Sept. 15, 1964 P. G. T. GEYER 3,148,803

DISPOSABLE LIQUID CONTAINER

Filed Jan. 2, 1962

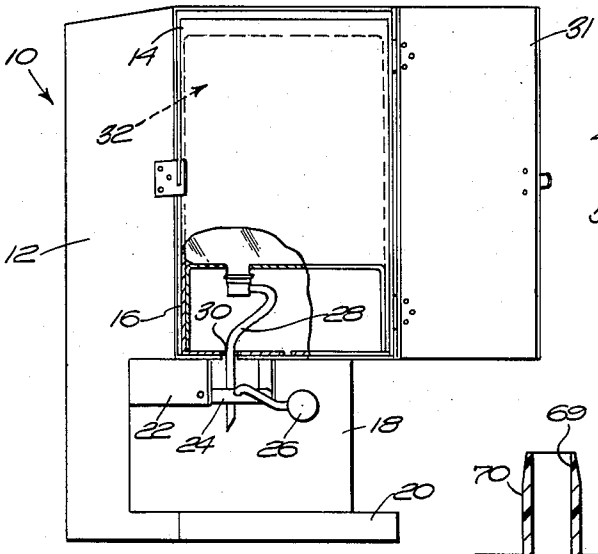


FIG. 1

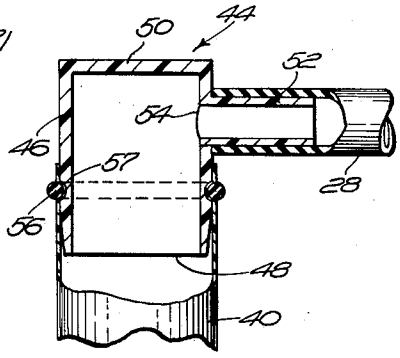


FIG. 3

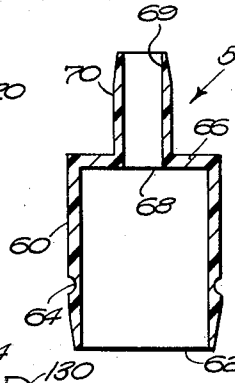


FIG. 4

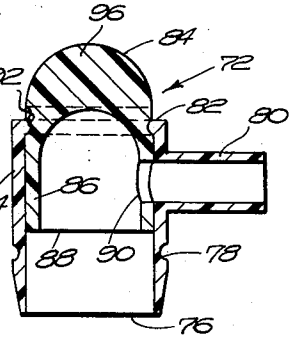


FIG. 5

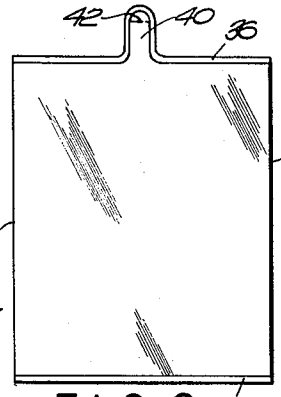


FIG. 2

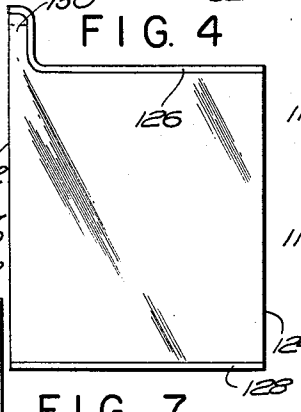


FIG. 7

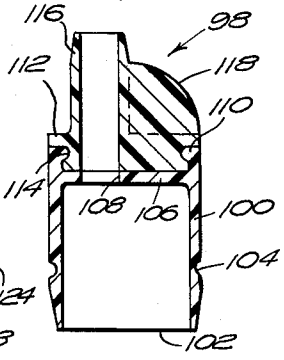


FIG. 6

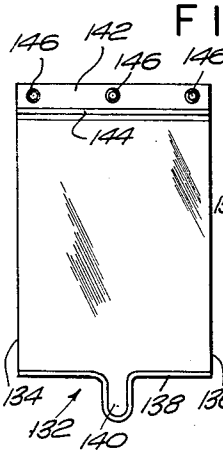


FIG. 8

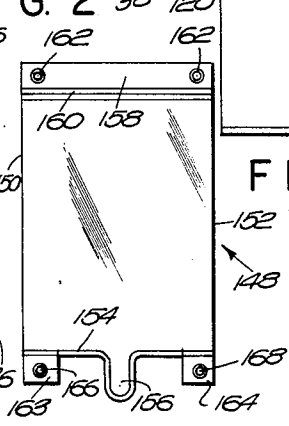


FIG. 9

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DISPOSABLE LIQUID CONTAINER

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This present invention relates to a disposable liquid container. More particularly, the present invention relates to a liquid container formed of a flexible plastic material that is adapted to contain a potable liquid, such as milk, and that may be destroyed after the dispensing of the liquid therefrom.

The present invention is useful in dispensing of various types of liquids, including potable liquids such as milk or water. However, it is intended that the container embodied herein be utilized for other purposes in the storing, shipping and dispensing of liquid materials, such as chemicals, food products, petroleum, acids and the like.

Liquid containers formed of flexible plastic materials have been known heretofore and have been utilized with some degree of success since they have primarily decreased the cost of dispensing liquids while eliminating the need for a metal container. However, these prior known flexible plastic containers have not found complete favor in the trade because of the limitations inherent therein for filling the containers with the liquid and for dispensing the liquid from the containers. Normally, these prior known devices have required some form of an external fitting that was permanently adhered to the container wall and thus required an additional manufacturing step in the fabrication thereof. Since these external members that were adhered to the flexible containers had a tendency to dislodge from the container wall, some difficulties have been experienced with these prior known flexible containers. Moreover, the method of securing the external member to the container wall materially increased the cost of the container.

The present invention represents a marked advance in disposable flexible containers and is formed with a neck portion on one edge thereof through which the liquid to be dispensed is introduced into the container. In all of the prior known containers, a separate delivery area was necessary for introducing the liquid material into the container and was usually located at one end of the container and remote from the discharge tube secured to the container wall. By providing a common inlet and discharge neck portion in the present invention, the container is simple to manufacture, thereby reducing the overall cost thereof.

