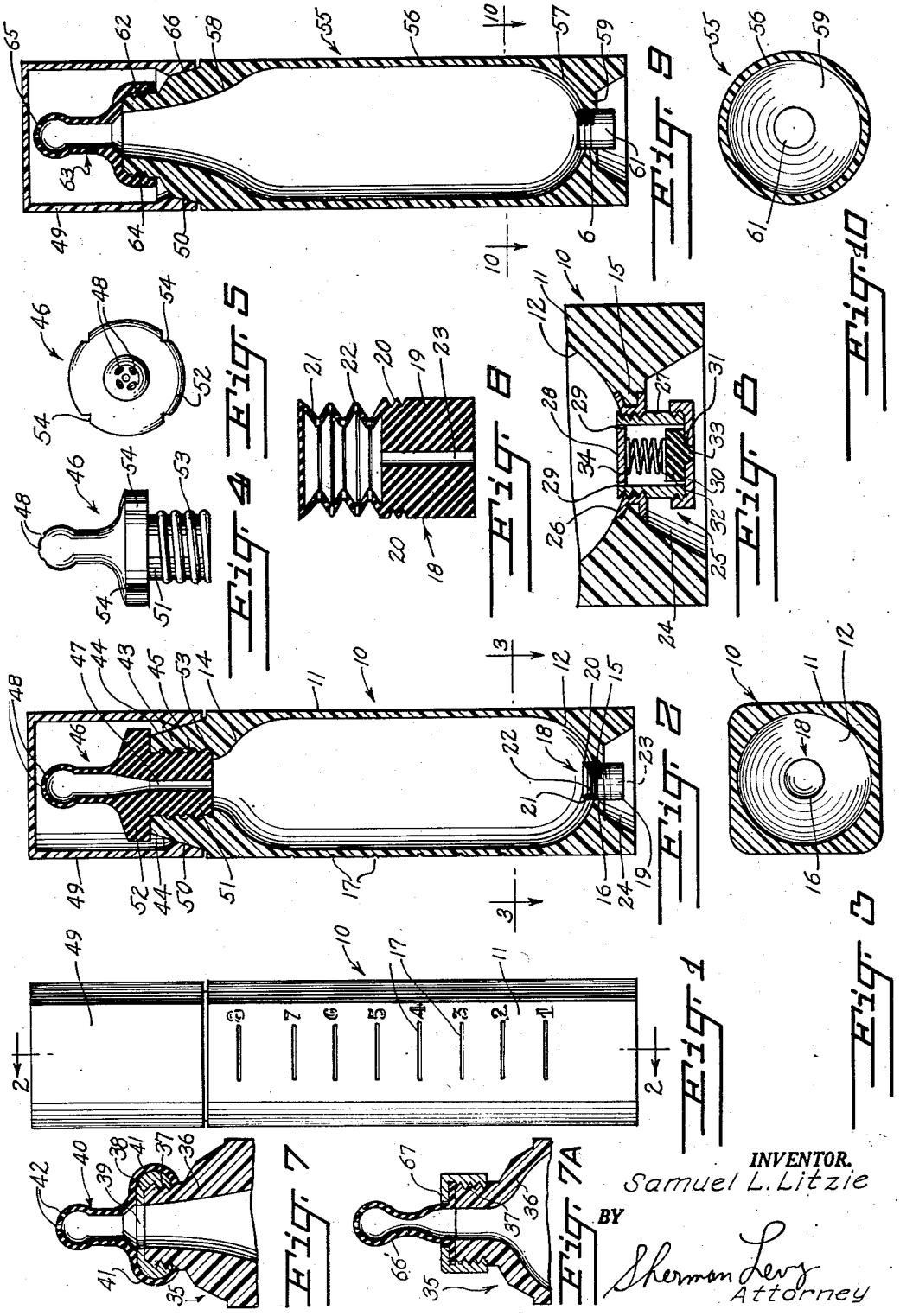
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BABY BOTTLE

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BABY BOTTLE

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This invention relates to a baby's nursing bottle, and more particularly to a baby's bottle which is unbreakable and shatterproof.

