

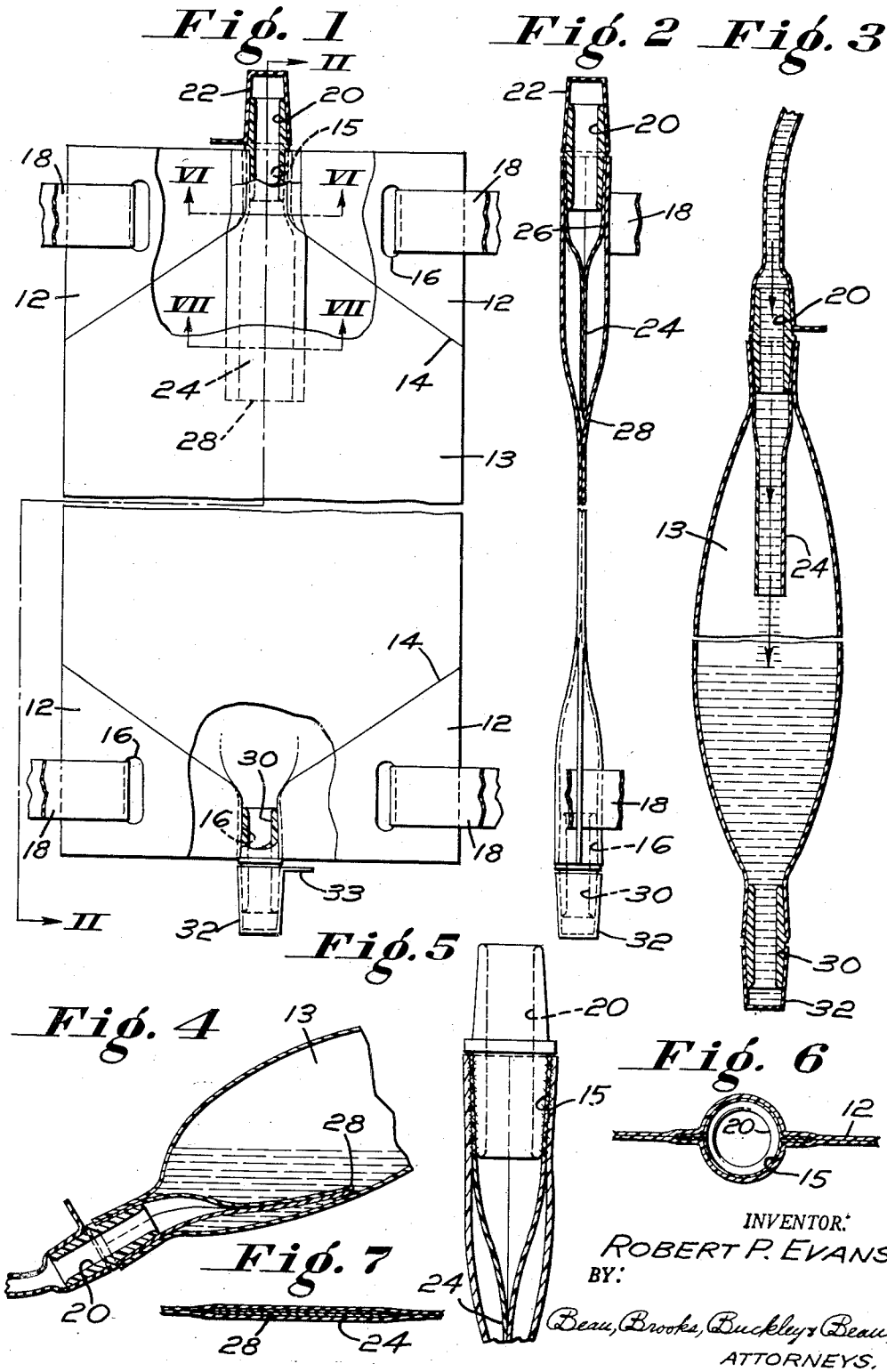
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MEDICAL APPLIANCE

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MEDICAL APPLIANCE

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5 Claims. (Cl. 128—295)

This invention relates to medical apparatus, and more particularly to improvements in urine fluid collection bags such as for collection of urine, bile, or other body effluences such as are to be applied to ambulatory and in-bed patients, or the like.

