United States Patent [19]

Weldon

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[45] **June 25, 1974**

[54] **SAFETY POURING PACKAGE FOR DANGEROUS CHEMICALS**

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[73] Assignee: **Owens-Illinois, Inc.,** Toledo, Ohio

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[21] Appl. No.: **285,808**

[52] **U.S. Cl.**..... **206/216,** 204/45.14, 206/84

[51] **Int. Cl.**..... **B65d 5/46,** B65d 77/00, B65d 81/00

[58] **Field of Search**..... 206/45.14, 46 FR, 56 R, 206/65 E, 84; 229/7 R, 14 BE, 14 C, 17 R, 37 R, 52 B, 89, DIG. 6

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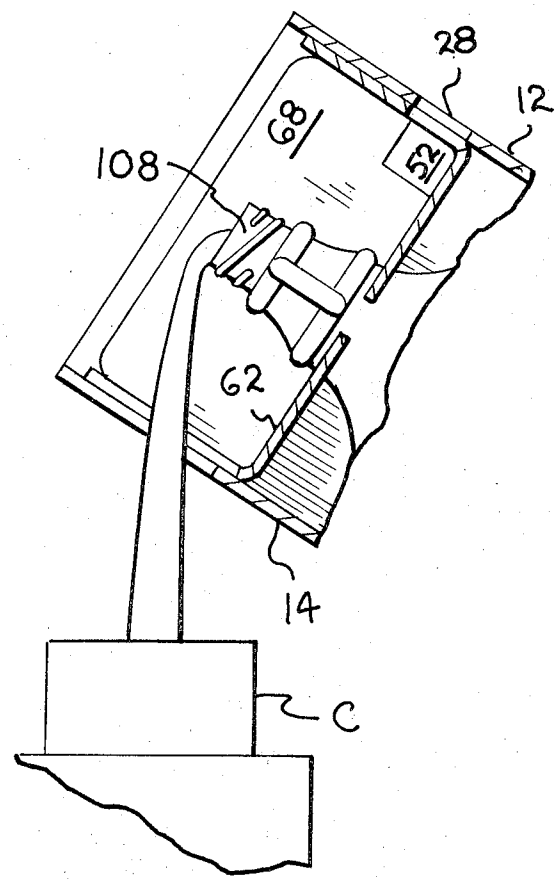
Assistant Examiner—Steven E. Lipman
Attorney, Agent, or Firm—Steve M. McLary; E. J. Holler

[57] **ABSTRACT**

A safety pouring package for dangerous chemicals wherein the chemical is contained in a bottle. A bottle containing a dangerous chemical, such as a concentrated acid, is completely enclosed in a tubular carton. The carton is tall enough to ensure that the finish portion of the bottle does not project beyond the open end of the carton. A pouring notch is cut in one sidewall panel of the carton. A hand hole aperture is cut in a sidewall panel of the carton opposed the pouring notch. A bottle retaining insert is pressed into the carton and located in position by the shoulder of the bottle below the finish of the bottle. The insert may be held in place by retaining panels, which overlie the insert, formed in the carton sidewall. The insert may have a plurality of upwardly extending flaps which serve to form a reservoir for any of the bottle contents which may be spilled. In this case, one of the flaps would be slotted in alignment with the pouring notch, and another flap would have a hand hole aperture in registry with the hand hole aperture in the carton. In operation, a person may transfer the contents of the bottle by lifting the carton at the hand hole aperture and pouring through the notch. Thus, the hand of the person need never touch the bottle.

