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ASEPTIC CATHETER

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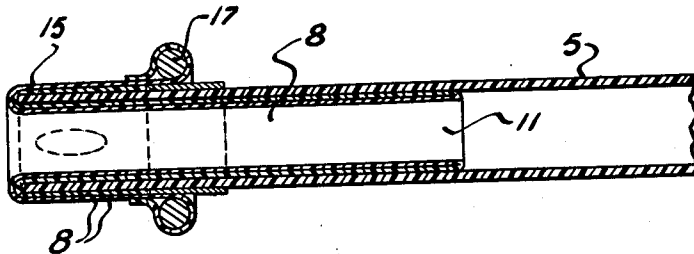


FIG-3

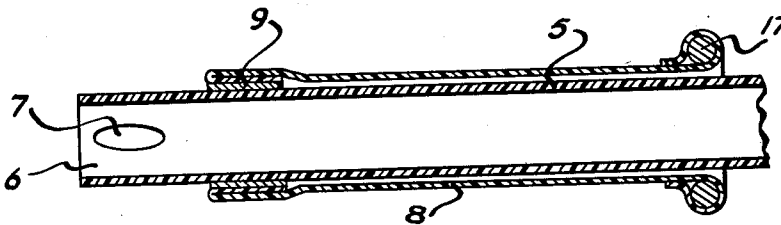


FIG-2

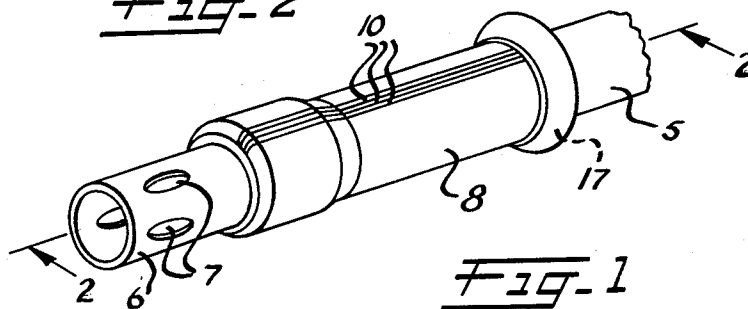


FIG-1

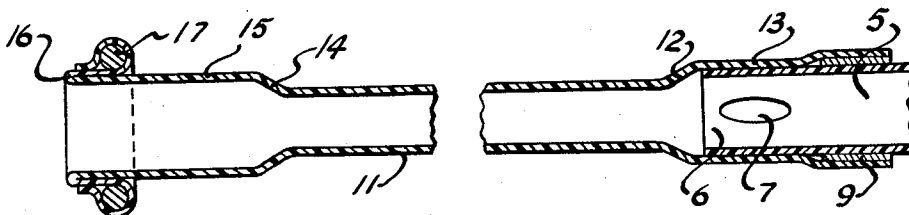


FIG-4

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ASEPTIC CATHETER

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3 Claims. (Cl. 128-349)

This invention relates generally to the field of surgical instruments, and more specifically to certain new and useful improvements in the construction of a catheter.

The instrument generally known as the catheter comprises an elongated tubular body which is used for insertion through the urinary tract into the bladder for the purpose of obtaining urine specimens or to drain the bladder. It will be obvious that extensive sterile precautions must be made before such an operation can be undertaken. The pseudo sterile technique which is generally employed cannot prevent infection which may be present on the external genitalia from being carried upwardly by the catheter to cause infections in the bladder or at the very least cause contamination of the urine specimens which may be required. My invention is directed towards a solution of this problem by providing a disposable sterile membrane which is unrolled during the insertion of the catheter such that a continually sterile surface of the membrane is in contact with the urethral mucosa and remains static therein while the catheter moves within the membrane.

It is therefore a primary object of this invention to provide a catheter instrument which obviates the necessity of extensive sterile precautions being taken prior to catheterizations.

It is a further object of this invention to provide a catheter instrument and disposable membrane therefor which will prevent the danger of ascending infections into the bladder as is commonly experienced when ordinary catheters are employed.

It is a still further object of this invention to provide a catheter instrument and disposable membrane therefor which will establish an economical method of draining the bladder in a completely sterile manner.

Briefly, the invention comprises the provision of a substantially conventional catheter instrument. A very thin tubular membrane is mounted with one end engaging over the operative end of the catheter tube. The sterile membrane is folded such that the greater part of its length extends inwardly of the operative end of the tube, and the free end of the membrane having a ring shaped peripheral stop mounted thereon is adapted to roll over the operative end on top of the fixed end of the membrane. The catheter is now inserted into the urethral meatus until the peripheral ring stop on one end of the membrane engages with the external genitalia. Further insertion of the catheter will cause the sterile membrane disposed within the catheter to unroll outwardly of the end so as to progressively line the urethral mucosa in a static manner with the membrane. Upon full insertion of the catheter, the extreme end thereof will project outwardly through the unrolled membrane into the bladder for drainage of the same.

