Jan. 14, 1964 H. F. COX, JR 3,117,695

FLUID DISPENSING CONTAINER

Filed May 19, 1960 4 Sheets-Sheet 1

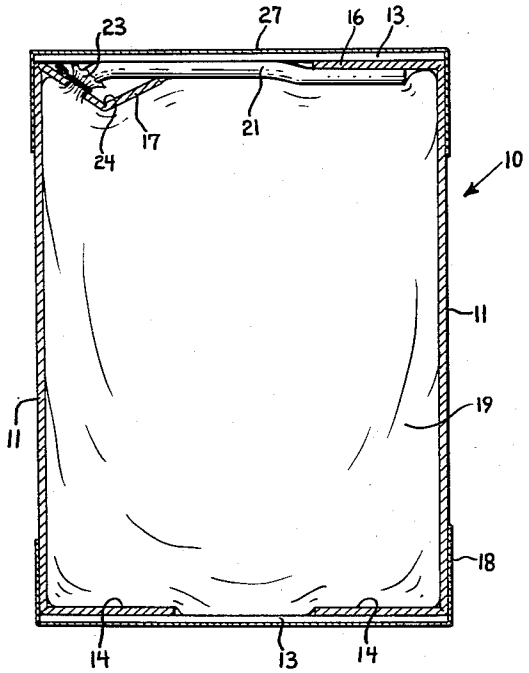


FIG. 1

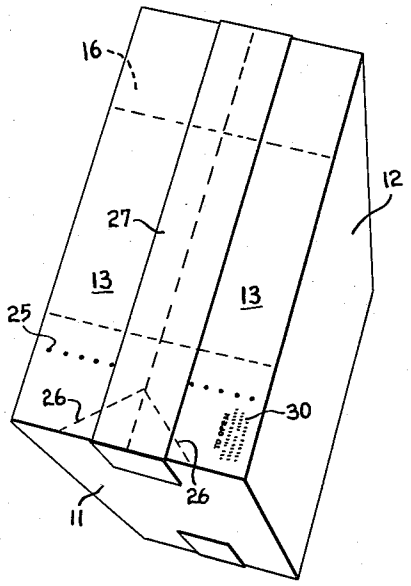


FIG. 3

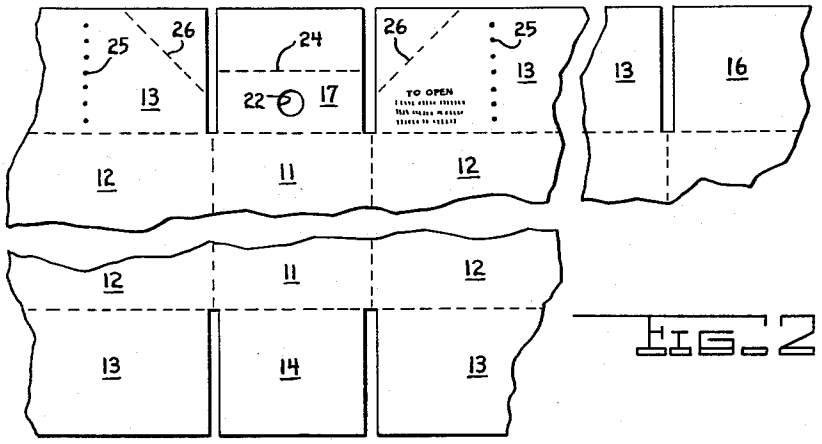


FIG. 2

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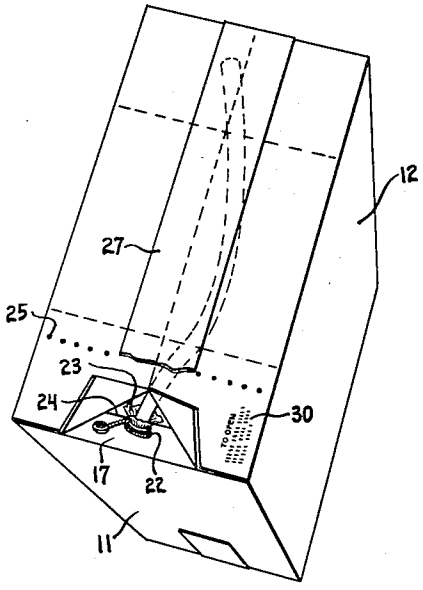


