United States Patent

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[54] **VALVED LIQUID DISPENSER**
5 Claims, 5 Drawing Figs.

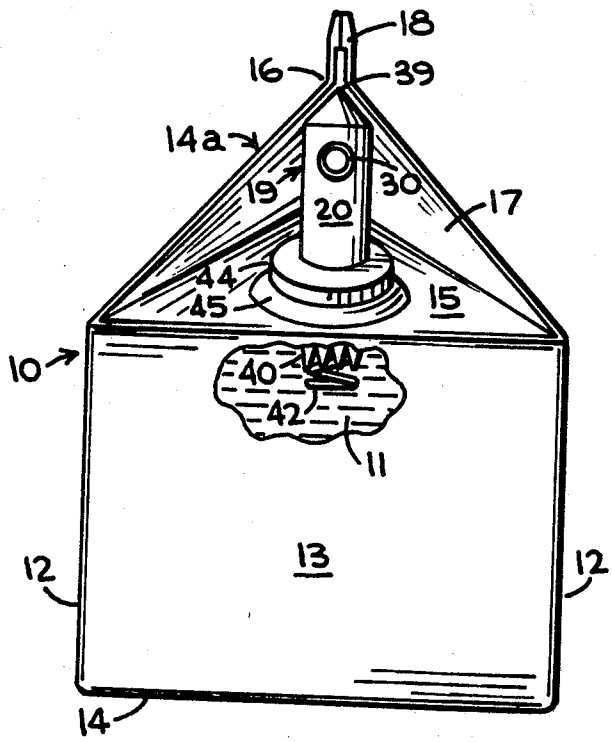
[52] **U.S. Cl.** **222/80,** 222/500; 229/17
[51] **Int. Cl.** **B67b 7/24**
[50] **Field of Search** 222/82, 80, 81, 89, 90, 211, 215, 556, 566, 567, 500; 229/17, 7

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ABSTRACT: A valved liquid dispenser adapted for use with a conventional dairy product carton. The device having automatic valve closing and opening means effected alternately by the resting and pouring positions of the carton respectively; thereby the unused portion of the product remaining within the carton will be shielded from the pollute mixed with the atmospheric air, for substantially reducing its contamination thereby.



