

⑫ **EUROPEAN PATENT SPECIFICATION**

- ⑬ Date of publication of patent specification: **18.10.89** ⑭ Int. Cl.⁴: **A 61 J 9/00, A 61 J 11/02**
⑮ Application number: **84307165.5**
⑯ Date of filing: **18.10.84**

⑰ **Improvements in baby feed bottles.**

- | | |
|--|--|
| ⑱ Priority: 01.02.84 GB 8402664 | ⑲ Proprietor: AVENT MEDICAL LIMITED
Prince's Building 22nd Floor
Hong Kong (HK) |
| ⑳ Date of publication of application:
21.08.85 Bulletin 85/34 | ㉑ Inventor: Atkin, Edward
4 Redington Road
London, NW3 (GB)
Inventor: Williams, Roger Leonard
5 Tudor Rise
Broxbourne Hertfordshire EN10 7HB (GB) |
| ㉒ Publication of the grant of the patent:
18.10.89 Bulletin 89/42 | ㉓ Representative: Woodward, John Calvin et al
VENNER SHIPLEY & CO. 368 City Road
London EC1V 2QA (GB) |
| ㉔ Designated Contracting States:
AT BE CH DE FR GB IT LI LU NL SE | |
| ㉕ References cited:
DE-A-2 539 556
DE-C- 860 843
FR-A- 795 062
GB-A-1 030 036
GB-A-1 312 408
GB-A-2 029 379
US-A-1 998 646
US-A-3 722 728
US-A-3 746 198 | |

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European patent convention).

Courier Press, Leamington Spa, England.

EP 0 151 862 B1

Description

This invention relates to a baby feed bottle and also to a baby feed bottle combination which comprises bottle, teat and teat fitting cap and may also include other components such as a dormal cap.

A present day baby feed bottle typically comprises a cylindrical necked bottle, a flanged teat, and an annular cap which screw fits to the bottle neck to attach the teat by pressing the teat flange against the rim of the bottle neck.

A typical bottle is relatively tall, having a capacity of the order of about 20 ml per cm height. This typical bottle therefore, having a neck portion above the bottle full mark of about 3 cm height will, in the case of a 250 ml full capacity bottle, stand about 15 cm high. Being of a diameter of the order of 5 cm, it thus tends to stand in a critically stable manner, and even a small disturbance is likely to knock or tip it over. This can lead to leakage of baby feed through the teat, and may create the need for re-sterilisation.

Additionally, although the neck diameter has been made as great as two thirds of the bottle main portion diameter, the neck is not large enough readily to enable insertion of food ingredients and thereby enable mixing in the bottle. Mixing, therefore, commonly has to be effected in another vessel, which also has first to be sterilised. Moreover, the relative narrow neck can make it difficult to clean the bottle after use.

Another problem which can arise with the known bottle is that of teat collapse, especially in the case of the commonly preferred soft teat. This is due to the difficulty of letting air gain access into the bottle interior as the feed is sucked out through the teat. It is known to provide a radial groove or hole in the flange of the teat but air first has to traverse the cooperating screw-threads between the annular cap and the bottle neck, and then may find the said radial groove at least partly closed or blocked, possibly because the cap has been screwed down too hard.

Yet again, shaking of the mixture in the bottle is only readily enabled by the provision and fitting of a separate cap in place of the annular cap and teat, or at least a closure disc in place of the teat, since if the bottle with a fitted teat is shaken, feed is liable to be shaken out through the teat perforations or the teat valve system. Shaking of the mixture in the bottle can also lead to blockage of the radial groove in the teat flange, which must be kept clear to avoid the problem of teat collapse.

US Patent No. 1998646 discloses a baby feed bottle with a flanged teat and an annular cap screw fitting to the necked bottle to attach the teat in position by pressing the flange of the teat against the rim of the bottle neck. The teat has a dependent annular lip extending downwardly therefrom which contacts the interior wall of the neck of the bottle to make a seal therewith but which is sufficiently resilient to deform inwardly away from the said interior wall and open in response to a pressure reduction in the bottle

when baby feed is sucked through the teat. One of the problems with a bottle and teat arrangement of this type is that it requires the teat to be an exact fit in the neck of the bottle which is extremely difficult due to manufacturing tolerances. Furthermore, even if the teat can be made to fit exactly in the neck of the bottle, it tends to increase in size with repeated use due to it becoming impregnated with milk and this then makes reinsertion of the teat in the bottle neck difficult as the downwardly extending lip will be larger than the bottle neck and therefore difficult to fit into the neck.

The present invention overcomes this problem by arranging for the lip to fit with a small clearance inside the bottle neck in the absence of screw cap, the arrangement being such that when the cap is screwed down, it acts on the teat to deform the annular flange thereof so that the said lip is turned outwardly to engage the interior surface of the bottle neck to provide a normally closed flap valve.

Because the lip which acts as the flap valve fits with a small clearance in the neck of the bottle and does not make its seal with the neck wall until the cap is screwed down, the problems of manufacturing tolerances and the teat growing are avoided.

Conveniently, the cap has an annular end face which at its internal peripheral rim seats in an external annular groove in the teat to locate and hold said teat relative to the cap. Preferably, the external annular groove in the teat is located radially inwardly of the lip.

In the preferred embodiment, the annular flange of the teat is deformed by the turning moment created, when the cap is screwed down, by the downward force acting on the teat at said internal peripheral rim and the upward reaction force acting on the teat at the rim of the bottle neck.

In order to assist passage of air past the flap valve into the bottle interior, the teat flange may be provided with at least one groove located to bridge the rim of the bottle neck when seated thereon. Preferably, there are two of said grooves located diametrically opposite each other and the bottle neck and the cap cooperate through interrupted screwthreads in order to facilitate access of air to the or each of said recesses in the teat flange.

In a preferred embodiment, the bottle has a main bottle portion surmounted by a neck portion at which the teat is attachable, the main portion having a capacity in the range 25 to 40 ml per cm height and the neck portion having a mean cross sectional area not less than 0.45 of the cross sectional area of the main portion. Preferably, the main portion is substantially tubular and the neck portion is cylindrical having a mean diameter not less than 0.65 of the main portion diameter.

The term diameter as used herein may be considered to refer in particular to the external diameter of the bottle portion in question; however, it will be understood that the thickness of

the bottle material is relatively small and therefore that the stated limits can be considered equally applicable to the internal diameters.

