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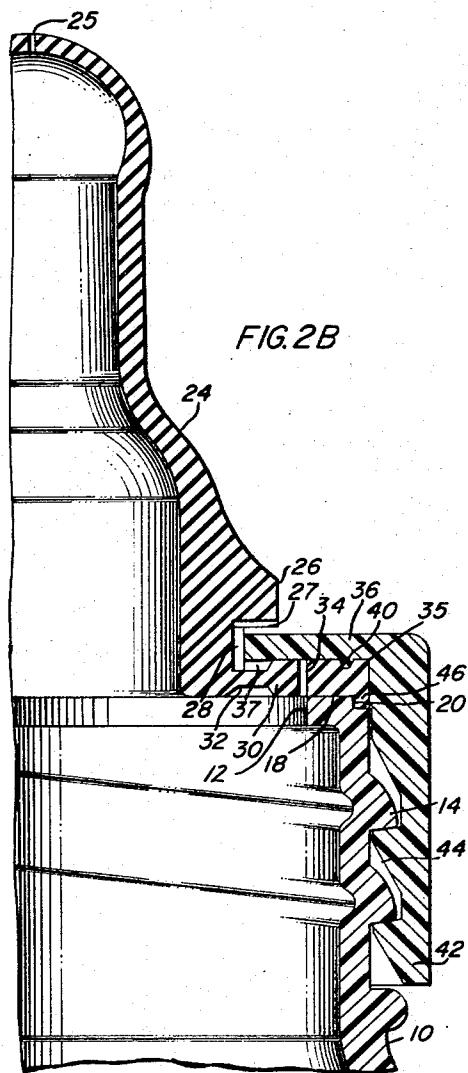
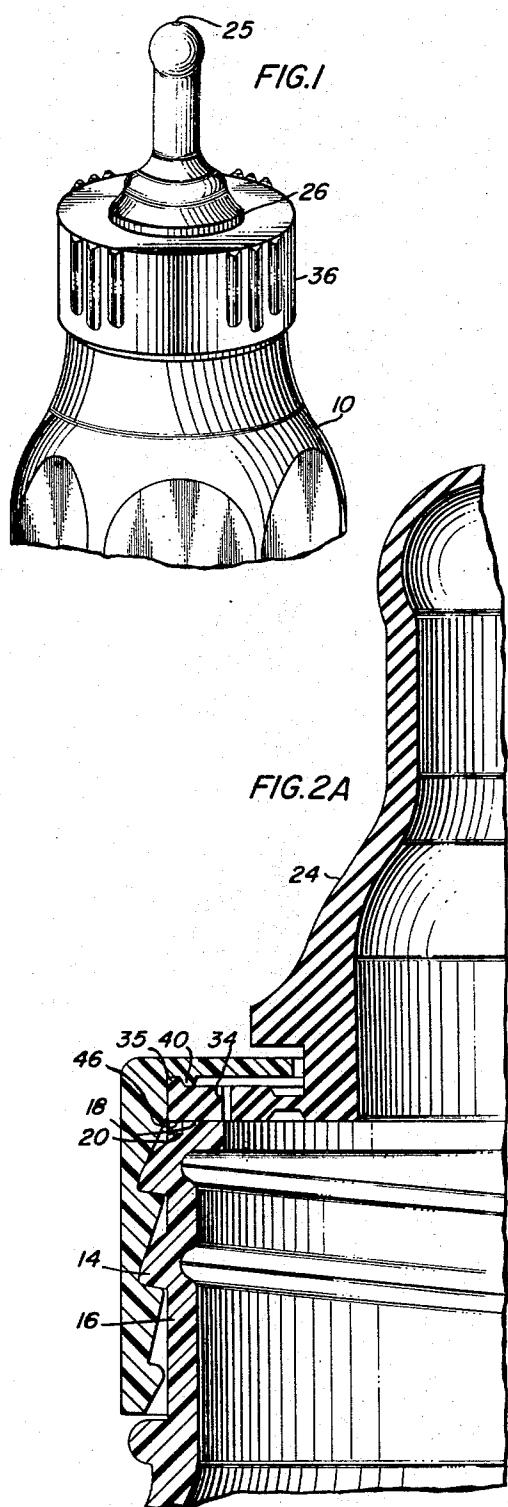
J. J. SHOMOCK ET AL

