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EUROPEAN PATENT APPLICATION

21 Application number: **90201200.4**

51 Int. Cl.⁵: **A61J 11/02**

22 Date of filing: **11.05.90**

30 Priority: **12.05.89 NL 8901204**

43 Date of publication of application:
14.11.90 Bulletin 90/46

84 Designated Contracting States:
AT BE CH DE DK ES FR GB GR IT LI LU NL SE

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54 **Nipple with non-return valve and/or conical sucking holes.**

57 Nipple (3), comprising a sucking end (4) that can be provided with one or more holes (6) a flange (7) that forms an entity therewith and extends in radial direction relative to the centre line of the nipple (3), in order to fix the nipple (3) therewith onto a supply holder (1), wherein a dish-shaped non-return valve (8) is arranged in this flange (7).

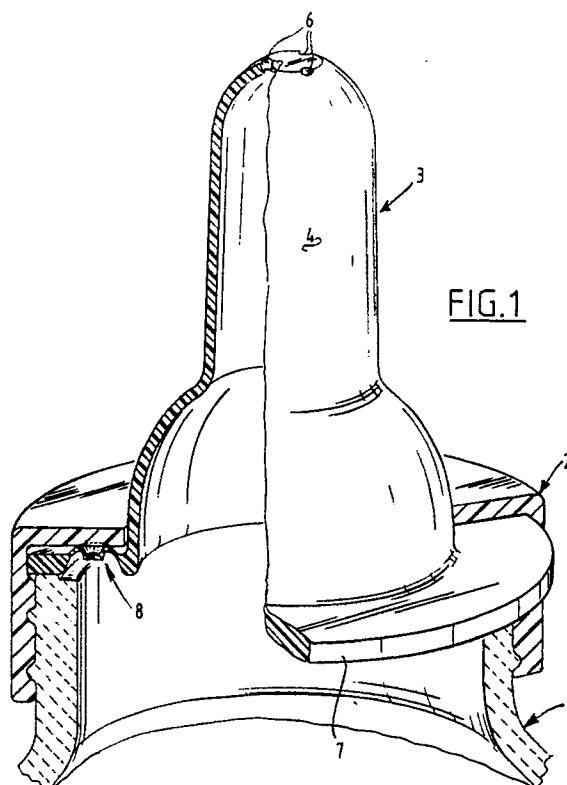


FIG.1

NIPPLE WITH NON-RETURN VALVE AND/OR CONICAL SUCKING HOLES

Nipples for baby feeding are used both in hospital surroundings and in private households, wherein in hospitals it is usually a matter of once-only use, while at home the nipples can be boiled. It is an object of the present invention to improve prior nipples as known from US-A-3.203.569.

The present invention provides a nipple comprising a sucking end that can be provided with one or more holes, a flange forming an entity therewith and extending in radial direction relative to the centre line of the nipple, in order to fix the nipple therewith onto a supply holder, wherein a dish-shaped non-return valve is arranged in this flange.

Using the nipple according to the present invention prevents an underpressure being built up in a bottle or supply holder for baby food through the sucking of the baby, which makes sucking difficult, while it also prevents baby food being able to leak out of the supply holder in the absence of underpressure; a non-return valve is provided which gives a good sealing against a holder screw to be arranged on the supply holder in addition to a non-return valve which opens at a small underpressure.

The nipple is preferably injection moulded from synthetic, non-silicon holding rubber, also referred to as thermoplastic rubber, which has the same properties as rubber but which requires no vulcanizing. Tensile strengths of 150-5000 psi and a Shore A-hardness of 28-95 can be used with this material. A strong nipple is provided herewith, while because of the strength of the material the non-return valve can be embodied with a small thickness of this material. The non-return valve will therefore open easily, while the sealing edge gives good sealing against a holder screw if no underpressure is built up in the holder. It is moreover important that this material is absolutely safe for a baby.

