Jan. 21, 1958 F. E. MAKUTA 2,820,581

CONTAINER AND BLANK WITH POURING MEANS

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Fig. 1

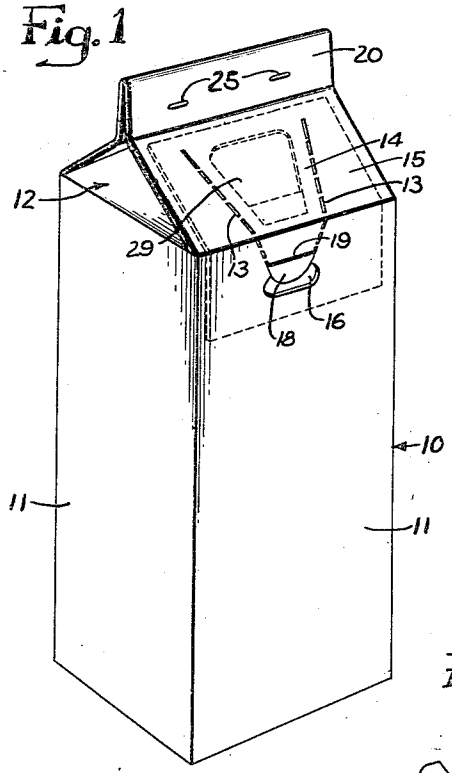


Fig. 7

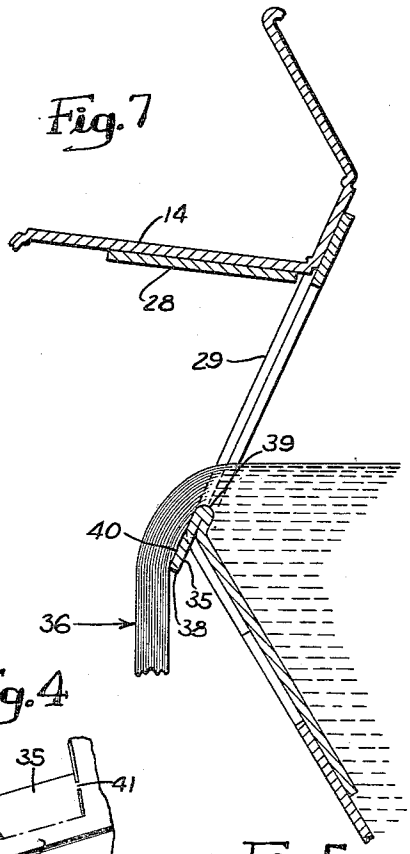


Fig. 4

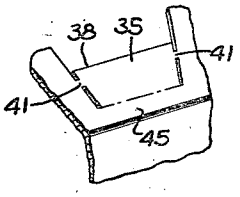


Fig. 2

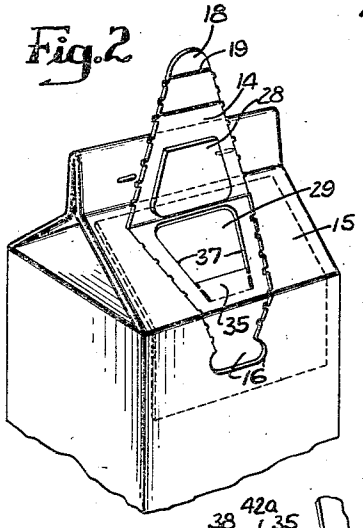


Fig. 3

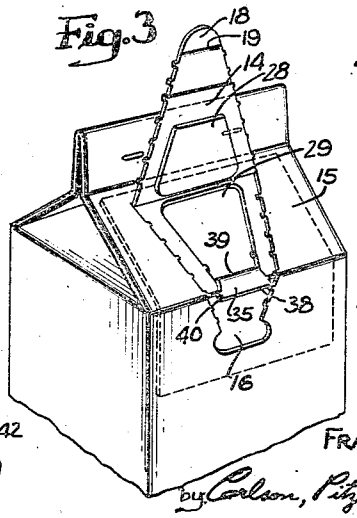


Fig. 5

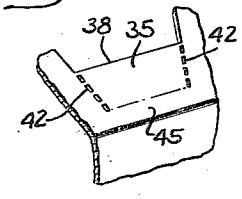


Fig. 6

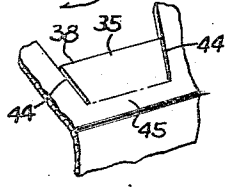
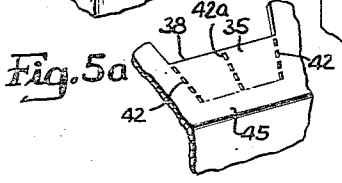