3,292,809

NURSING UNIT

Original Filed March 2, 1959

3 Sheets-Sheet 1



INVENTORS
JOSEPH J. SHOMOCK
FRANK E. BOSTON
CYRIL R. PORTHOUSE

BY

ATTORNEY

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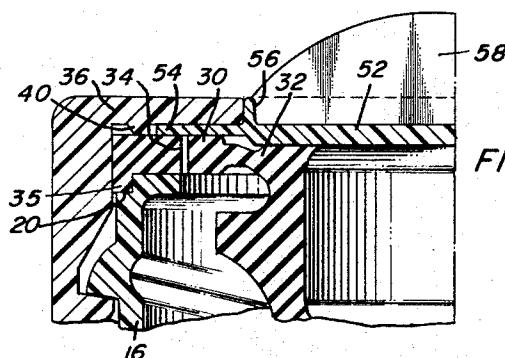
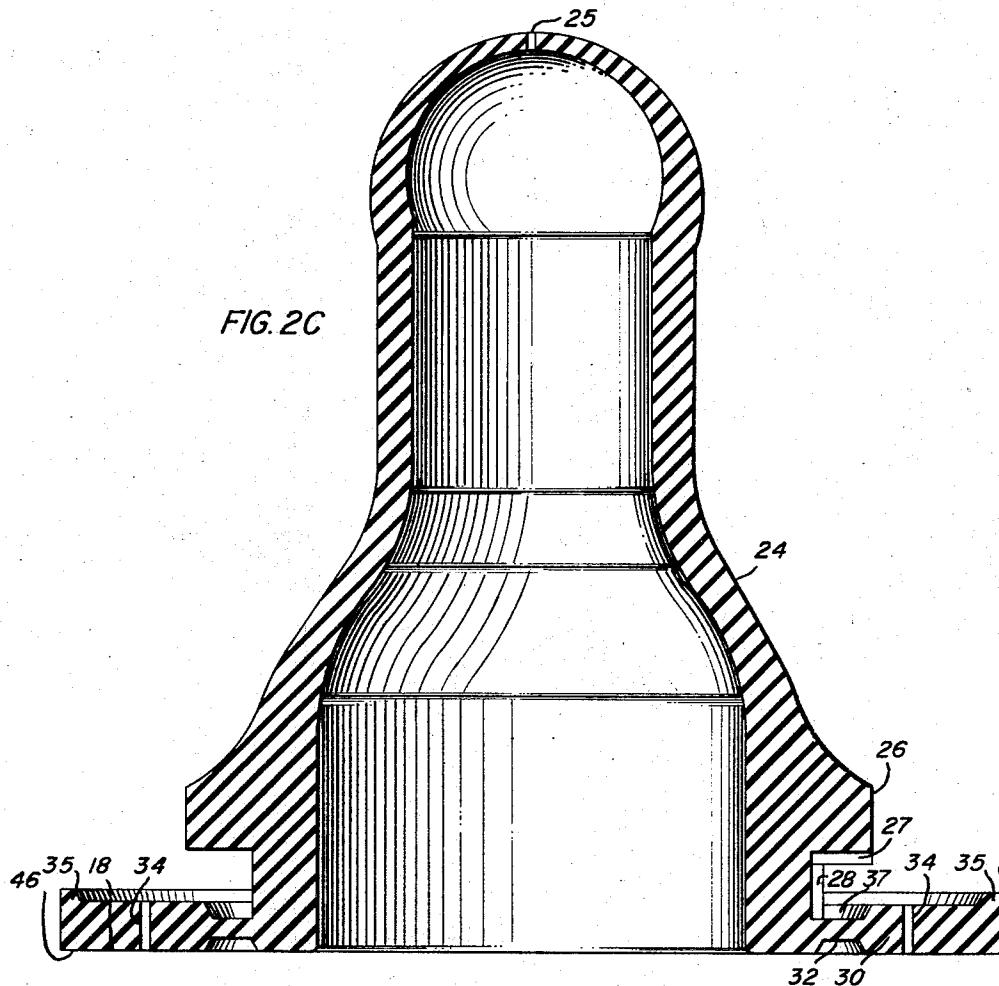
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JOSEPH J. SHOMOCK
FRANK E. BOSTON
CYRIL R. PORTHOUSE

BY

ATTORNEY

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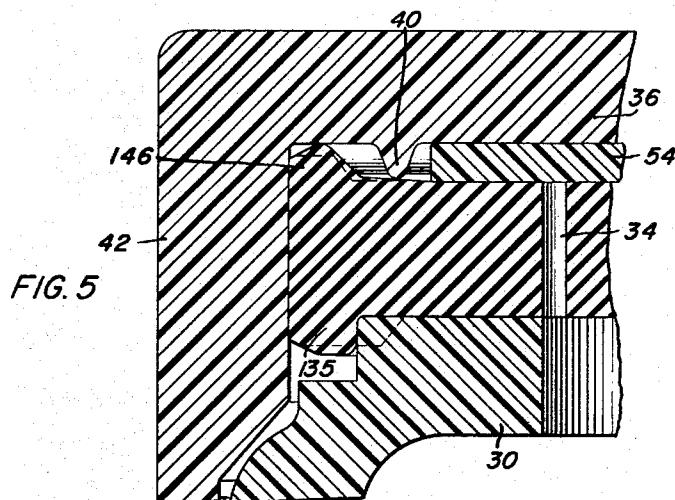
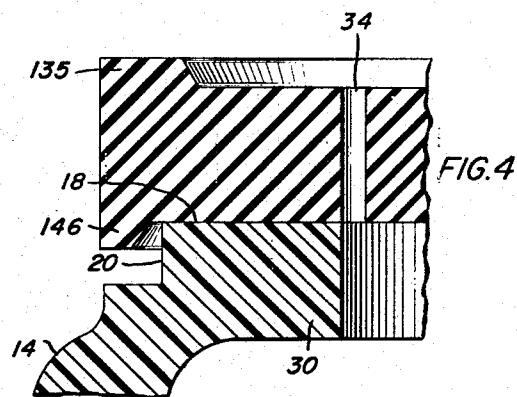
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NURSING UNIT