4 Claims, 9 Drawing Figures



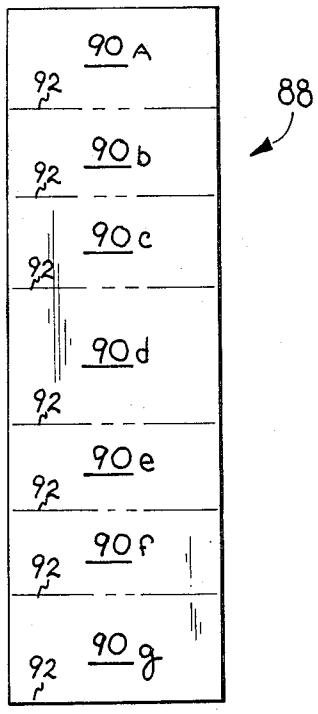


FIG. 3

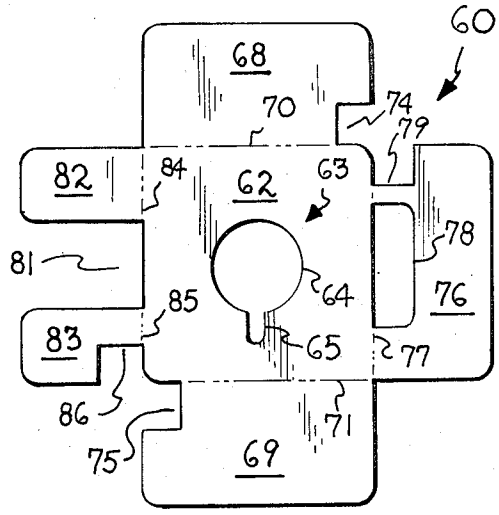


FIG. 2

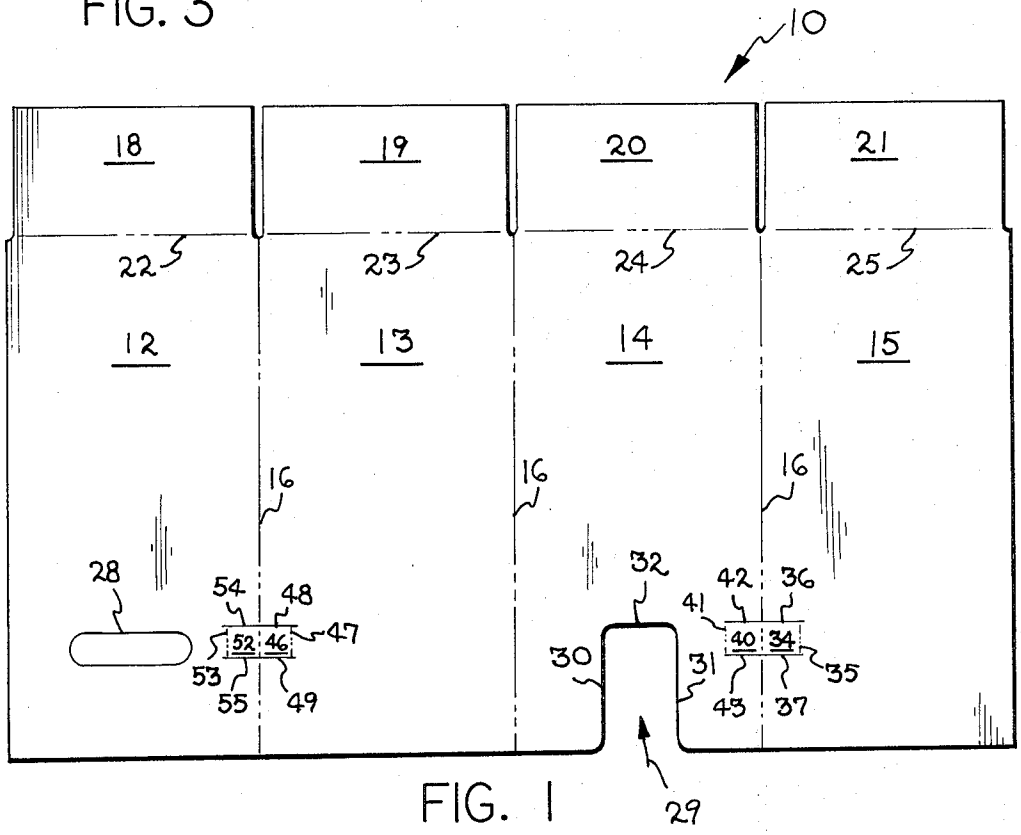


FIG. 1

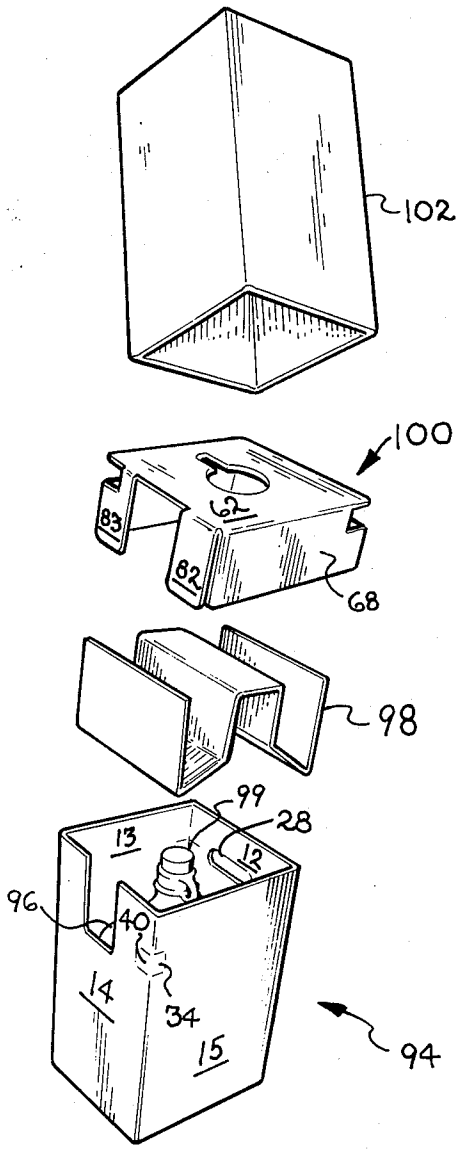


FIG. 4

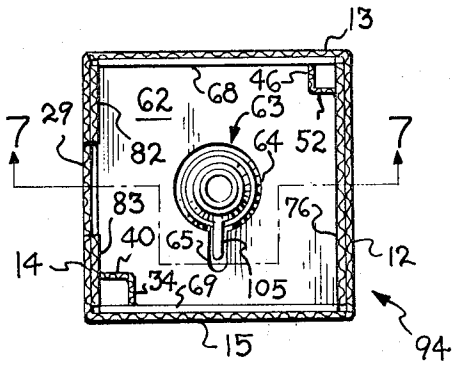


FIG. 6

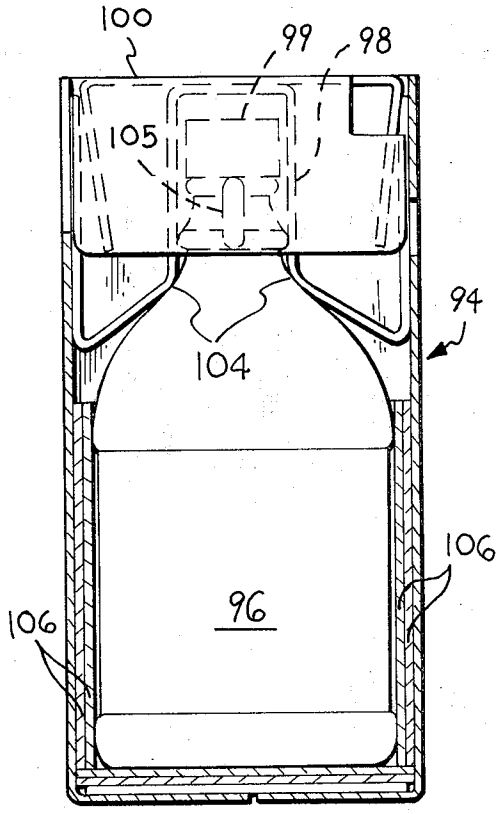


FIG. 5

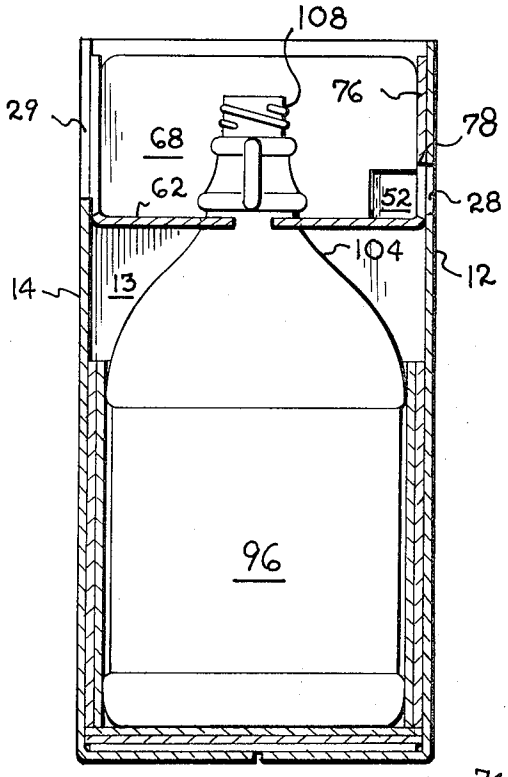


FIG. 7

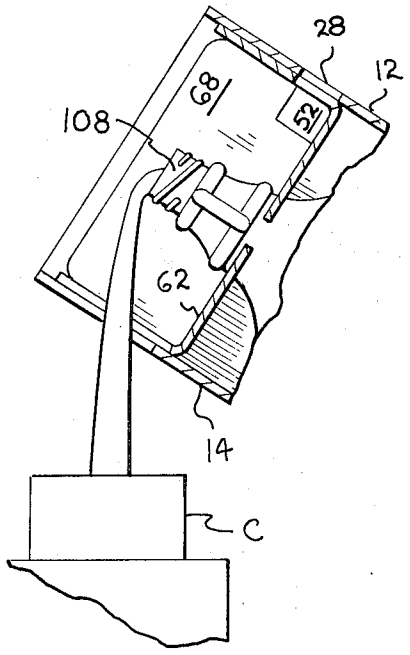


FIG. 9

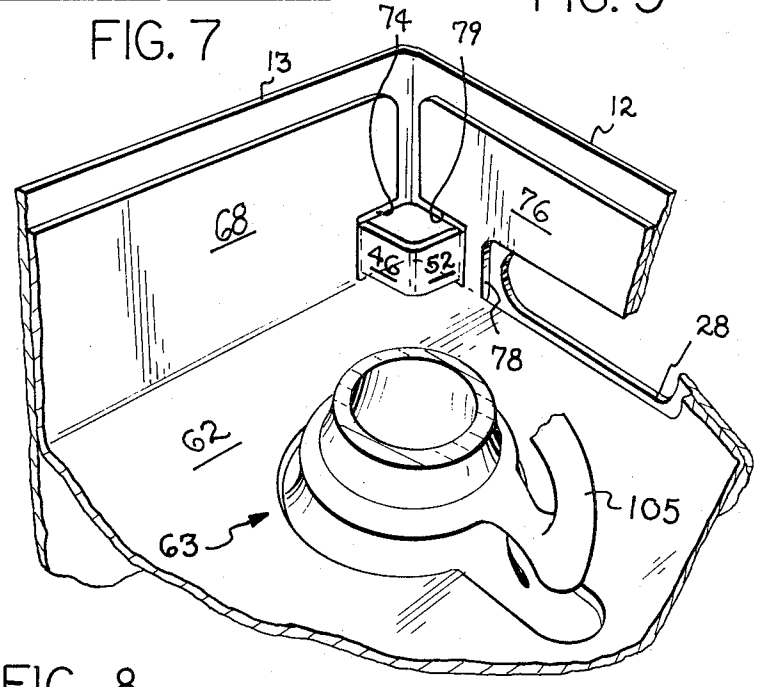


FIG. 8

SAFETY POURING PACKAGE FOR DANGEROUS CHEMICALS

BACKGROUND OF THE INVENTION

This invention generally relates to a package for a fragile article. More particularly, this invention relates to a package for a bottle filled with a dangerous chemical. Most specifically, this invention relates to a package of the type described which allows the contents of the bottle to be transferred without the necessity of a person touching the bottle.

Many acids and corrosive or otherwise dangerous liquid chemicals are commonly sold in glass bottles. The glass bottle is an ideal receptacle, since it resists attack by