FIG. 4

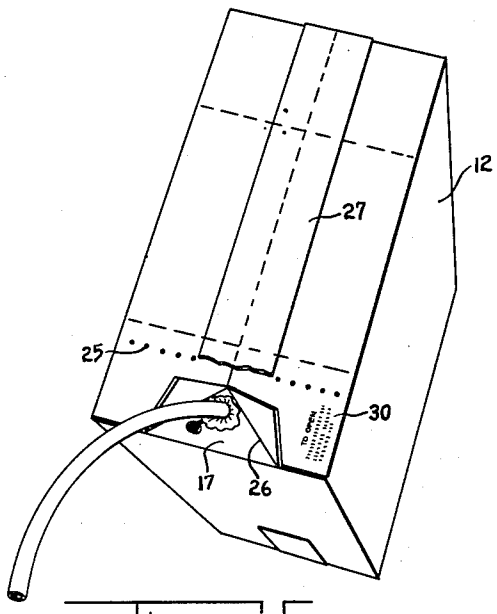


FIG. 5

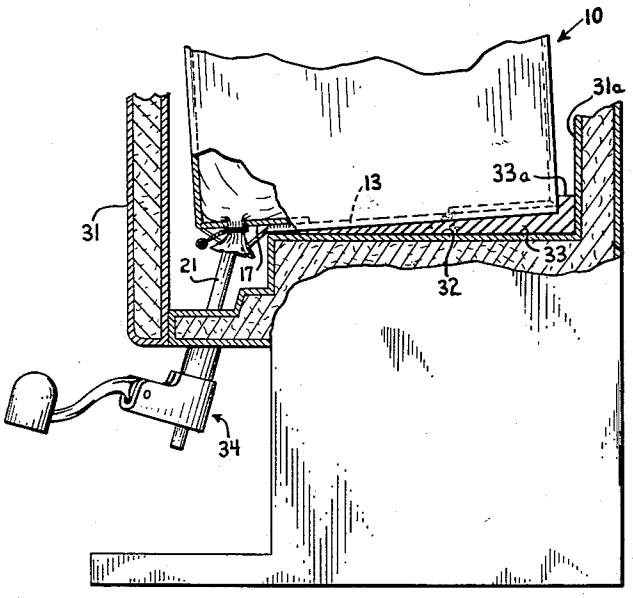


FIG. 6

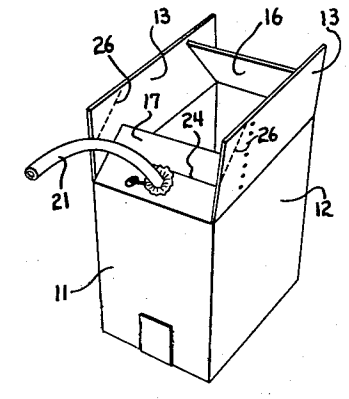


FIG. 12

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FLUID DISPENSING CONTAINER

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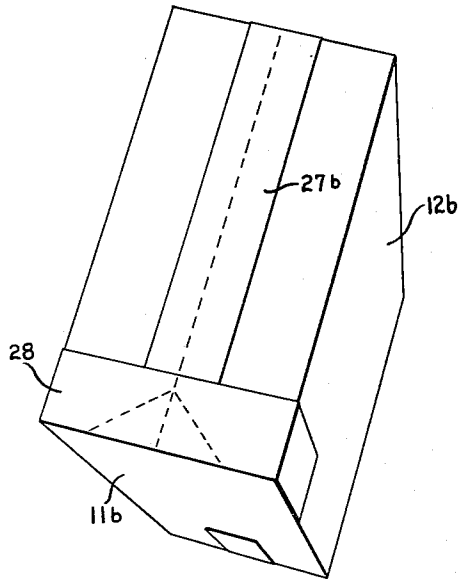


