

United States Patent

[11] **3,556,101.**

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[73]	Assignee	Hollister Incorporated a corporation of Illinois

2,999,500	9/1961	Schuerer	128/276
3,032,037	5/1962	Huber	128/276

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[54] **SURGICAL SUCTION ASSEMBLY**
14 Claims, 4 Drawing Figs.

[52] U.S. Cl..... 128/277,
128/(Bag Digest), 128/1

[51] Int. Cl. A61m 1/00

[50] **Field of Search**..... 128/214,
272, 275—278, 294—295

[56] **References Cited**

UNITED STATES PATENTS

2,597,715	5/1952	Erikson	128/276X
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ABSTRACT: A suction bottle assembly for medical-surgical use including a generally rigid chamber, a disposable liner bag for insertion in the chamber, a cover enclosing the chamber and a handle assembly for supporting the liner bag, the handle incorporating inlet and outlet conduits for connecting the interior of the bag to an area to be drained and also connecting the interior of the bag to a source of suction, characterized by a third inlet means in one of the conduit passages normally in the interior of the chamber for equalizing the pressure in the interior of the chamber to prevent collapse of the generally flexible liner bag.

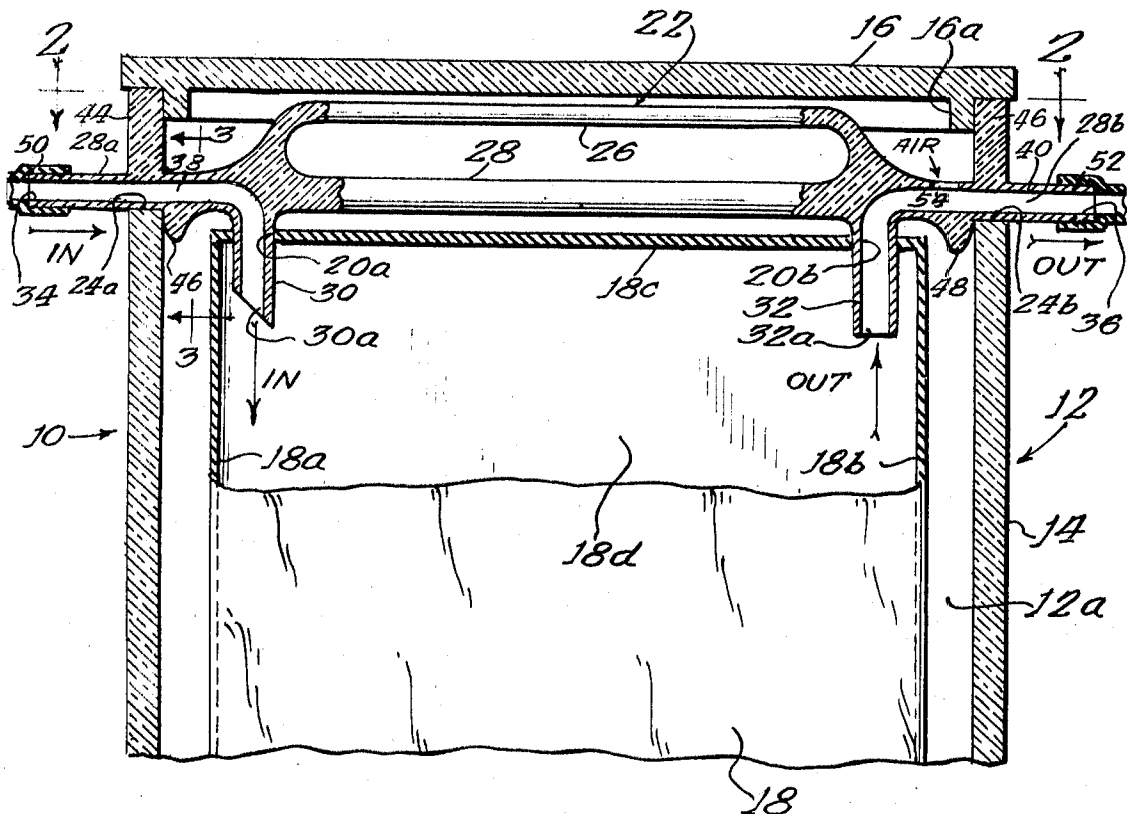


FIG. 1

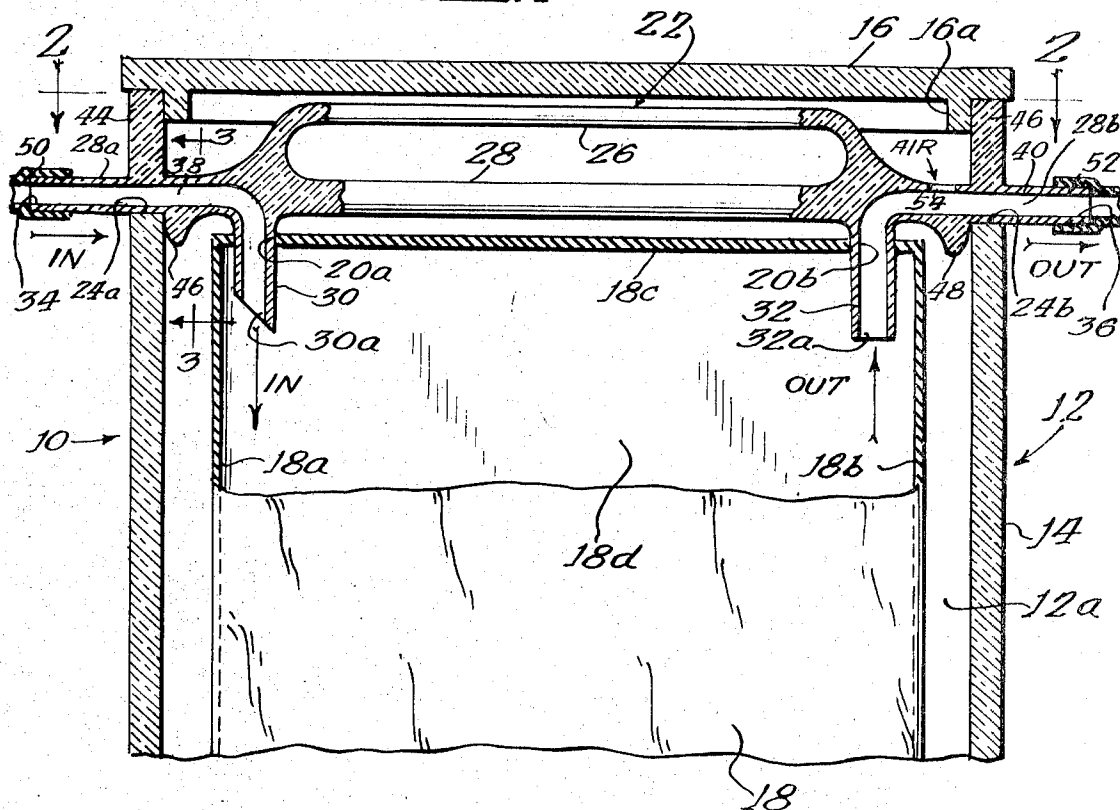


FIG. 2

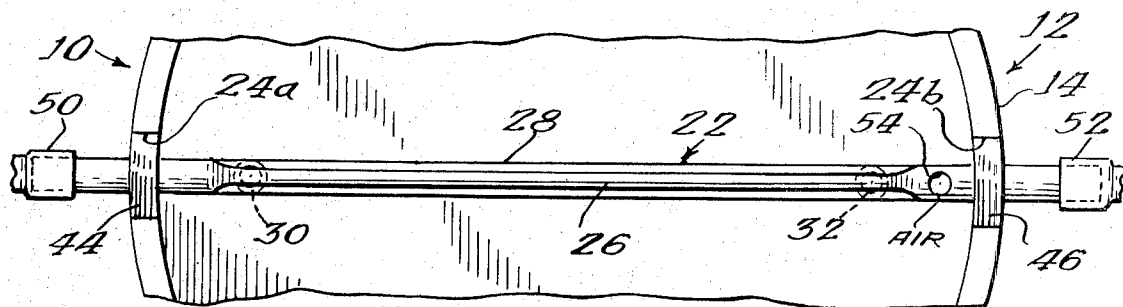


FIG. 3

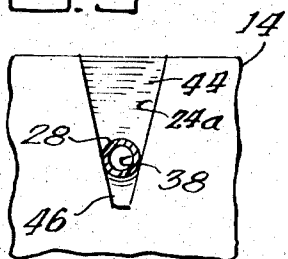
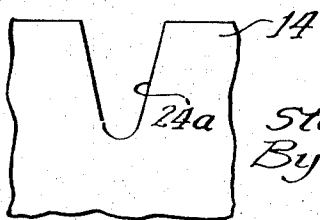


FIG. 4



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SURGICAL SUCTION ASSEMBLY

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to an improvement in a vacuum chamber assembly for use in draining fluids and the like and, more particularly, for use in draining fluids from a patient at the time of operation or otherwise.

