

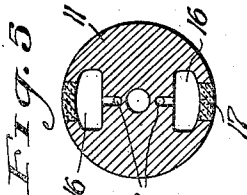
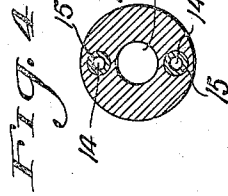
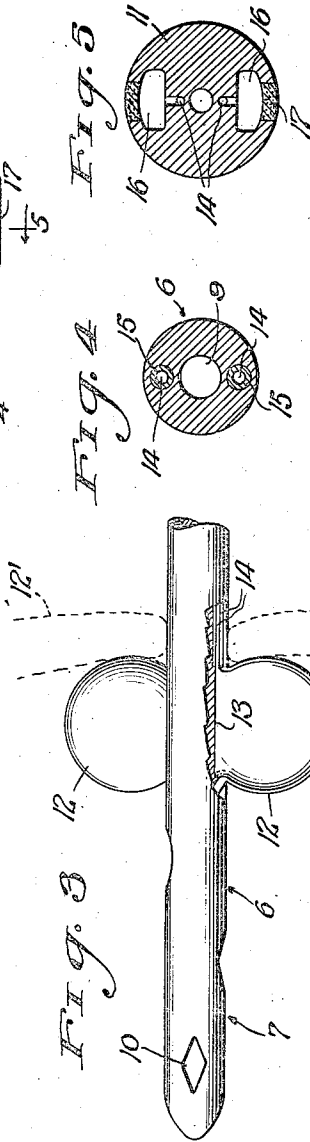
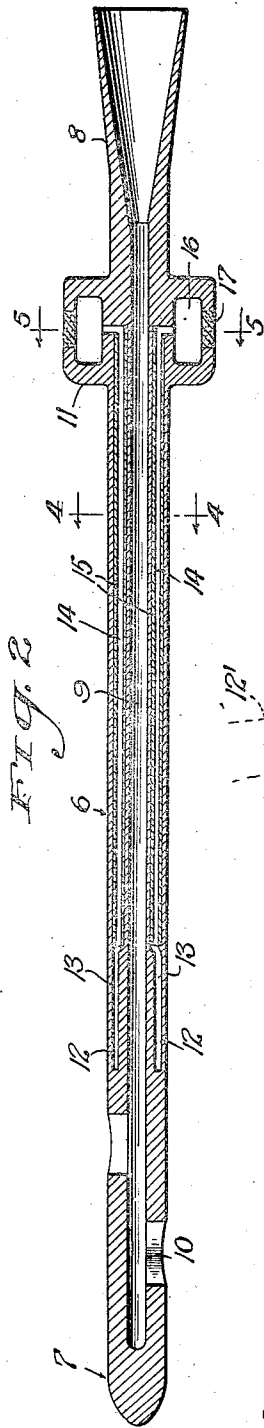
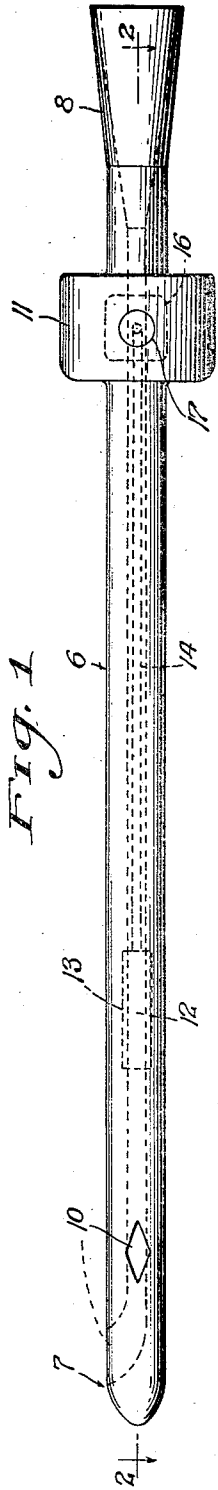
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CATHETER OR DRAINAGE TUBE

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CATHETER OR DRAINAGE TUBE

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4 Claims. (Cl. 128—349)

The present invention relates to devices to facilitate and improve the drainage of hollow viscera, such as the urinary bladder, and other cavities, such as the pleural, peritoneal and abscess cavities in treatment and surgical procedure.

