

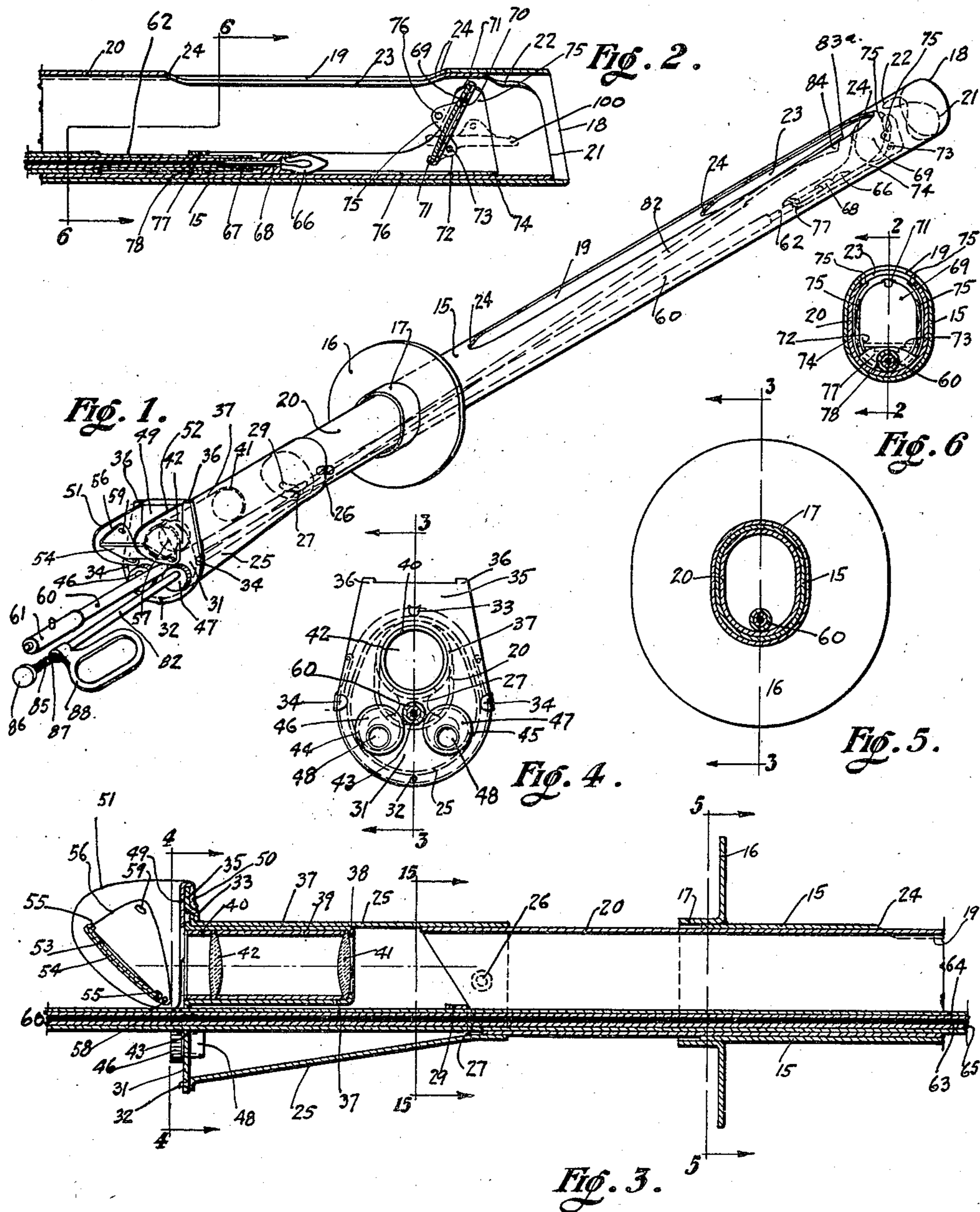
June 19, 1923.

