June 2, 1959 C. S. BRAY 2,889,063

NIPPLE

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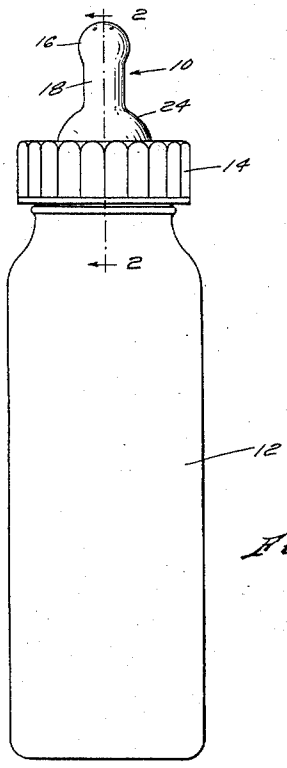


Fig. 1

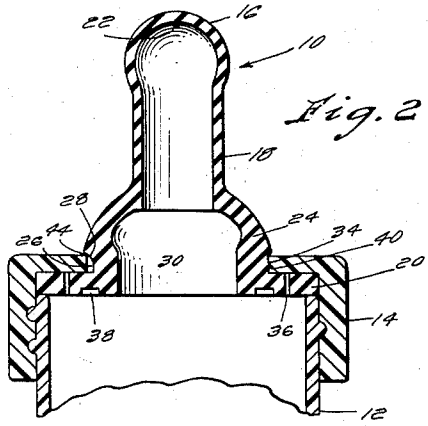


Fig. 2

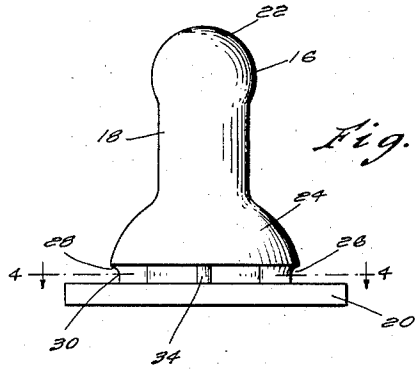


Fig. 3

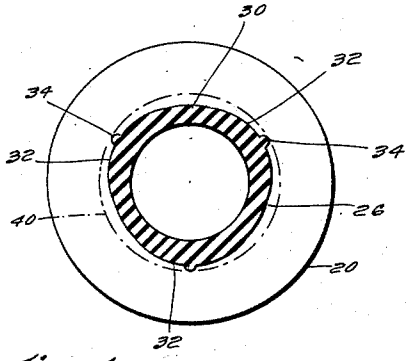


Fig. 4

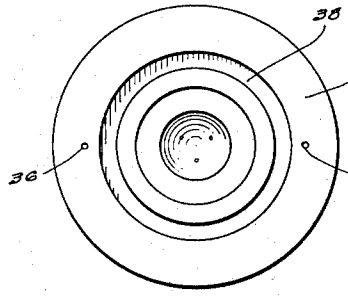


Fig. 5

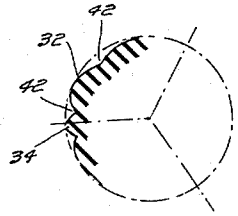


Fig. 6

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Application February 15, 1956, Serial No. 565,695

5 Claims. (Cl. 215—11)

This invention pertains generally to nipple constructions and more particularly to a nipple of the type generally used in connection with infants' nursing bottles.

A primary object of the instant invention is the provision of a nipple having venting means which will be effective at all times to prevent collapsing of the nipple during use due to pressure reduction within the bottle.

Another object is the provision of a nipple having means for insuring continuous venting even when the nipple is in a swollen state due to water and butter fat absorption.

Another object is the provision of a nipple for use in combination with a retainer cap, said nipple and said cap having cooperating means for insuring proper positioning of the nipple, as well as proper venting of the same.

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 by me for carrying out my invention:

Fig. 1 is an elevation of an assembled nursing bottle, feeding nipple, and retainer cap, the nipple being constructed in accordance with the instant invention;

Fig. 2 is a section, on an enlarged scale, taken on line 2—2 of Fig. 1;

Fig. 3 is an elevation, on an enlarged scale, of the nipple per se;

Fig. 4 is a section, on an enlarged scale, taken on line 4—4 of Fig. 3;

Fig. 5 is a bottom view, on an enlarged scale, of the nipple per se; and

Fig. 6 is a fragmentary section, also on an enlarged scale, taken on line 4—4 of Fig. 3 and showing the outer contour of the nipple when under expansion.

The instant invention relates to feeding nipples of the type that are held in position by a retainer cap which threadedly engages the neck of a nursing bottle. In practice, it has been found that when nipples of this type are tightly engaged by the threaded retainer cap, the necessary venting of air into the bottle does not always take place. Since it is essential that air be properly introduced into the bottle to counteract the natural suction which takes place during use, and accordingly, to prevent collapsing of the nipple, it has been found desirable to provide a nipple which is so constructed as to always enable proper venting to take place no matter how tightly the retainer cap is mounted and no matter what position the bottle may be in.

Referring to the drawings, the novel nipple **10** is shown mounted on a nursing bottle **12** by means of a threaded retainer cap **14**. As will be seen most clearly in Fig. 2, the nipple **10** is hollow and has a feeding tip **16**, a substantially cylindrical body portion **18** and a radially extending base flange **20**. The feeding tip **16** is provided with conventional feeding passages **22** therein.