The general object of the invention is to provide an improved drainage device, which may be termed a retention catheter or drainage tube, which enables the treatment, medication, irrigation or drainage, of a given body organ over an extended period of time. This is accomplished by an adequate means by which the catheter is retained in effective position by a plurality of inflatable members which may be inflated by gas or fluid, after the catheter has been inserted into proper position within the organ thru a natural or artificial canal or aperture.

A further object is to provide a device which by carefully controlled inflation of the inflatable members exerts an internal pressure upon the walls of the cavity and thereby control any hemorrhage from the blood vessels of the walls, especially in post-operative cases.

A still further object is to provide a drainage device which by the proper inflation and deflation of the inflatable members facilitates the evacuation of the undesired contents of the cavity, thereby obviating the dangerous practice of squeezing and pressing about the involved area in order to accomplish the evacuation.

A still further object is to provide a catheter or drainage device including inflatable members and inflation ducts communicating therewith and terminating in an annular member carried on the tube and provided to permit inflation of the mentioned members by using, for example, a surgical syringe, an appropriate wall of the annular member being so fabricated as to permit penetration of the syringe needle in a manner so as to instantly close and thereby check the release of pressure upon withdrawal of the needle, or while the needle is still in place.

The invention will be fully and comprehensively understood from a consideration of the following detailed description when read in connection with the accompanying drawing which forms part of the application.

In the drawing:

Fig. 1 is a side elevational view of the entire catheter or drainage device.

Fig. 2 is a longitudinal sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary side elevational view of

the distal end of the catheter, the retention means being shown in inflated condition.

Fig. 4 is an enlarged transverse section thru the catheter taken on line 4—4 of Fig. 2; and

Fig. 5 is a transverse section taken on line 5—5 of Fig. 2.

Referring now to the drawing for a more detailed description thereof, the numeral 6 indicates generally the catheter or drainage tube presenting an elongate structure of flexible tubing pointed at the distal end 7 to facilitate insertion into the urethra or a wound, for example, the proximal end 8 being flared as shown. As illustrated more clearly in Fig. 2, the catheter 6 has extending therein substantially its entire length a central port 9 terminating in one or more openings 10 at the distal end 7, the duct 9 being flared outwardly at the proximal end 8.

Adjacent the proximal end 8 of the catheter is provided an annulus or collar 11 adapted to serve primarily as an abutment to prevent the catheter from slipping into the area of the body being drained. The elongate structure forming the catheter 6 is preferably fabricated of a flexible and resilient material such as rubber and has the annulus 11 integrally formed thereon.

Serving also as retention means for the device in conjunction with the annulus 11 is a plurality, preferably a pair, of inflatable members 12 shown in inflated condition in Fig. 3. The members 12 are disposed on the catheter 6 adjacent the distal end 7 thereof and are integrally fabricated therewith by forming within the walls of the tubing a pair of interior chambers 13 so that the overlying portion of the tubing presents a substantially thin membrane structure. The members 13 may each be made of a size and proportion so as to provide a member 12 of adequate area to be inflatable to the desired maximum size.

In communication with each of the chambers 13 is an inflation duct 14 embedded in the wall of the tube 6 and terminating at chamber 16. To prevent collapsing of the ducts 14 during use of the device a reinforcing tube 15 is provided, the same being incorporated in the tube structure during fabrication thereof. The ducts 14 are directed laterally in the region of the annulus 11 to terminate in hollow portions 16 formed therein, see Fig. 5.

