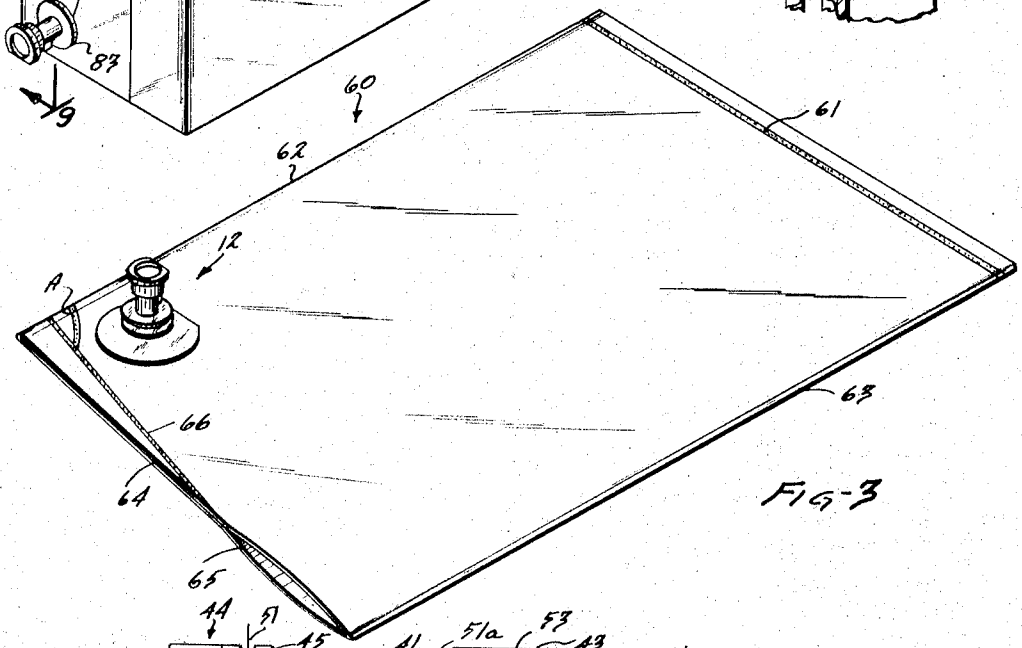


FIG-3

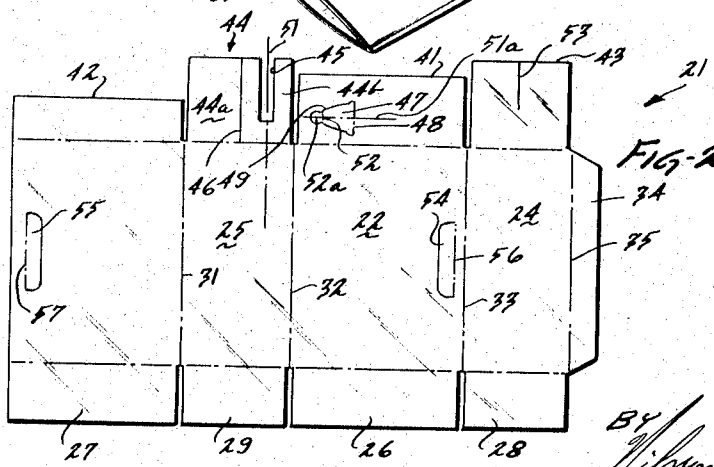


FIG-2

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FLEXIBLE DISPENSING BAG AND SEMI-RIGID CONTAINER THEREFOR

Filed Jan. 22, 1965 2 Sheets-Sheet 2

FIG-4

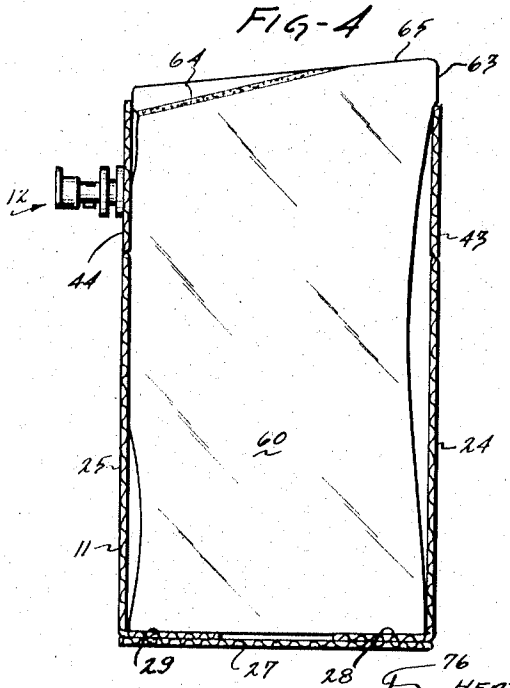
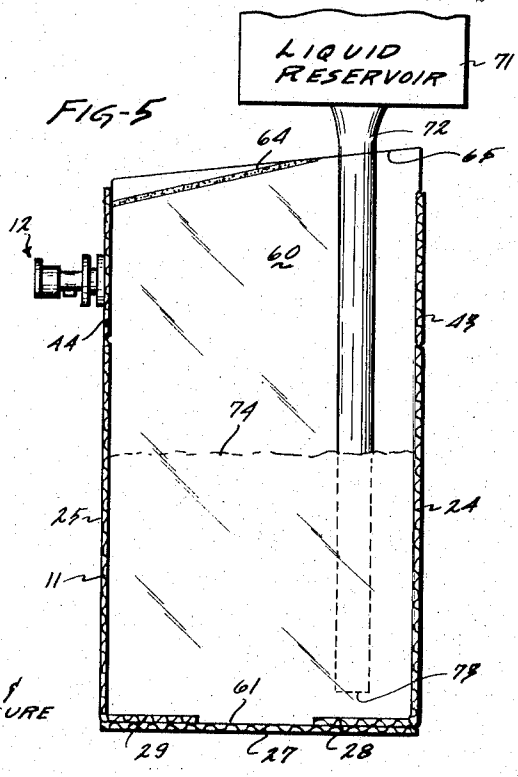


FIG-5



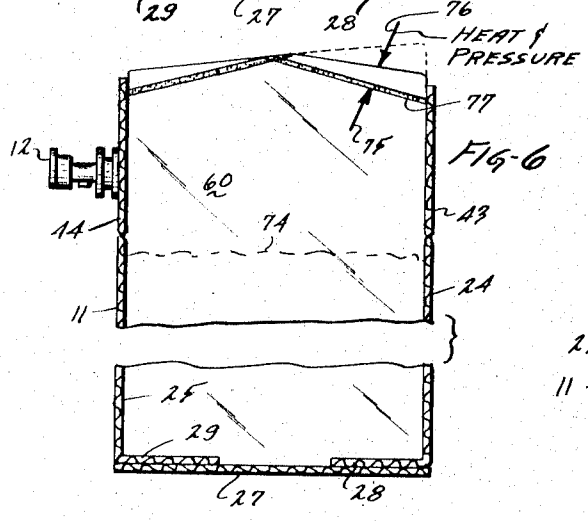
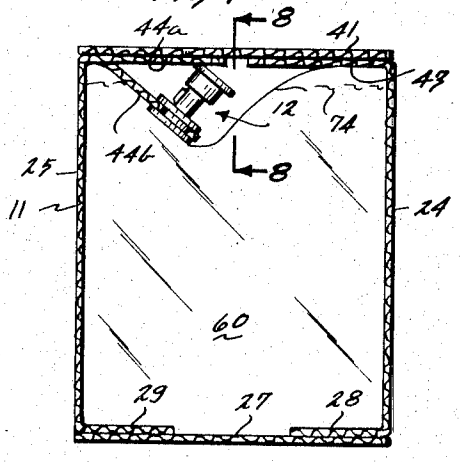


FIG-6

FIG-7



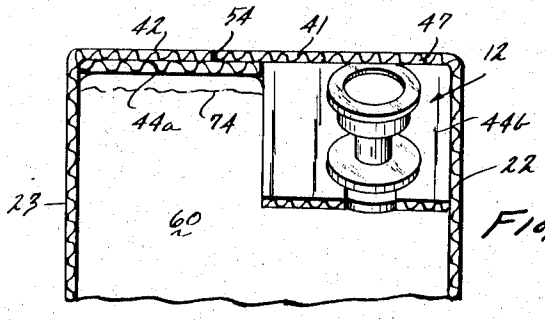


FIG-8

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3,363,807

FLEXIBLE DISPENSING BAG AND SEMI-RIGID CONTAINER THEREFOR

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4 Claims. (Cl. 222—105)

This invention relates generally to receptacles and more particularly to a receptacle having an outer semi-rigid container and an inner flexible plastic bag particularly adapted for receiving liquids and subsequently dispensing the liquids. This invention further relates to a method of filling said receptacle.

