

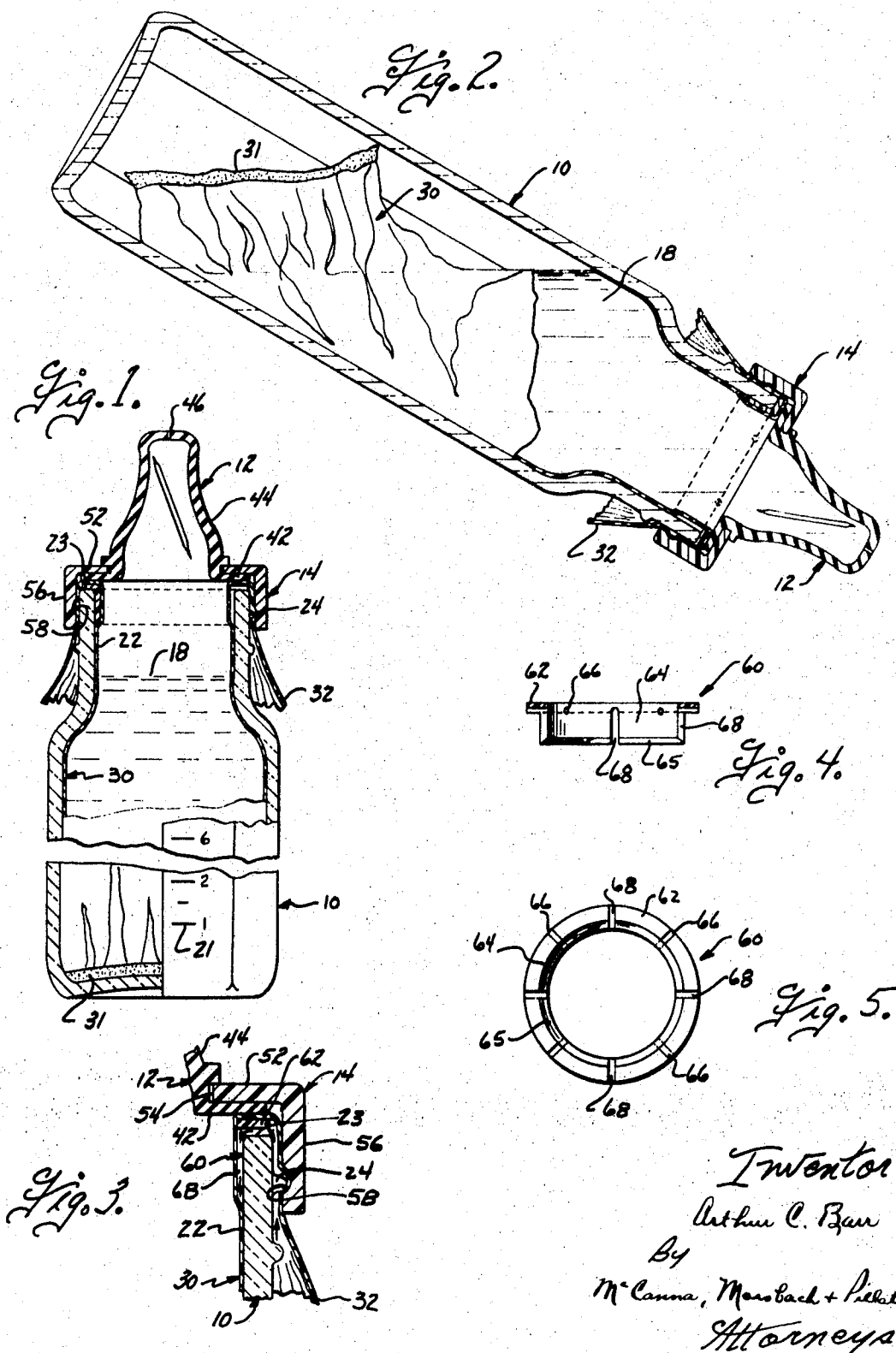
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3,471,050

NURSING UNIT

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DESCRIPTION

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NURSING UNIT
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9 Claims

ABSTRACT OF THE DISCLOSURE

An impervious baby bottle is provided with a plastic liner, a nursing nipple and a retaining cap. A venting insert of L-shaped cross-section is provided at the bottle mouth, between the lip and the liner, to vent the area between the bottle and liner to atmosphere so the liner collapses as liquid is dispensed therefrom.

