

[54] **CONTAINER WITH SELF-CLOSING
ONE-WAY VALVE**

[76] Inventor: **Melvin I. Eisenberg**, 2908 W. Lunt,
Chicago, Ill. 60645

[22] Filed: **Oct. 20, 1971**

[21] Appl. No.: **190,926**

[52] U.S. Cl. **128/227, 128/DIG. 24, 128/295,**
128/2 F, 137/525.1, 251/4, 150/9, 229/62.5

[51] Int. Cl. **A61m 3/00**

[58] Field of Search **150/9; 229/62.5; 128/214 D,**
128/275, 2 F, 226, 227, 232, 295; 251/4;
137/525.1

[56] **References Cited**

UNITED STATES PATENTS

241,390	5/1881	Mattson.....	128/DIG. 24
356,544	1/1887	Parker.....	128/DIG. 24
3,228,444	1/1966	Weber et al.....	128/2 F
3,332,420	7/1967	Voller.....	150/9 X
3,473,532	10/1969	Eisenberg.....	150/9 X

Primary Examiner—Samuel B. Rothberg

Assistant Examiner—Stephen P. Garbe

Attorney—Sidney Wallenstein et al.

[57] **ABSTRACT**

A container for fluid or the like including a pair of closely confronting flexible walls unsecured along a portion thereof to form a supply opening for the container. The supply opening includes a one-way valve comprising a pair of confronting flat walls of flexible sheet material forming a flattened sleeve-like structure open at the opposite ends thereof and respectively secured to the confronting container walls. An arcuate seal-forming spring member is secured to and extends across the outside of one of the valve walls with the convex side thereof facing the same to draw the valve walls thereto into sealing relation. A pair of oppositely curving partially expanded confronting spring members are located between said valve walls, the spring members curving about an axis extending in the direction of the open ends of the flattened sleeve-like valve structure, with the concave sides thereof facing one another, so that the confronting spring members can be squeezed to expand the same to balloon the same outwardly together with the valve walls on the outside of the same to form a large inlet passageway into the container.

