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Pannier, Jr. et al.

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[54] **VACUUM DRAINAGE COLLECTING APPARATUS WITH DISPOSABLE LINER**

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[52] **U.S. Cl.** **128/276**

[51] **Int. Cl.** **A61f 5/44**

[58] **Field of Search** 128/275–278, 283

[56] **References Cited**

UNITED STATES PATENTS

2,597,715	5/1952	Erikson	128/276
2,999,500	9/1961	Schurer	128/276
3,032,037	5/1962	Huber	128/276
3,089,493	5/1963	Galindo	128/283
3,186,410	6/1965	Buono	128/275
3,363,626	1/1968	Bidwell et al.	128/276
3,381,687	5/1968	Andersen et al.	128/276

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[57] **ABSTRACT**

A collecting apparatus for drainage from the body of a patient after severe wounding of or surgery performed on the patient, embodying a canister and a disposable receiver for the drainage, such apparatus having means for connecting the same in a vacuum or suction system to stimulate drainage of the wound in the patient.

20 Claims, 7 Drawing Figures

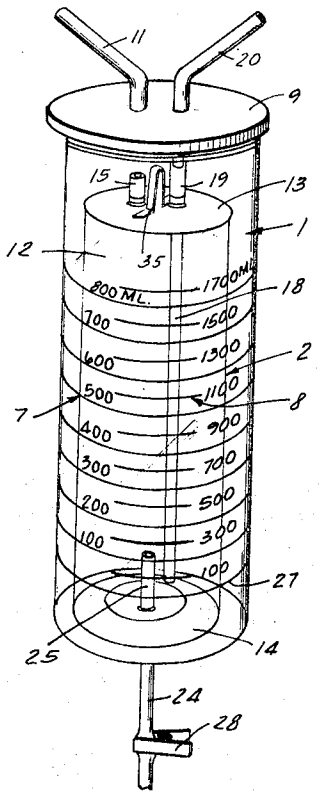

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Fig. 1

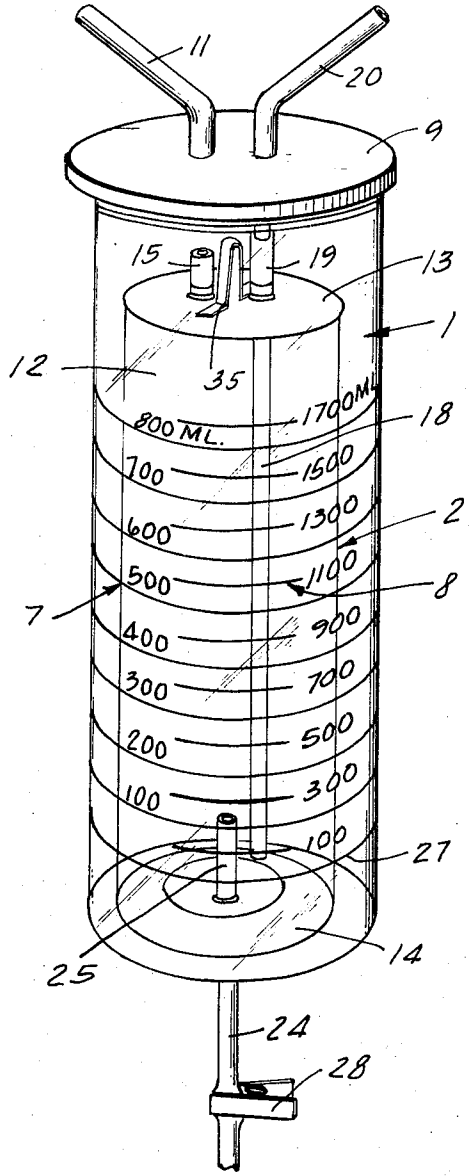

Fig. 2

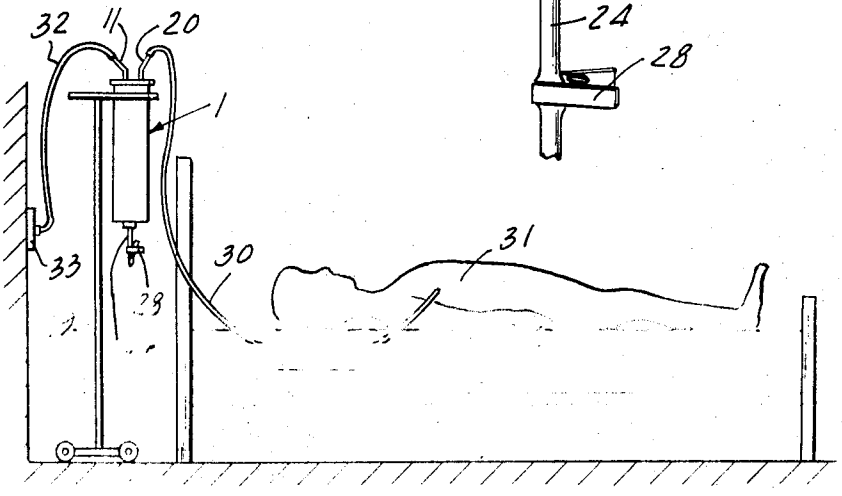

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Fig. 3

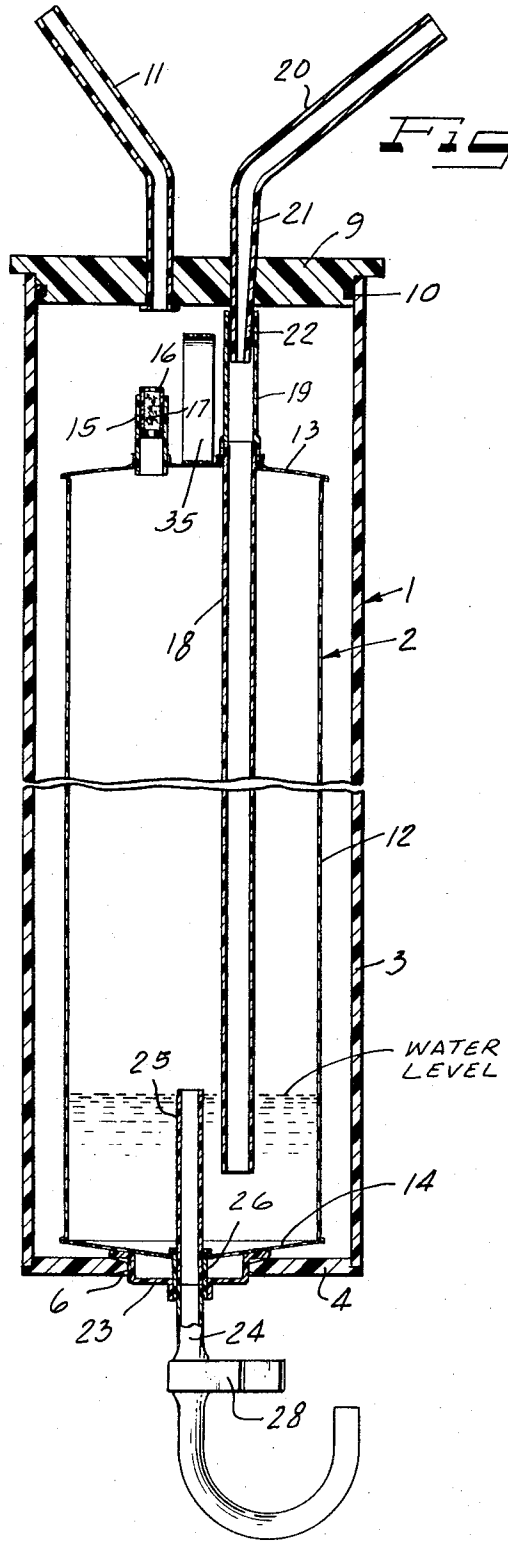

Fig. 4

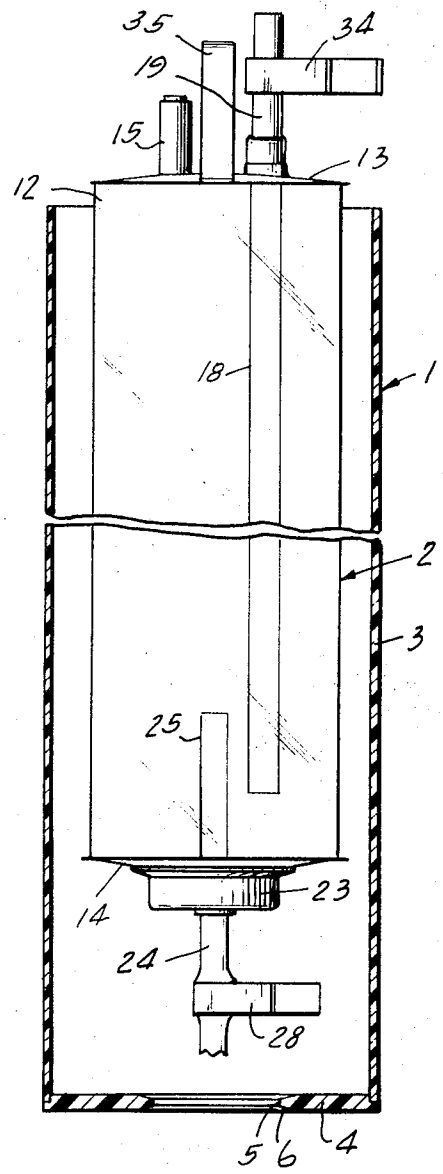

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Fig. 5

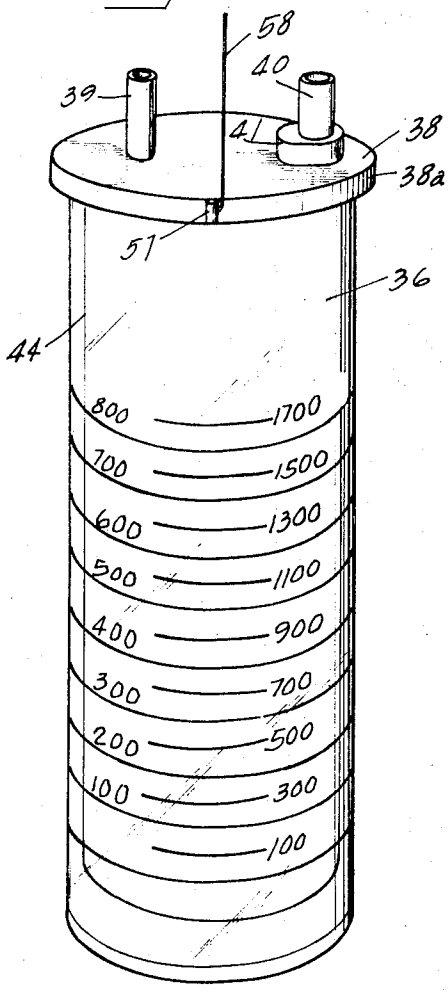
