

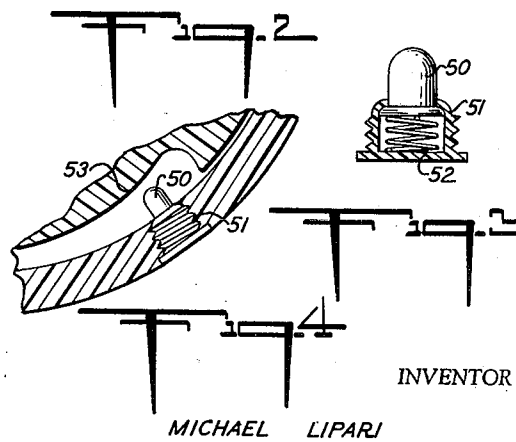
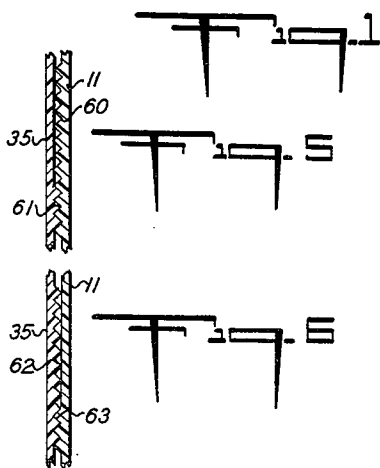
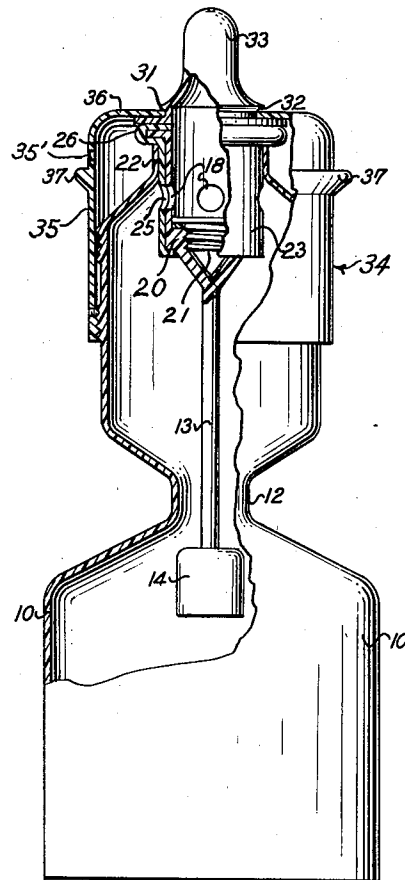
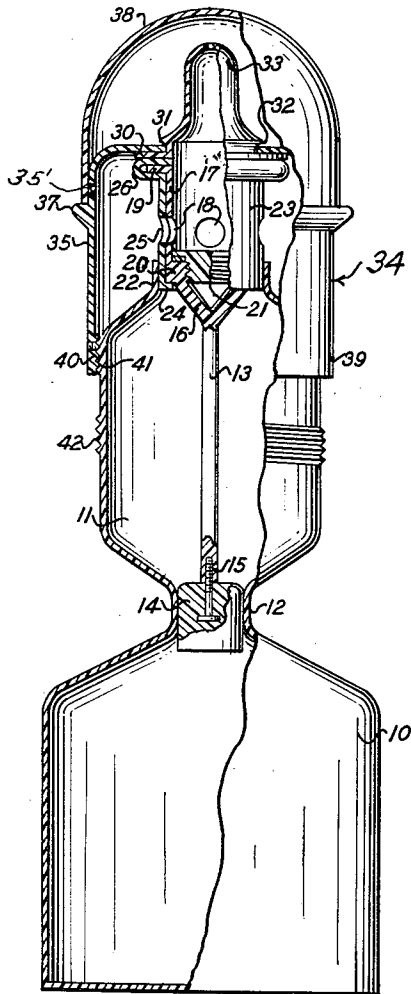
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RECEPTACLES

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RECEPTACLES

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This invention relates to receptacles and is particularly concerned with compartmented receptacles, as may be used to contain a plurality of individual ingredients which may, at the discretion of the user, be intermixed within the container. While certain aspects of the present inventive concept may be variously employed in a wide variety of types of receptacles and uses thereof, the present embodiment of the invention is adapted for use as a nursing bottle, in which dry and liquid materials may be separately stored and subsequently mixed and fed to an infant directly from the receptacle.

