

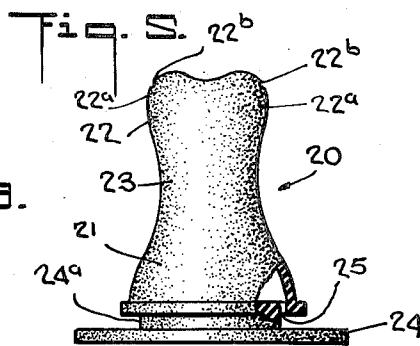
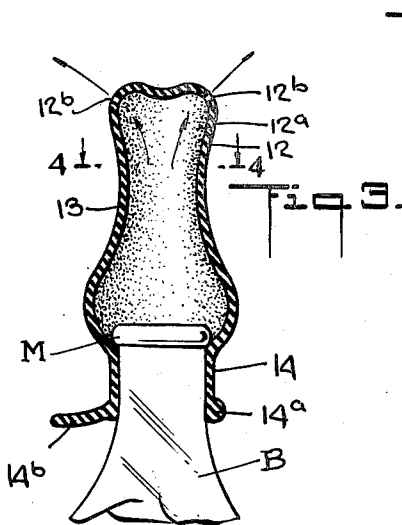
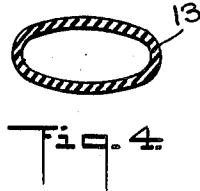
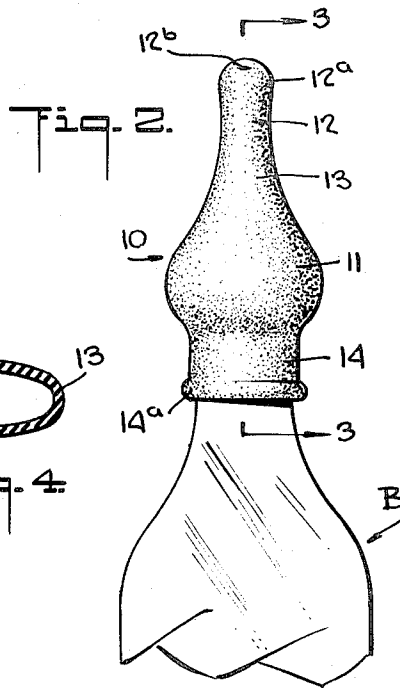
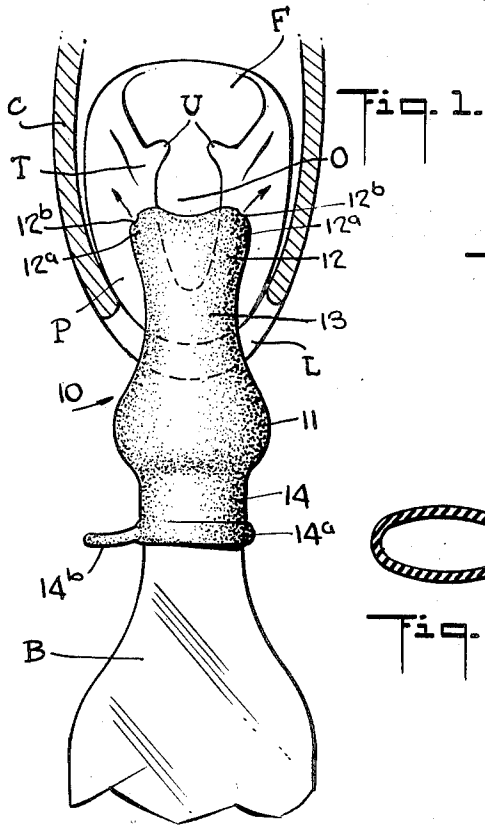
Dec. 17, 1957

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2,816,547

FEEDING NIPPLE CONSTRUCTION

Filed Sept. 16, 1955



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FEEDING NIPPLE CONSTRUCTION

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Application September 16, 1955, Serial No. 534,640

3 Claims. (Cl. 128—252)

This invention relates to liquid feeding nipple constructions as used on nursing bottles for infants, and more particularly is directed to such nipple constructions for feeding infants having cleft palate defects and providing for an improved method of infant feeding.

