F. J. W. MAGUIRE.

DIAGNOSTIC SOUND.

APPLICATION FILED NOV. 12, 1914.

1,144,220. Patented June 22, 1915.

Fig. 1.

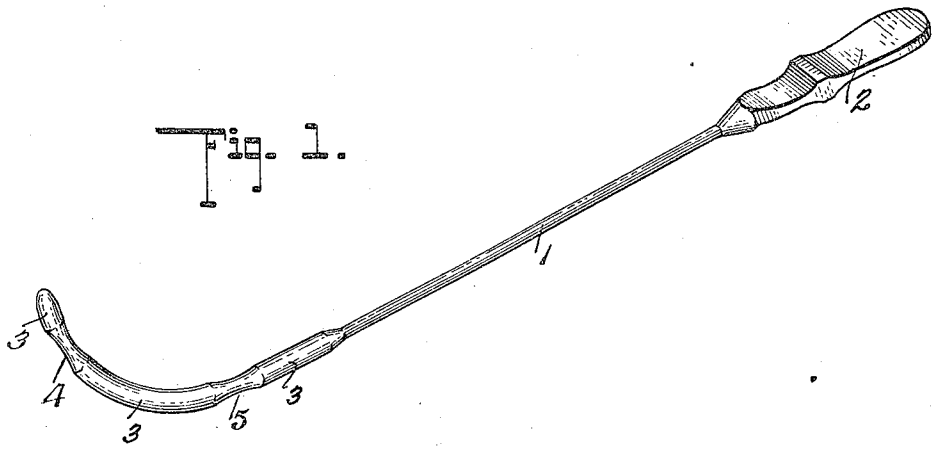



Fig. 2.

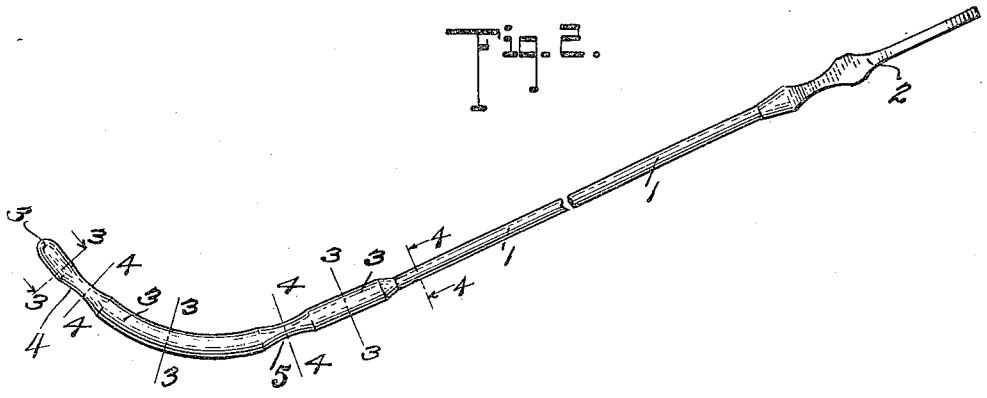



Fig. 3.




Fig. 4.




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# UNITED STATES PATENT OFFICE.

FRANCIS J. W. MAGUIRE, OF DETROIT, MICHIGAN.

## DIAGNOSTIC SOUND.

1,144,220. Specification of Letters Patent. Patented June 22, 1915.

Application filed November 12, 1914. Serial No. 871,743.

*To all whom it may concern:*

Be it known that I, FRANCIS J. W. MAGUIRE, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Diagnostic Sounds, of which the following is a specification.

This invention relates to improvements in surgical instruments and more particularly a diagnostic sound particularly adapted for explorations of the urethra.

An object in view is the enabling of ready discovery and location of urethral stricture.

With this and further objects in view, as will in part become apparent and in part be stated, the invention comprises certain novel features of construction, combinations, and arrangements of parts as will subsequently be made clear and pointed out in the appended claims.

In the accompanying drawing: Figure 1 is a perspective view of a sound embodying the features of the invention. Fig. 2 is a side view thereof. Fig. 3 is a cross section taken on any one of the planes indicated by lines 3—3 of Fig. 2. Fig. 4 is a similar view taken on any of the planes indicated by lines 4—4 of Fig. 2.

Referring to the drawing by numerals, 1 indicates the stem of the improved sound, which stem has a handle or grip 2 at one end and at its opposite end is formed with a body 3. Body 3 may be curved or otherwise formed as preferred and is of a diameter equal approximately to that of the normal caliber of the urethra. The free end of the body 3 is slightly tapered to render access to and advance within the urethra easy, and just at the rear (that is, outwardly toward stem 1) of the tapered portion, the body 3 is formed with an annular depression or groove 4. The walls of body 3 within groove 4 taper from the full diameter of the body at the opposite ends of the groove gradually to meet at the base of the groove, so that all parts are rounded and smooth. A groove or grooves similar to groove 4 may be formed at other points in the length of body 1 to assist in diagnosis, as for example in the rear of the bend in body 3 a groove 5 similar in form to groove 4 is employed for discovering double stricture.

In operation, the free end of body 3 is introduced into the urethra and the instrument diagnoses through the uneven surfaces thereof. The end of the sound, meeting the obstruction of a stricture dilates the reduced portion until it momentarily assumes the caliber of the remainder of the urethra. The resistance to the introduction of the instrument and the sensitiveness of the tissue will indicate the presence of the stricture both of which will be relieved as the further inward movement of the instrument allows the tissue of the stricture to enter the groove 4. Primarily the object of the reduced diameter or groove 4 in body 3 is to establish the presence of stricture, but experience and skill in handling the instrument enables the operator in addition to determining the existence of stricture to ascertain its relative location and approximate length. After the scar tissue of the stricture enters the recess or groove 4 in the body to an extent leaving the sound free to move with less resistence than when dilating the stricture, the extent of such freedom of movement will indicate how much shorter the stricture is than is the length of the annular groove, and the distance the instrument has entered the urethra indicates the location of the stricture.

What I claim is:

1. A diagnostic sound comprising a body of a diameter substantially equal to that of the normal caliber of the urethra, said body having a recess for accommodating projecting tissue of a stricture, spaced from the end of the body a distance leaving a cylindrical portion of the body of the diameter of the main portion of the body between the recess and the end of the body.

2. A diagnostic sound comprising a body of a diameter substantially equal to that of the normal caliber of the urethra, said body having an annular groove for accommodating projecting tissue of a stricture, spaced from the end of the body a distance leaving a cylindrical portion of the body of the diameter of the main portion of the body between the recess and the end of the body.

3. A diagnostic sound comprising a body of a diameter substantially equal to that of the normal caliber of the urethra, said body having an annular groove for accommodating projecting tissue of a stricture, the walls of the body tapering gradually from cylindrical portions of the body at the opposite ends of the groove to the base thereof for presenting rounded surfaces at all points.

4. A diagnostic sound comprising a cylin-

drical body of a diameter substantially equal to the normal caliber of the urethra, and having a portion of reduced diameter relative to the main portion of the body, spaced from the end of the body a distance leaving a cylindrical portion of the body of the diameter of the main portion of the body between the recess and the end of the body.

5. A diagnostic sound comprising a body of a diameter substantially equal to that of the normal caliber of the urethra, said body having a plurality of longitudinally spaced recesses for accommodating projecting tissue of strictures, and a cylindrical portion at each end of each recess.

In testimony whereof I affix my signature in presence of two witnesses.

FRANCIS J. W. MAGUIRE.

Witnesses:
ARTHUR D. MAGUIRE,
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**Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."**