

March 1, 1966

C. W. JINKENS ET AL

3,237,624

DRAINAGE BAG

Filed March 5, 1962

2 Sheets-Sheet 1

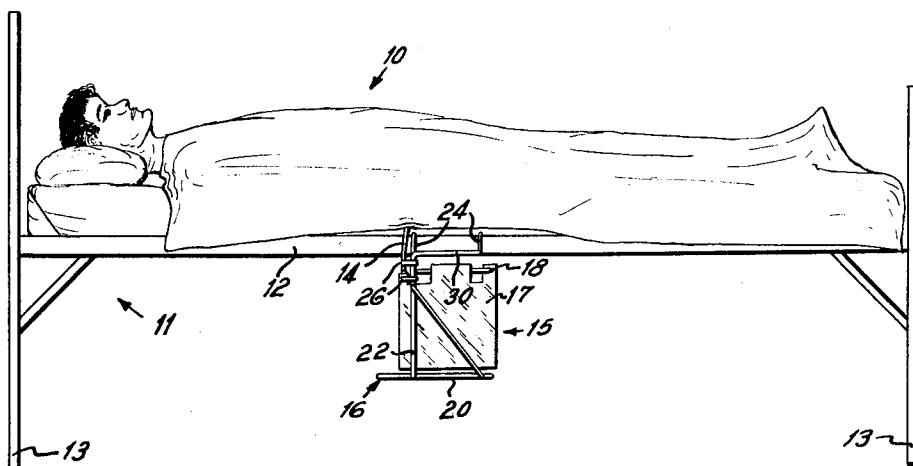


Fig. 1

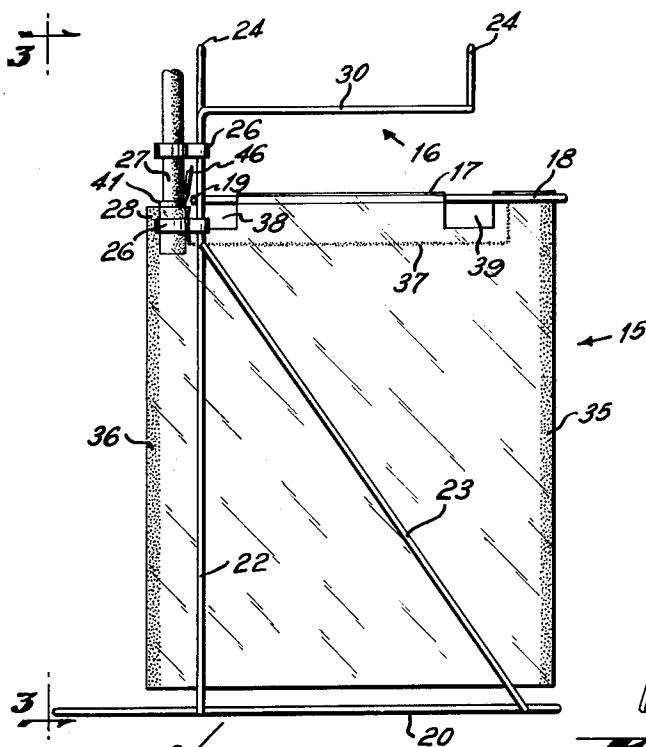


Fig. 2

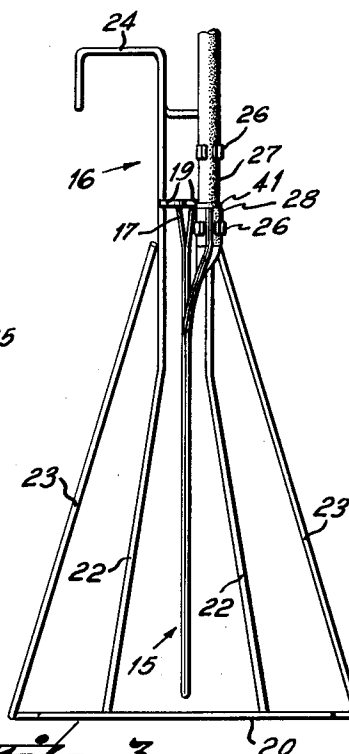


Fig. 3

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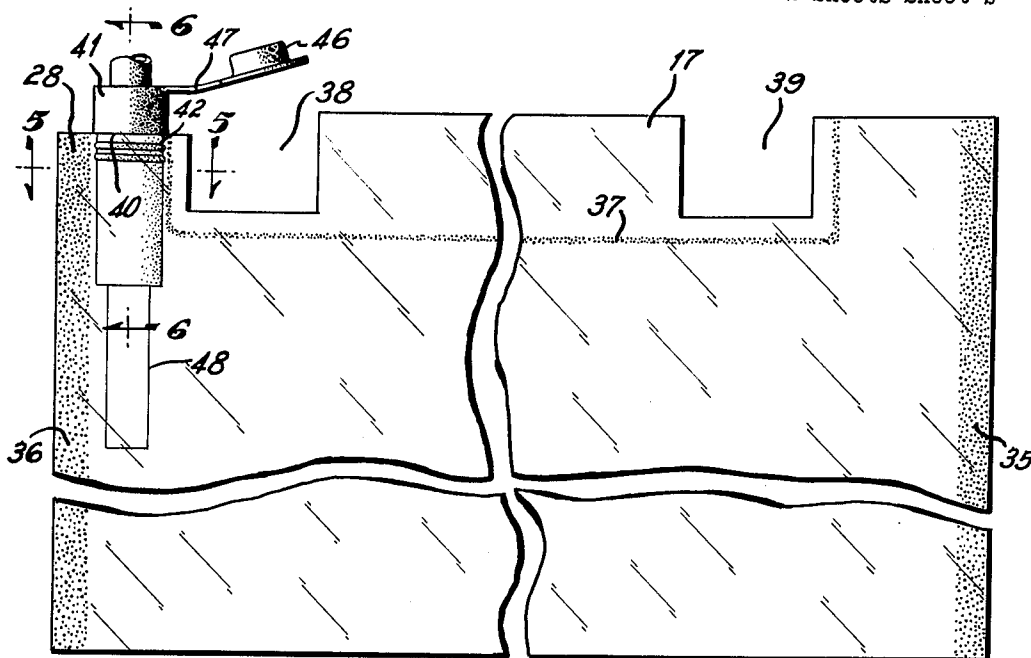


Fig. 4

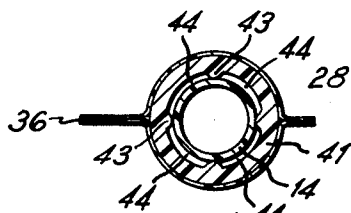


Fig. 5

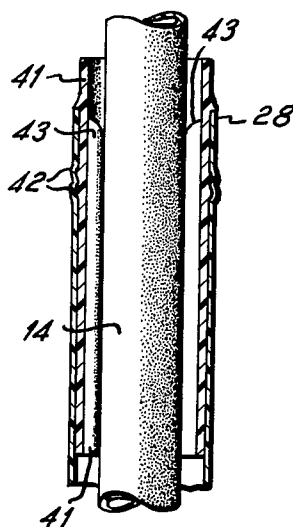


Fig. 6

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3,237,624

DRAINAGE BAG

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This invention relates to drainage bags of the type which are used to collect fluids draining from a patient.

There are many instances in the medical treatment of a patient in which body fluids must be constantly drained from the patient. These fluids may be collected for further analysis or may be disposed of. A typical example involves a patient having a kidney disorder, for example. A catheter tube is inserted into the body of the patient where it receives and discharges fluids from the body by means of gravity. In normal practice, the discharge end of that tube is inserted in some type of receptacle into which the fluid constantly drains. From time to time the receptacle is taken from the patient, emptied and perhaps reused.

In many instances, a patient having this disorder is in other respects well enough not only to sit up in bed but even to walk about. It is desirable therefore to connect the discharge end of the catheter to a receptacle from which it is not easily dislodged and which may be carried from place to place.

One approach to this problem has been to provide a lightweight drainage bag, and a number of these are currently being marketed. The known drainage bags are subject to two main disadvantages. First, there is no convenient way of securing the discharge end of the catheter to the drainage bag to provide assurance that it will not become dislodged. In some bags, the tube is inserted in the bag and the bag is bunched around the tube and tied as by a rubberband or the like.

Another disadvantage resides in the difficulty with which the bag is adapted to be mounted on a support alongside a bed or is adapted to be carried by the patient. Generally, the problem is solved by applying certain hardware to the bag which will adapt it for being mounted on a support.

Still another disadvantage of the known bags resides in the difficulty in sealing them against inadvertent discharge of the collected fluid when the bag is being carried away from the patient for further processing.