There has been a long felt need in the prior art for a receptacle capable of receiving liquids which are to be subsequently dispensed for human consumption and which receptacles maintain the contents thereof in a sanitary condition. Some such containers or receptacles have been provided in the past, but such prior art receptacles have had certain inherent limitations. For the most part such prior art receptacles have been exceedingly expensive to manufacture. Since the expense of manufacture of the receptacles was quite great, the receptacle once the contents thereof had been emptied, could not be disposed of and thus reuse thereof was necessitated. In such instances where reuse of a container which is designed for dispensing liquid for human consumption is required, the container must be thoroughly cleaned and sterilized prior to subsequent refilling thereof. Such cleaning operations are exceedingly difficult to accomplish in an inexpensive manner which will accomplish the desired end result.

Some containers have been offered in the prior art which were inexpensive and allegedly disposable. However, these containers were operable in such a manner that the consumer when attempting to dispense the liquid therefrom was in effect required, when the liquid level became rather low inside the receptacle, to use three hands for dispensing liquid. This was necessitated since the dispensing valve required a pulling operation in order to open it. If one therefore was to attempt to hold the glass into which the liquid was to be dispensed in one hand and operate the valve with another hand, and the liquid level in the container was such that the weight of the container was not sufficient to resist the friction in the valve, then one must hold the receptacle to permit opening of the valve. Such a situation is obviously less than satisfactory.

Furthermore, for the most part, those prior art disposable receptacles presently available also require filling thereof through the dispensing valve. Such an operation is obviously extremely slow and requires additional labor and effort during the actual filling, packing and storing of the liquid containing receptacles. Such an operation obviously increases the expense of the overall product thus making it less desirable from the seller's point of view.

Accordingly, it is an object of the present invention to provide a receptacle for retaining and dispensing liquids which is rugged, easy to assemble, inexpensive, and can be disposed of after use.

It is another object of the present invention to provide a receptacle for retaining and dispensing liquids which can easily be operated irrespective of the level of the liquid within the receptacle.

It is another object of the present invention to provide a receptacle for retaining and dispensing liquids which can easily and quickly be fiilled in a manner other than through the dispensing valve thereof.

It is another object of the present invention to provide a method of filling a receptacle which is adapted for retaining and dispensing liquids, which method is easy, quick, requires little handling, and provides a filled receptacle for a little more than the cost of the contents thereof.

It is a further object of the present invention to provide a receptacle for retaining and dispensing liquids which maintains the dispensing valve internally of the receptacle during shipment or storage thereof, but permits the valve to extend through the container and to be locked therewith for further use in dispensing the liquid contained within the receptacle.

Other and more specific objects and advantages of the present invention both as to its organization and method of operation will become apparent from a consideration of the following description taken in conjunction with the accompanying drawings, which are presented by way of example only and are not intended as a limitation upon the scope of the present invention, and in which:

FIG. 1 is a perspective view of a receptacle in accordance with the present invention;

FIG. 2 is a top plan view of a blank from which a container in accordance with one feature of the present invention is manufactured;

FIG. 3 illustrates a flexible plastic bag which is used in conjunction with the container in accordance with one aspect of the present invention in order to provide the completed receptacle as illustrated in FIG. 1;

FIG. 4, FIG. 5, FIG. 6, and FIG. 7 each illustrate a step in the method of filling a receptacle in accordance with the present invention;

FIG. 8 is a view partly in cross section taken along the lines 8—8 of FIG. 7; and

FIG. 9 is a partial cross sectional view taken along the lines 9—9 of FIG. 1.

A receptacle for containing and dispensing liquid in accordance with the present invention includes a flexible plastic bag which includes as a part thereof, a dispensing valve. The receptacle further includes a container member adapted to receive the plastic bag and which includes as a part theerof a closure flap which cooperatively receives the dispensing valve affixed to the plastic bag in such a manner that the valve is retained within a predetermined location with respect to the container. An additional closure flap includes a cutout tab thereon which overlies the retained dispensing valve in such a manner that upon being removed, the valve can be withdrawn from the container, locked in place upon the container, and thereafter used for dispensing the liquid contained within the flexible plastic bag.