The object of the invention is to provide a baby's bottle which is adapted to be made of a suitable material such as plastic whereby the bottle will not accidentally break or shatter, the bottle being easily cleaned and wherein a valve is provided for equalizing the pressure inside the bottle with the pressure on the outside of the bottle to insure a continuous flow of fluid.

Another object of the invention is to provide a bottle which can be made of plastic that may be either transparent or opaque and wherein the bottle may be tinted with color or may have a natural color, there being a cap for protecting the nipple when the bottle is not in use, the nipple being easily removed and replaced.

A further object of the invention is to provide a baby's bottle which is extremely simple and inexpensive to manufacture.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application, and in which like numerals are used to designate like parts throughout the same:

Figure 1 is a side elevational view of the baby bottle, showing the cap mounted thereon for protecting the nipple when the bottle is not being used.

Figure 2 is a sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a side elevational view of the nipple.

Figure 5 is an end elevational view of the nipple.

Figure 6 is a longitudinal sectional view taken through a bellows-type valve.

Figure 7 is a fragmentary sectional view of a modification wherein a conventional nipple is mounted on a cap which is arranged in engagement with the neck of the bottle.

Figure 7A is a view similar to Figure 7 but showing a further modification.

Figure 8 is a fragmentary sectional view through the bottom of the bottle showing a spring-type valve in place of the bellows-type valve.

Figure 9 is a longitudinal sectional view taken through a modified baby bottle showing a nipple arranged in threaded engagement with the outer surface of the neck of the bottle.

Figure 10 is a sectional view taken on the line 10—10 of Figure 9.

Referring in detail to the drawings, the numeral 10 designates in Figures 1 through 6, a baby bottle which includes a body portion 11, Figure 2. The bottle is made of a suitable plastic material so that it will not break or shatter. The interior of the body 11 of the baby bottle is rounded or shaped arcuately as at 12 and 14 whereby the interior of the bottle can be readily cleaned.

The bottle 10 further includes a bottom wall 15 which

is provided with a central circular threaded opening 16 for a purpose to be later described. The body portion 11 of the bottle is further provided with indicia or numbers 17, Figure 1 and the indicia 17 may serve to indicate the quantity of milk or liquid in the bottle 10.

A valve means is provided for equalizing the pressure inside the bottle 10 with the pressure on the outside so as to insure that there will be a continuous flow of milk or fluid. This valve means comprises in one form of the invention as shown in Figure 6 a bellows valve 18 which includes a core 19. The core 19 may have an exteriorly threaded portion 20 for threadedly engaging the threaded opening 16 in the bottom wall 15. A bellows 21 extends inwardly from the core 19, and the bellows 21 is flexible and is provided with a plurality of spaced apertures 22 for the passage therethrough of air. The apertures 22 communicate with the interior of the body member 11. The core 19 is provided with a longitudinally extending passageway or opening 23, Figure 6, whereby air can pass through the passageway 23, then into the interior of the bellows 21 and then when the bellows 21 is expanded as shown in Figure 6, the air can pass out through the apertures 22 into the interior of the body member 11.

