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3,154,080

ASEPTIC CATHETER AND INTRODUCER

Filed May 24, 1962

2 Sheets-Sheet 1

FIG. 2.

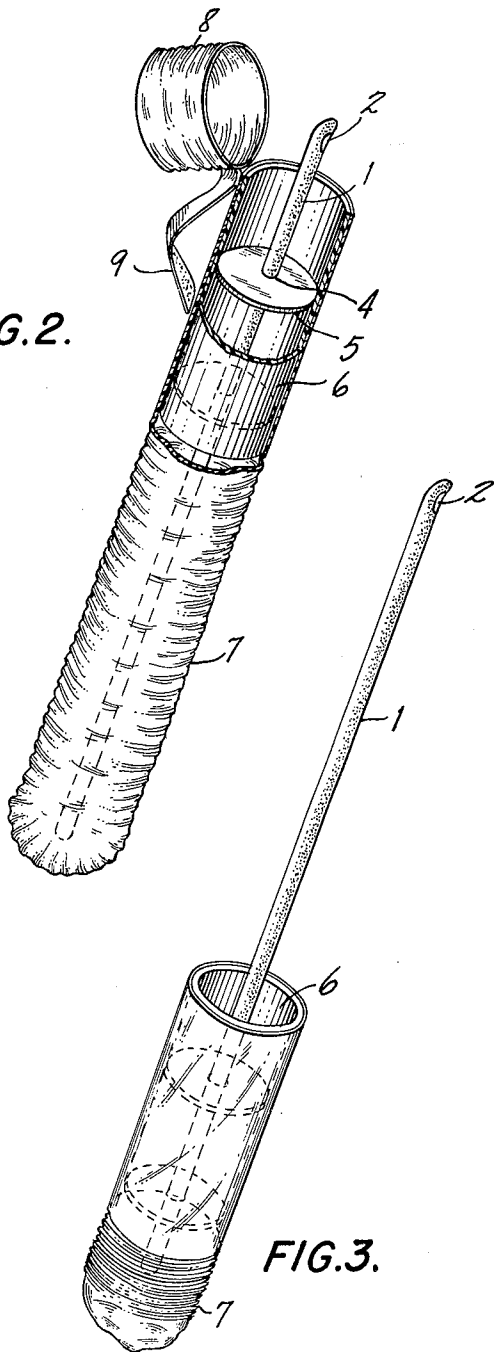


FIG. 3.

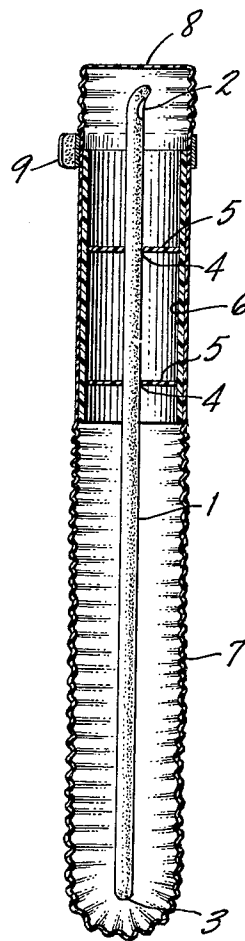


FIG. 1.

