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3,273,703

PRESTERILIZED DISPOSABLE NIPPLE ASSEMBLY

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FIG. 2.

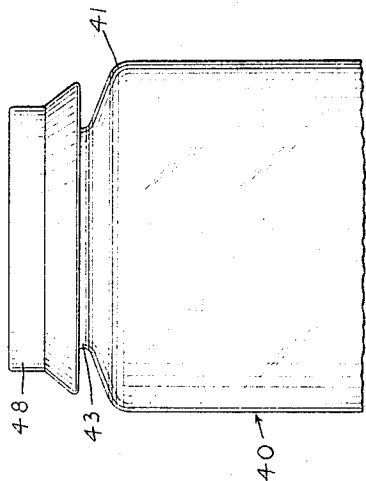


FIG. 1.

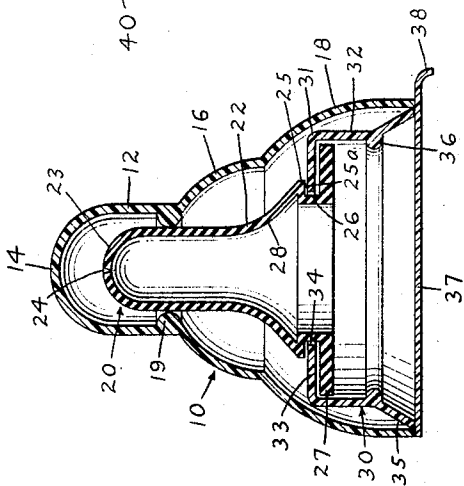


FIG. 3.

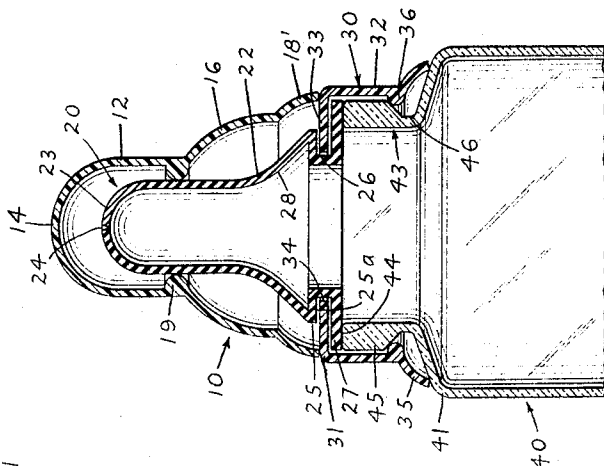


FIG. 5.

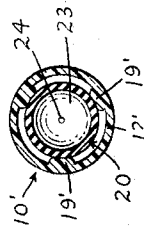
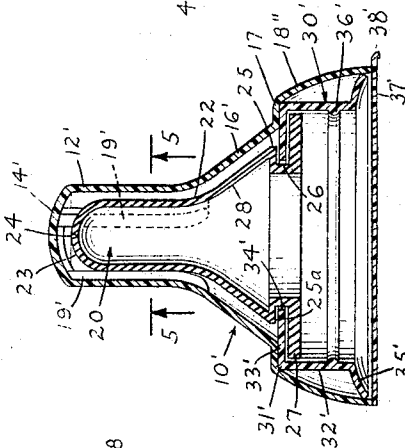


FIG. 4.



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PRESTERILIZED DISPOSABLE NIPPLE ASSEMBLY

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3 Claims. (Cl. 206—46)

This invention relates to a nursing bottle assembly. More particularly, the invention relates to a sterilized, single service, disposable nipple assembly particularly adapted for use with prefilled, sterilized, infant feeding containers.

In recent years increasing attention has been directed to providing a simple and inexpensive nursing bottle assembly, which could be factory sealed and sterilized without further sterilization being required at the time of use. In developing such a container consideration has been given to means for maintaining the nursing nipple sanitary once the bottle has been filled, capped and sterilized. Effort has also been directed to the development of means for insuring that a prefilled, sterilized bottle could be maintained sterile when a factory sealed cap is removed and a nipple manually seated thereon prior to feeding.