2. Brief Description of the Prior Art

Frequently, during surgery or similar procedures or at other times, it is necessary to drain fluids from the area of the surgical or other field or from tubes emanating from a patient. Usually this is done by some sort of vacuum apparatus incorporating a line connected to a source of suction, a drainage bottle and a line leading from the drainage bottle to the area of the surgical field. By this arrangement, fluids may be withdrawn and deposited in the bottle. The withdrawn fluids may be highly diseased and often are undesirable to handle. After the bottle has performed its function or becomes filled, it is necessary to dispose of the fluid. Typically, the bottles may be cleaned for repeated use.

To overcome problems of handling and/or sterilization and the like, the present invention provides a suction apparatus which includes a generally rigid chamber having a flexible sleeve-like bag in the interior thereof. Fluids are drawn from a patient into the flexible bag with the generally rigid container serving as a means for supporting the bag.

Related prior art presently known to the inventor includes Erickson patents 2,855,933 and 2,597,715. Both of these patents disclose generally similar suction apparatus. However, there is a requirement that some sort of a barrier or diaphragm be punctured so that fluid can be delivered to the flexible liner. Furthermore, a separate means is utilized for evacuating the space between the liner and the rigid container to prevent the collapse of the liner. Even with the existence of this prior art structure, there has arisen a need and a desire in the art for a simple, disposable, flexible medical suction bag incorporating a common means for evacuating the surgical field of the patient and for maintaining stability in the interior of the chamber within which the flexible bag is housed during operation.

SUMMARY OF THE INVENTION

This invention is directed, in brief, to the provision of an improved surgical suction bag incorporating a flexible, disposable, sleeve-like liner with a generally rigid container and having common means for maintaining the suction in the surgical field and drawing fluids to the interior of the liner and for also stabilizing pressure conditions in the interior of the chamber.

The best mode currently contemplated by me for carrying out the invention includes the provision of a generally rigid chamber including a substantially cylindrical casing and a top for enclosing the same. A handle-like supporting rack having opposed conduits or communication lines is nestably received within the casing, and supports a generally flexible, sleeve-like liner bag in the interior of the casing. A vent or outlet is formed in one of the communication lines for communication with the interior of the chamber. Thus, as suction is applied to the line to create negative pressure in the interior of the sleeve-like liner, air will also be withdrawn from the area of the chamber to the outside of the liner to create a generally stable or common pressure condition in the interior of the chamber and prevent collapse of the flexible liner.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary view, partially in section of a vacuum bottle assembly of this invention;

FIG. 2 is a fragmentary section view taken generally along the line 2-2 of FIG. 1;

FIG. 3 is a fragmentary section view taken generally along the line 3-3 of FIG. 1; and

FIG. 4 is a fragmentary view similar to FIG. 3 with the handle component of the bag assembly removed from its assembled position within the side walls of the container.

While this invention is susceptible of embodiment in many different forms, there is shown in the drawings and will herein be described in detail a specific embodiment therefor, with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiment illustrated.

BRIEF DESCRIPTION OF THE PREFERRED

EMBODIMENT The bottle assembly 10 of this invention includes a container 12 including a generally cylindrical casing 14, preferably being circular cylindrical in configuration, and having a closed bottom (not shown). A cap 16 is provided for enclosing the container and providing a generally enclosed cavity or chamber 12a in the interior of the container 12.

A drainage bag or liner 18 is mounted in the interior 12a of the container 12 and is provided with closed sides 18a and 18b, a closed top 18c and a closed bottom (not shown) providing a generally enclosed hollow interior 18d for the reception of fluids to be drained from a patient or the like. The top 18c is provided with apertures 20a and 20b for reception of suitable conduit means to establish communication between the interior and exterior of the bag.

The bag 18 is held in a suspended position in the interior 12a of the container 12 by support means 22 which extend through generally triangular notches 24a and 24b in opposite portions of the casing 14. Generally speaking, support 22 is preferably made of a suitably rigid material, such as plastic or wood or the like, and is provided with a handle element 26 which is spaced from, and connected to, an elongate bridge portion 28. The opposite ends 28a and 28b of bridge 28 are generally tubular in configuration. Spaced inwardly from each of the ends, the bridge has downwardly extending nipples 30 and 32, each of which has an open end 30a and 32a, respectively. Similarly, the opposite tubular ends 28a and 28b are open as at 34 and 36, respectively, and these open ends are in communication with the nipple open ends by means of the conduits or passages 38 and 40 extending therebetween.