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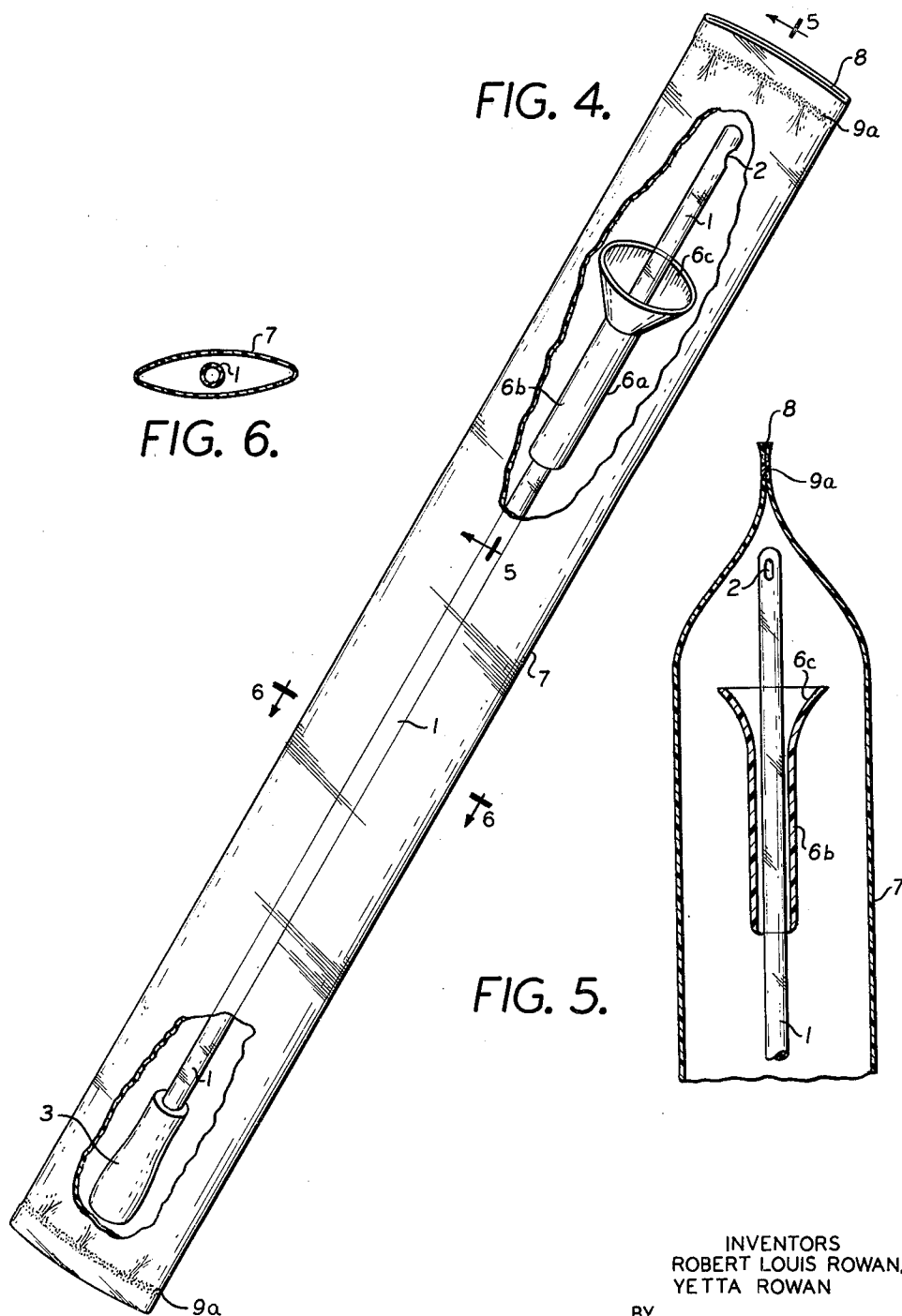
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ASEPTIC CATHETER AND INTRODUCER

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7 Claims. (Cl. 128—349)

The present application is a continuation-in-part of the copending patent application Serial No. 57,281, filed on September 20, 1960 and now abandoned.

The present invention relates to a urethral catheter and means for maintaining the catheter sterile before and during the removal of urine from patients.

The need for a device of the above-described character becomes apparent when one considers the difficulties encountered in the sterile handling of urethral catheters during catheterization. It is essential that the catheter be maintained completely sterile during catheterization in order to prevent any accidental infection of the patient from taking place. This invariably requires the attending physician to put on sterile gloves before commencing the process of catheterization and also to take further time-consuming precautionary measures.

Accordingly, it is an object of this invention to maintain a catheter in a sterile condition before use and to facilitate the collection of urine under sterile conditions with this catheter from a patient.

It is a further object of this invention to collect the urine from patients under sterile conditions without requiring the attending physician to put on sterile gloves.

Another object of this invention is to provide a novel combination catheter, introducer and urine collection container.

According to the invention, this novel combination which is the subject matter of our invention, comprises a flexible plastic and preferably transparent and thin container which houses a plastic stiffer catheter tube and a tubular introducer of easily deformable and, preferably, transparent material. In a first embodiment of the invention, the container is of an elongated cylindrical shape. In this first embodiment the tubular introducer's outside diameter is slightly larger than the inside diameter of the plastic container so that the introducer is firmly seated inside the container and does not by itself slidably move therein. At least, one or more circular discs are rigidly secured inside the introducer. Each of these discs have a central opening through which projects the catheter tube.