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3 Sheets-Sheet 3



INVENTORS
JOSEPH J. SHOMOCK
FRANK E. BOSTON
CYRIL R. PORTHOUSE

BY

ATTORNEY

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3,292,809
NURSING UNIT

Joseph J. Shomock and Frank E. Boston, Ravenna, and Cyril R. Porthouse, Kent, Ohio, assignors to Dunhill International, Inc., Ravenna, Ohio, a corporation of Delaware

Continuation of application Ser. No. 160,501, Dec. 19, 1961, which is a continuation of application Ser. No. 796,465, Apr. 2, 1959. This application May 24, 1965, Ser. No. 458,170

19 Claims. (Cl. 215—11)

This application is a continuation of Ser. No. 160,501, filed December 19, 1961, which in turn was a continuation of Ser. No. 796,465, filed March 2, 1959, now abandoned.

This invention pertains to nursing units, and more particularly to such units comprising a wide mouthed bottle to which a nipple, having a radial flange, is connected by an apertured screw cap having a threaded skirt engaging with the bottle neck and the nipple. The invention concerns means for holding the nipple to the bottle more securely.

Considerable difficulty is experienced in providing adequate engagement of nipple and bottle while maintaining adequate pliability of the nipple and this difficulty is enhanced when the bottle is made of some slippery plastic material such as a polyalkene, e.g., polyethylene or polypropylene. The invention provides retention of nipple to bottle even when such materials are used.

The invention finds special importance in conjunction with vented nursing units of the type utilizing a vent hole through the nipple flange, said vent hole being normally closed by the screw cap overlying the top of the flange but which opens when there is a pressure reduction inside the bottle causing the nipple flange to pull away from the base of the cap. Such a nipple can be held only at the outer periphery of the nipple flange since the remainder must be free to flex to insure proper valve action venting. With this limited area available for engagement the problem of securing the nipple flange to the bottle is more difficult. The invention provides improved securement of nipple to bottle suitable for these conditions.

Prior art patents have been principally concerned with securing the nipple flange between the cap and the bottle in such a manner as to prevent the nipple from being withdrawn from the screw cap while the nursing unit is being used. While this requirement is recognized, and the present invention attacks this problem in a novel and improved manner, a further problem, closely related, is recognized and solved by said invention. This latter, correlated, problem is that of retaining the position of the vent holes with respect to the bottle lip. Having recognized the two-fold nature of the problem, the present device solves it in a most effective manner.

The improved retention means of the invention is particularly important in connection with nursing units whose venting action is controlled by adjustment of the tightness of the screw cap. In such case without the special retention means of the invention, if the cap is screwed on tight enough to retain the nipple, the venting action may be completely eliminated, and if the cap is loosened the nipple may come loose or there may be leakage between nipple flange and bottle mouth. The retention means of the invention will hold securely with only moderate tightening of the cap on the bottle.

According to the invention a nursing unit is provided comprising a bottle, nipple and cap with interengaging means holding all three together. More specifically, there is an annular groove or rabbet around the outer periphery of the bottle lip, an upstanding ridge around the outer periphery of the nipple flange overlying the rabbet, and an annular bead on the underside of the screw cap lying just inside the ridge and overlying the middle of the bottle

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lip. When the cap is first screwed down the ridge is held between the cap bead on the inside and the cap skirt on the outside. Then as the cap is screwed down farther the ridge is flattened out and the rubber of the bottom of the nipple flange flows into the rabbet where it is held between the cap skirt and the bottle lip. By this time the cap bead has penetrated the nipple flange so that there is still a portion of the flange between the cap bead and the cap skirt. A sort of T section is thus formed on the end of the nipple flange interlocking with the cap bead, cap skirt and bottle lip, which effectively prevents the nipple flange from being pulled out from between the cap and bottle lip.

An advantage of the invention lies in the fact that when the nipple is in an upright position the portion of the nipple flange that engages the rabbet in the bottle lip is not pre-formed so that there is no problem in mating it with the rabbet. By the same token, the portion of the nipple flange that engages in the rabbet of the bottle lip makes a tight engagement since it is automatically formed by pressure flow of rubber to conform to the rabbet.

