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LIQUID INFANT FOOD DISPENSERS AND PACKAGING THEREFOR

Filed Sept. 5, 1947

2 SHEETS—SHEET 1

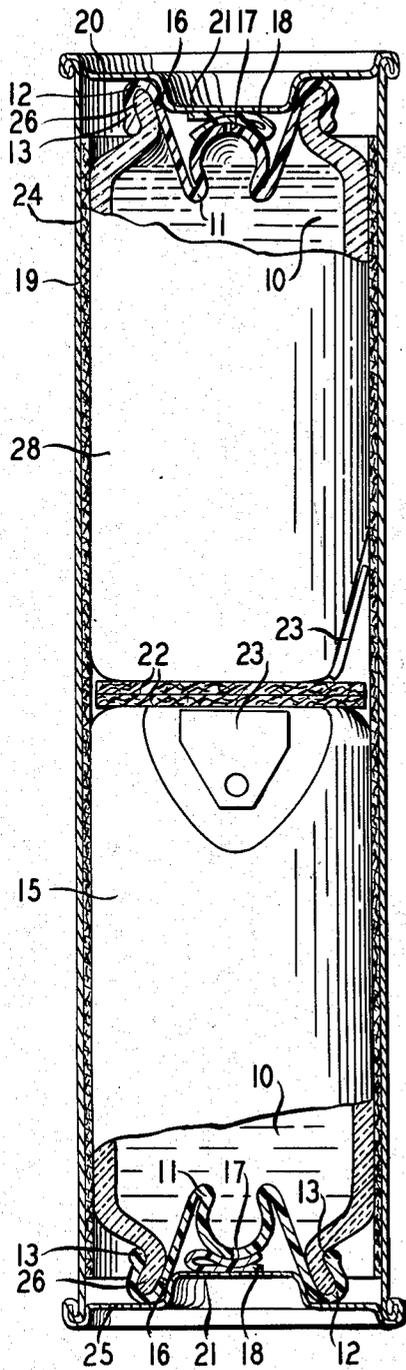


FIGURE 1.