During the dispensing operation of the liquid from the container embodied herein, a dispensing nozzle is utilized that is secured within the neck portion thereof. The dispensing nozzle is fabricated of a relatively rigid material and is formed with a discharge opening or tube to which a flexible tube is adapted to be secured. By providing that the discharge nozzle is releasably secured to the neck portion, the securement thereto in the neck portion is easily faciliated and may be accomplished by an unskilled person. The discharge nozzle furthermore provides a positive discharge action of the fluid from the container, and since the discharge nozzle is inserted only after the liquid material has been introduced into the container, the interior of the container and the liquid therein are maintained in accordance with accepted sanitary conditions.

Accordingly, it is an object of the present invention to provide a disposable liquid container having a combined liquid receiving and liquid discharging neck portion formed thereon.

Another object of the invention is to provide a disposable liquid container having a nozzle portion removably secured thereto through which the liquid in the container is adapted to be dispensed.

Still another object is to provide a liquid container having a neck portion integrally formed along one edge thereof and that is adapted to receive a nozzle therein, the nozzle being releasably secured in the neck portion by a detachable securing element.

Still another object is to provide a nozzle for use in a disposable liquid container that has a rotatable valve element formed therein, the valve element being controlled for metering the discharge of the fluid material located in the container.

Still another object is to provide a modified form of disposable liquid container which includes an overlapping portion formed on one end thereof through which grommets extend, the grommets being utilized for suspending the container in use.

Other objects, features and advantages of the invention will become apparent as the description thereof proceeds when considered in connection with the accompanying illustrative drawings.

In the drawings which illustrate the best mode presently contemplated for carrying out the present invention:

FIG. 1 is a perspective view with parts shown in section of a dispensing cabinet with the door in the open position thereof showing the container embodied in the present invention in the dispensing position thereof;

FIG. 2 is a plan view of one form of a flexible liquid container embodied in the present invention;

FIG. 3 is a vertical sectional view of one form of a nozzle for a container, the nozzle being shown as it is secured in the neck portion of a container as illustrated in FIG. 2;

FIG. 4 is a vertical sectional view of a modified form of nozzle;

FIG. 5 is a vertical sectional view of a further modified form of nozzle;

FIG. 6 is a vertical sectional view of a still a further modified form of nozzle;

FIG. 7 is a plan view of a modified form of the disposable container embodied herein;

FIG. 8 is a plan view of another modified form of a disposable container; and

FIG. 9 is a plan view of still another modified form of the disposable container.

