

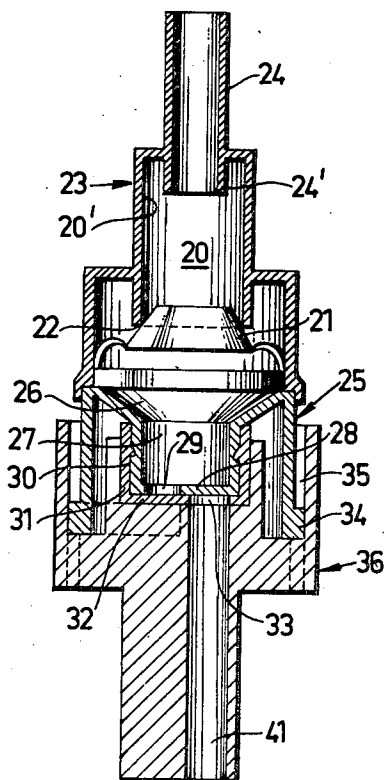
[72] Inventor **Jan Axel Svensson**
Bredbackavag 7, Bjarred, Sweden
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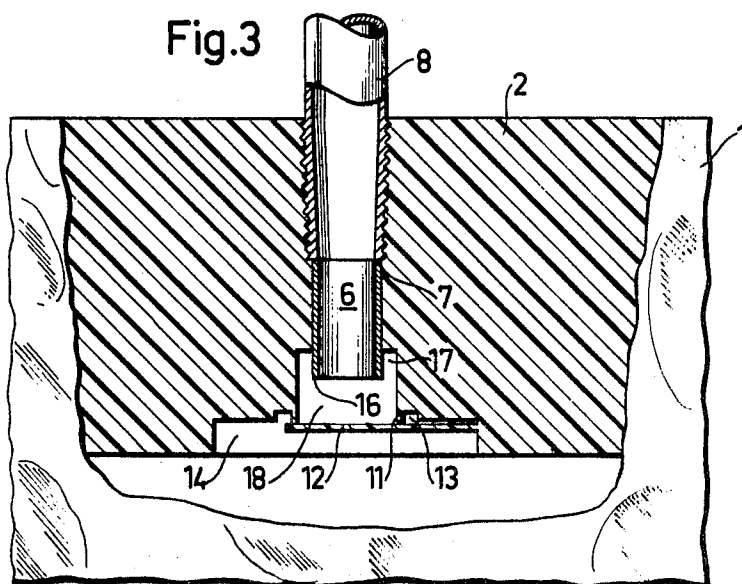
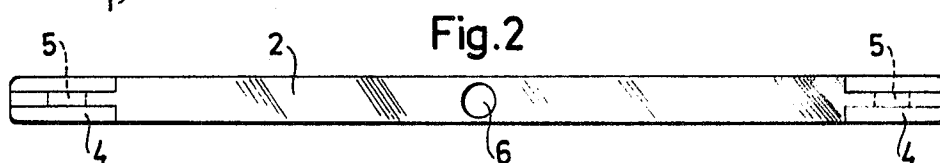
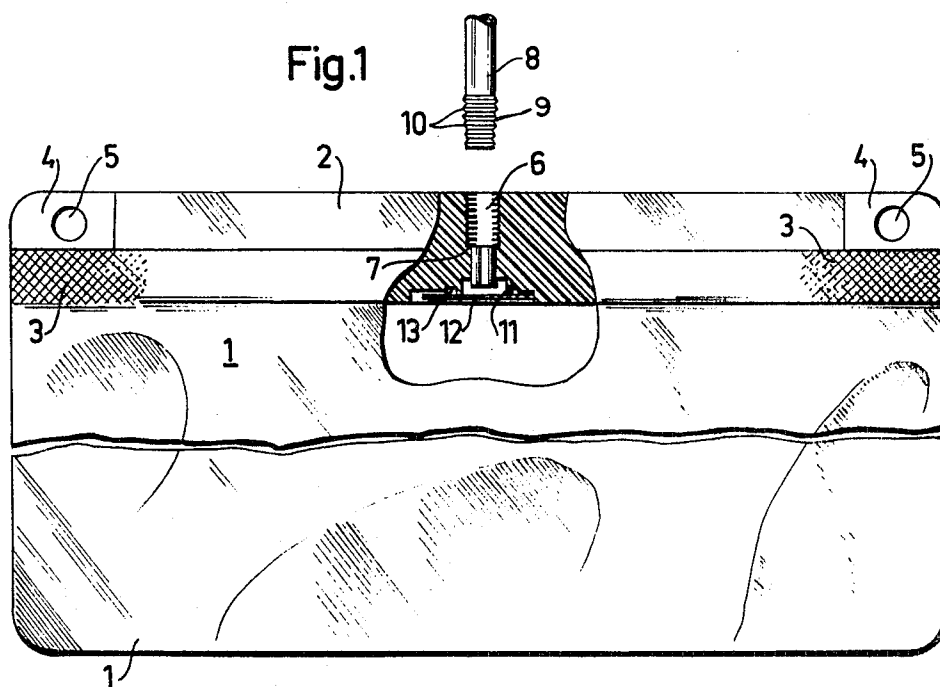
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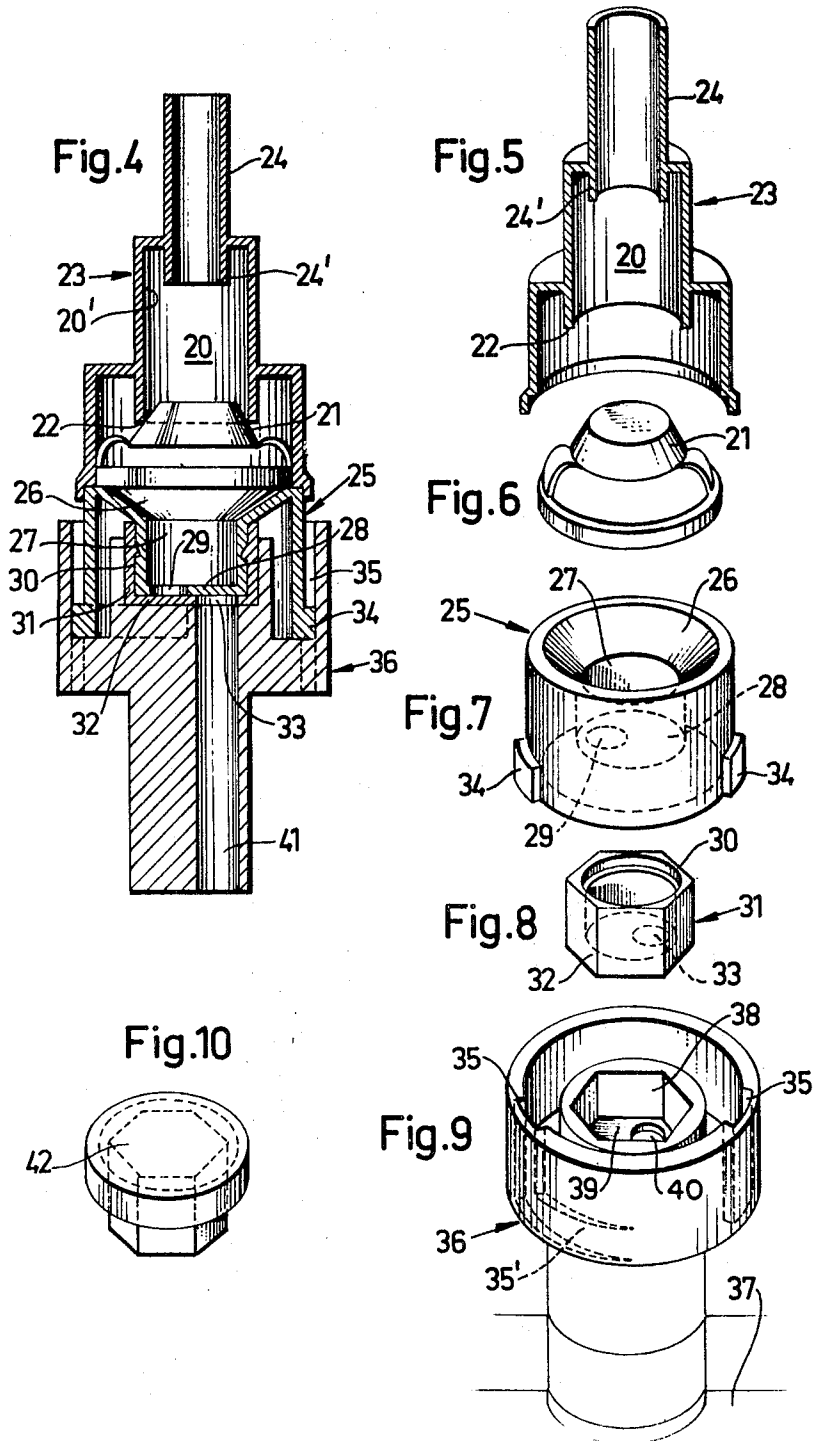
Primary Examiner—Samuel B. Rothberg
Assistant Examiner—Davis J. Zobkiw
Attorney—Pierce, Scheffler & Parker

[54] **BACTERIA BARRIER DEVICE**
1 Claim, 10 Drawing Figs.
 [52] U.S. Cl. **137/614.2,**
4/110, 128/295, 137/525, 137/525.3, 251/149
 [51] Int. Cl. **A61F 5/44**
 [50] Field of Search **4/110, 111;**
128/295; 222/464; 137/525, 525.3, 614.2;
251/149

ABSTRACT: A device for body fluid inlet to a receptacle from the body which device includes means providing a barrier to the reverse movement of bacteria from the receptacle to the body.