While compartmented receptacles for the separate storage of individual ingredients have heretofore been proposed, difficulties have been experienced in providing appropriate stoppering or sealing means so as to insure separation of the materials until the admixture is desired and to provide convenient release of such means to permit co-mingling, as required. Furthermore, such prior devices have not been ideally suited to use as nursing bottles including an affixed nipple and protector therefor, together with convenient means for intermixing ingredients, when desired, to thus dispense a mixed formula directly from the mixing receptacle and instantly upon its compounding.

It is therefore, among the primary objects of the present invention to provide a novel simple and improved compartmented receptacle having readily operable means for maintaining separation of individual materials and for releasing such materials for intermixture, as desired.

Another primary object of the present invention is to provide a novel simple and improved nursing bottle, including means for separately storing formula materials and for releasing such materials for compounding of the formula within the bottle and for feeding an infant directly therefrom.

More specifically, it is an object of the invention to provide a device of the character set forth, readily operable stopper or valving means for maintaining separate and for releasing for intermixture, individual components of a desired formula.

The invention also includes, among its objectives, that of providing a dual valving arrangement whereby the container itself is sealed, while the ingredients are retained in separation and by which the release of ingredients for admixture also releases the mixed formula for dispensing from the receptacle.

Numerous other objects, features and advantages of the invention will become apparent from a consideration of the following specification taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a side elevation, partly in section, of one preferred form of the present invention with the valve means disposed in material segregating and receptacle sealing position;

Fig. 2 is a view similar to Fig. 1, showing the valve in material mixing and mixture dispensing relation to the receptacle;

Fig. 3 is a detail sectional view of the spring urged stop detent of the device;

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Fig. 4 is a detail sectional view of the related walls of the device illustrating the action of the stop detent;

Fig. 5 is a detail sectional view showing a modification of the threaded interconnection between the walls of the device;

Fig. 6 is a detail sectional view similar to Fig. 5 showing a further modification of the thread relationship.

While the present invention may assume various aspects of design, construction and features of detail, that form thereof herein presented, by way of illustration, may be briefly characterized as comprising a double type of receptacle having separate compartments or chambers joined by a narrow or restricted neck to define a somewhat hour-glass configuration. An axially movable valve stem is located within one of the chambers with a valve head at one end thereof, to stopper and seal the intermediate neck between the chambers and including, at its opposite end, valve means for sealing the discharge end of the combined receptacle. The discharge end of the device is fitted with a nursing nipple and a structure is provided whereby threaded relationship between parts may act to operate the internal valve device.

Referring now to the drawings, the receptacle proper includes the lower compartment or chamber 10 and an aligned, preferably somewhat smaller upper chamber 11. Between the chambers 10 and 11, there is provided an integral neck 12, by which the hour-glass appearance, as mentioned above, is affected. In the use of the device, one ingredient, such as a liquid may be placed in the lower compartment 10 by passage through the upper compartment 11 and through the neck 12. Thereafter, the neck may be sealed as hereinafter explained, and other ingredients, such as a powder for subsequent mixture with the liquid may be placed in the upper compartment 11.

For sealing the neck 12 and thus maintaining the materials of the compartments 10 and 11 separated, there is provided an axially disposed and linearly movable valve stem 13 provided at its lower end with a neck valve or stopper 14. The stopper 14 is, of course, of such configuration as to snugly and sealingly be received in the neck 12 and may be detachably secured to the valve stem 13 by a bolt 15 or some equivalent thereof. The upper end of the valve stem 13 is provided with spaced outwardly inclined arms 16 engaging a cylindrical shell 17 apertured along its side walls, as at 18, and terminating in an annular flange 19. At the juncture of the arms 16 with the base of the shell 17, a thickened internally threaded base ring 20 is formed to receive a threaded plug 21. The plug 21 is removable to permit loading of material in the upper chamber 11, after the valve assembly is lowered to seal the neck 12, as shown in Fig. 1.