The term "mean diameter" is used in relation to the main bottle portion because this portion may slightly depart from a true cylindrical shape; for example in a practical embodiment this bottle portion is marginally waisted to assist holding by the hand.

The preferred bottle has a capacity in the range 30 to 35 ml per cm height, the neck having a mean diameter of not less than 0.725 of the main portion diameter. The preferred dimensions are a mean diameter of not less than 6 cm for the main cylindrical portion and a neck portion diameter of not less than 4.25 cm. It will thus be appreciated that a bottle having these dimensions for a corresponding total capacity, is shorter and squatter than known bottles. It therefore sits more stably when stood on its base, and is less liable to being tipped over. In addition, the wider neck facilitates the insertion of food ingredients, as by means of a scoop, and is more readily cleaned internally after use. Furthermore, a larger diameter neck enables the use of a larger teat, enabling use of the bottle by the baby more closely resembling natural feeding.

The use of a larger teat, however, more especially one moulded in a thin section of silicone rubber (SR) can lead to problems with the teat collapsing unless satisfactory means can be provided for maintaining normal pressure within the bottle when feed is sucked out through the teat.

As already mentioned, US Patent No. 1998646 provides a teat having a mouthpiece with a perforated end surface, a portion widening towards the other open end of the teat which fits to a feed bottle, an external flange at said open end and a lip depending downwardly from the flange inwardly of the outer groove. With this arrangement, when the teat is fitted to a bottle neck by means of a screw cap the flange is axially clamped downwardly onto the bottle neck.

The present invention, however, is characterised by the provision of an external groove in the wall of the teat located at a small axial spacing from the annular flange towards the mouthpiece and radially inwardly of the lip. Because of this arrangement, a turning moment is applied to the teat flange to cause it to deform when a cap is screwed onto a bottle neck due to the downward force acting on the teat where the internal peripheral rim of the cap engages the external groove in the teat and the upward reaction force acting on the teat at the rim of the bottle neck.

Preferably, the external groove is annular and positioned between two external ribs on the wall of the teat, one of the ribs adjoining the annular flange. In a preferred teat, the depending lip has a radially extending outer wall surface which at its end portion is angled radially outwardly relative to the portion of said wall surface adjoining the annular flange, the annular flange carrying an axially shorter depending lip or bead at its outer periphery.

Preferably, the undersurface of the external annular flange is formed with at least one recess adapted to permit the passage of air from the exterior to the interior of a baby feed bottle when fitted to the rim of the neck of said bottle. Conveniently, there are two of said recesses provided in the annular flange located diametrically opposite each other.

The invention will now be described by way of example with reference to a practical embodiment of baby feed bottle combination, also making reference to the accompanying drawings, in which:—

Figure 1 is an elevational view of a baby feed bottle;

Figure 2 is a plan view thereof;

Figure 3 is an elevational view of a teat;

Figure 4A is an axial cross section through the teat;

Figure 4B is a plan view from below of the teat of Figure 4A;

Figure 5 is an elevational view of an annular teat fitting cap;

Figure 6 is an axial cross section through the cap;

Figures 7A and 7B are diagrammatic views for explaining the flap valve action of the bottle, teat and annular cap combination;

Figures 8A, 8B and 8C diagrammatically illustrate possible profiles for a groove in the rim of the bottle neck;

Figure 9 is an axial cross section through a normal cap;

Figure 10 is a side elevational view of a cup trainer; and

Figure 11 is a plan view of a trainer spout.

The baby feed bottle shown in Figures 1 and 2 has a main portion 10 and a neck portion 12. Both portions are generally cylindrical, but the main portion is marginally waisted, as indicated at 14, to facilitate hand holding.

The neck has an interrupted screwthread 16 for receiving an annular teat fitting cap.

The bottle is made of clear polycarbonate and provided with graduated markings indicating capacity, for example up to a full capacity just at the top of the main portion 10 where it starts to merge into the neck portion 12 of reduced diameter.

The illustrated bottle, having a full capacity of 250 ml, is of a short, squat shape compared to a conventional feed bottle. Thus, the illustrated bottle has a main portion mean diameter of about 6.75 cm (7 cm maximum top and bottom to 6.5 cm at the centre of the waist) and main portion height up to the full capacity mark of about 8 cm. The neck portion diameter is about 5 cm. The total bottle height is about 12 cm.

More particularly, in accordance with the invention, the capacity per cm height lies between 25 to 40 ml per cm, in fact about 31 ml per cm, and a neck portion diameter of about 0.75 times the main portion mean diameter.

The base 18 of the bottle is slightly domed, convexly upwardly, whilst the rim 20 of the bottle

neck is chamfered, as indicated at 23.

Figures 3 and 4 show the configuration of the moulded teat for use with the bottle of Figures 1 and 2, whilst Figures 5 and 6 show an annular cap of polypropylene employed for fitting the teat to the bottle.

The teat has a nearly flat or very shallowly curved surface 24 at the end of the mouthpiece 26; the teat perforations are formed in this end surface. Below the mouthpiece the teat widens out to a pair of spaced external ribs 28 which define an annular groove 30 between them, immediately above an annular flange 32. The flange 32 has an inner depending annular lip 34, and an outer axially shorter, shaped depending bead or lip 35. The reference 31 denotes inclined inwardly directed stiffening ribs formed in the side wall of the mouthpiece of the teat.

The flange is dimensioned to seat on the rim 20 of the bottle neck, with the inner lip 34 extending into the interior of the bottle neck with small clearances from the interior surface of the latter. The bead 35 fits around the bottle neck on the chamfered rim 23 and the two diametrically opposed recesses or grooves 33 formed in the undersurface of the flange 32 bridge the top of the rim 23 to allow air to pass from the exterior to the interior of the bottle (see Figures 4A and 4B).

In practice, however, the teat is attached to the annular cap of Figures 5 and 6 before being fitted to the bottle.

The annular cap has an internal interrupted screwthread 36 for screwing to the externally threaded bottle neck, and externally the cap is shouldered at 38, being provided with an enlargement 40 on the wider diameter portion below the shoulder. The enlargement 40 facilitates the screwing and unscrewing of the cap.

The cap, in addition to its internally threaded cylindrical wall, has an annular end wall 42 of which the interior peripheral rim 44 is dimensioned to fit into the external annular groove 30 on the teat. The teat and annular cap can thus be press fitted together, so that the cap then locates the teat and the two can be fitted as a sub-assembly to the bottle.