One of the objects of the invention is to provide an improved collection bag as aforesaid which is adapted to be strapped to the patient in improved manner and to thereupon operate automatically to permit free flow of fluid into the bag while at the same time prohibiting expulsion of fluid therefrom such as might otherwise be caused by unintended application of pressure against the bag.

Another object of the invention is to provide a bag as aforesaid which is initially empty, thereby enabling the urologist to measure accurately the amount of collection over a given period of time.

Another object of the invention is to provide an improved bag as aforesaid which is initially sterile and enables the subsequently collected contents of the bag to be accurately tested by the urologist and preserved against contamination by foreign or infectious materials, inasmuch as no foreign bacteria is initially present in the bag.

Another object of the invention is to provide a bag as aforesaid having improved connection devices at the inlet and outlet ends thereof, whereby to facilitate attachments of the bag to catheter and drainage devices in leak-proof manner.

Another object of the invention is to provide an improved bag as aforesaid which is initially flat and empty of air, wherefore no air vent is necessary to accommodate for inflowing fluid, and whereby the bag is provided to be truly air-tight and leak-proof.

Another object of the invention is to provide an improved bag as aforesaid which is formed of a suitable light-weight transparent material so as to permit visual detection of clots or foreign matter.

Another object of the invention is to provide an improved bag as aforesaid which is adapted to be relatively inexpensively fabricated and lighter in weight compared to devices previously provided for similar purposes.

Other objects and advantages of the invention will appear from the specification hereinafter.

In the drawing:

Fig. 1 is a side elevational view, with portions broken away to show details of the interior construction, of a urine bag embodying the present invention when the bag is in its flatwise and empty condition;

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Fig. 2 is a sectional view taken along line II—II of Fig. 1;

Fig. 3 is a fragmentary sectional view corresponding to Fig. 2, but illustrating the operation of the fluid inlet check valve during drainage into the bag;

Fig. 4 is a fragmentary sectional view of the inlet end portion of the bag illustrating automatic operation of the check valve device thereof under bag inverted conditions;

Fig. 5 is an enlarged sectional view showing a detail of the connection of parts at the inlet end portion of the bag;

Fig. 6 is a fragmentary section taken along line VI—VI of Fig. 1; and

Fig. 7 is a fragmentary section taken along line VII—VII of Fig. 1.

As illustrated in the drawing an embodiment of the invention may be provided in the form of a generally flat appearing plastic bag of rectangular profile in side view; the bag being fabricated by simply heat-sealing or adhesively connecting a pair of plastic sheets in back-to-back relation; or in the alternative, to fabricate the bag from plastic tubing by cutting the tubing in suitable lengths and then heat-sealing the opposite ends thereof together as indicated at 12—12 (Fig. 1). The heat-sealing operation is performed by suitably shaped dies so as to leave the interior of the bag construction in the form of an open chamber 13 having funnel shaped ends as indicated at 14, subtended at the top and bottom ends of the bag by open channels 15—16, respectively, providing communication channels from the interior chamber 13 to the atmosphere at opposite ends of the bag. The heat-sealed corner portions 12 of the bag construction provide convenient portions to be perforated as indicated at 16 to receive in slip-fitted relation therethrough strap devices 18 for convenience in strapping the bag to the leg or body of the patient; it being appreciated that the straps will be provided of adjustable length so as to readily accommodate the unit to differently sized patients.

A catheter connection device in the form of a sleeve 20 is heat-sealed, welded or adhesively held in position within the channel portion 15 of the device, to extend partially therefrom for slip-fitted connection in leak-proof manner at its tapered end into the funnel outlet portion of a conventional catheter. A detachable cap as indicated at 22 is initially positioned in slip-fitted relation upon the outwardly extending end of the sleeve 20, to maintain the connector sleeve and the interior of the bag in sterile condition prior to its use.