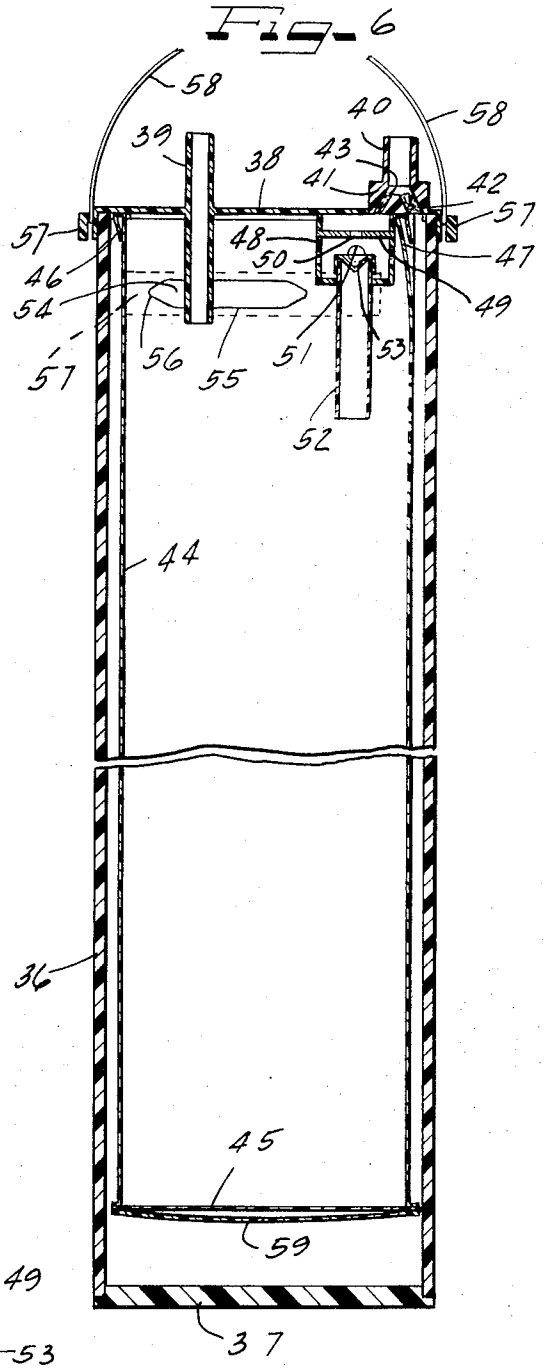


Fig. 6



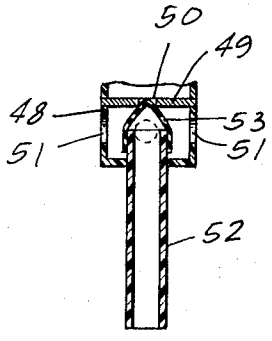


Fig. 7

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VACUUM DRAINAGE COLLECTING APPARATUS WITH DISPOSABLE LINER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention or discovery pertains to the art of surgery, and more particularly to a new type of receptor for receiving drainage from a patient suffering from a severe wound, excess of fluid, etc., the receptor having means for connecting the same in a vacuum system, and embodying a canister in which is a disposable liner to receive the drainage and after the liner is filled to a desired level, it is removed from the canister and discarded, a new liner being substituted.

