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(12) # EUROPEAN PATENT APPLICATION

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(54) **Disposable medicine dispenser.**

(57) A disposable medicine dispenser comprising a squeezable medicine container (1) to which is directly attached a rubber or silicone teat (2) with an enlarged portion such as a tapered collar (3). The enlarged portion (3) is adapted to make a seal with the neck (12) of a medicine bottle (8) and medicine (9) is admitted to the container (1) when it is squeezed and collapsed. On removal from the medicine bottle (8) the medicine (9) in the container (1) can be administered to the patient.

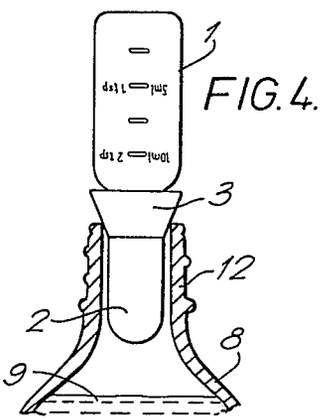

FIG. 4.

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Description

DISPOSABLE MEDICINE DISPENSER

This invention relates to a disposable medicine dispenser.

There are many instances where patients need to take medicine but are unable to do so either because they are too young, for instance a baby, or alternatively because they are too sick or very old or paralysed. In such cases, it is normal for the nurse to use a disposable syringe by means of which the exact amount of medicine is drawn from a supply thereof into the syringe and the medicine is then injected orally from the syringe into the patient's mouth.

In the case of babies, the injection of the medicine into the mouth can often cause discomfort which results in the baby becoming upset and crying. It is therefore desirable to administer medicines to young babies in a more convenient form and in a form more acceptable to the child. As the bottle feeding of babies has been found to be acceptable to both the mother and the child, it seems possible that medicine could be administered in much the same way by providing a dispenser on which the patient could suck to draw the medicine out of the container instead of having it injected orally..

According to one aspect of the invention there is provided a disposable medicine dispenser comprising a squeezable medicine container and a flexible teat attached directly thereto, the container being sufficiently flexible to permit fluid to be admitted thereto when the teat is immersed in another container filled with said fluid and the squeezable container is squeezed and the pressure thereon released.

Preferably, the teat is made of a flexible material such as thermoplastic or latex rubber of a silicone material.

Desirably, the teat includes an enlarged portion in its base region where it is attached to the squeezable container.

Conveniently, this portion is tapered to provide a frusto-conical collar at the base of the teat or it can be part spherical in shape. In the embodiment with the collar, the teat is preferably formed with an internal annular groove shaped to receive an annular retaining bead provided on the squeezable container. Alternatively, the interior of the teat is provided with an annular rib at its base which engages in an annular groove formed in the neck of the squeezable container.

In a preferred embodiment, the side walls of the medicine container have markings on them which may be printed or indent moulded thereon to indicate the level of the contents of the container.

Conveniently, the squeezable container is moulded from a polyethylene or polypropylene material or clear PVC.

According to another aspect of the invention, there is provided a flexible teat for fitting to a disposable medicine dispenser having at least one aperture therein to admit the passage of medicine therethrough, the external surface of the teat including an enlarged portion shaped to cooperate with and form a seal with the neck of another container when inserted therein and means at its open end to attach it directly to an open mouthed container.

In a preferred embodiment, the attachment means comprise an annular groove around the inside surface of the open end of the teat. Alternatively, the teat is formed with an annular inwardly projecting rib to cooperate with a corresponding annular groove formed in the neck of the open mouthed container.

The enlarged portion may be a frusto-conical surface in the region of said annular groove but preferably it is part spherical. Said surface can either be in the immediate vicinity of the means for attaching the teat to the open mouthed container or spaced therefrom.

Preferred embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which :

Figure 1 is a side view of one form of medicine dispenser of the invention;

Figure 2 is a cross section through the dispenser of Figure 1;

Figure 3 shows the dispenser of Figures 1 and 2 inserted in another container prior to being filled with the contents of that container;

Figure 4 is a view similar to that shown in Figure 3 but with the dispenser inserted in another container having a larger mouthed neck;

Figure 5A shows the dispenser of Figure 3 just prior to filling;

Figure 5B shows the dispenser of Figure 5A on completion of the filling step;

Figure 5C shows the dispenser of Figures 5A and 5B just prior to removal thereof from the container containing the fluid to be administered;

Figure 5D shows the dispenser of Figures 5A-5C being used by a baby;

Figure 6 shows an alternative embodiment; and

Figure 7 shows the teat of Figure 6 fitted with an adaptor for use with a wide mouthed container.