An unexpected advantage of the invention lies in the improved regulability of the valve action to suit varying requirements of different infants. If the vent hole in the nipple flange is placed just inside adjacent to the inner lip of the bottle, the size of the vent hole can be varied by providing a bead under the cap which will, as the cap is tightened, cause rubber to flow toward the vent hole and reduce its size. However, this method of controlling the vent hole size is only effective if the vent hole is accurately positioned relative to the bottle lip, that is, if the vent hole were rather remote from the bottle lip and the adjacent cap bead, control of the vent size by tightening the cap would be much less effective. Therefore the better nipple retention means of the present invention brings about a better regulability of the valve action nurser.

It is also to be observed that the upstanding ridge of the nipple flange is received in a definite place between the cap skirt and bead so that the nipple is very accurately located relative to the cap which gives a precise location of the nipple flange vent hole relative to the bottle lip as required for regulation of the size of the vent hole.

Other objects and advantages of the invention will appear from the following detailed description of a preferred embodiment thereof, reference being made to the accompanying drawings, wherein:

FIGURE 1 is a perspective view of the upper portion of an assembled nursing unit embodying the invention;

FIGURES 2A and 2B are axial sections through the nurser of FIGURE 1;

FIGURE 2C is an axial section through the nipple shown in FIGURES 2A and 2B;

FIGURE 3 is a section similar to FIGURE 2 showing the nursing unit reassembled for storage; and

FIGURES 4 and 5 are fragmentary views similar to FIGURES 2 and 3 showing a modification.

Referring now to FIGURES 1, 2A and 2B there is shown a nursing unit comprising a bottle 10 having a wide mouth or opening 12 at its upper end. Preferably the bottle is made of a polyalkene plastic such as polyethylene, although glass bottles or bottles of other similar materials may be utilized, said glass bottles not generally having the turned overhanging lip nor generally having the slippery qualities of plastic. There is a buttress thread 14 around the exterior of the bottle neck 16. The upper surface 18 of the turned lip around the mouth of the bottle is flat except for a rabbet 20 around the outer periphery of the lip. The rabbet is of approximate square cross-section, that is, the height and width of the rabbet are substantially equal, e.g., .030 inch.

Disposed on top of the bottle over its mouth is a soft rubber nipple (shown separately in FIGURE 2C) having a tubular body or barrel 24, the upper closed tip end of which is perforated at 25 for the discharge of fluid. Around the middle of the barrel is formed an overhanging annular shoulder 26, beneath which are a plurality of radially extending spacing lugs 27. Just below each lug 27 there is a vertically extending spacing lug 28 on the side of the barrel. Projecting radially outwardly from the open lower end of the barrel is a horizontal annular flange 30 which rests on top of the flat upper surface 18 of the bottle lip with which it is adapted to seal. As will be apparent from the drawing, which is a true scale drawing, except where the contrary is stated, the flange is about 0.075 inch thick. Immediately adjacent the barrel of the nipple the flange 30 has a web portion 32 of reduced thickness to provide greater flexibility. In the outer thicker portion of the flange there is a vertical vent passage 34 which is just inside and immediately adjacent the inner edge of the bottle lip. The vent passage is enlarged in the drawing for clarity, being much smaller in actual practice, being more of a capillary size. Around the outer periphery of the nipple flange is an upstanding ridge 35, about 0.020 inch high by .050 inch wide, the volume of the ridge being just a little larger than the volume of rabbet 20. The flange outwardly of the vent passage may be deemed a ring portion, the flange inwardly of the vent passage deemed flexible means for joining the ring portion to the barrel, with the vent passage positioned at substantially the juncture of the ring portion and the joining means.

There is a screw cap for holding the nipple to the bottle. The cap may be made of the same material as the bottle. The upper centrally apertured circular flap top portion 36 of the cap is adapted to be snapped into position around the nipple between the flange 30 and shoulder 26, the lugs 27, 28, spacing the cap from the shoulder 26 and the sides of the barrel 24 so as to leave air passages therebetween leading to the annular channel 37 between the underside of the top 36 and the top of the web portion 32 of the nipple flange. In use, when there is a reduced pressure inside the nursing unit, the flange 30 flexes inwardly away from the underside of the cap top 36 allowing air to pass therebetween and thence through vent passage or port 34 into the nursing unit, thereby countering the vacuum.

The screw cap has an annular bead 40 on its underside concentric with the ridge 35 on the nipple flange and disposed just inside the ridge so as to overlie the middle of the bottle lip between the rabbeted outer periphery of the lip and the overhanging inner portion thereof, thereby being in line with the wall of the bottle neck. The bead is about 0.020 inch in height.