2. Description of the Prior Art

It is well known that where a patient has received a wound, accidentally or by surgical incision, which has entered a lung, passed through the peritoneum, had a breast removed, for example, drainage of blood, pus, excess liquid, and various exudates from the wound or its vicinity is indicated to enhance the patient's recovery rate and shorten convalescence. The most effective and desirable way of accomplishing this drainage is to connect a receptor in a vacuum line and remove the drainage from the patient's body by suction. Heretofore, the only receptor for the drainage has been a plastic or glass bottle or container equipped with fittings for connecting the same to a tube leading from the patient's body, to a suction or vacuum system, to permit draining some of the contents of the container if desired, and other purposes, which receptor must be removed, cleansed, and reused. The cleansing of such a receptor is a most laborious and messy operation, and the changing and cleansing of the receptor places an extreme burden upon the nurses, other hospital workers, and the sterilization facilities in the hospital. Spreading of infection is a constant hazard in such an operation. The time, labor and care necessary in such an operation is so great that the cost per suction receptor rises to a tremendous amount, and some patients require the use of as many as 10 to 15 receptors during a single hospital stay. Thus, it is at once apparent that the procedure heretofore found essential in connection with drainage receptors was highly objectionable both to hospital and to the patient.

SUMMARY OF THE INVENTION

The instant invention provides drainage collecting apparatus in the form of a receptor embodying a canister and a removable drainage receiving liner for the canister. The drainage receiving liner is very economical in construction, simple to remove and replace, which operation can be accomplished by anyone and which should require but a very few minutes, there being no real labor involved. The canister need not even be washed and there is nothing to sterilize, the drainage being fully contained within the liner and discarded therewith. The attendant does not contact any surface that was contacted by the drainage. Scales on the face of the canister indicate the time when a liner must be changed for a new one, there being a plurality of scales so that the same canister may accommodate a plurality of sizes of liners, it only being necessary to read the proper scale for a certain size of liner. Means are provided for very simply sealing the liner airtightly within the canister, connecting the liner to a

tube leading from the patient's body, connecting the interior of the canister to a vacuum system, and a drainage tube is also provided for the liner. In one form of the invention, within the liner a tube for drainage overlaps in length with the tube leading from the patient's body so that an effective water seal is easily established. The entire structure is economical and the canister, of course is repeatedly used. It can be seen therefore that the instant invention has solved the problems and objections of the prior apparatus and procedure, as mentioned above, in a most efficient, economical, and effective manner. Labor on the part of hospital attendants and use of the sterilization equipment is avoided and the hazard of infection eliminated.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a canister and liner assembled ready for use;

FIG. **2** is a reduced diagrammatic view illustrating the drainage collection apparatus of FIG. **1** in operative association with a patient and a vacuum system;

FIG. **3** is an enlarged vertical sectional view through the structure of FIG. **1**, with a part shown in elevation;

FIG. **4** is a part-sectional part-elevational view illustrating the removal of a filled liner from the canister;

FIG. **5** is a perspective view of a canister and liner of a somewhat different form, but also embodying principles of this invention;

FIG. **6** is an enlarged vertical sectional view through the structure of FIG. **5**; and

FIG. **7** is a fragmentary vertical sectional view of the valve and housing in the upper right-hand portion of FIG. **6**, but showing the same enclosed position.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

As stated above, the instant drainage collecting apparatus embodies two major parts, a canister and a removable liner or drainage receiver, generally indicated by numerals **1** and **2** respectively.

In the first embodiment of this invention, seen in FIGS. **1** through **4**, the canister proper comprises the tubular body **3** fixedly connected to a bottom **4**, both parts preferably being of transparent rigid plastic material. The bottom **4** is provided with a central aperture **5**, the surrounding edge of which is chamfered on both sides as indicated at **6** to insure an effective airtight seal with the bottom portion of the liner receiver **2**, as seen best in FIG. **3**. One side of the body **3** is provided with a plurality of scales to denote the amount of drainage within the liner receiver **2**, FIG. **1**, there being two such scales shown in the drawing namely a smaller scale **7** for a small liner and a larger scale **8** for a large liner. Two liners, one for a child and for an adult will usually be all that is necessary, the instant illustrations depicting a smaller liner so scale **7** would be utilized whereas if a larger liner that would expand to the inside wall of the canister were used, scale **8** would be read.

As seen best in FIG. **3**, a cover **9** is provided for the canister, which cover is of thicker, yet rigid plastic material, preferably, and which cover need not be transparent. This cover can merely be pressed into the upper end of the canister and an airtight seal therebetween is established by an O-ring **10** or in an equivalent manner. Permanently and airtightly secured

to the cover through a suitable aperture therein is an angular tube **11**, preferably of rigid transparent plastic material, which may be connected to a vacuum or suction system.