As aforeindicated, it is desired to employ a surgical syringe for inflation of the members 12 and to facilitate connection of the needle to the chambers 16. The walls of the annulus 11, overlying the chambers 16, have inserted therein or other-

wise affixed a penetrable section 17. The sections 17 are composed of a highly resilient material, such for example as rubber, which may be readily pierced by a syringe needle and, due to the resilient but firm quality of the material will close immediately about the needle or upon withdrawal of the needle. It will be noted that each inflatable member 12 is provided with an individual duct 14, each of the latter terminating in corresponding hollow portions 16. From this it will be seen that each member 12 may be accurately inflated to the desired extent by careful manipulation of the syringe for which air, water or other suitable fluid may be used. It will also be seen that such a syringe may be employed to deflate the members 12 by again penetrating the section 17 and retracting the syringe plunger.

Where it is desired to apply internal pressure to certain regions of the organisms being treated, it will be noted that a specific region may thus be affected by inflating the corresponding member 12 to the desired degree. The fabrication of the members 12 integral with the tube 6 obviates the risk of damage occurring to these delicate membranes during withdrawal of the tube since, by so forming, these members present a substantially even exterior surface to the catheter tube 6. It will also be observed that the relatively rigid character of the reinforcing tubes 15 affords a comparative rigidity against collapsing of the catheter 6 altho permitting the desired flexure when required so as to assist in determining the direction in which the tube may be inserted. It will be noted in Fig. 3 of the drawing the relative position of the inflatable members 12 when inserted within a cavity, the walls of the cavity being indicated by the numeral 12' and it will readily be seen that the tube 7 will be retained within the cavity until the members 12 are deflated.

It is to be understood that this improvement is capable of extended application and is not confined to the exact showing of the drawing nor to the precise construction described and, therefore, such changes and modifications may be made therein as do not affect the spirit of the invention nor exceed the scope thereof as expressed in the appended claims.

What is claimed as new and useful is:

1. A device of the character described comprising an elongate tube of elastic material for insertion thru a body aperture and having a passageway therethru, orifices in the side of said tube near one end thereof, retention means on said tube, positioned intermediate said orifices and the other end of said tube, including a plurality of independently inflatable members integral with said tube and presenting relatively thin wall sections adjacent one end thereof and

a peripheral projection adjacent the opposite end thereof so as to prevent movement of the tube in either direction from the aperture after inflation of said inflatable members, and means for inflating said members.

2. A device of the character described comprising an elongate tube of elastic material for insertion thru a body aperture and having a passageway therethru, retention means associated with said tube including a plurality of inflatable members integral with said tube and presenting relatively thin wall sections adjacent an end thereof, said thin wall sections overlying chambers formed in the wall of said tube, and means for inflating said members comprising a plurality of ports communicating with the respective chambers and an annulus on said tube adjacent the other end thereof including hollow portions forming the respective terminals for said ports.

3. A device of the character described comprising an elongate tube of elastic material for insertion thru a body aperture and having a passageway therethru, retention means associated with said tube including a plurality of inflatable members integral with said tube and presenting relatively thin wall sections adjacent an end thereof, said thin wall sections overlying chambers formed in the wall of said tube, and means for inflating said members comprising a plurality of ports communicating with the respective chambers and an annulus on said tube adjacent the other end thereof including hollow portions forming the respective terminals for said ports, sections of said annulus wall overlying each of the hollow portions being fabricated of resilient material adapted to be pierced by penetration of an implement therethru.

4. A catheter comprising an essentially hollow, flexible tubular member, closed at one end and open at the other, having a plurality of orifices, communicating with the interior of said member formed in sides thereof near said closed end, means for retaining said catheter in an opening comprising a pair of isolated transversely extending, diametrically positioned segmental chambers, formed in said member in a locality intermediate said orifices and said open end, each of said chambers being independently radially extensible, and means for facilitating extension of said chambers comprising an annular formation on said member near the open end thereof, a pair of isolated separate fluid-feeding sacs formed in said annulus, each of said sacs having an exposed wall penetrable by a syringe needle, and a pair of transversely extending fluid passages formed in said member, each communicating at one end with one of said chambers and at the other end with one of said sacs.

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