It will be noted, from a consideration of Figs. 1 and 2, that the shell 17 constitutes the inner element of an upper sleeve type valve fitted to slide within the neck 22 at the top of the upper receptacle. The shell 17 is, therefore, fitted within an outer similar cylindrical sleeve 23 having a lower inwardly extending flange 24 to engage the base ring 20 of the shell 17. Apertures 25 in the walls of the sleeve 23 register with the apertures 18 of the shell and the flange 19 of the shell is received in and secured by a return bent complementary bead 26 at the upper end of the sleeve. The upper ends of both shell 17 and sleeve 23 are open to provide free passage of material upwardly therethrough from the apertures 18 and 25. Placed over the bead 26 is the bottom circumferential flange 30 of a substantially conventional rubber nipple including an upwardly spaced bead 31 forming with the flange 30, an intermediate annular recess 32. The upper tip 33 of the nipple is pierced to permit the usual dispensing of the formula as a feeding operation for an infant.

For slidably actuating the valve assembly, there is provided a cup-shaped actuator 34, the closed end 36 of which is apertured to receive the annular recess 32 of the nipple and thus, to be secured for movement with the shell 17 and sleeve 23. Midway along the side wall 35 of the actuator 34, a shoulder 37 is provided to provide for the seating of a friction nipple shield 38. At the lower open edge 39 of the actuator, there is formed internal threads 40 which may selectively engage, either the upper threads 41 adjacent the top of the outer wall of the upper chamber 11, or lower threads 42 spaced approximately midway between the top and bottom of the chamber 11. The vertical spacing of the threads 41 and 42 are comparable with the height of the shell 17 and sleeve 23, the arrangement being such that, as shown in Figs. 1 and 2, with the upper threads 41 engaged with the threads 40, the valve 14 is within the neck 12 and the apertures 18 and 25 are above the neck 22 of the upper compartment 11, such neck being sealed by the lower portions of the shell and sleeve. Hence, in this position, the contents of both compartments are sealed in segregated relation. However, when the threads 40 are engaged with the lower threads 42, the downward travel of the actuator 34 will have carried with it the valve stem 13 so as to lower the valve 14 into the lower compartment 10 and free the neck 12, while the upper valve assembly will have been equally lowered to position the apertures 18 and 25 below the neck 22 of the upper receptacle 11, thus providing communication between the upper chamber and the nipple. Thus, the separate ingredients may be mixed and the resultant formula fed through the nipple.

Since downward movement of the actuator 34, as described above, will tend to compress the air trapped between the closed upper end of the actuator 34 and the upper end wall of the chamber 11, it is desirable that such pressure be relieved in order not to impede movement of the actuator 34. For this purpose, there is provided in the wall 35 of the actuator 34, a vent in the form of an aperture 35' and it is to be noted, that this aperture 35' prior to use of the device is covered by the shield 38.

In order to preclude inadvertent disassembly of the actuator with its upper valve assembly and its nipple, there is provided the spring urged detent shown in detail in Figs. 3 and 4. The rounded detent button 50 is mounted within a threaded detent housing 51 and is urged outwardly by a detent spring 52. Cooperating with the detent assembly which is threaded through the lower open end of the actuator in the zone of its threads 40, is a recess in the threads 41, as shown at 53 in Fig. 4. The cooperative location of the recess 53 with respect to the detent is such that, the actuator is threaded outwardly over the threads 41, but before upward detachment of the threaded relation may take place, the detent will engage the recess to preclude further relative rotation in that direction and hence, prevent disassembly of the actuator from the upper compartment 11.

While that form of the invention shown in Figs. 1 and 2, discloses a single short thread on the actuator and spaced short threads on the walls of the upper compartment 11, it will be understood, that the invention is not limited to such precise arrangement. Accordingly, it is suggested, as by way of Fig. 5, that continuous long threads 60 may be formed on the walls of the compartment 11 to be engaged by a relatively short thread 61 on the inner wall of the actuator 35.

A still further modified form of the thread arrangement is shown in Fig. 6 in which the actuator 35 may be provided with a continuous long thread 62 and the wall of the compartment 11 with a relatively short thread 63 in engagement with the thread 62. The operation of this form of the invention is the same as that described above.

From the foregoing, it is believed that the operation,

as well as the construction of the invention will be apparent.

With regard to structural details, materials and various unmentioned uses to which the invention may be put, it will be understood, that the present illustration is by way of exemplification only, and that numerous changes, modifications and the full use of equivalents may be resorted to without departure from the spirit or scope of the invention, as outlined in the appended claims.