From the outer periphery of the cap depends a skirt 42 having an internal buttress thread 44 engaging the thread 14 of the bottle neck. As the cap is screwed on, the ridge 35 on the nipple flange is pressed down and the rubber 46 at the lower side of the outer periphery of the nipple flange is caused to flow down into the rabbet 20 forming a collar around the bottle lip. At the same time the bead 40 under the cap is forced down into the body of the flange 30 maintaining its interengagement with the ridge 35. There is thus formed a double interlock of the nipple flange with the screw cap and bottle which holds the nipple flange securely in place on the bottle lip and forms a seal therebetween. Portions of the prior art have attempted to prevent accidental removal of the nipple through the screw cap, but have failed to realize that a cap protuberance alone, digging into the nipple flange, will be unable to successfully limit the relative position of the vent hole with respect to the protuberance or adjusting means.

The buttress threads on the cap skirt and bottle neck provide a direct axial downward pull on the cap as it is screwed on. This is a considerable advantage over

threads having sloping engaged flanks since such a slope would create a radial inward pressure on the neck of the bottle and a radial outward pressure on the cap skirt. There is thus avoided the possibility of splitting of the cap skirt which might otherwise occur when the cap is screwed down tight for displacing rubber to form a collar 46 or to reduce the size of the vent hole 34. There is also avoided the possibility, especially in the case of a plastic or other thin walled or resilient bottle, of distorting the neck inwardly so that the surface 18 of the lip is underneath the vent holes 34 blocking passage therethrough. The inturned lip of course provides considerable stiffening tending to prevent such an occurrence but since the vent hole is disposed immediately inside this lip any slight displacement of the bottle lip would have said blocking effect.

It will thus be seen that according to the invention there is provided improved means for securing the nipple to the bottle, for forming a seal between bottle and nipple, and for positioning the vent hole while varying its size with adjustment of the pressure of the screw cap. Initial downward movement of the cap is seen to cause rubber to flow into the rabbet. The collar thus formed engages the outer periphery of the bottle lip and, along with the cap bead which engages the nipple flange, fixedly positions the vent hole as well as secures the cap, nipple and bottle. With the flange thus accurately positioned the vent hole is adjacent the inner edge of the bottle lip whereby upon further tightening of the screw cap the effective diameter of the vent hole can be reduced. Although the invention is particularly applicable to use with plastic bottles and caps employing valve action vented nipples, many features of the invention are applicable to use with glass bottles, bakelite caps, and to other types of venting. Other materials than natural rubber, e.g., silicone rubber, can be used for the nipples.

Referring now to FIGURE 3, the nursing unit is shown as assembled for storage of food. The nipple is inverted, in which condition the ridge 35 fits in rabbet 20. Between the nipple and screw cap is disposed a seal disc having a thicker central portion 52 and a thinner annular peripheral portion 54. The disc is also provided with a circular upstanding flange 56 fitting inside the aperture in the top 36 of the screw cap and a finger grip diametral upstanding flange 58. The thin portion 54 of the seal disc overlies the top of the vent holes 34. Since portion 54 is as thick as the height of bead 40, the pressure of the screw cap bears directly on the portion 54 of the seal disc, causing it to seal over the vent holes 34 and pressing the nipple flange into sealing engagement with the bottle lip. At the same time the thick portion 52 of the seal disc pushes down on the barrel of the nipple, flexing the web 32 and sealing over the mouth of the barrel, thereby preventing any leakage through hole 25 in the tip of the nipple. Of course should a larger diameter seal disc be used, such as that shown in U.S. Patent No. 2,942,726, which has a diameter only slightly less than the inner diameter of the screw cap, then bead 40 would press directly down on the outer portion of the seal disc, still sealing the vent holes, sealing by engaging the nipple flange with the bottle lip, and flexing the nipple barrel. Since the rabbet 20 is not quite wide enough to receive the ridge 35, additional pressure is created between the corner of the bottle lip and the nipple flange at this point, enhancing the sealing effect. An additional beneficial effect of having ridge 35 at the extreme outer periphery of nipple flange 30 lies in the fact that on inverting the nipple for storage, the ridge, by entering rabbet 20, automatically centers the nipple on the bottle for ease of assembly.

Referring now to FIGURE 4, there is shown a modification which is the same as FIGURE 2 except that the ridge 135 at the top of the nipple flange is not quite as large in the volume and a partially preformed ridge 146 is provided on the underside of the nipple flange. The combined volumes of ridges 135 and 146 is slightly

greater than that of rabbet 20 so that as in the previously described embodiment the fully developed ridge 146 as created when the screw cap is applied, and rubber flows into rabbet 20, will be under pressure against the bottle and cap. The relaxed inner diameter of ridge 146 is larger than the inner diameter of rabbet 20 so that there is no problem of fitting them together during initial assembly of the parts.