Fig. 5a



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Fig. 8

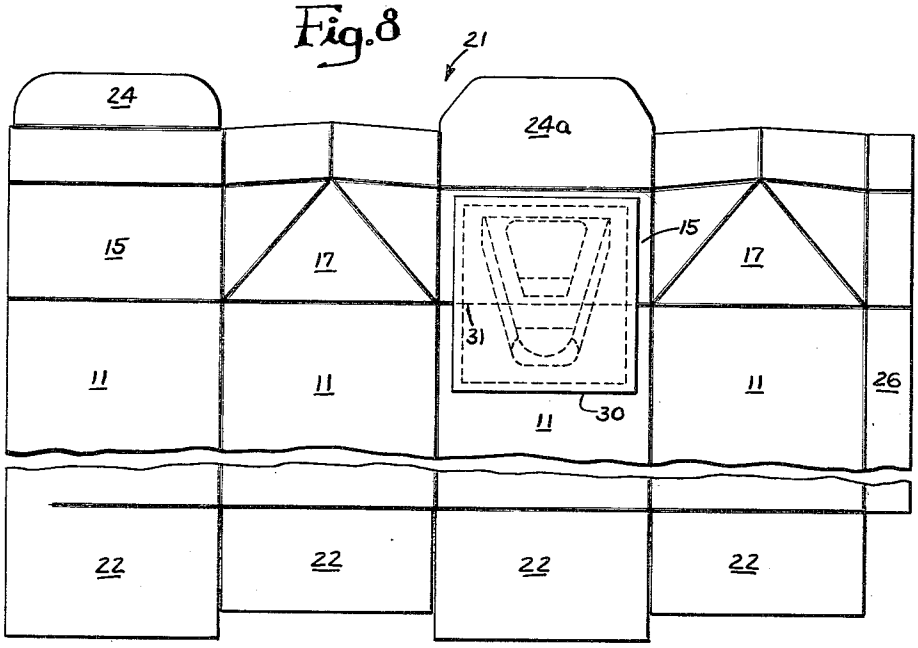


Fig. 10

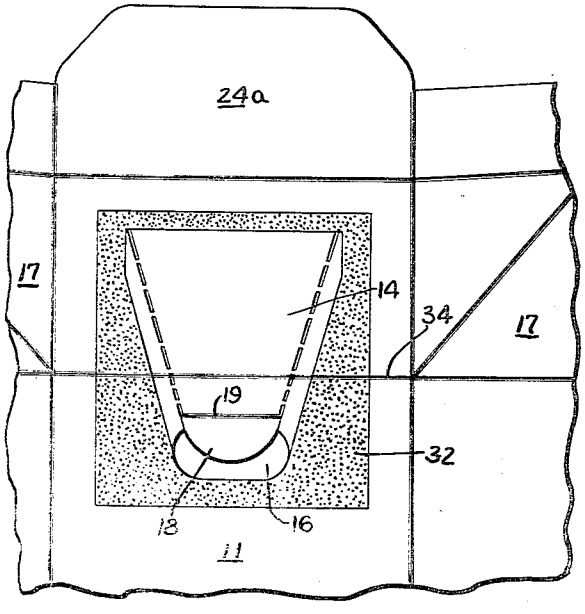
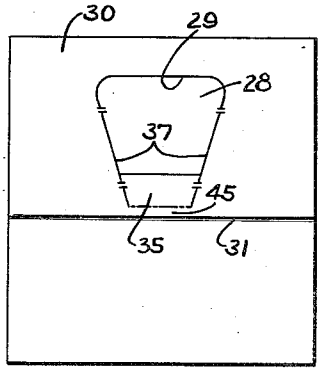


Fig. 9



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2,820,581

CONTAINER AND BLANK WITH POURING MEANS

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Application November 18, 1952, Serial No. 321,217

2 Claims. (Cl. 222—528)

The present invention relates generally to the packaging field, and more specifically to fluid-tight containers fashioned from sheet material such as paperboard or the like. Such containers are particularly well adapted for the packaging of milk and other comestibles but may, of course, be employed for packaging a wide variety of fluent substances.