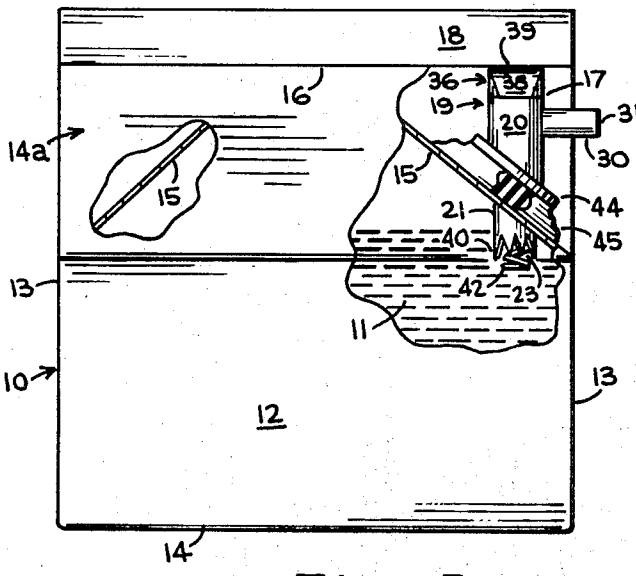


Fig. 3

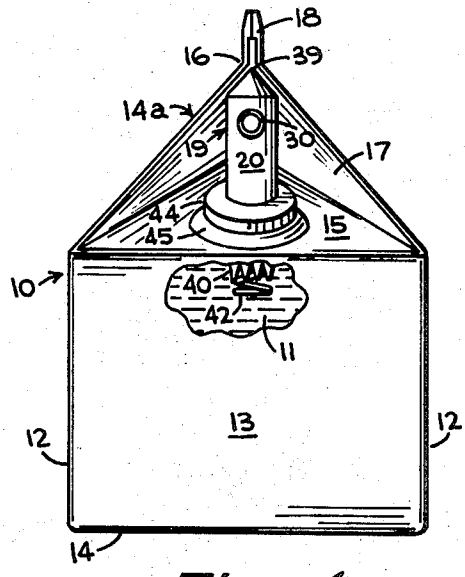


Fig. 4

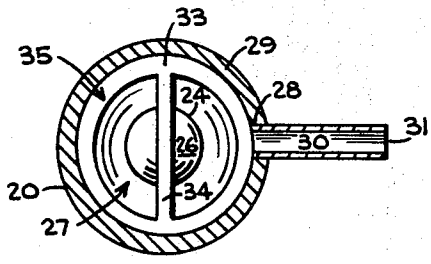


Fig. 5

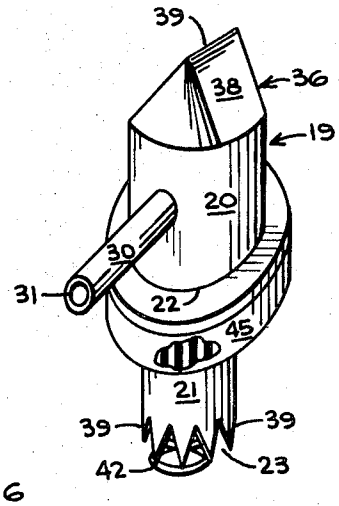


Fig. 1

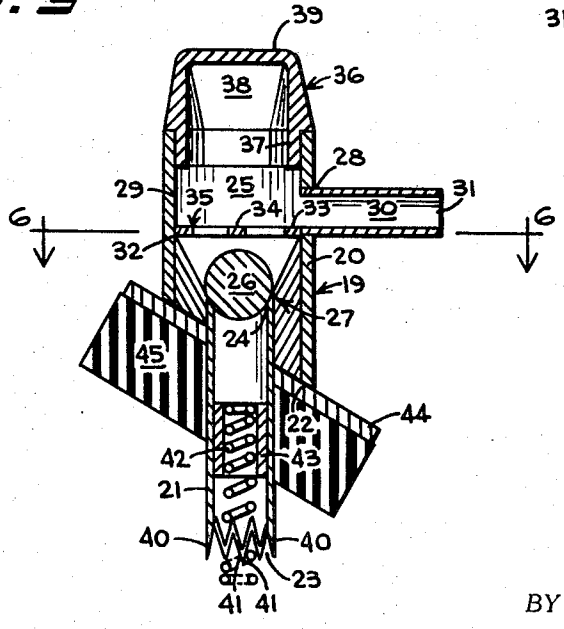


Fig. 2

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VALVED LIQUID DISPENSER

The main object of my invention is to provide a valved liquid dispenser for a dairy product such as liquid cream, or the like; wherein a portion of the product remaining in the carton following a serving thereof will be automatically protected from contamination by the pollute mixed with the atmospheric air.

Another object of my invention is to provide a device of the aforegoing characteristics having automatic valve opening means for establishing the product in communication with the dispenser associated with the device, when the carton is upended into a conventional pouring position.

A further object of my invention is to provide a aerating means for releasing a portion of the product to flow through the dispenser when the carton is sustained in the latter stated position.

A still further and important object of my invention is to provide a valved liquid dispenser which will be capable of manufacture at a relatively low cost, and wherein it will be foolproof in operation.

Other objects and advantages of my invention will henceforth become apparent to those persons skilled in the art from the following description, and the accompanying drawing, in which a preferred embodiment thereof is illustrated, and wherein:

FIG. 1 is a perspective view of the device.

FIG. 2 is a view in vertical section of FIG. 1.

FIG. 3 is a view in side elevation of both a conventional dairy product carton holding a liquid therein such as cream, which is disclosed through the sight provided therein; further, the sight reveals my device as associated with the carton.

FIG. 4 is a view in end elevation of FIG. 3.

FIG. 5 is a view in plan taken substantially on the line 6–6 of FIG. 2.

Now with reference being had to both FIGS. 3 and 4 within the drawing; therein is illustrated a conventional carton 10 composed of suitable paper having a liquid dairy product stored therein, such as liquid cream 11. Carton 10 comprises a pair of opposed and upstanding side walls 13,13, provided integrally with the end walls 12,12, and integral bottom wall 14, and an inverted V-shaped closure member 14*a*, which includes a pair of inwardly and upwardly inclined gable walls 15,15, which terminate in sealed relation within the composite of upstanding flanges 18, which are carried integrally by the closure ridge 16, and wherein the positioning of each gable wall 15, in respect to each gabled end of the closure member 14*a* provides a triangular shaped pocket 17.

Interposing the apex of closure member 14*a* associated with carton 10, and a medially disposed portion of gable wall 15, there is provided a valved liquid dispenser 19 which constitutes my invention. Dispenser 19 comprises a elongated cylindrical body member 20, composed preferrably of stainless steel, for the reason that the material will not flake, or rust in use. Body member 20 is provided with a depending reduced end portion 21, wherein the shoulder 22 provided by virtue thereof is cut in a manner whereby it will be inclined to the axis of body member 20, which serves a henceforth described purpose.

