

[54] **VOLUMETRIC INFANT FEEDING UNIT**

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[22] Filed: **Nov. 5, 1969**

[21] Appl. No.: **874,161**

[52] U.S. Cl. **128/222, 128/252, 128/348, 215/11 R, 222/566, 222/570**

[51] Int. Cl. **A61j 09/00**

[58] Field of Search..... **128/213, 222, 223, 252, 348, 128/224; 215/11-11.4, 73; 222/460, 464, 566-570**

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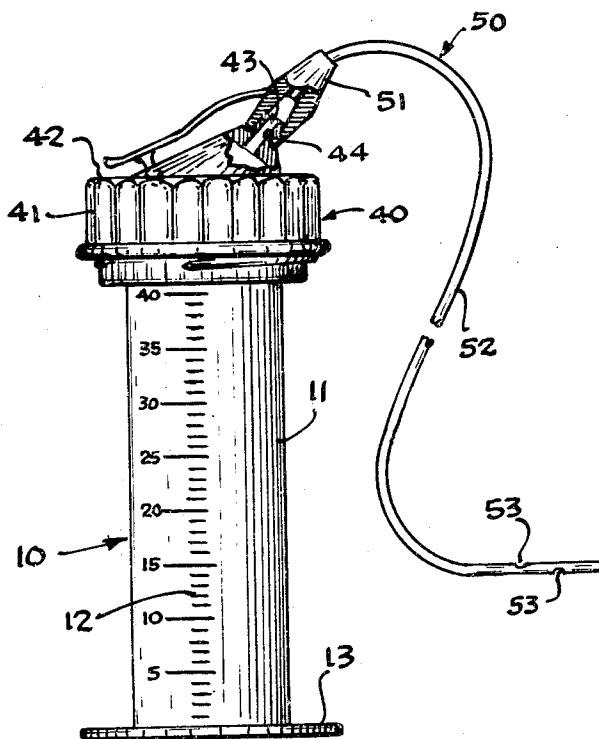
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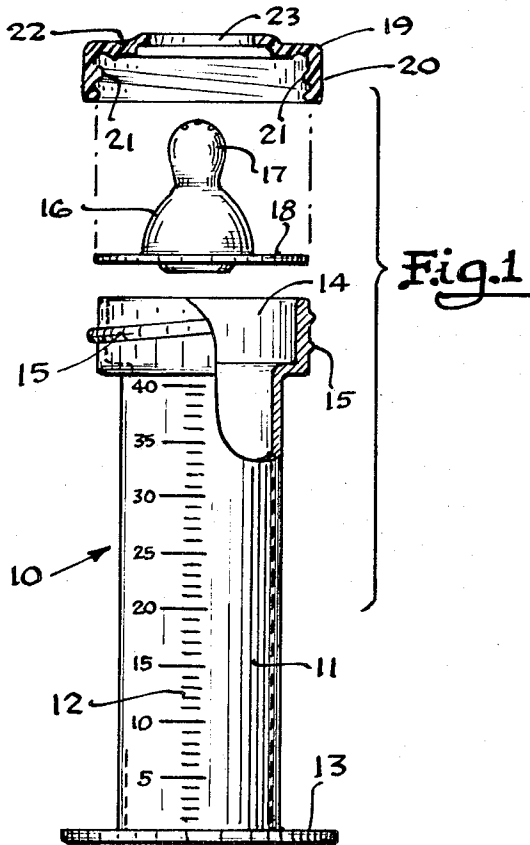
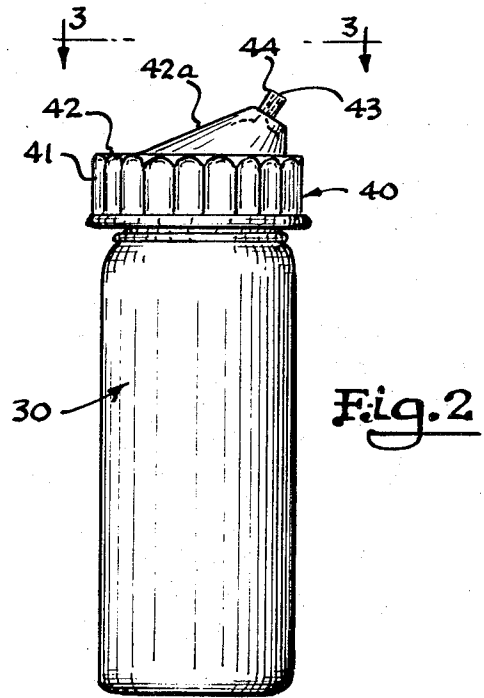
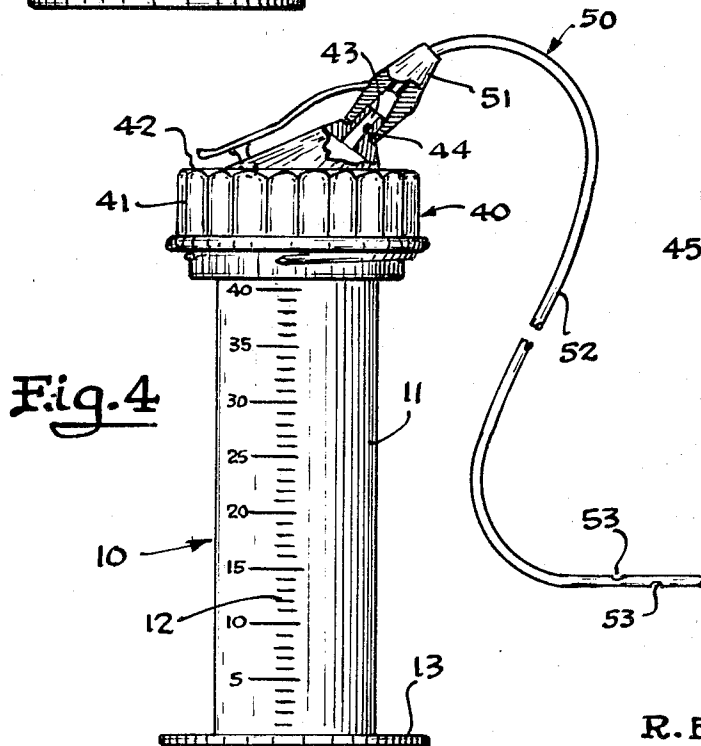
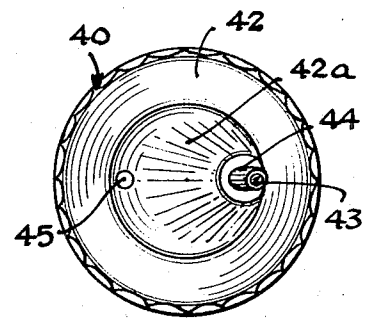
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ABSTRACT