BACTERIA BARRIER DEVICE

The present invention relates to a bacteria barrier device adapted to be connected to a feedline of a bag or other receptacle for catching of body fluid, such as urine or discharge fluid. The device according to the invention is characterized by a dropping chamber or collecting chamber having a fluid control adapted to convey the fluid past an annular wall portion in order to keep said wall portion in a dry condition and to obstruct the back motion of bacteria from the receptacle to the source of fluid.

Preferably, the device according to the invention also is provided with a nonreturn valve adapted to admit the fluid into the receptacle and at the same time to effectively prevent a counter flow of the fluid and of air mixed with bacteria.

Owing to the invention, bacteria occurring in the caught fluid are effectively prevented from propagating back to the fluid source. Several further advantages will be clear from the following specification.

The invention below is described with reference to the accompanying drawings, which illustrate two different, preferred embodiments of the invention subject.

FIGS. 1 to 3 are an elevational, top and enlarged fragmentary view, respectively, of a first embodiment of the invention subject.

FIG. 4 is a sectional view of a second embodiment of the invention subject.

FIGS. 5 to 9 illustrate the device according to FIG. 4 in an exploded view.

FIG. 10 shows a simple plug adapted to seal the member according to FIG. 9.

Referring to FIG. 1, numeral 1 designates a bag having rectangular shape in its unfilled condition and consisting of two rectangular plastics sheets, which are welded together along the bottom and the both vertical sides of the bag. At the upper end the sheets forming the walls of the bag are fluid-proof and are attached to each side of a member 2 made preferably of plastic but considerably more rigid and thicker than said sheets. In order to facilitate a sealed connection, either by welding or by adhesives, the plastic strip 2 is chamfered along its full length and at least a part of its width, as shown at 3 in FIG. 1. In the embodiment according to FIG. 1, the plastic strip 2 extends upward from the upper end of the bag and has rectangular notches at the corners 4 provided with apertures 5 in order to facilitate suspension of the bag.

The strip 2 is provided with a central opening 6, which serves as inlet to the bag. The upper end portion of said opening 6 forms a socket 7 for connection with the end of a plastic hose 8. In order to establish a good connection between the plastic hose 8 and said socket 7 the end portion 9 of the plastic hose 8 may be slightly conical and chamfered or provided with fine, preferably sawtooth-shaped, annular projections 10. At the mouth of the inlet opening 6 in the bag there is a nonreturn valve, which in the illustrated embodiment consists of a valve seal 11 (see also FIG. 3) and a valve flap in the shape of a membrane flap or tongue 12, which may be attached to the inner side of the strip 2 or made in one piece with the said strip. In the illustrated embodiment the valve seat 11 consists of a projecting of the edge strip 2, said edge being formed by a recess 13 surrounding the mouth of the inlet opening 6.

In the embodiment according to the drawing the tongue 12 has rectangular shape and substantially the same width as the inner edge of the strip 2. The tongue 12 is mounted in such a manner, that whenever there is a tendency to squeeze the fluid towards the outlet, the tongue 12 is firmly pressed against the valve seat 11.

Favorable results have been attained with a valve having a tongue 12 of just sufficient rigidity to make the same self-supporting.

As best appears from FIG. 3, the tongue 12 is countersunk into a recess 14 in the strip 2. Above the tongue 12 there is a dropping chamber 18 defined by a widened portion of the inlet channel 6. The channel 6 is provided with an extension in the shape of a tubular end portion 16, which extends into the dropping chamber 18 and conveys the fluid past the annular

wall of the chamber 18 downwards to the lower part of said chamber.

By this arrangement fluid flowing into the chamber 18 from the hose 8 is prevented from wetting down the inside of the dropping chamber 18 within the area of the annular space 17. Accordingly a dry surface area will be maintained around the whole chamber. By this means substantially all bacteria propagation by movement of bacteria from the bag or the lower part of the chamber 18 up to the inlet channel is avoided.