In patents such as U.S. 2,834,496, attention is directed to providing a nipple protector which permits sterilization of the bottle and contents after the cap containing the nipple has been secured to the bottle. U.S. 2,982,432 on the other hand is primarily directed to maintaining the nipple free of unsanitary handling or contact after sterilization has been accomplished.

In addition to the devices described in the patents referred to, a variety of assemblies have been proposed for use with prefilled infant liquid food containers of the type disclosed in U.S. 2,432,496.

None of the foregoing devices, however, provide a simple inexpensive, disposable nipple assembly which can be sterilized during fabrication and then quickly and easily secured to a factory filled, sterilized baby bottle without the necessity of further sterilization of either the nipple assembly or the feed bottle prior to use.

The present invention now overcomes the disadvantages of conventional devices by providing a unique, sealed, sterilized, single service, disposable nipple assembly which can be conveniently mounted on a prefilled and sterilized baby feed container without further sterilization steps being required at the time of use. The unique design of the nipple assembly of the present invention permits it to be presterilized and maintained in that condition without further special treatment or handling being required prior to its use on a companion factory sterilized infant feed container. The simple design of the new nipple assembly and the fact that it is constructed of relatively inexpensive materials permits the same to be disposed of after a single use without any economic disadvantage. In addition, the design is such that it lends itself well to reuse if desired, in a manner similar to that of conventional nipple-cap assemblies.

In its broadest aspect, the present invention comprises a conventional, resilient baby nipple positioned in a snap-on retaining cap. The cap is adapted to be pressure seated and secured, by means of a cap locking rim which fits into a receiving channel in the neck of a prefilled, factory sterilized, baby feeding container. The nipple and snap-on cap are enclosed in a flexible, nipple cover which has a configuration that permits, when unsealed in the manner hereinafter described, a user to grasp the cover and nipple, and pressure seat the cap on the neck of the feed container, without contaminating sterilized portions

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of the container or nipple during the seating operation or thereafter.

The sterilized condition of the cap-nipple assembly and the manner in which it is positioned on the container is made possible by having removably secured to the lower edge of a downwardly flaring terminal edge of the nipple cover, a removable or tear-off bottom which as assembled, seals the nipple and cap assembly in the cover. The tear-off bottom is so fixed to the bottom terminal edge of the nipple cover that it can be easily removed by simply tearing off the same prior to use. Grasping the flexible cover and the nipple, conveniently retained therein, with the fingers and applying the cap to the container, seats the nipple and cap on the container. The cover then conveniently serves as a protective sterile shield for the nipple until it is removed just before feeding in addition to serving as a convenient tool or means by which the nipple-cap can be seated on the container.

As will be readily apparent, such an assembly provides a distinct advantage over current devices and procedures based upon the same as presently followed in mass infant feeding operations. The device of the present invention permits volume factory filling, sterilizing and sealing of infant feed containers making them suitable for immediate and direct use merely by removing a sterile seal cap and seating thereon the sterile, disposable nipple-cap assembly of the present invention.

Various features and modifications of the invention will be apparent from the description which follows which is to be read in conjunction with the drawing attached hereto in which:

FIGURE 1 is a sectional view illustrating the nipple assembly of the present invention particularly adapted for use as a sterilized, sealed, single service, disposable unit.

FIGURE 2 is an elevation of a seal capped, sterilized, prefilled nursing bottle particularly adapted for use with the nipple assembly of the present invention.

FIGURE 3 is a sectional view illustrating the nipple cover assembly of the present invention in its reusable embodiment form positioned on a baby feeding container.

FIGURE 4 is a vertical, sectional view of an alternate embodiment in which the nipple cover is of a different configuration which includes vertical nipple locking means.

