July 25, 1950 J. E. GALL, JR 2,516,513

LIQUID DISPENSING AND MEASURING VESSEL

Filed Aug. 8, 1947 2 Sheets-Sheet 1

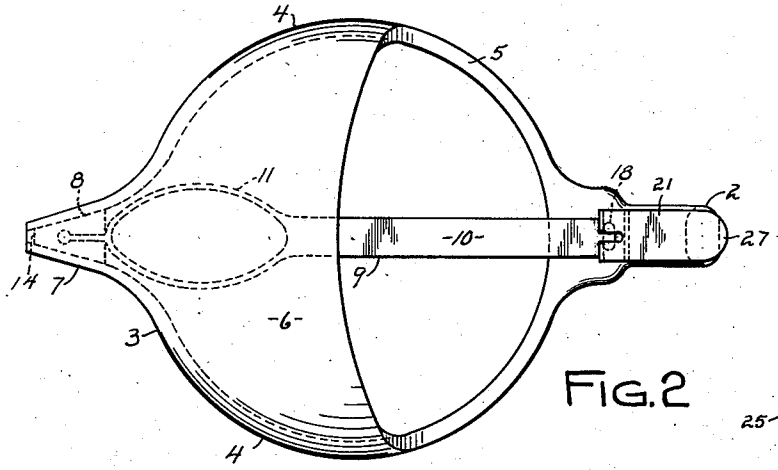


FIG. 2

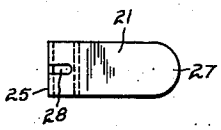


FIG. 4

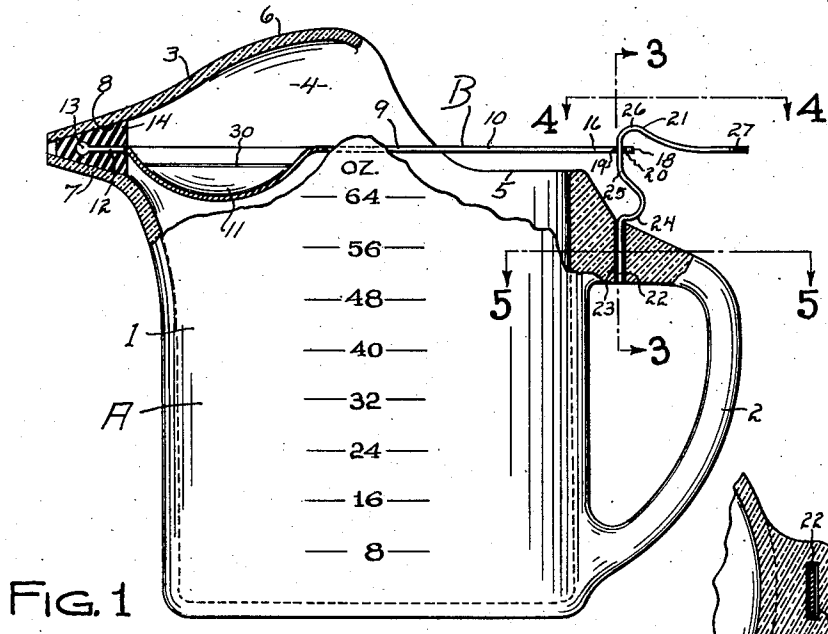


FIG. 1

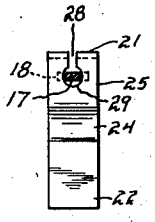


FIG. 3

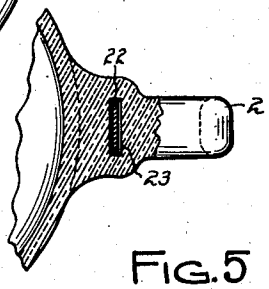


FIG. 5

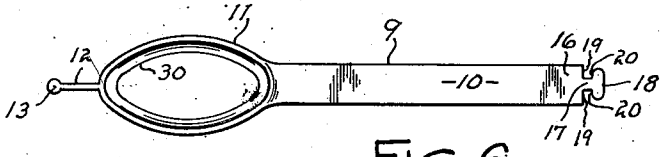


FIG. 6



FIG. 7

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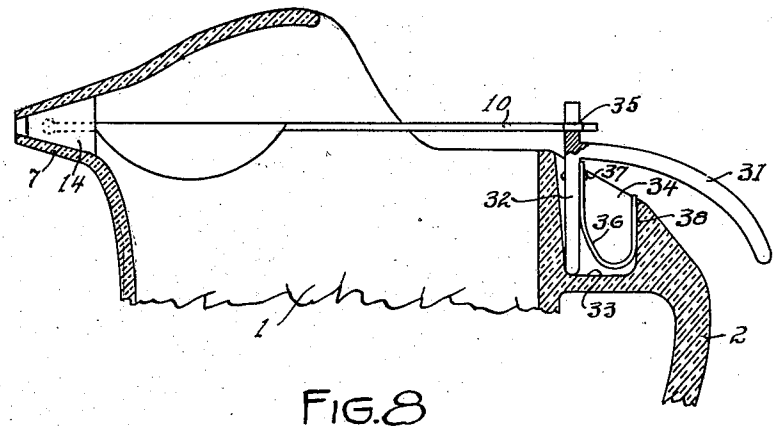


FIG. 8

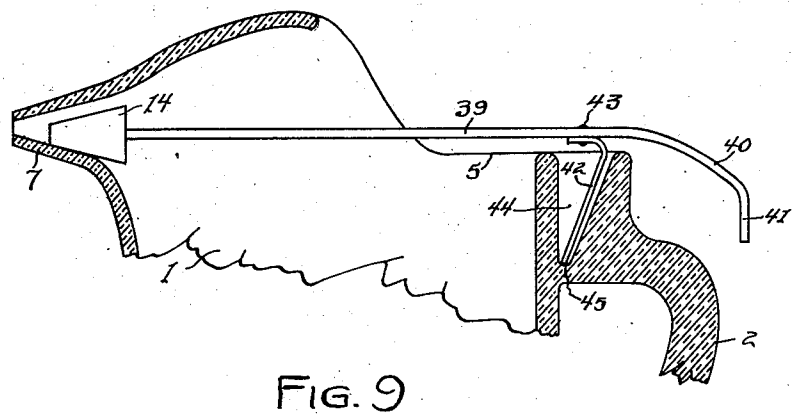


FIG. 9

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LIQUID DISPENSING AND MEASURING VESSEL

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3 Claims. (Cl. 222—510)

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This invention relates to vessels for containing liquids, and of the type having manually operable valves for controlling the dispensing of liquid therefrom.

While the invention has various uses, as will become apparent hereinafter, perhaps its most important use is as a vessel in which a baby's formula of liquid food can be measured and mixed and dispensed by valve control into a number of baby's nursing bottles.

As is well known, a baby's liquid food formula as prescribed by a physician, often consists of numerous ingredients, which must be carefully measured and mixed, and then poured into a number of baby's bottles, to a prescribed quantity per bottle. The whole process must be performed in a manner to make and keep the mixture sterile as to bacteria, etc.

With the ordinary kitchen utensils, this is a time consuming, exacting, and fatiguing operation for a busy mother. The vessel and measuring spoons, etc., used in measuring and mixing the formula must be sterilized; water is usually one of the ingredients and must be boiled; a funnel must be used to direct the mixture into the bottles and must be sterilized; as the bottles are being filled the funnel must be moved from one bottle to the next; such funnels are necessarily small and care must be taken not to overflow the funnel and spill some of the mixture; the bottles must be uniformly filled to a prescribed level and care must be taken in pouring from the larger vessel into the small funnel to bring the liquid in the several bottles to the same level; and after the operation is finished, all of the utensils used must be washed and put away or stored in a manner to make them readily accessible to be collected again for the next operation.

It is the object of the present invention to provide means for making this operation from start to finish more convenient, more accurate, safer as to sterility, and generally less exacting and fatiguing and time consuming.