most chemicals of this nature. However, the glass bottle is relatively easily broken. U.S. Pat. No. 3,000,492 shows one type of package designed to minimize breakage. However, this package still left the neck portion exposed. Other, somewhat similar, packages are disclosed in U.S. Pat. Nos. 1,647,581 and 2,349,020. An additional problem arises in transferring the contents of a relatively large bottle into small containers for use. The liquid may splash during the pouring or may run back on the bottle. Since the person doing the pouring is holding the bottle at this time, an obvious hazard exists to such a person. I have overcome these problems by devising a safety pouring package for dangerous chemicals which allows the person to pour the contents of the bottle without touching the bottle and which completely encloses the bottle as a protection against breakage.

SUMMARY OF THE INVENTION

My invention is a safety pour-out package for a bottle having a shoulder portion and a finish portion. The bottle is placed in a tubular carton having a plurality of sidewalls foldably connected together in a closed configuration and bottom closure flaps foldably connected to the lower ends of the sidewall panels to provide a closed bottom. The height of the carton is such that the finish portion of the bottle is completely contained within the carton. One of the sidewall panels has formed therein a pouring notch extending from the edge of the panel away from the bottom closure flaps to a point intermediate the height of the sidewall panel. One of the sidewall panels located opposite the pouring notch has formed therein a hand hole aperture. A bottle retaining means is positioned in the carton for holding the bottle in the carton. The bottle retaining means has an aperture formed therein for passing it over the bottle finish to allow positioning of the bottle retaining means by the bottle shoulder portion. The combined package allows the contents of the bottle to be poured through the pouring notch, thereby avoiding contact of the hand of a person with the bottle.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of the blank for the tubular carton of the present invention;