As shown in FIGURE 5, when the nipple of the FIGURE 4 embodiment is inverted to put the unit in condition for sealed storage, the ridge 146 fits under the cap between bead 40 and cap skirt 42. If, as shown in dotted lines, the unstressed height of the ridge 146 is no higher than the thickness of the outer portion 54 of the seal disc, the ridge 146 will be received without distortion, except that because ridge 135 which is now on the bottom, must be distorted from its unstressed shape as shown in dotted lines to the shape shown in solid lines in order to fit rabbet 20, there will be a certain amount of upflow of rubber, swelling ridge 146 toward the top of the cap, as shown in solid lines. If ridge 146 is higher than the thickness of outer portion 54 of the seal disc, then ridge 146 will be placed under pressure and the rubber will flow down to enlarge ridge 135 therebelow, swelling it into rabbet 20, and further enhancing the seal. If, as previously mentioned, a larger diameter seal disc is utilized, bead 40 would press directly on the outer portion of the disc, immediately causing said disc to transmit this pressing force to ridge 146 and causing rubber in ridge 135 to flow into rabbet 20.

Comparing the embodiment of FIGURES 2A, 2B, and 2C with that of FIGURE 4, it may be said that the latter embodiment gives a slightly stronger interlock, whereas there is less difficulty in manufacturing the first described embodiment. In manufacturing these nipples an operator cuts off the flash from the molding process with a die. If the nipple does not have a flat bottom, difficulty will be experienced with the nipple shimmying around and the ridge on the bottom thereof deforming as an attempt is made to cut off the flash, resulting in a high frequency or production of rejects. A similar problem exists in connection with piercing the nipples to provide the vent holes; if the nipple is not flat on the bottom it will not rest steady on a table during the piercing and the hole may be mislocated. It is therefore a marked advantage to be able to use a nipple having a flat bottom, the bottom interlocking ridge being developed solely by fluid flow. However the modified form shown in FIGURE 4 may be used with machine finished nipples in which case the machine bed can be shaped to fit the nipple bottom.

It will be seen in the various embodiments, especially that of FIGURE 2A, that prior to screwing the cap onto bottle 10, the under surface of cap top 36 does not conform or correlate with the upper surface of nipple flange 30 and ridge 35 contained thereon, i.e., an air gap exists therebetween. On the cap being screwed on, and rubber caused to flow from the lower surface of flange 30, the lower surface of said flange tends to become correlative in contour with the bottle lip and rabbet 20 contained therein.

While a preferred embodiment of the invention has been shown and described, many modifications thereof can be made by one skilled in the art without departing from the spirit of the invention and it is intended to protect by Letters Patent all forms of the invention falling within the scope of the following claims.

We claim:

1. In a nursing unit, the combination of:

an elongated bottle, said bottle having an opening at one end thereof, a threaded portion on the outside of said end, a lip surrounding said opening, and a depression formed at the outer peripheral edge of said lip;

a nipple having a tubular barrel, a radial flange extending outwardly from said barrel, an annular upstanding

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ridge around the extreme outer periphery of said flange, said ridge overlying said depression of said bottle lip when said nipple is placed in a nursing position on said bottle, and vent holes in said flange disposed so as to be just inside and tangent to the inner periphery of said bottle lip when said bottle and nipple are in a nursing position; and

a cap having a top portion and a depending skirt portion, an opening in said top adapted to receive said barrel of said nipple, a threaded portion on the interior of said skirt designed to mate with said bottle threads allowing said cap to be screwed on said bottle, and means on the underside of said top of said cap for causing rubber from the underside of said nipple flange to flow into said bottle lip depression when said cap is screwed onto said bottle.

2. The combination of claim 1 wherein said lip depression of said bottle is a rabbet and said means causing rubber to flow is an annular bead on the underside of said cap.

3. The combination of claim 2 wherein said bead is concentric with said nipple ridge and has a slightly lesser diameter than said ridge, and wherein said ridge, on said nipple being inverted for storage purposes, enters into said rabbet.

4. In a nursing unit, the combination of:

a bottle, said bottle having an opening at one end thereof, a threaded portion on the exterior portion adjacent said end for receiving mated threads on a screw cap, a lip surrounding said opening and first combination means for receiving rubber flowing from the underside of a nipple flange when said nipple is in a nursing position and for receiving a portion of the upperside of said nipple flange when said nipple is inverted for storage purposes;

a nipple having a tubular barrel and an annular flange connected to said barrel at one end thereof, vent holes in said flange so disposed that when said nipple is placed on said bottle in a nursing position, said vent holes are adjacent said opening of said bottle, second combination means on said flange for forming an interlock with a portion of a screw cap when said nipple is in a nursing position and for forming an interlock with said first combination means of said bottle when said nipple is inverted to a storage position; and

a screw cap having a top portion and a depending skirt portion, said skirt portion being internally threaded to allow mating with said threaded portion of said bottle, said top portion having an opening designed to receive and pass said barrel of said nipple, and said top portion further having depending third combination means for (1) causing rubber to flow from the underside of said nipple flange into said first combination means of said bottle when said nipple is in a nursing position thereby preventing removal of said nipple from said bottle and nurser and fixing the location of said vent holes with respect to said opening and for (2) causing said second combination means on said nipple to interlock with said first combination means on said bottle when said nipple is inverted to a storage position.

