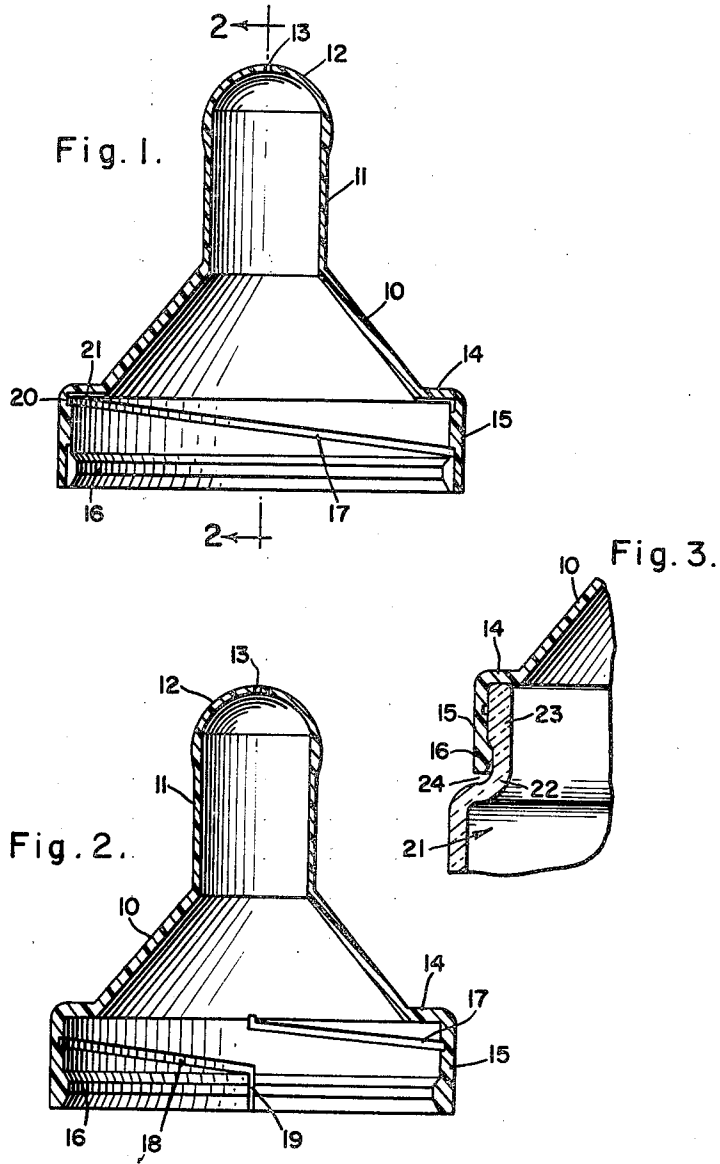


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DISPOSABLE PLASTIC NIPPLE

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DISPOSABLE PLASTIC NIPPLE

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1 Claim. (Cl. 128—252)

This invention relates to infant feeding nipples. More particularly it relates to disposable plastic nipples and especially to the means for venting the nipple during use.

In the preferred embodiment the nipple is made from plastic and comprises a body portion with a neck and feed tip projecting upwardly therefrom. The body portion has a horizontal outwardly extending flanged area at the downward end thereof for engaging the top of the rim of a fluid container. A cylindrical skirt vertically depends from the outer edge of the flanged area and has an annular bead adjacent the lower edge on the interior side thereof.

Venting of the nipple during use is accomplished by a pair of helical grooves defined on the interior side of the skirt and flanged areas. Each groove commences at the lower edge of the skirt, winds helically toward the upper edge thereof, and then communicates with the interior of the body portion inwardly across the flanged area. The grooves have a cross-sectional area and length adapted to permit ingress of air from the atmosphere to the interior of the body while preventing egress of fluid from the body portion when the nipple is cooperatively engaged with a fluid container.

In the accompanying drawings there is shown in:

FIG. 1 in side section a disposable plastic nipple provided by the present invention.

FIG. 2 shows the nipple of FIG. 1 in end section taken along the line 2—2 of FIG. 1.

FIG. 3 shows in side section the nipple of FIG. 1 in position for cooperation with a bottle for holding fluid for discharge through the nipple.

Nipples require some provision for venting to permit air to enter the container upon which the nipple is placed so that fluid held in the container may be easily withdrawn through the nipple without creating a vacuum in the container. In addition to allowing the ingress of air from the atmosphere to the interior of the nipple and container, the vent should not permit leakage or egress of fluid from within the bottle and nipple to the exterior thereof for obvious reasons. There are many types of nurser arrangements known to the art which include various means for accomplishing suitable venting. Most of these nurser arrangements heretofore employed rubber nipples.

The need and desirability of a disposable nipple which is economically made from a suitable plastic has grown in recent years. For example, it is common practice in many hospitals to provide formula for new-born babies. In such volume operations it is extremely desirable to have nipples and bottles which may be pre-sterilized and which may be discarded after a single use when the formula has been consumed. In sterilization, plastic has advantages in that it can be pre-sterilized with ethylene oxide, formaldehyde, or heat for instance, without deleterious effect. The cost factor of plastic permits disposal after a single use.