FIGURE 5 is a horizontal cross sectional view taken along the line 5—5 of FIGURE 4.

Referring now to the drawing, in particular FIGURE 1, numeral 10 designates generally the disposable nipple cover assembly of the present invention. Cover 10 includes an upper cylindrical dome portion 12, having integral therewith a curved closed top 14, and an intermediate body portion 16. Body portion 16 flares outwardly from the lower edge of dome 12, and extends downwardly, terminating in an outwardly flaring annular skirt 18. The lengths of dome 12, body portion 16 and annular skirt 18 are approximately equal and when combined are sufficient to cover a conventional baby nipple positioned in a retaining cap such as is shown. Cover 10 is constructed of a flexible material such as rubber or plastic or an equivalent material. Suitable plastics include polyethylene, polypropylene, polyvinylchloride and polystyrene or similar equivalent resilient or flexible materials.

Cover 10 includes, at the joint of the lower end of dome portion 12 and the intermediate body portion 16, means for seating and securing or frictionally locking cover 10 on nipple 20. The locking means shown at 19 comprises a continuous or, if desired, a semicontinuous rib or annular rim, which is integral with the interior

lower edge of the lower bottom edge of dome 12. While not shown, it may be desirable to extend annular locking rib 19 downwardly slightly to include the top of the intermediate body portion 16. The latter construction will provide additional strength at the joint of dome 12 and body portion 16 and in addition will provide additional frictional surface to engage neck 22 of nipple 20 when cover 10 is placed thereover.

As shown in FIGURE 4, locking means 19 (therein identified as 19') can take the form of a plurality of vertical ribs or lugs, annularly disposed about the interior of dome 12' at the position of ribs 19'. Such locking means extend inwardly a distance sufficient to contact neck 22' of the nipple 20' and would extend vertically downward from top 14' to the lower edge of dome 12'. The inner surface of the lugs would preferably be curved at the outer nipple engagement edge in the manner suggested by the shape and configuration of ribs 19' in FIGURE 5. Alternatively, lugs 19' could be constructed to have a flat nipple engaging surface if desired.

Returning now to FIGURE 1, the lower skirt portion 18 of cover 10 terminates at tear-off bottom 37 which is sealed thereto by heat or other means during fabrication as desired. The presence of bottom 37 insures a complete container for nipple 20 and cap 30. For convenience, a finger tear tab 38 is provided at the outer edge of tear bottom 37 to facilitate easy removal of the bottom.

While not shown, it is envisioned that the lower skirt 18 of cover 10 can be contoured, when viewed from the top, to provide a peripheral square shape at the bottom terminal edge of the skirt, thus permitting a square or if desired rectangular configuration for tear bottom 37 rather than the circular configuration as contemplated in the embodiment shown. Such a construction would permit tear bottom 37 to be made integral with one side wall of the skirt 18 in the manner of a flexible end or hinged flap. Such a construction provides for simple heat sealing or gluing of bottom 37 to the remaining sides of the lower edge of skirt 18 to seal nipple 20 and cap 30 within cover 10 when the latter is positioned over the nipple.

As shown in FIGURE 1, the nipple, generally designated by numeral 20, includes a neck portion 22 which terminates in a bulb-like tip 23. The latter is preferably spherical in shape and includes at least one feed passage or aperture 24. At the lower end of the body portion 28 of nipple 20, a short flange 25 is provided extending radially outward in a manner that provides flange 25 with a generally horizontal base 25a. Spaced below flange 25 is another radial flange, base flange 27, which as shown extends horizontally outwardly from body 28 a greater distance than flange 25 and creates the recessed or constricted area designated 26. These flanges and the annular recess 26 created thereby, by engaging the bottom and top surfaces of top 33 of snap-on cap 30 provide the means by which nipple 20 is retained in its vertical position in cap 30.