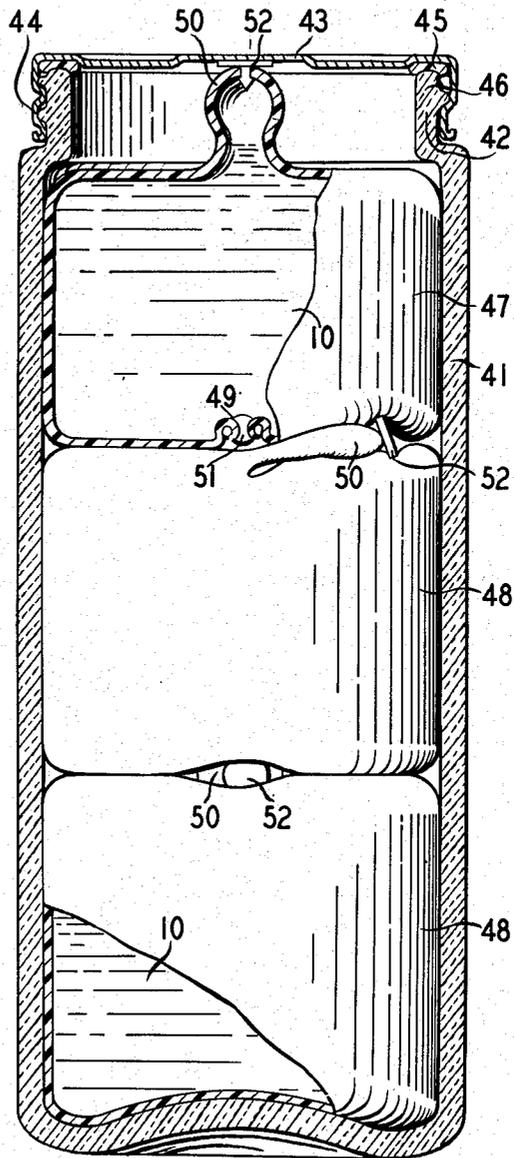


FIGURE 2

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2 SHEETS—SHEET 2

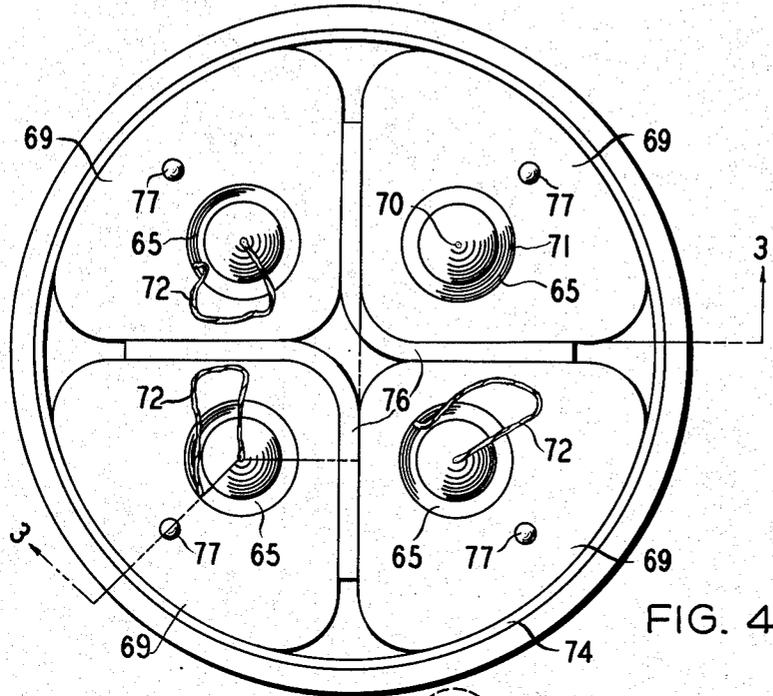


FIG. 4

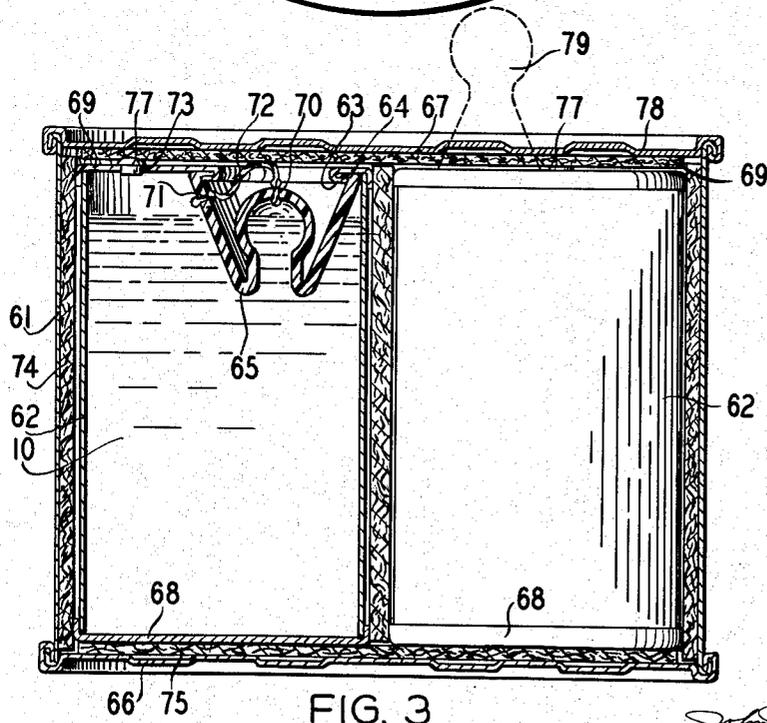


FIG. 3

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LIQUID INFANT FOOD DISPENSERS AND PACKAGING THEREFOR

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Application September 5, 1947, Serial No. 772,239

11 Claims. (Cl. 99—171)

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This invention relates generally to commercially marketable dispensing devices containing liquid infant food and progresses several steps beyond my previous applications in which I have limited the specific disclosures to packages containing single dispensing units.