5. The combination of claim 4, wherein said first combination means on said bottle is a rabbet in the extreme outer periphery of said lip and said third combination means on said cap is an annular bead on the underside of said top portion.

6. The combination of claim 5 wherein said second combination means on said nipple is an upstanding annular ridge around the extreme outer periphery of said nipple flange, said nipple flange being further provided with a depending annular ridge on the underside of its extreme outer periphery.

7. The combination of claim 4, wherein said first combination means on said bottle is a rabbet in the ex-

treme outer periphery of said lip, said second combination means on said nipple is an upstanding annular ridge around the extreme outer periphery of said nipple flange, and said third combination means on said cap is a depending annular bead concentric with said upstanding annular ridge.

8. In a nursing unit, the combination of:

- a bottle, said bottle having an opening at one end thereof, a threaded portion on the outside of said end, a lip surrounding said opening, and a depression formed at the outer peripheral edge of said lip;
- a nipple having a tubular barrel, a radial flange extending outwardly from said barrel, an annular upstanding ridge around the outer periphery of said flange, said ridge overlying said depression of said bottle lip when said nipple is placed in a nursing position on said bottle, and vent holes in said flange disposed as to be inside of and closely adjacent to the inner periphery of said bottle lip when said bottle and nipple are in a nursing position; and
- a cap having a top portion and a depending skirt portion, an opening in said top adapted to receive said barrel of said nipple, a threaded portion on the interior of said skirt adapted to mate with said bottle threads allowing said cap to be screwed on said bottle, and means on the underside of said top of said cap causing rubber from the underside of said nipple flange to flow into said bottle lip depression when said cap is screwed onto said bottle.

9. In a nursing unit, the combination of:

- a bottle, said bottle having an opening at one end thereof, a threaded portion on the outside of said end, a lip surrounding said opening, and a depression formed in said lip;
- a nipple having a tubular barrel, a radial flange extending outwardly from said barrel, an annular upstanding ridge around said flange and concentric with said barrel, said ridge overlying said depression of said bottle lip when said nipple is placed in a nursing position on said bottle; and
- a cap having a top portion and a depending skirt portion, an opening in said top portion adapted to receive said barrel of said nipple, a threaded portion on the interior of said skirt adapted to mate with said bottle threads allowing said cap to be screwed on said bottle, and means on the underside of said top of said cap causing rubber from the underside of said nipple flange to flow into said bottle lip depression when said cap is screwed onto said bottle.

10. The combination of claim 9 wherein said flow causing means includes an annular rib formed on the under surface of said top portion of said cap, said rib being so positioned as to contact a portion of said annular ridge of said nipple flange when said cap is screwed onto said bottle.

11. The combination of claim 9 wherein said depression in said bottle lip is an annular depression formed at the outer periphery of said lip.

12. In a nursing unit, the combination of:

- a bottle, said bottle having an opening at one end thereof, a threaded portion on the outside of said end, a lip surrounding said opening, and a depression formed at the outer peripheral edge of said lip;
- a nipple having a tubular barrel, a radial flange extending outwardly from said barrel, an annular upstanding ridge around said flange and concentric with said barrel, said ridge overlying said depression of said bottle lip when said nipple is placed in a nursing position on said bottle;
- a cap having a top portion and a depending skirt portion, an opening in said top portion adapted to receive said barrel of said nipple, a threaded portion on the interior of said skirt adapted to mate with said bottle threads allowing said cap to be screwed on said bottle; and

wherein in assembling said unit for nursing and prior to screwing said cap on to said bottle, the upper surface of said radial flange is non-correlative with the under surface of said top portion of said cap, and on said cap being screwed onto said bottle the under surface of said nipple flange is substantially correlative with said bottle lip and said depression formed therein.

13. In a nursing unit, the combination of:

- a bottle having an opening at one end thereof, a cap receiving portion on the outside of said end, a lip surrounding said opening, and annular receiving means formed in said lip concentric with said opening;
- a nipple having a substantially tubular body, a radial flange extending outwardly from said body, and a ridge on said flange so disposed as to overlie said annular receiving means when said nipple is in a nursing position on said bottle; and
- means for exerting a downward force on said ridge to cause rubber to flow from the bottom of said flange into said annular receiving means formed in said bottle lip, said force exerting means comprising a cap having a top portion, a central aperture in said top portion for receiving said nipple body, said cap including a skirt portion having interior means for securing said cap to said cap receiving portion on said bottle, and said cap top portion overlying said ridge on said nipple flange when said nipple is in a nursing position on said bottle.

14. The combination of claim 13 wherein said means for exerting a downward force further include a depending annular rib formed on the under surface of said cap top and said nipple flange includes valve means positioned intermediate said body and said ridge.