Referring to the drawings, there is shown a disposable fluid dispenser, in the illustrated embodiment this is a medicine dispenser, comprising a fluid container 1 to which a mouthpiece 2 is fitted. In the illustrated embodiment, the mouthpiece is a feeding teat formed at one end with an aperture 6 therein through which medicine can pass to either fill the container 1 or to be expelled therefrom. The base of the teat 2 includes a frusto-conical section 3 whose purpose will be described shortly. The interior of the frusto-conical section 3 is formed with an annular groove 5 which is shaped to cooperate with and receive a retaining bead 4 moulded around the open neck of the container 1.

The teat 2 is moulded from a suitable flexible

material such as silicone or thermoplastic or latex rubber. Because of its flexibility, it can be readily fitted directly to or removed from the container 1 by means of the cooperating retaining head 4 and annular groove 5.

The container 1 is preferably moulded from a clear PVC, polyethylene or polypropylene material and has moulded along its length indentations or projections to indicate the amount of fluid therein. In the illustrated embodiment, this takes the form of millilitre graduations with their teaspoon equivalents, but any form of measurement could be used.

The purpose of the frusto-conical collar 3 is more clearly illustrated in Figures 3 and 4. Figure 3 shows a medicine bottle 8 filled with medicine 9 having an open necked portion 12. The diameter of the neck portion 12 is substantially the same as that of the teat 2 and therefore a very small amount of the frusto-conical collar 3 needs to be pushed into the neck 12 to form a seal therewith. Referring now to Figure 4, it will be seen that the diameter of the medicine bottle neck 12 is substantially greater than that of the teat 2. However, a suitable seal between the teat and the bottle 8 can still be made because more of the frusto-conical collar 3 enters the neck 12 and this seal can still be formed. By this simple expedient, one size teat can be moulded for effective use with medicine bottles 8 having neck diameters which vary over a considerable range.

Referring now to Figure 6, there is shown a medicine dispenser comprising a squeezable container 22 and a flexible teat 21. The teat has an outwardly extending part spherical portion 23 near to its base with an annular groove 24 formed therein. The interior of the base is formed with an annular inwardly directed rib 25 having an upper annular ledge 26 and a lower annular rebate 27.

The open topped medicine container 22 is generally cylindrical and has a rounded bottom 28 with feet or webs 39 which enable it to be free standing. The bottom may, however, be moulded flat to achieve the same objective or alternatively, it can be rounded if the container does not need to be freestanding. The advantage of a flat or square base is that it enables the user to check the dispensing level by standing the container on a suitable surface. Finger locating indentations 29 are provided adjacent the upper end. The neck of the container 22 and the neck is formed with an annular groove 30 with upper and lower edge surfaces 32 and 31 respectively. A collar 33 is provided around the open top of the container 22, the shape of this collar being the same as the interior of the spherical portion 23 of the teat.

It will be seen that when the teat 21 is fitted directly onto the container 22, the rib 25 seats in the annular groove 30 to form a fluid tight seal therewith, the upper annular surface 32 of the groove 30 of the container 22 seating on the annular surface 26 in the teat and the lower annular surface 31 of the container groove 30 seating in the teat rebate 27. The collar 33 engages the interior of the teat portion 23 and provides a firm support therefor. This is important when the teat is inserted in the bottle (not shown) containing the medicine to be drawn out as it not only prevents collapsing of the teat but also ensures that the teat portion 23 can cooperate with the container neck in which it is inserted in the manner of a ball and socket connection thus giving greater flexibility to the manner in which the teat is inserted into the medicine bottle and thereby improving its sealing properties. With the embodiments of Figures 1-5, desirably the teat 2 and container 1 need to be generally axially aligned with the medicine bottle 8 if leakage is to be avoided when the latter is inverted as shown in Figure 5B whereas this problem is avoided with the embodiment of Figure 6 as the alignment is less critical due to the spherical portion 23 of the teat 21.

Figure 7 shows the teat 21 of Figure 6 fitted to an adaptor 35 for use with wide necked bottles 8. The adaptor comprises a part spherical portion 38 of a shape similar to that of the part spherical portion 23 of the teat 21 and an outwardly directed annular lip 37. The top of the adaptor is formed with a central hole into which the teat 21 is fitted with its annular groove 24 engaging with and locating the periphery of said hole to provide a fluid tight seal therewith.