With reference now being had to FIGS. 2 and 5 within the drawing, therein is shown that body member 20 is provided with the axial bore wherein defining valve chamber 25, which communicates with a conical shaped counterbore provided within the lower end of body member 20, wherein defining valve seat 24; further, valve seat 24 communicates with a axial bore provided through reduced body portion 21, wherein defining valve inlet port 23. Serving to normally interrupt communication between the inlet port 23 and valve chamber 25, as when body member 20 is disposed in an upright position in respect to a horizontal plane, there is then for this purpose provided the steel ball 26 which is adapted to rest in contiguous relation with a medial transverse portion of valve seat 24, wherein the composite thereof defines ball valve 27.

In order to limit the movement of ball 26 from entering valve chamber 25, for a henceforth described reason, there is

then for this purpose provided the sieve member 35 which comprises the ring flange 33 which is adapted for a press fit within valve chamber 25, in spaced relation with ball 26; further sieve 35 includes the transversing bar 34; thereby sieve 35 will serve both for limiting the outward movement of ball 26, from valve seat 24, and further, will permit a liquid to flow from inlet port 23 through the valve chamber 25 as when communication is established therebetween. Disposed in proximity with the open end of valve chamber 25 in transverse relation with the wall 29 thereof, there is provided the bore 28 therethrough, having its central diametric axis thereof aligned in transverse relation with the lowermost body portion of body shoulder 22, which serves a henceforth described purpose. Bore 28 serves to secure in press-fitting sealed relation therewith one end portion of a elongated tubular member which defines herein nozzle 30, and wherein the outer opening thereof defines outlet port 31.

Serving to close the outer open end of valve chamber 25 there is then for this purpose provided the inverted substantially V-shaped closure member defining herein valve bonnet 36, having a ring-shaped reduced lower body portion 37 which is adapted for a press-fit within the open end of valve chamber 25, in a manner whereby the central longitudinally disposed axis of closure ridge 39 is aligned in parallelism with the central axis of nozzle 30, which serves a henceforth described purpose.

Serving to cut an opening within gable wall 15 in order to establish the reduced body portion 21 substantially within the interior of carton 10; there is then provided for this purpose the series of saw teeth 40, which depend integrally from the free end portion of reduced body portion 21. Teeth 40 are each provided with converging cutting edges 41,41, whereby enabling the series of teeth 40 to cut through gable wall 15 in either direction of rotation. From the foregoing description it is apparent that a blank disc will be provided by the cutting action which would lodge in the inlet port 23; therefore to obviate this condition, there is provided a rejection means, which comprises the sleeve member 43 which is adapted for a press fit within the upper end of inlet port 23. Sleeve member 43 serves to secure within the axial opening thereof as by welding a series of convolutions of a elongated helical wound spring 42, wherein the free end thereof extends outwardly from inlet port 23; it being apparent that spring 42 will serve to keep inlet port 23 free of the aforecited blank.

Serving to obviate liquid leakage between the opening within gable wall 15 and reduced body portion 21, there is then for this purpose provided a resilient washer 45 which is composed of substantially soft rubber. Washer 45 is adapted in its relaxed state to slide frictionally upon the periphery of reduced body portion 21, and to extend substantially therefrom, in a manner whereby washer 45 will abut the rigid washer 44 which is disposed in abutting relation with body shoulder 22. It now being apparent that if the extent of washer 45, washer 44, body member 20, and bonnet 36 is such that it will be longer than the distance between the opening provided through gable wall 15 and the apex of carton closure member 14*a*, and yet be enabled to be press-fitted therebetween, as by virtue of the yieldable washer 45, then the action transposed thereon will serve both to secure the dispenser 19 with carton 10, as when the ridge 39 of bonnet 36 is aligned in parallelism with the apex of closure member 14*a*, and to compress washer 45 against the top face of gable wall 15 for simultaneously providing a liquid tight seal thereabout, and as it has been described that the axis of bonnet ridge 39 is aligned in parallelism with the central axis of nozzle 30 then it is apparent that the latter will extend laterally from carton 10.

In practicing my invention I upend carton 10 into a conventional pouring position, in a manner whereby ball 26 will gravitate from valve seat 24; thereby the liquid cream 11 will be free to flow within the dispenser 19; however, and in order to relieve the air-lock which prevent the product 11 from flowing from dispenser 19, I gently squeeze the end walls 12,12, simultaneously, the action of which forces a portion of

the product through the dispenser, and if I require an additional serving of the product, I merely repeat the cited action upon carton 10. In as much as it is now obvious that ball valve 27 will assume its closed position when carton 10 is disposed in a upright resting position, then by virtue thereof a remaining portion of the product within carton 10 will be substantially safeguarded from contamination by the pollute mixed with the atmospheric air.