It is the general object of this invention to provide a container of the character set forth and fashioned from paperboard or the like, such container having fluid dispensing means adapted to pour and to cut off effectively without permitting the poured fluid to dribble down the outside of the container.

Another object of the invention is to provide a container of the foregoing type and wherein the dispensing means has a manipulable element adapting it to prevent dribble during pouring and cut-off, irrespective of the fluid level in the container or the size or rate of flow of the poured stream.

A further object of the invention is to provide a blank for a container of the character set forth and which will include structural features capable of implementing the objectives just recited.

Still another object is to provide a container and blank of the type set forth and which will be susceptible of economical manufacture at a cost comparing favorably with that required for paperboard containers presently available to the trade.

Other objects and advantages will become apparent from the following detailed description, taken along with the accompanying drawings, in which:

Figure 1 is a perspective view of an illustrative container embodying the present invention and being in initially filled and sealed conditon ready for use by the consumer.

Fig. 2 is a fragmentary perspective view showing the container of Fig. 1 after its lift tab has been raised, thereby exposing the pouring opening of the container.

Fig. 3 is a fragmentary perspective view of the container as shown in Fig. 2, but after the pouring lip has been folded into its operative position.

Figs. 4, 5, 5*a* and 6 are enlarged fragmentary perspective views detailing certain preferred forms of the pouring opening lip in the position as shown in Fig. 2.

Fig. 7 is an enlarged fragmentary vertical section taken through the center of the container of Fig. 1 displaying the pouring operation diagrammatically.

Fig. 8 is a plan view of the inside face of the blank from which a container embodying the invention may be formed.

Fig. 9 is a detailed plan view of the pouring opening inner ply with a lip construction similar to that shown in Figs. 2 and 4.

Fig. 10 is an enlarged fragmentary plan view of the glue patch section intended for securing the pouring opening inner ply shown in Fig. 9 to the blank shown in Fig. 8 in the course of fabrication.

While the invention is susceptible of various modifications and illustrative constructions, certain preferred embodiments have been shown in the drawings and will be described below in considerable detail. It should be understood, however, that there is no intention to limit the invention to the specific forms of containers, blanks, or pouring openings disclosed, but on the contrary, it is intended to cover all modifications, alternative constructions, and equivalents falling within the spirit and scope of the invention as expressed in the appended claims.

Illustrative of the type of package in which the invention finds major, but not exclusive, utility, there is shown in Fig. 1 a container **10** particularly well adapted for the packaging of milk. The container **10** may be fabricated from paperboard or other bendable sheet material and is self-sustaining in shape, being coated or impregnated with appropriate material such as paraffin to render it fluid-tight and nonabsorbent. In its finished form, the container **10** comprises a tubular body defined by four side panels **11** and closed at its lower end by a bottom closure (not shown) which may be of any desired construction. At its upper end, the tubular body of the container **10** is closed by the familiar gable top **12**.

A lift tab **14** is preformed in the outer ply of the container **10** by laterally spaced severance lines **13**, which run down one of the roof panels **15** of the gable top **12** and extend down into the adjacent underlying side panel **11**, terminating at a finger recess **16**. The severance lines **13** converge toward the finger recess **16**, resulting in the formation of a relatively narrow lower end on the tab **14**. This lower end presents a finger piece **18** which may be hinged to the remainder of the lift tab along a score line **19**. The finger piece **18** may be readily loosened and gripped by the user and, when subjected to an upward pull, causes progressive severance of the lift tab **14** from the outer ply of the container until the tab becomes fully elevated to permit dispensing of the contents of the container. The lift tab of course remains connected to the outer ply of the container along a crease or hinge line situated adjacent the central laminar rib **20** of the gable top.

Turning now to Fig. 8, it will be seen that the construction of the container **10** begins with a cut and scored blank **21** of paperboard or other appropriate sheet material. Such stock is of proper thickness and weight to be bendable during forming of the container but self-sustaining in shape after the container has been erected, filled and closed. The blank **21** is divided into four rectangular side panels **11** which form the side panels of the container **10**. In this instance, the blank **21** is provided along its lower edge with bottom closure flaps **22** which are adapted to be folded into overlapping relation and sealed to define the bottom of the container. The top portions of the blank **21** comprise two generally rectangular panels **15** which ultimately define the roof panels of the gable top **12**, and two angularly scored panels **17** which include the fractional panels infolded to define the ends of the gable top **12**. The top portion of the blank **21** also includes those panels which ultimately define the central laminar rib **20**, including the "tuck-in" flap **24** and the overlapping outer flap **24***a*. These rib defining panels are usually mechanically secured in position by a staple **25** running through the central rib **20**. At one end, the blank **21** is provided with a fractional panel known as a glue flap **26**. The latter is used to secure the opposite edges of the blank together in overlapping relation so as to arrange the side panels **11** in a hollow tube which defines the tubular body of the container.