It has been an objective of the present invention to obviate the disadvantages of the prior bags by providing a plastic bag which is economical to manufacture, which has means for mounting the bag on a support without the requirement of additional hardware and which is adapted to receive and frictionally retain a catheter tube or a connector tube from the catheter tube.

One of the most important features of the invention resides in the manner in which the connector tube is inserted and retained in the drainage bag. If the bag is simply wrapped about the tube and secured to it as by a rubberband, it is difficult if not impossible to get fluid to drain into the bag. It is necessary for air to pass between the tube and the bag in order for the fluid to flow by gravity into the bag. Even if a small amount of air is permitted to pass between the tube, the draining fluid will, by capillary action, tend to fill up such passages and block the flow of air. When the flow of air is blocked, the draining fluid backs up into the body of the patient with the obvious deleterious effects.

In this respect, the present invention obviates the disadvantages of the prior bags by providing at the same time a friction connection between the bag and the connector tube and passageways for permitting the air to flow into and out of the drainage bag. In the preferred

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embodiment of the invention, this is effected by providing an adapter tube or spout at the edge of the bag, the adapter tube having a plurality of internal ribs which form spaces between the adapter tube and the connector tube and permit venting of the bag.

It is another objective of the invention to provide an adapter tube and a cap integrally secured by a tab to the tube, the cap being adapted to close and seal the adapter tube. The cap will retain the fluid captured within the drainage bag without leakage no matter how the bag is positioned once it is closed. In other words, the cap will withstand the internal pressure of fluid attempting to escape.

In the forming of the bag, it is an objective of the present invention to provide an integral loop by which the bag can be mounted on a support. The loop is formed without requiring any special hardware added to the bag.

It has been another objective of the invention to provide a support which cooperates with the drainage bag mounting loop and adapter tube to permit the bag to be carried, to be hung on a bed or to be set on the floor without affecting its proper and continuous operation.

These and other objectives of the invention will become more readily apparent from the following detailed description taken in conjunction with the accompanying drawings in which:

FIG. 1 is a front elevational view of a patient utilizing a drainage bag of the present invention;

FIG. 2 is a side elevational view of the invention mounted on a support;

FIG. 3 is an end elevational view thereof;

FIG. 4 is a side elevational view of the drainage bag;

FIG. 5 is a cross sectional view taken along lines 5-5 of FIG. 4, and

FIG. 6 is a cross sectional view taken along lines 6-6 of FIG. 4.

Referring to the drawings, particularly FIG. 1, a patient indicated at 10 is reclining in a bed 11 having a side rail 12 and supporting legs 13. The patient has a catheter tube inserted in his body, the discharge end of the catheter tube either being connected to a connector tube 14 or directly to the drainage bag 15. The drainage bag is mounted on a support 16 by means of a loop 17 through which passes a horizontal rod 18.

The support has a generally rectangular, flat base 20 formed by bent wire rods, each side of the base being connected to a vertical rod 22 and a bracing rod 23. The horizontal rod 18 is formed by a rod folded on itself and connected at its ends 19 to the vertical rods 22.

Extensions of vertical rods 22 are bent to form a pair of inverted U-shaped hangers 24 joined by an integral cross bar 30, the hangers 24 being adapted to hang over the bed rail 12 to support the bag alongside a patient.

One vertical rod 22 also has spring clips 26 secured thereto, the clips having an internal dimension of just sufficient dimension to receive the end 27 of the connector tube 14 as well as the upper corner 28 of the drainage bag.

The bag support 16 is useful under three different conditions of handling of the drainage bag. As suggested above, the U-shaped hangers 24 permit the bag to be hung from the end of the bed. The generally rectangular base 20 permits the bag to be set on the floor if a patient should get out of bed and sit in a chair, for example. A cross bar 30 extending between the two U-shaped hangers 24 provides a handle with which the patient can carry the bag from place to place.

The rod 18 which projects horizontally from the support 16, cooperating with the loop 17 in the upper edge portion of the bag provides a very convenient and rapid mode of securing and removing the bag from the support

16. Further, the interrelation of clips 26, tubes at corner 28 of the bag and the hanger loop and rod provides maximum security against dislodgement of the bag from the support and against disconnection of the connector tube from the bag.

