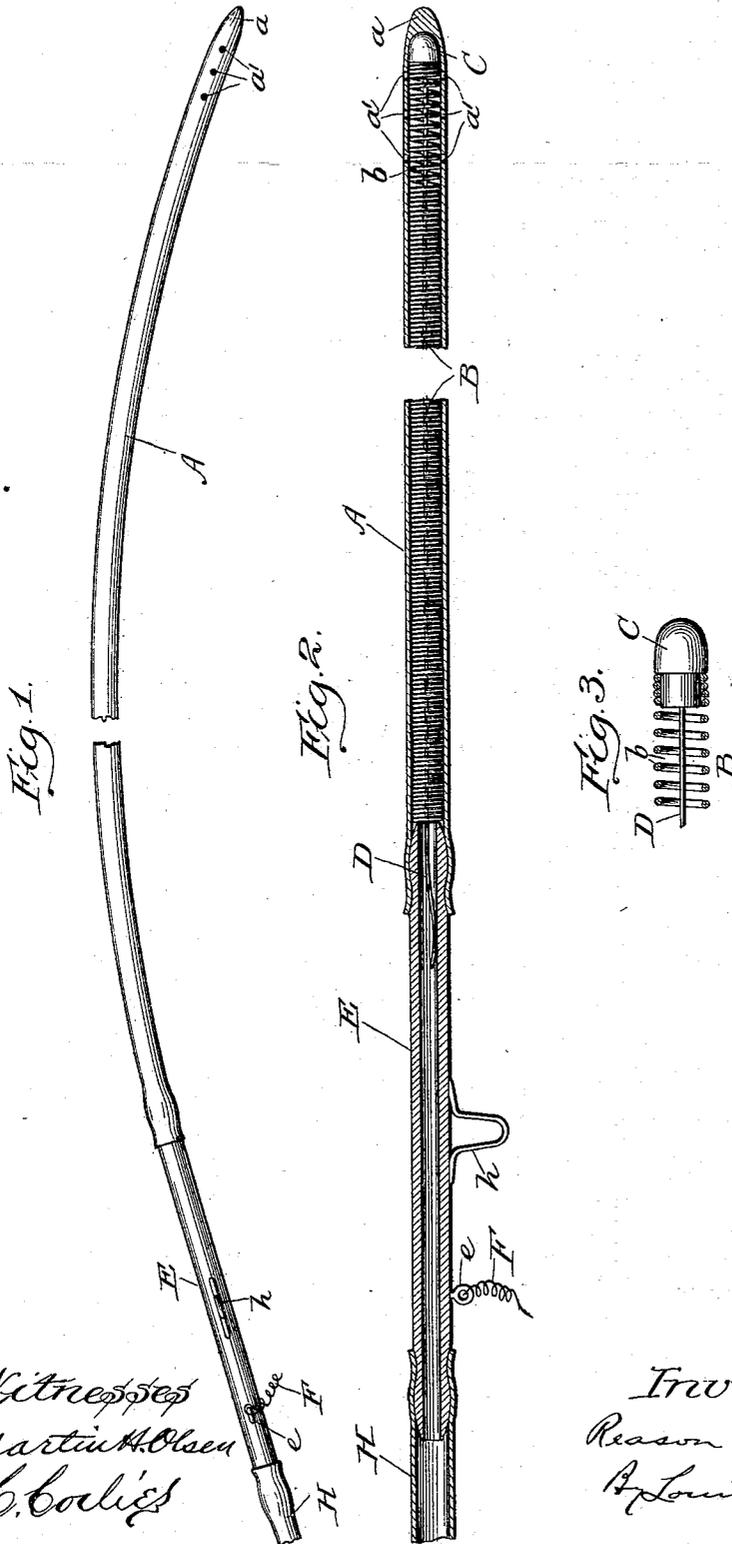


No. 623,022

Patented Apr. 11, 1899.

R. P. JOHNSON.
ELECTRIC CATHETER.
(Application filed Mar. 30, 1898.)

(No Model.)



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ELECTRIC CATHETER.

SPECIFICATION forming part of Letters Patent No. 623,022, dated April 11, 1899.

Application filed March 30, 1898. Serial No. 675,831. (No model.)