While coating or impregnating of the container **10** may be effected at various stages during its fabrication, it has been found convenient to perform this step after the blank has been erected and the bottom closure has been made, but prior to completion of the top closure.

Fluids may be dispensed from the container **10** via a sanitarily protected pouring opening **29** (Figs. 2, 3, 7 and 8) which underlies the lift tab **14** and becomes exposed for use upon elevation of the lift tab in the manner already described. In this case, the pouring opening **29** happens to be of generally trapezoidal shape and is adapted to receive a complementary reclosure plug **28** bonded or secured to the inside face of the lift tab in any suitable manner. The pouring opening **29** is formed in an inner ply **30** bonded to the roof panel **15** and underlying side panel **11** in the outer ply of the container. In the present instance, the pouring opening ply **30** is fashioned as a separate patch (Figs. 7 to 9) adapted to be adhesively secured to the blank **21** over an area or glue spot **32** surrounding the lift tab **14** and finger recess **16**, as indicated in Fig. 10. The pouring opening ply **30** is also provided with a transverse score line or perforation line **31** which coincides substantially with the score line **34** separating the roof panel **15** from the underlying side panel **11**, permitting easy folding of the pouring opening ply upon formation and closing of the gable top **12**.

It has been found that, when pouring from a container of the general type disclosed herein, the greater the pouring velocity of the fluid being removed the cleaner the separation will be when pouring is initiated and when pouring is cut off. This effect is generally observed irrespective of the size of the poured stream. A further factor to be considered is the adhesive relationship between the fluid being poured and the surface over which it flows. When the force of gravity on the poured stream at the point of separation from the container becomes greater than the adhesive relationship between the poured fluid and the adjacent surface of the container at that point, pouring can be initiated without dribbling and a clear separation can be effected when pouring is cut off. When, on the other hand, the adhesive force at the separation edge is greater than that of gravity, a certain amount of the poured fluid will tend to dribble down the side of the container both at initiation and at cut-off of the pouring operation.

Provision is made for imparting dribble-free pouring characteristics to the container **10**, enabling the same to pour satisfactorily regardless of the size of the poured stream, the level of fluid within the container, or the degree of inclination given the container to initiate pouring. This is accomplished by forming in the pouring opening ply **30** a manipulable pouring lip **35**, the latter being situated immediately adjacent the pouring opening **29** and initially disposed in coplanar relation with the ply **30**. The lip **35** is integral with the pouring opening ply **30** and has at least three sides defined in the stock of the ply **30** by precutting, perforating or equivalent operations. Thus upon elevation of the lift tab **14**, the pouring lip **35** becomes accessible and can readily be down-folded or reversely bent by the user, shifting from a dormant position coplanar with the ply **30** (Fig. 2) to an operative position wherein its free edge overhangs the finger recess and face of the underlying side panel **11** (Figs. 3 and 7). In this position, the pouring lip **35** defines a surface **40** which might be considered to be an eave for the underlying side panel **11**. Separation edge **38**, which is actually the free edge of the pouring lip **35**, is spaced sufficiently far from the surface of the side panel **11**, and the inclined underlying surface of the lip **35** is so oriented relative to the plane of the underlying side panel **11**, that the possibility of having adhesion forces sufficiently great to lead poured fluid from the edge **38** down the side **11** of the container is eliminated.

Referring to Fig. 7 which shows the container **10** in pouring position, it will be perceived that the pouring lip **35** when in operative position produces an almost vertical column **36** of poured fluid at the separation edge **38** of the lip. The average fluid flow in the cross section of the poured stream adjacent the separation edge **38** is relatively large and more nearly uniform than would be the case if the pouring lip **35** were to occupy its dormant position. By the same token, it will be appreciated that at the hinge line of the pouring lip, which actually defines crest **39** of a pouring weir, the velocity of the fluid immediately adjacent the weir crest **39** is considerably less than it is at the surface of the stream. The substantial rate of flow and relative uniformity of velocity at the separation edge **38** of the pouring lip may be obtained even when initially dispensing from a container in completely filled condition. As more and more fluid is dispensed from the container, the longer dimension of the latter becomes oriented more closely toward the horizontal and pouring conditions become even better.