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S. REISLER ET AL
OPERATING URETHROSCOPE

Filed June 28, 1921

2 Sheets-Sheet 1



Witnesses:

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2 Sheets-Sheet 2

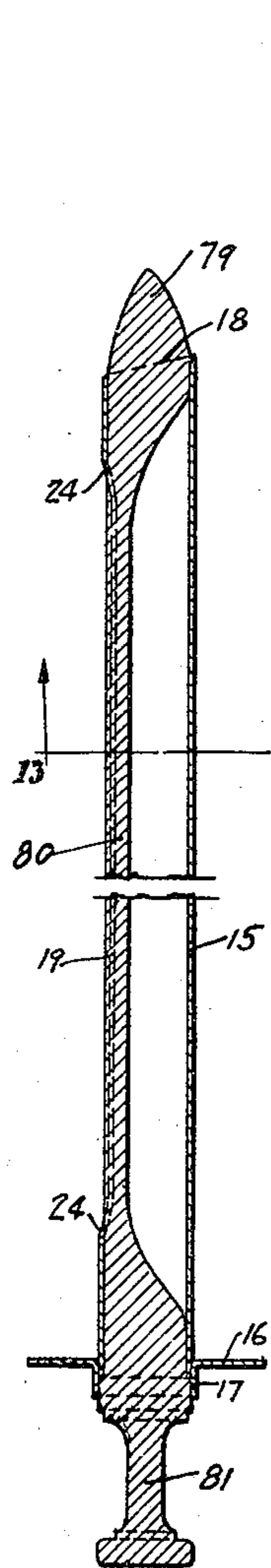


Fig. 7.

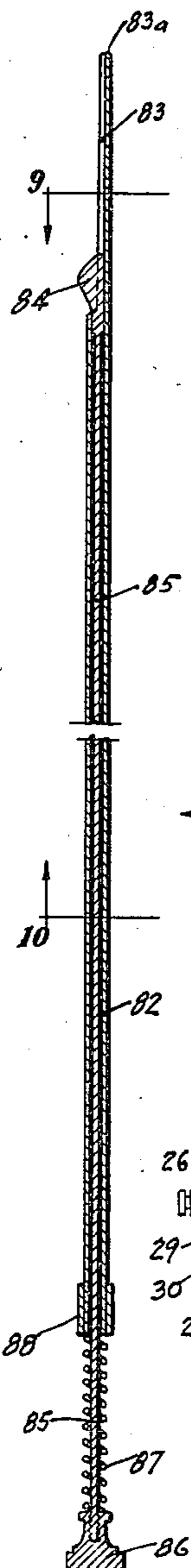


Fig. 8.

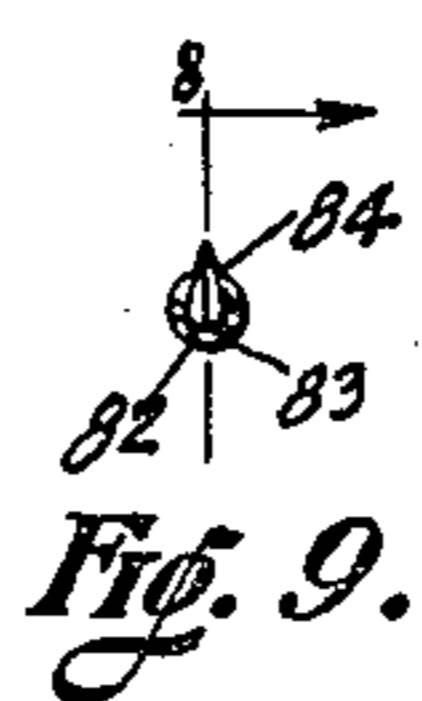


Fig. 9.