A commercially marketed dispenser for liquid infant food is best shielded from external contamination due to handling by hermetically sealing its outside surfaces as well as its interior. Therefore, an exterior airtight jacket over the dispenser is desirable, and the divided cost of such a jacket can more easily be borne by a number of dispensers there enclosed than the whole cost by a single one.

Since infants require several feedings per day, the enclosure of a number of dispensing devices in a single shell would afford both a saving in cost and an increase in convenience for the consumer. Moreover, a packaging unit can contain up to six or even more individual portions; so a whole day's feeding or more may be assembled as one unit, particularly when opened units have sealed dispensers within or when refrigeration is available for opened units containing unsealed dispensers.

Furthermore, when a number of dispensers are enclosed within a single hermetically sealed unit package, the necessity for construction of each to be capable of withstanding the punishment of shipping and handling is reduced, thereby lessening further the cost per dispenser.

To eliminate repetition I shall not again in this application define the sense to which the use of certain words such as "consumer," "liquid infant food," "processor," "package," "container," "destructive deformation," "irreplaceable," "cemented," etc. are limited herein, as I have done in a previous application.

An object of this invention is to provide for the manufacture of packages containing liquid infant food, the dispenser portions thereof being hermetically sealed from contamination of either exterior or interior surfaces.

An object of this invention is to provide for the manufacture of packaging units comprising a number of containers of liquid infant food.

An object of this invention is to reduce the cost of providing single feeding portions of liquid infant food by enclosing a multiplicity of dispensers containing said food in one dispensing unit.

Further objects and novel features of my invention will become apparent in the balance of the specification, in the claims appended, and in

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the following description of several forms thereof as shown in the accompanying drawings in which:

Fig. 1 is a sectional view of one form of packaging unit in accordance with this invention;

Fig. 2 is a sectional view of another form of packaging unit in accordance with this invention;

Fig. 3 is a sectional view of a third form of packaging unit in accordance with this invention;

Fig. 4 is a top view of the packaging unit shown in Fig. 3, the cover of the unit being removed.

Referring now specifically to Fig. 1, there is shown a packaging unit including two identical dispensers 15 and 28, which are somewhat similar to the container plus nipple combination shown in Fig. 7 of my previous application bearing Serial No. 772,235.

After one (25) of the two similar disc closures 20 and 25 has been crimped and sealed as shown to one end of the can body 19, and after the sheet or tubular separator 24 has been inserted its full length into the can body 19, the first 15 of two identical dispensers 15 and 28, having therein already a supply of liquid infant food 10, and having its mouth 26 already closed by a nipple 11, whose skirt 12 preferably fits over the mouth 26 and whose feeding orifice 17 is closed by a strip 18 of contact adhesive material, is preferably inserted upwardly into the temporarily inverted can body 19, until the nipple 11 has struck the reentrant portion 21 of the closure 25 and is thereby telescoped into itself in the manner shown, wherein the ball portion of the nipple 11 is enclosed within the sidewalls of the skirt 12.

The can body 19 is then righted to the position shown and the dispenser mouth 26 is thus centered upside down by the reentrant portion 21 of the closure 25 and is gasketed in place by the skirt 12 of the nipple 11.

The strip 18 of contact adhesive material has been prefolded with its tacky side outwards and placed against the ball of the nipple 11 so that after the dispenser 15 has been inserted into the can body 19, the tacky surface of the strip 18 also contacts the inner surface of the reentrant portion 21 of the closure 25.