In accordance with a more specific aspect of the present invention, the flexible plastic bag includes a tubular sheet plastic member which is sealed across one end and partially across the other end. A dispensing valve is permanently affixed to one side of said sheet plastic member adjacent the open end portion, and includes a bore communicating with the interior of said plastic bag. The open end portion of the plastic bag is adapted for sealing once liquid has been injected into the plastic bag.

Further in accordance with yet another more specific aspect of the present invention, a container which is adapted to receive the flexible plastic liquid retaining bag includes a rectangular tubular member having at least two closure flaps at one end thereof. One of the closure flaps defines an elongated opening adapted to receive the dispensing valve which is affixed to the flexible plastic bag. The other of the closure flaps defines a cutout tab which is positioned in such a manner that when the two closure flaps are in their closed position, the tab overlies the elongated opening within the one closure flap.

In accordance with the method of filling a liquid retaining receptacle in accordance with the present invention, there is provided a receptacle including an inner bag and an outer container, the bag having one end portion which is at least partly open. The bag is first positioned within the container, and thereafter liquid is injected into the bag through the open end portion thereof. After fill-

ing the bag with the liquid the open end portion thereof is sealed. Upon such filling and sealing, the container is then closed about the filled bag.

It should be expressly understood that the receptacle in accordance with the present invention is usable for retaining and dispensing any liquid which is desirable so long as the liquid is compatible with the flexible plastic material, and with the dispensing valve. However, for purposes of ease of illustration and clarity of description, the following description will be given with particular emphasis placed upon the utilization of a receptacle structured in accordance with the present invention in conjunction with receiving and dispensing milk.

Referring now to the drawings, and more particularly to FIG. 1, there is illustrated a perspective view of a receptacle in accordance with the present invention, as it would appear when ready for dispensing milk therefrom. As is therein seen, the receptacle illustrated generally at **11** includes a container **10** having a dispensing valve **12** extending externally thereof through an opening provided in an outer closure flap **13**. The outer closure flap **13** includes a cutout tab **14** which is perforated or scored along the line **15** to permit the tab **14** to be raised, thus defining an opening in the outer closure flap **13** through which the dispensing valve **12** may protrude. The tab **14** may then be replaced in position to cover the opening once the dispensing valve is locked in place, as will be more fully described hereinafter.

A better understanding of the structure of the receptacle and particularly of the container **11** will be obtained from a consideration of FIG. 2 to which reference is hereby made.

FIG. 2 illustrates generally at **21** a unitary blank from which the container **11** is constructed. The unitary blank **21** includes opposed side walls **22** and **23** and opposed end walls **24** and **25**. Side wall bottom closure flaps **26** and **27** are hingedly attached along the score line **30** to opposed side wall panels **22** and **23** respectively. End wall bottom closure flaps **28** and **29** are hingedly secured along the score line **30** to end wall panels **24** and **25** respectively. As should be noted, the bottom closure flaps **26**, **27**, **28** and **29** function in the normally accepted manner to close one end of a generally tubular rectangular structure which is formed by folding the unitary blank **21** along the score or hinge lines **31**, **32** and **33** transversely extending across the body of the unitary blank **21**. An attaching flap **34** is hingedly secured along score or hinge line **35** to the side of end wall panel **24** and attaches by means of adhesive, tape or any other well known expedient to the edge side wall panel **23**, to maintain the unitary blank **21** in a generally tubular form. As is well known, when the blank is thus folded and formed and the attaching flap adhered as above described, the blank may be stored or shipped in a collapsed position.

Outer closure flaps **41** and **42** are hingedly secured along hinge or score line **36** to the top of the opposed side wall panels **22** and **23** respectively. Inner closure flaps **43** and **44** are hingedly secured along hinge or score line **36**, to the top of end wall panels **24** and **25** respectively.

An elongated opening such as the slot **45** is defined by the inner closure flap **44**. It should be noted that the inner closure flap **44** is separated by die cut **46** into two separate sections, **44A** and **44B**. The slot **45** is defined by the section **44B** of the inner closure flap **44**. The slot **45** is adapted to receive the dispensing valve as will be more fully described hereinafter. A cutout tab **47** is provided in outer closure flap **41**. The cutout tab has a wide base **48** and a narrow neck portion **49** and as is illustrated in FIG. 2, takes the shape generally of a bell. It should, however be understood that any geometric shape desired can be utilized. The terminal end portion **52***a* of the cutout tab **47** is perforated along the line **52** and can be completely removed from the tab **47** and discarded if such is desired leaving an opening having approximately the same diameter as the body of the dispensing valve **12**. The wide base portion **48** of the cutout tab **47** may be scored, hinged or perforated as indicated by the dashed line. It should be noted that when the inner and outer closure flaps **44** and **41** respectively are in their closed position, that the longitudinal axis of the slot **45** as indicated by the broken line **51** and the longitudinal axis of the tab **47** as indicated by the broken line **51***a* substantially coincide. The purpose of such coincidence will become more apparent as the description of the receptacle in accordance with the present invention progresses. A die cut **53** is provided in the inner closure flap **43** for a purpose to be described in detail hereinbelow.

