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C. F. INGOLD

1,767,073

CATHETER

Filed Sept. 17, 1927

Fig. 1.

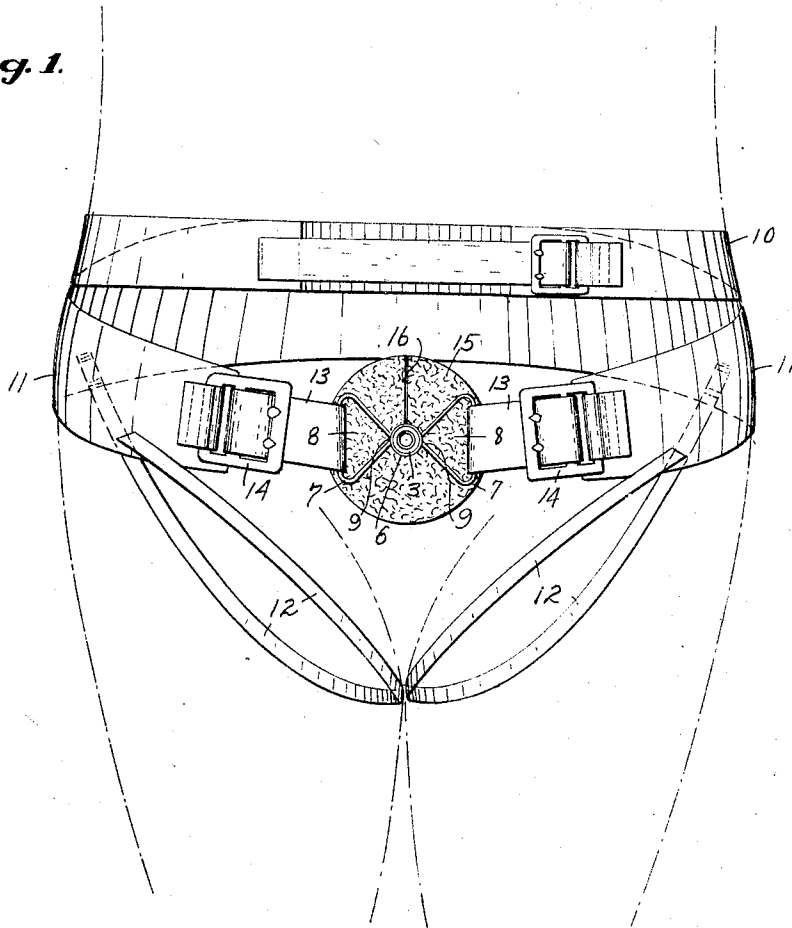


Fig. 4.

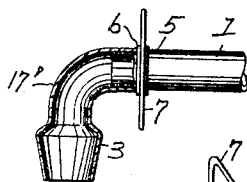


Fig. 2.

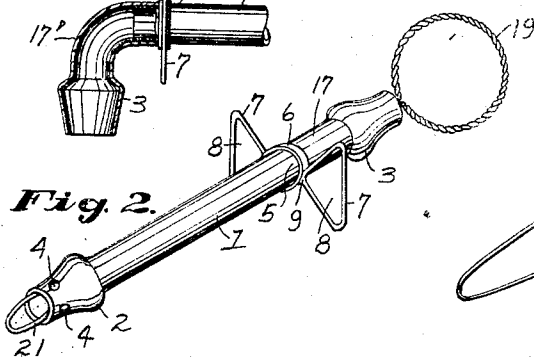
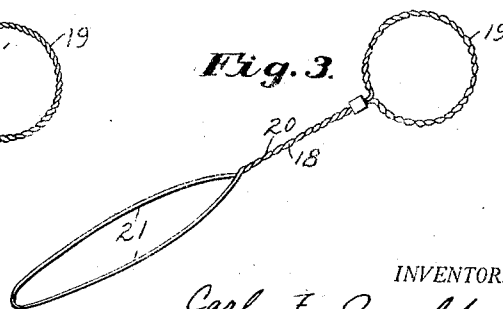


Fig. 3.



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CATHETER

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This invention relates to improvements in catheters.

It is common practice by surgeons to use rubber tubing of special shape for bladder draining purposes. It is well known, therefore, that rubber invites the deposit of various salts such as calcium and as a consequence the tubing becomes clogged within a very short time. This necessitates the replacement of the rubber tubing and as the salts deposited therein renders it inelastic, the larger end of the tubing within a bladder frequently breaks off. Also, inflammation and incipient mortification, perhaps due in part at least to chemical changes set up by the presence of sulphur in the rubber, and in part due to accumulations of waste material along the roughening surfaces sets up adhesions or cysts. In any event the tubing adheres to the tissues and the removal of tubing under such conditions is painful to a patient.

Therefore, it is an object of this invention to minimize the extent to which salts will deposit in the catheter and also to provide a catheter which will not set up irritations and from the interior of which deposits can be scraped without the necessity of removal, whereby the device may remain in operation indefinitely without pain or inconvenience to the patient.

It is a further object to provide a catheter with means for positively fixing its position in the body of a patient, thereby enabling the patient to move about with a minimum of discomfort.

It is another object of this invention to provide a catheter which may be easily inserted in a surgical opening made in a bladder and which when so inserted will hold the bladder wall in distended or uncollapsed position to promote proper drainage.