In a second modified form of the invention, the plastic, flexible, thin and transparent container also houses a plastic stiffer catheter tube and a tubular introducer. The tubular introducer, however, has a different configuration than the tubular introducer of the first embodiment. This tubular introducer's maximum outside diameter is substantially smaller than the inside diameter of the elongated plastic container and its minimum inside diameter is slightly larger than the maximum outside diameter catheter tube so that the tubular introducer may be slidably moved along the catheter tube inside the plastic container.

The entire unit is sterilized by heat, ultra-violet light or other means known in the art and is then closed by heat-sealing means or other means so that the unit remains in a sterilized condition. When the catheter is to be used, a strip is cut or torn from the upper portion of the plastic container. The upper portion of the introducer is then manually fitted over the penis by manipulating the container and introducer. The catheter tube is then slowly inserted into the urethrae of the penis. The latter step is greatly facilitated when both the container and introducer are transparent. When a desired amount of urine has been deposited in the container, the catheter tube is removed from the container by sliding the introducer and

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the container back over the catheter tube. The catheter tube may be left in the bladder until it has completely drained the latter. The container after removal may be resealed by clamping it below the introducer with staples or other closing devices. Alternatively, the urine may be transferred from the sterile plastic container to another sterile container or bottle. The entire device thus is disposable and is meant to be used one time only.

The catheter tube, container and introducer may be made of any suitable non-irritating plastic materials. It has been found that polyethylene has all the required qualities for the various components of the invention.

Although the present invention has been described in conjunction with preferred embodiments, it is to be understood that the novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The construction and method of operation of the invention, however, will be best understood from the following description when read in connection with the accompanying drawings in which:

FIG. 1 is a vertical-sectional elevation of the entire device;

FIG. 2 is a perspective view of the device, partially cut away, illustrating the manner of opening the container;

FIG. 3 is a perspective view of the device, showing the catheter tube protruding from the introducer;

FIG. 4 is a perspective view of a modified form of the device, partially cut away;

FIG. 5 is a partial, vertical, sectional elevation along line 5 of FIG. 4; and

FIG. 6 is a cross-section along line 6 of FIG. 4.

Referring now to the drawings in which identical parts are designated with the same numeral, the embodiment of FIGS. 1 to 3 has a catheter 1 which is made of polyethylene or other suitable plastic material and consists of a semi-rigid tube having a closed elliptical forward end portion with a small opening 2 and an open rear end portion 3. The catheter 1 is slidably mounted in the holes 4 of the introducer discs 5. The introducer discs 5 (two discs are illustrated in FIGS. 1, 2 and 3) are rigidly secured within the introducer tube 6 in axial alignment therewith. Introducer discs 5 and introducer tube 6 consist of relatively rigid, but preferably elastic transparent plastic material. Introducer tube 6, in turn, is seated in the plastic container 7. The tube 6 is frictionally held in position in the container 7 due to the fact that the exterior diameter of tube 6 is slightly larger than the interior diameter of the tubular container 7 when the latter is in an unstretched condition. The container 7 consists of flexible, preferably transparent plastic material. The container 7 may be opened at one or both ends by means of removing an opening strip 9 or a weakened portion 9a of the plastic container 7. The catheter 1 and introducer tube 6 are slidably inserted into the flexible container 7 during the assembly of the device and the interior of the container 7 is then sterilized by ultra-violet light, heat or other known means. After sterilization, the container 7 is hermetically sealed by heat or other suitable means.

In FIGS. 4-6 a modified embodiment of the invention is illustrated. The latter modified embodiment is similar to the embodiment of FIGS. 1-3, except for the introducer tube 6a, which is shaped somewhat differently than the introducer tube 6. The latter is tubular in shape whereas the introducer tube 6a has a tubular portion 6b and a frusto-conical portion 6c. The interior diameter of the tubular portion 6b is slightly larger than the exterior diameter of the catheter 1 so that the introducer tube 6a may be slidably moved along the catheter 1. The frusto-conical portion of the introducer tube 6a is shaped to fit over the forward end of the penis of a patient. In the embodiment of FIGS. 4-6 the container 7 has in lieu of an opening strip 9 weakened portions 9a at the loca-

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tion of which the container 7 may be torn and thereby opened.