FIG. 7

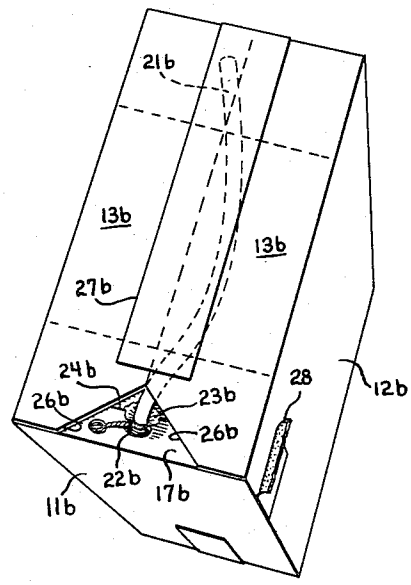


FIG. 8

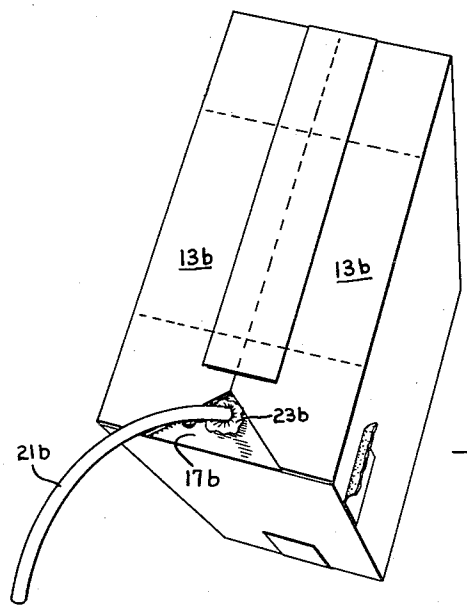


FIG. 9

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FLUID DISPENSING CONTAINER

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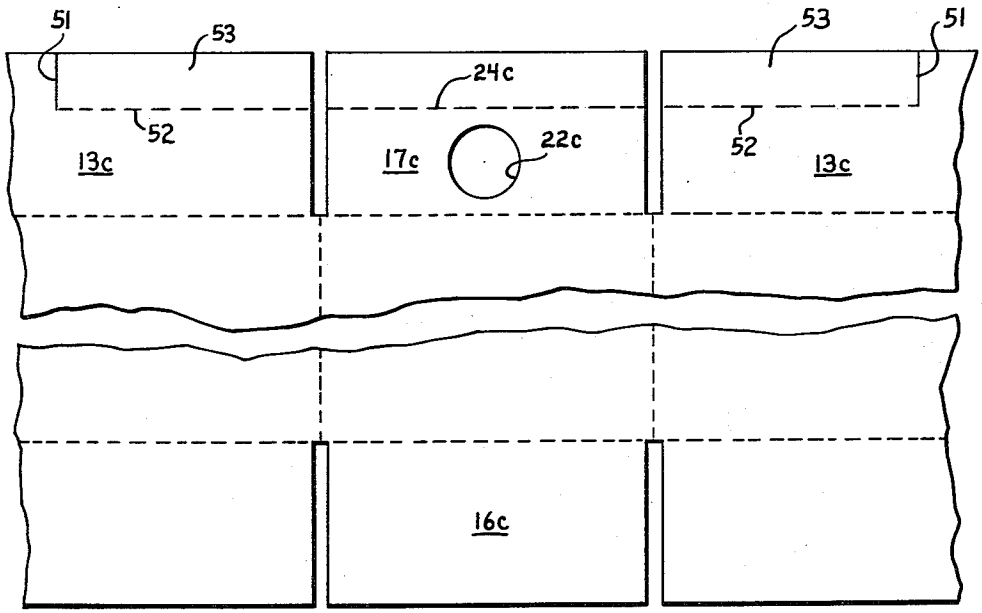


FIG. 10

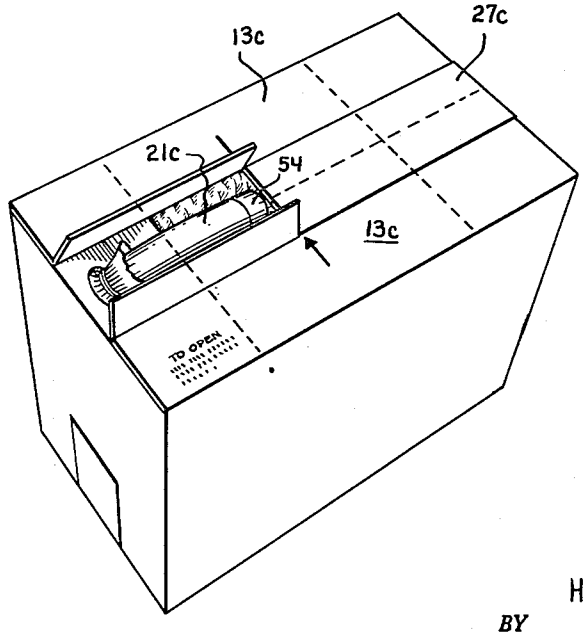


FIG. 11

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United States Patent Office 3,117,695 Patented Jan. 14, 1964

3,117,695
FLUID DISPENSING CONTAINER

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Filed May 19, 1960, Ser. No. 30,342
6 Claims. (Cl. 222—105)

This invention relates generally to dispensing and shipping packages for fluids such as milk, ice cream mix and the like, and in particular to such a package or container having a novel arrangement for accommodating a liner bag and its dispensing tube within a relatively rigid outer shell.