The venting orifice 16, located in the nipple skirt 12, is temporarily closed by the folding of the nipple 11 and the resultant interposition of the skirt 12 between the mouth 26 of the dispenser 15 and the walls of the cap 25 adjacent its reentrant surface 21.

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Filler discs 22, which may be of corrugated organic material or of some other springy resilient construction, are dropped into place upon the bottom of the now inverted dispenser 15; and a second dispenser 28, in all respects identical with the first dispenser 15 (the parts being here given the same numerical designation), is dropped in an erect position into the can body 19, whereupon the second disc closure 20, which may be identical with the disc closure 25 previously mentioned, is applied to the open end of the can body 19 and seamed or otherwise secured in place.

The nipple 11, when mounted over the mouth 26 of either dispenser 15 or 28 after filling and before the dispenser 15 or 28 is placed in the can 19, may be cemented in place or it may rely upon the elastic squeeze of the peripheral portion 13 operating in a recess below the mouth 26 to retain it against withdrawal during feeding.

Besides serving as a gasket for retaining the liquid contents within the dispenser 15 or 28, the nipple skirt 12 also serves as a cushion for protecting the mouth 26 against axial shocks transmitted through the disc closure. The separator 24 is intended for protection of the dispensers 15 and 28 against radial shocks or blows which may be transmitted through the can body 19.

While the can may be vacuum sealed during application of the second disc closure 20, I prefer that it be sealed under positive pressure with a non-oxidizing gas content to facilitate extension of the nipples 11 upon opening.

Provided that, after filling of the container bodies with presterilized liquid infant food, the nipples 11 are initially assembled in an extended position and the adhesive strips 18 are in place before the dispensers 15 and 28 are loaded into the can 19 and the can sealed, it is possible to have greater pressure in the dispensers 15 and 28 than in the can 19 because of the forced collapse of the nipples 11 by the operation of loading into the can. (Of course, it is desirable that there be a minimum of oxygen present to reduce the danger of spoilage.) Therefore, even if the can 19 is sealed under a partial vacuum, it is possible for a nipple 11 to be forced outward upon opening of the can 19 owing to the greater pressure within the dispensers 15 and 28. The contact adhesive strips 18 aid in the automatic extension of one nipple 11 upon the opening of the can 19 (best done with a rotary or other smooth acting can opener unless the can has a removable tear strip) and of the other nipple 11 upon the inverting of the can 19 permitting the second dispenser 15 to drop out.

Even if all aids to the extension of the nipple 11 after openings were eliminated, shaking of the dispensers 15 or 28 in an inverted position after removal from the can 19 would cause the nipples 11 to be extended as the vents (as well as the feeding orifices) begin to operate. I do not contend that the dispensers 15 and 28 and closures 20 and 25 must be designed for collapse of the nipple while in shipping position; but I regard the folding of the nipples 11 either in the position shown or over to one side as an advanced step in design and as a novel and excellent means of conserving of material and reducing the ultimate bulk of the dispensers 15 and 28 and the can 19.

The tabs 23 are secured to the dispensers adjacent their bases for the purpose of permit-

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ting suspension of the dispensers in an inverted position during feeding.

The consumer needs only to cut circumferentially around one closure of the can with a rotary or other smooth acting type of can opener, and lift out the closure, or remove the closure by means of a tear strip if one is provided, remove the adhesive strip, extend the nipple, if not already extended, by shaking the dispenser, and warm the dispenser before administering it to an infant.

Referring now specifically to Fig. 2, there is shown a packaging unit comprising a glass jar body 41 having a threaded neck section 42 and an external cap 43 having a threaded sidewall 44, which mates with the threaded neck section 42. The cap is fitted with a gasket 45 which, when the cap 43 is drawn down by means of the threads, provides a hermetically sealed closure for the packaging unit which contains a number of flexible flasks 47 or 48, each preloaded with a supply of liquid infant food.