It should be noted that the heights of the outer closure flaps **41** and **42** are different, flap **41** being larger in dimension thus causing the point of contact between the edges of the flaps **41** and **42** to be off center, as is illustrated at **54** in FIG. 1.

The opposed side wall panels **22** and **23** each have a die cut member **54** and **55** respectively, which is hinged along the score lines **56** and **57** respectively. The die cut members **54** and **55** may be pushed inwardly to provide a handle or gripping area so that the filled receptacle can easily be lifted by the consumer.

Referring now more particularly to FIG. 3, a liquid containing bag which is cooperatively received by the container **11** constructed from the blank **21** above described, is illustrated generally at **60**. The liquid containing bag **60** is preferably constructed of a tubular sheet of flexible plastic material such as, for example, polyethylene, having a generally trapezoidal configuration as shown in FIG. 3. The tubular sheet of flexible plastic material is sealed completely across one end thereof as is illustrated by the seal line **61** and is sealed across only part of the opposite end **64** as shown by seal line **66**. It should be noted that the said opposite end **64** of the sheet material is cut on an angle so that there is provided a shorter side **62** and a longer side **63** thereof. The opposite end **64** which is angularly cut, is open as shown at **65** from a point intermediate the ends thereof, extending outwardly to substantially its terminal point adjacent the end of the longer side **63**. This open portion **65** of the bag **60** is provided by causing the seal line **66** to progress along the opposite end **64** at an angle A which is greater than the angle formed between the side **62** and the end **64** of the bag. A dispensing valve **12** is permanently affixed as by heat sealing, to one side of the pastic material which forms the bag **60**. It should be noted that the dispensing valve **12** is affixed adjacent the end edge **64** having the open portion **65** above described, and specifically is affixed adjacent the juncture of the end edge **64** and the side edge **62** which form the angle A above referred to.

Referring now more particularly to FIGS. 4 through 7, the cooperative relationship between the bag **60** and the container **11** will become apparent. FIGS. 4 through 7 illustrate the various steps which are required to fill the receptacle with milk and ready it for storage, shipment, and ultimate use by the consumer. Each of the FIGS. 4 through 7 is a side view in which the side wall **23** of the container **11** has been removed for purposes of clarity and ease of illustration of the steps required.

As is illustrated in FIG. 4, the flexible plastic bag **60** is first positioned within the container **11** in such a manner that the angularly cut end **64** is positioned uppermost so that the open portion **65** of the bag is exposed. The side edge **63** of the bag adjacent the upper portion thereof, is inserted into the die cut **53** provided in the inner closure flap **43**, to thus hold the open portion of the bag in place. The dispensing valve **12** is inserted into the slot **45** provided in the inner closure flap **44** as above described. When the bag **60** is thus positioned within the container **11**, it should be understood that the inner and outer closure flaps **41** through **44** have not as yet been bent along the score line **36**. The bottom closure flaps **26** through **29** may have already been folded and sealed into

position as is illustrated in FIGS. 4 through 7, although such an operation is not necessary.

After the flexible plastic bag **60** has been positioned within the container **11** as described in conjunction with FIG. 4, the bag **60** is filled with milk as is illustrated in FIG. 5. As is therein shown, a liquid reservoir **71** filled with milk or any desired liquid which is to be inserted into the bag **60**, includes a spout **72** extending therefrom. The spout **72** is inserted into the opening **65** provided in the end **64** of the bag **60**, and is inserted downwardly until the terminal end **73** of the spout **72** is adjacent the lower end edge portion determined by the seal line **61** of the bag **60**. Milk is then injected into the bag **60**, causing the level of the milk therein to rise, as is indicated by the wavy line **74**, until a predetermined point has been reached which point is determined by the amount of milk that is to be housed within the container. When such predetermined point has been reached, the spout **72** is withdrawn from the bag **60**.