An infant feeding unit for the feeding of precise quantities of formula to an infant and which comprises a container calibrated for accurate measurement of liquid contents within the container and including a nipple and a retaining cap for retaining the nipple on the container. Included in the unit is a transfer cap engageable with both the calibrated container and a conventional infant feeding container, and including a projecting hub. The transfer cap is used to facilitate transfer of formula from the conventional container to the calibrated container, the hub being adapted for engagement with an infant feeding catheter whereby, when attached to the calibrated container, the unit can be used for feeding of an infant by the gavage method when the infant cannot be fed orally.

1 Claims, 4 Drawing Figures





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VOLUMETRIC INFANT FEEDING UNIT

BACKGROUND OF THE INVENTION

Hospitals must be enabled to provide accurate feeding of special care infants such as those which are prematurely born. Presently available infant feeding containers, even those which are calibrated, are not considered highly accurate. Consequently, at the present time a pediatric nurse must use a pharmacy-type graduate in order to measure the exact quantity of formula which must be fed to a special care infant. The formula is then transferred to a conventional nursing container, a nipple is supplied, the nipple is capped with a paper dust cover and the entire unit is then terminally heated in an autoclave. After terminal heating the unit is allowed to cool to room temperature and is then refrigerated. Prior to feeding the infant the container is heated within the nursery and then fed to the infant. If the infant consumes the entire contents of the container the hospital then has an accurate measure of formula intake. As is more usually the case however, the infant will consume somewhat less than the amount of formula offered. It is therefore necessary for the nurse to express the remaining formula into a graduated syringe or other accurate measuring device in order to determine with accuracy the quantity of formula the infant has consumed.

SUMMARY OF THE INVENTION

The present invention provides a volumetric feeding system which permits accurate measurement of the amount of formula consumed by the infant either orally or by the gavage method without the need for accurate measurement in a separate measuring device of either the initial quantity of formula or the remaining formula after feeding. The system comprises a container calibrated for accurate measurement of its liquid contents, a nipple which may be attached to the calibrated container by means of a retaining cap, and a transfer cap which is engageable with both the calibrated container and a conventional nursing container. The transfer cap includes a hollow projecting hub so that when the cap is affixed to a conventional nursing container, formula can be accurately transferred to the calibrated container. If the infant cannot be fed orally, then the transfer cap is affixed to the calibrated container and an infant feeding catheter is attached to the hub on the transfer cap and the infant is fed by the gavage method. If the infant does not consume all of the formula offered, it is necessary only to determine the amount of formula remaining in the calibrated container in order to calculate the amount consumed.

For a more complete understanding of the invention, reference is made to the following drawings and description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevational exploded view, partly in section, of the infant feeding unit of the present invention including the calibrated container, nipple and retaining cap.

FIG. 2 is a side elevational view of a conventional nursing unit to which is attached the transfer cap of the present invention.

FIG. 3 is a top elevational view, taken along the lines 3—3 of FIG. 2.