Although the disposable liquid container embodied in the present invention may be utilized in various types of apparatus or may be employed independently without the requirement of a dispensing unit, the description following hereinafter discloses the container as used in a device for dispensing a fluid material such as milk. Such fluid dispensers are normally utilized in restaurants and cafeterias for the dispensing of individual glasses of milk as required.

A milk dispensing unit is generally indicated at **10** in FIG. 1 and includes a cabinet **12** in the upper end of which an enclosure **14** is defined for receiving a carton **16** having a generally rectangular configuration as seen in cross section. The lower end of the cabinet **12** has a stepped-in configuration so that the upper portion in which the carton **16** is disposed overhangs a foot portion **20**. Mounted on the cabinet **12** is a bracket **22** to which an eccentric tube squeezing valve **24** is secured that is actuated by means of a handle **26**. As will be described, the tube **28** extends through the valve **24** and is secured to a nozzle that is releasably mounted in the flexible container embodied in the present invention. As shown in FIG. 1, the tube **28** extends through an opening **30** in the carton **16** and the cabinet **12**, the lower end of the tube **28** being exposed when the door **31** of the cabinet

12 is in the latched position thereof. The carton 16 may have a false bottom, the upper end of which is inclined forwardly so that the liquid in the container will normally gravitate toward the hose 28 that is connected to the nozzle secured to the container. The container which is generally indicated at 32 and defines one form of a container embodied in the present invention may be secured within the carton in some convenient manner, the particular construction of the carton 16 determining the securement of the container 32 therein. The carton and the manner of securing the container therein do not form part of the present invention, and therefore only general reference is made thereto.

Referring now to FIGS. 2 and 3, the container 32 illustrated in FIG. 1 and the nozzle attached thereto are shown in detail. The container 32 is preferably fabricated of a plastic material, such as polyethylene, and is generally tubular in construction, the continuous side edges of the tubular construction being indicated at 33 and 34. The outer edges of the tubular construction of the flexible container 32 are aligned and sealed such as by heat sealing to define outer edges 36 and 38. It is understood that cementing or other fastening techniques may be utilized to seal the outer edges 36 and 38, the sealed outer edges 36 and 38 cooperating with the continuous side edges 33 and 34 to form a completely concealed enclosure. Contrary to the formation of the disposable liquid containers known heretofore, the flexible container 32 is sealed along the edges thereof to define the sealed enclosure prior to the introduction of the liquid material therein. Thus the interior of the container 32 is completely sealed from exposure to atmosphere and contamination prior to the use thereof and may be shipped to the milk packager in the sealed condition.

As shown in FIG. 2, the outer edge 36 is formed with a neck portion 40 as an integral part thereof, the sealing edge extending around the sides and outer end of the neck portion 40. In the form of the invention illustrated in FIG. 2, the neck portion 40 is formed intermediate the continuous side edges 33 and 34, this form of the container being preferred. When it is desired to fill the container 32 with a liquid material such as milk, the outer end of the neck portion 40 is severed as indicated by the dotted line 42 in FIG. 2. With the interior of the container 32 exposed, the milk or other liquid material is then introduced therein. When the liquid material is filled to the required level in the container 32, a dispensing nozzle generally indicated at 44 is inserted through the severed opening in the outer end of the neck portion 40 and secured therein. The dispensing nozzle 44, which represents one form of a device of this kind, includes a tubular body portion 46 having an open end 48 that communicates with the interior of the container 32 through the neck portion 40. The opposite end of the tubular body portion 46 is capped to define an end wall 50, while a side wall of the body portion 46 has an outwardly extending tubular element 52 joined thereto. The interior of the tubular element 52 communicates with an opening 54 formed in the side wall of the body portion 46, the opening 54 defining a discharge opening for the contents of the liquid material in the container 32 in the dispensing operation. The hose or tube 28 is secured directly to the tubular element 52 and prior to the dispensing operation is capped on the end thereof. When the liquid material in the container 32 is to be dispensed and the container is mounted in the cabinet 12 of the dispensing unit 10, the capped end of the hose 28 may be severed after the hose is inserted through the squeeze valve 24.