FIG. 2 is a plan view of the blank for the bottle retaining insert of the present invention;

FIG. 3 is a plan view of the blank for the cap protector used during shipping the package of the present invention;

FIG. 4 is an exploded view of the package of the present invention in its shipping configuration;

FIG. 5 is an elevation view of the assembled package of FIG. 4 with the tubular overcarton removed and one sidewall panel of the main carton removed to show the shipping configuration of the bottle and bottle retaining insert;

FIG. 6 is a top plan view of the package of the present invention in its pouring configuration with the overcarton removed;

FIG. 7 is a cross sectional elevation view taken along the line 7—7 of FIG. 6;

FIG. 8 is an enlarged perspective view, with parts broken away, of the upper portion of the package of FIG. 6 illustrating the bottle insert retaining panels and the alignment of the hand hole apertures; and

FIG. 9 is a partial cross sectional view similar to FIG. 7 showing the pouring or transfer of the contents of the bottle through the notch into a suitable unit of use container.

DETAILED DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a blank **10** from which the tubular carton member of the present invention is formed. A linear series of sidewall panels **12, 13, 14** and **15** are hingedly connected together by fold lines **16.** End closure flaps **18, 19, 20** and **21** are hingedly connected to the sidewall panels **12, 13, 14** and **15** by respective fold lines **22, 23, 24** and **25.** It should be realized that a manufacturer's joint tab could be attached to the sidewall panel **12** or **15** for construction purposes. However, this particular blank **10** is erected and formed into a tubular carton with a taped joint, therefore eliminating the need for a manufacturer's joint tab. A hand hole aperture **28** is cut into the sidewall panel **12.** A pouring notch **29** is cut from the sidewall panel **14,** the pouring notch **29** being defined by two substantially parallel cut lines **30** and **31** which extend from the free edge of the sidewall panel **14** toward the fold line **24.** The cut lines **30** and **31** are coextensive, and are connected at their lower terminal points by a connecting cut line **32** to thus form the pouring notch **29** in the sidewall panel **14.** A first insert retaining panel **34** is located on the sidewall panel **15.** The insert retaining panel **34** has a fold line **35** which is positioned intermediate the length of the fold line **16** connecting the sidewall panel **15** to the sidewall panel **14** and intermediate the width of the sidewall panel **15.** The actual position of the fold line **35** is dictated, as will be seen later, by the height of a bottle contained within the tubular carton erected from the blank **10.** A cut line **36** extends from the terminal point of the fold line **35** closer to the fold line **25** to and through the fold line **16** connecting the sidewall panel **15** to the sidewall panel **14.** A cut line **37** extends from the opposite terminal point of the fold line **35** to and through the fold line **16** connecting the sidewall panel **15** to the sidewall panel **14.** A second insert retaining panel **40** is formed on the sidewall panel **14.** A fold line **41** is located on the sidewall panel **14** to partially define the second insert retaining panel **40.** The fold line **41** is located approximately the same distance from the fold line **16** connecting the sidewall panels **14** and **15,** as is the fold line **35.** In addition, the fold line **41** is substantially parallel to, and coextensive with, the fold line **35.** A cut line **42** extends from the terminal point of the fold line **41,** which is nearer the fold line **24,** to, and connects with, the cut line **36.** A cut line **43** extends from the opposite terminus of the fold line **41** to, and connects with, the cut line **37.** A third insert retaining

panel **46** is located on the sidewall panel **13**. The third insert retaining panel has a fold line **47**, which is positioned intermediate the length of the fold line **16** connecting the sidewall panel **13** to the sidewall panel **12** and intermediate the width of the sidewall panel **13**. Preferably, the fold line **47** will be parallel to and substantially coextensive with the fold lines **41** and **35**. Again, it will be noted that the actual position of the fold line **47** on the sidewall panel **13** will be dependent upon the height of the bottle held within the tubular carton erected from the blank **10**. A cut line **48** extends from the terminal point of the fold line **47** nearest the fold line **23** toward and through the fold line **16** connecting the sidewall panel **13** to the sidewall panel **12**. A cut line **49** extends from the opposite terminal point of the fold line **47** toward and through the fold line **16** connecting the sidewall panel **13** to the sidewall panel **12**. A fourth insert retaining panel **52** is located on the sidewall panel **12**. The fourth insert retaining panel **52** has a fold line **53** located intermediate the length of the fold line **16** connecting the sidewall panel **12** to the sidewall panel **13** and intermediate the width of the sidewall panel **12**. Again, the fold line **53** is preferably parallel to, and coextensive with, the fold line **47**. The fourth insert retaining panel **52** is then further defined by a cut line **54** which extends from the terminal point of the fold line **53** nearest the fold line **22** toward, and connecting with, the cut line **48**. A cut line **55** extending from the opposite terminal point of the fold line toward, and connecting with, the cut line **49** completes the definition of the fourth insert retaining panel **52**.