19 Claims, 15 Drawing Figures

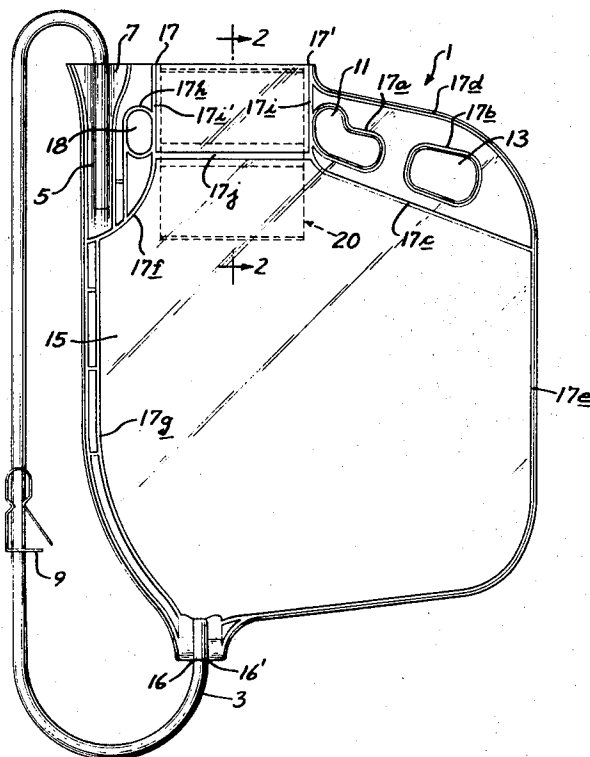


FIG. 1

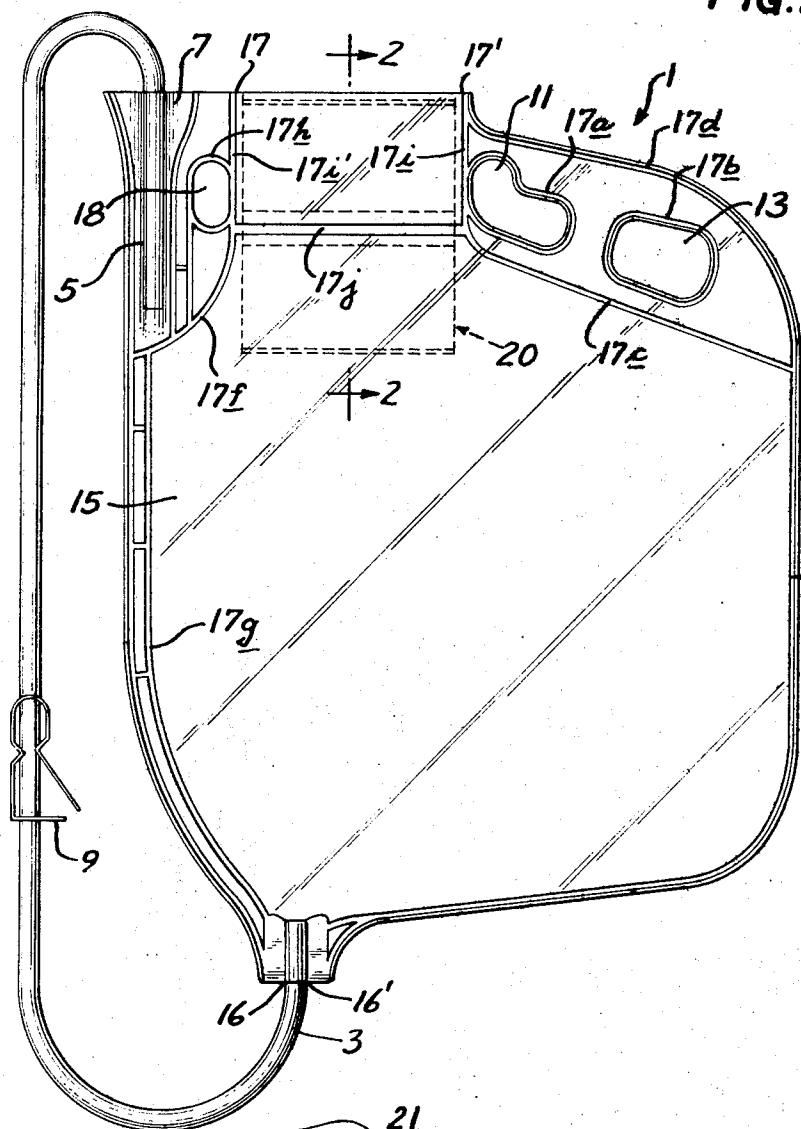


FIG. 2

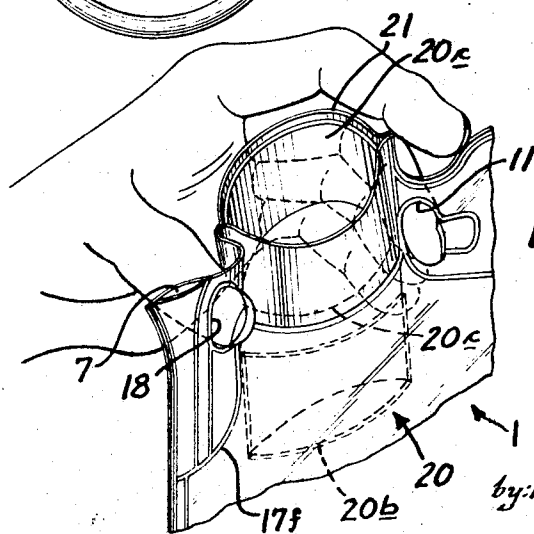
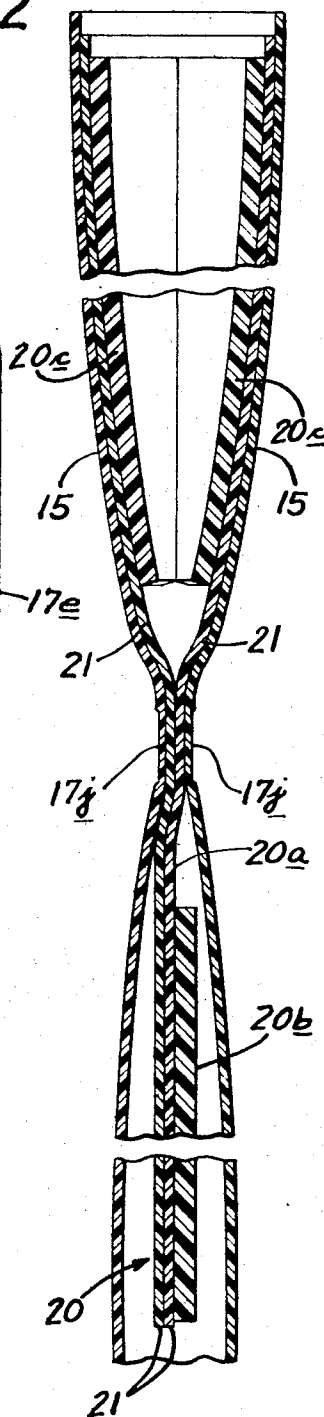
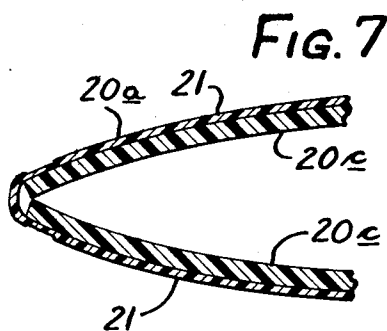
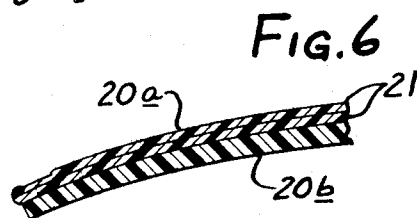
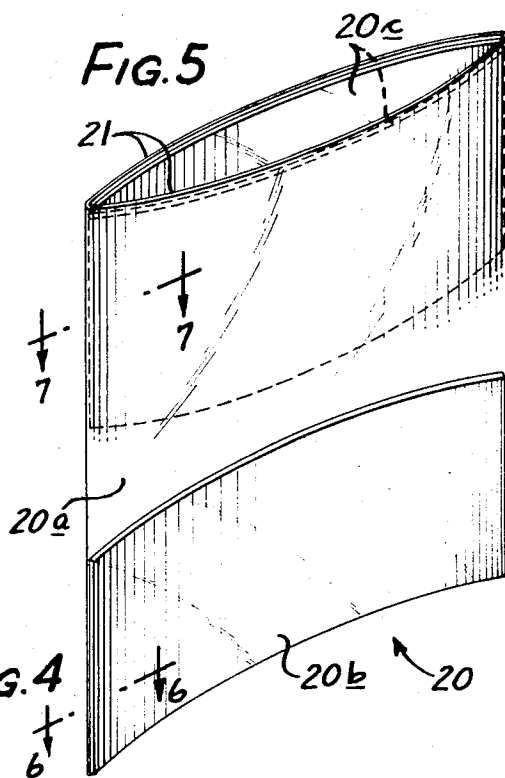
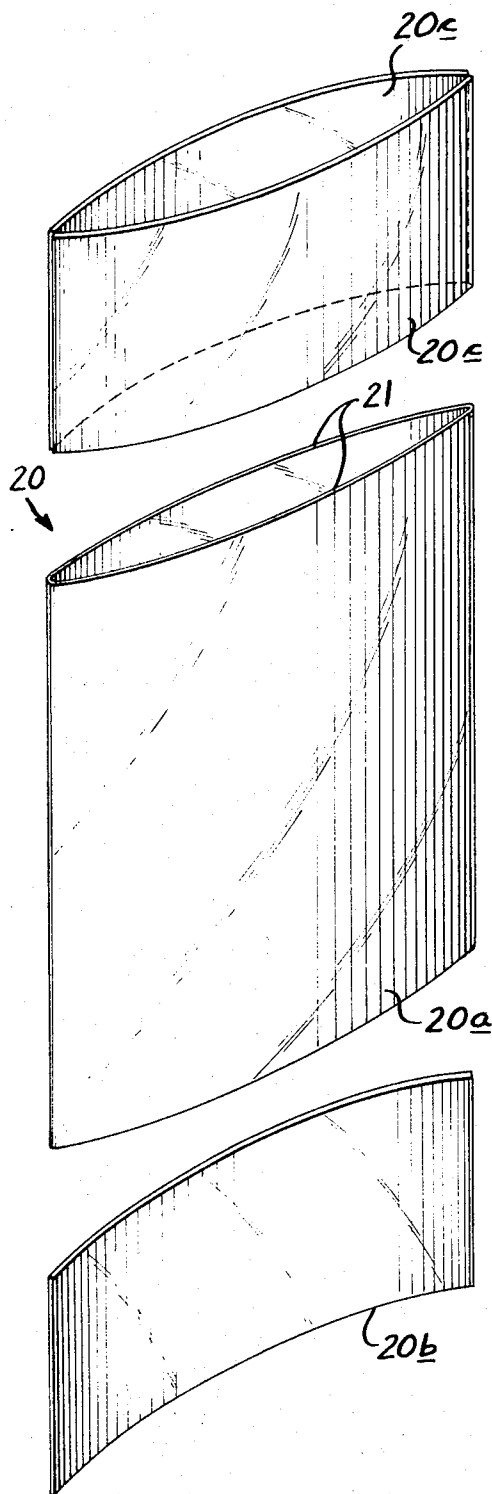