Further advantages, features and details are elucidated in the light of the following description with reference to a drawing, in which:

fig. 1 shows a perspective view, partly broken away and partly in section, of a preferred embodiment of the nipple according to the present invention;

fig. 2 shows a schematic view of the operation of the embodiment of fig. 1.

Onto a supply holder or bottle 1 can be screwed a holder screw or closing means 2 between which a nipple (fig. 1) can be clamped. A sucking end 4 of the nipple 3 is provided with three conical holes 6. By moving insert pieces in an injection moulding die (not shown) penetration of cones can be adjusted wherewith the size of the

passage opening from the interior of the sucking end 4 to a baby is determined.

Arranged in a flange or collar 7 which is injection moulded from one piece with the sucking end 4 is a non-return valve 8 which is injection moulded together with the nipple 3. If through the sucking of a baby an underpressure results in the bottle 1 (fig. 2), air can pass between the holder screw edge and the neck of the nipple into a dish 9 since the sealing edge 11 is released through the underpressure. From the dish 9 the underpressure passes into the interior of the bottle 1, whereafter the sealing edge 11 closes and prevents the liquid content leaking out of the bottle along the neck of the nipple.

A nipple according to the present invention is preferably injection moulded from a thermoplastic rubber such as commercially available under the names Kraton^R and Evoprene^R. This material has a high tensile strength with rubber-like properties without vulcanizing having to take place. In addition the material displays good temperature characteristics.

Claims

1. Nipple, comprising:

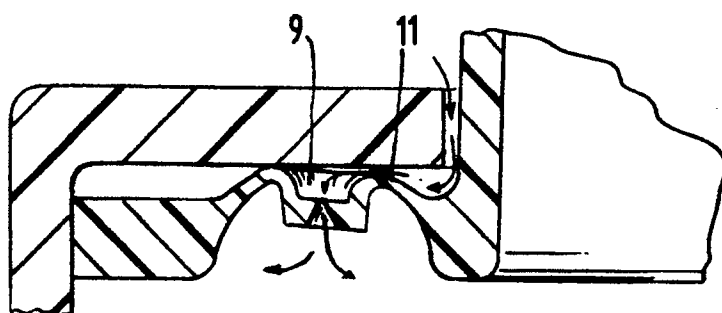
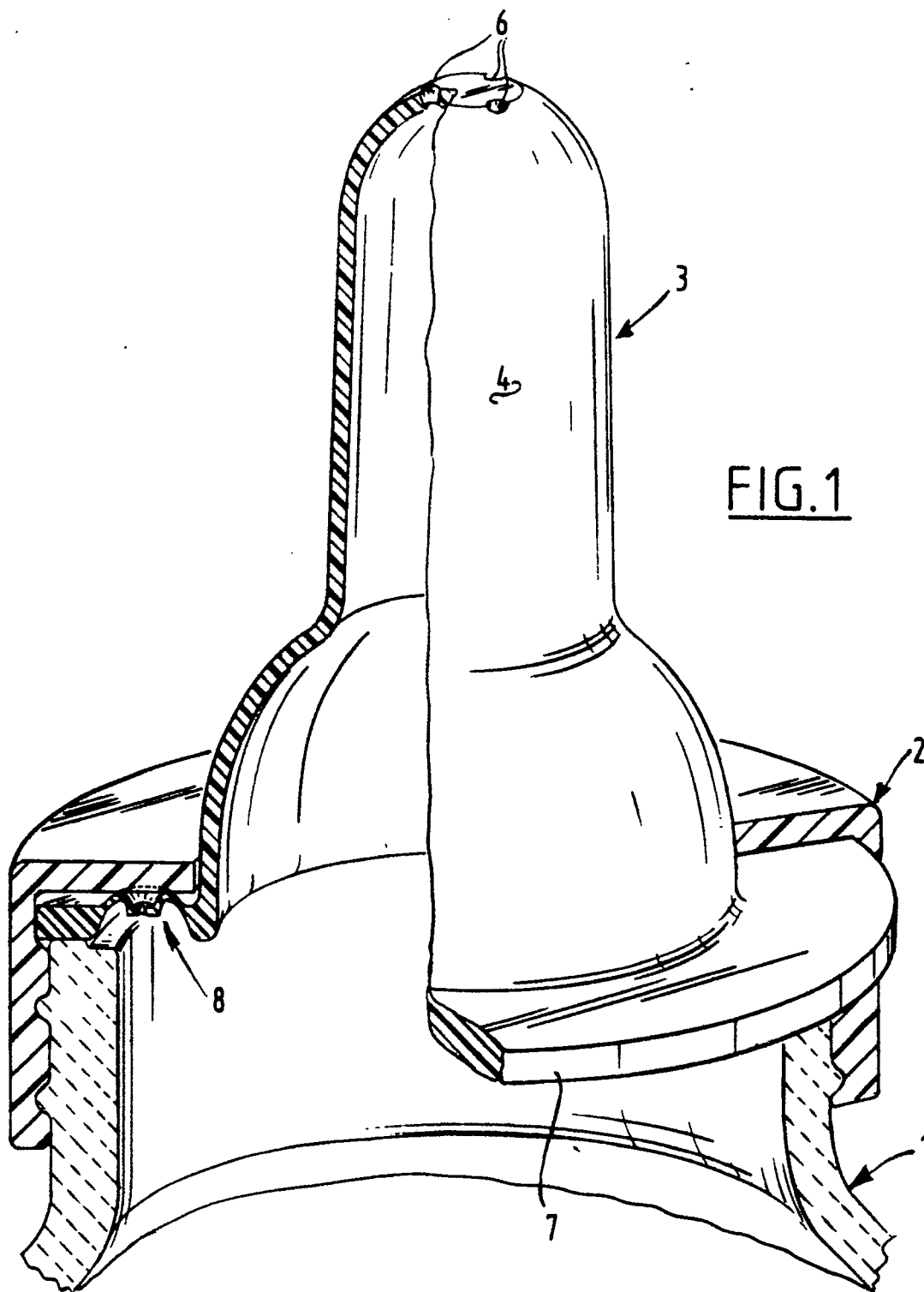
- a sucking end that can be provided with one or more holes;
- a flange that forms an entity therewith and extends in radial direction relative to the centre line of the nipple, in order to fix the nipple therewith onto a supply holder,
- wherein a dish-shaped non-return valve is arranged in this flange.