The liner or receiver **2** is preferably formed entirely of thermoplastic material, with the single exception of the filter medium in a small air filter, and various parts thereof are preferably connected together by fusing or electronic heat sealing, although suitable adhesive materials could also be utilized. While the making of this liner **2** of plastic material is not essential, it is more economical, more efficient, light in weight, and easier to assemble than with most other materials. Also, it would not be injured if dropped on the floor as would be a material such as glass.

This liner **2** comprises a tubular body **12**, a top **13**, and a bottom **14** fully enclosed except for essential openings through the top and bottom. With reference more particularly to FIG. **3**, it will be seen that a short plastic tube **15** extends through a suitable aperture in the cover **13** and is airtightly secured to the cover **13**. This short tube contains a plastic casing **16** open at the bottom and top, and containing a filter medium **17** such as cotton or the equivalent. Communication between the interior of the liner **2** and the interior of the canister **1** is established by way of the tube **15** and the air filter therein. No other communication between the canister **1** and liner **2** is possible during operation of the apparatus. A second and preferably rigid tube **18** extends from a point near the bottom of the liner **2** just through the cover thereof, where the end of the tube is telescopically received within a flexible plastic tube **19** and securely attached to the tube **19** and the top cover **13** of the liner. A removable elbow tube **20** of rigid plastic has an inner tapered end **21** which passes through a suitable aperture in the canister cover **9** and may be telescopically and airtightly engaged with the aforesaid flexible tube **19** as seen at **22** in FIG. **3**. The tube **20** is expendable, may readily be removed from the liner and discarded therewith after usage.

A cup-shaped seal **23** is attached to the bottom of the liner centrally thereof, and this seal is made of thicker plastic than the liner, and a plastic providing a relatively soft outer surface that is not as smooth as the surfaces of the plastic tubes. This sealing cup when engaged within the chamfered edge **6** at the bottom of the canister as seen in FIG. **3** establishes an airtight seal between the liner and canister bottom. Drain means for the liner are provided in the way of a flexible tube **24** in end to end relationship with a rigid tube **25**, both tubes being secured together and to the sealing cup and bottom of the liner by way of a suitable sleeve **26** extending through both the sealing cup and liner bottom. The tube **25** extends upwardly inside the liner a predetermined distance from the bottom thereof but above the lower end of the aforesaid tube **18**. The overlapping end portions of the tubes **18** and **25** provides the requirements necessary for an effective water seal as indicated by the level in FIG. **3**, and the rigidity of the tubes **18** and **25** prevent accidental maladjustment that would adversely affect the water seal. The water level is just below the upper end of the tube **25** and corresponds with the lower unnumbered line **27** beneath the canister scales **7** and **8**, FIG. **1**. Water seals of the type shown in FIG. **3** are customarily utilized in apparatus for the main purpose of preventing any inadvertent flow of air to the body of the patient so no bacteria could be carried back to the patient should this accident occur. Normally, during usage, a clamp **28** is secured to the flexible tube **24** to prevent drainage therethrough. This clamp may be released when drainage is desired for any reason.

At the outset a hospital or the like may purchase a canister and lid assembly therefor, which is retained for continued and repeated usage, and a supply of liners with an inlet tube **20** packaged with each liner in a sterile condition. Thereafter, only liners need be purchased for use with that single canister, and, if desired, the hospital may purchase a supply of canisters and keep a stock of liners of different sizes on hand which may be used with any of the canisters.

In use, the instant invention is extremely economical, labor saving and efficient. The apparatus may be simply and easily assembled for usage. While the steps mentioned herein need not be followed in precisely the same order, perhaps the simplest procedure for assembling the apparatus is to take the liner and inlet tube **20** therefor out of its wrapper, insert the inlet tube in the cover of the canister and then telescopically and airtightly attach the flexible tube **19** from the liner to the inlet tube on the underside of the cover. The liner may then be carried by the cover and disposed within the canister with the drain tube **24** of the liner passing through the opening **5** in the bottom of the canister and the clamp **28** may be placed on the drain tube outside the canister. The lid is replaced on the canister in an airtight position, and a pull on the drain tube from below the canister will effectively establish an airtight connection between the sealing cup **23** and the chamfered edge **6** defining the opening **5**, the diameter of the sealing cup **23** being very slightly greater than the diameter of the opening **5**. The apparatus may then be mounted on a stand **29**, as illustrated in FIG. **2**, or on any other suitable apparatus, and water put into the liner through the tube **20** and tube **18** until the proper level of water seal is established. The tube **20** may then be connected to a tube or catheter **30** leading from the body of a patient **31**, and the tube **11** carried by the canister cover **9** is connected with a tube **32** plugged into a vacuum or suction system connection **33** in the wall of the hospital room.