FIG. 3

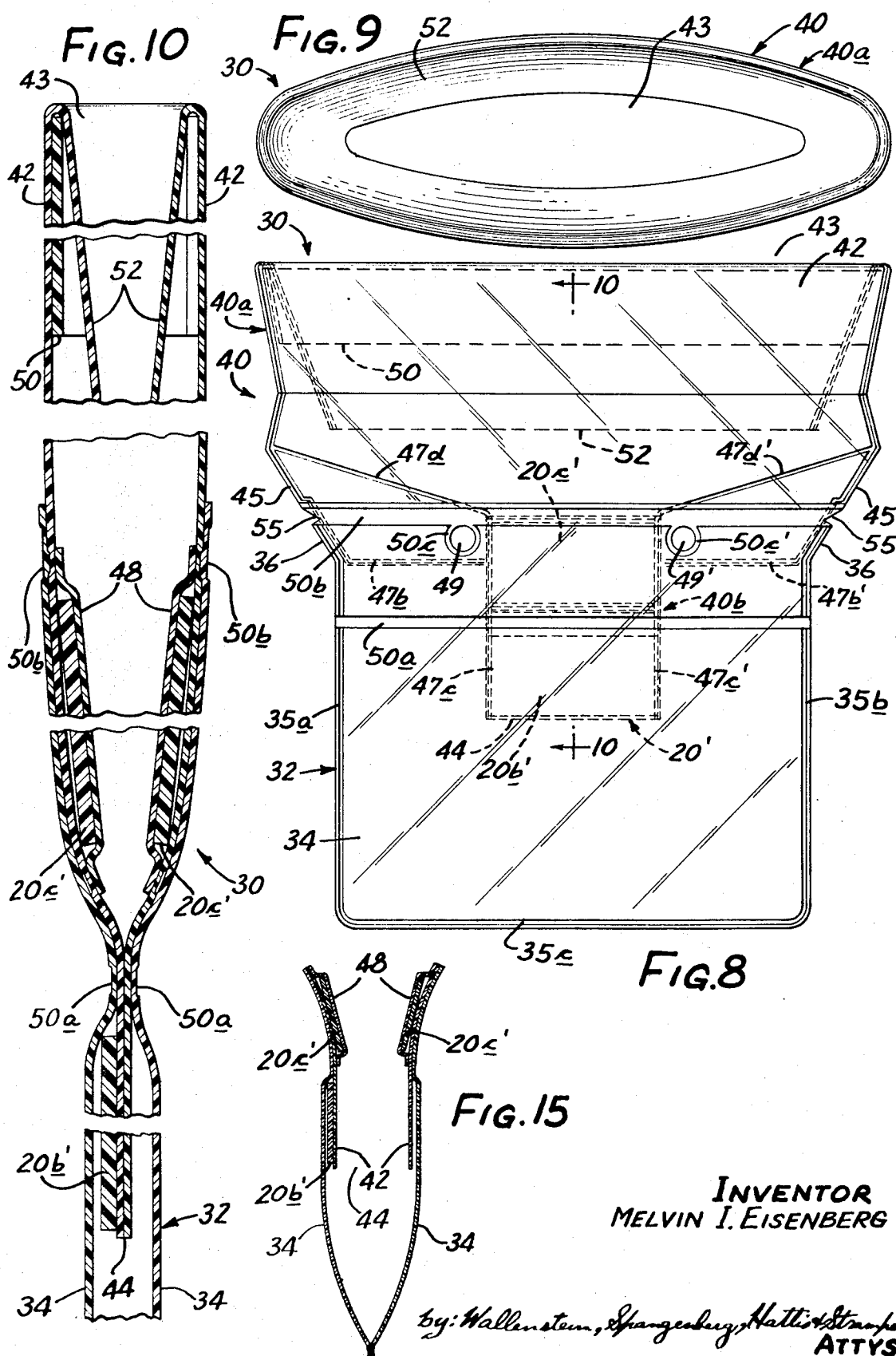
INVENTOR
MELVIN I. EISENBERG

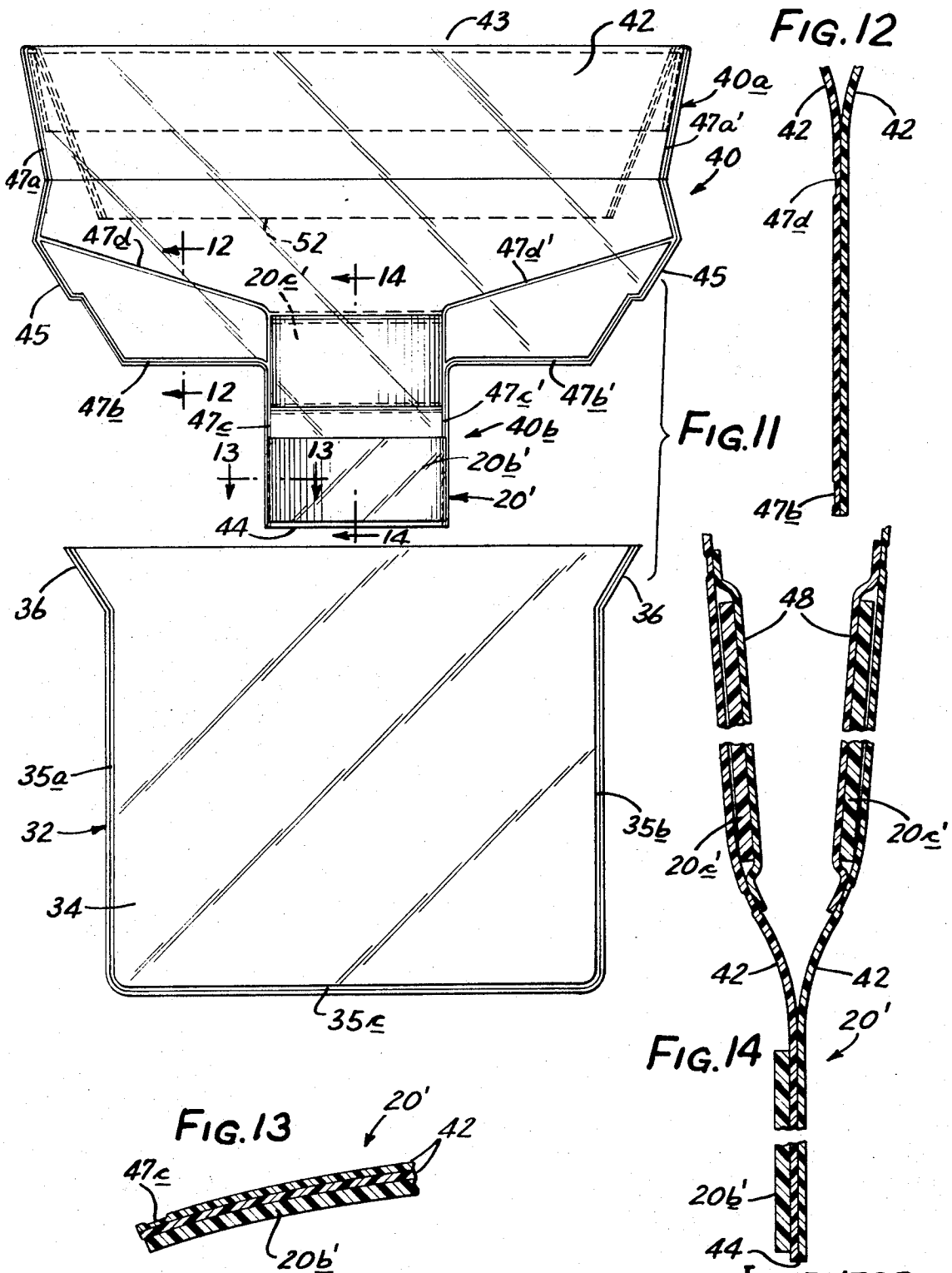
by: Wallenstein, Elphangenberg, Hattie & Strampel
ATTYS.



INVENTOR
MELVIN I. EISENBERG

by: Wallenstein, Spangenberg, Hattis & Eltranfel
ATTYS.





INVENTOR
MELVIN I. EISENBERG

by: Wallenstein, Shanzberg, Hattis & Strangfeld
ATTYS.

CONTAINER WITH SELF-CLOSING ONE-WAY VALVE

This invention relates to container with one-way valves, and has its most important application in disposable enema, douche and urine collection bags.

In recent years, disposable enema, douche and urine collection bags have gained wide acceptance in hospitals. Generally, these products are made of sheets of heat sealable material, such as polyvinyl chloride, sealed along their marginal areas except at those locations where the supply tube and filling opening are to be located. As is the case with most disposable products, it is of utmost importance that the cost thereof be extremely low. One of the difficult problems faced heretofore by manufacturers of disposable enema, douche and urine collection bags was developing a very inexpensive yet reliable valve for selectively opening and sealing the filling openings of the bags and wherein the valve will not leak even when the bags involved are subjected to rough handling. The sealing of the bag filling openings is desirable so the bags can be filled and then laid on their sides for delivery to the rooms where they are needed.

U. S. Pat. No. 3,473,532, granted Oct. 21, 1969, discloses disposable bag constructions having very inexpensive and reliable one-way valves for selectively opening and sealing the supply openings of the bags. One of the main aspects of the present invention is an improvement in the bag and one-way valve constructions disclosed in this patent (which require generally the use of two hands to open the bags) in that the bags can be easily opened with the use of only one hand.

More specifically, the one-way valve disclosed in the aforesaid patent includes a pair of confronting walls of flexible sheet material secured together along the side margins of the valve to provide a flattened sleeve-like structure open at the opposite ends thereof. Only the upper end portions of the valve walls are secured to the confronting flexible walls of the bag leaving the lower end portions freely disposed in the bag. An arcuate seal-forming spring member is secured to and extends across the outside of the lower end portion of one of the valve walls. The convex side of the seal-forming spring member faces the adjacent valve wall so the resiliency of the arcuate spring member pulls the confronting valve walls tautly around the convex side of the spring member to bring the same into sealing relation. The force of a liquid stream guided downwardly through this valve structure is sufficient to separate the valve walls encompassed by the seal-forming spring member. However, liquid within the bag cannot splash out of the bag even when the bag is roughly treated or dropped on the floor, since there is no way for a liquid stream to be formed within the bag which is guided into the small space between the sealed spring pressed portions of the valve walls.