Turning now to FIGS. 4, 5 and 6, it can be seen that the bag itself is formed from a tube of plastic material, the tube having been cut into sections and sealed along their open ends as at 35 and 36 to form a completely sealed bag. When sealed in this manner, the bag is substantially flat. A second U-shaped seal 37 is formed at the upper end of the bag and notches 38 and 39 are cut within the confines of the U-shaped seal. The cutting of the notches 38 and 39 leaves a loop 17 of plastic material between them without affecting the fluid tightness of the bag.

In addition to notching as at 38 and 39, one corner of the bag is cut away along the line 40 so as to provide the only opening into the bag. Into that opening is inserted an adapter tube 41, the adapter tube being sealed as at 42 in a fluid tight manner to the internal surface of the bag.

As can be best seen by referring to FIGS. 5 and 6, the adapter 41 is provided with a plurality of inwardly directed ribs 43. These ribs 43 are engageable with the external surface of the adapter tube 14 and project inwardly a distance sufficient to provide a snug frictional engagement with the adapter tube which will prevent its dislodgement from the connector tube.

The ribs space the connector tube from the adapter tube a distance sufficient to provide for venting holes 44 which permit the drainage bag to "breathe" as fluid from the patient drips into the bag.

Referring back to FIG. 4, the upper end of the adapter tube 41 has a cap 46 integrally secured thereto by means of a tab 47. The tube 41, tab 47 and cap 46 are molded integrally so as to provide assurance that the cap will remain with the drainage bag. The cap preferably has an outside diameter slightly greater than the inside diameter of the adapter tube so that when the cap is applied to the tube, it will fit snugly and will resist the pressure of a full bag of fluid from dislodging the cap from the tube thereby maintaining the seal on the bag.

In the operation of the invention, the patient undergoing treatment has a catheter inserted in his body in such a manner as to capture all of the fluids to be drained. The catheter is then normally connected to a connector tube which has its discharge end snugly inserted into the adapter tube so as to project a short distance below the adapter tube as at 48 in FIG. 4. The projection 48 prevents fluid from rising up through the openings 44 between the connector tube and the adapter tube by capillary action and thus sealing off the drainage bag.

Fluid will drain from the patient in a substantially continuous manner by gravity into the drainage bag 15. Normally, these bags are adapted to receive 2000 cc. of fluid.

When the bag has been filled, an attendant removes the connector tube and reinserts it into a fresh bag. The filled bag is then capped by pushing the cap 46 into the upper end of the adapter tube 41 and the bag can be carried away for further processing.

We claim:

1. A drainage bag comprising, a section of tubular plastic sheet material, means sealing the edges of said tubular sheet and forming a flat bag, said bag having two spaced notches formed in the upper end thereof and leaving therebetween a loop to receive a hanger, a U-shaped seal at the top of said bag between said notches and the remainder of said bag, said bag having an opening in an upper corner thereof between one of said notches and a sealed edge of sealed bag,

and having an adapter tube in said opening for slidably receiving a connector tube from a patient, means forming a liquid tight seal of said adapter tube to said bag.

2. A drainage bag comprising, a fluid tight bag having an opening, a generally cylindrical adapter tube in said opening, and having a fluid tight seal with said opening, a plurality of axially extending ribs on the internal surface of said tube, said ribs being spaced from each other to receive and retain in frictional engagement a connector tube, and a cap secured integrally to said adapter tube and adapter to be removed and replaced.

3. A drainage bag comprising, a fluid tight bag having an opening, a generally cylindrical adapter tube in said opening, and having a fluid tight seal with said opening, a plurality of axially extending circumferentially spaced ribs on the internal surface of said tube, and, a connector tube positioned in said adapter tube, said connector tube being of sufficient external dimension to form a friction fit with said ribs.

4. A drainage bag comprising, a fluid tight bag having an opening, a generally cylindrical adapter tube in said opening and having a fluid tight seal with said opening, and a plurality of axially extending ribs on the internal surface of said tube, said ribs being spaced from each other to receive and retain in frictional engagement a connector tube.

5. A drainage bag comprising, a section of tubular plastic sheet material, means sealing the edges of said tubular sheet and forming a flat bag, said bag having two spaced notches formed in the upper end thereof and leaving therebetween a loop to receive a hanger, a U-shaped seal at the top of said bag between said notches and the remainder of said bag, said bag having an opening in an upper corner thereof between one of said notches and a sealed edge of said bag, an adapter tube for slidably receiving a connector tube from a patient, means forming a liquid tight seal of said adapter tube in said opening of said bag, and a plurality of axially extending circumferentially spaced ribs on the internal surface of said adapter tube.

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