Suction may then be started, and air will first be withdrawn from the canister, by virtue of the resistance provided by the air filter in the tube **15** connected to the liner, and the liner will then expand due to the pressure differential and air will be drawn from the interior of the liner until the vacua of the flexible liner and the canister are countervailed, whereupon the liner will remain expanded.

Exudates will then be drawn from the patient's body into the liner. When the liner has collected a sufficient amount of fluid, the scale **7** on the canister being utilized for the liner illustrated owing to its small size as stated above, and then the suction may be temporarily stopped, the liner removed and replaced with a new liner.

This operation is extremely simple. It is simply necessary to put a clamp on the tube **30** from the patient's body, and either before or after removing the cover **9** from the canister pull the tube **20** through the canister

cover thus disconnecting this tube from the flexible tube **19** on the liner. It is not necessary to disconnect the tube **11** from this suction line. The tube **20** may be then disconnected from the tube **30** and discarded completely. The operator may then pinch the tube **19** on the liner between his thumb and finger or clamp the tube as indicated at **34** in FIG. **4**. This tube may then be used to lift the liner out of the canister, a simple push of a finger on the sealing cup **23** being sufficient to disconnect the liner from the canister at that point. The liner is then removed and discarded either before or after being drained, according to the desire of the operator and a new liner and tube **20** being assembled with the canister in the manner above described.

Alternatively, the liner may be removed from the canister by means of an upstanding plastic loop **35** secured to the top **13** of the liner in the event the operator does not wish to touch the tube **19** for any reason. This loop **35** also serves as a hanger for the liner in the event it is used without the canister.

There is no washing of the canister for reusage since it has not become contaminated and the discarded liner is of little bulk and is easily disposed of without contamination of the operator, the patient, or the environment and the whole operation requires an exceedingly small amount of labor.

The instant invention may have other uses and purposes as will be apparent to one skilled in the art. For example, it has long been considered desirable, if possible, where a patient loses a lot of healthy blood during an operation to collect as much of that blood as possible and use it for a transfusion into the same patient, since one person's own blood is more acceptable to that person than the blood of another person, even though they are both of the same type. The instant apparatus could well be utilized as a collector for that healthy blood, and the transfusion thereof back into the patient could be made through the drain tube in the bottom of the liner. It is understood of course that the blood would be provided with the necessary additives and filtered on the way from the patient to the canister and liner therein although the necessary additives might well be added to the blood while in the canister or liner through the tube **20**.

For certain usages and hospital installations, a water-seal and drain at the bottom of the liner receiver may not be needed, and accordingly the liner may be constructed with a closed bottom, the long tube **18**, and the tubing **24** and **25** along with the seal **23** being omitted. Also in many cases it is desirable to have an arrangement eliminating any possibility of contamination during connecting or disconnecting of the suction and body tubing and in removing and replacing the canister cover.

To this end, we have illustrated in FIGS. **5**, **6** and **7** a modified form of the instant invention that is safer to the operator against contamination even when carelessly handled and which eliminates some of the plumbing between the lid and bag as previously described herein.

In this instance, canister **36** is utilized, this canister having a fully closed bottom **37** and in other respects is like the canister **1** previously described. A canister cover **38**, which differs distinctly from the cover **9** above described, is provided with a downwardly turned flange **38***a* to intimately fit over the upper margin of the wall at the opened end of the canister. This cover is preferably molded of plastic material as shown, and the fittings associated with that cover are either molded along with the cover or fused thereto; although the cover might be made of thin metal and the essential fittings adhesively or equivocally secured thereto. These fittings including a tube **39** extending through the cover in an intermediate location, which tube is for connection to the tube or catheter **30** leading from the body of the patient **31**, as seen in FIG. **2**. Another externally projecting tubular fitting **40** having a base portion **41** of enlarged size is also secured to the cover in a position such that the base portion **41** will be immediately adjacent the canister wall just to the inside thereof, as seen in FIG. **6**. This base **41** is provided with a pair of downwardly divergent passages therethrough, namely an outer passage **42** and an inner passage **43**, both of which open through the cover **38**. The tube **40** is for connection to the vacuum line **32**.

For disposition within the canister **36** is a thin flexible plastic receiver **44** of the same material as the hereinabove described receiver **2**. The receiver **44**, however, is provided with an entirely closed bottom **45** while the top end of the receiver is initially entirely open. The margin around the opened end of the liner or receiver **44** is folded over as indicated at **46** in FIG. **6** and is firmly secured to the underside of the cover **38** entirely therearound with the top end of the liner approximately fully expanded. Directly beneath the base **41** and the tubular fitting **40** the upper margin of the liner **44** is inwardly deviated as indicated at **47** in FIG. **6** so that the liner is secured to the cover beneath the solid portion of the base **41** between the divergent passages **42** and **43**.

