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BODY FLUID SAMPLING ASSEMBLY

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FIELD OF THE INVENTION

This invention relates to a bag assembly used for sampling fluid, usually urine, from a patient and more particularly to the connection between the body drainage outlet and the sample connection.

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BACKGROUND TO THE INVENTION

Drainage bags connected to a patient via a catheter and flexible tube for collection of urine discharged from the body are well known.

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It is frequently necessary when a patient is being treated to take samples of freshly discharged urine for examination. This is presently usually achieved by having the catheter attached through a special connector to the drainage tube. The connector includes a plug which may be pierced by a syringe needle and which will seal automatically once the needle is withdrawn. The connector is a rigid tube with a central body portion having a transverse aperture into the bore through the body. This aperture is plugged with resilient material through which a syringe needle can be inserted to communicate with a flow through the connector. This enables a sample of freshly excreted body fluid to be obtained.

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Being located, as it is in use, near the catheter the manipulation of the syringe requires care and dexterity to satisfactorily obtain a required sample. Also to ensure the connector is full the drainage tube needs to be folded to provide a

5 temporary reservoir in the tube and into which the syringe needle may be introduced through the plug and some of the fluid withdrawn as a test sample.

The procedure is thus one of potential danger because of the serious and often fatal infections which can be transmitted through mishandling of hypodermic
10 syringes and in practice frequently leads to the drainage tube being temporarily removed from the drainage bag to allow a sample to be taken therefrom that is not fresh.

As far as the applicant is aware this procedure is widely used throughout the
15 world.

The closest prior art known to the applicant is US Patent 4,000,649 assigned to International Patent Company. This document discloses a three-way valve as part of a complicated combined measuring and collection bag assembly. The
20 valve is secured to the assembly and cannot be reused or have its position changed. While it is stated its purpose is to enable collected urine to be sampled it is not possible for fresh samples to be taken as urine must first be collected in a measuring container. Fresh urine sampling is not indicated in the document.

25 **OBJECT OF THE INVENTION**

It is the object of this invention to provide a connector which enables sampling to be effected in a simpler more efficient manner.

30 **SUMMARY OF THE INVENTION**

In accordance with this invention there is provided a connector for sampling drained body fluids comprising a three-way valve fitted to one end of a flexible tube and adapted for connection to a collection outlet.

5 Further features of this invention provide for the three-way valve to be moulded in plastics material and of a kind having a body with three openings with connection spigots, two openings being directly opposed to each other and the third spaced between them but having its spigot inclined at an acute angle to one of the other spigots.

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The invention also provides for the spigots to be tapered and provide a serrated surface for frictional engagement with flexible plastics material drainage tubing, closure caps or other connectors.

15 **BRIEF DESCRIPTION OF THE DRAWINGS**

A preferred example of the invention is described below with reference to the accompanying drawings in which

20 FIG.1 illustrates the sampling connector ready for use with a simple standard disposable collection bag; and

FIG.2 shows the connector on the kind of bag used for measured sample collection; and

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FIG. 3 is an exploded view of a valve for the connector.

DETAILED DESCRIPTION OF THE INVENTION

30 As shown the sampling connector (1) is attached to a conventional standard polyvinyl chloride urine collection bag (2). The attachment is effected through a flexible tube (3) and an inlet spigot (4) for the bag (2).

The standard bag (2) usually has the inlet spigot (4) welded into position during
35 manufacture and this may be integral with a length of tube (3). The bag also has

5 an outlet connection welded into position during manufacture and this outlet is fitted with a closure valve (5).

Preferably the valve (5) will be a slide valve operable across the flow passage in well known manner. This also adds simplicity to the assembly.

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It should be noted that a three-way valve (6) is fitted to the inlet to the bag in the length of the flexible tube (3). This makes it possible to locate the valve in a convenient position for use in sampling away from a catheter connection (3A) and where samples can be easily taken at any time. The ease with which
15 samples can be taken makes it highly unlikely that any tube (3) will be disconnected for this purpose.

The three-way valve (6) has three openings with connection spigots (7) and thus provides a direct through flow for uninterrupted drainage or a by-pass for
20 collection of samples or, where necessary, shut-off for the removal for disposal of the collection bag (2) and replacement with a new bag. To enable this to be done the openings into the spigots (7) such that two openings are arranged directly opposed to each other and the third spaced between them but having its spigot (7A) inclined at an acute angle to one of the other spigots (7).

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The spigots (7) have tapered and serrated external surfaces to enable them to be easily connected in sealing engagement with the different fittings used in body fluid drainage and collection.

30 As shown in Fig 2 the three-way valve (6) is shown in use on a collection and measuring bag (8) made from polyvinyl chloride. This bag (8) is reusable being provided at the inlet with a reflux valve (9) and having a tubular outlet (10) fitted with a manually operated closure valve (11). This reflux valve (9) is usually provided as an integral part of the bag (8).

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5 Between the three-way valve (6) and the measuring bag (8) is a rigid shaped container (12) for accurate measuring of samples and a second three-way valve (13) may be positioned between the container (12) and the measuring bag (8). The container (12) is provided because the volumes demarcated on a scale (14) on the bag (8) are only approximate the use of the bag (8) for measured samples is generally not acceptable under post-operative conditions for example. The bags do however give a useful indication of rate of flow through the catheter and thus the effective function of the urinary system of a patient.

15 However the usual system is improved by having a connection according to this invention attached to both the inlet and the outlet of the container (12). In this way, with the valve (13) being a valve of the kind illustrated at (6) but inverted, the drainage assembly can provide an automatic overflow (15) from the container (12) through the three-way valve (13) into the bag (8). The valve (13) can also be set to allow direct flow through the container (12) into the bag (8) or to prevent flow from the container other than through the overflow. The valve (13) can also be closed when the bag (8) needs replacement for any reason. It will further be appreciated that the construction of the valve (6) enables a selected directional flow to be obtained under gravity.

25 It will be appreciated that the three-way valve connector can also be used with any other drainage or sampling bag assembly to obtain accurately measured samples. The spigot for sampling can easily be kept clean and sterile when not in use by suitable protective caps and wiping after use with antiseptic material.

30 The invention thus provides body fluid drainage and sampling connector which enables the above sampling functions to be achieved in a more convenient manner than has been possible heretofore. However it is the facilitating of the sampling of freshly drained body fluids in a simple and safe manner which is most desirable particularly under circumstances where such sampling must be

- 5 undertaken by persons of little if any medical training. Other fittings than tubing and caps can also be connected to the connector of this invention.

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5 CLAIMS

1. A connector (1) for sampling drained body fluids characterized in that it comprises a three-way valve (6) fitted to one end of a flexible tube (3) and adapted for connection to a collection outlet.
- 10 2. A connector (1) as claimed in claim 1 characterized in that the valve (5A) body has three openings with connection spigots (7), two openings being directly opposed to each other and the third spaced between them but having its spigot (7A) inclined at an acute angle to one of the spigots (7).
- 15 3. A connector as claimed in claim 2 characterized in that the spigots (7) provide tapered and serrated surface for frictional engagement with different fittings.
- 20 4. A connector as claimed in claim 2 characterized in that the valve (6) is moulded from synthetic plastics material.

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