Among the objects of the invention is to generally improve feeding nipple constructions and methods of infant feeding of the character described, which constructions shall comprise few and simple parts forming a rugged structure capable of withstanding rough usage, which shall be easy and cheap to manufacture, which method and construction shall enable infants with cleft palate defects to be fed by nursing bottles without fear of choking or discomfort and without the use of auxiliary appliances, which method and construction shall permit cleft palate infants to suckle while in the usual feeding position without fluid entering the nasal cavity through the cleft opening, which nipple construction shall prevent the entry and lodging thereof in such palate cleft openings with the accompanying discomfort and choking effects, which method and construction shall reduce feeding time by providing increased feeding fluid flow by the natural suckling reflex with the attending stimulation for muscular development of palate, tongue and lower jaw, which nipple shall be easy to keep in sanitary and hygienic condition, which shall be reliable in operation, which shall be adaptable to be conformed to various types of feeding bottles, and which shall be practical and efficient to a high degree in use.

Other objects of the invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists of features of constructions and method, combination of elements, arrangement of parts and steps of the method which will be exemplified in the constructions and method hereinafter disclosed, the scope of the application of which will be indicated in the claims following.

In the accompanying drawing in which various illustrative embodiments of the invention are shown:

Fig. 1 is a bottom view of the roof of the mouth of an infant having a cleft plate defect involving both the hard and soft palate with the cheeks in section and showing a feeding nipple constructed to embody the invention mounted on a narrow neck nursing bottle, the nipple being in suckling position with respect to the upper lip, cheeks and palate, the arrows indicating the stream of fluid emitted from the nipple during suckling.

Fig. 2 is an end view of the feeding nipple construction shown in Fig. 1.

Fig. 3 is a sectional view taken on line 3—3 in Fig. 2 showing the interior thereof.

Fig. 4 is a sectional view taken on line 4—4 in Fig. 3 showing the oval contour of the teat portion of the nipple, and

Fig. 5 is a modified form of nipple construction embodying the invention having a base for attachment to a wide mouth nursing bottle.

Referring in detail to the drawing, 10 denotes a nip-

ple formed of a flexible material, such as, gum or synthetic rubber, or other suitable substances having like elastic properties, constructed to embody the invention.

Nipple 10, as seen in Figs. 1 to 4, may comprise a hollow breast 11, a mouth inserting teat head 12 extending from a tubular neck 13 interposed between said teat head 12 and the breast 11, and a mounting collar 14 extending from breast 11 and terminating in a bead 14a. Collar 14 is here shown to be sized for mounting nipple 10 on a narrow mouthed nursing bottle B of conventional well known construction and having a rim bead M.

Infants having cleft palate defects of both the hard and soft palate type encounter serious difficulty in feeding when using nipples of standard construction in that water, milk or other fluid food formulae is forced rearwardly and upwardly through the cleft and enters the nasal cavity causing choking, coughing and extreme discomfort. Nipples of standard construction also have been found to lodge in the cleft openings not only causing delivery of the fluid directly into the nasal cavity but also materially reducing the effectiveness of suckling action which in the normal mouth is accentuated by compression of the nipple head between the tongue and palate.

To prevent starvation or malnutrition in infancy, either special devices are employed to close the abnormal cleft opening between the mouth and nasal cavity or in extreme cases food may be required to be administered intravenously or by dropper. The special devices now in use incorporate a shield or closure means for the cleft with a standard type feeding nipple head or teat. Such devices have been found to be exceedingly bulky in the mouth, are ill fitting and must be adjusted or shaped for the individual mouth formation, and require training of nurses or parents in their use.

In order to overcome the hereinbefore enumerated problems in feeding infants having cleft palate defects, as will be clear from Fig. 1 illustrating one of the various types of deformities involving a simple cleft of both the soft and hard plate, nipple 10 is provided with a substantially elliptical cross section through neck 13 and teat head 12, the latter being flared and having a pair of substantially hemispherically shaped projections or domes 12a sized to span cleft opening O and remaining portion T of the hard and soft palate. Each of said domes 12a may be provided with one or more through-openings 12b positioned on the polar or apex region thereof, that is, on opposite sides of flared final teat head 12, to direct the stream of liquid nutrient from bottle 13 laterally in the direction of the arrows against the cheeks C and away from cleft opening O and bifid uvula U. The liquid nutrient then flows around and over the tongue (not shown) and into the pharynx F where it initiates the swallowing reflex.