While it is possible to open the container 7 to remove the catheter 1 for use by cutting off the end 8, it has been found preferable to use an opening strip 9. The latter slightly protrudes from the container 7, so that it may easily be grasped and then pulled off so that the end 8 can be removed. The strip 9 may be made of the same or different material than the container 7, but preferably, like the container, is made of polyethylene. The strip 9 is secured to the container 7 by heat welding or can be made as an integral part of the container 7.

Upon opening of the container 7 by removing the end 8, or tearing the container 7 open at weakened portion 9a, the frontal portion of the sterile introducer tube 6, 6a is immediately fitted over the front end of the penis and contamination of the patient during catheterization is thereby prevented. The fitting of the introducer tube over the penis facilitated due to the flexibility of the introducer tube. After the introducer tube is in place, the catheter 1 is inserted into the urethra by manipulating the deformable tube 6, 6a and the semi-rigid catheter 1.

Although the present invention has been described in conjunction with preferred embodiments, it is to be understood that modifications and variations may be resorted to without departing from the spirit and scope of this invention, as those skilled in the art will readily understand. Such modifications and variations are considered to be within the purview and scope of the invention and appended claims.

What we claim is:

1. An aseptic elongated container having a catheter and introducer therein, comprising in combination, an hermetically elongated heat-sealed transparent plastic container, a hollow plastic tubular introducer axially mounted in said container, a plastic catheter slidably mounted in said introducer, said introducer having at least one non-supporting portion with respect to said catheter, at least a part of which is of maximum interior diameter of said introducer, said introducer having at least one other supporting portion with respect to said catheter which includes a part of minimum interior diameter of said introducer, at least a part of said non-supporting portion of said introducer being adapted to be manually fitted over the head of the penis of a patient before said catheter is manually introduced into the urethra of a patient.

2. The aseptic elongated container having a catheter and introducer as set forth in claim 1, said hermetically heat-sealed plastic container having a front end and including means operatively connected to said front end of said container for opening the same.

3. The aseptic elongated container having a catheter and introducer as set forth in claim 1, wherein said container and introducer are made of plastic transparent material and wherein said introducer is made of relatively

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rigid elastic plastic material and said container and catheter are made of relatively flexible plastic material, said container being made of more flexible plastic material than said catheter.

4. In the elongated disposable container, the aseptic catheter and introducer, as set forth in claim 1, wherein said tubular introducer has two circular disc-shaped rib sections secured to the interior thereof in axial alignment therewith, each of said two rib sections being spaced from the frontal portion of said introducer and having a central opening, said catheter slidably extending through the central openings of said rib sections.

5. In an elongated disposable container an aseptic catheter and introducer, comprising in combination, an hermetically sealed flexible transparent tubular plastic container, the interior of said container having been sterilized before the sealing thereof, a transparent plastic tubular introducer having interior walls supported in said container in axial alignment therewith, said introducer having a frontal portion and at least one disc-shaped circular rib section spaced from said frontal portion and secured to said interior walls thereof, said rib section having an opening, a portion of said introducer forwardly projecting from said rib section and being adapted to be manually fitted over the head of the penis of a patient and a catheter tube slidably extending through said opening of said circular rib section.

6. An aseptic container, catheter and introducer, comprising in combination, an hermetically heat-sealed plastic tubular container, a plastic tubular introducer axially slidably mounted in said tubular container, said introducer having an axial bore extending therethrough, a catheter slidably mounted in said bore of said introducer, said introducer having at least one portion of minimum interior diameter and a forwardly projecting other portion of maximum interior diameter adapted to be manually fitted over the head of the penis of a patient before said catheter is introduced into the urethra of a patient, said former portion of said introducer being adapted to slidably support said catheter.

7. The aseptic container catheter and introducer as set forth in claim 6, including an annular peripheral opening strip secured by heat welding to said container at the front end portion thereof whereby said front end portion of said container can be removed from said container by tearing off said opening strip.

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