FIG. **2** illustrates a blank **60** for a bottle retaining insert. The blank **60** is composed of a generally square central panel **62** having an aperture **63** located generally centrally thereof. The aperture **63** may be seen to be of a generally keyhole shape having a circular portion **64** and a connected notch portion **65**. It should be realized that the panel **62** need not necessarily be square, but may be generally rectangular in shape or of any shape required to fit a particular carton. However, in this specific example, the panel **62** is generally square. Four flaps are hingedly connected to the central panel **62** along score lines. Two positioning flaps **68** and **69** are attached to the central panel **62** at opposed sides of the central panel **62** along respective score lines **70** and **71**. It may be seen that the diagonally opposed corners of the positioning flaps **68** and **69** have notched portions **74** and **75**. A handle flap **76** is attached to one of the remaining sides of the central panel **62** along a fold line **77**. It may be seen that a hand hole aperture **78** is formed in the handle flap **76**. The hand hole **78** is generally identical in shape to the previously described hand hole **28** in the sidewall panel **12**. The position of the hand hole **78** in the handle flap **76** should be such that when the bottle retaining insert formed from the blank **60** is placed over a bottle in the carton formed from the blank **10**, the hand holes **28** and **78** will be in registry. It will also be noted that the handle flap **76** has a notched portion **79** adjacent to the notch portion **74** of the positioning flap **68**. The fourth flap is, in effect, divided into two flap portions **82** and **83** by the interposition of a pouring slot **81**. The two flap portions **82** and **83** are hinged at **84** and **85** to the side of the panel **62** which is opposite the handle flap **76**. The pouring slot **81** corresponds generally in width and height to the notch **29** formed in the sidewall panel **14**. It will also be seen that the pouring flap **83** has a notched portion **86** which is adjacent to the notched portion **75** of the positioning flap **69**.

FIG. **3** illustrates a blank **88** for a cap protector to be used during the shipment of a bottle contained in the carton erected from the blank **10**. The blank **88** is made up of a substantially linear array of panels **90A** through **90G** connected to one another along fold lines **92**.

FIG. **4** illustrates a carton **94** erected from the blank **10**. A bottle **96** may be seen in position in the carton **94**. The explosion view of FIG. **4** shows the configuration of the components of the present invention in the form they assume for shipping the bottle **96**. The blank **88** is folded into substantially a W-shaped cap protector **98**. The cap protector **98** is first placed in the carton **94** such that it fits over a cap **99** on the bottle **96**. This prevents any damage to the cap **99** or loosening of the cap **99** during shipment of the bottle. The contents of the bottle **96**, as previously pointed out, are usually of such a nature that precautions must be taken during shipment of the bottle **96** to avoid breakage of the bottle or spillage due to loosening of the cap **99**, as well as precautions during transfer of or "pouring out" the contents of the bottle **96**, toward which the present invention is primarily directed. The blank **60** may be seen to have been formed into a bottle retaining insert **100**. This is accomplished by folding the positioning flaps **68** and **69** at substantially right angles to the square panel **62** and folding the handle flap **76** similarly, as well as folding the pouring flaps **82** and **83** into the same position. The shipping position of the bottle retaining insert **100** is essentially reversed from the operational or pouring position that it later assumes. Thus the position of the bottle retaining insert **100** shown in FIG. **4** is not the position which it will later be seen to assume when the contents of the bottle **96** are to be transferred. The shipping configuration is completed by a tubular overcarton **102**. Once the cap protector **98** and the bottle retaining insert **100** have been slipped into position within the carbon **94**, the tubular overcarton **102** is telescopingly engaged over the carton **94**. The configuration of the tubular overcarton **102** may be substantially identical to that of the carton **94** with the exception that the notch portion **29** is not required, and the circumference of the tubular overcarton **102** should be slightly larger than that of the carton **94** to allow the telescoping engagement. FIG. **5** illustrates the completed shipping configuration with the sidewall panel **15** and the overcarton **102** removed. This view is taken to show the interior arrangement of the shipping configuration. It may be seen that the bottle **96** has a shoulder portion **104** on which the cap protector **98** rests. In addition, bottle **96** used to contain materials of the character herein described normally have a pouring finger grip such as that designated as **105**. Additionally, FIG. **5** illustrates that extra packing material may be placed within the carton **94** to prevent any shifting of the bottle **96** within the carton **94** during the shipping or storing process. This extra material, which may be corrugated paperboard, is designated as **106**. The material **106** contacts not only the sidewalls of the bottle **96**, but is also placed in the bottom of the carton **94** to cushion the bottom of the bottle **96** against shock.