The confronting valve walls of the enema or douche bag disclosed in the aforesaid patent extend beyond the margins of the container body preferably with one of the valve walls extending beyond the other so that the user can readily extend his fingers of one hand between the valve walls to a point where he can reverse flex the arcuate seal-forming spring member away from the valve walls to expand the same in the opposite direction to open the valve. The valve is maintained in its open position by grasping the oppositely expanded spring member through the bag walls with the other hand.

There are many occasions where the user (a doctor or nurse) has only one hand conveniently available to fully open the bag, as when an enema or douche bag is to be filled or where it is desired to withdraw a sterile sample of urine from a urine collection bag. To this end, in accordance with one of the main features of the present invention, the above-described valve structure is modified by providing a pair of oppositely curving partially expanded confronting spring members extending along the inner surfaces of the upper end portions of the valve walls. The pair of partially expanded confronting spring members can be fully expanded by squeezing the ends of the same to balloon the same outwardly to form a large filling mouth for an enema or douche bag and also to widely separate the valve walls so a sterile tube can be readily passed through the valve in a urine collection bag which was sterilized before usage without touching any of the exposed walls of the bag which may have been contaminated by air or mishandling. If the valve could not be fully opened in this way, a sterile urine collection tube would be contaminated by touching an exposed contaminated portion of the bag and this contamination would be transferred to the urine in the bag. Also, with the use of the partially expanded confronting spring members described above, it is not necessary for the valve walls to be extended beyond the margins of the bag and so the valve structure of the present invention can be located completely within the margins of the bag. Passage openings for the thumb and at least one of the fingers of a hand can be provided within the body of the bag adjacent the ends of the aforesaid partially expanded confronting spring members and outside of the sealed areas of the bag, permitting the passage of the thumb and at least one finger of the user's hand to enable the same to be readily extended around the ends of the confronting spring members so that it can be ballooned outwardly by the squeezing action previously described.