Turning now to the pouring lip per se and its relation to the pouring opening ply, it will be noted upon reference to Figs. 4 and 9 that the lip **35** has three edges initially defined in the ply **30** as by means of suitable incisions. In this instance, the incisions defining the opposite ends of the lip **35** are interrupted so as to leave a pair of severable ties or bridges **41** adapted to hold the lip **35** in dormant position coplanar with the ply **30** until turned down by the user. Such incisions, which may conveniently be pre-cut extensions of the lateral edges **37** of the pouring opening, preferably terminate short of the transverse score line **31** on the pouring opening ply **30** and are of greater length than the distance between their lower ends and the transverse score line **31**. This insures an overhanging relationship between the separation edge **38** and the adjacent underlying side panel **11**. Terminating the lip-defining incisions short of the score line **31** is also desirable because it results in creation of a paraffin-sealed area **45** adjacent the lower portion of the pouring opening **29** and which comprises a part of the continuous paraffin seal initially surrounding the pouring opening for fluid-retaining and sanitary purposes.

Referring next to Figs. 5 and *5a*, it will be noted that the pouring lip **35** there illustrated resembles the one just described but has its opposite ends initially defined by perforation lines **42**. When turned down by the user, the lip **35** simply parts from the stock of the ply **30** along the perforation lines **42**. In Fig. *5a*, the lip **35** may optionally be provided with a central score or perforation line **42***a*. After the lip has been placed into operative position by the user, it may be creased somewhat along the line **42***a* so as to give it a spout-like configuration.

In Fig. 6, the lip **35** has its ends defined by uninterrupted incisions **44**. The stiffness of the stock in the pouring opening ply **30**, supplemented by the adhesion of the paraffin coating which fills the incisions **44**, are relied upon to maintain the lip **35** in dormant position prior to initiation of the dispensing operation.

As indicated in the views just discussed, as well as in Fig. 7, it will be noted that the pouring lip **35** is adapted to bend relative to the pouring opening ply **30** when forced down by the user. However, it is desirable to avoid the use of a score line or other folding guide at the hinge point because this might render the lip **35** susceptible of being inadvertently torn off when gripped by the user.

A container embodying the present invention may be prepared for pouring in but two steps. First, the pouring opening **29** is exposed by grasping the finger piece **18** and pulling up on the lift tab **14** until the pouring opening is completely exposed, as shown in Fig. 2. Second, the pouring lip **35** is then down-folded from its dormant position into its operative position as shown in Fig. 3. This may be accomplished by grasping the lip **35** either between the fingers or by the use of any other appropriate means for bending it substantially through 180° at the initial line. Pouring may thereupon be effectively accomplished by inclining the container to the desired angle.

I claim as my invention:

1. In a container of paperboard or the like having a top panel and an adjacent underlying side panel, the combination comprising a sanitarily protected ply having a pouring opening therein, said opening being situated in the top panel, an outer ply fixed to said sanitarily protected ply and having a lift tab initially overlying the pouring opening and the marginal areas of said sanitarily protected ply sealing the pouring opening, means defining a pouring lip integral with said sanitarily protected ply and situated adjacent the pouring opening and entirely within the perimeter of the top panel, said pouring lip having a dormant position coplanar with said sanitarily protected ply, severable ties yieldably retaining said pouring lip in said dormant position coplanar with said sanitarily protected ply, said pouring lip being manipulable by the user from said dormant position into a substantially reversely bent operative position overlying said sanitarily protected ply upon elevation of said lift tab, said pouring lip in said operative position having a free end overhanging beyond the plane of the side panel and projecting outside the perimeter of the top panel.

2. In a blank of paperboard or the like intended for fabrication into a sealed container having side, top and bottom panels, the combination comprising a partially severable lift tab extending upwardly from a side panel and terminating in the adjacent top panel, an attached inner pouring ply having a pouring aperture therein and a transverse score line for locating said pouring ply with relation to the junction between such top and side panels, a manipulable pouring lip coplanar with said pouring ply and defined at its ends by separation lines extending downwardly from the lower portion of said pouring aperture but terminating without crossing said transverse score line and means for yieldably maintaining said pouring lip in coplanar relation with said pouring ply prior to manipulation of said lip by the user.

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