To all whom it may concern:

Be it known that I, REASON P. JOHNSON, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Catheters, of which the following is a full, clear, and exact description, and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to catheters adapted to enter any of the orifices of the body, and is equally applicable to urethral, anal, and stomach catheters. Its objects are to secure in a tube of the class named ample longitudinal rigidity to enable it to be inserted without doubling or buckling, together with the necessary lateral flexibility to permit it to follow tortuous passages without injury to the parts, and to provide means for conveying an electric current to any desired part of the accessible passages and cavities of the body and to discharge it through the liquid introduced into or contained in the part treated, and thereby so diffuse it that a large current may be used without discomfort to the patient or danger of injuring the mucous surfaces. These objects are attained by means of a soft rubber tube having lateral discharge-apertures and into which is inserted a helical coil of wire, preferably having some elasticity, means being provided for conveniently connecting a terminal of an electric circuit with the coil and for attaching the tube to a source of liquid-supply, such as a syringe.

In the accompanying drawings, Figure 1 is a side elevation of my improved catheter. Fig. 2 is a longitudinal central section, and Fig. 3 is a detail of the inner end of the coil.

The tube A is preferably of soft rubber and will be of such size and length as the particular use to which it is to be put may require. One end of the tube is open. The other is closed to form a tip, as shown at *a*, and near the closed end are located a series of lateral discharge-apertures *a'* of such size and as numerous as may be desired, but small enough so that they will have no tendency to enlarge to allow the protrusion of the coil as the tube is flexed.

A helical coil B, of wire, quite flexible and somewhat elastic, is inserted within the tube,

reaching to its inner or closed end and terminating a short distance within its open end, the size of the coil being such that it makes a snug fit within the tube. The inner end of the coil is armed with a metallic cap, which not only facilitates its insertion into the tube, but supplies a suitable bearing for the coil against the closed end thereof. A single strand D of wire is attached to the cap and extends entirely through and beyond the end of the tube for convenience in withdrawing the coil from the tube.

A metallic nipple E is adapted to fit within the open end of the tube and to contact with the end of the coil B. This nipple is provided with a lug or eyelet *e*, to which the terminal F of an electric circuit may be attached and may have a suspending-loop *h*. The discharge-tube H of a syringe or other source of liquid-supply is shown as being attached to the outer end of the nipple.

The convolutions of the coil B are preferably close together, except that a few turns near its inner end are more open, as shown at *b*, to permit the free passage of liquid through the apertures *a'*.

In use the instrument is inserted into the orifice gently, but with necessary firmness, and when the path is tortuous, as in passing the sigmoid flexure of the colon, it may be turned so as to facilitate its advance, the coil preventing it from doubling back upon itself or from buckling. The electric current is carried to the extreme end of the coil and discharged into the body through the liquid being introduced through the instrument or which may enter it from the cavity into which it is inserted. No metallic surface comes into contact with the mucous surface, and hence the current is not concentrated at any point of contact, but is diffused by the liquid, so that a comparatively heavy current may be used without harm to the parts or discomfort to the patient. It will be understood without illustration that the other terminal is applied to the exterior of the body, as usual in such treatment.

The instrument serves as a convenient means for either irrigation or drainage, either in conjunction with electric treatment or otherwise.

I claim as my invention—

1. In a catheter, the combination with a flexible tube having a closed end or tip and lateral apertures, of a helical wire coil within
5 the tube, and means for attaching such coil to a terminal of an electric circuit.
2. In a catheter, the combination with a flexible tube having a closed end or tip and lateral apertures, of a helical wire coil within
10 the tube, means for attaching such coil to a terminal of an electric circuit, and means for connecting the tube with a source of liquid-supply.
3. In a catheter, the combination with a
15 flexible tube having a closed end and lateral apertures at such end, of a helical wire coil within the tube, the convolutions of the portion of the coil within the apertured part of the tube being spaced apart, and the adja-

cent convolutions of the coil within the non-perforate portion of the tube being substantially in contact, substantially as and for the purpose specified.

4. In a catheter, the combination with a flexible tube, of a helical wire coil within the
25 tube and a draw-wire leading from the inner end of the coil to without the tube.

5. In a catheter, the combination with a flexible tube having discharge-apertures at its inner end, of a helical wire coil within the
30 tube, means for attaching the coil to an electric circuit, and means for connecting the outer end of the tube with a source of liquid-supply.

REASON P. JOHNSON.

Witnesses:

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