In my copending application, Serial No. 599,958, filed July 25, 1956, now Patent No. 3,007,608, and titled "Liquid Dispensing Containers," there are disclosed and claimed several types of containers, all characterized by the utilization of a thin plastic inner bag. The structure of the present invention represents an improvement, particularly as to cost of fabrication, over the container structures disclosed in said copending application. As there mentioned, the transport, storing and dispensing of certain fluids such as milk in containers comprising flexible inner bags protected by semi-rigid outer shells has several advantages. Among these are improved sanitation, preservation of flavor and delayed onset of deterioration of the fluid, these advantages resulting from the substantial elimination of contaminating air-contact with the fluid during filling of the container, storage and dispensing therefrom.

It is the primary object of the present invention to provide a container of the type referred to utilizing a simplified dispensing tube supporting structure which materially lowers the manufacturing cost of the container.

A further object of the present invention is to provide a container of the type referred to which utilizes a scored and apertured flap to hold the filling-dispensing tube and the inner bag in place during filling and storage or transport of the container, the aperture flap serving to strengthen the tube access area and to support the inner bag, becoming a part of the relatively rigid outer shell when the container is inverted into dispensing position.

A further object of the present invention is to provide a container of the type referred to in which the scored and apertured flap, in addition to providing the features mentioned above further provides protection for the bag or liner against abrasion and rupture by the fitting elements joining the tube to the bag.

A further object of the present invention is to provide a container of the type referred to having a simple and convenient arrangement for obtaining access to the filling-dispensing tube when the container is to have its contents withdrawn therefrom.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

FIG. 1 is a side sectional view of a filled and sealed container ready for storage or transport.

FIG. 2 is a fragmentary, plan view of the blank from which the container or carton of FIG. 1 is formed.

FIG. 3 is a perspective view of the upper portion of the container or carton of FIG. 1.

FIG. 4 is a view similar to FIG. 3, but showing an intermediate step in obtaining access to the container contents.

FIG. 5 is a view similar to FIG. 4, but showing a further step in obtaining access to the container contents.

FIG. 6 is a fragmentary, side sectional view of a container installed in a conventional dispenser cabinet.

FIG. 7 is a view similar to FIG. 3, but illustrating a modified form of the container or carton.

FIG. 8 is a view similar to FIG. 3, but illustrating an intermediate step in obtaining access to the contents of the modified carton.

FIG. 9 is a view similar to FIG. 8, but illustrating a further step in obtaining access to the carton contents.

FIG. 10 is a fragmentary, plan view of the blank from which a modified form of the container or carton is formed.

FIG. 11 is a perspective view of the modified form of the carton illustrating an intermediate step in obtaining access to the container contents.

FIG. 12 is a perspective view of the carton of FIGS. 1–5 as it appears when ready for the filling operation.

Referring initially to FIGS. 1–5, the structure of the present invention comprises an outer shell 10 which may be formed of corrugated fibreboard or the like. The shell has a tubular configuration and is rectangular in cross section, having end panels 11 and side panels 12. At each of their ends the side panels are provided with longitudinal side flaps 13 which are adapted to overlie lower end flaps 14 and upper end flaps 16 and 17 integral with the end panels 11. The lower end of the shell, as viewed in FIG. 1, may be conventionally sealed by means of tape 18 which overlies the abutting edges of the lower side flaps 13.

Accommodated within the shell is a plastic bag or liner 19 which may be formed of a plastic, such as polyethylene. As viewed in FIG. 1, the bag has extending therefrom at its upper-left corner a dispensing tube 21. The tube may be formed of any suitable semi-rigid material and provided with a sealing plug (not shown) at its free end. The tube might also be closed at its free end by heat sealing rather than by means of a sealing plug. The interior of the tube 21 communicates with the interior of the bag 19 and is sealed thereto by gathering and binding a portion of the bag to the tube as described in detail in my copending application mentioned above. It will be understood that the tube-bag junction herein disclosed is illustrative only and that other forms of tube-bag junctions might be used in the structure of the present invention.

