

[54] MEDICINE DISPENSER WITH NIPPLE-INSERT

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[51] Int. Cl. A61j 9/04, A61j 9/08
[58] Field of Search 215/11 R, 11 B, 11 C

[56] References Cited

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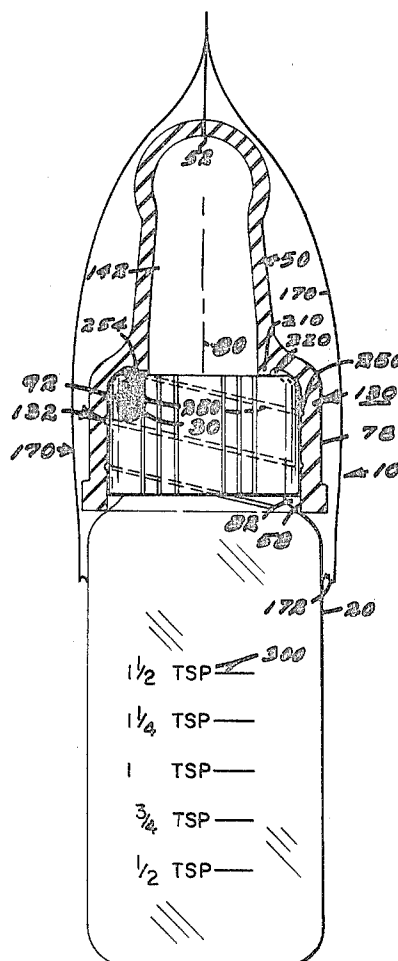
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[57] ABSTRACT

A unit-dose medicine dispenser for babies comprising a hollow medicine vial of less than 3 teaspoonsful volume, an annular nipple-insert having an outer wall onto which the nipple is stretched, the inner wall of the nipple-insert being threadedly attached to the vial.

The combination of the dispenser described with a covering extended around the nipple for protecting the nipple from the fingers during attachment to the vial.

5 Claims, 4 Drawing Figures



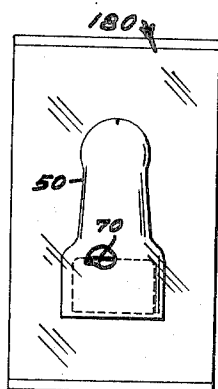


FIG. 1

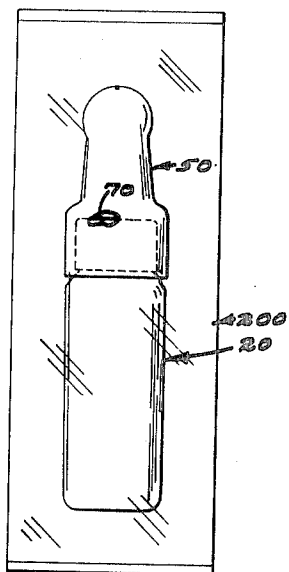


FIG. 2

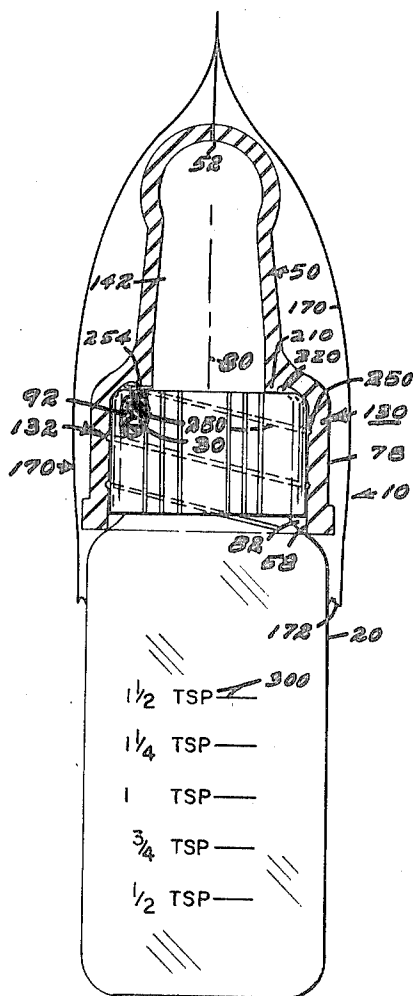


FIG. 3

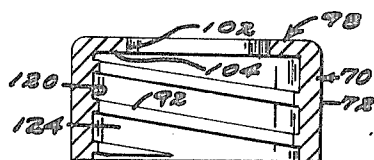


FIG. 4

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MEDICINE DISPENSER WITH NIPPLE-INSERT

FIELD OF THE INVENTION

This invention is in the field of devices for feeding highly concentrated medicines to babies in very low liquid volume, with special problems of waste, high expense, and accuracy of dosage, and not in the field of babies' milk bottles which is a field without these special problems.