The inlet check valve portion of the device comprises a normally flat-shaped tubular section of plastic tubing or sheeting stock of suitable pliability as indicated at 24; both ends of which are open while the upper end of which is formed into a reduced diameter circular section connection portion 26. This connection portion of the valve device is fitted about the inner end of the connection sleeve 20 and is thus interposed between the sleeve 20 and the throat of the bag defining the passage-way 15 hereinabove referred to; and the valve and connection tube devices are conveniently assembled in the unit in a single operation by any simple heat-sealing, welding or adhesive connection method, into an integral leak-proof construction. The lower outlet open end portion of the valve device is "set" in flat closed form, as indicated at 28, whereby it will be appreciated that due to the pliability of the valve material fluid may readily

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flow into the bag through the valve device, but will be automatically prevented from passing back through the valve device in event of inversion of the bag or application thereon of pressures such as would tend to force the fluid to back up through the inlet opening.

At the bottom end of the bag, the channel portion 16 is fitted with an outlet connection device 30 of tubular form having a protruding outer end portion exteriorly tapered for convenient slip-fitting connection in leak proof manner with a detachable cap device 32. The connector 30 is preferably formed of plastic material so as to be readily heat-sealed, fluid type relation to the bag material, or otherwise welded adhesively connected thereto, as may be preferred. The cap member 32 may also be preferably formed of pliable rubber or plastic material so as to be adapted to firmly clasp the extending end portion of the connector 30 of fluid type manner. As indicated at 33 the cap 32 may be formed with an integral finger tab for convenience in drawing the cap off and on the connector 30. It will of course be understood that on removal of cap 32 the contents of the bag may be removed therefrom simply by dumping through the connector 30; or that a drainage tube may be slip-fitted upon the connector 30 for conveying the contents to some specific place of disposal.

Thus it will be appreciated that the device of the invention provides a structurally simplified and inexpensively fabricated and conveniently usable bag for the purposes specified; which is comfortable to wear due to the pliability of all of its parts. It is a particular feature of the invention that the end connectors and fluid passageways and the entire interior of the unit are sterile and maintained in sterile condition indefinitely until used for the intended purpose. Furthermore, due to the relatively low cost of the device, it is practicable to limit the use of each such device to one patient only; thereby avoiding the necessity for cleaning and sterilizing the device immediately of its usage, and eliminating the possibility of cross-contamination.

Whereas only one specific form of the invention has been illustrated and described in detail hereinabove, it will of course be appreciated that various changes may be made in the details of its construction without departing from the spirit of the invention or the scope of the following claims.

I claim:

1. A sterile collection bag of normally flat form constructed of superposed rectangular shaped sheet portions of transparent pliable plastic materials, said sheet portions being heat-sealed together triangularly at their four corner portions thereby defining an end-for-end interchangeable bag having a hollow interior in communication at opposite ends thereof with inlet and outlet liquid passageways, a tubular connector device disposed in each of said passageways for fluid inlet and outlet purposes, the fluid inlet connector having one of its ends extending exteriorly of the bag for connection to a fluid supply device and covered by a sterile cap, and its other end portion extending into said bag and mounting thereon a check valve device, said check valve device being in the form of a flutter valve comprising generally a tubular pliable plastic member having its outlet end portion set in closed position but adapted to be plially deformed therefrom in response to fluid inlet pressures to permit flow of fluid into the bag, while automatically closing against pressures tending to force fluid to flow in reverse direction through said valve, said connector devices being fluid-sealed in connection with said bag, the outlet connector device having an end portion extending exteriorly of said bag and mounting in fluid tight slip-fitted relation thereon a pliable closure, the said connectors, passageways and interior of said bag being sterile, said triangular corner portions being each apertured accommodating slip-fitting strap devices for strapping said bag to the user's body.