FIG. 4 is a side elevational view of the feeding unit of the present invention including the calibrated container, the transfer cap affixed thereon and an infant feeding tube attached to the cap for gavage feeding of an infant.

DETAILED DESCRIPTION

Referring to the drawings and particularly FIG. 1, there is illustrated an infant feeding unit 10 including a calibrated container 11 which has accurate calibrations 12 inscribed on the walls thereof. Forty to 50 milliliters in 1 milliliter increments is generally sufficient. The container includes a broad base 13 for stability of the container during introduction of formula therein, an opening 14 at the top thereof and exterior threads

15 adjacent the opening 14. For oral feeding of the infant a flexible nipple 16 is positioned over the opening 14 of the container 11, the flexible nipple 16 having a hollow apertured teat portion 17 and a flange 18 near its lower portion opposite the teat portion 17, the flange being dimensioned to rest on the opening 14 in the container. A retaining cap 19 releasably engageable with the calibrated container 11 is used to secure the nipple 16. In the illustrated embodiment, the cap 19 has a depending skirt 20 with internal threads 21 engageable with the threads 15 on the calibrated container 11. The retaining cap 19 includes an inwardly extending top portion 22 defining an opening 23 therein through which the flexible nipple 16 projects when the retaining cap 19 is affixed to the container 11. FIG. 2 illustrates a conventional nursing container 30 having a transfer cap 40 attached thereto. As illustrated, the transfer cap 40 likewise has a depending skirt 41 which has internal threads (not shown) engageable with the threads 15 on the calibrated container 11 as well as with the threads on the conventional nursing container 30. The inwardly extending top portion 42 of the transfer cap 40 defines an opening 43 from which extends a hollow hub 44 for passage of formula. To facilitate pouring and measuring the formula from the conventional nursing container 30 to the calibrated container 11, the inwardly extending top portion 42 of the transfer cap 40 may be formed wholly or partially in an inclined configuration, as exemplified by the surface 42a. This results in the hollow hub 44 projecting at an inclined angle to thereby facilitate pouring, measuring and feeding of the formula. A vent opening 45 is included in the transfer cap 40 to facilitate transfer and feeding of the formula. Referring to FIG. 4 there is illustrated the infant feeding unit of the present invention arranged for gavage feeding of an infant. As is apparent, the hollow hub 44 of the transfer cap 40 is engageable with an infant feeding catheter 50 for gavage feeding, the infant feeding catheter 50 comprising a hub portion 51 engageable with the hub 44 of the transfer cap 40 and a tube 52 extending from the hub. The tube 52 includes openings 53 for exit of the formula.

When it is desired to use the infant feeding system 10 of the present invention for either oral or gavage feeding of an infant the transfer cap 40 is attached to a conventional nursing unit 30 containing the formula. The desired amount of formula is then transferred through the opening 43 of the transfer cap 40 to the calibrated container 11. If it is desired to feed the infant orally, then the nipple 16 is attached to the container 11 with the retaining ring 19. If however the infant must be fed by the gavage method, then the transfer cap 40 is removed from the conventional nursing container 30 and attached to the calibrated container 11. An infant feeding tube 50 is attached to the hollow hub 44 of the transfer cap 40 and is then inserted for gavage feeding of the infant.

To insure effectiveness for the purpose intended, the calibrated container 11 should permit accurate feeding of infants, i.e., within ± 1 ml. in 40 ml. As previously explained, with the present methods and devices hospitals must maintain an autoclave, adequate refrigeration, and bottle washing and heating facilities. By presterilizing each of the components of the volumetric infant feeding unit of the present invention, transfer of formula from the conventional nursing container 30 to the calibrated container 11 can be conducted aseptically. Feeding of the formula either orally or by the gavage method can likewise be conducted aseptically, thereby eliminating the need for autoclaving or refrigerating the unit. This can be accomplished for example by packaging each of the component parts and particularly the nipple 16, retaining cap 20 and transfer cap 40 in a blister-type package and then gas-sterilizing each of the packages by known methods. Accordingly, hospitals can maintain a completely disposable system without the need for autoclaving or refrigerating and without the need for a separate measuring device to determine, with accuracy, formula intake by an infant.

What is claimed is:

1. A volumetric infant feeding unit comprising in combination a container calibrated for accurate measurement of liquid

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contents within the container, said container including an opening at its top and having exterior threads adjacent said opening, and a transfer cap, said transfer cap having an internally threaded depending skirt engaging the exterior threads of the calibrated container and adapted to engage the threads on a conventional infant feeding container, and an inwardly extending top portion defining an opening therein and including a hollow hub extending from said opening, said inwardly

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extending top portion being formed at least partially in an inclined configuration whereby the hollow hub projects at an inclined angle to facilitate pouring, measuring and feeding of infant feeding formula, said hub having engaged thereon an infant feeding catheter for feeding of an infant by the gavage method.

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