A full understanding of the construction of this invention, together with further novel features and advantages, will be had from the following detailed description of a preferred embodiment thereof, taken in conjunction with the attached drawings wherein:

FIG. 1 is a perspective view of a catheter tube having the membrane mounted thereon, and indicating the position of the membrane after insertion of the end of the tube into the bladder.

FIG. 2 is a cross sectional side elevation taken along the line 2-2 of FIG. 1.

FIG. 3 is a cross sectional side elevation of the catheter

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tube shown with the membrane positioned ready for insertion.

FIG. 4 is a fragmentary cross sectional view showing the operative end of the catheter tube mounting the flexible membrane in preparation for loading the same inwardly of the tube.

Similar reference characters indicate corresponding parts throughout the several views in the drawing.

Referring now to the drawings in detail, the numeral 5 represents an elongated hollow cylindrical tube which may be constructed of rigid or semi-flexible material such as rubber or plastic. The operative end 6 of the tube is provided with a number of elliptically shaped openings 7 inwardly spaced from the end and disposed about the periphery of the tube. This tube is technically known as a catheter.

A very thin tubular membrane 8 which may be formed of suitable latex or plastic, is attached at one end 9 to the periphery of the tube 5 inwardly of the elliptically shaped openings 7. The tubular membrane is formed such that it will expand radially but is relatively inflexible in the axial plane. Such flexible limitation can be provided by forming the membrane with a number of elongated fibres which extend longitudinally of the membrane and within the thickness thereof as indicated at 10 in the drawings. The membrane is formed with a central cylindrical portion 11 which expands at 12 to form a sleeve 13 of larger diameter for sliding over the operative end 6 of the tube. The other end of the central portion 11 also expands at 14 to form a larger sleeve 15 adapted to slide over the sleeve 13 when mounted for use. The sleeve 15 is initially rolled back at 16 and terminates in surrounding engagement with a ring shaped peripheral stop 17 formed of solid material.

In operation, the membrane is mounted in position on the catheter as best seen in FIG. 4, of the drawing. The external surface of the covering is now lubricated over its entire length, and the central portion 11 is then rolled inwardly of the operative end of the catheter, as indicated in FIG. 3. Finally, the ring shaped peripheral stop is slid over the end 9 of the membrane in preparation for use. After sterilization, the assembly is inserted into the urethral meatus until the peripheral stop 17 impinges against the external genitalia. Upon further insertion of the catheter, the stop is retained by the genitalia thus forcing the membrane to unroll from inside the catheter and present a continuous sterile surface in contact with the urethral mucosa in a static manner as the catheter moves on within the sterile membrane. Upon complete insertion of the catheter, the openings 7 become exposed within the bladder, the membrane being positioned as indicated in FIGS. 1 and 2. For indwelling purposes, when it is desired that the catheter remain in place, a small distendable retention bag may be incorporated adjacent the elliptical openings 7 for the purpose of locking the tube in position. The assembly would be made in various sizes as required, and it will be appreciated that the membrane, being a disposable item, need not return to its original shape after use. The membrane itself may be made of thin latex or polyethylene material, and should be formed so as to incorporate the longitudinal inelastic fibres therein so as to prevent elongation of the membrane during insertion.

From the foregoing, it is believed that the construction, operation and advantages of this invention will be fully apparent. However, since numerous modifications will occur to those skilled in the art, it is not desired to limit the construction exactly to that shown and described, and accordingly, modifications and equivalents may be resorted to, falling within the scope of the appended claims.

I claim:

1. A catheter and disposable membrane therefor, and comprising, an elongated hollow cylindrical tube, an operative end to said tube having radially disposed openings formed therein, a tubular membrane secured at one end over said operative end, said membrane extending over the operative end and folding inwardly of the tube, said membrane reversing within itself inwardly of the tube and extending outwardly of the same operative end, a peripheral stop secured about the other end of the membrane and adapted to slideably extend over said one end of the membrane outwardly of the tube, such that upon insertion of the operative end of the tube into an opening of the human body, said stop will abut with the opening causing the membrane to be rolled from within the cylindrical tube and presented against the continuation of the opening in the human body in a substantially static manner, said radial openings in the tube adapted to be uncovered from the membrane upon complete insertion of the tube into the body opening.

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2. A catheter and disposable membrane according to claim 1, wherein said membrane comprises a thin flexible material adapted to expand radially, and restricted from extension longitudinally by inelastic fibres sealed within the membrane.

3. A catheter and disposable membrane according to claim 1, wherein said membrane comprises a cylindrical central portion terminating at each end with sleeves of larger diameter than said central portion.

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