Having thus described my invention, and since different embodiments thereof could be made without departing from the scope and spirit thereof, it is therefore intended that all matter encompassed by the aforegoing description or as illustrated in the drawing, be interpreted as being limited only by the following claims.

I claim:

1. In combination with a conventional paper carton having a liquid dairy product sealed therein such as cream or the like, said carton having a rectangular cross section, comprising elongated side walls, end walls, a bottom wall, and a inverted substantially V-shaped closure member, which includes a pair of inwardly disposed and upwardly converging gabled walls, each of which provides a triangular shaped pocket with a respective end of said closure member; of a valve liquid dispenser adapted for removable connection with said carton inwardly the closure pocket thereof, said dispenser comprising a elongated cylindrical body member having a depending reduced end portion, and a axial bore provided in the upper end portion of said body member defining a valve chamber, said valve chamber being established in communication with a conical-shaped counterbore provided within the remaining portion of said body member, said conical shaped bore defining a valve seat, said valve seat being established in communication with a axial bore provided in said reduced body portion therethrough defining a inlet port, a shoulder provided by virtue of the reduced body portion, said shoulder being cut in inclined relation with the axis of said body member conforming to the extent of the slope of a respective gable wall, a rigid washer disposed in press-fitting relation with said reduced body portion, and in abutting relation with said shoulder, a resilient washer disposed in slidable relation with said reduced body portion, in its relaxed state, and in abutting relation with the rigid washer, said washers extending substantially from the peripheral wall of said body member, means to cut a entrance within a medially disposed portion of said gable wall whereby said reduced body portion may be established in communication with the interior of said carton, disc blank rejection means provided inwardly and extensibly said inlet port for dislodging said cuttings therefrom, a steel ball adapted to seat within said valve seat defining a ball valve, means to limit the movement of said ball from its seat in a manner whereby blocking the opening within said valve chamber will be obviated, a nozzle established in communication with said valve chamber extending laterally therefrom, in a manner wherein the central vertically disposed diametric axis thereof is disposed in transverse relation with the lowermost plane of said washers, a inverted substantially V-shaped closure element defining a valve bonnet, said bonnet having a depending annular-shaped body portion adapted for a telescopic inner sealing fit with a upper open terminal portion of said valve chamber, spaced from the opening extending through said nozzle, said bonnet having a ridge with its longitudinal axis aligned in parallelism with the central longitudinal axis of said nozzle, thereby said nozzle will be enabled to extend outwardly said carton pocket, when said bonnet ridge is forced into continuous relation with the apex of said carton closure member by virtue of said resilient washer, whereby the action of said resilient washer will serve to further provide a leaktight seal for the dispensers connection with said gable wall, and means to break the air-lock within said carton whereby alternate portions of said product will be enabled to flow through the outlet port of said nozzle from said carton, when up-ended into a conventional pouring position, by virtue of the open position of said ball valve.

2. As claimed in claim 1, wherein the cutting means comprises a series of V-shaped teeth provided in depending integral relation with said valve inlet port, each tooth thereof being provided with upwardly diverging cutting edges at the opposite sides thereof, thereby said teeth will be enabled to cut a circular opening in said gable wall therethrough in either direction of rotation.

3. As claimed in claim 1, wherein the disc blank rejection means provided inwardly and extensibly said inlet port, for dislodging said cuttings therefrom, comprises a sleeve element adapted for a press-fit inwardly the upper open end of said valve inlet port, said rejection means further including a elongated helical wound spring having one end thereof adapted for a inner press-fit within the opening of said sleeve element, and wherein the opposite end of said spring is adapted to extend beyond said cutting teeth, thereby said rejection means will bear resiliently against said gable wall when said cutting action is transposed thereupon.

4. As claimed in claim 1, wherein the means to limit the movement of said valve ball element whereby it will not enter and block the opening within said valve chamber as when influenced to move by the force of gravity from said valve seat, comprises a sieve element having a annular shaped flange which is adapted for a press-fit inwardly said valve chamber in proximity with the upper open end thereof, thereby said flange will be spaced from said ball element, said flange further including a integral diametrically disposed bar member which is abutted by said ball element when said ball valve is disposed in a open position.

5. As claimed in claim 1, wherein the means for breaking the air-lock within said carton whereby alternate portions of the liquid product stored therein may be enabled to flow through the outlet port of said nozzle from said carton, when upended into a conventional pouring position, by virtue of the open position of said ball valve, constitute the alternate squeezing action applied simultaneously upon the end walls of said carton prior to dispensing a portion of said liquid product.