As shown particularly in FIG. 3, the tubular body portion 46 of the dispensing nozzle 44 is secured in the neck portion 40 by inserting the open end of the body portion 46 through the severed end of the neck portion 40. An annular groove 57 is formed in the outer surface of the body portion 46, and upon insertion of the body portion 46 within the neck portion 40, an O ring 56 having a configuration corresponding to that of the annular groove 57 is rolled over the outer surface of the neck portion 40 and into the annular groove 57. Since the O ring 56 is dimensioned to tightly engage the tubular body portion 46, movement of the O ring into the annular groove 57 will secure the dispensing nozzle 44 within the neck portion 40 of the container 32 in fluid-tight engagement. With the dispensing nozzle 44 mounted in the neck portion 40 of the container 32 and the hose 28 secured to the tubular element 52, the container 32 may be mounted in the dispensing unit 10 for the dispensing of the liquid material therein. During the dispensing operation, it is understood that the liquid material flows through the neck portion 40 into the dispensing nozzle 44 and outwardly through the hose 28, the dispensing of the liquid material being metered by the squeeze valve 24. Although not shown, various other securing means may be utilized for fastening the dispensing nozzle 44 within the neck portion 40. Such other securing means may be spring clamps or wire that is twisted in clamping engagement around the neck portion 40 and body portion 46 of the dispensing nozzle.

Referring now to FIG. 4, another form of dispensing nozzle is generally indicated at 58. The dispensing nozzle 58 also includes a tubular body portion 60 having an open end 62 and an annular groove 64 formed therein for receiving a securing element such as an O ring 56. The side walls of the tubular body portion 60 are imperforate but the top wall indicated at 66 is formed with an opening 68 therein that communicates with a passage 69 formed in a tubular element 70 that is integrally joined to the outer wall 66. The function and operation of the dispensing nozzle 58 is substantially similar to that of dispensing nozzle 44.

Referring now to FIG. 5, a further modified form of a dispensing nozzle is illustrated and is generally indicated at 72. The dispensing nozzle 72 includes a tubular body portion 74 having an open end 76 and annular groove 78 formed therein in the manner as shown in the dispensing nozzles illustrated in FIGS. 3 and 4. The side wall of the tubular body portion 74 has a tubular element 80 integrally joined thereto that is adapted to receive the hose 28 as described in connection with FIG. 3. The outer wall of the tubular body portion is formed with an opening that is defined by an annular marginal portion 82, the inner edges of which are substantially curved or rounded in configuration. Disposed within the tubular body portion 74 in coaxial relation with respect thereto is a valve element 84 that is defined by a tubular body 86 having an open end 88 that communicates with the open end 76 and an opening 90 formed therein that is adapted to communicate with the interior of the tubular element 80. An annular groove 92 is formed in the body portion 86 and receives the rounded edge of marginal portion 82, the interrelation of the marginal portion 82 and the annular groove 92 defining a bearing relation so that the valve element 84 may be rotated with respect to the tubular body portion 74. The outer end of the valve element 84 may be formed with a finger grip 96 for rotating the valve element to position the opening 90 in communication with the interior of the tubular element 80. It is understood that when the opening 90 is located in the position illustrated in FIG. 5, the dispensing nozzle 72 is adapted to dispense liquid therethrough. In use and when the dispensing nozzle 72 is secured within the neck portion 40 of the container 32, valve element 84 is utilized as an on-off control. However, it is understood that the valve element 84 may replace the squeeze valve 24 if it is so desired.