The body portion **18** comprises an outwardly flaring lower section **24** which is of relatively thick cross section for reasons hereinafter to be made apparent. At the

junction of portion **24** and base flange **20**, there is provided an external annular recess **26**, which recess is defined by an upper wall **28**, an inner wall **30** and a bottom wall which forms a continuation of the top surface of base flange **20**. As will be seen most clearly from Fig. 4, the inner wall **30** of the recess **26** is substantially circular in configuration but is provided with a plurality of circumferentially spaced, radially protruding portions **32**. As will be apparent, the portions **32** are arcuate in form and merge with wall **30** whereby to gradually increase and decrease the depth of the recess **26**. At the center of each of the protruding portions **32** there is formed a vertically extending bead **34**. As will be seen most clearly in Fig. 3, the top wall **28** of recess **26** slopes downwardly and merges with inner wall **30**.

The base flange **20** is provided with apertures **36** extending therethrough and further is provided with a circular groove **38** in the under surface thereof. As will be noted from Figs. 2 and 5, groove **38** is located radially inward of the apertures **36**.

In operation and use, the nipple **10** is forced through the central opening **40** in retainer cap **14** in the manner shown in Fig. 2. The edge of retainer cap **14** which surrounds the opening **40** fits within nipple recess **26** but is maintained properly centered and in spaced relation with respect to the inner wall thereof by virtue of engagement with the circumferentially spaced, protruding portions **32** and the beads **34**. The maintenance of this spaced relation is essential in order to enable air to pass through opening **40** and then through apertures **36** to the interior of the bottle. It has been found that the presence of vertically extending beads such as the elements **34** is in itself not sufficient to always maintain the desired spaced relation due to the fact that the nipple has a tendency to swell upon absorption of water and butter fat. By providing the radially protruding portions **32**, however, it has been found that the nipple upon swelling will assume a form substantially as shown in Fig. 6, the irregular expansion of the portions **32** functioning to insure the continued presence of air spaces such as shown at **42**. Thus under any conditions of nipple expansion, there is always a passage between the nipple and its surrounding retaining cap through which air may penetrate for entry to the bottle.

The sloping upper wall **28** of recess **26** functions as a baffle to properly direct the air downwardly in the direction of the bottle interior. Also, as will be seen most clearly in Fig. 2, this sloping surface provides, in effect, a point contact with upper edge **44** of the retaining cap **14** whereby to facilitate the passage of air by this point.

The thickened portion **24** of my nipple construction provides a firm base whereby better flexing action of the feeding tip may be obtained. By the same token, the circular groove **38** located in the lower surface of base flange **20** provides said base flange with sufficient flexibility so that no matter how tightly retaining cap **14** is screwed into place, said base flange will flex sufficiently with respect to said retaining cap to enable air to pass therebetween for passage through the apertures **36**. It will be understood that while apertures **36** are of sufficient size to permit entry of air, they are not large enough to permit liquid to pass outwardly therethrough. Thus it will be seen that while my novel nipple is so designed as to insure proper venting at all times, it also will not be susceptible to leaking when the bottle is tilted for use.

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.

I claim:

1. A feeding nipple comprising a hollow body portion of substantially cylindrical configuration having a feeding tip at the upper end thereof and a base flange extending outwardly from the lower end thereof, said body portion having an external annular recess juxtaposed to said base flange, said recess being defined by an upper wall, an inner vertical wall and a bottom wall which forms a continuation of said base flange, said inner wall being substantially circular but having a plurality of circumferentially spaced, radially protruding portions whereby to provide a recess of varying depth, said portions having a gently curved, arcuate configuration whereby the depth of said recess gradually varies.

2. A feeding nipple comprising a hollow body portion of substantially cylindrical configuration having a feeding tip at the upper end thereof and a base flange extending outwardly from the lower end thereof, said body portion having an external annular recess juxtaposed to said base flange, said recess being defined by an upper wall, an inner vertical wall and a bottom wall which forms a continuation of said base flange, said upper recess wall having a downwardly sloping portion merging with said inner recess wall and said inner wall having a plurality of circumferentially spaced, radially protruding portions whereby to provide a recess of varying depth, said portions having a gently curved, arcuate configuration whereby the depth of said recess gradually varies.

3. A feeding nipple comprising a hollow body portion of substantially cylindrical configuration having a feeding tip at the upper end thereof and a base flange extending outwardly from the lower end thereof, said body portion having an external annular recess juxtaposed to said base flange, said recess being defined by an upper wall, an inner vertical wall and a bottom wall which forms a continuation of said base flange, said inner wall being substantially circular but having a plurality of circumferentially spaced, radially protruding portions whereby to provide a recess of varying depth and said radially protruding portions each having thereon a vertically extending bead.

4. A feeding nipple comprising a hollow body portion of substantially cylindrical configuration having a feeding tip at the upper end thereof and a base flange extending outwardly from the lower end thereof, said body portion having an external annular recess juxtaposed to said base flange, said recess being defined by an upper horizontal wall, an inner vertical wall and a bottom wall which forms a continuation of said base flange, said upper recess wall having a downwardly sloping portion merging with said inner recess wall and said inner wall having a plurality of circumferentially spaced, radially protruding portions whereby to provide a recess of varying depth, said radially protruding portions each having thereon a vertically extending bead.

5. In combination, a nursing bottle, a feeding nipple comprising a body portion terminating in a feeding tip having a feeding passage therethrough, a base flange having a circular rim and extending laterally from the lower edge of the body portion, and an annular recess in said body portion adjacent said base flange, said recess being of gradually increasing and decreasing depth, the combination further comprising a retainer cap adapted to be secured to the bottle with the nipple base flange mounted on the bottle rim, said cap having a central opening through which the nipple body portion extends, the cap edge surrounding said opening being received within said annular recess in spaced relation to the recess inner wall, at least at portions thereof, due to said varying recess depth, said recess being provided on its inner wall with circumferentially spaced, vertically extending beads located at the narrow portions of said recess.

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