As the spout **72** is withdrawn through the opening provided in the bag **60**, heat and pressure are applied along the end **64** of the bag **60**, as is indicated by the arrows **75** and **76**, in FIG. 6. The application of the heat and pressure seals the opening along the seal line **77** as shown in FIG. 6 which joins the seal line **66**. In this manner the milk contained within the plastic bag **60** is sealed from the atmosphere and is thus maintained in a sanitary condition fit for human consumption. It should also be noted that the plastic bag **60** is filled through an opening provided within the bag, and thus is not filled through the dispensing valve **12** as has been the case in the prior art.

Once the bag **60** is thus filled and sealed as above described, the inner and outer closure flaps of the container **11** are then closed. Such closure is as illustrated in FIG. 7. As is illustrated in FIG. 7, the inner closure flaps **43** and **44** are closed and thereafter the outer closure flaps **41** and **42** are closed (flap **42** not being shown in FIG. 7). Upon the closure of the outer closure flap **41**, the dispensing valve **12** is contacted by the cutout tab **47**. The tension between the periphery of the cutout tab **47** and the outer closure flap **41** is such that the pressure applied by the cutout tab against the dispensing valve **12** pushes the valve **12**, along with the section **44B** of the inner closure flap **44**, downwardly into the container. Sufficient space is provided between the level of the milk **74** within the plastic bag **60**, and the top surface of the container **11** as viewed in FIG. 7, to permit the portion **44B** of the inner closure flap **44** to easily be depressed into the interior of the container. It should thus be seen that the dispensing valve **12** is maintained internally of the container **11** thus preventing foreign matter such as dirt, bacteria or the like from entering the dispensing valve **12**, prior to use thereof. Furthermore, the dispensing valve **12** is retracted into the container **11** in such a manner that it does not provide an external protuberance capable of interfering with shipment, storage or handling of the filled receptable **10**.

The particular relationship of the inner and outer closure flaps and the valve **12** is more clearly seen in FIG. 8 to which reference is hereby made.

As is illustrated in FIG. 8, the cutout tab portion **47** on the outer closure flap **41** clearly overlies the dispensing valve **12** and is pushing it along with the section **44B** of the inner closure flap **44** downwardly into the container as was above described in conjunction with FIG. 7. As can be seen, the portion **44A** of the inner closure flap **44** remains in an upward flat position even though the section **44B** is arranged and adapted to be movable with respect to the outer closure flap **41** and associated parts thereof. It should further be noted that the point of joinder **54** between the outer closure flaps **41** and **42** overlies the section **44A** of the inner closure flap **44**. In this manner the box may be sealed by utilizing adhesive between the outer closure flaps **41**, **42**, and the inner closure flap section **44A** or by using strips of adhesive coated tape as is well known in the art.

When the consumer purchases a carton of milk, typically a two and one-half gallon carton thereof, packaged in accordance with the receptacle of the present invention, it will appear as is illustrated in FIGS. 7 and 8 with the dispensing valve **12** pushed into the interior of the receptacle. At the point when the consumer is ready to commence consumption of the milk housed within the receptacle **10**, the consumer breaks out the section **51** of the cutout tab **47**, and then lifts the tab **47** upwardly allowing it to bend along the hinge line or perforation **48** so that an opening is defined in the outer closure member **41** along the lines previously occupied by the cutout tab **47**. When the tab **47** is thus lifted or removed, the force of the milk within the container **60** pushes the section **44B** of the inner closure flap **44** upwardly as viewed in FIG. 8 so that the dispensing valve **12** is caused to protrude through the opening left by the removal of the tab **47**. The consumer then grasps the dispensing valve **12** pulling it the remainder of the distance outwardly, if such be necessary, and then slides the valve downwardly as viewed in FIG. 1 until the body of the valve is received within the lower portion of the opening left by the removal of the tab **47**, that is, within the area formed by the removal of the section **51** of the tab **47**. If desired, the tab **47** may be folded back into its original position and tucked into place against the valve **12** and the milk may then be dispensed from the receptacle **10** through the dispensing valve **12**.

A better understanding of the cooperation of the dispensing valve with the various inner and outer closure flaps can be gained by reference to FIG. 9. As is therein illustrated, the dispensing valve **12** in accordance with the presently preferred embodiment of the present invention includes three flange members **81**, **82** and **83** which define a pair of spaces therebetween. The flange **81** is also used as the section of the valve for sealing to the bag **60**, for example, the large diameter flange **81** is received internally of the bag **60**, and is heat sealed thereto along the seal line **84**.