Referring now to FIG. 6, still another modified form of a dispensing nozzle is illustrated and is generally indicated at 98. The dispensing nozzle 98 includes a tubular body portion 100 having an inner end construction generally similar to that illustrated in FIGS. 3, 4 and 5 and which includes an open end 102 and an annular groove

104 formed in the outer surface thereof. As described above, in connection with FIGS. 3, 4 and 5, the tubular body portion 100 is adapted to be inserted within the neck portion 40 of a flexible container such as container 32. The side walls of the tubular body portion 100 are formed imperforate similar to that illustrated in FIG. 4; however, an intermediate wall 106 is formed as part of the nozzle construction and has an opening 108 formed therein that communicates with the interior of the tubular body portion 100. The side walls of the tubular body portion 100 extend outwardly of intermediate wall 106 and terminate in a marginal portion 110 formed with curved or rounded inner edges. Disposed within the recess defined by the intermediate wall 106 and the marginal portion 110 is a valve element 112 that is formed with an annular groove 114 for receiving the marginal wall 110 therein. The valve element 112 is rotatable with respect to the tubular body portion 100 and includes an upstanding tubular element 116, the interior passage of which is adapted to communicate with the opening 108. Opening 108 is formed eccentric with respect to the longitudinal axis of the tubular body portion 100, and, as shown in FIG. 6, the passage formed in the tubular element 116 is also eccentric with respect to the longitudinal axis of the tubular body portion 100. Communication between the interior passage of the valve element 112 and the opening 108 may be obtained by rotating the valve element 112. Upon establishment of communication between the passage and opening as indicated, the dispensing nozzle 98 may be utilized for dispensing the liquid material from the container in which the dispensing nozzle is secured. A thumb grip 118 formed as an integral part of the valve element 112 may be utilized for rotating the valve element 112 as desired. As mentioned above in connection with the dispensing nozzle 72, the dispensing nozzle 98 may be utilized as an on-off control or may be employed as a metering device in place of the squeeze valve 24.

It is contemplated to utilize other forms of flexible containers than that illustrated in FIGS. 2 and 3, one such modified form of flexible container being shown in FIG. 7 and generally indicated at 120. The flexible container 120 is similar to the flexible container 32 in that it is tubular in construction, the continuous edges defining the tubular construction being indicated at 122 and 124. The outer edges of the container 120 are mated and sealed to define sealed edges 126 and 128, the sealed edge 126 being formed with an integral extension that defines a neck portion 130. The neck portion 130 is formed adjacent the continuous edge 122 and is distinct from the construction illustrated in FIG. 2 in this respect. In the use of the flexible container 120 as illustrated in FIG. 7, a fluid will be introduced therein after the outer end of the neck portion 130 has been severed in the manner as described in connection with FIG. 2. The dispensing nozzle of the type illustrated in FIGS. 3, 4, 5 and 6 may be inserted into the neck portion 130, after which the dispensing operation of the liquid material within the flexible container 120 may be carried out.

Referring now to FIG. 8, another modified form of a flexible container is illustrated and is generally indicated at 132. The flexible container 132 is similar to the container 32 in that it is tubular in construction, being defined by continuous side edges 134 and 136. The outer edges of the tubular material are heat sealed to define an outer edge 138 to which an integral neck portion 140 is joined in sealed relation. Rather than heat sealing the edge opposite the edge 138, this edge is folded to define an overlapping area 142, a heat seal 144 being used to seal the interior of the container 132. A plurality of grommets 146 are secured in the overlapping area 142 and may be utilized for hanging the container 132 in an inverted position from hooks or the like when the container 132 is to be employed separately from a dispensing unit. The container 132 may be used in conjunction with a dispensing nozzle such as illustrated in FIGS. 3 through 6, and the outer end of the neck portion 140 may be severed for receiving such a dispensing nozzle.

Referring to FIG. 9, a still further modified form of the invention is illustrated and is generally indicated at 148. The flexible container 148 is generally similar to container 132 and includes continuous side edges 150 and 152 that define the tubular construction of the container. The outer edges of the tubular construction are sealed at 154 at one end thereof, a neck portion 156 being formed as an integral part of the container and sealed thereto. An overlapping area 158 is formed on the end of the container opposite the neck portion 156, a seal line 160 extending through the overlapping area 158 and cooperating with the seal 154 to sealingly enclose theinterior of the container. Grommets 162 extend through the overlapping area 158 and may be utilized for suspending the container 148 as desired. Formed on the edges of the container on which the neck portion 156 is formed are additional overlapping portions 163 and 164 that are disposed in spaced relation with respect to the neck portion 156. The spaced overlapping portions 163 and 164 have grommets 166 and 168 formed therein, respectively, these latter grommets being utilized for securing the flexible container 148 to a container such as 132 indicated in FIG. 8. It is seen that by forming the additional overlapping portions 163, 164 with the grommets therein, containers of similar design may be secured together in end-to-end relation and stacked vertically if it is so desired. It is further understood that the neck portion 156 of the container 148 may be severed for receiving a dispensing nozzle such as illustrated in FIGS. 3, 4, 5 and 6.