The invention comprises an improved apparatus for the aforesaid purposes, the main elements of which are an improved construction of vessel and an improved construction of dispensing valve therefor.

The invention is fully disclosed in the following description taken in connection with the accompanying drawing, in which:

Fig. 1 is a side elevational view of an embodiment of the invention, illustrating a vessel of the pitcher class, and a dispensing valve therefor, parts being broken away and in section;

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Fig. 2 is a top plan view of the parts of Fig. 1;

Fig. 3 is a sectional view from the plane 3—3 of Fig. 1;

Fig. 4 is a fragmentary view from the plane 4—4 of Fig. 1, illustrating separately a part of the valve device of Fig. 1;

Fig. 5 is a fragmentary sectional view from the plane 5—5 of Fig. 1;

Fig. 6 is a view showing separately and in top plan, another part of the valve device, shown in section and in side elevation in Fig. 1;

Fig. 7 is a view showing separately another part of the valve device of Fig. 1.

Figs. 8 and 9 are fragmentary views similar to the upper part of Fig. 1 illustrating modifications thereof.

Referring to the drawing, there is designated at A a vessel; and generally at B a manually operable valve device.

The vessel A is in the form of a pitcher having a body 1 for containing liquid, a handle 2 and a spout 3, all formed integrally, and of glass or other suitable material which will withstand, without cracking, the heat of a flame or other stove burner, when the pitcher is placed thereover; such materials being well known and used in kitchen utensils for cooking.

The spout 3 is made to be in the form of a funnel, by carrying the opposite side walls 4—4 of the body 1, upwardly beyond the top 5 of the body 1, and bridging them by a covering portion 6; and converging them into a tubular discharge outlet nozzle 7 which is preferably frusto-conical inside as at 8, and small enough at the outer small end to enter the small mouth of the conventional baby's nursing bottle.

On the outside of the body 1 is a graduated indicating scale calibrated in ounces; the vessel as stated being preferably of glass and transparent, and the levels of liquid in the vessel being visible and the scale indicating the ounces of the contents at different levels.

The valve device B comprises the following parts associated with corresponding cooperating parts of the vessel to be described.

A horizontally movable link or reciprocator (shown separately in Fig. 6) is provided and preferably of metal, in the form of a spoon, having a handle 10 and a bowl 11.

At the front end of the bowl 11 it has a stem 12 projecting forwardly therefrom, which may be in one piece with the bowl, but may be provided by welding a separate piece thereto. Preferably it has a slightly enlarged head 13 at its free end.

A valve proper 14 (shown separately in Fig. 7) is provided of rubber or like compressible material. It is frusto-conical in form, and has an axial recess 15 therein sized to correspond to the stem 12, and the stem 12 and head 13 may be pressed thereinto, the rubber of the valve 14 yielding to permit the stem head 13 to enter the recess 15, and closing in around and behind the head, to thereby removably mount the valve 14 on the end of the spoon bowl 11 and retain it thereon generally in axial alignment with the spoon handle 10; so that when the parts are in assembled positions as in Fig. 1 reciprocations of the reciprocator 9 as a whole will project the valve forwardly into the nozzle 7 and seal it; or retract the valve rearwardly in the nozzle 7 to open it.

At the rear end portion 16 of the handle 10 it is provided with a neck 17 and therebeyond a T-head 18; thus providing rearwardly facing shoulders 19—19 and forwardly facing shoulders 20—20. At least this portion 16 of the handle 10 is of sheet metal form, and in the position of Fig. 1 lies in a horizontal plane.

A valve operating spring 21 is provided, formed from a piece of resilient sheet metal strip. At one end, it has a vertical portion 22 which fits into a recess or aperture 23 in the upper part of the handle 2 and a loop portion 24 resting upon the top of the handle. The recess 23 may be closed at the bottom and open at the top but to facilitate forming and cleaning, it is preferably in the form of an aperture extending all the way through the handle. The aperture and the vertical portion 22 of the spring are sized to each other with clearance, so that the portion 22 may readily be slid into the aperture or withdrawn from it; and the clearance is small enough so that the spring parts above the handle (to be referred to) will be held upright.