Each flask 47 or 48 comprises a bag of rubber or soft plastic made in the shape of and constructed in the manner of a rubber balloon, possible designs of flasks having already been described in my previous application bearing Serial No. 772,237, as part of a packaging unit comprising a single flask.

The flasks 47 are preferably loaded from the end opposite the nipple 50 with a single feeding portion of sterilized liquid infant food 10, the loading being accomplished through the opening 49 which is then closed by a drop 51 of hardenable sealant. The feeding orifice of the nipple 50 is plugged for shipping purposes with the removable pin 52. Since the flask 47 is flexible, and, therefore, collapsible, no vent is needed.

The flasks 48 (when used instead of the flasks 47) may be syringe loaded through the feeding orifice 50 which is plugged for shipping purposes with a removable pin 52.

After loading, the flasks are dropped into the jar 41 and the above described closure assembly is applied.

The consumer needs only to open the jar and warm it or the containers individually and remove the pins 52 before feeding.

Referring now to Figs. 3 and 4, there is illustrated a packaged unit, the outer member of which preferably has a cylindrical metal can body 61 having end closure discs 66 and 67 seamed to it, and enclosing a number of dispensers 62, preferably four in this instance, constructed in the manner shown, each containing a supply of liquid infant food 10.

The dispensers 62, preferably of metal or other non-absorbent material, are shaped to conserve space in this multiple packaging unit, and are preferably of soldered or cemented end construction, having a plain end closure 68 and a special closure 69. The closure 69 preferably has a turned down flange 63 gripping the flange 64 of a nipple 65 to which it has preferably been pre-assembled before assembly to the dispenser 62 and before filling. The closure 69 also has a filling orifice 73.

The nipple 65 has two orifices, one a feeding orifice 70 and the other a venting orifice 71, both orifices being closed with a knotted pull cord 72 the slack middle portion of which lies across the outside of the closure 69.

After assembly of the body 61 and the end closure disc 66, one separator disc 75 is dropped into the outer can and the body is lined with a

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separator 74 which may be either sheet or tubular. The four empty dispensers 62 complete with closures are then dropped in, the two V separators 76 are inserted, and the whole partial assembly is sterilized.

Sterile liquid infant food is then injected into each dispenser through the filling orifices 73 which are then each closed with a drop of hardenable sealant 77, after which a sterile separator disc 78 is laid over the top and a sterile end closure disc 67 sealed to the body 61.

The thickness of the separator disc 78 and the several projections on the closures 69 contrive, together with the slight dishing of the end closure disc 67, to insure a small amount of slack space between the closures 69 and the end closure disc 67 so as to permit the consumer to cut out the end closure disc 67 with a rotary can opener without cutting through the closures 69. Tear strip construction would be equally suitable.

After the consumer has removed the end closure disc 67 he may lift out the dispensers 62 separately, extending and unplugging the nipples 65 by pulling out the cords 72, thereupon warming the dispensers 62 before administering them to the infant.

The dotted line 79 above the closure 69 for the unsectioned container 62 at the right of Fig. 3 represents the extended height of the nipple 65.

I prefer that the liquid infant food be presterilized before loading into the containers or dispensers, and that each part brought into contact with the food and each new component assembled to the container, the dispenser, and even the outer protective enclosure be presterilized, although it is possible to sterilize the food and the remainder of the packaging unit together. The latter expedient often results in less favorable conditions for sterilization of the food and retaining all possible nutritional value, but on the other hand may in some instances give greater insurance against contamination during the assembly operations.

It is possible, within the scope of this invention, to resort to what I regard as an inferior practice in enclosing nipples within the packaging unit, viz: not to mount the nipples directly upon the dispenser, but to close the mouth of the dispenser by other means, and to enclose none, one, or more nipples within the packaging unit; but such construction affords less convenience to the consumer, and also may cause post opening contamination of the nipple during assembly by the consumer, unless a quantity of individually wrapped nipples equal in number to the quantity of dispensers is enclosed within the packaging unit, and unless the nipple wrapping is performed in such a manner that the nipples may be applied to the dispenser without contact with the fingers. Enclosing of a quantity of nipples less than the number of dispensers would render it necessary for the consumer to sterilize nipples, one of the uncertainly safe home tasks that this invention is intended to eliminate. The major justification for closing the dispensers by other means and enclosing separately wrapped nipples would be to permit the use of lower grade nipple materials, subject to softening or other damage through absorption of liquids.