Each of tubular end portions 28a and 28b or bridge 28 is provided with generally triangular 42 and 44 which are generally of a size and shape to be matingly received within the notches 24a and 24b, respectively, in the opposite walls of the casing 14. Closely spaced inwardly from each of the enlargements 42 and 44, are downwardly extending stops 46 and 48 which, as best seen in FIG. 1, closely abut the interior of the casing wall 14 when the support 22 is assembled therewith. These stops 46 and 48 provide a means for registering or guiding the support into its assembled position in the notches 24a and 24b of the casing wall.

When the apparatus is in use, a bag 18 is mounted on the support 22 with the nipples 30 and 32 extending inwardly through the openings 20a and 20b and the conduits 38 and 40 providing communication to the exterior of the bag through the two openings 34 and 36 at the opposite tubular ends 28a and 28b of notches 24a and 24b by means of the enlargements 42 and 44 matingly occupying the space of the notches 24a and 24b and the cap 16 is positioned over the top of the casing 14 to enclose the container. The bag 18 may be formed integrally with support or secured thereto by suitable means, such as adhesion or the like.

Suitable hose means 50 and 52 are connected to the opposite tubular ends 28a and 28b with one hose, such as the hose 50 leading to the surgical field of a patient, and the other hose, such as the hose 52, leading to a source of vacuum or suction. This creates a drawing force or negative pressure such as to draw fluids or the like through hose 50, conduit 38 into the interior of the bag.

To prevent the collapse of the relatively flexible bag inside the container 12, another opening 54 is provided in the tubular end 28b generally in the area of stop 48 so that the conduit 40 also communicates with the interior 12a of the chamber. Thus, the suction applied through the bag to the sur-

gical field would also be applied to the interior 12a of the container, thereby equalizing the pressure within the container and preventing the collapse of the bag due to the differential in pressure between the container and the interior of the bag.

This invention provides a convenient assembly for receiving fluids drained from a patient incorporating a disposable fluid bag or reservoir. Because the bag is made of a thin, flexible plastic it may be disposed of after a single use and may be easily stored in a flattened condition. The handle or support for the bag may also be disposable especially in those cases where the handle and bag are preadhered together.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, as some modifications may be obvious to those skilled in the art.

I claim:

1. For use with a medical suction bottle assembly including a generally rigid vessel, and a drainage bag for placement in the vessel interior, a drainage bag support, comprising; a bag supporting bridge having spaced ends and including spaced bag supporting conduit means projecting therefrom and plural fluid line conduit means communicating with said bag supporting conduit means for connection with a source of reduced pressure and connection to the surgical field of a patient, and aperture means in one of said second conduit means.

2. The support of claim 1 including a generally flexible drainage bag connected to said first conduit means.

3. The support of claim 1 including handle means connected to said bridge means.

4. The support of claim 1 wherein the opposite ends of the bridge have transversely extending enlargements.

5. The support of claim 1 wherein the second conduit means are formed in the opposite ends of the bridge.

6. The support of claim 5 wherein the first conduit means are spaced inwardly from the ends of the bridge and the aperture means is formed in one bridge end portion between the first conduit and the bridge end.

7. The support of claim 6 wherein the opposite ends of the

bridge have transversely extending enlargements.

8. The support of claim 6 wherein a generally flexible drainage bag connect to said first conduit means.

9. 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.

10. The assembly of claim 9 wherein the drainage bag is made of a generally flexible, collapsible material.

11. The assembly of claim 10 wherein the support means includes a bag supporting bridge having spaced apart ends and wherein the conduit means extending between the bag and container exterior include bag supporting conduit means projecting from the supporting bridge and plural fluid line conduit means communicating with the bag support conduit means and opening through the opposite spaced ends of the bag supporting bridge.

12. The assembly of claim 11 wherein the rigid container has spaced recesses therein wherein the opposite ends of the bag supporting bridge have transversely extending enlargements for generally nestable occupation with the spaced recesses.

13. The assembly of claim 12 wherein the means communicating the container interior with the source of reduced pressure includes means communicating one of the fluid line conduit means with the container interior.

14. The assembly of claim 12 wherein one of the fluid line conduit means is provided with an opening positioned on the bridge to the interior of the transversely extending enlargements.

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Disclaimer

3,556,101.—*Steven G. Economou*, Wilmette, Ill. SURGICAL SUCTION ASSEMBLY. Patent dated Jan. 19, 1971. Disclaimer filed Dec. 27, 1971, by the assignee, *Hollister Incorporated*.

Hereby enters this disclaimer to claims 9 and 10 of said patent.
[*Official Gazette May 9, 1972.*]