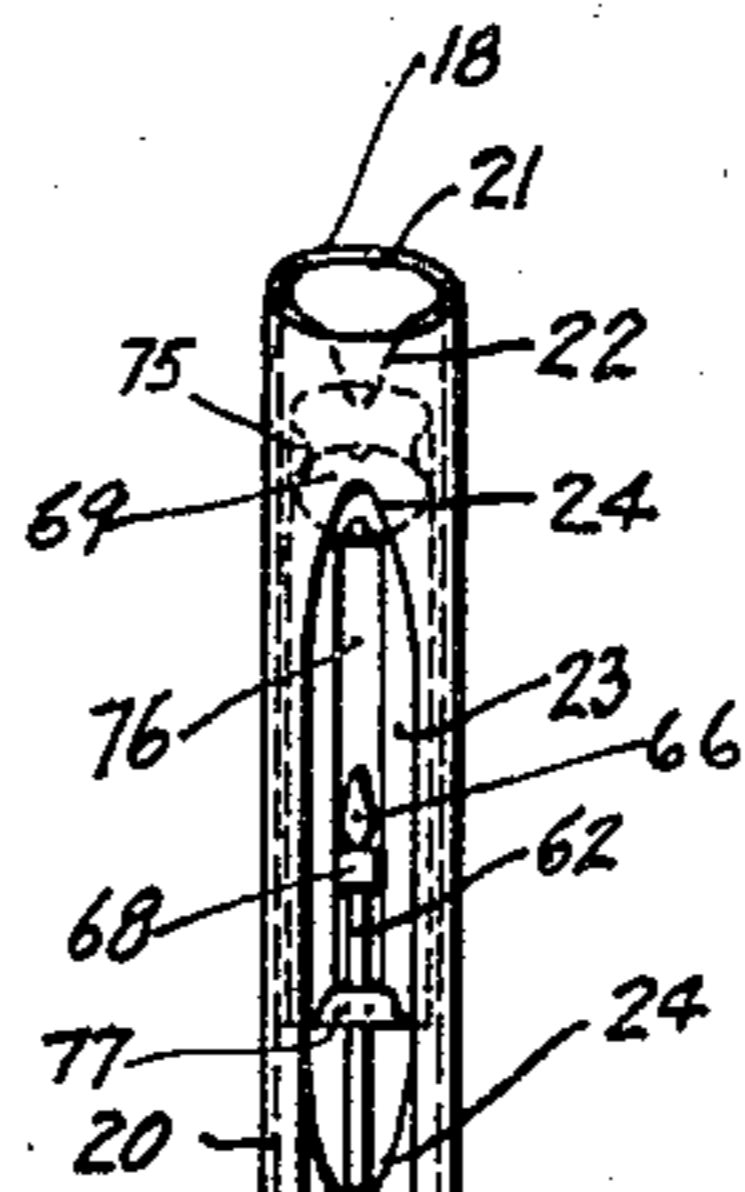


Fig. 10.