Figures 7A and 7B are now referred to for facilitating understanding of the manner in which the bottle, teat and annular cap cooperate with one another when the cap and teat sub-assembly is screwed into position. In these two figures, the bottle neck is generally referenced 46, the teat 48 and annular cap 50. The previously described features of these three components are referenced in accordance with the preceding description.

Figure 7A shows the annular cap 50 (which carries the teat 48) screwed loosely on to the bottle neck. The teat flange 32 and inner depending lip 34 are undistorted, with the lip 34 spaced with small radial clearance within the neck of the bottle.

Figure 7B shows the effect of tightening the cap/teat subassembly by screwing the cap further on to the bottle neck. The annular flange 32 is

deformed downwardly at its inner end region 52 due to the downward pressure exerted on the teat by the inner peripheral rim 44 of the annular end wall 42 of the cap 50, where this rim is engaged into the external annular groove 30 on the teat. In consequence, the inner depending lip 34 is turned radially outwardly to engage and seal with the interior wall of the bottle neck, as indicated at 54. An axial advance of the cap 50 by about 2 mm is sufficient to deform the teat from the Figure 7A condition to the Figure 7B condition.

The manner in which the depending lip 34 acts as a flap valve, in use of the bottle by a baby, can also be visualised from Figure 7B. External air pressure exists on the radially outer side of the lip, in the space 56, due to free passage of air past the interrupted screwthreads 16, 36 and the radial grooves 33 in the teat flange 32. Consequently, if pressure in the bottle tends to fall due to feed being sucked out through the teat, the lip 34 is deformed inwardly away from the inside of the bottle neck wall, i.e. opening in the manner of a flap valve to let air into the bottle. This minimises risk of teat collapse, even with the relatively large teat of this invention. The flap valve closes again when the pressure in the bottle has equalised to the pressure outside.

The efficiency of the flap valve action is assisted by the angling of the end portion of the radially outer wall surface of the depending lip 34, as indicated at 37 in Figure 4, since this helps to ensure that the seal is effected around a circular line, as distinct from a circular band.

The use of silicone rubber as the teat material is preferred in the context of the above-described flap valve arrangement, because whereas a teat of conventional rubber tends to "grow" as it ages, a silicon rubber teat has a much reduced tendency to do so with the result that its critical shaping and dimensioning is retained throughout the life of the teat.

Figures 8A to 8C show three possible differing profiles for a radial groove 22 in the rim of the bottle neck instead of providing one or more grooves 33 in the teat flange 32. The shallow but wide concave profile of Figure 8C enables air flow to be controlled by adjusting the tightness of the cap, within the range of tightness which ensures that a seal is made in the manner of Figure 7B.

Figure 9 shows a dormal cap which push fits over the teat around the annular cap. This dormal cap, at its closed end, has a domed interior 60 having a central flat 62, and at a portion adjacent its open end, has an internal longitudinal bead 64. The dormal cap can be moulded of polypropylene.

The dormal cap is dimensioned to push fit over the annular teat fitting cap until its rim abuts against the external shoulder 38 on the annular cap, whereby, in this position, the central flat 62 on the dome 60 engages against the perforated, almost flat, end surface 24 of the teat to seal the perforations against egress of the bottle contents. It is thereby possible, when the dormal cap is fitted over the teat, to shake the bottle without

loss of the baby feed inside, and without the necessity first to replace the teat by a closure disc or the like. The beam 64 prevents a seal being formed between the dormal cap and the annular cap when the dormal cap is push fitted thus preventing teat collapse due to a build up of pressure as the dormal cap is pushed fully down into its home position.

The manner of use of the above-described baby feed bottle combination can be as follows:

- a) all the components are sterilised;
- b) the annular cap and teat are assembled, and the dormal cap is preferably also push fitted to form part of the sub-assembly. This prevents further contact with the sterilised teat;
- c) the bottle is filled with baby feed and, if desired, this feed mixture can be prepared in the bottle;
- d) the sub-assembly of b) is screwed with a relatively light pressure on to the bottle neck but sufficiently to make a seal by deformation at the open end of the teat;
- e) the bottle is shaken;
- f) the dormal cap is removed. The bottle is now ready for use.

It will also be appreciated that the bottle filled with baby mix, and having the dormal cap fitted over the teat, is very convenient for travel, in a condition ready for immediate use when required.

The annular cap may, of course, be screwed on to the bottle without a fitted teat. Figures 10 and 11 show a trainer spout which can be push fitted over the screwed on annular cap, when the teat is omitted.

The trainer spout has a rim portion 66 at its open end which is stopped against the shoulder 38 on the annular cap when the trainer is push fitted into position. It also has an upstanding eccentric spout 68 having small apertures 70 in its end through which baby feed can be taken by a baby with a sucking and/or drinking technique. The spout can also be moulded of polypropylene.

It will be appreciated that various modifications of the above-described arrangements of bottle, teat, screw cap and other components are possible, within the scope of the invention as defined by the appended claims. For example, the dormal cap could screw fit into position on an externally threaded annular cap, and the trainer spout could screw fit either on to said externally threaded annular cap or possibly directly on to the bottle neck.

Within the dimensional limits stated, the bottle may be produced in several sizes of differing total capacities, including a small size in which the main portion diameter may exceed the height of the bottle. As far as the teat is concerned, a flat or nearly flat perforated end surface is not essential, but is preferred to assist sealing by the dormal cap without deformation of the teat mouthpiece. However, it would be possible to dome the interior of the dormal cap in any convenient manner matching the shape of the said end surface of the teat mouthpiece. The ability to sub-

assemble the annular cap and the teat as an initial step is not an essential requirement, but it is important that the annular cap when screwed down should act on the teat on a circle radially smaller than the rim of the bottle neck, thereby to create the necessary turning moment which in turn results in creation of the flap valve arrangement, as the latter is important to avoid collapse of the teat mouthpiece when feed is sucked out of the bottle, this in turn being especially important when a large moulded silicone rubber teat is employed.

