(No Model.)

E. J. PARKER.

DILATOR.

No. 538,120. Patented Apr. 23, 1895.

Fig. 1.

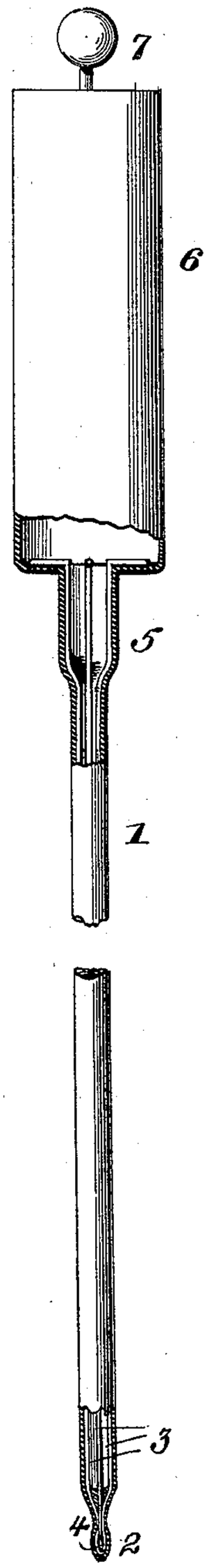
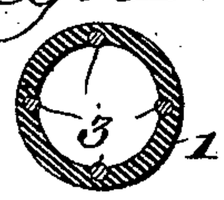


Fig. 2.



WITNESSES.

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ELISHA J. PARKER, OF DALLAS, TEXAS.

DILATOR.

SPECIFICATION forming part of Letters Patent No. 538,120, dated April 23, 1895.

Application filed August 30, 1894. Serial No. 521,744. (No model.)

To all whom it may concern:

Be it known that I, ELISHA J. PARKER, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented new and useful Improvements in Dilators and Processes of Dilation, of which the following is a specification.

My invention relates to certain improvements in dilators, for the enlargement of the urethral and other passages or canals, of the human body.

The object of my invention is to provide a dilator formed of elastic material and capable of distention, or dilation, under the pressure of air, water, or other fluid introduced and to combine with said dilator means whereby its uniform enlargement under internal pressure shall take place without increase of length, thereby avoiding the objection common to all rubber and similar structures heretofore, that interior pressure produced elongation at the expense of increase in diameter, while any inequality of strength, or thickness, caused unequal expansion.

The invention consists, to these ends, in the instrument for practicing the same hereinafter fully described and then particularly pointed out and defined in the claims.

To enable those skilled in the art to which my invention pertains to fully understand and to practice my said invention, I will now proceed to describe the same in detail, reference being made for this purpose to the accompanying drawings, in which—

Figure 1, is a sectional elevation of the dilator, and Fig. 2, is a transverse section of the same.

The reference-numeral 1, in said drawings, indicates the stem of the dilator, which consists of a slender tube, formed of rubber, or a similarly elastic material, and in its diameter, length, and general appearance, resembling the sound, or bougie, used by surgeons, its diameter being about equal to that of one of the smaller sounds ordinarily used. At its extremity the stem 1 is slightly tapered and provided with an approximately elliptical, or bulbous point 2, which is of solid rubber, or of such increased thickness as to give it rigidity.

Within the stem 1 are arranged two or more wires 3, of annealed steel, and of any suitable fineness, according to the size of the stem and the thickness of its wall. Each wire is bent double at its middle point, and the bent ends 4 are arranged in the spherical point 2 in such manner that the two strands of each wire lie diametrically opposite each other, the four strands being placed at substantially equal intervals. The bent portions 4 are firmly embedded in the rubber forming the spherical point 2 and the parallel strands, which extend throughout the interior of the stem, are partly, or wholly, embedded in the rubber forming the cylindrical wall of the stem, preferably the latter. The four ends of the strands emerge from the stem into an enlarged, communicating chamber 5, and are bent outward and then upward, traversing the wall of the chambers 5 and passing into the end of a cylindrical chamber 6, which forms the barrel, or cylinder, of a small air, or fluid pump, which is provided with a suitable piston 7.

I wish it understood that I do not confine my invention to the employment of the type of pump or pumps mentioned as any pump suitable for the purpose may be used.

The stem of the dilator, as shown in the drawings, is normally straight, but it may be given any desired curvature. Like the flexible sound, or bougie, it yields with great readiness to the curvature of any passage in which it is introduced, the wires 3 giving the required strength to the rubber and affording a high degree of elasticity. As these wires are buried in the rubber at the point 2, and positively secured at their other extremities in the end of the pump cylinder 6, the inflation of the stem by forcing air, or water therein, cannot elongate the stem, and as the equi-distant wires lie longitudinally in the stem they give substantially uniform resistance to the interior pressure, so that dilation will expand, or enlarge the stem with uniformity.

By varying the size, or the size and form, of the stem 1, the instrument may be used as a rectal dilator, or for the enlargement of any other passage where dilation can be employed.

What I claim is—

1. A dilator consisting of a tubular flexible and laterally expansible stem, a series of non-extensible longitudinal wires bent at substantially the middle portion thereof and connecting the two ends of said tubular stem and

serving to prevent lengthening of the dilator when its diameter is increased by internal pressure, the end of said stem being formed solid, and the bent portion of said wires being embedded in said solid portion, substantially as described.

2. A dilator consisting of a tubular flexible and expansible stem, a series of steel wires running longitudinally of, and embedded in the side wall of the stem, the end portion of said stem being contracted and made solid, and the ends of the longitudinal wires being embedded in said solid portion, substantially as described.

3. A dilator consisting of a tubular flexible and expansible stem provided at its end with a solid contracted portion, longitudinal wires partially embedded in the wall of said stem, and in the solid contracted portion, an enlarged chamber communicating with the other end of the tubular stem, and a pump integrally connected to the enlarged chamber, the free ends of said longitudinal wires emerging from the stem into the enlarged chamber and then bent outward and upward traversing the wall of said latter named chamber and passing into the end of the fluid pump, substantially as shown and described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ELISHA J. PARKER.

Witnesses:
ALBERT H. NORRIS,
THOS. A. GREEN.