BACKGROUND

The invention pertains generally to bottles adapted for nursing; that is for dispensing liquid infant food.

The conventional baby nurser includes a reusable bottle, nipple and cap. It has the advantage of being reusable, but certain disadvantages when used with young infants. One chief disadvantage is the possibility of colic resulting from feeding air through the nipple. Nursing units having collapsible liners overcome this problem but, for the most part, are useless without the liners. Thus, should a mother run out of liners at an inopportune time, a different nursing unit must be used. Other prior art arrangements have incorporated a plastic liner with a conventional nurser, for example see U.S. Patent No. 2,624,485. These, however, do not overcome the disadvantages of the conventional nurser.

SUMMARY

The present invention relates generally to a new and improved nursing unit. More particularly, the present invention relates to a nursing unit which provides a collapsible liner in an impervious bottle and which liner collapses as the liquid infant food is dispensed therefrom.

It is a general object of the present invention to provide a nursing unit which has the advantages of both the conventional nurser and the collapsible nurser.

Another object is to provide a nursing unit which can be used as either a conventional nurser or a collapsible nurser.

Still another object of the present invention is to provide a nursing unit which utilizes a conventional baby bottle and a flexible liner in the bottle, and provides apparatus for communicating the area between the liner and bottle to atmosphere so that the liner collapses as the liquid infant food is dispensed therefrom.

These, and other objects and advantages of the present invention, will become obvious as the invention becomes better understood from the following description when taken with the drawings.

DRAWINGS

FIG. 1 is generally a vertical sectional view, with some parts in elevation, of a preferred embodiment of the present invention filled with a liquid infant food;

FIG. 2 is a vertical sectional view of the nursing unit in a dispensing position and illustrating the collapsing of the flexible liner as the liquid is dispensed;

FIG. 3 is a partial sectional view, on an enlarged scale, illustrating the relationship of the parts and the venting means in greater detail; and

FIGS. 4 and 5 are a vertical sectional view and a bottom view, respectively, of a preferred insert utilized in the present invention.

Reference is now made more particularly to the drawings which illustrate one form of the present invention and wherein similar reference characters indicate the same parts throughout the several views.

The nursing unit of the present invention includes a bottle 10, a nipple 12, and a retaining cap 14. The bottle 10 is preferably made of a strong, generally transparent material, such as glass or plastic, and which material is resistant to heat and impervious to liquid. In the embodiment illustrated, the bottle is of hexagonal shape and of the eight ounce size, it being understood that other sizes and shapes may be utilized. On the side of the bottle are longitudinally positioned, spaced indicia or markings 21 for determining the amount of liquid infant food 18 remaining in the unit. In the embodiment illustrated, the bottle is slightly necked at the top leaving a generally wide mouth 22 which terminates in a lip 23. The bottle lip 23 is preferably smooth and flat. As is conventional, the top of the bottle is circular in cross-section and provided with a screw thread 24 at the outside of the neck. Preferably, the thread 24 is discontinuous, as best seen in FIG. 3, for purpose hereafter explained.

Received in the bottle 10 is a flexible liner 30 that is preferably impervious to liquid, being made of a strong, generally transparent, heat-resistant material, such as synthetic resin. The bottom edge of the liner or bag 30 is sealed at 31. The top of the liner is open and turned back over the top of the bottle as shown at 32. The length and diameter of the liner, when filled with the liquid infant food 18, is great enough to fill the entire bottle so that the indicia 21 may serve to indicate the quantity of the contents in the liner. Additionally, by lying closely adjacent the walls of the bottle 10, heat is transmitted through the liner 30 to the liquid infant food 18 when the bottle is warmed.

The bag or liner 30 is of conventional construction and readily available on the market in the form of a sterile roll of flattened plastic tubing. The tubing has spaced seal areas 31 and may have perforations at one side of the seal area for serving one bag from the roll. After each use of the nursing unit, the bag may be discarded and a new bag removed from the roll.