In the illustrated embodiment a fluid control in the dropping chamber 18 is obtained in that the inlet channel 6 with a separate tubular member 16 extends a bit into the chamber 18. A similar result, however, can be achieved by other arrangements. Thus, for instance, it is possible to give the chamber wall such a configuration that an annular dropping projection, for instance a bead, collar, lip or the like, is formed at the outflow opening. It is of course also possible to use the lower end of the hose 8, i.e., the lower end portion of the hose may be introduced a bit into the chamber 18 in order to replace the tubular member 16 according to the drawing.

In FIGS. 4 to 10 a second preferred embodiment is illustrated, in which a dropping chamber 20 and a nonreturn valve 21, 22 are mounted in a first member 23, which is provided with an inlet plug for a feed hose (not shown). An extension 24' of the inlet plug forms a fluid control in the dropping chamber 20, by means of which control the fluid is conveyed past the annular wall portion 20' (FIG. 4), and accordingly this wall portion will be kept in a dry condition. The valve consists of the valve body 21 according to FIG. 6, which is inserted into the member 23 according to FIG. 4 and FIG. 5 and pressed against the valve seat 22. The member 23 then may be, if desired for instance by means of welding, connected with the member 25 according to FIG. 7. Said member 25 is provided with a conical recess 26 at the upper portion and, changes into a cylindrical chamber 27 in the lower portion, which at the bottom is defined by a bottom wall 28 with an eccentric aperture 29. A valve member 31 is mounted within the member 25, preferably by means of a snap lock 30. The valve member 31 is also provided with bottom wall 32 having an eccentric aperture 33. By a turning movement the aperture 33 can be brought into a position just in front of the opening 29. The member 25 further is provided with shoulders 34 adapted to engage grooves 35 in the member 36 according to FIG. 9. Said member is designated generally by the numeral 36 and is adapted to serve as an inlet to a bag 37. At the lower end the grooves 35, as appears from FIG. 9, are terminated by lateral angled portions 35'. By this arrangement the member 36 can be attached to the member 25 by means of a bayonet catch. A flange 38 having an internal hexagon profile extends upwards from the bottom of the member 36. Said profile directly fits the member 31 according to FIG. 8. For the connection of the member 36 to the member 25, the shoulders 34 accordingly are brought into engagement with the grooves 35, whereupon the parts are turned in relation to each other, so that the shoulders 34 will be locked in the lateral groove portions 35'. After the shoulders 34 have reached this position the continued turning movement results in a turning movement of the member 31 relatively to the member 25, so that the apertures 33 and 29 will be brought into positions just in front of each other. Preferably, a simple snap or stop mechanism is used to exactly define this position. Such a mechanism, however, is not shown in the drawings. The space within the flange 38 at the lower end is defined by a bottom 39 with an aperture 40. By means of a channel 41 said aperture 40 communicates with the interior of the bag. The numeral 42 in FIG. 10 designates a simple plug member adapted to seal the member 36 when it is disengaged from the member 25. The plug by means of a simple plastics strip may be connected with the member 36.

Of course the invention is not limited to the above-described embodiments but can be changed within the frame of the following claims. Thus, for instance, the tongue 12 according to FIGS. 1 and 3 of course can be replaced by a valve

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body substantially similar to the valve body 21 according to FIG. 6. By this means one will have a greater latitude in selecting the suitable material for the tongue 12. Furthermore, for instance the aperture 40 and the channel 41 can be made larger in order to avoid difficulties in coinciding with the apertures 33 and 29. Also in other respects the shape of the individual parts of course may be changed within wide limits without departing beyond the scope of the invention.

I claim:

1. A bacteria barrier fluid inlet device for controlling the flow of a fluid from an inlet to a receptacle therefor, said inlet device comprising a fluid inlet means, means defining a fluid-collecting chamber for receiving fluid from said inlet means and surrounding said inlet means and spaced outwardly from the walls thereof to prevent bacteria from migrating from said collecting chamber means back to said inlet means, a recepta-

cle communicating with said collecting chamber means, a nonreturn valve means for controlling the flow of fluid from said collecting chamber means to said receptacle, a cutoff valve means between said nonreturn valve means and said receptacle, said cutoff valve means including a first portion and a second portion, said portions including a rotatable bayonet-type connecting means for separably connecting said portions together, one of said portions being connected to said collecting chamber means and the other of said portions being connected to said receptacle, means operable by said rotatable bayonet-type connecting means for operating said cutoff valve means, whereby when said portions are connected said cutoff valve is open and when said portions are disconnected said cutoff valve means is closed.

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