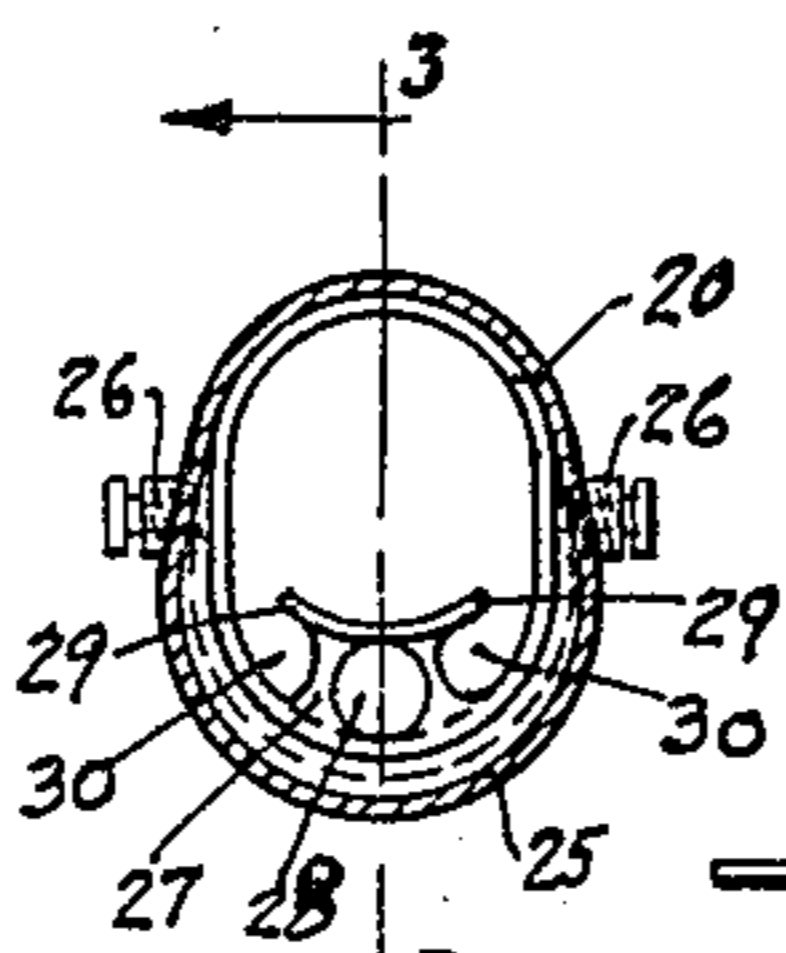


Fig. 11.

Fig. 12.

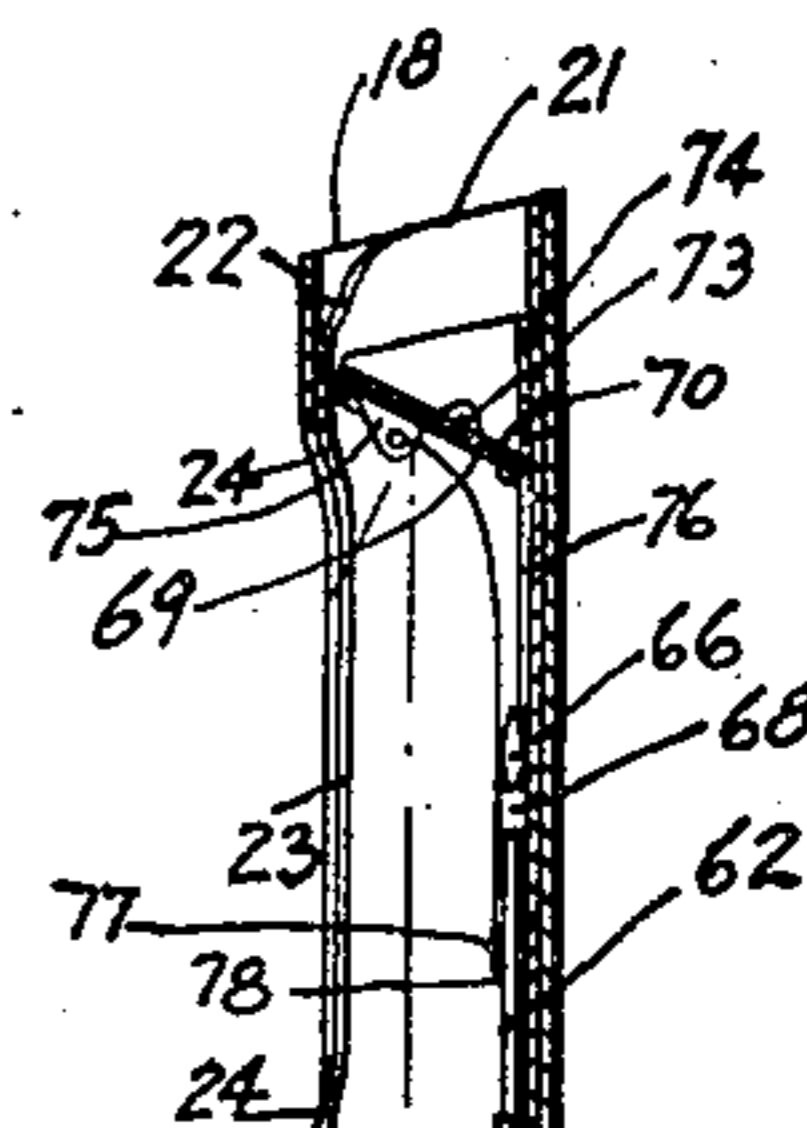


Fig. 13.