DESCRIPTION OF THE PRIOR ART

The general idea of dispensing medicine from a small vial by the use of a nipple, as is done with milk in babies' milk bottles, was first proposed, to my knowledge, in my earlier U.S. Pat. No. 3,077,279, titled, Infant Medicine Feeder, issued Feb. 12, 1963. However, the proposal of that patent had the disadvantage that it proposed marking calibrations on the nipple, and had costly manufacturing expenses, and also problems of distortion and enlargement of the nipple with use, making its calibrations give inaccurate measuring of costly medicine.

It is important that a medicine dispenser have a small vial so that there is no waste of medicine because of excess amounts of medicine unwantedly sticking to the bottle and not running out, which latter is a problem with a large bottle, whereby this entire field of use is distinguished from babies' milk bottles which are so large that administration of tiny dosages of medicine therefrom would produce this great waste of medicine sticking to the sides of a bottle.

And so, babies' milk bottles, although available and having nipples, have not been a solution to this problem through the many decades.

A product has never been available on the market having means for making possible the practical feeding medicine to an infant directly from such small vials through a nipple. A tiny vial in combination with some means for delivering the medicine directly from the vial through a nipple would give an ideal way to solve the problem if such means were available.

The method of feeding medicine to babies by teaspoons has great disadvantages. One of these was spillage of costly medicine.

Another disadvantage was that what is commonly called a teaspoon, as used in a home, actually comes in more than ten sizes, leading to great inaccuracies, medicine underdoses and medicine overdoses, and distress on the part of doctors.

Some hospitals had tried prefilling a collapsible plastic tubing with medicine, but this, too, had its drawbacks. One cannot always get all the liquid out of the tubing and administration to babies through such tubes is oftentimes awkward, requiring the nurses to use both hands. The problem was so distressing that some hospitals have resorted to using needleless syringes with a plunger, so that when the plunger is pushed, the medicine is squirted into the baby's mouth. This has the disadvantage that the baby has fear of a syringe and anticipates that it is about to receive one more of the many needle injections, 16 needle injections are received by a baby in its first one and one-half years.

In addition, the sudden squirting of the medicine from a needleless syringe does not allow the baby to drink medicine at his own leisure and babies can become frightened and choke.

These desperate methods show the problem has been much greater than one tends to think.

Hospitals have come to prefer to be able to store measured amounts of medicine in sterile-capped vials for later use. This handling system has been known as the "unit dose" concept because the entire contents of the vial are administered to the patient usually by teaspoon at one administration, whereby the vial is, therefore, said to contain a "unit dose," meaning a single dose.

At a later stage, I had conceived that it is desirable to be able to place a sterile nipple on a unit dose vial after removing its cap, but no such nipple is on the market.

I had conceived of the use of a special small nipple, which is not in production and not available on the market, to be

secured to a small threaded medicine vial by means of a threaded ring which receives and fits around a rearward end of a nipple and attaches threadedly to the vial.

One type of milk bottle nipple has been available on the market which is of a general construction similar to the special nipple I mention, but it is so large as to fit only babies' milk bottles and far too large to fit a tiny medicine vial.

And so, up to that point in the history of the prior art, neither I nor anyone else had been able to market a practical product which would feed medicine by the use of a nipple.

There has long been on the market a pullover nipple designed to be pulled over the narrow top of a full-sized baby's milk bottle. But such pullover nipples were excessively large at the opening of the rearward end and would not tightly fit the small top of an infant's medicine vial. So the existence of these pullover nipples had not been of use in solving the problem, and hospital nurses, and mothers in the home, still lacked a product for feeding medicine through a nipple.

I had attempted to solve the problem by having vials made of a size to fit the pullover nipples which were available on the market for use on babies' milk bottles. This will not solve the problem because hospitals do not want the nuisance of stretching nipples over medicine bottles. The stretching problem is greater than one would think because I found that hospital policy requires that the nurses try to stretch the sterile nipples over the vials, not by hand, as would contaminate, but by the use of sterile forceps for handling the nipples during the nipple stretching and application process. The time and labor required for this operation was so great that the overall problem still remained unsolved.

Handling a sterile nipple while held in a flexible sterile enclosure has been used in babies' milk bottle handling, but only where a screw-on adapter ring has held the nipple from the outside, nipples for such outside rings have not been available on the market in sizes for tiny medicine vials.

SUMMARY OF THE INVENTION

A unit-dose medicine dispenser for babies comprising a hollow medicine vial of less than 3 teaspoonsful volume, an annular nipple-insert having an outer wall onto which the nipple is stretched, the inner wall of the nipple-insert being threadedly attached to the vial.