The dispensers described herein, when removed from the packaging units, require no holders, frames, supports, brackets or positioners to permit them to serve as complete single service nursing units.

It will now be obvious that various other com-

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binations are practicable, such as, for instance, the use of metallic enclosures as shown in the first and third forms of this invention to house flasks such as those shown in Fig. 2, or the insertion of metallic containers in glass enclosures or the use of rigid as well as flexible plastic flasks as dispensers, or other combinations, particularly those making use of containers and dispensers similar to those previously disclosed by me in other applications.

While there have been shown and described what are at present considered to be the preferred forms of this invention, it will be obvious to those skilled in the art that various changes, modifications and combinations may be made therein without departing from the true scope of this invention, in particular combinations including elements of disclosures I have made in previous applications; and it is accordingly intended, in the appended claims, to cover such equivalents as may fall within the true scope of this invention and without the prior art. Therefore, I claim:

1. The combination of an outer enclosure having an end opening surrounded by an externally grooved flange, a removable closure for said opening, a plurality of independent containers for nursing liquid within said outer enclosure formed of flexible material and each being provided with a nipple having a sucking orifice, the said orifices being stoppered by removable members.

2. The combination of an outer enclosure having an opening surrounded by an externally grooved flange, a removable closure for said opening, a plurality of independent containers for nursing liquid within said outer enclosure formed of flexible material and each being provided with a nipple having a sucking aperture, and means for initially sealing the sucking aperture of each of said nipples.

3. A package for commerce comprising: at least one dispenser containing therein a supply of liquid infant food, said dispenser including a vessel portion and a nipple portion; and an outer enclosure adapted to receive said dispenser, said outer enclosure being initially hermetically sealed to prevent the infiltration during storage, shipment and handling of air borne organisms and the resultant deposition of such organisms upon the surfaces of said dispenser, whereby the danger of infection of an infant, using said dispenser upon the removal of said outer enclosure, by such organisms is eliminated.

4. A package as in claim 3, said nipple portion having a pull member thereon, said pull member initially rendering said nipple portion inoperable for suckling, said pull member being removable to prepare said nipple portion for suckling.

5. A package as in claim 3, said nipple portion having an aperture and removable means for initially sealing said aperture.

6. A package as in claim 3, said dispenser being of organic material, said nipple portion being integral therewith, said nipple portion having an element at the tip thereof, said element being removable to prepare said nipple for suckling.

7. A package as in claim 3, said nipple portion being initially assembled to said dispenser and being incapable of disassembly and reassembly by hand thereto without the use of extraneous aids.

8. A package as in claim 3, said dispenser having a suspension member at the base end thereof, whereby said dispenser may be suspended in an inverted position during the feeding of an infant.

9. A package as in claim 3, said enclosure, after

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initial opening, being incapable of sealable re-assembly by hand without the use of tools and without the use of sealants.

10. A package as in claim 3, said nipple portion spanning the mouth of said dispenser, and an interior surface of said outer enclosure abutting said nipple portion and confining said nipple portion within the body of said dispenser. 5

11. A package for commerce comprising: a plurality of dispensers, said dispensers containing therein individual supplies of liquid infant food, said dispensers each including a vessel portion and a nipple portion; and an outer enclosure having said dispensers enclosed therein, said outer enclosure being initially hermetically sealed to prevent the infiltration during storage, shipment and handling of airborne organisms and the resultant deposition of such organisms upon the surfaces of said dispensers. 15

JOHN J. HORAN. 20

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