The teat with the adaptor 35 attached to it is then attached to a squeezable container 1 or 22 in exactly the same way as has been described with reference to Figures 1-5. Thus, the spherical portion 38 of the adaptor 35 extends outwardly from the teat and can cooperate with the medicine bottle neck 12 instead of the portion 23 of the teat. The adaptor 35 is made of a relatively rigid thermoplastic rubber material, so a good seal with the bottle neck results.

The purpose of the webs 39 to the medicine dispenser 22 is that it cannot be stood up so it cannot be knocked over.

The manner of use of the medicine dispensers will now be described with reference to the embodiments shown in Figures 5A-5D. First of all, the teat 2 is inserted into the open neck 12 of the medicine bottle 8 as shown in Figures 3 and 4. The medicine bottle is then inverted as can be seen in Figure 5A and the resilient fluid container 1 is squeezed to express the air therein and cause it to collapse. This generates bubbles 10 in the medicine 9 during expulsion of the air from the container 1. On release of the pressure applied to the container by squeezing it, medicine 9 is sucked into the container 1 through the teat 2 via its opening 6 (see Figure 2). By this means, any required quantity of medicine 9 can be drawn into the container 1, this being gauged by means of the markings 7 thereon.

Alternatively, first of all, the resilient fluid container 1 is squeezed to expel the air therein and cause it to collapse. The teat 2 is then inserted into the open end 12 of the medicine bottle 8 which is then inverted whilst holding the medicine dispenser firmly against the neck of the bottle and keeping the container 1 collapsed. On release of the pressure, medicine 9 is sucked into the container through the teat as before.

When the desired level of medicine has been drawn into the container 1, the medicine bottle 8 is again inverted back to its normal upright position shown in Figure 5C and the teat 2 is removed from the bottle. Any excess medicine on the teat is wiped

away on the neck of the bottle 12 and the contents of the container 1 can be checked to ensure that the correct amount of medicine to be dispensed is actually contained therein.

Once this has been completed, the mouthpiece 2 can be inserted into the baby's mouth as shown in Figure 5D. By squeezing the container 1 as indicated by the arrows in the drawing, the medicine can be forced into the baby's mouth. Alternatively, the baby can simply suck the medicine from the container. Squeezing the container 1 simply encourages quicker dispensing of the medicine into the baby's mouth. As the mouthpiece 2 is formed as a rubber feeding teat, the baby has no difficulty in suckling or gently squeezing the bottle to encourage the dispensing of the medicine until the complete dosage has been taken, after which, the whole dispensing container assembly can be thrown away.

Because hygiene is of such importance in hospitals etc., the dispenser can be supplied in a sealed package already sterilised, for instance by means of gamma radiation or ethylene oxide.

A major advantage of the dispenser of the present invention is that it is extremely cheap to produce which renders it readily dispensable. It also has the advantage of being approximately 50% of the cost of disposable syringes used at present.

The container 1 can have any required volume but it is desirable to give it a maximum volume of little more than 15 millilitres which corresponds to three teaspoons of medicine thereby avoiding overdosage and also encouraging disposal of the dispenser after use.

Claims

1. A disposable medicine dispenser characterised squeezable container (1) for the fluid to which a flexible teat (2) is directly attached, the container (1) being sufficiently flexible to permit fluid (9) to be admitted thereto when the teat is immersed in another container filled with said fluid and the squeezable container is squeezed and pressure thereon released.

2. A dispenser as claimed in claim 1 characterised in that the teat includes an enlarged portion (3, 23) in its base region.

3. A dispenser as claimed in claim 2 characterised in that said enlarged portion (3, 23) is a frusto-conical collar (3).

4. A dispenser as claimed in claim 2 characaterised in that said enlarged portion (23) is part spherical in shape.

5. A dispenser as claimed in claim 3 charact erised in that the interior of the teat in the region of the collar is formed with an annular groove (5).

6. A dispenser as claimed in claim 4 characterised in that the interior of the teat is provided with an inwardly directed annular rib (25) at its base.

7. A dispenser as claimed in any one of the preceding claims characterised in that the fluid container (1, 22) has printed or moulded markings on its side walls to indicate the level of contents of the container.

8. A dispenser as claimed in any one of the preceding claims characterised in that the container (1, 22) is moulded from a polyethylene, polypropylene or clear PVC.

9. A dispenser as claimed in any one of the preceding claims in combination with an adaptor comprising a frusto-spherical (38) shell with a central hole in its top, the teat having an external groove (24) fitted into said hole to make a fluid tight seal therewith.