The combination of the dispenser described with a covering extended around the nipple for protecting the nipple from the fingers during attachment to the vial.

As thus described, the nipple-insert forms a means by which a stretch-over type of a nipple of a standard size available on the market for large milk bottles can be united with a vial, even while the nipple is held in a covering for maintaining it sterile. Whereas it would be impossible to stretch a nipple over a vial directly, with the sterile covering in the way and preventing holding the nipple directly by the fingers. Yet, this invention makes it possible to apply a standard milk bottle sized stretch-over nipple onto a medicine vial while the nipple is held in a covering, the covering being a part of a former sterile package.

The combination in which the annular nipple-insert has an inwardly projecting flange means on its forward end which is adapted to be engaged by a rearwardly extending annular protrusion which extends inwardly from and rearwardly from an inner side of the nipple, the protrusion forming part of the nipple and being itself surrounded by a circular recess on the inner wall of the nipple, whereby the flange on the nipple-insert can engage the annular nipple protrusion for preventing medicine from becoming wasted by entering the annular nipple-recess. The flange is also important because medicine which enters the recess does not reach the baby and hospital medical staffs are very concerned with exact dosages.

DESCRIPTION OF THE DRAWING

FIG. 1 is a frontal elevation of a package containing a nipple and annular nipple-insert of this invention.

FIG. 2 is a package similar to FIG. 1 but also receiving a medicine vial attached to the nipple-insert.

FIG. 3 is a frontal elevation of the medicine dispenser of this invention shown with the forward half of a nipple thereof broken away and with the forward corner of a nipple-insert thereof broken away, a package portion or cover surrounding the nipple being shown with its forward half broken away.

FIG. 4 is a frontal elevation of the nipple-insert shown in detail with its forward half removed.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The unit dose medicine dispenser of this invention is generally indicated at 10 in FIG. 3 and comprises a hollow medicine vial 20 having an open forward end 24 and having threads 30 on the outside of the forward end of the vial, a portion of which is shown in FIG. 3.

The vial 20 has an interior volume of less than 3 teaspoonful for containing the amount of medicine that would be needed at maximum and also for allowing a small "shake space." It is important that the volume not be substantially larger than 3 teaspoonsful because, if it were, medicine would be excessively wasted during dispensing because it would tend to cling to the side of the vial during drinking of the medicine by a baby instead of reaching the baby.

As accurate dosages are important, this volume of the vial is important to avoid this waste of medicine and its cost, and particularly because doctors are regarding accurate dosage as very important.

A hollow flexible elongated nipple generally indicated at 50 having a perforated forward end 52 for reception in a baby's mouth is provided. The nipple 50 has an entrance 58 at its rearward end, which latter is disposed around and spaced from the forward end of vial 20.

In accordance with this invention, an annular nipple-insert generally indicated at 70 is provided having an outer wall 72 upon which it is desired that the rearward portion 78 of the nipple 50 be stretched so as to firmly press against the nipple-insert in a manner such that medicine will not leak out between the nipple and nipple-insert. The rearward portion 78 has a hollow interior 82, as seen in FIG. 1, for receiving the nipple-insert.

The nipple 50, medicine vial 20, and nipple-insert 70, all have a common axis of rotation 80, the axis of rotation 80 extending therethrough from the forward end of the dispenser 10 to the rearward end thereof centrally of the threads 30 which are arranged in a generally cylindrical fashion around the forward end of the vial 20, although most of the threads 30 are not shown.

The nipple-insert 70 has threads 92 thereon which are adapted to mesh with the threads 30 of the vial in a secure fashion, permitting the annular insert 70 to be threadedly attached to the vial.

The nipple-insert 70 has an inwardly projecting annular flange 98 on its forward end projecting inwardly toward the axis 80 and having a forward surface 102 which is substantially planar, especially on its innermost portions, and having a rearward surface 104 which is likewise planar and at a right angle to the axis 80.

The nipple-insert 70 can be said to have an inner wall 120 on which the threads 92 are mounted and a passageway 124 therethrough from its forward to its rearward end.

The nipple 50 and the nipple-insert 70 can be said to form a nipple-and-insert assembly 130 having air vent means generally indicated at 132 permitting air to pass through the assembly 130 from the rearward side of the nipple-insert 70 to a position on the forward side of the nipple-insert 70, which latter position is in communication with the hollow forward end 142 of the nipple 50, whereby it is possible to attach the nipple 50 to the vial 20 by means of the simple twisting of the vial 20 relative to the nipple-and-insert assembly 130, as is manually possible while the nipple is held by pressure from an operator's fingers while the operator's fingers engage the out-

side of an internally sterilized hollow protector 170 which receives the nipple.