Overlying the liner 30 at the top lip 23 of the bottle, is the aforementioned nipple 12 which is held in place by the retaining cap 14. In general, the nipple 12 includes a peripheral flange 42 and a hollow teat portion 44 rising upwardly therefrom. The tip end of the nipple has an opening 46 for dispensing of the liquid infant food. The nipple illustrated is identical to that illustrated and described in U.S. Patent No. 3,113,569 issued to Arthur C. Barr and Norma K. Barr, and reference is made thereto for a more complete description thereof. It should be understood, however, that any conventional nipple may be utilized with the present invention.

The retaining cap 14 has an inwardly extending flange 52 with a circular opening 54. The flange 52 overlies the nipple flange 42 and the opening 54 permits the teat portion 44 to project therethrough. The cap 14 has a downturned annular flange 56 having an internal thread 58 which engages the bottle thread 24 to hold the cap in place. When the cap is tightly screwed down, a seal is provided between the nipple flange 42 and the liner 30.

In FIGURE 1 the nursing unit is shown with the liner holding the liquid infant food. The weight of the liquid causes the liner to assume the shape of the bottle, as shown. In FIGURE 2, the nursing unit is shown in a dispensing position with the liner 30 collapsed around the liquid. To allow the liner 30 to collapse, means is provided for venting the area between the liner and the bottle 10 to atmosphere, to allow air into that area when the liquid is dispensed. In this manner, the dispensing through

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the opening 46 closely approximates the "natural" form of feeding. The liquid can be more easily withdrawn by a newborn baby, for example, than when the baby must draw a partial vacuum on the bottle as occurs in a conventional nurser. Additionally, with the collapse of the flexible liner 30, no flow of air into the liner is required thereby alleviating the possibility of colic.

Referring now to FIGS. 4 and 5, there is shown one embodiment of an apparatus which cooperates in venting the space between the liner 30 and the bottle 10 to atmosphere. As shown, the apparatus comprises an insert, generally designated 60, and having a generally L-shaped cross section. The insert 60 includes a first portion 62 designed to overlie the bottle lip 23. The upper surface of portion 62 is preferably flat and smooth, and it is over this upper surface that the liner extends. Thus, it is the upper surface of portion 62 to which the liner is clamped by the nipple flange 42. A second annular portion 64 extends downwardly from portion 62 and is shaped for inserting into the bottle mouth 22 to position the insert at the open end of the bottle. The lower end 65 of portion 64 is preferably tapered outwardly toward the bottle wall to allow the liner 30 to lie closely adjacent thereto. A plurality of channels are provided in the insert 60 to allow the passage of air from the outside of the bottle into the space between the liner and inside of the bottle. For this purpose, a plurality of radially extending grooves 66 extend along the bottom side of the portion 62 and through the depending portion 64. Thus the grooves 66 are shown as openings in the portion 64, as seen in FIG. 4. Other grooves 68 extend across portion 62 and downwardly through depending portion 64 to the lower end thereof and are shown as slots in FIG. 4. In this manner, grooves 68 are advantageously in communication with the inside of the bottle neck and with the bottle lip to provide an air vent extending to the outside of the bottle. Air at atmospheric pressure can reach the grooves 66 and 67 by flowing between the threaded neck of the bottle and the downturned portion of the insert 30. To aid in this communication, the thread 24 is interrupted or discontinuous, as shown in FIG. 3, to provide an air passageway from the outside of the nursing unit to the aforementioned grooves. Alternately, the threads 24 and 58 may be so arranged to provide an air channel therealong to accomplish the same purpose. With either structure, means is provided for continuously venting the space between the insert 30 and bottle 10 to allow the flexible liner 30 to collapse as the liquid infant food is dispensed therefrom.

The nursing unit described herein can be utilized as a conventional nurser, if desired, or with the insert 60 and liner 30 as a collapsible nurser. In this manner, the unit is convertible. It is now deemed obvious that there has been described one embodiment of the nursing unit which has the advantages of both the conventional nurser and the collapsible nurser, and accomplishes this desirable result by providing a flexible liner in a conventional baby bottle, and apparatus for communicating the area between the liner and the bottle to atmosphere so that the liner collapses as the liquid infant food is dispensed therefrom.