Above the loop portion 24 the spring 21 has an upright portion 25, bent over rearwardly at a bend 26 and continuing into a generally horizontal handle 27. The bend 26 and the upright portion 25 have a continuous slot 28 therein (Figs. 3 and 4) terminating in an enlarged aperture 29 in the upright portion. The slot 28 and aperture 29 may be provided by punching them out of the strip before it is bent into the form described.

The rear end portion 16 of the spoon handle 10 is detachably assembled and interlocked with the spring 21, to provide a hinging connection therewith as shown in Fig. 1. To do this, the spoon handle 10, before assembling, is rotated on its axis through ninety degrees relative to the spring 21 (or the spring is so rotated, or both rotated relatively). The T-head 18 and neck 17 are slid down into the slot 28, until the neck 17 is in the aperture 29. The parts are then relatively rotated back again, which disposes the shoulders 19—19 in front of the spring portion 25 and the shoulders 20—20 behind it; and the T-head 18 prevents removal of the neck 17 out of the slot.

When the parts are all assembled as in Fig. 1, the neck 17 resting in the aperture 29 supports the rear end of the spoon handle on the spring 21, the spring itself being supported by its loop portion 24; and the valve 14 in the nozzle 7 supports the forward end.

With the parts in the assembled position of Fig. 1, the reciprocator is of such length as to bend the spring 21 rearwardly out of its normal shape, and the spring is under tension; the loop portion 24 acting as a part of the spring; and the engagement of the spring with the shoulders 19—19 on the rear end of the spoon handle, thrust it forwardly, and seal the valve 14 in the nozzle 7.

The spring handle 27 is within reach of the thumb of the user while grasping the vessel handle 2, and upon pressing downwardly on the spring handle 27, the whole upper part of the spring above the aperture 23 is rocked still farther rearwardly, causing the spring to engage the shoulders 20—20 on the spoon handle and withdraw the valve 14 out of sealing engagement in the nozzle 7. When the spring handle 27 is released, the spring returns the valve 14 to sealing position.

The full mode of operation of the invention will now be described, in connection with its use with a baby's food formula as referred to.

With the valve device B and the pitcher A assembled as in Fig. 1, the user fills the pitcher with water and puts it on the stove to boil. Boiling for a time, sterilizes the water and the heat conducted to all of the parts of the pitcher A and valve device B sterilizes them.

The valve device B is then removed. This can be done by pulling upwardly on the spring 21 and rear end of the spoon handle 10 concurrently pulling the spring out of the aperture 23, and the valve 14 out of the nozzle 7. The user can keep these parts, still interlocked together and hold them in her left hand to keep them from becoming contaminated with germs, as they might if laid down.

The user then pours out some of the water through the nozzle 7 until the remainder as indicated on the scale, is correct for the formula; and then puts into the water the other ingredients of the formula; and uses the bowl 11 of the spoon (which is still in her left hand, the normal position for such use) to measure spoonfuls when that is called for.

In this connection, the spoon bowl may be of a size to measure a tablespoon quantity when full; and may have a gage line 30 therein indicating a teaspoonful quantity, when filled up to the level of the gage line.

The spoon may also be used at this time to stir and mix the contents of the pitcher.

The valve device B is then put back into place, by putting the valve 14 into the nozzle, inserting the vertical portion 22 of the spring into the aperture 23, and pushing down on the spring 21 and spoon handle 10, thus pushing the spring portion 22 all the way into the orifice 23 and concurrently tensioning the spring and sealing the valve 14 in the nozzle 7.

The user then picks up the pitcher by the handle and projects the nozzle into the first nursing bottle; depresses the valve handle 27 with the thumb, thereby retracting the valve 14 as described allowing the mixture to flow into the bottle, the nozzle 7 and the wall parts adjacent thereto acting as a funnel as described, and when the mixture in the bottle rises to the desired level prescribed by the physician for one feeding, releases the spring handle 27, allowing the spring 21 to seal the valve 14 in the nozzle 7 and instantly cut off the flow. The successive bottles are filled in the same manner, going quickly and efficiently from one to the other.