2. Nipple as claimed in claim 1, wherein such is made from thermoplastic rubber.

3. Nipple as claimed in claim 2, wherein the thermoplastic rubber is Kraton rubber.

4. Nipple as claimed in claim 1, 2 or 3, wherein the non-return valve comprises a conical hole, the broad end whereof is remote from the sucking end and wherein the sealing edge of the dish shape takes a slightly tapered form relative to the thickness of the flange.

5. Nipple as claimed in any of the foregoing claims provided with a sucking end having two or more conical holes.





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EUROPEAN SEARCH REPORT

Application Number

EP 90 20 1200

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A,D	US-A-3 203 569 (SHOMOCK) * Column 1, lines 58-70; column 2, line 26 - column 3, line 7; figures *	1,2,4	A 61 J 11/02
A	GB-A- 739 521 (DAVOL RUBBER CO.) * Page 2, lines 122-128; figures *	1,4	
A	DE-A-1 932 482 (SHELL) * Page 4, line 3 - page 5, line 28; figures *	1,2	
A	NL-A-7 001 730 (NUTRICIA) * Page 5, lines 13-17; figures *	2,3	
A	US-A-2 143 719 (SCHULTE) * Page 1, right-hand column, lines 39-43; figures 1-3 *	5	
A	NL-A-7 300 298 (BETTERFOOD) * The whole document *	1,5	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A 61 J
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 27-07-1990	Examiner BAERT F.G.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons * : member of the same patent family, corresponding document			