10. A flexible teat for fitting to a disposable medicine dispenser having at least one aperture therein to admit the passage of medicine therethrough, the external surface of the teat including an enlarged portion shaped to co-operate with an form a seal with a neck of another container when inserted therein, characterised in that means (4, 5, 25, 30) are provided at its open end to attach it directly to an open mouthed container.

11. A teat as claimed in claim 10 characterised in that said attachment means comprises an annular groove (5) around the inside surface of said open end of the teat.

12. A teat as claimed in claim 11 wherein the enlarged portion is a frusto-conical surface (3) in the region of said annular groove.

13. A teat as claimed in claim 10 characterised in that said attachment means comprises an inwardly directed annular rib (25).

14. A teat as claimed in claim 13 characterised in that an annular groove (24) is provided around the outside of the base of the teat.

FIG.1.

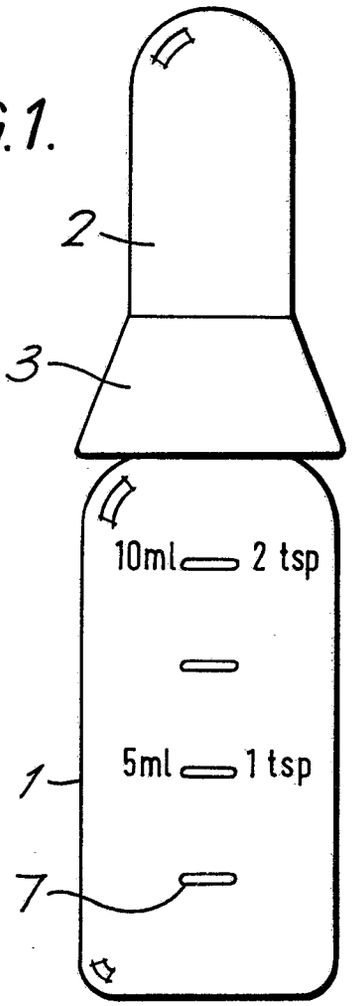
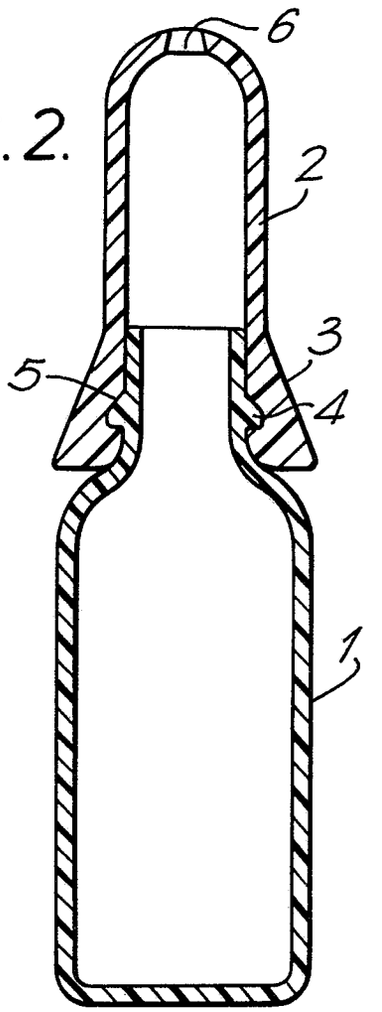


FIG.2.



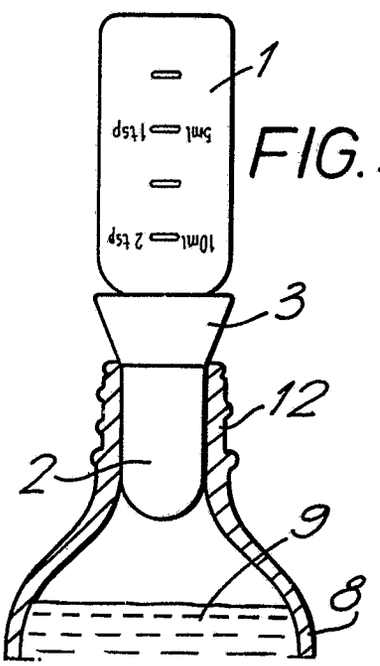
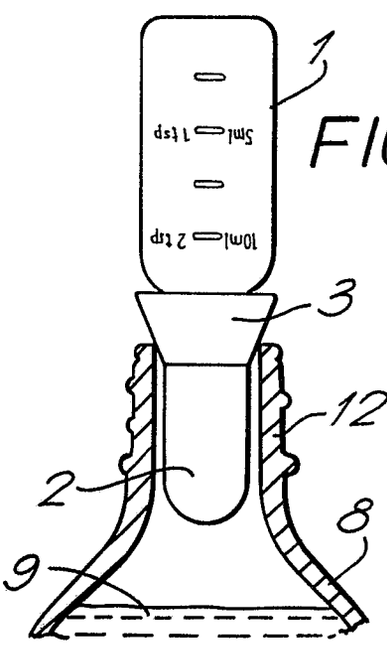


FIG.3.