FIGS. **6** and **7** show the carton **94** with the bottle **96** therein and with the bottle retaining insert **100** in position to dispense the contents of the bottle **96**; that is, turned 180° from the position shown in FIG. **4**. FIG. **6** clearly shows that the insert retaining panels **34, 40, 46**

and 52 are pushed inward at this time to hold the bottle retaining insert 100 in place. In addition, when the bottle retaining insert 100 is pressed into the carton 94, the bottle finger grip 105 extends through the notch portion 65 of the aperture 63. The bottle 96 may be seen in FIG. 7 to have a threaded finish portion 108 which can be threadably engaged with the bottle cap 99, which has been removed in FIGS. 6 and 7. The retaining panels 40 and 34 in their operational position shown in FIG. 6 extend from the sidewall panels 14 and 15 at substantially right angles and are at a substantially right angle to one another. The retaining panels 40 and 34 pivot about their respective fold lines 35 and 41 for entry into the carton 94 in contact with the bottle retaining insert 100. The insert panels 46 and 52 similarly extend from their respective sidewall panels 13 and 12 at substantially a right angle and overlie the bottle retaining insert 100 to further hold the bottle retaining insert 100 in position. As was pointed out earlier, the actual positions of the fold lines 35, 41, 47 and 53 are determined by the configuration of the bottle 96. That is, it may be seen in FIG. 7 that the bottle retaining insert 100 slips into the carton 94 until it is stopped by the shoulder portion 104 of the container 96. This then dictates the elevation of the fold lines, so that when the insert retaining panels 34, 40, 46 and 52 are pressed inward, they will overlie the bottle retaining insert 100 and hold it in place. It should be apparent that this position may vary with different sizes of bottles, since the precise location at which the bottle retaining insert 100 will lock in position in the carton 94 depends upon where the shoulder portion 104 of the bottle 96 holds the bottle retaining insert 100. Generally, once the bottle retaining insert 100 has pressed over the neck of the bottle 96, the bottle 96 is free to rotate with respect to the aperture 63. This is of little consequence, since the actual pouring of the contents of the bottle 96 is through the notch 29 in the sidewall 14 and through the pouring slot 81 between the pouring flaps 82 and 83. FIG. 6 shows that there is a complete opening from the exterior of the carton 94 into the interior of the carton 94 through which the contents of the bottle 96 may be poured. FIG. 7 further shows that the hand hole aperture 78 in the handle flap 76 is in alignment with the hand hole aperture 28 in the sidewall panel 12. Again, it may be necessary to adjust the relative positions of the hand hole aperture 78 and the hand hole aperture 28, depending upon exactly what level within the carton 94 the bottle retaining insert 100 assumes with respect to any particular bottle 96. However, in all situations, it is necessary that the hand hole aperture 78 be in alignment with the hand hole aperture 28.

FIG. 8 further illustrates the function served by the notched portions 74 and 79 of the positioning flap 68 and the handle flap 76. The retaining panels 46 and 52 must enter into the interior of the carton 94 to hold the bottle retaining insert 100 in place. Thus, the notched portions 74 and 79 allow access by the insert retaining panels 46 and 52. In a similar manner, it may be appreciated that the notched portions 86 and 75 will allow entry of the insert retaining panels 40 and 34. Additionally, FIG. 8 clearly illustrates the registry of the hand hole apertures 78 and 28 with one another.

FIG. 9 illustrates the pouring of the contents of the bottle 96 using the registered hand hole apertures 78 and 28. It should be carefully noted at this point that the hand of a person who is pouring the contents of the bottle 96 need never touch the bottle 96. Thus, there is very little danger of the person splashing any dangerous chemicals on his hand or perhaps having such chemicals drop back on his hand after the pouring is completed. The contents of the bottle 96 are shown as being poured into a suitable transfer container "C".