As will be evident from FIGS. 2 and 4, the end flap 17, disposed adjacent the base of the tube is apertured, as indicated at 22, to receive the tube and the gathered portion 23 of the bag. As shown in FIG. 1, the gathered portion of the bag is above the aperture 22 and it will be understood that this arrangement is important in that the flap 17 thus protects the body of the bag from abrasion by the wire or other fitting present at the tube-bag junction. The arrangement further provides a natural funnel for withdrawal of the bag contents when the carton is inverted, as will subsequently be described. The flap 17 is transversely scored, as indicated at 24 so that the flap may give somewhat longitudinally to provide a stowing space for the tube 21 above the bag and to permit it to extend horizontally between the bag and the under face of the side flaps 13. While the scoring 24 is present in the preferred construction, it will be understood that this score line could be omitted and the inherent flexibility of the material forming flap 17 relied upon to permit the flap 17 to be deformed against the lower surface of the tube when the container is filled and sealed. The free corners of the upper side flaps 13 are perforated as indicated at 26 to permit these corner portions to be torn away, exposing a triangular portion of the flap 17 and the base portion of the tube 21. It will be understood that the corner portions of the side flaps need not be torn off but could be merely bent back in which case the line of perforations 26 could be replaced by scoring.

With the tube extending from the container as in FIG. 12, the bag 19 may be filled by initially withdrawing air

therethrough and then pumping fluid into the bag under pressure, as disclosed and claimed in my copending application Serial No. 3,344, filed January 19, 1960, entitled "Filling Apparatus." After filling, the tube may be positioned as indicated in FIG. 1 and the flaps 13 closed thereover and sealed by the tape 27 or similar sealing means. The tape 27 preferably utilizes a pressure-sensitive adhesive to facilitate its removal from the container. The upper side flaps 13 each carry a transverse, rectilinear marking 25, indicated as a series of dots in FIGS. 2–5, and one of the flaps further has printed on its upper surface a legend indicated at 30 in FIGS. 3–5. The legend 30 may be such as to clearly indicate that in opening the carton, the tape 27 is to be cut or otherwise broken along the line 25, as shown in FIGS. 4 and 5. When sealed, as shown in FIG. 3, the container and its fluid contents are ready for transport or storage.

When the container contents are to be withdrawn therefrom, the tape 27 may be cut or broken along the line 25 as indicated in FIG. 4, thereby exposing the perforated corner portions of the side flaps 13. The side flap corner portions may then be torn off or bent back exposing the base portion of the tube and the gathered portion of the inner bag at the tube-bag junction. It should be noted that the tape-separating line 25 does not directly overlie the free end of the underlying end flap 17. When the tape is cut along line 25, therefore, a portion thereof to the left of the end flap margin remains to reinforce the tube access area. The tube may then be withdrawn from its stowed position in the container as shown in FIG. 5. With the tube extending from the container, the plug may be removed from the end thereof or the plugged or heat sealed end portion of the tube may be cut therefrom and the contents of the bag poured through the tube.

The container of the present invention also may be installed in conventional dispensing apparatus as indicated in FIG. 6. As there illustrated, the container is disposed in inverted position within an insulated cabinet 31. The major end portion of the container is supported on a horizontal surface 32 formed in the cabinet and the container may be given a forward tilting by means of the wedge-shaped member 33 or by other suitable means. It will be understood that forward tilting of the container facilitates somewhat the emptying thereof, although satisfactory fluid withdrawal conditions may be maintained without such tilting of the container. Member 33 may be provided with an upwardly extending portion or boss 33*a* which spaces the rear face of the container from the cold wall 31*a* of the dispenser cabinet. The tube 21 is extending through a pinch valve 34 and its closed end cut off by a razor blade or knife. Fluid, such as milk, may then be dispensed as needed by manipulation of the pinch valve.

It will be noted that when the container is inverted, as shown in FIG. 6, the scored end flap 17 tends to flatten out under the weight of the bag contents and braces against the inner face of the side flaps 13. The flap 17 thus aids in supporting the bag and, in effect, becomes a part of the outer shell. By use of the apertured and scored end flap the tube 21 is retained in proper position for convenient access thereto and the filled bag is properly held in place and supported. The end flap 17 thus provides the necessary positioning and support of the bag and tube without the introduction into the container of separate supporting end walls or false bottoms, as has been the case in prior art structures.