The bottom of the bottle is recessed out as at 24 so as to facilitate removal and replacement of the valve. Instead of using the bellows-type valve 18 shown in Figures 2 and 6, a spring type valve 25 can be used, and this spring type valve 25 is shown in detail in Figure 8. The valve 25 includes a collar 27 that is arranged in threaded engagement with a bushing 26 which is mounted in a central opening in the bottom wall 15. A plate 28 is connected to the collar 27, and portions of the plate 28 may be cut away to provide openings 29 which permit air to enter the interior of the bottle so as to equalize the pressure inside and outside the bottle. A closure member or cap 30 is arranged in threaded engagement with the collar 27, and the cap 30 is provided with a central opening 31. A plug or stopper 32 includes a finger 33 that is mounted for movement into and out of closing relation with respect to the opening 31. A coil spring 34 is interposed between the plate 28 and the stopper 32 for normally urging or biasing the finger 33 into closing relation with respect to the opening 31. The valve 25 is constructed so that when pressure within the body member 11 decreases sufficiently, the stopper 32 will move away from the cap 30 whereby air can pass through the opening 31, then through the openings 29 and into the interior of the bottle to equalize the pressure therein. When the pressure has built up sufficiently in the body member 11, the spring 34 will again move the stopper 32 to the position shown in Figure 8 so that no more air will enter the bottle.

Referring to Figure 7 of the drawings there is shown a portion of a modified bottle which is indicated generally by the numeral 35. The bottle 35 is made of plastic and the bottle 35 includes a neck 36 that has a threaded portion 37. A cap 38 is arranged in threaded engagement with the portion 37 of the neck 36, and the cap 38 is provided with a central opening 39. A nipple 40 has a portion 41 surrounding the cap 38, and the nipple 40 may be of conventional construction. The nipple 40 is provided with the usual openings 42 for the egress therethrough of milk or fluid.

Referring again to Figures 2, 4 and 5 of the drawings, it will be seen that the body 11 of the bottle 10 includes a neck 43 on its upper end, and the outer surface of the neck 43 is tapered as at 44. The interior of the neck 43 is threaded as at 45, and a nipple 46 includes a cylindrical sleeve 51. The sleeve 51 is provided with exterior threads 53 for engagement with the interior threaded portion 45 of the neck 43. The nipple 46 is further provided with a longitudinally extending passage-

way or bore 47, there being apertures 48 in the outer end of the nipple for the passage therethrough of milk or fluid. For protecting the nipple 46 when the bottle is not being used, a cap 49 is provided. The cap 49 includes inner beveled surfaces 50 for snugly engaging the inclined surface 44 of the neck 43. Preferably the projecting portion of the nipple 46 which has the apertures 48 therein is flexible or pliable, while the sleeve 51 and collar 52 of the nipple are of more rigid material. The collar 52 is of a greater diameter than the sleeve 51. The collar or shoulder 52 is further provided with a plurality of notches or cutouts 54 in its outer periphery, Figure 5, and these notches 54 provide a better gripping surface so that the nipple 46 can be readily screwed into or out of the body 11 of the bottle. It is to be understood that when the baby is to use the bottle, the cap 49 is removed so that access can be had to the nipple 46.

Referring to Figures 9 and 10 of the drawings there is shown another modified bottle which is indicated generally by the numeral 55. The bottle 55 is again made of shatterproof unbreakable plastic, and the bottle 55 includes a body portion 56 that has its inner surface rounded or curved as at 57 and 58 whereby the bottle can be readily cleaned. The bottle 55 further includes a bottom wall 59 having a central opening 60 therein, and a plug 61 may be arranged in threaded engagement with the opening 60. The plug 61 may be used in the event that the valve 18 or the valve 25 becomes inoperative or worn out whereby the bottle can still be used with the plug 61 in place. The bottle 55 further includes a neck 62 on the upper end of the body portion 56, and the neck 62 may be threaded exteriorly. A nipple 63 has a portion 64 threaded interiorly for engagement with the threaded portion of the neck 62. The nipple 63 is provided with the usual openings 65, and the neck of the bottle may be provided with inclined surfaces 66 which are adapted to be engaged by the beveled surfaces 50 of the cap 49. Again the cap 49 is used to protect the nipple 63 when the bottle is not being used.