What is claimed is:

1. A compartmental dispensing receptacle comprising a container having a lower compartment and an upper compartment, a restricted passage between said compartments, said container terminating at the upper end in a reduced cylindrical wall providing a neck portion, a valve and stopper assembly slidably disposed in said neck portion and comprising a substantially cylindrical hollow body open at the upper end and having a removable plug closing the lower end, said body slidably engaging the wall of said neck portion, apertures in the wall of said body, a stem secured to the lower end of said body and projecting downwardly within said upper compartment, a stopper on the lower end of said stem closing said restricted passage, an annular flange on said body adjacent the upper end, a dispensing nipple removably secured to said flange, an annular recess in the wall of said nipple adjacent said flange, an inverted cup-shaped valve and stopper actuating member having an aperture in the bottom wall which said nipple projects and with the inner edge of said bottom wall received in said annular recess to secure said member to said assembly, the side wall of said member having internal threads adjacent the lower end thereof, axially spaced external threads on the wall of said upper compartment and a nipple protecting cap removably received on said member whereby with the threads on said member engaging the upper threads on said container said valve and stopper assembly will close said neck portion and said stopper will close said restricted passage and upon rotary and downward movement of said member to disengage said upper threads and engage said lower threads said assembly will move downward to move said stopper out of said restricted passage and provide communication between said compartments to permit mixing of the contents, the downward movement of said assembly moving the apertures in said body into communication with said upper compartment to permit dispensing of the contents through said nipple.

2. A device as defined in claim 1 in which the wall of said actuating member is provided with a vent opening.

3. A device as defined in claim 1 in which said actuating member is provided with a detent cooperating with a recess in the wall of said upper compartment to prevent inadvertent removal of said valve and stopper assembly from said receptacle.

4. A compartmental dispensing receptacle comprising a container having a lower compartment and an upper compartment, a restricted passage between said compartments, said container terminating at the upper end in a reduced cylindrical wall providing a neck portion, a valve and stopper assembly slidably disposed in said neck portion and comprising a substantially cylindrical hollow body open at the upper end and having a removable plug closing the lower end, said body slidably engaging the wall of said neck portion, apertures in the wall of said body, a stem secured to the lower end of said body and projecting downwardly within said upper compartment, a stopper on the lower end of said stem closing said restricted passage, an annular flange on said body adjacent the upper end, a dispensing nipple removably secured to said flange, an annular recess in the wall of said nipple adjacent said flange, an inverted cup-shaped valve and stopper actuating member having an aperture in the bottom wall through which said nipple projects and with the inner edge of said bottom wall received in said annular recess to secure said member to said assembly, the side wall of said member

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having internal threads adjacent the lower end thereof and axially spaced external threads on the wall of said upper compartment whereby with the threads on said member engaging the upper threads on said container said valve and stopper assembly will close said neck portion and said stopper will close said restricted passage and upon rotary and downward movement of said member to disengage said upper threads and engage said lower threads said assembly will move downward to move said stopper out of said restricted passage and provide communication between said compartments to permit mixing of the contents, the downward movement of said assembly moving the apertures in said body into communication with said upper compartment to permit dispensing of the contents through said nipple.

5. A compartmental dispensing receptacle comprising a container having a lower compartment and an upper compartment, a restricted passage between said compartments, said container terminating at the upper end in a reduced cylindrical wall providing a neck portion, a valve and stopper assembly slidably disposed in said neck portion and comprising a substantially cylindrical hollow body open at the upper end and having a removable plug closing the lower end, said body slidably engaging the wall of said neck portion, apertures in the wall of said body, a stem secured to the lower end of said body and projecting downwardly within said upper compartment, a stopper on the lower end of said stem closing said restricted passage, an annular flange on said body adjacent the upper end, a dispensing nipple removably secured to said flange, an annular recess in the wall of said nipple adjacent said flange, an inverted cup-shaped valve and stopped actuating member having an aperture in the bottom wall through which said nipple projects and with the inner edge of said bottom wall received in said annular recess to secure said member to said assembly, the side wall of said member having internal threads adjacent the lower end thereof and external threads on the wall of said upper compartment whereby with the threads on said member engaging the threads on said container said valve and stopper assembly will close said neck portion and said stopper will close said restricted passage and upon rotary and downward movement of said member said assembly will move downward to move said stopper out of said restricted passage and provide communication between said compartments to permit mixing of the contents, the downward movement of said assembly moving the apertures in said body into communication with said upper compartment to permit dispensing of the contents through said nipple.