Referring now to FIGS. 7, 8 and 9, a somewhat modified form of the container structure will be described. In describing this modified structure, the parts are given the same reference numerals as in FIGS. 1–5, but with the suffix "*b*." The modified structure has the same general configuration as that previously described and the scored and apertured flap 17*b* supports the junctional area of the tube and bag.

The free corners of the upper side flaps 13*b*, adjacent the tube-bag junction are cut away as indicated at 26*b* to expose a triangular portion of the flap 17*b* and the base portion of the tube 21*b*. After the bag has been filled, the tube 21*b* is disposed in stowed position, as shown in FIG. 8, and the flaps 13*b* closed thereover and sealed by means of tape 27*b* or similar sealing means. The tape 28 (FIG. 7) may then be applied transversely across the upper end of the container to shield the exposed portion of the flap 17*b* and the tube-bag junction. When sealed, as shown in FIG. 7, the container and its fluid contents are ready for transport or storage.

When the container contents are to be withdrawn, the tape 28 may be torn off as indicated in FIG. 8, thereby exposing the base portion of the tube. The tube may then be withdrawn from its stowed position in the container and the plugged or heat sealed end of the tube may be opened and the contents of the bag poured through the tube. The container may further be inverted and placed in the dispensing carton such as that shown in FIG. 6.

Referring now to FIGS. 10 and 11, a further modified form of the container structure will be described. In describing this modified structure, the parts are given the same reference numerals as in FIGS. 1–5, but with the suffix "*c*." This modified structure has the same general configuration as that previously described and the scored and apertured flap 17*c* supports the junctional area of the tube and bag. It differs from the structure previously described in that it is particularly adapted for pouring of the container contents rather than insertion into a dispensing cabinet.

In this modified structure the corner areas of the upper side flaps 13*c* are sloted or cut at 51 and longitudinally scored along the lines 52 to provide the rectangularly shaped tabs 53. As will be evident from FIG. 11, the container, when filled, is sealed by tape 27*c* with the side flaps 13*c* overlying the end flaps 17*c* and 16*c*. End flap 17*c* is provided with score line 24*c* and apertured at 22*c* to accommodate the pour tube 21*c*. The tube 21*c* is preferably somewhat larger in diameter and somewhat more rigid than the tube 21 of FIG. 1 because it is adapted for manual pouring from the container rather than use with a dispensing cabinet.

As indicated by FIG. 11, when access to the container contents is desired, a portion of tape 27*c* is removed along the marked line and the flaps 53 folded back. The tube 21*c* may then be extended from the container, the cap 54 removed and the container tilted for pouring. After the desired portion of the container contents has been removed, the tube cap may be replaced, the tube returned to its position of FIG. 11 and the flaps 53 reclosed. The tube is thus retained by the flap 17*c* accessible at the upper end of the container although the inner bag is only partially full. It should further be noted that the side flaps 13*c* are retained in overlying relation to the side portions of the end flap 17*c* as the container is tilted for pouring, this tending to support the inner bag. and its content within the container and to prevent the bag from moving out of the container through the tube access opening.

While mention has been made of the advantages of the structure of the present invention in the transporting of milk and milk products, it will be evident tha the features of the present invention are equally present in the transport and dispensing of any other fluids, such as fruit juices, beverages and the like, as well as commercial fluids such as corrosive liquids.

It will also be understood that in the case of milk distribution, a ten quart container or carton, weighing approximately twenty pounds, is within the weight limit which can be handled by the ultimate consumer, so that milk, for example, can be packaged at its source and thereafter dispensed at its ultimate point of consumption. The ultimate consumer, with modern refrigerating facilities, may reduce the frequency of delivery of containers and eliminate the inconvenience in handling of numerous quart or one-half gallon containers. Since the flexible

bag or liner is free to collapse as its contents are withdrawn, it will be evident that air need not be introduced into the interior of the bag, as it is emptied. The freedom from contamination thereby provided greatly facilitates sanitary distribution of the contents of the container.

While the invention has been disclosed and described in some detail in the drawings and foregoing description, they are to be considered as illustrative and not restrictive in character, as modification may readily suggest themselves to persons skilled in this art and within the broad scope of the invention, reference being had to the appended claims.