Claims

1. A baby feed bottle combination comprising a necked bottle, a flanged teat and an annular cap (50) screw fitting to the necked bottle to attach the teat in position by pressing the flange (32) of the teat against the rim (20) of the bottle neck (12), the teat having a dependent annular lip (34) thereon which is sufficiently resilient to deform inwardly away from the interior surface of the bottle neck and open responsively to a pressure reduction in the bottle when baby feed is sucked through the teat, characterised in that said lip (34) fits with a small clearance inside the bottle neck (12) in the absence of the cap, the arrangement being such that when the cap (50) is screwed down, it acts on the teat to deform the annular flange (32) thereof so that the said lip is turned outwardly to engage the interior surface of the bottle neck to provide a normally closed flap valve.

2. A baby feed bottle combination according to claim 1, characterised in that the cap (50) has an annular end face (42) which at its internal peripheral rim (44) seats in an external annular groove (30) in the teat to locate and hold said teat relative to the cap.

3. A baby feed bottle combination as claimed in claim 2 characterised in that the external annular groove (30) in the teat is located radially inwardly of the lip.

4. A baby feed bottle combination according to claim 2 or claim 3, characterised in that the annular flange (32) of the teat is deformed by the turning moment created, when the cap (50) is screwed down, by the downward force acting on the teat at said internal peripheral rim (44) and the upward reaction force acting on the teat at the rim (20) of the bottle neck.

5. A baby feed bottle combination according to any one of the preceding claims, characterised in that to assist passage of air past the flap valve into the bottle interior, the teat flange (32) is provided with at least one groove (33) located to bridge the rim of the bottle neck when seated thereon.

6. A baby feed bottle combination according to claim 5, characterised in that there are two of said grooves (33) located diametrically opposite each other.

7. A baby feed bottle combination according to claim 5 or claim 6, characterised in that, in order to facilitate access of air to the or each of said recesses in the teat flange, the bottle neck and the

cap cooperate through interrupted screwthreads (16).

8. A baby feed bottle combination according to any one of the preceding claims characterised in that the teat is moulded of silicone rubber.

9. A baby feed bottle combination as claimed in any one of claims 1 to 8 characterised in that the bottle has a main bottle portion (14) surmounted by a neck portion (12) at which the teat is attachable, the main portion having a capacity in the range 25 to 40 ml per cm height and the neck portion having a mean cross sectional area not less than 0.45 of the cross sectional area of the main portion.

10. A baby feed bottle combination as claimed in claim 9, characterised in that the main portion (14) is substantially tubular and the neck portion (12) is cylindrical having a mean diameter not less than 0.65 of the main portion diameter.

11. A baby feed bottle combination according to claim 9 or claim 10, characterised in that the main bottle portion (14) has a capacity in the range 30 to 35 ml per cm height.

12. A baby feed bottle combination according to claim 10 or claim 11, characterised in that the neck (12) has a mean diameter not less than 0.725 of the main portion diameter.

13. A baby feed bottle combination according to any one of claims 9—12, characterised in that the main bottle portion (14) is marginally waisted.

14. A baby feed bottle combination according to any of claims 9 to 13, made of transparent polycarbonate.

15. A baby feed bottle combination according to any of claims 9 to 14, having a main bottle portion (14) mean diameter not less than 6 cm.

16. A baby feed bottle combination according to claim 15, having a neck (12) diameter not less than 4.25 cm.

17. A teat for use with the baby feed bottle combination of any of the preceding claims, said teat having a mouthpiece (26) with a perforated end surface (24), a portion widening towards the other open end of the teat which fits to the feed bottle, an external annular flange (32) at said open end, a lip (34) depending from the flange inwardly of the outer periphery of the latter, characterised by an external groove (30) in the wall of the teat located at a small axial spacing from the annular flange (32) towards the mouthpiece (26) and radially inwardly of the lip (34).

18. A teat according to claim 17, which has been moulded of silicone rubber.

19. A teat according to claim 17 or claim 18, characterised by a substantially flat or only slightly curved perforated surface (24) at the tip of the mouthpiece (26).

20. A teat according to any one of claims 17 to 19, characterised in that the external groove (30) is annular and positioned between two external ribs (28) on the wall of the teat, one of the ribs adjoining the annular flange (32).

21. A teat according to any one of claims 17 to 20, characterised in that the depending lip (34) has a radially outer wall surface which at its end

portion is angled radially outwardly relative to the portion of said wall surface adjoining the annular flange.

22. A teat according to any one of claims 17 to 21, wherein the annular flange (32) carries an axially shorter depending lip or bead (35) at its outer periphery.

23. A teat according to any one of claims 17 to 22, characterised by inclined stiffening ribs (31) in the side wall of the teat mouthpiece (26).

24. A teat according to any one of claims 17 to 23, characterised in that the undersurface of the external annular flange (32) is formed with at least one recess (33) adapted to permit the passage of air from the exterior to the interior of a baby feed bottle when fitted to the rim of the neck of said bottle.

25. A teat according to claim 24, characterised in that two of said recesses are provided in the annular flange (32) located diametrically opposite each other.

Patentansprüche

1. Saugflasche für Babys mit einer Flasche mit Hals, einem mit einem Flansch versehenen Sauger und einer ringförmigen Kappe (50), die auf den Hals der Flasche aufschraubbar ist, um den Sauger durch Andruck des Flansches (32) des Saugers lagerichtig gegen den Rand (20) des Flanschenhalses (12) zu pressen, wobei der Sauger eine davon abstehende ringförmige Lippe (34) aufweist, die ausreichend elastisch ist, um sich einwärts weg von der Innenfläche des Flaschenhalses zu deformieren und zu öffnen als Reaktion auf einen Druckabfall in der Flasche, wenn Baby-nahrung durch den Sauger herausgesaugt wird, dadurch gekennzeichnet, daß die besagte Lippe (34) bei fehlender Kappe mit geringem Spiel in den Flaschenhals (12) hineinpaßt, wobei die Anordnung so ist, daß die Kappe (50), wenn sie festgeschraubt wird, auf den Sauger einwirkt, um dessen ringförmigen Flansch (32) so zu deformieren, daß die besagte Lippe auswärts geschwenkt wird, um sich an die Innenfläche des Flaschenhalses anzulegen, um und ein normalerweise geschlossenes Klappenventil zu bilden.

2. Saugflasche für Babys nach Anspruch 1, dadurch gekennzeichnet, daß die Kappe (50) eine ringförmige Endfläche (42) aufweist, die mit ihrem inneren Umfangsrand (44) in einer äußeren ringförmigen Rille (30) in dem Sauger sitzt, um den Sauger relativ zur Kappe festzulegen und zu halten.