The nipple may be made of any suitable material such as plastic or rubber and the bottle is made of a heat resistant material. The bellows valve 18 may also be made of rubber or plastic. The bottle may have any desired size and shape and for example the bottle may have a rectangular shape or else it may have a cylindrical configuration. The various parts of the valve 25 may be made of stainless steel whereby corrosion thereof will be prevented. The cap 38 shown in Figure 7 permits a conventional nipple 40 to be mounted on a plastic baby bottle 35, since the lower portion of the nipple 40 can be stretched over the cap 38 to be held properly in place. The plug 61 can be used in the event that the valves get out of order whereby the bottle will still permit milk to be withdrawn therefrom. The cap 49 can be made of plastic and may either be transparent or opaque or it may be tinted with color or it can have a natural color. The cap can be rigid or semi-rigid but at any event it is unbreakable and non-shatterable. The bottle 10 is made of the same material and the cap 49 protects the nipple when the bottle is not in use. The cap 49 fits over the tapered shoulder 50 on the neck 43 or the neck 62 and the cap 49 is tightened by pressing down thereon. This pressure holds the cap in place and the cap can be readily removed by turning it slightly and then pulling it up. The nipple for the nursing unit can be made of rubber, synthetic rubber, or plastic such as glycerin base and the nipple in Figures 2, 4 and 5 has outside threads 53 to fit inside the bottle. The portion of the nipple which enters the baby's mouth is soft and pliable similar to a conventional nipple, while the base of the nipple including the portions 51 and 52 is thicker and harder in order to maintain its shape and to insure a tight fit of the nipple. The nipple has a straight hollow center or bore 47 to permit easy and thorough cleaning thereof. Notches 54 in the nipple provide a good grip for attaching and removing the nipple.

The bottle can be made of plastic either transparent or opaque and can be tinted or natural in color and can be made rigid, hard, or semi-rigid and pliable but at any event it is unbreakable and shatterproof. The bottle can be either round or square on the exterior and the interior of the bottle is round to facilitate cleaning of the bottle. The neck 43 of the body 11 has interior threads 45 for receiving the threads 53 of the nipple 46 and the bottom of the bottle will either receive the bellows valve 18 or the spring valve 25. Or, the plug 61 can be arranged in engagement with the opening in the bottom of the bottle. The bottle can also be made with a plain bottom. The calibrations 17 on the bottle permit a visual observation of the quantity of fluid in the bottle. The bellows valve 18 can be made of rubber or plastic and the spring valve 25 can be made of stainless steel or plastic. The plug 61 can be made of stainless steel or plastic. The nipple 63 has threads on the inside for engagement with the exteriorly threaded neck 62 of the bottle 55. The plastic will withstand heat and cold. The bellows valve 18 or the spring valve 25 serve to equalize the pressure inside the bottle with the pressure on the outside of the bottle to insure a continuous flow of fluid and to prevent the bottle from collapsing.

It is to be understood that the plastic is also acid resistant.

In use when milk and air are drawn out of the bottle by the baby, a partial vacuum or low pressure is created which will draw the top portion of the bellows valve 18 up to the position shown in Figure 6. At the same time atmospheric pressure from outside the bottle forces the air into the opening 23 and into the bellows 21 and then through the small holes 22 to allow outside air into the bottle. This action equalizes the pressure inside the bottle to keep the bottle from collapsing and to keep a continuous flow of milk to the baby. This also is a colic preventative. When pressure is equalized the bellows valve returns to a closed position shutting off outside air.

The spring valve 25 has the cap 30 which can be easily removed for cleaning and the valve 25 permits air to enter the bottle under the same principle as the bellows valve. The pressure in the bottle decreases as the baby consumes milk from the bottle, and when the pressure inside the bottle decreases, the atmospheric pressure outside forces the rubber stopper 32 and spring 34 to contract to thus allow air into the bottle through the holes 29. When sufficient air has entered the bottle to equalize the pressure, the tension spring 34 expands closing the opening 33 with the stopper 32 to shutoff the outside air so that there will be a continuous flow of milk to the baby.

