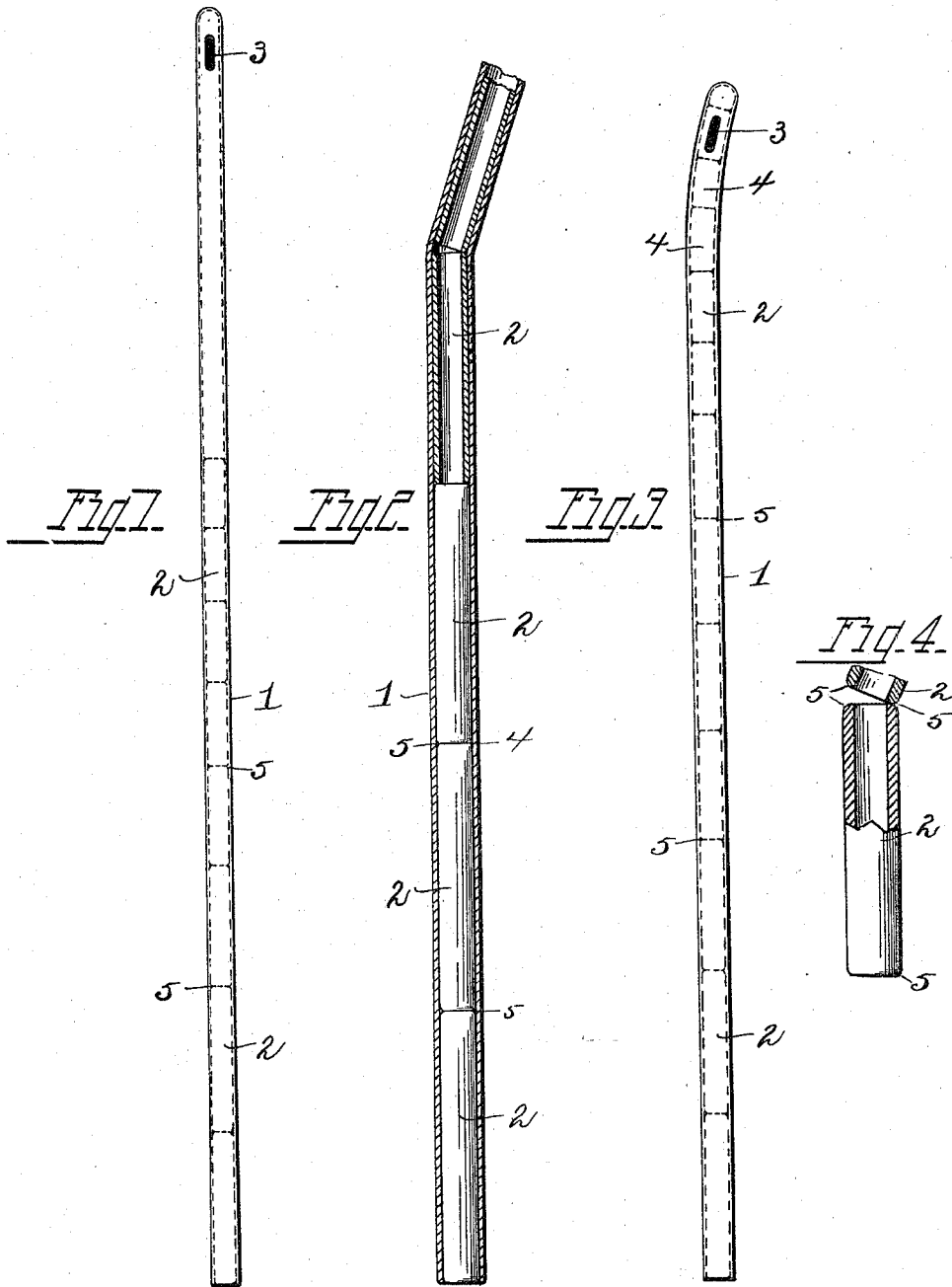


(No Model.)

D. P. CHAMBERLIN.
CATHETER.

No. 580,372.

Patented Apr. 13, 1897.



WITNESSES

Samuel J. Webster
Carl H. Keller.

INVENTOR

David P. Chamberlin
By William Webster
Atty

UNITED STATES PATENT OFFICE.

DAVID P. CHAMBERLIN, OF TOLEDO, OHIO.