The protector 170 has an open rearward end 172 and is otherwise closed so that it prevents the operator's fingers from contaminating the nipple during assembly of the vial into the nipple-insert 70.

The protector 170 is formed of a portion of a package 180 seen in FIG. 1, which latter is completely sealed and is sterile on its inner side receiving therein a nipple 50 and a nipple-insert 70.

By tearing off a lower part of the package 180, the remainder becomes the protector 170 of FIG. 3.

In FIG. 2, an alternate way is shown in which a package 200 completely encloses a vial 20, a nipple 50, and an insert 70, in which the three are all in assembled position as a dispenser. In the use of the package in FIG. 2, a lower portion of the package could be torn off, the nipple held in the fingers with the fingers on the outside of the upper part of the package, the medicine vial 20 is then removed so as to be on the outside for filling, and then the nipple and nipple-insert are placed on the vial 20 after it has medicine in it.

All parts of the dispenser disposed in either of the packages 180 or 200, are, of course, sterile.

In FIG. 3 it can be seen that the nipple 50 has a rearwardly extending annular nipple protrusion 210 attached thereto and forming a part thereof and attached continually around its annular shape and, therefore, on all sides thereof, to the nipple 50. The protrusion 210 is itself surrounded by a circular recess 220 on the inner wall of the nipple and the nipple-insert 70 has the annular flange means 98 thereof in a position for engaging the rearward side of the protrusion 210 so as to substantially seal the protrusion 210 to prevent medicine from passing between the protrusion 210 from passing between the protrusion 210 and the nipple-insert 70, as is undesirable because it would then enter the recess 220 and tend to become trapped so that it would not pass forwardly and be administered to the baby, making the dosage inaccurate and causing waste of medicine.

The air vent means generally indicated at 132 can be of any one of many types, such as, for example, the provision of a spiral groove 250 which extends from the rearward end of the nipple up to the recess 220 spiralling about the axis 80 for admitting air to the recess 220 from which it can escape into the hollow interior of the nipple through a passage 254 which extends transversely to the protrusion 210 from an inner to an outer side thereof, the vent passage 254 being small enough to prevent medicine from entering through it, but large enough to substantially function to allow air to pass through it to vent the vial so that medicine can come out.

I claim:

1. A unit dose medicine dispenser for babies comprising the combination of a hollow medicine vial having an open forward end, threads on the outside of said vial at said open end, said medicine vial having an interior volume of less than 3 teaspoonsful so as to be small enough so that concentrated babies' medicine is not excessively wasted because of its clinging to the side of the vial during drinking of medicine therefrom by a baby, a flexible hollow elongated nipple having a perforated forward end for reception in a baby's mouth, the rearward end of said nipple having an entrance opening and the rearward end of said nipple being disposed around and spaced from the forward end of said vial, an annular nipple-insert having an outer wall, said nipple having a stretchable resilient rearward portion having a hollow interior receiving at least a forward portion of said nipple-insert, said nipple being stretched onto said nipple-insert and firmly pressing against said nipple-insert, said nipple, medicine vial, and nipple-insert all having a common axis of rotation extending therethrough from the forward end of said dispenser to the rearward end thereof centrally of said threads, said nipple-insert having an open rearward end and having an inner wall which is threaded at its rearward end and which is threadedly received on the threaded forward end of said medicine vial, said nipple-insert

having a passageway in its forward end in communication with the open rearward end of said nipple-insert, said nipple and said nipple-insert forming a nipple-and-insert assembly having air vent means permitting air to pass therethrough from the rearward side of said nipple-insert to a position on the forward side of said nipple-insert which position is in communication with the hollow forward end of said nipple whereby it is possible to attach said nipple to said medicine vial by means of the simple twisting of said vial relative to said nipple-and-insert assembly as is manually possible while said nipple is held by pressure from an operator's fingers when the latter engage the outside of an internally sterilized hollow protector receiving said nipple.

2. The medicine dispenser of claim 1 in which a protective covering is disposed around said axis on the outside of said nipple at at least that portion of said nipple which extends over said nipple-insert.

3. The medicine dispenser of claim 1 in which said nipple-insert has an inwardly projecting annular flange means on its forward end projecting inwardly toward the said axis.

4. The combination of claim 3 in which said flange means is engaged by the forward end of said medicine vial at times when said insert is screwed tightly onto said vial.

5. The medicine dispenser of claim 1 in which said nipple has a rearwardly extending annular nipple protrusion on its inner side and attached to all sides thereof, said protrusion forming part of the nipple and being itself surrounded by a circular recess on the inner wall of the nipple, said nipple-insert having an inwardly projecting annular flange means on its forward end extending toward said axis and which is adapted to be engaged by said rearwardly extending annular nipple protrusion for preventing medicine from becoming wasted by entering the annular nipple-recess.

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