It is to be understood that the details of construction of the various parts of the bottle may be altered without departing from the spirit of the invention and within the scope of the appended claims.

Referring to Figure 7A of the drawings, there is shown a further modification wherein a conventional nipple 66' is mounted on the bottle 35 by means of a collar 67 which is arranged in threaded engagement with the threaded portion 37 of the neck 36 of the bottle. In other words Figure 7A shows a standard or conventional nipple assembly being used on the bottle. Figure 7 shows a pull over type of nipple 40 being used, while Figure 7A shows a nipple 66 which is held in place by means of the collar 67. Furthermore, the bottles 35 and 55 are interchangeable and either the nipple 63 or a conventional nipple may be used. When the bottle is not in use, a cap such as the cap 29 may be arranged over the various nipples.

I claim:

1. In a baby's bottle, a body portion having indicia thereon, the inner portions of said bottle being shaped arcuately, said bottle including a bottom wall having an outer recess, there being a central opening in said bottom wall, a valve arranged in engagement with said opening, a neck on the upper end of said bottle, a nipple arranged in engagement with said neck, said bottle being made of unbreakable shatterproof plastic, the outer surface of said neck being inclined, and a cap surrounding said nipple and including inner beveled surfaces releasably engaging the inclined surface of said neck, said nipple comprising a cylindrical sleeve provided with exterior threads, the inner surface of said neck being threaded for engagement by said threaded sleeve, an annular shoulder on said nipple of greater diameter than said sleeve abutting the top of said neck, a mouth engaging portion projecting from said shoulder and provided with openings therein for the egress therethrough of liquid, said mouth engaging portion being flexible, said shoulder being provided with a plurality of notches in its outer periphery for facilitating manual rotation of the nipple, said valve comprising a core arranged in engagement with the opening in said bottom wall, there being a longitudinally extending passageway in said core, said core having threads on its outer surface, and a bellows extending from said core and including a plurality of folds having apertures therein.

2. A baby's bottle, comprising a body portion provided with indicia arranged along a portion of its outer surface, the inner portions of said bottle being shaped arcuately whereby the bottle may be readily cleaned, said bottle including a bottom wall having an outer frusto-conical recess, there being a central opening in said bottom wall, a valve arranged in engagement with said opening, a neck on the upper end of said bottle, a nipple arranged in engagement with said neck, said bottle being made of unbreakable shaterproof acid resistant plastic, the outer surface of said neck being inclined whereby the top of said neck is of less diameter than the bottom thereof, and a hollow cap surrounding said nipple and including inner lower beveled surfaces releasably engaging the inclined surface of said neck, said bottle and cap having the same outside diameter, said cap being made of unbreakable shatterproof material, said nipple comprising a cylindrical sleeve provided with exterior threads, the inner surface of said neck being threaded for engagement by said threaded sleeve, an annular shoulder on said nipple of greater diameter than said sleeve abutting the top of said neck, a mouth engaging portion projecting from said shoulder and provided with openings therein for the egress therethrough of liquid, said mouth engaging portion being soft and flexible, said shoulder being provided with a plurality of radially spaced apart notches in its outer periphery for facilitating manual rotation of the nipple, said valve comprising a core arranged in engagement with the opening in said bottom wall, there being a longitudinally extending passageway in said core, said core having threads on its outer surface, and a bellows extending from said core and including a plurality of folds having apertures therein, said bellows being arranged at the upper end of said valve, said valve serving to equalize the pressure inside the bottle with the pressure on the outside of the bottle to insure a continuous flow of fluid and to prevent the bottle from collapsing, and wherein when pressure is equalized the bellows valve returns to a closed position shutting off outside air.