CATHETER.

SPECIFICATION forming part of Letters Patent No. 580,372, dated April 13, 1897.

Application filed October 5, 1896. Serial No. 607,884. (No model.)

To all whom it may concern:

Be it known that I, DAVID P. CHAMBERLIN, of Toledo, county of Lucas, and State of Ohio, have invented certain new and useful Improvements in Catheters; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form part of this specification.

My invention relates to a catheter, having for its object to provide a device of this character comprising an outer smooth pliable surface and an inner sectional filling for the same having a universal flexibility and longitudinal rigidity, whereby the tube will accommodate itself to the tortuous passages of the body and still retain its rigidity longitudinally.

The invention therefore consists of an outer tube composed of an elastic material, such as soft rubber, and an inner tube composed of sections of rigid material held in close contact and in longitudinal alinement by the outer elastic tube, each of the sections having the outer edges of the ends thereof rounded, whereby the ends of the sections have a bearing upon adjacent sections to provide for longitudinal rigidity of the catheter and to permit of lateral bending, which is facilitated by the rounded outer edges of the ends of the sections, the only resistance to the bending of the tube being the stretching of the outer elastic tube, which is a minimum resistance, whereby the catheter has a flexibility to bend practically equal to the well-known soft-rubber catheter, with the further advantage of longitudinal rigidity.

The invention further consists in the parts as shown, described, and claimed.

In the drawings, Figure 1 is an elevation of a catheter constructed in accordance with my invention. Fig. 2 is an enlarged sectional detail view of a portion of the same. Fig. 3 is a view similar to Fig. 1, illustrating a modification. Fig. 4 is a detail view, partly in section, of two of the sections, illustrating more particularly the rounded outer edges of the ends of the sections and the relation of the ends of the sections to each other when the sections are at an angle to one another.

The catheter consists in an outer shell 1, composed of soft rubber, and an inner shell composed of sections 2 of tubing, the outer shell having the usual opening 3 near the inner end. Sections 2 are of equal diameter in cross-section and are composed of rigid material, such as hard rubber, aluminium, silver, glass, or other analogous non-corrosive substance, or of brass, steel, or other metal provided with a coating of non-corrosive material.

When the catheter is intended for use in a passage which is without obstruction, the form of catheter in Fig. 1 is preferable—that is, the sections 2 need not extend the full length of the catheter, as the outer end is where the bending or buckling takes place, and I have therefore reinforced and secured a longitudinal rigidity at this point which will prevent this difficulty in forcing the inner end forward. Where the passage is tortuous at the inner end, it is necessary to give a longitudinal rigidity the entire length of the catheter, which is accomplished by continuing the sections the full length of the catheter. In cases where the prostate gland is much enlarged and so pressing upon the urethra as to produce a cul-de-sac the sections may be continued the full length of the catheter, and those near the inner end may be curved, as at 4, which causes the inner end to extend away from the obstruction, so that it will ride over the same. In view of the fact that the inner end of the passage may be more tortuous than the outer end, to cause the tube to follow the passage, the length of the sections may be varied—that is, the sections upon the inner end may be shorter than the sections upon the outer end.

In order that the adjacent edges of the sections will not present a sharp corner to the rubber when the sections are at an angle to each other, as shown in Fig. 2, the outer portion of each end is rounded, as at 5, whereby a smooth surface is presented to the rubber, and consequently the exterior surface of the rubber presents a smooth continuous surface to the walls of the passage into which the catheter is inserted, no matter how sinuous the catheter may become.

It will readily be seen that the construction employed in the catheter as described is equally well applicable to drainage-tubes,

stomach-tubes, or to any tube desired to enter the blind passage where force is required for the insertion of the same.

What I claim is—

- 5 In a catheter, an outer tube composed of an elastic material, and an inner tube composed of rigid sections, each section being independent of the adjacent section but held in close contact and in longitudinal alinement by the
10 elasticity of the material of the outer tube, each of the sections having the outer edges of the ends thereof rounded, whereby the ends of the sections abut against and have a bear-

ing upon the ends of adjacent sections to provide for longitudinal rigidity of the catheter and permit of free lateral bending due to the elasticity of the material of the outer tube and the rounded outer edges of the ends of the sections.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

DAVID P. CHAMBERLIN.

Witnesses:

CARROLL J. WEBSTER,
MAUD SCHUMACHER.