3. Saugflasche für Babys nach Anspruch 2, dadurch gekennzeichnet, daß die äußere ringförmige Rille (30) in dem Sauger radial einwärts der Lippe angeordnet ist.

4. Saugflasche für Babys nach Anspruch 2 oder 3, dadurch gekennzeichnet, daß der ringförmige Flansch (32) des Saugers durch ein Drehmoment deformiert wird, das durch die nach unten gerichtete, an dem besagten inneren Umfangsrand (44) auf den Sauger einwirkende Kraft und die aufwärts gerichtete, am Rand (20) des Flanschenhal-

ses auf den Sauger einwirkende Gegenkraft erzeugt wird, wenn die Kappe (50) festgeschraubt wird.

5. Saugflasche für Babys nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß der Flansch (32) des Saugers zur Unterstützung des Luftdurchlasses an dem Klappenventil vorbei in das Flascheninnere wenigstens eine Rille (33) aufweist, die so angeordnet ist, daß sie den Rand des Flaschenhalses überbrückt, wenn sie auf diesem aufliegt.

6. Saugflasche für Babys nach Anspruch 5, dadurch gekennzeichnet, daß zwei dieser besagten Rillen (33) einander diametral gegenüberliegen.

7. Saugflasche für Babys nach Anspruch 5 oder 6, dadurch gekennzeichnet, daß der Flaschenhals und die Kappe über unterbrochene Schraubgewinde (16) zusammenwirken, um den Luftzutritt zu dem oder jeder dieser Aussparungen in dem Flansch des Saugers zu erleichtern.

8. Saugflasche für Babys nach irgendeinem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß der Sauger aus Silikonkautschuk geformt ist.

9. Saugflasche für Babys nach irgendeinem der Ansprüche 1 bis 8, dadurch gekennzeichnet, daß die Flasche einen Flanschenhauptteil (14) aufweist, auf den ein Halsteil (12) aufgesetzt ist, an dem der Sauger befestigbar ist, wobei der Hauptteil ein Fassungsvermögen im Bereich von 25 bis 40 ml pro cm Höhe und der Halsteil eine mittlere Querschnittsfläche von nicht weniger als 0,45 der Querschnittsfläche des Hauptteils aufweist.

10. Saugflasche für Babys nach Anspruch 9, dadurch gekennzeichnet, daß der Hauptteil (14) im wesentlichen rohrförmig und der Halsteil (12) zylindrisch ist und einen mittleren Durchmesser von nicht weniger als 0,65 des Durchmessers des Hauptteils.

11. Saugflasche für Babys nach Anspruch 9 oder 10, dadurch gekennzeichnet, daß der Hauptteil (14) der Flasche ein Fassungsvermögen im Bereich von 30 bis 35 ml pro cm Höhe aufweist.

12. Saugflasche für Babys nach Anspruch 10 oder 11, dadurch gekennzeichnet, daß der Hals (12) einen mittleren Durchmesser von nicht weniger als 0,725 des Durchmesser des Hauptteils hat.

13. Saugflasche für Babys nach irgendeinem der Ansprüche 9—12, dadurch gekennzeichnet, daß der Hauptteil (14) der Flasche geringfügig verengt ist.

14. Saugflasche für Babys nach einem der Ansprüche 9 bis 13, die aus einem durchsichtigen Polycarbonat hergestellt ist.

15. Saugflasche für Babys nach einem der Ansprüche 9 bis 14, bei der der mittlere Durchmesser des Hauptteils (14) der Flasche nicht kleiner ist als 6 cm.

16. Saugflasche für Babys nach Anspruch 15, bei der der Durchmesser des Halses (12) nicht kleiner ist als 4,25 cm.

17. Sauger zum Gebrauch mit einer Saugflasche für Babys nach einem der vorhergehenden Ansprüche, der ein Mundstück (26) mit einer

durchlöchernten Endfläche (24), einen sich zum anderen offenen Ende des Saugers hin erweiternden Abschnitt, der auf die Flasche paßt, einen äußeren ringförmigen Flansch (32) an dem besagten offenen Ende, eine von dem Flansch einwärts seines äußeren Umfanges abstehende Lippe (34) hat, gekennzeichnet durch eine äußere Rille (30) in der Wand des Saugers, die in geringem axialem Abstand von dem ringförmigen Flansch (32) zum Mundstück (26) hin und radial einwärts der Lippe (34) angeordnet ist.

18. Sauger nach Anspruch 17, der aus einem Silikonkautschuk geformt ist.

19. Sauger nach Anspruch 17 oder 18, gekennzeichnet durch eine flache oder nur wenig gebogene durchlöchernte Oberfläche (24) an der Spitze des Mundstückes (26).

20. Sauger nach irgendeinem der Ansprüche 17 bis 19, dadurch gekennzeichnet, daß die äußere Rille (30) ringförmig ist und zwischen zwei äußeren Rippen (28) an der Wand des Saugers liegt, wobei eine der Rippen an den ringförmigen Flansch (32) angrenzt.

21. Sauger nach irgendeinem der Ansprüche 17 bis 20, dadurch gekennzeichnet, daß die abstehende Lippe (34) radial außen eine Wandfläche aufweist, die an ihrem Endabschnitt in Bezug zu dem Abschnitt der besagten, an den ringförmigen Flansch angrenzenden Wandfläche radial auswärts abgewinkelt ist.

22. Sauger nach irgendeinem der Ansprüche 17 bis 21, wobei der ringförmige Flansch (32) an seinem äußeren Umfang eine axial kürzere abstehende Lippe oder einen Wulst (35) trägt.

23. Sauger nach irgendeinem der Ansprüche 17 bis 22, gekennzeichnet durch geneigte Versteifungsrippen (31) in der Seitenwand des Saugermundstückes (26).

24. Sauger nach irgendeinem der Ansprüche 17 bis 23, dadurch gekennzeichnet, daß die Unterseite des äußeren ringförmigen Flansches (32) mit wenigstens einer Aussparung (33) ausgebildet ist, die dazu dient, den Luftdurchtritt von außen in das Innere der Saugflasche für Babys zu erlauben, wenn sie auf dem Rand des Halses der besagten Flasche passend aufliegt.