The invention claimed is:

1. A fluid dispensing and shipping container comprising a relatively rigid tubular outer shell, said shell being generally rectangular in cross-section and having end flaps and longitudinal side flaps at each of its ends for closing thereof, a fluid-tight plastic bag accommodated within said shell and sized so as to be supported by the walls of said shell when filled with fluid, a dispensing tube extending from said bag at one corner thereof, the shell end flap adjacent the tube-bag junction being apertured to receive said tube-bag junction, said shell end flap being transversely scored to provide stowing space for said tube when the adjacent side flaps are closed thereover, said side flaps being formed to provide removable tabs adjacent said apertured end flap, and removable means extending over the tab portions of said side flaps, whereby upon removal of said removable means and removal or deflection of said tabs said tube is accessible and upon orienting of said container so that said tube-receiving end flap is beneath said bag said flap aids in supporting the bag and its contents.

2. A container as claimed in claim 1 in which said removable means comprises tape of which a portion is removable from the container to provide access to said tube, said removable portion of the tape being dimensioned so that upon its removal from the container, a section of said tape overlying said tube-receiving end flap remains in place on the container to lock said tube-receiving end flap in bag supporting position.

3. A fluid dispensing and shipping container comprising a relatively rigid, tubular outer shell, said shell being generally rectangular in cross-section and having end flaps and longitudinal side flaps at each of its ends for closing thereof, a fluid-tight plastic bag accommodated within said shell and sized so as to be supported by the walls of said shell when filled with fluid, a dispensing tube extending from said bag adjacent one corner thereof, the shell end flap nearest the tube-bag junction being apertured to receive said tube-bag junction, said shell end flap being transversely scored to provide stowing space for said tube when the adjacent side flaps are closed thereover, said side flaps having their free corners cut away adjacent said apertured end flap, and removable means extending over the cut-away portions of said side flaps and shielding the exposed portion of said tube, whereby upon removal of said removable means, said tube is accessible and upon orienting of said container so that said tube-receiving end flap is beneath said bag, said flap aids in supporting the bag and its contents.

4. A fluid dispensing and shipping container comprising a relatively rigid, tubular outer shell, said shell being generally rectangular in cross-section and having an end flap and a side flap at one of its ends for closing thereof, a fluid-tight plastic bag accommodated within said shell and sized so as to be supported by the walls of said shell when filled with fluid, a dispensing tube extending from said bag adjacent one corner thereof, said sheli end flap being apertured to receive the tube-bag junction, said shell end flap being transversely scored to provide stowing space for said tube when the adjacent side flap is closed thereover, said side flap having a removable portion adjacent said end flap whereby upon removal of said removable portion said tube is accessible and upon orienting of said container so that said tube-receiving end flap is beneath said bag, said flap aids in supporting the bag and its contents.

5. A fluid dispensing and shipping container comprising a relatively rigid tubular outer shell, said shell being generally rectangular in cross-section and having an end flap and a longitudinal side flap at one of its ends for closing thereof, a fluid-tight plastic bag accommodated within said shell and sized so as to be supported by the walls of said shell when filled with fluid, a dispensing tube extending from said bag at one corner thereof and disposed at said one end of said shell, the shell end flap being apertured to receive the tube-bag junction whereby the free end portion of said end flap shields the bag from contact with the tube-bag junction, said shell end flap being disposed adjacent the underside of said tube when the adjacent side flap is closed thereover, said side flap being formed to provide a removable tab adjacent said apertured end flap, whereby upon removal or deflection of said tab said tube is accessible and upon orienting of said container so that said tube-receiving end flap is beneath said bag said flap aids in supporting the bag and its contents.

6. A fluid dispensing and shipping container comprising a relatively rigid, tubular outer shell, said shell being generally rectangular in cross-section and having an end flap and a side flap at one of its ends for closing thereof, a fluid-tight plastic bag accommodated within said shell and sized so as to be supported by the walls of said shell when filled with fluid, a dispensing tube extending from said bag adjacent one corner thereof, said shell end flap being apertured to receive the tube-bag junction, said shell end flap being disposed adjacent the underside of said tube when the adjacent side flap is closed thereover, said side flap having a removable portion adjacent said end flap, whereby upon removal of said removable portion said tube is accessible and upon orienting of said container so that said tube-receiving end flap is beneath said bag said flap aids in supporting the bag and its contents.

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