In accordance with another aspect of the present invention, a very unique urine collection bag is provided which is preferably an inexpensive disposable type bag and has an elongated oval-shaped tubular inlet portion having a large oval-shaped mouth to catch either a male or female urine stream. The oval-shaped tubular inlet portion of the bag directs the urine to the inlet end of the above-described valve located in the central portion of the bag. The bag is provided with means forming a tear line across the bag at a point immediately above the valve, so that the bulky tubular inlet portion of the bag can be removed from the remainder of the bag, leaving the inlet end of the valve at the new top margin of the bag.

The above and other advantages and features of the present invention will become apparent upon making reference to the specification to follow, the claims and the drawings wherein:

FIG. 1 is a front elevational view of a disposable enema bag constructed in accordance with the present invention;

FIG. 2 is an enlarge fragmentary sectional view through the supply opening portion of the enema bag of FIG. 1, taken along section line 2—2 therein;

FIG. 3 is a perspective view of the filling end of the enema bag of FIG. 1 showing the thumb and a finger of a user's hand inserted through openings in the bag and

squeezing the bag fully to open the inlet passageway of the bag;

FIG. 4 is an exploded view of a valve unit inserted in the supply opening of the bag of FIG. 1;

FIG. 5 is a perspective view showing the assembly of the parts shown in exploded form in FIG. 4;

FIG. 6 is a greatly enlarged fragmentary sectional view through a portion of a valve unit shown in FIG. 5, taken along section line 6—6 therein;

FIG. 7 is a fragmentary sectional view through a portion of the valve unit shown in FIG. 5, taken along section line 7—7 therein;

FIG. 8 is a front elevational view of a disposable urine collection bag constructed in accordance with another form of the present invention;

FIG. 9 is a top plan view of the urine collection bag shown in FIG. 8;

FIG. 10 is a greatly enlarged fragmentary sectional view through the filling end portion of the urine collection bag of FIG. 8, taken along section line 10—10 therein;

FIG. 11 is an exploded view of a container body and inlet passageway and valve-forming unit which when assembled forms the urine collection bag of FIG. 8;

FIG. 12 is a greatly enlarged sectional view through a portion of the inlet passageway and valve-forming unit shown in FIG. 11, taken along section line 12—12 therein;

FIG. 13 is a greatly enlarged sectional view through a portion of the inlet passageway and valve-forming unit shown in FIG. 11, taken along section line 13—13 therein;

FIG. 14 is a greatly enlarged sectional view through a portion of the inlet passageway and outlet forming unit shown in FIG. 11, taken along section line 14—14 therein; and

FIG. 15 is a vertical sectional view through the portion of the urine collection bag shown in FIG. 8, after the inlet portion of the urine collection bag has been severed from the rest of the bag and the user applies a squeezing force to open the inlet passageway to the valve-forming portion of the bag.

ENEMA BAG OF FIGS. 1-7

Referring now more particularly to FIG. 1, an enema bag is thereshown. A feeding tube 3 extends from the bottom of the bag 1 wherein it makes communication with the interior of same. The feeding tube 3 has a greased nozzle end portion 5 which is tucked into a pocket 7 formed in the bag. A suitable clamp 9 is applied over the tube 3 normally to prevent the passage of liquid through the supply tube.

The bag 1 has centered near the top thereof a finger-receiving opening 11 also to be used for hanging the bag in a vertical position when in use. The bag 1 has a handle-forming finger-receiving opening 13 also sized to receive fingers of the user's hand for carrying the bag.

To minimize cost and to provide a maximum compactness for convenience in packaging and storage for enema and douche bag applications, the bag 1 has confronting walls 15—15 preferably made of a heat sealable synthetic plastic material, most advantageously thin flexible polyvinyl chloride sheet material. Two layers of such material are heat-sealed together along the mar-

ginal portions thereof except between the points 16-16' where the supply tube 3 enters and is sealed to the bottom of the bag, and between points 17-17' at the top margin of the bag between which is formed a filling opening for the bag. A thumb opening 18 is provided in the bag walls 15—15 spaced from the finger-receiving opening 11. The openings 11 and 13 and the associated corner sections of the bag are defined by heat seal lines 17a, 17b, 17c and 17d connecting the polyvinyl chloride layers or walls forming the bag 1. Heat seal lines 17e, 17f and 17g along with the heat seal line 17c define the margins of the bag interior. A heat seal line 17h defines the thumb opening 18.

The valve of the present invention is generally indicated by reference numeral 20 and is secured in the aforesaid filling opening in a manner to be described. The construction of the valve per se and its relationship to the bag 1 constitutes important aspects of the present invention.

The valve 20 is a normally thin flattened sleeve-like structure (FIG. 5) designed so that it can be initially opened readily by squeezing the upper portion thereof to expand and open the valve. Upon release of the valve it snaps back into the normally flat closed condition, which seals the bag 1 against leakage even under rough handling conditions. In fact, one can apply his entire weight to the liquid filled bag by standing or sitting on the same and the liquid will not leak from the closed valve.

The preferred form of the valve 20 which is shown in exploded view in FIG. 4 includes a flattened tube or sleeve-like structure 20a which may be made of a thin flexible polyvinyl chloride sheet material or the like which is open at the opposite ends thereof and sealed at the longitudinal side margins thereof. The open ends of the flattened sleeve-like structure 20a form open top and bottom ends of the valve when mounted in the filling opening of the bag. The flattened sleeve-like structure presents closely confronting walls 21—21 which are respectively secured to the confronting bag walls 15—15 between horizontally spaced vertically extending heat seal lines 17i-17i' defining a supply passageway into the bag 1. The flattened sleeve-like structure 20a, is secured within this supply passageway by a horizontal heat seal line 17j extending approximately midway across the flattened sleeve-like structure 20a. The horizontal seal lines 17j, unlike the vertical heat seal lines 17 and 17i', does not extend completely through the thickness of the walls involved, so that the heat seal lines 17j does not close the passageway by the valve 20. For reasons to be explained, it is important in a bag to be liquid tight that no portion of the valve below the heat seal line 17j be secured to the bag walls 15—15 so that the lower portion of the flattened sleeve-like structure 20a hangs loosely within the bag interior. In such case, forces applied to the bag walls 15—15 tending to separate the same in the vicinity of the valve 20 will have little or no effect in separating the loosely hanging bottom end portions of the valve walls 21—21.