What is claimed is:

1. In a nursing unit for liquid infant food, including an impervious, reusable bottle having a neck at the top and terminating in a peripheral lip defining an open mouth; and a nursing nipple overlying the bottle mouth; the improvement comprising: a disposable, impervious liner received in the bottle for holding the liquid and made of flexible material open at the top end; the liner extending over the bottle lip; venting means at the mouth of the bottle between the bottle and liner for communicating the area between the liner and bottle to atmosphere so the flexible liner collapses as the liquid is dispensed therefrom; and mounting means for mounting the nursing nipple in sealing relationship to the liner and for holding the liner in place at the bottle mouth.

2. A nursing unit as set forth in claim 1 wherein the venting means comprises a removable annular insert over-

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lying the bottle lip and having a smooth upper surface for contacting the flexible liner; the insert having at least one opening extending from the outside of the bottle and over the bottle lip to a point at the inside of the bottle to vent the area between the bottle and liner; and the bottle, nursing nipple, and mounting means being usable as a unit in the ordinary manner when the liner and insert are removed.

3. A nursing unit as set forth in claim 2 wherein the annular insert has a generally L-shaped cross section and includes a first portion overlying the bottle lip and a second portion extending downwardly from the first portion at the inside of the bottle to position the insert.

4. A nursing unit as set forth in claim 3 wherein: the flexible liner has a size at least as large as the bottle to fill the bottle space when filled with the liquid infant food, the flexible liner and the bottle are generally transparent so the liquid level is readily ascertained, the bottle having indicia thereon to indicate the liquid volume in the bottle, and the second portion of the annular insert having a downwardly and outwardly tapered lower end to dispose the flexible liner closely adjacent the bottle.

5. The combination of claim 1 wherein: the venting means comprises an annular insert on the bottle lip and having a smooth upper surface for contacting the flexible liner, the insert having an opening extending from outside the bottle to a point inside the bottle to vent the area between the bottle and liner, the liner having a portion at its upper end turned downwardly outside the bottle neck, the bottle neck having threads on the outside thereof, the mounting means comprises a removable retaining cap which overlies a portion of the nursing nipple and has a depending portion outside the bottle neck, the depending portion having threads thereon interfitted with the bottle threads to provide a threaded connection, and the threaded connection operative to hold the liner in place and providing an air passageway between the liner and bottle neck from outside the bottle to the insert opening.

6. In a nursing unit for liquid infant food, including an impervious, reusable bottle having a neck at the top and terminating in a peripheral lip defining an open mouth; a removable retaining cap adjustably secured to said neck and having an inwardly extending flange defining a central aperture; and a nursing nipple having an upstanding central portion extending through said aperture and a laterally-extending peripheral flange overlying the bottle lip inside the cap flange; the improvement which comprises a disposable, impervious liner received in the bottle for holding the liquid and having an upper portion extending over the bottle lip under the nursing nipple and turned downwardly outside the bottle neck; venting means for continuously venting the area between the liner and the inside of the bottle; the venting means including an insert disposed between the liner and the bottle lip and generally coextensive with the bottle lip; the insert having at least one channel extending over the bottle lip to continuously communicate the vented area with the outside of the bottle; and means for communicating air from outside the nursing unit to said channel so the liner collapses as the liquid is dispensed therefrom; and said retaining cap operative to clamp the nursing nipple against the liner to provide a liquid-tight seal therebetween.

7. The combination of claim 6 wherein: the bottle neck has exterior threads thereon, the retaining cap has threads for clamping the downwardly turned portion of the liner to the bottle neck and providing a threaded connection to secure the cap in place, and the means for communicating air to said channel is through the threaded connection between the liner and the neck threads.

8. The combination of claim 6 wherein the insert includes a first portion overlying the bottle lip and a second portion extending downwardly therefrom at the inside of the bottle to position the insert, and wherein the channel extends across the first and second portions to the inside of the second portion.

9. The combination of claim 6 wherein the insert in-

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cludes a first portion overlying the bottle lip and a second portion extending downwardly therefrom at the inside of the bottle to position the insert, and wherein the channel extends across the first portion in communication with the bottle lip and downwardly across the second portion in communication with the bottle neck.

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JAMES B. MARBERT, Primary Examiner

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