25. Sauger nach Anspruch 24, dadurch gekennzeichnet, daß zwei dieser Aussparungen in dem ringförmigen Flansch (32) vorgesehen sind, die einander diametral gegenüberliegend angeordnet sind.

Revendications

1. Ensemble combiné formant biberon pour bébé, comportant une bouteille munie d'un goulot, une tétine à bride et un capuchon annulaire (50), que l'on fixe par vissage sur la bouteille muni d'un goulot pour fixer la tétine en position en repoussant la bride (32) de la tétine contre le rebord (20) du goulot (12) de la bouteille, la tétine possédant une lèvre annulaire pendante (34), suffisamment élastique pour se déformer vers l'intérieur en s'écartant de la surface intérieure du goulot de la bouteille et s'ouvrir en réponse à une

réduction de la pression dans la bouteille lorsque l'aliment pour bébé est aspiré au moyen de la tétine, caractérisé en ce que ladite lèvres (34) s'applique, moyennant la présence d'un faible jeu, à l'intérieur du goulot (12) de la bouteille, en l'absence du capuchon, l'agencement étant tel que, lorsque l'on visse le capuchon, il agit sur la tétine en déformant sa bride annulaire (32) de sorte que ladite lèvres est retournée en direction de l'extérieur de manière à s'appliquer contre la surface intérieure du goulot de la bouteille pour former une soupape à clapet normalement fermée.

2. Ensemble combiné formant biberon pour bébé selon la revendication 1, caractérisé en ce que le capuchon (50) possède une surface d'extrémité annulaire (42), qui s'appuie, au niveau de son rebord périphérique intérieur (44), dans une gorge annulaire extérieure (30) ménagée dans la tétine de manière à positionner et retenir cette dernière par rapport au capuchon.

3. Ensemble combiné formant biberon pour bébé selon la revendication 2, caractérisé en ce que la gorge annulaire extérieure (30) ménagée dans la tétine est disposée intérieurement, du point de vue radial, par rapport à la lèvres.

4. Ensemble combiné formant biberon pour bébé selon la revendication 2 ou 3, caractérisé en ce que la bride annulaire (32) de la tétine est déformée par le moment de rotation créé lors du vissage du capuchon (50), sous l'effet de la force descendante agissant sur la tétine au niveau dudit rebord périphérique interne (44) et de la force de réaction ascendante agissant sur la tétine au niveau de rebord (20) du goulot de la bouteille.

5. Ensemble combiné formant biberon pour bébé selon l'une quelconque des revendications précédentes, caractérisé en ce que, pour faciliter la pénétration de l'air à l'intérieur de la bouteille, au niveau de la soupape à clapet, la bride (32) de la tétine comporte au moins une gorge (33) disposée de manière à envelopper le rebord du goulot de la bouteille, lorsqu'elle est en appui sur ce rebord.

6. Ensemble combiné formant biberon pour bébé selon la revendication 5, caractérisé en ce que deux desdites gorges (33) sont disposées dans des positions diamétralement opposées.

7. Ensemble combiné formant biberon pour bébé selon la revendication 5 ou 6, caractérisé en ce que, pour faciliter l'accès de l'air au ou à chacun desdits renforcements ménagés dans la bride de la tétine, le goulot de la bouteille et le couvercle coopèrent au moyen de filetages hélicoïdaux interrompus (16).

8. Ensemble combiné formant biberon pour bébé selon l'une quelconque des revendications précédentes, caractérisé en ce que la tétine est formée par moulage de caoutchouc silicone.

9. Ensemble combiné formant biberon pour bébé selon l'une quelconque des revendications 1 à 8, caractérisé en ce que la bouteille possède une partie principale (14) surmontée par une partie en forme de col (12) au niveau de laquelle la tétine peut être fixée, la partie principale possédant une

contenance de l'ordre de 25 à 40 ml par cm de hauteur et que la partie formant goulot possède une surface en coupe transversale moyenne non inférieure à 0,45 fois la surface en coupe transversale de la partie principale.

10. Ensemble combiné formant biberon pour bébé selon la revendication 9, caractérisé en ce que la partie principale (14) est sensiblement tubulaire et que la partie en forme de goulot (12) possède une forme cylindrique ayant un diamètre moyen non inférieur à 0,65 fois celui de la partie principale.

11. Ensemble combiné formant biberon pour bébé selon la revendication 9 ou 10, caractérisé en ce que la partie principale (14) de la bouteille possède une contenance de l'ordre de 30 à 35 ml par cm de hauteur.

12. Ensemble combiné formant biberon pour bébé selon la revendication 10 ou 11, caractérisé en ce que le goulot (12) possède un diamètre moyen non inférieur à 0,725 fois le diamètre de la partie principale.

13. Ensemble combiné formant biberon pour bébé selon l'une quelconque des revendications 9—12, caractérisé en ce que la partie principale (14) du biberon est rétrécie en section.

14. Ensemble combiné formant biberon pour bébé selon l'une quelconque des revendications 9 à 13, réalisé en polycarbonate transparent.

15. Ensemble combiné formant biberon pour bébé selon l'une quelconque des revendications 9 à 14, dans lequel la partie principale (14) de la bouteille possède un diamètre moyen non inférieur à 6 cm.

16. Ensemble combiné formant biberon pour bébé selon la revendication 15, comportant un goulot (12) possédant un diamètre non inférieur à 4,25 cm.

17. Tétine destinée à être utilisée avec l'ensemble combiné formant biberon pour bébé selon l'une quelconque des revendications précédentes, ladite tétine comportant, un embout buccal (26) possédant une surface d'extrémité perforée (24), une partie s'élargissant en direction de l'autre extrémité ouverte de la tétine, qui s'adapte sur le biberon, une bride annulaire extérieure (32) située au niveau de ladite extrémité ouverte, une lèvres (34) pendante s'étendant à partir de la bride, sur la côté intérieur du pourtour extérieur de cette bride, caractérisée par une gorge extérieure (30) ménagée dans la paroi de la tétine et située à une faible distance axiale à partir de la bride annulaire (32) en direction de l'embout buccal (26) et intérieurement, du point de vue radial, par rapport à la lèvres (34).

18. Tétine selon la revendication 17, formée par moulage de caoutchouc silicone.

19. Tétine selon la revendication 17 ou 18, caractérisée par une surface perforée (24) sensiblement plane ou seulement légèrement incurvée, au niveau de l'embout buccal (26).