Other objects of the invention relate to the provision of a simple and effective cleaner for removing deposits from the catheter with a minimum of inconvenience to the patient and the provision of a head into which and through which the cleaner may extend and which is provided with

openings so arranged that even the complete collapse of the bladder wall thereon will not obstruct drainage.

In the drawings:

Figure 1 is an end elevation of the catheter as it appears with its securing means when engaging the body of a patient.

Figure 2 is an isometric view of the catheter and its cleaner.

Figure 3 is a view of the cleaner.

Figure 4 is a fragmentary view, partly in section, of a modified form of catheter.

Like parts are identified by the same reference characters throughout the several views.

The catheter comprises a metal tube 1 preferably composed of silver or other non-corrodible metal and having heads 2 and 3 at its ends, the latter being adapted to receive and hold a rubber discharge hose and the former being rather abruptly shouldered and adapted to engage within the bladder wall to maintain a predetermined relation between the catheter, the bladder wall and the exterior of the patient's abdomen. The head 2 is provided with a series of apertures 4 which ensure drainage of the bladder even under circumstances such that the rear wall thereof collapses upon the open end of the headed tube. Secured to the portion 5 of the catheter tube is a collar 6 having triangularly shaped arms 7 diametrically opposite each other and each describing a triangular opening 8 with the apex 9 of the arm integrally connected with the collar 5.

The catheter is provided with an anchorage device which engages the body of a person to whom the catheter has been applied. The anchorage device includes a belt 10 of any suitable construction adapted to encircle the waist of a person and to which is secured an ancillary belt 11 intermediate the ends of both belts. The ancillary belt encircles the hips of the person and may be held in position by the straps or tie members 12, use of which is optional and which are secured at their ends to the ancillary belt and pass between the legs of the person wearing the device. At each end of the an-

cillary belt 11 is provided a strap 13 which passes through the opening in the triangularly shaped arms 7 upon the catheter. These straps are tightened by means of the buckles 14. In order to prevent the arms 7 of the catheter and the straps 13 from irritating the abdomen of a person wearing the device, a washer 15, composed of felt or other suitable material, may be disposed about the tube. To facilitate replacement of the washer upon the tube, it is split at 16. Because of this split, the washer may readily be replaced for sanitation without disturbing the rest of the apparatus.

In Figures 1 and 2, the catheter is shown provided with the delivery portion 17 thereof extending substantially axially beyond the plane of the arms 7. In Figure 4, the catheter is shown provided with a delivery elbow 17' bent at right angles to the axis of longer portion 5 and extended in a plane substantially parallel to the plane of the arms 7. The bulged ends 3 of the sections 17, 17' are adapted to be engaged by a hose (not shown) which may lead to a receptacle (not shown) adapted to receive the material discharged through the catheter.

The device for cleaning the catheter may, as illustrated, be comprised of a single length of wire 18 bent to form a handle 19, a shank 20, and an elliptically shaped end 21. The end 21 may be inserted in the tube, passed from end to end thereof and rotated to break encrustations from the inner wall of the tube. Its length is such that it will project slightly from the central opening in head 2 whereby the sides of the loop will scrape the margins of the opening. The wire is resilient and will expand within the tube to the walls thereof as the deposits are removed. Its resilience enables it to conform in a general way to the interior surface of enlarged tube portions such as the head 2. In the Figure 4 construction, the elbow 17' is threaded to tube portion 5 to permit of its removal for the ready introduction of the cleaner. The cleaner is readily operable by the patient himself.

Summarizing briefly the foregoing description, the arrangement of the catheter and anchorage device is such that the catheter is fixed within an incision in which bulged end 2 is inserted, is prevented from entering the incision beyond a desired position by the arms 7, and is prevented from rotating within the incision or moving laterally thereof by the ancillary belt 11 and vertically thereof by the straps 12. The catheter, being constructed of silver, minimizes the tendency of solids to precipitate from liquids while passing through the catheter and may be cleaned perfectly by the device illustrated, whereby it may be left in place indefinitely.

Although a specific form of the invention

has been described, it is to be understood that I recognize that other forms may obviously be devised without departing from the scope of the invention. I, therefore, do not limit all of the claims to the specific form shown. Furthermore, it is obvious that the catheter disclosed herein may be used to drain parts of the body of a patient other than the bladder, although it has special advantages for use as indicated.

What I claim as my invention is:

1. A catheter comprising a non-corrodible metallic tube having a shouldered enlargement at its end adapted for insertion into an incision.

2. In combination, a catheter, a pair of arms secured to opposite sides of an intermediate portion of said catheter, said arms each describing substantially an open triangle having its apex secured to said catheter, a belt adapted to encircle the waist of a patient, an ancillary belt secured to the first mentioned belt intermediate the ends of both belts, and a strap and buckle arrangement on each end of said ancillary belt, whereby the straps may each be engaged with the side of one of said arms opposite said apex, to thereby hold said catheter against rotation when inserted in an incision in said patient.

3. In combination, a catheter, a pair of apertured arms secured to opposite sides of an intermediate portion of said catheter, a belt adapted to encircle the waist of a patient, an ancillary belt secured to the first mentioned belt intermediate the ends of both belts, a strap and buckle arrangement on each end of said ancillary belt engageable with said arms, and tie members each secured at its ends to spaced portions of said ancillary belt, thereby to form a loop about each of the legs of said patient, whereby said catheter will be fixed in position when inserted in an incision in said patient.

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