The container embodied in the present invention represents a departure from the prior known devices in that the tubular container formed of the sheet material includes an outwardly extending neck portion that is formed as an integral part thereof. The neck portion is utilized for both receiving the fluid when filling the container and for dispensing the fluid during the dispensing operation. Since the interior of the container is unexposed until the fluid is introduced therein, the container is extremely sanitary and because of the single access opening, economical to manufacture. The containers are exceedingly thin and can be packaged in relatively large numbers without requiring excessive packaging space.

While there is shown and described herein certain specific structure embodying the invention, it will be manifest to those skilled in the art that various modifications and rearrangements of the parts may be made without departing from the spirit and scope of the underlying inventive concept and that the same is not limited to the particular forms herein shown and described except insofar as indicated by the scope of the appended claims.

What is claimed is:

1. In a container for a liquid material, a thin-walled tubular member formed of a flexible material, the outer ends of said tubular member being heat sealed to form a fluid-tight construction, a neck portion integrally formed on one of said sealed ends and projecting outwardly with respect thereto, said neck portion being initially sealed at the edges thereof and the interior thereof communicating with the interior of said tubular member, the sealed outermost edge of said neck portion being severable to form a filling opening therein through which the liquid material is poured for filling said container, the walls of said neck portion being substantially flat when said neck portion is severed and thereafter being flexibly movable to form a generally tubular configuration, a tubular nozzle member of relatively rigid material being insertable into the open end of said neck portion after it has been severed, the tubular formation of the neck portion conforming to the tubular configuration of said nozzle member, and means for securing said nozzle member in said neck portion.

2. A container as set forth in claim 1, said securing

member being defined by an O ring that is proportioned and dimensioned to tightly fit on said nozzle member and be received in said annular groove.

3. A container as set forth in claim 1, said nozzle member comprising a hollow rigid body that includes a neck in which said annular groove is formed and an outwardly extending tubular element joined to said body and communicating with the interior thereof, said neck extending within the neck portion of said tubular member and being sealingly secured therein by said securing member that is seated in said annular groove.

4. A container as set forth in claim 3, said tubular element being joined to a side wall of said neck and extending outwardly therefrom.

5. A container as set forth in claim 3, said tubular element being joined to an outer wall of said neck and extending outwardly therefrom.

6. A container as set forth in claim 3, a valve element rotatably secured in said body and including a tubular portion having an open end that communicates with the interior of said body, an opening formed in said tubular portion and being movable into communication with said tubular element by rotation of said valve element when the liquid within said container is to be dispensed.

7. A container as set forth in claim 1, said nozzle member comprising a tubular body formed of a rigid material, a discharge opening formed in said tubular body, and a valve element rotatably mounted in said tubular body and having an opening formed therein, said valve element being rotatable to move the opening formed therein into communication with the discharge opening in said tubular body when the liquid is to be dispensed from said container.

8. A container as set forth in claim 7, said opening in said valve element being formed in a side wall thereof, and the discharge opening in said nozzle tubular body being formed as part of an outwardly extending tube that is joined to said tubular body on a side wall thereof.

9. A container as set forth in claim 1, the sealed end of said flexible member that is opposite the one on which said neck portion is formed being folded to define an overlapping portion, and a plurality of grommets extending through the overlapping portion and the portion of said member which it overlaps, said grommets defining means for suspending said container so that the neck portion and dispensing member received therein are located at the lowermost end of said container.

10. A container as set forth in claim 1, the sealed end of said flexible member that is opposite the one on which said neck portion is formed being folded to define an overlapping portion, a plurality of grommets extending through the overlapping portion and the portion of said member which it overlaps, spaced end portions formed on the end on which said neck portion is formed and overlapping said member, and grommets extending through said spaced end portions and the part of said member that they overlap, said first-named grommets providing for suspending of said container and said second-named grommets providing for interconnecting a plurality of the containers together.

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