This leaves the outer and larger passage **42** communicating with the interior of the canister but outside the wall of the liner, while the inner and smaller passage **43** communicates with the interior of the liner. Thus, when the tube **40** is connected to the suction line, the initial suction will be stronger outside the liner than inside until the vacua of the flexible liner and the canister are countervailed, whereupon the liner will remain in expanded condition. Filtering means may be incorporated in the passages **42** and **43** if so desired, as indicated in FIG. **6**.

In order to protect the hospital vacuum system, which systems are usually built-in, a safety valve assembly is provided within the liner **44**. This assembly includes a housing **48** having an opened upper end secured by fusion, adhesive, or any other desired manner to the underface of the cover **38** from which the housing depends in position to be in open communication with the inside passage **43** of the tube assembly **40**. A valve seat **49** having a central aperture **50** therein extends across the upper portion of the casing and below that valve seat the casing is provided with a series of apertures **51** therearound. The bottom of the casing **48** is closed around a tube **52** which projects into the casing to a point below the valve seat **49**. The end of the tube within the housing is covered by a relatively light diaphragm **53**, of rubber or equivalent material, and preferably having the shape of a blunt cone. This diaphragm **53** is the safety valve itself. As seen in FIG. **6** the tube **52** extends well below the inner end of the

tube **39** which connects with the patient's body. During operation, the valve will be in the position seen in FIG. **6** and suction is effective to the interior of the liner **44** through the hole **50** in the valve seat and the apertures **51** in the wall of the housing **48**. However, through the neglect, carelessness or for any other reason should the liner **44** become filled with drainage to the point it might overflow and the drainage enter the hospital suction system, the valve will assume the position seen in FIG. **7** and close the port **50** in the valve seat so that suction to the interior of the liner is no longer effective. This is caused by liquid rising within the tube **52**, compressing the air therein since the vacuum is not perfect but only to a desired degree and when that air pressure reaches a certain point it will cause the valve to reverse from the position of FIG. **6** and assume the position of FIG. **7**. No drainage will enter the line leading to the patient's body through the tube **19** since before the collected drainage reaches that point the valve will have operated.

Preferably above the point to where it is possible to fill the liner **44** with drainage, the liner is provided with a tear-out section **54** defined by a line of weakening **55**, this line being pointed at the starting end as indicated at **56** to facilitate easy removal of the section **54**. To effect the removal of this section, a tear-strip **57** is provided on the outside of the liner and sealed to the section **54** at the weakened line **55**. In some cases it is desirable to empty the liner **44** before disposing of the same and this is especially desirable when the accumulated drainage is of a heavy viscous character.

It is apparent that the cover **38**, the liner **44**, the safety valve assembly, and the fittings **39** and **40** are all assembled as an integral unit, the entire unit being disposed of and replaced by a new unit after the liner is filled with drainage. To facilitate handling the unit, diametrically opposed brackets **57—57** or any other desirable connecting means may be provided, preferably on the skirt **38***a* of the cover, to which a bail **58** is pivotally connected. Also, the liner is provided with a bail **59** on the bottom thereof, which bail may be in the form of a plastic strap fused to the bottom of the liner.

In use, this embodiment of the invention is highly effective, time saving, and entirely safe from the standpoint of contamination of either the apparatus associated with the liner or the operator handling the same. The liner and canister are assembled in the manner seen in FIGS. **5** and **6**, and the tube **39** connected to the tube leading from the patient's body, and the tube **40** connected to the suction system. Operation is then in effect in a minimum amount of time and labor. When the liner becomes filled to the extent possible with drainage or no further drainage is necessary, it is a simple expedient to disconnect the lines from the tubes **39** and **40** and with the aid of the bail **58** lift the cover **38** and liner off and out of the canister and either dispose of the same or empty the liner of drainage before disposal. The liner may be emptied easily and safely by suspending the cover and liner unit over the drainage sink with the aid of the bail **58**, tear out the section **54** of the liner then grasp the liner by the bottom bail **59**, and invert the unit over the sink until it empties. It will be noted that during this operation none of the contents of the liner will be in contact with the hands of the operator. Likewise there can be no contamination of the lines leading to the suction system or to the patient's body by virtue of overflow, since such is effectively and automatically prevented by the safety valve **53**. After removal of the cover-liner unit from the canister, a new unit may be easily inserted and connected in the manner above described. No sterilization of the canister or lines leading thereto is necessary, since nothing can become contaminated.

It will be understood that modifications and variations may be effected without departing from the spirit and scope of the novel concepts of the present invention.