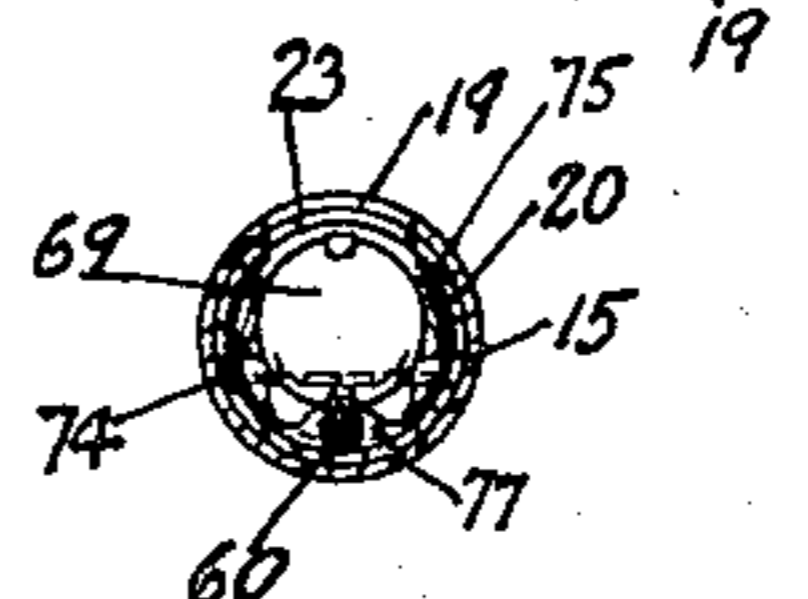


Fig. 14.

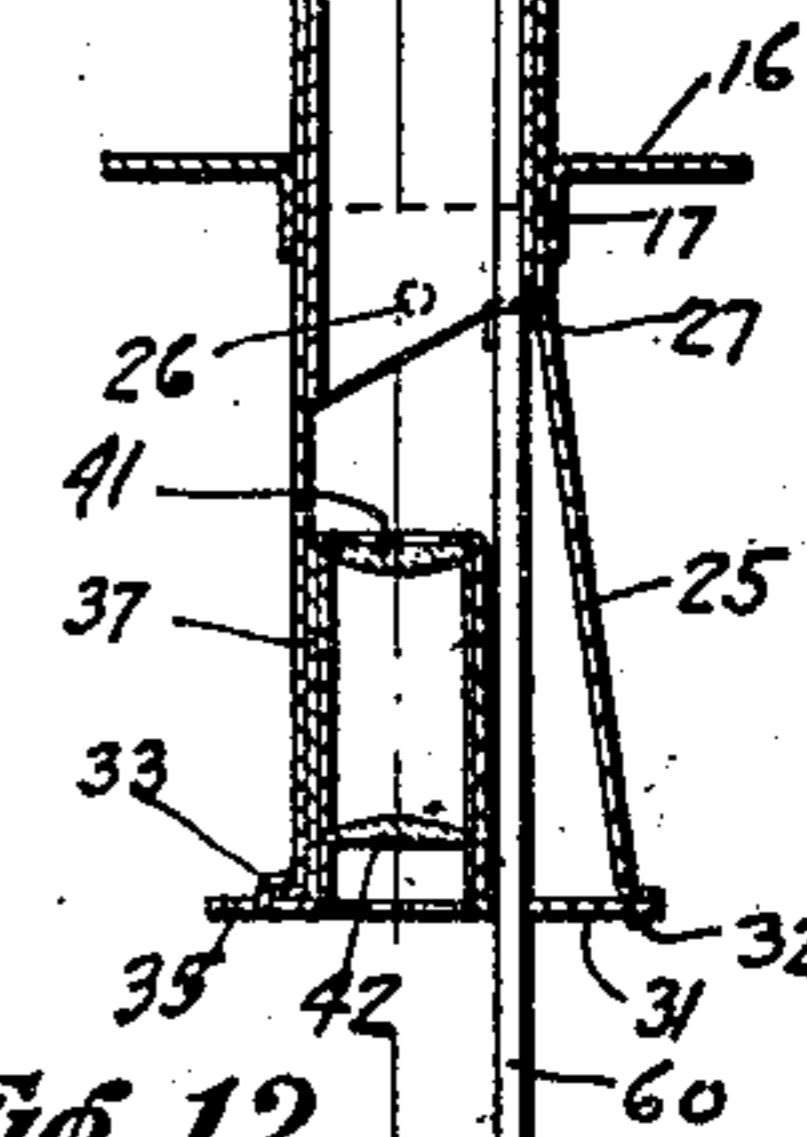


Fig. 15.