15. The combination of claim 13 wherein said annular receiving means of said bottle lip is a rabbet, said annular receiving portion on the outside of said bottle's one end includes a threaded portion and said skirt portion's said interior means includes a further threaded portion capable of mating with said bottle's threaded portion.

16. The combination of claim 13 wherein said nipple flange includes, disposed intermediate said ridge and said tubular body, an area of substantially greater flexibility than the area of said nipple adjacent thereto, and, on said cap being affixed to said bottle prior to being affixed in a tight fitting manner, an air gap is defined between the upper surface of said nipple flange and the under surface of said cap top.

17. A soft rubber nipple for use in a nursing unit which nursing unit is of the type including a bottle having an opening at one end forming a lip and a threaded portion on the exterior of the bottle for receiving the threaded skirt of a nipple retaining screw cap whose top is centrally apertured to receive the nipple barrel, said nipple comprising:

- a tubular barrel having an upper end and a lower end, the upper end of the barrel closing in at the top thereof, an overhanging annular shoulder around the middle of the barrel between the upper and lower ends thereof, a plurality of radially extending azimuthally spaced lugs beneath said shoulder for spacing the barrel shoulder from the top of a screw cap with which the nipple may be used,
- a plurality of vertically extending lugs on said barrel below said shoulder azimuthally spaced apart around the barrel for spacing the barrel from the periphery of a central aperture in a screw cap with which the nipple may be used,
- an annular flange around the barrel adjacent the lower end thereof extending radially outwardly therefrom, said flange including an annular web of reduced thickness adjacent said barrel,

said flange further including an outer thicker portion around the outer periphery of said web, said outer portion being thicker than said web,
 a vent passage extending through said outer thicker portion of the flange from the top to the bottom thereof, said vent passage dividing said outer thicker portion into an annular outermost rim portion adapted to rest on the lip of a bottle with which the rim is used and an annular interior valve portion adapted for engagement with the underside of the top of a screw cap with which the nipple is used, such engagement blocking fluid flow through between said vent passage and the passage formed between said nipple and such cap by said vertical and radial lugs, said web allowing said valve portion to move away from such engagement under differential pressure when there is a partial vacuum in the bottle,
 said rim having an annular inner part of the same thickness as said valve portion of the flange, both being thicker than said web, said inner part of the rim extending radially from the outer periphery of the valve portion of the flange a major portion of the distance to the outermost periphery of the flange,
 said rim having an annular outer part extending radially from said inner part of the rim the remaining minor portion of the distance to the outermost periphery of the rim,
 said nipple being characterized by an upstanding annular ridge at the top of said outer part of the rim, said ridge extending continuously around the outermost periphery of the rim, the thickness of said outer part of the rim including said annular ridge exceeding the thickness of said inner part of the rim, said upstanding ridge being colevel with a portion of said vertically extending lugs on said barrel, said ridge being adapted to engage the underside of a screw cap with which the nipple is used and to be displaced into the body of the nipple flange under pressure of the screw cap, thereby to extrude rubber out of the lower face of the outer part of the nipple flange to form a collar for positioning the nipple around the lip of a bottle with which it may be used.

18. Combination according to claim 17 including an annular depending ridge on the underside of the outer part of the rim of the nipple flange.

19. A soft nipple for use with a nursing bottle and screw cap, said nipple comprising:

a tubular barrel having an upper end and a lower

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end, the upper end of the barrel closing in at the top thereof, an annular flange around the barrel adjacent the lower end thereof extending radially outward therefrom, the outer annular portion of said flange extending from the outermost periphery thereof in toward said barrel providing a rim, the undersurface of said rim being flat and thereby adapted to rest on a plane surface during manufacture and the lip of a nursing bottle when in use, the inner annular portion of said flange extending from the outer periphery of the barrel out toward the outermost periphery of the rim providing annular support means for flexibility supporting the nipple barrel from the rim, said inner annular portion having an annular portion of a thickness less than that of the remainder of said flange, said rim having a broad annular inner part of the same thickness as the adjacent portion of said annular support means, said inner part of the rim extending radially from said adjacent portion of said annular support means a major portion of the distance to the outermost periphery of the flange, said rim having a narrow annular outer part extending radially from said inner part of the rim the remaining minor portion of the distance to the outermost periphery of the rim said nipple having an upstanding annular ridge at the top of said narrow outer part of the rim, said ridge extending continuously around the outermost periphery of the rim, the thickness of said narrow outer part of the rim including said annular ridge exceeding the thickness of said broad inner part of the rim and being thereby adapted for easy displacement into the body of the nipple flange to extrude rubber out of the lower face of said narrow outer part of the rim to form a collar on the undersurface of the nipple flange.

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GEORGE O. RALSTON, Primary Examiner.

JOSEPH R. LECLAIR, Examiner.

D. F. NORTON, Assistant Examiner.