FIG.4.



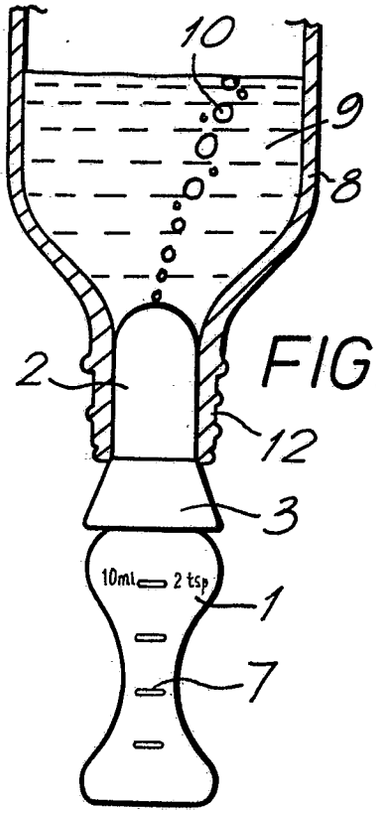


FIG.5A.

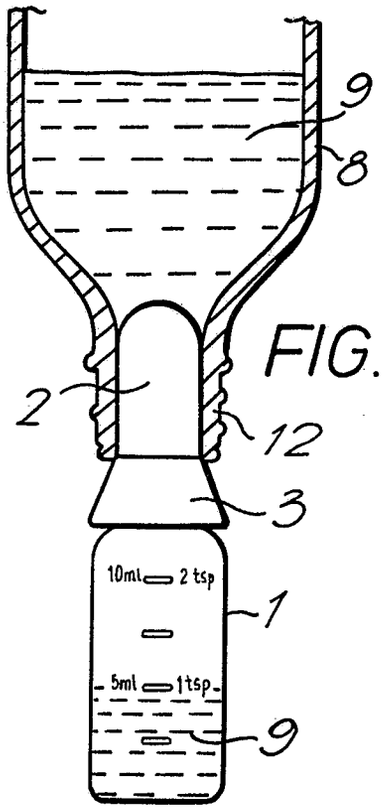
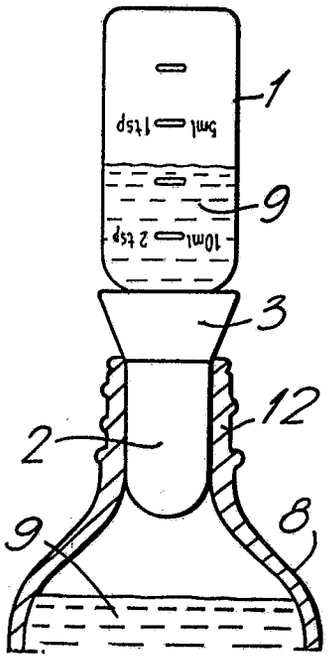


FIG.5B.

FIG.5C.



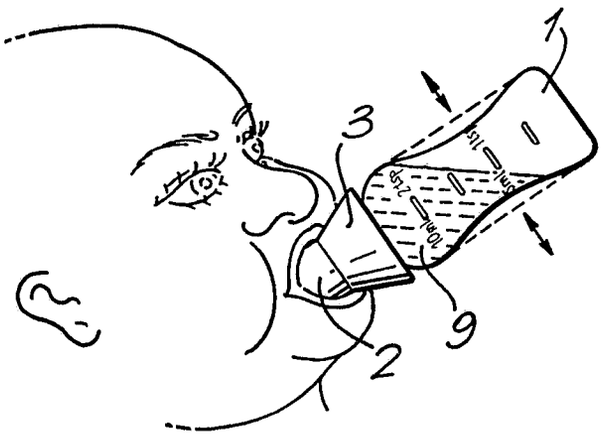


FIG.5D.