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UNITED STATES PATENT OFFICE.

SIMON REISLER, OF INDIANAPOLIS, INDIANA, AND HERRMANN B. TOBIAS, OF
PHILADELPHIA, PENNSYLVANIA.

OPERATING URETHROSCOPE.

Application filed June 28, 1921. Serial No. 481,030.

To all whom it may concern:

Be it known that we, Dr. SIMON REISLER and HERRMANN B. TOBIAS, citizens of the United States of America, and residents, respectively, of the city of Indianapolis, in the county of Marion and State of Indiana, and of the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and Improved Operating Urethroscope, and do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of the specifications, and to the reference numbers marked thereon.

Our present invention relates to an instrument intended for the surgical treatment of the anterior urethra.

The main object of the invention is to provide an instrument to facilitate the surgical technique introduced by Dr. Simon Reisler for the cure of chronic anterior urethritis.

A further object of the invention is to provide an instrument that can be easily operated and also used as an endoscope aeroscope or with attachments as a cystoscope.

The attachments mentioned above will form the basis of future applications.

For the purpose of illustration the instrument is shown to a very exaggerated scale while in actual practice the circumference of the cross section is only 26 millimeters.

In carrying out our invention, we provide a main tube having a top window along most of its length and a telescoping tube having a shorter window, both tubes being open at the rear end; the telescoping tube having at the front end devices for propelling through the tubes illuminating, reflecting, focusing, operating, irrigating and aspirating tools, all as will be hereinafter more fully described, the main features being pointed out in the appended claims.

Figure 1 shows an isometric perspective view of the instrument with main elements of the interior dotted in.

Figure 2 shows a vertical section through the rear end of the instrument taken on line 2—2 of Figure 6.

Figure 3 shows a vertical section through the front end of the instrument taken on line 3—3 of Figures 4 and 5.

Figure 4 shows a view of the front end of the instrument and its relation to the telescoping tube taken on line 4—4 of Figure 3, having the reflecting mirror and its carrier removed.

Figure 5 is a section through the instrument taken on line 5—5 of Figure 3.

Figure 6 shows a cross section through the rear end of the instrument taken on line 6—6 of Figure 2.

Figure 7 is a vertical section along the long axis of the main tube with the obturator in position to facilitate its introduction in the urethra.

Figure 8 is a vertical section along the long axis of the "Folliculotome" taken on lines 8 of Figures 9 and 10.

Figure 9 is a cross section to the operating end of the "Folliculotome" taken on line 9 of Figure 8 and showing the operating knife.

Figure 10 is a cross section through the body of the "Folliculotome" taken on line 10 of Figure 8.

Figure 11 is a top view of the instrument elongated to approximate the relative proportion between parts.

Figure 12 is a vertical section along the long axis of the instrument as shown by Figure 11, having the front reflecting mirror and carrier removed.

Figure 13 is a cross section through the main tube and obturator taken on line 13 of Figure 7.

Figure 14 is a cross section thru the telescoping tubes in their circular form instead of the ovoid form shown elsewhere for the present illustration.

Figure 15 is a cross section thru the secondary tube taken on line 15—15 of Figure 3, showing the anchoring chair with the light carrier removed.

The instrument constructed in accordance with our invention embodies a main tube 15, formed of very thin section and for the present illustration of an ovoid form.

The front end of the tube 15 is made integral with a shield 16 through the flange 17.

The rear end is cut away as shown at 18 to permit endoscopic operations.

The top of the main tube 15 is provided with an opening or window 19 throughout most of its length to permit folliculotomic operations at any point of the urethra.