An arcuate spring member 20b most advantageous made of rigid polyvinyl chloride sheet or similar material as best shown in FIG. 5, extends across the bottom end portion of the flattened sleeve-like structure 20a, with the ends of the arcuate spring member being heat

sealed to the side marginal portions of the flattened sleeve-like structure 20a and the convex side thereof facing the adjacent valve wall 21 so that the resiliency of the spring member 20b pulls the valve walls 21-21' tautly over the convex side thereof to force the inner surfaces of the valve walls 21 and 21 together to form a liquid seal thereat. A stream of liquid directed downwardly from the top of the valve 20 will, however, exert sufficient pressure between the sealed valve walls 21-21 to pass readily between the same. However, a liquid-tight seal is formed insofar as the liquid within the bag is concerned since there is no way for guiding a stream of liquid between the spring urged inner surfaces of the walls 21-21 at the bottom end of the valve 20. The arcuate spring member 20b is most advantageous made of rigid polyvinyl chloride sheet or similar material.

In accordance with the present invention, there is provided at the upper end portion of the flattened sleeve-like structure 20a a pair of oppositely curving arcuate spring members 20c-20c most advantageous made of rigid polyvinyl chloride sheet or similar material which extend along the inner surfaces of the upper end portions of the valve walls 21-21 with the concave sides thereof facing one another. The confronting spring members 20c-20c curve about an axis extending between the open ends of the flattened sleeve-like structure 20a. (Although the seal-forming spring member 20b is preferably curved about this same axis, it can be made to curve about an axis extending transversely of the open ends of the flattened sleeve-like structure 20a, unlike the confronting spring members 20c-20c which must have the curvature described). The confronting spring members 20c-20c are only partially expanded so that the squeezing of the opposite end portions thereof will balloon the same outwardly. The confronting spring members 20c-20c are secured within the upper end portions of the flattened sleeve-like structure 20a in any suitable way, as by heat sealing the ends thereof to the longitudinal side margins of the valve walls 21-21. The spacing of the confronting spring members 20c-20c and the seal-forming spring member 20b is such that when the end portions of the confronting spring members 20c-20c are squeezed, the outward ballooning of the spring members and the corresponding spreading of the upper portions of the valve walls 21-21 apart will also widely separate the bottom end portions of the valve walls 21-21.

The aforementioned thumb opening 18 and finger-receiving opening 11 formed in the upper portion of the bag 1 are positioned immediately at the opposite ends of the confronting spring member 20c-20c, so that by passing the thumb and one of the other fingers of the hand through the openings 18 and 11, respectively, the user can squeeze the confronting spring members 20c-20c through the walls of the bag to balloon the same outwardly to open to form a very large inlet passageway as shown in FIG. 3, so that the bag can be readily filled with an enema material where an enema bag is involved or a douche material where a douche bag is involved.

URINE COLLECTION BAG OF FIGS. 8-14

The one-way valve construction described in connection with the embodiment of FIGS. 1-7 also has

application to urine collection bag, such as the urine collection bag generally indicated by reference numeral 30 in FIG. 8. (However, this urine collection bag has unique features other than the utilization of this one-way valve which features do not necessarily require the use of this valve).

The urine collection bag 30 is preferably made, for the most part, of flexible sheet material like polyvinyl chloride sheet material and includes a main container body 32 (as best shown in FIG. 11) having relatively closely spaced confronting walls 34-34 which are joined together at their side and bottom margins by heat seal lines 35a, 35b and 35c to form an elongated oval-shaped open top bag structure. The upper ends of the side margins of the container body 32, as illustrated, have outwardly flaring upper end portions 36-36.

The urine collection bag 30 also includes an inlet passageway and valve-forming unit generally indicated by reference numeral 40 which fits within the open top of the container body 32. The inlet passageway and valve-forming unit 40 illustrated has an elongated oval-shaped upper tubular inlet passageway-forming portion 40a and a relatively narrow lower valve-forming portion 40b both formed preferably by a pair of confronting walls 42-42 made of a flexible sheet material, like polyvinyl chloride sheet material. The confronting outer walls 42-42 as illustrated are sealed together along all their side marginal portions thereof along heat seal lines 47a-47a', 47b-47b' and 47c-47c', leaving the upper and bottom margins of these walls unconnected to define a tubular body open at the top where it has elongated oval-shaped inlet mouth or orifice 43 and a discharge opening of limited extent at the bottom end 44 of the inlet passageway and valve-forming unit 40. The side margins of the inlet passageway-forming portion 40a have downwardly and inwardly tapering bottom portions 45-45 which conforms to and fits along the inner surfaces of the outwardly flaring side marginal portion 36-36 or the container body 32. Internal heat seal lines 47d-47d' are also formed in the walls 42-42 which converge downwardly to form downwardly inclining bottom walls for the inlet passageway of the unit, which heat seal lines 47d-47d' merge with an upper extension of the heat seal lines 47c-47c'. The entire length of the heat seal lines 47c-47c' up to the bottom of the downwardly converging heat seal lines 47d-47d' define the extremities of a flattened sleeve-like structure constituting part of a one-way valve generally indicated by reference numeral 20', resembling very closely the one-way valve 20 of the embodiment of the invention shown in FIGS. 1-7. Accordingly, an arcuate seal-forming spring member 20b' extends across the outside of one of the walls 42 at the narrow bottom end thereof with its concave side facing the same and is secured thereto by the heat seal lines 47c-47c' where it draws the bottom end portions of the walls 42-42 together to form a liquid-tight seal. A pair of oppositely curving confronting spring members 20c'-20c' extend along the inner surfaces of the walls 42-42 between the upper portions of the seal lines 47c-47c', the concave sides of the confronting spring members 20c'-20c' facing one another. Small pieces 48-48 of thin flexible sheet material like polyvinyl chloride material heat sealed to

the confronting walls 42—42 cover the inner sides of the confronting spring members 20c'—20c'.

A resilient ring 50 of spring metal or plastic material placed under compression and allowed to expand is positioned within the upper extremity of the side walls 42—42 adjacent the inlet mouth or orifice 43, the ring being held in an elongated oval-shape by the walls 42—42 to maintain the inlet mouth or orifice 43 in a fully opened condition despite the flexibility of the material out of which the walls 42—42 are made. The upper ends of the walls 42—42 terminate in a reversely inwardly folded skirt-forming portion 52 which encloses the spring member 50 and defines the margins of an inlet passageway portion joining the outwardly converging side walls formed by the heat seals 47d and 47d'.