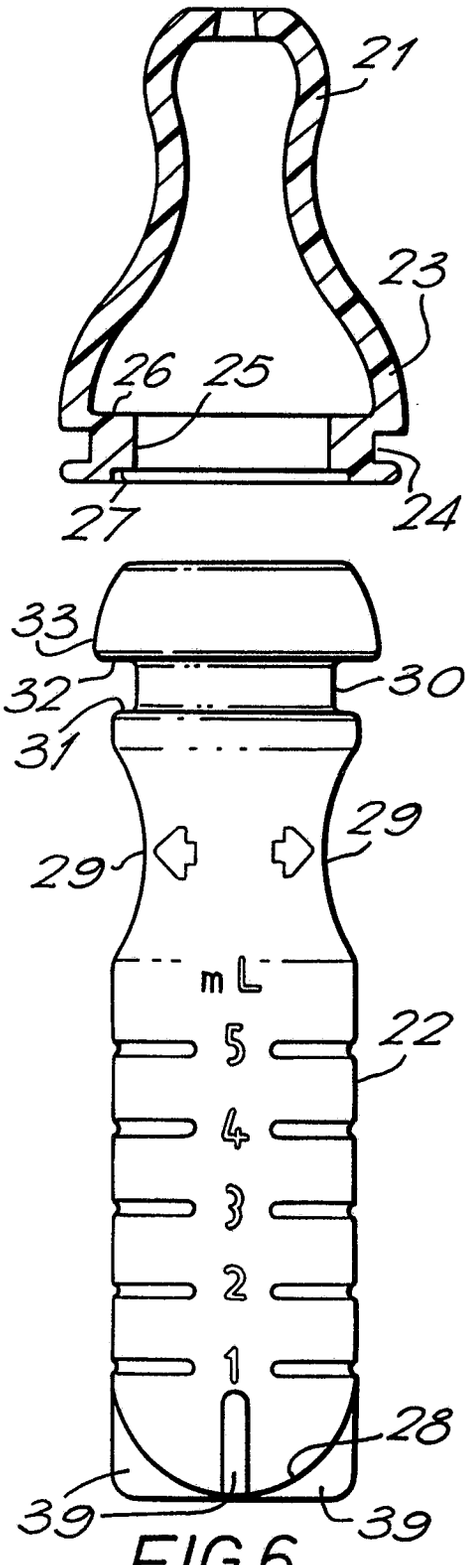

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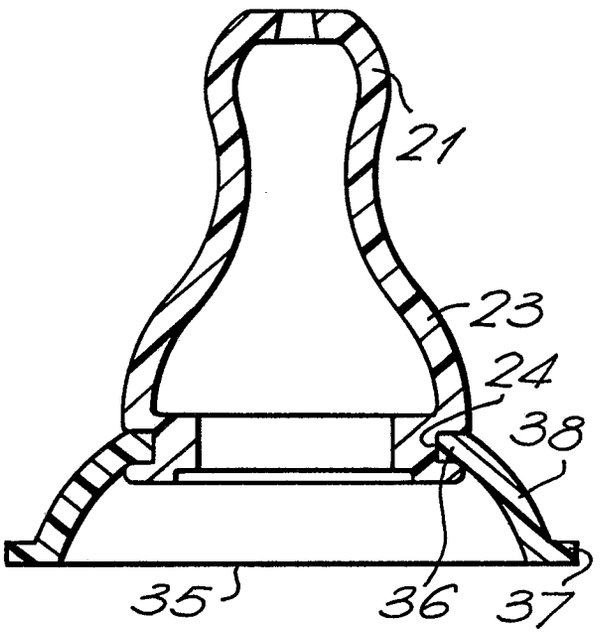
FIG.6.

FIG.7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EUROPEAN SEARCH REPORT

Application Number

EP 88 30 6694

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.4)
Y	US-A-2 448 569 (A.M. ALLEN) * Column 1, line 51 - column 2, line 33; figures 1,2 *	1-8,10-13	A 61 J 7/00
Y	US-A-2 178 426 (E.I. KILCUP) * Page 1, right-hand column, lines 3-28; figures 1,2 *	1-8,10-13	
A	WO-A-8 606 273 (LSR BABY PRODUCTS U.K. LTD.) * Page 3, line 12 - page 4, lines 5; page 6, lines 21-29; figures 1,4-6 *	9,14	
A	US-A-3 077 279 (D.L. MITCHELL)	1,10	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

A 61 J

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	14-08-1988	NEWELL P.G.

CATEGORY OF CITED DOCUMENTS

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