3. A baby's bottle, comprising a body portion provided with indicia arranged along a portion of its outer surface, the inner portions of said bottle being shaped arcuately whereby the bottle may be readily cleaned, said bottle including a bottom wall having an outer frusto-conical recess, there being a central opening in said bottom wall, a valve arranged in engagement with said opening, a neck on the upper end of said bottle, a nipple arranged in engagement with said neck, said bottle being made of unbreakable shatterproof acid resistant plastic, the outer surface of said neck being inclined whereby the top of said neck is of less diameter than the bottom thereof, and a hollow cap surrounding said nipple and including inner lower beveled surfaces releasably engaging the inclined surface of said neck, said bottle and cap having the same outside diameter, said cap being made of unbreakable shatterproof material, said nipple comprising a cylindrical sleeve provided with exterior threads, the inner surface of said neck being threaded for engagement by said threaded sleeve, an annular shoulder on said nipple of greater diameter than said sleeve abutting the top of said neck, a mouth engaging portion projecting from said shoulder and provided with openings therein for the egress therethrough of liquid, said mouth engaging portion being soft and flexible, said shoulder being provided with a plurality of radially spaced apart notches in its outer periphery for facilitating manual rotation of the nipple, said valve comprising a core arranged in engagement with the opening in said bottom wall, there being a longitudinally extending passageway in said core, said core having threads on its outer surface, and a bellows extending from said core and including a plurality of folds having apertures therein, said bellows being arranged at the upper end of said valve, said valve serving to equalize the pressure inside the bottle with the pressure on the outside of the bottle to insure a continuous flow of fluid and to prevent the bottle from collapsing, and wherein when pressure is equalized the bellows valve returns to a closed position shutting off outside air, said mouth engaging portion being soft and flexible, said shoulder being provided with a plurality of radially spaced apart notches in its outer periphery for facilitating manual rotation of the nipple.

4. A baby's bottle, comprising a body portion having indicia arranged along a portion of its outer surface, the inner portions of said baby bottle being shaped arcuately whereby the bottle may be readily cleaned, said bottle including a bottom wall having an outer frusto-conical recess, there being a central opening in said bottom wall, a valve arranged in engagement with said opening, a neck on the upper end of said bottle, a nipple arranged in engagement with said neck, said bottle being made of unbreakable shatterproof acid resistant plastic, a hollow cap surrounding said nipple, said valve comprising a core arranged in engagement with the opening in said bottom wall, there being a longitudinally extending passageway in said core, said core having threads on its outer surface, and a bellows extending from said core and including a plurality of folds having apertures therein, said bellows being arranged at the upper end of said valve, said valve serving to equalize the pressure inside the bottle with the pressure on the outside of the bottle to insure a continuous flow of fluid and to prevent the bottle from collapsing, and wherein when pressure is equalized the bellows valve returns to a closed position shutting off outside air.

5. A baby's bottle, comprising a body portion having indicia thereon, the inner portions of said baby bottle being shaped arcuately whereby the bottle may be readily cleaned, said bottle including a bottom wall having an outer recess, there being an opening in said bottom wall, a valve arranged in engagement with said opening, a neck on said bottle, a nipple arranged in engagement with said neck, said bottle being made of unbreakable shatterproof acid resistant plastic, a cap surrounding said nipple, said valve comprising a core arranged in engagement with the opening in said bottom wall, there being a passageway in said core, said core having threads on its outer surface, and a bellows extending from said core and including folds having apertures therein, said valve serving to equalize the pressure inside the bottle with the pressure on the outside of the bottle to insure a continuous

flow of fluid and to prevent the bottle from collapsing, and wherein when pressure is equalized the bellows valve returns to a closed position shutting off outside air.

References Cited in the file of this patent

UNITED STATES PATENTS

2,043,186	O'Dette	June 2, 1936
2,084,099	MacCoy	June 15, 1937
2,394,722	Sloane	Feb. 12, 1946
2,555,054	Oliver	May 29, 1951
2,628,911	Horan	Feb. 17, 1953

FOREIGN PATENTS

13,751	Great Britain	Oct. 11, 1887
174,091	Canada	Dec. 26, 1916
910,845	France	Feb. 18, 1946