The bottle retaining insert 100 is preferably completely impregnated with a material which is resistant to the chemical contained in the bottle 96. Examples of such materials are wax and polyethylene. However, the contents of the bottle 96 dictate what material should be used and these two materials should not be taken by way of limitation, but only by way of example of suitable materials for some acids. The reason for impregnating the entire bottle retaining insert 100 is twofold. First, the materials which impregnate the bottle retaining insert 100 generally have a relatively high friction factor with respect to the walls of the container 94. The walls of the container 94 are generally of a corrugated paperboard material. The container retaining insert 100 likewise is made of a corrugated paperboard material. The relative friction of the impregnated bottle retaining insert 100 with the walls of the container 94 is quite high, thus making it unlikely that the bottle retaining insert 100 would slip out of the carton 94 once it was inserted. Thus, in case one would forget to press in the insert retaining panels 34, 40, 46 and 52, the frictional engagement would tend to prevent the bottle retaining insert 100 from slipping out of the carton 94. The second purpose for impregnating the bottle retaining insert 100 is to provide a reservoir for any liquid which might be splashed out of the bottle 96 during the pouring process. Many of the chemicals designed to be poured using this container will attack the corrugated paperboard material from which the carton 94 is preferably made. Thus, the impregnated bottle retaining insert 100 functions as a reservoir to prevent the escape of any such chemical which may be splashed during the pouring process or which may drip back after the pouring process has been completed. This allows the carton 94 to be made from standard corrugated paperboard material rather than an impregnated material, thereby keeping the cost to a minimum.

What I claim is:

1. A safety pour-out package comprising, in combination: a bottle having a shoulder portion and a finish portion; a tubular carton having a plurality of sidewall panels foldably connected together in a closed configuration, bottom closure flaps foldably connected to the lower ends of said sidewall panels to provide a closed bottom for said carton, the height of said carton being such that the finish portion of said bottle is entirely contained within said carton, one of said sidewall panels having a pouring notch formed therein extending from that edge of said panel that is remote from said bottom closure flaps to a point intermediate the height of said sidewall panel, one of said sidewall panels located opposite said sidewall panel having said pouring notch therein having a hand hole aperture formed therein; at least two insert retaining panels hingedly connected to adjacent sidewall panels and joined at the foldable connection between said sidewall panels; and a bottle retaining insert, formed with a central panel portion having an aperture formed therein through which said finish portion of said bottle extends, positioned in said carton for holding said bottle in said carton, the position of said bottle retaining insert in said

carton being fixed by the engagement of said bottle retaining insert with the shoulder portion of said bottle, said insert retaining panels being positioned interiorly of said tubular carton in overlying relationship with respect to said central panel to prevent the escape of said bottle retaining insert from the interior of said tubular configuration, whereby the contents of said bottle may be poured out through said pouring notch by lifting said carton at said hand hole aperture, thereby avoiding contact of the hand of a person with said bottle.

2. The package of claim **1**, wherein said bottle retaining insert further includes at least two opposed positioning flaps hingedly connected to said central panel and extending upwardly away from said shoulder portion of said bottle, at least one of said positioning flaps having a notched portion adjacent one of said insert retaining panels to allow entry of said retaining panel into the interior of said tubular carton.

3. The package of claim **1**, wherein said bottle retaining insert further includes two spaced-apart pouring flaps hingedly connected to said central panel and extending upwardly away from said shoulder portion of said bottle, said pouring flaps being located in alignment with said pouring notch and spaced on either side of said pouring notch to define an opening into the interior of said tubular carton; and a handle flap hingedly connected to said central panel and extending upwardly away from said shoulder portion of said bottle, said handle flap being located in alignment with the sidewall panel containing said hand hole aperture and having formed therein a hand hole aperture aligning with the hand hole aperture in said sidewall panel.

4. The package of claim **1**, wherein said bottle retaining insert further includes a plurality of flaps hingedly connected to said central panel and extending upwardly away from said shoulder portion of said bottle, the number of flaps being equal to the number of said carton sidewall panels, said flaps being respectively in facing alignment with individual ones of said carton sidewall panels, one of said flaps having formed therein a hand hole aperture located in alignment with the hand hole aperture in said sidewall panel to thereby define a handle flap, and one of said flaps having a pouring slot formed therein, said pouring slot being positioned in alignment with said pouring notch in said sidewall panel, whereby an enclosed reservoir position is formed to collect any of the contents of said bottle spilled during the pouring of said contents from said bottle, said bottle retaining insert further having at least two adjacent flaps with notched portions formed therein to allow entry of said retaining panels into the interior of said tubular carton.

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