All of the parts can now be disassembled and cleaned at the same time. The valve 14 can be removed from the stem 12, and the spring 21 detached from the spoon handle 10 so that there are no holes or crevices inaccessible for cleaning.

The valve device B can then be assembled with the pitcher A for another operation as described;

and the pitcher can be set on a shelf with all of the parts kept together therewith as a unit, and no loose parts are left lying around to become misplaced.

The pitcher handle 2 is shown as integral with the pitcher body 1. However, the handle may, if desired, be of low heat conducting material, as sometimes provided for handling hot vessels, and may be attached to the body 1 by any of the well known means utilized in such cases.

In the foregoing, I have described one embodiment and one mode of operation of the invention. Changes and modifications, however may be made in that embodiment, without departing from the spirit of the invention. For example, while I prefer to provide a hinging connection between the reciprocator 9 and the spring 21, of the quick detachable neck-and-slot type, as illustrated and described, this is not essential; and any other known or suitable type of connection which will transmit bending movement of the spring to the reciprocator to reciprocate it may be utilized.

Again in Fig. 8, I have shown that the valve operating spring need not be also the operator's handle. Here, the handle 31 is in the form of a downwardly, rearwardly curving stem of a generally T-form piece of molded material (metal or plastic for example); the head 32 of the T being generally upright and rocking at its lower end upon the bottom 33 of an enlarged upwardly open recess 34 in the upper part of the handle, and extending upwardly to the reciprocator or spoon handle 10 and hingingly connected thereto as at 35.

An upwardly open U-shaped spring 36 is riveted at one leg end to the upright 32 as at 37, depends into the recess 34, and at its other leg resiliently engages a substantiailly vertical wall 38 of the recess 34.

Here again the spring is normally under tension, and, reaching on the recess wall 38 rocks the upright T-head 32 forwardly around its lower end to normally seal the valve 14 in the nozzle 7. Upon depressing the handle 31, the upright T-head 32 is rocked rearwardly against the yielding force of the spring 36 and unseals the nozzle.

Again, it is within the intent of the inventive concept hereof to have the valve normally in retracted open-nozzle position, and to have it reciprocable forwardly by the operator to seal the nozzle.

In the form of Fig. 1, this can be done by making the spoon handle 10 shorter. The spring 21 would then not be normally under tension, and the valve 14 would be rearwardly of its sealing position. The operator would in that case press upwardly on the handle 27 to reciprocate the valve 14 forwardly to seal it in the nozzle, thereby tensioning the spring, and would release the handle to allow the spring to return the valve to open the nozzle. It is deemed unnecessary to illustrate this modification of structure and mode of operation of Fig. 1.

Again in Fig. 9, a form of the invention is illustrated, having more particular this normally-open-valve type of operation.

Here the reciprocator 39 is a bar connected at its forward end to the valve 14, and extending rearwardly over the top 5 of the pitcher and continuing into a downwardly curving handle 40 terminating in a substantially vertical thumb-engageable end 41.

A depending spring 42 is riveted at its upper end as at 43 to the reciprocator 39 and extends

downwardly into an upwardly open V-form recess 44, at the top of the pitcher; the lower end of the spring being engaged in a forwardly-rearwardly fixed position in the angle corner of the V. The spring 42 supports the rearward part of the reciprocator and the valve 14 supports the forward end; the valve being normally in nozzle-open position as shown.

To close the valve, the operator presses forwardly with the thumb on the end 41 of the reciprocator, pushing it forwardly and tensioning the spring by rocking its upper part around its lower fixed end. Upon releasing the end 41, the spring returns the valve and opens the nozzle.

As will be apparent, in both the forms of Figs. 8 and 9, the reciprocator, valve, handle, and spring parts can all be lifted out of the recesses 34 and 44 and taken away from the pitcher for the purposes described; and later to reassemble them, the spring 36 and upright 32 of Fig. 8 are simply pushed downward into the recess 34, thereby tensioning the spring; and in the form of Fig. 9, the spring 42 is inserted downwardly without tension into the recess 45.