Nipple 20, a conventional rubber nipple, or nipple of equivalent material, is vertically positioned and retained in snap-on cap 30 in the manner described. Cap 30 is constructed of a resilient plastic material and is adapted to fit the wide neck of a container such as bottle 40 of FIGURE 2. The details of the construction and function of cap 30 are developed further by reference to FIGURES 2 and 3. The embodiment shown in FIGURE 1 is that preferred in the single service assembly and is distinguishable from the reusable assembly described hereafter with reference to FIGURES 2 and 3 in that the lower skirt 18 is somewhat longer in length to insure sterile protection of a bottle shoulder, such as 41 of FIGURE 2, when the nipple and cap are seated thereon. It will be further noted that skirt 35 of cap 30 in the embodiment of FIGURE 1 is angularly flared outwardly and is of a flat configuration. Such construction results in

skirt 35 being raised slightly at its outer edge when in contact with the shoulder of the bottle thus providing a means by which the cap can be readily removed when a lifting tool is inserted under the edge of skirt 35.

Bottle 40 is constructed to provide a reduced portion generally designated 43 which constitutes a neck. Neck 43 includes at the top flat edge 44 an annular rim or shoulder 45, which creates the channel 46, into which locking rib 36 of cap 30 fits when the latter is pressure seated on neck 43. To insure a secure fit of cap 30 on neck 43, the continuous locking rib 36 is made integral with and at the lower edge of side wall 32 at the joint of side wall 32 with the flared skirt 35. A variant of this construction will be described with respect to FIGURE 4 hereinafter. As is readily apparent by reason of the positioning of nipple 20, cap 30 also includes or defines in top 33 a nipple receiving hole 34.

When the nipple assembly of the present invention is to be utilized, and to gain the advantages provided by the same, a factory filled, sterilized bottle such as suggested by numeral 40, which has been factory capped and sealed as by cap 48, is opened to expose neck 43. To seat a nipple on the bottle, a nipple-cap assembly is grasped by the cover 10; and, by pulling on tab 38, sealed bottom 37 is removed. By moving cover 10 and the nipple-cap assembly held therein by means of the locking means at 19 and the seal at 33 when present, the cap and nipple can be pressure seated on 43 by forcing rib 36 of cap 30 over shoulder 45 thus seating rib 36 in channel 46. In this manner, the disposable assembly is placed on a feeding bottle ready for use.

By reason of the fact that nipple 20 and cap 30 were sterilized during assembly and prior to being sealed in cover 10, and the fact that no contact is made with the nipple or the cap during seating, both remain sterile. Additionally, neck 43 and upper edge 44 of bottle 40, which were protected by cap 48, remain sterile when the nipple-cap-cover assembly are placed thereon after bottle cap removal. The assembly including the bottle is then ready for use in a conventional manner without further sterilization being required. It can be thus seen that both units, that is the presterilized bottle and its contents and the disposable nipple cap assembly, can be presterilized, stored and be made ready for immediate use without further sterilization steps being required prior to use, merely by removing cap 48 from bottle 40 and removing bottom 37 from nipple assembly 10.

In the feeding of large numbers of infants such as in the mass feeding of babies, the advantages of factory filled, disposable units of the type embodied in FIGURE 1 will be immediately apparent. The relatively inexpensive materials from which the cover, nipple and cap can be constructed makes the disposable assembly relatively inexpensive and provides a substantial measure of convenience as well as safety when consideration is given to the conventional steps of formula mixing, sterilizing and nipple fastening and the reesterilizing required in conventional practice.

Continuing the reference to FIGURE 3, it will be noted that the embodiment envisions a lower skirt 18' of shorter length than skirt 18 of FIGURE 1. Skirt 18' terminates so as to rest on outer edge of top 33 as shown at 31 generally at the peripheral edge when assembled in this form if desired an easily rupturable seal joint can be made between the lower edge of 18' and the top surface 33. When so assembled, a tear bottom may then be placed across the base of cap 30 in a manner similar to 37 of FIGURE 1.