6. A compartmental dispensing receptacle comprising a container having a lower compartment and an upper compartment, a restricted passage between said compartments, said container terminating at the upper end in a reduced cylindrical wall providing a neck portion, a valve and stopper assembly slidably disposed in said neck portion and comprising a substantially cylindrical hollow body open at the upper end and having a removable plug closing the lower end, said body slidably engaging the wall of said neck portion, apertures in the wall of said body, a stem secured to the lower end of said body and projecting downwardly within said upper compartment, a stopper on the lower end of said stem closing said restricted passage, an annular flange on said body adjacent the upper end, a dispensing nipple removably secured to said flange, an inverted cup-shaped valve and stopper actuating member having an aperture in the bottom wall through which said nipple projects, a side wall of said member having internal threads adjacent the lower end thereof and external threads on the wall of said upper compartment whereby with the threads of said member engaging the threads on said container said valve and stopper assembly will close said neck portion and said stopper will close said restricted passage and upon rotary and downward movement of said member said assembly

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will move downward to move said stopper out of said restricted passage and provide communication between said compartments to permit said mixing of the contents, the downward movement of said assembly moving the apertures in said body into communication with said upper compartment to permit dispensing of the contents through said nipple.

7. A compartmental dispensing receptacle comprising a container having a lower compartment and an upper compartment, a restricted passage between said compartments, said container terminating at the upper end in a cylindrical wall providing a neck portion, a valve and stopper assembly slidably disposed in said neck portion and comprising a substantially cylindrical hollow body open at the upper end and having means closing the lower end, said body slidably engaging the wall of said neck portion, apertures in the wall of said body, a stem secured to the lower end of said body and projecting downward within said upper compartment, a stopper on the lower end of said stem closing said restricted passage, an annular flange on said body adjacent the upper end, a dispensing nipple removably secured to said flange, an inverted cup-shaped valve and stopper actuating member having an aperture in the bottom wall through which said nipple projects, the side wall of said member having internal threads adjacent the lower end thereof and external threads on the wall of said upper compartment whereby with the threads on said member engaging the threads on said container said valve and stopper assembly will close said neck portion and said stopper will close said restricted passage and on rotary and downward movement of said member said assembly will move downward to move said stopper out of said restricted passage and provide communication between said compartments to permit mixing of the contents, the downward movement of said assembly moving the apertures in said body into communication with said upper compartment to permit dispensing of the contents through said nipple.

8. A compartmental dispensing receptacle comprising a container having a lower compartment and an upper compartment, a restricted passage between said compartments, said container terminating at the upper end in a cylindrical wall providing a neck portion, a valve and stopper assembly slidably disposed in said neck portion and comprising a substantially cylindrical hollow body open at the upper end and having means closing the lower end, said body slidably engaging the wall of said neck portion, apertures in the wall of said body, a stem secured to the lower end of said body and projecting downwardly within said upper compartment, a stopper on the lower end of said stem closing said restricted passage, a dispensing nipple removably secured to said body, an inverted cup-shaped valve and stopper actuating member having an aperture in the bottom wall through which said nipple projects, the side wall of said member having internal threads and external threads on the wall of said upper compartment whereby with the threads on said member engaging the threads on said container said valve and stopper assembly will close said neck portion and said stopper will close said restricted passage and upon rotary and downward movement of said member said assembly will move downward to move said stopper out of said restricted passage and provide communication between said compartments to permit mixing of the contents, the downward movement of said assembly moving the apertures in said body into communication with said upper compartment to permit dispensing of the contents through said nipple.

9. A compartmental dispensing receptacle comprising a container having a lower compartment and an upper compartment, a restricted passage between said compartments, said container terminating at the upper end in a cylindrical wall providing a neck portion, a valve and stopper assembly slidably disposed in said neck por-

tion and comprising a substantially cylindrical hollow body open at the upper end and closed at the lower end, said body slidably engaging the wall of said neck portion, apertures in the wall of said body, a stem secured to the lower end of said body and projecting downwardly within said upper compartment, a stopper on the lower end of said stem closing said restricted passage, a dispensing nipple removably secured to said body, an inverted cup-shaped valve and stopper actuating member having an aperture in the bottom wall through which said nipple projects, the side wall of said member having internal threads and external threads on the wall of said container whereby with the threads on said member engaging the threads on said container said valve and stopper assembly will close said restricted passage and

upon rotary and downward movement of said member said assembly will move downward to move said stopper out of said restricted passage and provide communication between said compartment to permit mixing of the contents, the downward movement of said assembly moving the apertures in said body into communication with said upper compartment to permit dispensing of the contents through said nipple.

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