20. Tétine selon l'une quelconque des revendications 17 à 19, caractérisée en ce que la gorge extérieure (30) est annulaire et est disposée entre deux nervures extérieures (28) sur la paroi de la

tétine, l'une des nervures étant contiguë à la gorge annulaire (32).

21. Tétine selon l'une quelconque des revendications 17 à 20, caractérisée en ce que la lèvre pendante (34) possède une surface de paroi extérieure du point de vue radial, dont la partie d'extrémité est inclinée vers l'extérieur, du point de vue radial, par rapport à la partie de ladite surface de paroi reliée à la bride annulaire.

22. Tétine selon l'une quelconque des revendications 17 à 21, dans laquelle la bride annulaire (32) porte, sur son pourtour extérieur, une lèvre ou un rebord pendant (35), plus court dans la direction axiale.

23. Tétine selon l'une quelconque des revendi-

cations 17 à 22, caractérisée par des nervures inclinées de renforcement (31) situées dans la paroi latérale de l'embout buccal (26) de la tétine.

24. Tétine selon l'une quelconque des revendications 17 à 23, caractérisée en ce que la surface inférieure de la bride annulaire extérieure (32) comporte au moins un renforcement (33) apte à permettre le passage de l'air depuis l'extérieur vers l'intérieur d'un biberon pour bébé, lorsqu'il est appliqué sur le rebord du goulot dudit biberon.

25. Tétine selon la revendication 24, caractérisée en ce que deux desdits renforcements sont ménagés dans la bride annulaire (32), dans des positions diamétralement opposées.

20

25

30

35

40

45

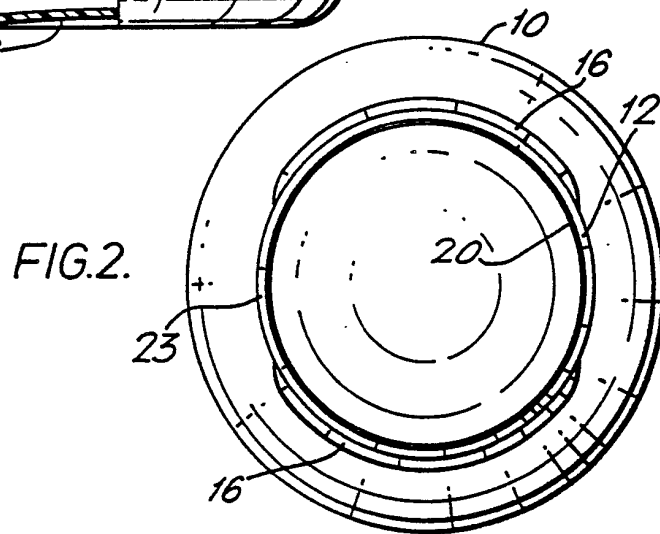
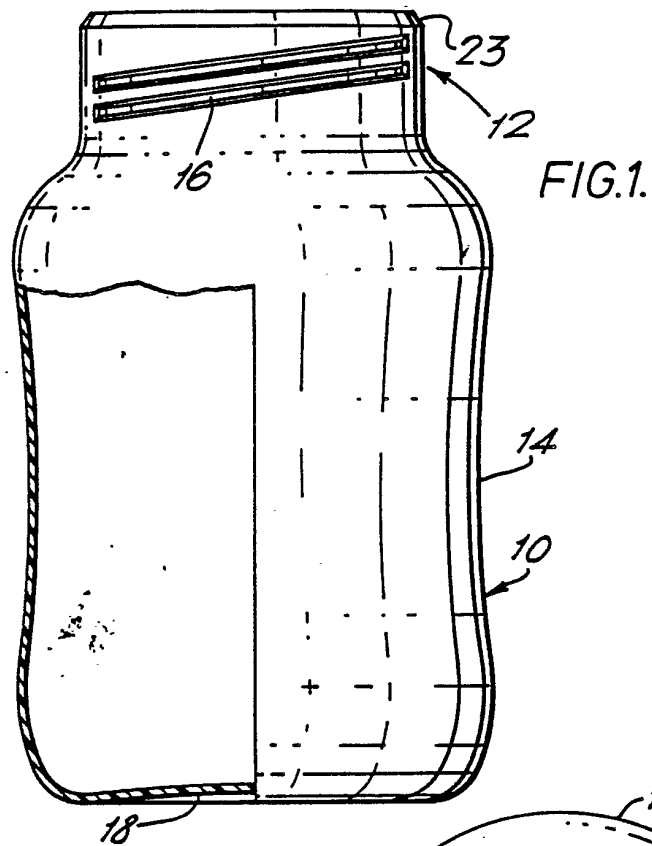
50

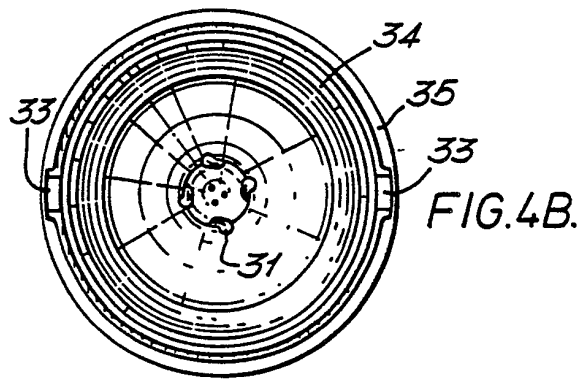
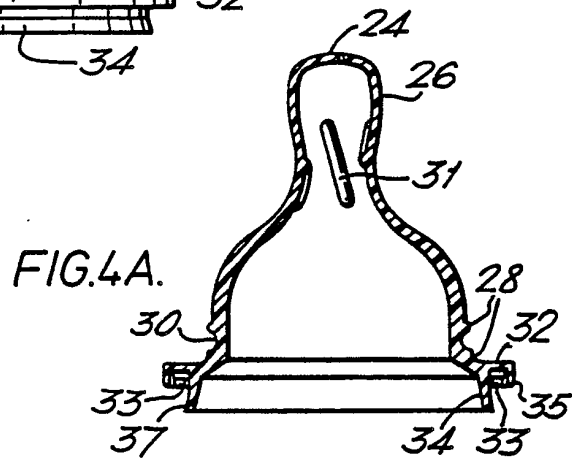
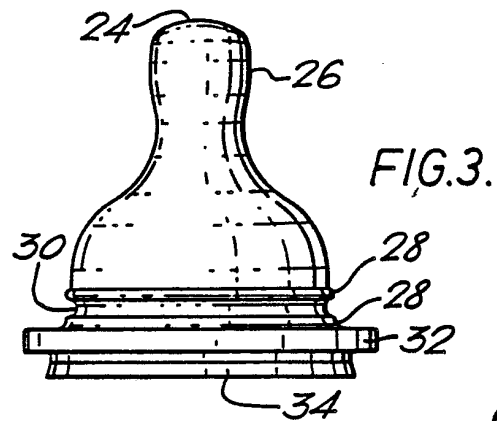
55