Alternatively, skirt 18' may be lengthened as in FIGURE 1 to extend to and cover shoulder 41 thus covering side wall 32 of cap 30 as well as shoulder 41 of the bottle 40. In this configuration in which all other components are substantially the same as described in FIGURE 1, the extended skirt 18' insures that shoulder 41 of the bottle 40 will be maintained in a sterile condition when the nipple-cover assembly is placed thereon in a manner

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similar to that previously described. In this embodiment as in FIGURE 1, the presence of cover 10, which is removably secured by the locking means 19 to the nipple 20, maintains the latter in a sterile condition during the period of seating and prior to use.

In FIGURE 4, an alternate form of the nipple assembly of the present invention is shown. In this embodiment, the structural features found in the embodiment of FIGURE 1 are identified by the same numerals with prime (') designation. It will be further noted that cover 10' is of a varied shape particularly the top portion 12' to accommodate the vertical locking ribs 19'. Additionally, the intermediate body portion is angularly flared outward in a surface which terminates in the flat peripheral seating edge 17. This construction facilitates handling of the assembly and is particularly useful when seating of the cap and nipple is to be accomplished since flat seating surface 17 provides a most convenient point on which to exert finger pressure to seat cap 30'. In the embodiment side wall 32' of cap 30' is of a longer length than its counterpart in FIGURE 1 or 3 so that when the cap is seated on the bottle neck skirt 35' will contact the bottle shoulder in such a manner that the outer edge thereof will be raised slightly. This will permit a lifting tool to be inserted under the skirt 35' to make removal of cap 30' easier. Similar to the embodiment of FIGURE 1, it is of course understood that the assembly includes the tear bottom as at 37'.

In assembling the device of the present invention, a variety of convenient means are envisioned. In one form, the nipple cover may be inverted and held in a moving assembly line to receive the preassembled nipple and snap-on cap. The nipple is then positioned in the cover and sterilization accomplished, after which removable bottom 37 can be sealed to the lower edge of skirt 18 in the manner previously described as by heating, gluing or pressure sealing. This provides a seal that can be readily broken or ruptured by finger pressure when it is desired to ready the nipple and cap for use.

Alternatively, in an assembly line type of procedure, the nipple-cap assembly can be positioned on the tear-off base 37 and the latter moved to a sterilization point after which cover 10 can be placed thereover with sealing accomplished as previously described. A further packaging alternative is to sterilize the assembly after packaging by using a sterilizing gas such as nitrous oxide. In this procedure, the tear bottom is made of a material which is permeable to the sterilizing gas under the conditions used.

While the device of the present invention has been described with some degree of particularity with respect

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to the embodiments shown in FIGURES 1, 3, 4 and 5, it is understood that modifications and changes can be made to the same without departing from the scope of the invention broadly described herein. It is understood, therefore, that the invention is to be limited only by the claims appended hereto.

The invention claimed is:

1. A sterilized, disposable nipple assembly adapted for use on a baby feeding container which comprises a snap-on nipple positioning and retaining cap, adapted to be pressure seated on the neck of a liquid feeding container, a feeding nipple positioned in said cap and retained thereby, a flexible nipple cover surrounding the nipple and cap having an upper closed dome portion, an intermediate body portion flaring downwardly from the lower edge of the dome portion and a lower skirt portion flaring downwardly from the lower edge of the intermediate portion, said cover having a nipple locking means at the joint of the dome and intermediate portions in engagement with the nipple and a tear-off bottom sealed to the bottom edge of the skirt, sealing the nipple and cap in said cover.

2. A sterilized, disposable nipple assembly adapted for use on a baby feeding container as claimed in claim 1 wherein the nipple locking means comprises a continuous inwardly extending annular rib.

3. A sterilized, disposable nipple assembly adapted for use on a baby feeding container as claimed in claim 1 wherein the nipple locking means comprises a plurality of locking lugs spaced annularly around the interior of the cover at the joint of the dome and intermediate body portions.

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