Obviously, the recesses 34 and 45 of these forms will be made of suitable width (toward and from the observer) to support the parts therein from rocking out of position laterally.

Fig. 9 illustrates that it is not essential for the reciprocator 39, to be of spoon form.

Other changes and modifications will occur to those skilled in the art, and the invention is comprehensive of all of the same that come within the scope of the appended claims.

I claim:

1. A liquid dispensing pitcher form vessel, comprising a one part body for containing liquid, having at its forward side a forwardly tapering funnel-shaped discharge spout; and provided at its rearward side with a body handle; and open at its top for free manual access to its interior for cleaning; a valve of rubber or like compressible material inside the spout for sealing and unsealing it upon forward and rearward movement thereof respectively; a generally horizontal forwardly and rearwardly extending reciprocator spanning the open top of the body, and connected to the valve at its forward end portion, and supported at the forward end solely by the valve; actuating means comprising an upwardly open aperture provided at the rearward side of the body near its top; an upright element resting in and removably supported in the aperture, and an upper portion thereof being movable in forward and rearward directions and having a quick-detachable hinge connection with the rearward portion of the reciprocator, and the rearward end of the reciprocator supported solely by the hinge connection; and the actuator comprising resilient means yieldably urging the upper portion of the upright element and the hinge connection in the forward horizontal direction; a valve handle extending rearwardly from the upright element depressible by the thumb of the user's hand while grasping the body handle, for moving the upper portion of the upright element rearwardly; the valve, reciprocator and actuating means being removable from the body by lifting the upright element out of the aperture and withdrawing the reciprocator and valve rearwardly.

2. A liquid dispensing pitcher form vessel, comprising a one part body for containing liquid, having at its forward side a forwardly tapering funnel-shaped discharge spout; and provided at its rearward side with a body handle; and open

at its top for free manual access to its interior for cleaning; a valve of rubber or like compressible material inside the spout for sealing and unsealing it upon forward and rearward movement thereof respectively; a generally horizontal forwardly and rearwardly extending reciprocator spanning the open top of the body, and connected to the valve at its forward end portion, and supported at the forward end solely by the valve; actuating means comprising an upright element supported on the body at its rearward side, and an upper portion thereof being forwardly and rearwardly movable, and the upper portion having a hinge connection with the rearward end portion of the reciprocator; and the rearward end of the reciprocator supported solely by the hinge connection; and the actuator comprising resilient means yieldably urging the upper portion of the upright element and the hinge connection in the forward horizontal direction; a valve handle extending rearwardly from the upright element depressible by the thumb of the user's hand while grasping the body handle, for moving the upper portion of the upright element rearwardly; the upright element being quick-detachably mounted on the body; and the reciprocator and the valve being removable from the body by moving the upright element upwardly and rearwardly.

3. A liquid dispensing pitcher form vessel, comprising a one part body for containing liquid, having at its forward side a forwardly tapering funnel-shaped discharge spout; and provided at its rearward side with a body handle; and open at its top for free manual access to its interior for cleaning; a valve of rubber or like compressible material inside the spout for sealing and unsealing it upon forward and rearward movement thereof respectively; a generally horizontal forwardly and rearwardly extending reciprocator spanning the open top of the body, and connected to the valve at its forward end portion, and supported at the forward end solely by the valve; actuating means comprising an upwardly open aperture provided at the rearward side of the body near its top; an upright element resting in and removably supported in the aperture, and an upper portion thereof being movable in forward and rearward directions and having a connection with the rearward portion of the reciprocator, and the rearward end of the reciprocator supported solely by the connection; and the actuator comprising resilient means yieldably urging the upper portion of the upright element and the connection in one horizontal direction; a valve handle extending rearwardly from the upright element operable by the thumb of the user's hand while grasping the body handle, for moving the upper portion of the upright element in the other horizontal direction; the valve, reciprocator and actuating means being removable from the body by lifting the upright element out of the aperture and withdrawing the reciprocator and valve rearwardly.

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