Nipple 10 may be provided with a tab projection or lip 14b integrally formed with bead 14a serving as a finger grasping handle to facilitate mounting over bottle rim bead M in the well understood manner.

After constructing nipple 10 as above described and shown in Figs. 1 to 4, the practical application of the invention may be carried out by simply mounting nipple 10 on feeding bottle B containing a milk formula, water or any other liquid nutrient. On inserting nipple 10 into an infant's mouth so that neck 13 extends between lips L with the long cross-sectional axis horizontally disposed and lips L resting on breast 11, flared teat head 12 with laterally positioned openings 12b will be properly located for effective suckling as shown in Fig. 1 with respect to cleft opening O, maxillary process P and hard and soft palate T. When suckling by the infant commences, the liquid will flow from the bottle through openings 12b in a stream directed laterally against cheeks C, flared teat

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head 12 serving to partially close cleft opening O to facilitate swallowing and to permit compression thereof by the tongue against maxillary process P. This action by the tongue in compressing teat head 12 against maxillary process P and hard and soft palate T aids in expelling liquid from the nipple augmenting the sucking action and at the same time provides needed massage and exercise for stimulating muscular development of the growing infant's tongue, palate and lower jaw.

Although most beneficial when used in the feeding of infants having palate deformities, nipple 10 may also serve normal infants, flared teat head 12 comfortably fitting the infant's mouth and providing a double laterally directed stream of liquid nutrient for more rapid intake.

Nipple 10 may be provided in two or more sizes to satisfy differences in size and shape of the maxillary processes and the extent of palate deformities among infants at birth and also provide for growth requirement in the individual, the proper size nipple being readily determined by simple inspection.

The novel improved method of feeding infants having cleft palate deformities embodying the invention will now be apparent and is seen to comprise the steps of feeding a liquid from a nursing bottle through a nipple having a width sufficient to span the cleft by positioning the nipple to underlie the maxillary process, applying mouth suction to draw liquid from the bottle through the nipple and directing the stream from opposite corners of the nipple laterally and rearwardly against the cheeks and sides of the mouth to avoid entry of the liquid into the nasal cavity through the cleft opening.

A modified form embodying the invention shown in Fig. 5 as nipple 20 which may be of a type for mounting on a wide mouth nursing bottle. Nipple 20 is seen to comprise a breast 21, flared finial teat head 22 having domes 22a each with openings 22b and a tubular neck 23 all similar to breast 11, head 12, domes 12a, openings 12b and neck 13, respectively, in nipple 10. In place of mounting collar 14, an extension groove 24a and outwardly extending flange 24 is provided over which a screw coupling cap (not shown) fits for clamping engagement with a wide mouth nursing bottle in the well understood manner. Nipple 20 will clearly function in the same manner as described above for nipple 10.

Nipples embodying the invention may be provided with suitable venting means which will allow air to trickle into the bottle as liquid is withdrawn therefrom during

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feeding thereby reducing the suction requirements for a satisfactory flow of liquid. To this end, vent 25 is shown in nipple 20 formed as a through-opening in the bottom wall of breast 21.

It is thus seen that there is provided an improved feeding nipple construction and method of feeding infants with cleft palate deformities in which the several objects of this invention are achieved and which are well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiments above set forth, it is to be understood that all matters herein set forth or shown in the accompanying drawing are to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A nursing nipple for feeding infants having cleft palate deformities comprising an elastic tubular wall structure formed with a flared teat head having through-openings positioned on opposite sides thereof, said teat head being constructed and arranged to span a cleft opening and extend beneath a maxillary process surrounding said cleft opening for directing the flow of liquid laterally against the cheeks.

2. A nursing nipple for feeding infants having cleft palate deformities comprising an elastic tubular wall structure for drawing a liquid flow from a bottle there-through, said wall structure terminating in a flared teat head and having a neck interconnecting a breast portion, said teat head having a pair of laterally extending substantially hemispherically shaped domes sized to span a palate cleft opening and underlie the palate and maxillary process surrounding said cleft opening, each of said domes being formed with a through-opening positioned on an apex region thereof for directing on suckling a flow stream of liquid from the bottle laterally and rearwardly avoiding the cleft opening.

3. The nursing nipple defined in claim 2 in which the teat head and neck are substantially elliptical in cross section.

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