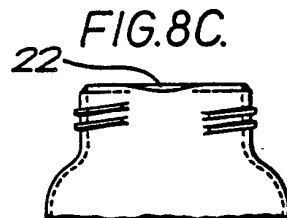
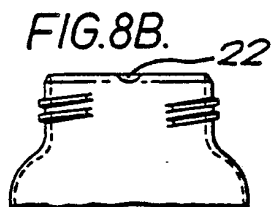
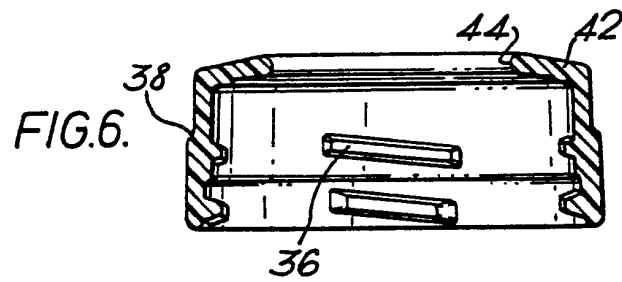
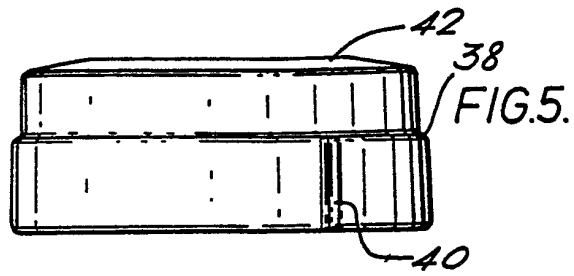
60

65

9







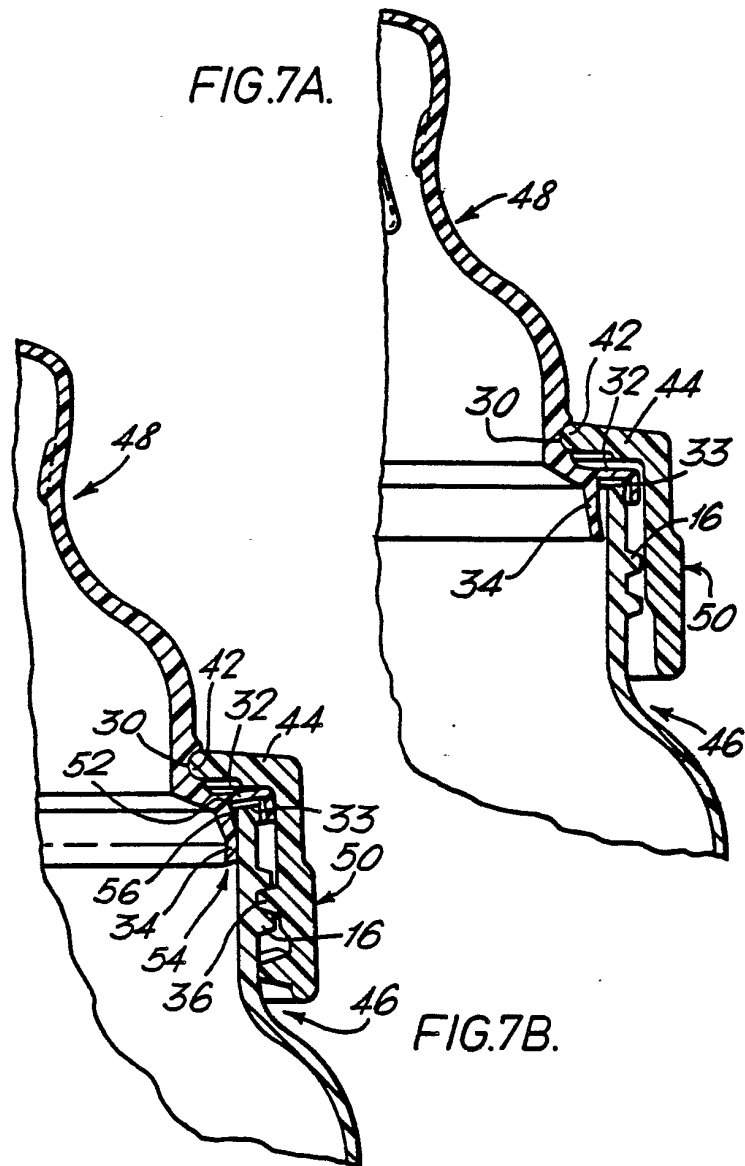


FIG.9.

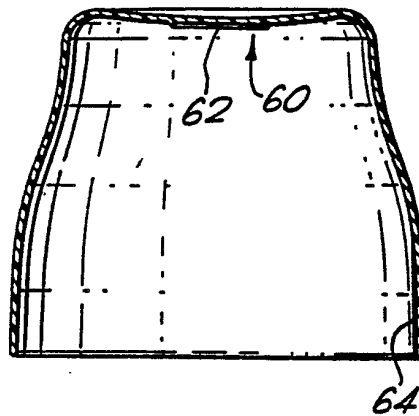


FIG.10.

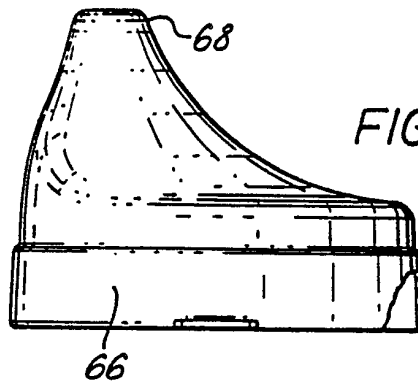


FIG.11.