The container body 32 and the inlet passageway and valve-forming unit 40 are secured together by horizontally extending heat seal lines 50a and 50b best shown in FIG. 8. Heat seal line 50a extends through the narrow bottom portion of the walls 42—42 of the inlet passageway and valve-forming unit 40 between the seal-forming spring member 20b' and the confronting spring members 20c—20c'. The portion of the heat seal line 50a outwardly of the narrow valve-forming bottom portion of the inlet passageway and valve-forming unit 40 extends completely through the outer walls 34—34 of the container body 32. However, the heat seal line 50a does not extend between the walls 34—34 but only effects a heat sealing of the walls 42—42 respectively to the walls 34—34, so as not to seal off the passageway formed between the narrow portion of the walls 42—42 of the inlet passageway and valve-forming unit 40. Similarly, the heat seal line 50b interconnects and extends through a portion of the walls 42—42 and 34—34 outwardly of the valve-defining heat seal lines 47c—47c', to effect merely the securing of the adjacent pairs of walls 42—34 and 42—34 together between the heat seal lines 47c—47c'. After the assembly of the container body 32 and the inlet passageway and valve-forming unit 40, thumb and finger-receiving openings 49—49' are cut in these pair of walls opposite the ends of the confronting spring members 20c'—20c'. The thumb and finger-receiving openings 49—49' are defined by circular heat seal lines 50c—50c' formed in the side walls 34—34 and 42—42 between the pairs of heat seal lines 47b—47d and 47b'—47d' adjacent to the upper ends of the heat seal lines 47c—47c' of the inlet passageway and valve-forming unit 40. The openings 49—49' are spaced apart a distance to permit the passage of the thumb and one of the other fingers of the user's hand, so that the confronting spring members 20c'—20c' can be squeezed to balloon the same outwardly when it is desired to form a very large inlet passageway into the container body 32.

Means for forming a tear line across the urine collection bag is provided by V-shaped notches 55—55 formed at the outer ends of the heat seal line 50b, the apex of the notches being formed in the central portion of the heat seal line 50b. Accordingly, the bulky upper portion of the urine collection bag can be severed from the rest of the bag by merely tearing the urine collection bag along the line extending between the apexes of the V-shaped notches 55—55. This line extends above the thumb and finger-receiving openings 49—49' and

the upper margin of the confronting spring members 20c'—20c', so that when the upper portion of the urine collection bag has been severed, the upper portion of the valve 20' is adjacent to the tope of the new upper margin of the urine collection bag, which is shown in FIG. 15. The inlet passage into the container body 32 can then be open to a substantial extent to permit the passage of a urine specimen collection tube into the bag without touching the air exposed portion of the valve above the seal-forming spring member 20b', by inserting the thumb and one of the fingers of one hand through the openings 49—49' and squeezing the confronting spring members 20c'—20c' to balloon the spring members outwardly to separate the valve walls, as illustrated in FIG. 15.

It is thus apparent that the various forms of the present invention provide a very convenient disposable holder for liquid and other materials with an easy one-way valve which can be readily fully opened with a simple squeezing action requiring only one hand of the user thereof.

It should be understood that numerous modifications may be made in the most preferred forms of the invention described above without deviating from the broader aspects thereof.

I claim:

1. In combination, a container for fluid or the like including a pair of closely spaced confronting flexible walls secured together along certain marginal portions thereof and being unsecured along other portions thereof to form a supply opening for the container; a valve mounted in said supply opening, said valve comprising a pair of confronting walls of flexible sheet material secured together along part of the margins of the valve to provide a flattened sleeve-like structure open at the opposite ends thereof so fluid can be passed into the container between the valve walls, said valve walls being respectively secured to said container walls only at points spaced from the inner end portions thereof, an arcuate seal-forming spring member secured to and extending across the outside of the inner end portions of one of said valve walls at points inwardly of said points of connection thereof to said container walls so forces tending to separate the container walls will be de-coupled from the portion of the valve walls sealed by said spring member, and with the convex side thereof facing said one valve wall, the resiliency of said arcuate spring member pulling said confronting valve walls around the convex side of said spring member to bring the confronting valve walls into sealing relation, and a pair of oppositely curving partially expanded confronting spring members extending along the inner surface of said valve walls adjacent said container supply opening, said confronting spring members curving about an axis extending in the direction of the open ends of the flattened sleeve-like valve structure with the concave sides thereof facing one another, the ends of said confronting spring members being of a size and positioned to be grasped by one hand of the user through the container walls from the outside thereof and squeezed to balloon the same outwardly together with the valve walls on the outside of the same to a degree which also separates the valve walls adjacent to said seal-forming spring member against the sealing force thereof and forms a large inlet passageway for the container.

2. The combination of claim 1 wherein said container adjacent said partially expanded confronting spring members have apertures on the opposite sides of said spring members to provide clearance for the passage of the user's thumb and at least one other finger of the same hand to permit the opposite ends of said confronting spring members to be squeezed by the user.

3. The combination of claim 1 wherein said container is an enema bag or the like having attached thereto an open-ended tube with a releasable tube shut off means, said tub communicating with the inside of the container and adapted to be thrust into the anal canal of a patient.

4. The combination of claim 1 wherein said container is a urine collection bag, and there is connected to the inlet side of said valve as an outer extension of said container wall means forming an open inlet urine-collection passageway with a large inlet mouth for catching the urine stream emanating from a patient and directing the same to the space between said valve walls at the inlet end of the valve adjacent to said confronting spring members.

5. The combination of claim 4 wherein said wall means forming said urine collection inlet passageway forms a large elongated oval-shaped inlet mouth to receive a female urine stream.

6. The combination of claim 4 wherein said wall means forming said urine collection inlet passageway being manually severable from the rest of the combination of the said container and valve so said valve is positioned at the newly formed outer margin of the resulting combination after severance of said wall means.

7. A container having a supply opening with a valve forming portion therein comprising a pair of confronting walls of flexible sheet material secured together along part of the margins of the valve to provide a flattened sleeve-like structure open at the opposite ends thereof and through which fluid can be passed into said container from the outside thereof, an arcuate seal-forming spring member extending across the outside of one of said confronting walls of the valve, the resiliency of said seal-forming spring member pulling the confronting valve walls tautly around the convex side of the spring member to bring the confronting valve walls into sealing relation, and a pair of oppositely curving partially expanded confronting spring members extending along the inner surface of said valve walls, said confronting spring members curving about an axis extending in the direction of the open ends of the flattened sleeve-like valve structure with the concave sides thereof facing one another, the ends of said confronting spring members being of a size and positioned to be grasped by one hand of the user and squeezed to balloon the same outwardly together with the valve walls on the outside of the same to a degree which also separates the valve walls adjacent to said seal-forming spring member against the sealing force thereof and forms a large inlet passageway for the container.