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2. A sterile fluid collection bag constructed of superposed rectangular shaped sheet portions of transparent pliable plastic materials, said sheet portions being heat-sealed together triangularly at their four corner portions thereby defining an end-for-end interchangeable bag having a hollow interior in communication at opposite ends thereof with inlet and outlet liquid passageways, a tubular connector device disposed in each of said passageways for fluid inlet and outlet purposes, the fluid inlet connector having one of its ends extending exteriorly of the bag for connection to a fluid supply device, and at its other end mounting thereon a check valve device, said check valve device being in the form of a flutter valve comprising generally a tubular pliable plastic member having its outlet end portion set in closed position but adapted to be plially deformed therefrom in response to fluid inlet pressures to permit flow of fluid into the bag, while automatically closing against pressures tending to force fluid to flow in reverse direction through said valve, said connector device being fluid-sealed in connection with said bag, the outlet connector device having an end portion extending exteriorly of said bag and mounting in fluid-tight slip-fitted relation thereon a pliable closure, said triangular corner portions being each apertured accommodating slip-fitting strap devices for strapping said bag to the user's body.

3. A sterile fluid collection bag of normally flat form constructed of superposed rectangular shaped sheet portions of transparent pliable plastic materials, said sheet portions being heat-sealed together triangularly at their four corner portions thereby defining an end-for-end interchangeable bag having a hollow interior in communication at opposite ends thereof with inlet and outlet passageways, a tubular connector device disposed in each of said passageways for fluid inlet and outlet purposes, the fluid inlet connector having one of its ends extending exteriorly of the bag for connection to a fluid supply device, and its other end portion extending into said bag and mounting thereon a check valve device, said check valve device being adapted to respond to fluid inlet pressures to permit flow of fluid into the bag, while automatically closing against pressures tending to force fluid to flow in reverse direction through said valve, said connector device being fluid-sealed in connection with said bag, the outlet connector device having an end portion extending exteriorly of said bag and mounting in fluid-tight slip-fitted relation thereon a pliable closure, said triangular corner portions being each apertured accommodating slip-fitting strap devices for strapping said bag to the user's body.

4. A sterile collection bag of flat tubular form constructed of an open end tube blank of pliable plastic material heat-sealed at the four corner portions thereof to define therebetween a hollow interior in communication with inlet and outlet passageways, a tubular connector device in fluid tight relation in each of said passageways for fluid inlet and outlet purposes, the fluid inlet connector having one of its ends extending exteriorly of the bag for connection to a fluid supply device, and its other end portion extending into said bag and mounting thereon a check valve device, said check valve device being adapted to respond to fluid inlet pressures to permit flow of fluid into the bag, while automatically closing against pressures tending to force fluid to flow in reverse direction through said valve, the outlet connector device having an end portion extending exteriorly of said bag and mounting in fluid tight slip-fitted relation thereon a pliable closure, the heat-sealed corner portions of said bag being perforated and accommodating holding devices.

5. A collection bag of flat tubular form constructed of pliable material heat-sealed at the four corner portions thereof to define therebetween a hollow interior in communication with inlet and outlet passageways, a tubular connector device in fluid tight relation in each of said passageways for fluid inlet and outlet purposes, the fluid

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inlet connector having one of its ends extending exteriorly of the bag for connection to a fluid supply device, and its other end portion extending into said bag and mounting thereon a check valve device, said check valve device being adapted to respond to fluid inlet pressures to permit flow of fluid into the bag, while automatically closing against pressures tending to force fluid to flow in reverse direction through said valve, the outlet connector device having an end portion extending exteriorly of said bag and mounting in fluid tight slip-fitted relation thereon a pliable closure, the heat-sealed corner portions of said bag accommodating holding devices.

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Dedication

2,883,985.—*Robert P. Evans*, Kenmore, N.Y. MEDICAL APPLIANCE. Patent dated Apr. 28, 1959. Dedication filed May 6, 1963, by the assignee, *Sterilon Corporation*.

Hereby dedicates to the public the entire term of said patent.
[*Official Gazette June 25, 1963.*]

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