March 6, 1956 E. V. PERREAULT 2,737,180

NURSING NIPPLE

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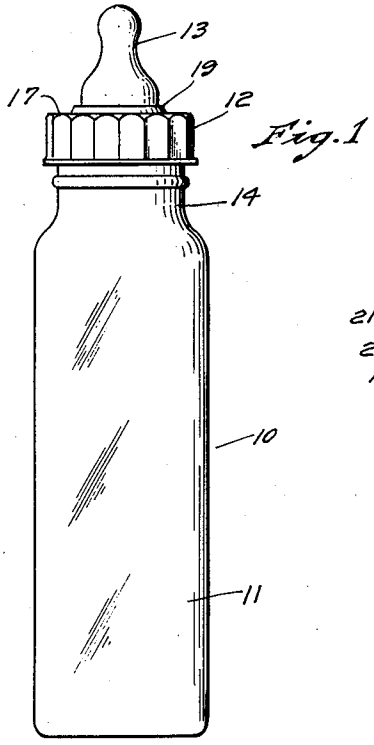


Fig. 1

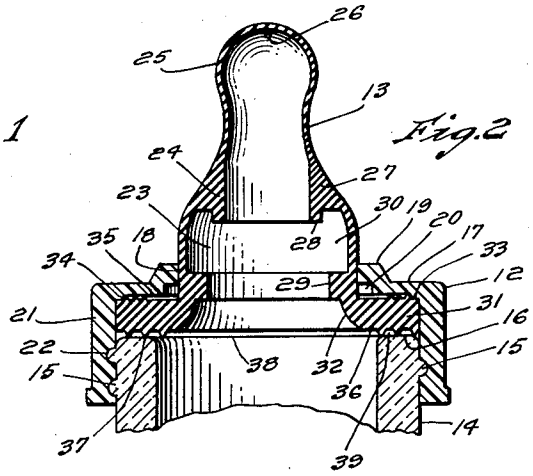


Fig. 2

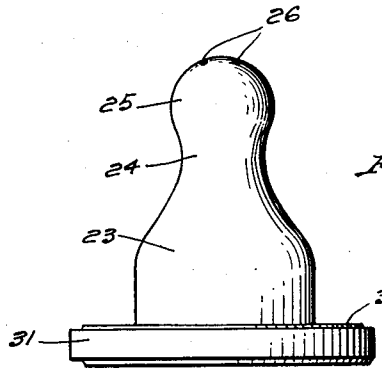


Fig. 3

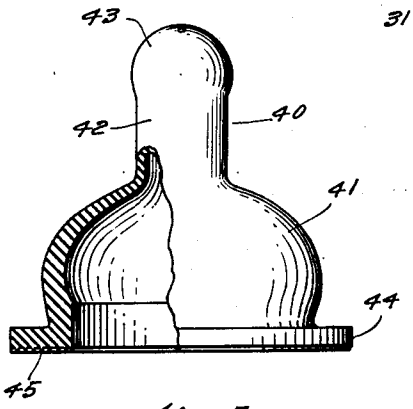


Fig. 5

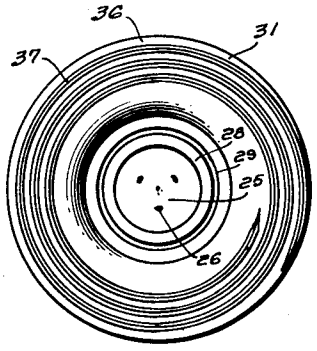


Fig. 4

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NURSING NIPPLE

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10 Claims. (Cl. 128—252)

The present invention relates to nurser combinations for feeding infants, and has particular reference to a novel construction for a feeding nipple.

The principal object of the invention is to provide a feeding nipple for medium and large mouth nurser bottles, which has a continuously open air vent passage of special form for permitting entry of air into the nurser combination while preventing leakage of fluid therefrom.

Another object of the invention is to provide a capillary flow duct of greatly extended size for feeding nipples having lateral mounting flanges adapted to seat on the rims of medium and large mouth nurser bottles.

A further object of the invention is to provide a capillary spiral flow duct passage on the lower surface of the feeding nipple mounting flange, whereby a tortuous capillary air vent passage is provided between the nipple flange and the upper surface of the nurser bottle rim when the nipple is mounted on the nurser bottle.

With the above and other objects and advantageous features in view, the invention consists of a novel arrangement of parts more fully disclosed in the detailed description following, in conjunction with the accompanying drawings, and more specifically defined in the claims appended thereto.

In the drawings,

Fig. 1 is a view of a medium mouth nurser combination, comprising a feeding nipple embodying the invention;

Fig. 2 is an enlarged vertical section through the upper portion of Fig. 1;

Fig. 3 is an elevation of the feeding nipple of Fig. 1;

Fig. 4 is a bottom plan view of Fig. 3; and

Fig. 5 is an elevation, partly in section of a wide mouth feeding nipple embodying the invention.

It has been found desirable to provide an air vent in a nurser combination having a nipple of the base flange type, to permit inflow of air when collapsing suction results from the infant's feeding. Since the nipple base flange is mounted on the narrow upper surface of the bottle rim and is pressed down by a retainer cap so as to provide a firm seal, it has heretofore been proposed to provide an air vent passage across the bottle rim or through the nipple flange; but such passages are of short length and have been difficult to control so as to permit the desired inflow of air while preventing outflow of liquid. I heave therefore devisd a tortuous flow passage of greatly extended length by forming a spiral rib on the lower surface of the nipple flange with closely adjacent convolutions, whereby a narrow spiral capillary groove is provided between the rib convolutions. The spacing of the convolutions is preferably set to position at least two ribs on the narrow bottle rim in the assembled nurser combination; a capillary air flow trough is thus provided, which may be adjusted as to height and flow area by tightening or loosening the retainer cap to correspond to the rate of infant feed and the density of the feed formula. I have found that the provision of a regulatable flow trough of capillary size as described permits a regulated

inflow of air into the nurser combination, but prevents outflow of liquid due to the small size and length of the flow trough.