8. The combination of claim 7 wherein said container adjacent said partially expanded confronting spring members have apertures on the opposite sides of said spring members thereof to provide clearance for the passage of the user's thumb and at least one other finger of the same hand to permit the opposite ends of said confronting spring members to be squeezed by the user.

9. In combination, a flexible bag-like container body having an opening at the top thereof defined between closely spaced confronting walls; and an inlet passageway and valve-forming unit having an upper relatively wide inlet passageway-forming portion positioned in said container body opening and a lower relatively narrow valve-forming portion projecting downwardly into said container body, said inlet passageway-forming portion of said unit having conveying slanting bottom walls which guide a container filling material into the upper end of said lower valve-forming portion, said flexible container body and said inlet passageway and valve-forming unit being secured together with the container interior body sealed up to said lower valve-forming portion, at least said lower valve-forming portion of said inlet passageway valve-forming unit comprising a pair of confronting walls of flexible sheet material forming a flattened sleeve-like structure open at the opposite ends thereof and through which fluid can be passed into the container body, an arcuate seal-forming spring member extending across the outside of the bottom portion of one of said confronting walls with the convex side thereof facing the same, the resiliency of said arcuate spring member pulling said confronting walls tautly around the convex side of the spring member to bring the confronting walls into sealing relation with a sufficiently light force that a stream of liquid directed between confronting walls from the inlet passageway forming portion will separate the walls to pass into said container body, the confronting valve walls being respectively secured to the adjacent confronting container walls at points only above said seal-forming member so the tension in the container walls is not applied in opposition to the sealing force of the spring member, and a pair of oppositely curving partially expanded confronting spring members within the upper portion of said valve walls, said pair of confronting spring members curving about an axis extending in the direction of the open ends of the flattened sleeve-like structure formed by said valve walls, the concave sides thereof facing one another, the squeezing of the ends of said pair of confronting spring members causing the same to balloon outwardly thereby to separate the valve-walls previously sealed by said seal-forming spring member; said container body having openings at the opposite sides of the upper portion of said valve walls above the sealed portion of the container adjacent said confronting spring members to permit the passage of at least the thumb and one of the other fingers of the same hand therethrough to enable the ends of said confronting spring members to be squeezed.

10. The combination of claim 9 when the inlet of said passageway and said valve-forming unit and container body are interconnected by seal lines extending across the same at points above said seal-forming spring member and below said pair of confronting spring members adjacent thereto.

11. The combination of claim 9 wherein there is provided means forming a tear line extending across the assembly of said container body and inlet passageway and valve-forming unit at points immediately above the upper end of said lower valve-forming portion of the latter unit, so the inlet passageway portion thereof can be separated from the rest of the combination above this tear line.

12. The combination of claim 9 wherein said inlet passageway and valve-forming unit is comprised by a pair of flexible confronting walls which are relatively wide at the top thereof, where they form an oval-shaped tubular body with a correspondingly shaped inlet orifice to catch a female urine stream, and relatively narrow at the bottom thereof to form said relatively narrow valve-forming portion thereof, and there is provided a resilient ring secured to the inside of said pair of confronting walls at said inlet orifice which resilient ring expands said confronting walls to maintain said oval-shaped inlet orifice despite the flexibility of said confronting walls.

13. The combination of claim 12 wherein said confronting walls are folded down at the top thereof at said inlet orifice to form a depending skirt covering said resilient ring.

14. The combination of claim 12 wherein said pair of confronting walls forming said upper inlet passageway-forming portion being sealed together along seal lines converging downwardly to the upper end of said valve-forming portion to form said converging slanting bottom walls of said inlet passageway-forming portion.

15. A urine collection unit comprising: a flat flexible container including a pair of closely confronting flexible walls secured together along the marginal portions at the sides and bottom thereof and forming an opening at the top thereof, a valve unit secured in said opening, said valve unit including a pair of confronting flat walls of flexible sheet material secured together along part of the margins of the valve to provide a flattened sleeve-like structure and a vertically extending opening at the top and bottom ends thereof and through which urine can be passed into said container from the outside thereof, an arcuate seal-forming spring member extending across the bottom portion of the flattened sleeve-like structure and secured to the outside of one of said walls thereof with the convex side thereof facing the same, the resiliency of said arcuate seal-forming spring member pulling said confronting valve walls tautly around the convex side of the spring member with a force such that only the passage of a stream of urine through said flattened sleeve-like structure will overcome the sealing force of said seal-forming spring member, said valve walls including therebetween expandable means which is expandable with a manual force widely to separate the confronting valve walls for the entire length thereof to permit the ready passage of

a sterile tube through the container without touching any of the walls of the valve or the container.

16. The combination of claim 15 wherein there is provided at the upper portion of said container an inlet passageway-forming portion much wider than said flattened sleeve-like valve structure and forming a widely open top, tubular body for receiving a urine stream directly from a patient and guiding the same into the upper portions of said valve structure.

17. The combination of claim 16 wherein said inlet passageway-forming portion is separable from the rest of the combination along a tear line extending immediately above the upper portion of said valve structure.

18. A urine collection unit comprising: a flat flexible bag-like structure including closely spaced confronting walls secured together to form an elongated oval-shaped tubular upper section with an elongated oval-shaped mouth for receiving a male or female urine stream, and a constricted lower portion defining a relatively narrow passageway communicating with said tubular upper inlet section to receive the urine stream received thereby and opening into a urine collection compartment in the bottom portion of the bag-like structure, means forming a one-way valve in said relatively narrow passageway which passes the urine directed thereto from said elongated tubular upper section and preventing back flow of urine within the bag to the outside thereof, and means forming a tear line across the bag at the base of said elongated oval-shaped tubular upper section so this section of the bag-like structure can be manually severed from the rest of the same, leaving a more compact bag structure.

19. The urine collection unit of claim 18 wherein said relatively narrow passageway is formed by confronting walls forming a flattened sleeve-like structure located just below said tear line and held in sealing relation by spring means which forms a one way valve by forcing at least a portion of the confronting walls of said flattened sleeve-like structure together into light liquid sealing relation which force is overcome by the guided flow of a urine stream therebetween, and there is provided manually graspable means which upon operation by one hand widely separates said confronting walls of said flattened sleeve-like structure for its entire length so a sterile urine specimen withdrawing tube can be passed therethrough without touching any of the walls of the same.

* * * * *

50

55

60

65