The section **44B** of the inner closure flap **44** is received within the space defined between the flanges **81** and **82** as is illustrated in FIG. 9. As is shown in FIG. 9, the bottom of the body portion **85** of the valve **12** is resting against the bottom end or terminal section of the slot **45** in the section **44B** of the inner closure flap **44**. The outer closure flap **41** is received within the space provided between the flanges **82** and **83** as is illustrated in FIG. 9. The body **85** of the valve **12** is resting at the bottom of the opening provided by the removal of the section **52***a* of the tab **47** in the outer closure flap **41**. It is thus seen that the valve is locked into position by the flanges defining the openings or spaces within which the various sections of the container **11** are received. As is also illustrated, vertical ribs are provided as is illustrated at **86** on the inwardly facing sides of the flanges **82** and **83**. The vertical ribs engage the closure flaps **41** and **44B** and, if the material is pliant, depress the material slightly, thus more firmly affixing the valve **12** into position to prevent its rotation during use.

There has thus been disclosed a receptacle for receiving and dispensing liquids which receptacle is exceedingly inexpensive, easy to assmble, and fill, and once the contents thereof have been utilized, may be disposed of. There has also been disclosed a method for filling the receptacle of the present invention. Although only a specific embodiment of a receptacle has been disclosed in detail herein, it is to be expressly understood that such is for the purpose of illustration and description of the invention only, and is not intended as a limitation upon the scope of the claims as they appear hereinafter.

What is claimed is:

1. A receptacle for retaining and dispensing liquid comprising:

(A) a flexible plastic bag having a dispensing valve affixed permanently thereto and extending outwardly therefrom,

(1) said valve having a body portion having a predetermined outer dimension;

(2) first, second, and third spaced apart flanges on said predetermined outer dimension portion of said valve defining first and second spaces therebetween, said first flange being sealed to said bag; and

(B) a rectangular container receiving said plastic bag and being constructed of semi-rigid sheet material and including

(1) two pairs of opposed wall panels interconnected to form a generally tubular member,

(2) first closure means interconnected to one end of said wall panels and closing one end of said tubular member,

(3) second closure means interconnected to the other end of said tubular member and comprising

(a) first and second inner closure flaps each secured respectively to a first pair of said opposed wall panels along a hinge line and having an outer edge,

(i) said first inner closure flap being divided into first and second sections by a die cut extending from said outer edge to said hinge line, said first section defining an elongated opening extending from said outer edge toward said hinge line but terminating short of said hinge line, said elongated opening having a width slightly larger than said predetermined outer dimension on said valve, said valve being slidably received in said opening and abutting the terminal part of said opening to support said valve, and

(b) first and second outer closure flaps each secured respectively to the other pair of said opposed side walls along a hinge line,

(i) said first outer closure flap having a substantially larger dimension, measursed orthogonally to said hinge line, than said second closure flap,

(ii) said first and second outer closure flaps being secured along a line overlying said second section of said first inner closure flap,

(iii) said first outer closure flap having a cutout tab therein, said tab overlying said elongated opening when said first outer closure flap is closed,

(iv) said tab engaging said valve and pushing said valve and only said first section of said first inner closure flap inwardly into said container when said first outer closure flap is closed,

(v) said tab upon being removed defining an opening in said outer closure flap within which said valve is received for permitting said valve to extend outwardly from said container adjacent one corner thereof,

(vi) at least a portion of said tab opening being substantially the same width as said elongated opening, said first space receiving said first inner closure flap and said second space receiving said first outer closure flap.

2. A receptacle as defined in claim 1 wherein said tab has a wide base portion and a circular terminal portion opposite said base portion, said terminal portion having a diameter substantially the same as said predetermined outer dimension on said valve body, said base portion and said terminal portion being joined by a narrow neck portion.

3. A receptacle as defined in claim 2 wherein said base portion is secured along a hinge line to said first outer closure flap and said circular terminal portion is removable to define a circular opening, said tab, without said terminal portion, being insertable between said second and third flanges on said valve to assist in retaining said valve in said terminal portion.

4. A receptacle as defined in claim 3 wherein said first and second spaces on said valve include inwardly directed ribs on said second and third flanges for engaging respectively said first inner and first outer closure flaps and slightly depress the same to assist in preventing rotation of said valve.

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