We claim as our invention:

1. Drainage collecting apparatus for receiving exudates from the body of a patient, including

a canister,

a removable cover for the canister,

a disposable liner receiver for removable insertion in said canister,

tubular means for connecting the interior of the liner through said cover to a tube leading from the body of a patient, and

means for placing the interior of both the canister outside the liner and the liner in communication with a suction system.

2. The collecting apparatus of claim **1**, wherein the canister is rigid and the liner is of thinner material, flexible and collapsible, and is maintained expanded when the vacua in the liner and canister are countervailed.

3. The collecting apparatus of claim **1**, including a safety valve inside said liner to automatically limit the extent to which said liner can be filled with body exudates.

4. The collecting apparatus of claim **3**, wherein said tubular means and the last said means are mounted in said cover and disposable therewith.

5. The collecting apparatus of claim **1**, wherein the cover and liner are secured together and disposable as a unit. said opening

6. The collecting apparatus of claim **1**, wherein said canister has an opening in the bottom thereof, a seal on the bottom of said liner sized for compressive insertion in said opening, and drain tube means extending through said seal and the bottom of said liner, whereby when said liner is placed in said canister with said drain tube means extending through said opening a pull thereon will draw seal into opening in an airtight engagement.

7. The collecting apparatus of claim **6**, wherein said tubular means includes a tubular portion extending to a point above but near the bottom of said liner, and said drain tube means extends into said liner to a point above the lower end of said tubular portion, whereby an effective water seal may be established in said liner.

8. The apparatus of claim **1**, in which said receiver has a bottom, a sealing element secured to said bottom to establish a friction seal with an opening in the container, and drain tube means extending through said sealing element and said bottom.

9. The apparatus of claim **26**, wherein said tubular means and said drain tube means extend within said receiver overlapping distances adjacent said bottom, whereby an effective water seal may be established within said receiver.

10. A disposable unit for association with a canister to receive body exudates, including

a cover for the canister,

a liner receiver depending from said cover and having a closed bottom for insertion in the canister,

tubular means carried by said cover for connecting the interior of the liner to a tube leading from the body of a patient, and

other tubular means carried by said cover for placing the interior of the canister outside said liner and the interior of said liner in communication with a suction system.

11. The disposable unit of claim 10, wherein said cover is of thin rigid material and said liner is of thin flexible material.

12. The disposable unit of claim 10, including a safety valve in said liner to automatically limit the extent to which said liner can be filled with body exudates to prevent any overflow into either of said tubular means.

13. The disposable unit of claim 12, wherein said safety valve acts to close off communication between the interior of said liner and the suction system when the liner is filled to a predetermined extent.

14. The disposable unit of claim 10, including a tear-out section near one liner end defined by a line of weakening, and a tear-tab secured to said section exteriorly of said liner to remove the section and provide a drainage port.

15. The disposable unit of claim 14, including a safety valve in said liner to limit the extent to which said liner can be filled, and wherein said tear-out section is disposed above the limit controlled by said safety valve.

16. The disposable unit of claim 15, including a carrying bail secured externally to the bottom of said liner to support the same during drainage through said port.

17. A receiver for body fluids, comprising:

a flexible body closed at the top and bottom thereof and adapted to be received in a container;

tubular inlet means extending through the top of said receiver for connection with a source of body fluid;

connecting means in the top of said receiver to establish communication between the interior of said receiver and the interior of a container outside of the receiver and a source of suction whereby to effect countervailing of vacua; and

said receiver being of such economical construction as to warrant its disposal after a single usage.

18. A receiver according to claim 28, in which said connecting means comprise a tubular element projecting externally of said top and having divergent passages one of which opens through the top to the interior of said body and the other of which opens outwardly of said body.

19. A vacuum bottle assembly for use in draining fluids from a patient by suction apparatus, comprising

a generally rigid container having a hollow interior;

a drainage bag in the container interior; and support means extending across the top of the container interior connected to said bag for supporting the bag in suspended position in the interior of the container, said support including conduit means extending between the bag and the container exterior to an area to be drained and between the bag and the exterior of the container to a source of reduced pressure and further including means communicating the container interior with a source of reduced pressure.

20. The assembly of claim 19 wherein the drainage bag is made of a generally flexible, collapsible material.

* * * * *

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,680,560 Dated August 1, 1972

Inventor(s) Karl A. Pannier, Jr., Gordon S. Reynolds and James L. Sorenson

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 8, line 42, after "unit" read in a period (.) and strike "said opening".

Column 8, line 50, before "seal" read in "said", and before "opening" read in "said".

Column 8, line 63, for "26" read "8".

Column 10, line 15, for "28" read "17".

Signed and sealed this 29th day of May 1973.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

FORM PO-1050 (10-69)

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