Referring to the drawings, the nurser combination **10** includes a nurser bottle **11**, a retainer cap **12**, and a feeding nipple **13**. The bottle **11** has a neck **14** with exterior threads **15** and an annular rim **16**, and is made of suitable material such as glass or plastic, the illustrated bottle being of the medium neck type. The retainer cap **12** is of standard type, with an upper annular base **17** having a central opening **18** of a width to freely extend around the nipple body, the base **17** having an upper annular flange **19** and a lower annular recess **20** around the opening **18**, and having a depending cylindrical skirt **21** which is internally threaded as indicated at **22** to engage the outer bottle neck threads **15**.

The nipple **13**, see Fig. 2, has a hollow generally cylindrical body portion **23**, a reduced neck **24** and a slightly enlarged tip **25** provided with one or more flow passages **26**, the inner surface at the neck being cylindrical and depending downwardly and the outer surface between the neck and the body portion tapering to provide a thickened annular bead **27** of generally triangular cross-section with a depending inner flange **28**. The lower inner surface of the body portion has an inwardly extending annular bead **29** which forms a recess **30** with the lower surface of the bead **27** and the flange **28**, and the lower outer surface of the body portion has an annular outwardly extending flange **31** which is inwardly upwardly inclined to provide a conical inlet **32**.

The triangular annular bead **27** imparts a tensioning arrangement which increases the pressure as the infant's lips press inwardly, thus providing a gum massaging effect. The recess **30** and the conical inlet **32** adapt the feeding nipple for use with a narrow neck nurser bottle, as the narrow neck bottle rim is readily seated in the recess **30** with the inner flange **28** sealing the inner rim edge.

As illustrated in Fig. 2, the upper surface **33** of the annular flange **31** is preferably provided with a fine spiral bead **34** adjacent its periphery which is adapted to be engaged by the lower surface **35** of the retainer cap base, and the lower surface **36** of the annular flange **31** has a relatively coarse spiral bead **37** of substantially triangular cross section which is adapted to be engaged by the upper surface **38** of the bottle neck rim **16**. Air is normally admitted between the cap threads **22** and the bottle neck threads **15**; the spacing of the cap base from the nipple body and the provision of the spiral upper bead **34** ensure a free flow of air around the nipple flange **31**, as shown in Fig. 2, and through the capillary trough **39** formed by the spaced convolutions of the spiral bead **37** and the upper surface of the bottle neck rim.

The feeding nipple is preferably molded of resilient material or synthetic rubber such as silicon rubber, but may be made of plastic materials of the same resilient properties, such as for example, polyvinyl choloride.

The resiliency of the feeding nipple material permits control of the air inflow, as threading the cap down flattens the trough **39** to control the trough area. The very long capillary trough length ensures against return flow of fluid, as there is no flow pressure for the fluid, whereas feeding suction quickly draws air in.

The above described control for vent air may be applied to larger size nipples such as shown at **40** in Fig. 5, for use with wide mouth nurser bottles. In this type of nipple the body portion **41** is dome-like, with uniform thickness, the upstanding neck **42** being of less thickness and the tip **43** of increased thickness. An outwardly extending lower flange **44** is provided with a spiral rib **45** having narrowly spaced convolutions.

Although I have disclosed specific constructional em-

bodiments of my invention, it is obvious that changes in the size and arrangement of the parts to meet different feeding nipple requirements may be made, without departing from the spirit or the scope of the invention as defined in the claims appended hereto.

I claim:

1. A feeding nipple of flexible material, having a hollow body portion, a neck, and a feeding tip, said body portion having an annular outwardly projecting flange at the lower portion thereof, and a spiral rib on the lower surface of said flange having closely adjacent convolutions.

2. In the combination of claim 1, said spiral rib having a substantially triangular cross section.

3. In the combination of claim 2, the upper surface of said flange having a spiral rib with closely adjacent convolutions.

4. In the combination of claim 3, said lower surface spiral rib being coarser than the upper surface spiral rib.

5. A feeding nipple of flexible material, having a hollow body portion, a neck, said body portion and neck having an intermediate annular portion of generally triangular cross section, and a feeding tip, said body portion having an annular outwardly projecting flange at the lower portion thereof, and a spiral rib on the lower

surface of said flange having closely adjacent convolutions.

6. In the combination of claim 5, said spiral rib having a substantially triangular cross section.

7. In the combination of claim 5, the upper surface of said flange having a spiral rib with closely adjacent convolutions.

8. In the combination of claim 5, said lower surface spiral rib being coarser than the upper surface spiral rib.

9. In the combination of claim 5, said body portion having an annular internal recess adapted to receive the bottle rim of a small mouth nursing bottle.

10. A feeding nipple of flexible material, having a hollow body portion, a neck, and a feeding tip, said body portion having an annular outwardly projecting flange at the lower portion thereof, the lower surface of said flange having a capillary air vent flow passage of tortuous character extending from the outer edge to the inner edge of the flange.

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