The present invention is directed to achieving an adequate seal with the neck and rim of the bottle and in providing a suitable venting system in a plastic nipple. Prior rubber devices have used a single helical ridge for forming a vent canal. Since the rubber is relatively highly flexible, when stretched onto a bottle the helical ridge flattened and formed a suitable size air passage between the helical turns. Plastic cannot be made as

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flexible as the rubber or it would collapse too readily during use.

The present invention provides means for venting a plastic nipple which overcomes the inherent problems and provides the desired control over the amount of venting. Thus, the present nipple employs two helical grooves on the interior surface of the portions of the nipple which are adjacent to the neck and rim of the bottle to be used with the nipple. The helical configuration provides the necessary length to the groove so that fluid will not be lost therethrough due to capillary forces. The use of grooves instead of a ridge provides the requisite control over the effective size of the groove when the nipple is applied to a bottle. A pair of grooves as opposed to a single channel permits the obtaining of the proper amount of venting without leakage. The horizontal flanged area provides the additional surface required to form a fluid-tight seal with the top of the rim of the bottle. Positive contact with the bottle by both the flanged area and depending skirt assure no loss of fluid during use.

More specifically with respect to the drawings, the present plastic nipple includes a body portion 10 having a generally frusto-conical configuration. A neck 11 and a feed tip 12 project upwardly from body portion 10. A fluid discharge orifice 13 is provided in feed tip 12. Orifice 13 may be of any suitable dimension or shape such as a single hole or a cross cut opening.

At the downward end of the body portion 10 there is a horizontal outwardly extending flanged area 14. A cylindrical skirt 15 vertically depends from the outer edge of flange 14. An annular bead 16 is provided adjacent the lower edge of the interior of skirt 15.

Venting is accomplished by means of a pair of grooves 17, 18 which helically wind from adjacent the bottom of skirt 15 to the top thereof and then inwardly across flanged area 14 and into fluid communication with the interior of body portion 10. As illustrated, the grooves are on the interior surface of skirt 15 and flanged area 14. In the preferred embodiment each groove 17, 18 helically winds 180° with respect to cylindrical skirt 15. By employing two helical grooves of such a length, and preferably when said grooves have a substantially semi-circular cross section with a radius of about .0075-.0225 inches the desired controlled venting without leakage is obtained in a plastic disposable nipple.

More specifically, the vent path provided by each groove 17, 18 is similar and proceeds from the interior lower edge of skirt 15 upwardly through bead 16 as shown at 19 in FIG. 2 with respect to groove 18, then helically toward the upper edge of skirt 15 for 180°, then upwardly to the junction of skirt 15 with flanged area 14 as shown at 20 in FIG. 1 with respect to groove 17, and then inwardly across flanged portion 14 to communicate with the interior of body portion 10 as shown at 21 in FIG. 1 with respect to groove 17. As illustrated in FIGS. 1 and 2, grooves 17, 18 are mirror images of each other and have their starting and ending points 180° apart on skirt 15 and flanged area 14 respectively.

FIG. 3 illustrates the manner of attaching the nipple of FIGS. 1 and 2 to a suitable container and illustrates the method of obtaining a positive leak-proof seal with the neck and rim of the container. The container shown generally at 21 includes neck 22 and a rim 23. The nipple of FIGS. 1 and 2 is applied to neck 22 and rim 23 by forcing bead 16 over rim 23. Skirt 15 and flanged area 14 engage rim 23 from two sides (flanged area 14 engages the top of rim 23 and skirt 15 engages the side of rim 23) to provide the desired seal. Grooves 17, 18 communicate with the exterior atmosphere through space 24.

The nipple may be made from any suitable plastic such

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as polyethylene and the like. In the preferred embodiment, the nipple is made from a polyvinyl resin having a durometer reading made with Shore "A" scale of 85-90. This latter material provides highly acceptable flexibility and functionality.

Although the foregoing invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it is understood that certain changes and modifications may be practiced within the spirit of the invention as limited only by the scope of the appended claim.

What is claimed is:

A disposable plastic nipple comprising a body portion, a neck and feed tip projecting upwardly therefrom, said body portion having a horizontal outwardly extending flanged area at the downward end thereof adapted for sealing engagement with the top of a bottle rim, a cylindrical skirt vertically depending from the outer edge of said flanged area adapted for sealing engagement with the side of a bottle rim, an annular bead adjacent the lower edge of the interior of said skirt, and a pair of helical grooves defined on the interior side of said skirt and flanged area for venting of said nipple during use, each of said grooves commencing at the lower edge of said skirt and winding helically in opposite directions 180° with respect to said cylindrical skirt towards the upper edge thereof, and then communicating with the interior of said body portion inwardly across said flanged area, said grooves having cross sectional area and length adapted to permit ingress of air from that atmosphere to the interior of said body portion while preventing egress of fluid from said body portion when the nipple is cooperatively engaged with a fluid container.

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