A secondary tube 20 is provided to snugly fit and telescope into the main tube 15. The rear end of the secondary tube is cut away as shown at 21 to permit endoscopic operations. The top part of opening 21 is extended longitudinally as shown at 22 to form a parabolic cut for the purpose hereinafter described.

On the top of the secondary tube an opening or window 23 is provided of sufficient length to expose the follicles for operation. The ends of both windows 19 and 23 have a parabolic form as shown at 24 intended to prevent, while the tubes are moved, any injury to the membrane of the urethra, protruding thru the windows, by lifting said membrane gradually from the level of the inner tube to that of the main tube.

The front end of the secondary tube 20 is provided with a removable funnel 25, which is secured thereto in a snug manner by springlock pins 26.

An anchoring chair 27 is provided integral with the lower front end of secondary tube 20, having an opening 28 thru which the light carrier is passed.

The top flange of this chair is curved and is provided with side wings 29 so arranged as not to interfere with the optical system of the instrument providing a top rest for the minor instruments or anchoring orifices 30 on either side of light carrier opening 28.

The front end of the funnel is provided with a removable cover 31 secured in place by pin 32, tongue 33 and pivoted side clips 34, the joint being sealed by a suitable gasket.

The top of the cover 31 is extended at 35 and provided with side stops 36 intended to receive and support a reflecting mirror frame, hereinafter described.

Integral with the front cover 31, is a tube 37 open at both ends and flanged at 38 to hold a lens. Snugly fitting inner sleeves 39 and 40 are provided to secure the lenses 41 and 42 at a proper spacing.

An opening 43 is provided in the front cover to admit the light carrier into the tubes.

Below opening 43 and on either side thereof large openings 44 and 45 are provided covered by removable plugs 46 and 47.

These plugs have eccentric holes 48 for admitting tool into the tubes and may be used separately or be a slidable part of the various tools used.

Some of these plugs have no holes intended to render instrument tight against air or liquids, while other plugs are provided with

valved outlets to facilitate the introduction into the instrument or extraction therefrom of air or liquids.

A removable mirror frame 49 is provided with a lip 50 which fits between stops 36 of the front cover and with side flanges 51 and 52.

The reflecting mirror 53 is held on a plate 54 by tongues 55.

Integral with the plate 54 are side flanges 56 and 57 which support the mirror; they are pivoted to the flanges 51 and 52 of the mirror frame by rivets 58. Depressions 59 are provided in the flanges 56 and 57 of the mirror plate flanges intended to press against flanges 51 and 52 of the mirror frame and thereby hold said mirror at any desired angle.

The mirror carrier can also be made integral with the sleeve 40 omitting in such case the lip 50 and thereby permitting the radial adjustment of the mirror.

A light carrier 60 is provided having a standard electric connection plug 61 at the front end and a reduced section 62 at the rear end.

As is usual in these light carriers the center rod 63 carries one electric current form while the outer shell 64 carries the other electric current form being separated by the insulating tube 65.

The circuit is closed by the lamp 66 screwed through a plug 67 into the rear end of light carrier.

The base 68 of the lamp is as large as the main tube of light carrier forming thereby a stop for the reduced section 62 of the light carrier tube.

A rear reflecting mirror 69 is provided mounted on a mirror plate 70 and held in place by tongues 71.

Flanges 72 are provided integral with mirror plate thru which supporting pivot pin 73 is passed and secured to the mirror carrier frame 74.

Flanges 75 with holes 76 are provided at the front side of mirror plate intended to facilitate the tilting of the mirror by the use of a suitable hook and hold the mirror at any desired angle by the friction of said flanges against the wall of the inner tube 20 or of the mirror carrier 74.

The mirror carrier is formed to fit snugly within the secondary tube 20 and terminates at the top in tension flanges 75.

The floor of the mirror carrier is cut away as at 76 to allow the lamp 66 to slide within the opening.

The front end of the mirror carrier has a doubled flange 77 provided with an opening 78 of such size as to allow free sliding there-through of the reduced section 62 of light carrier.

The obturator shown in Figure 7 is made to fit snugly in the main tube 15, having a

pointed end 79 to facilitate introduction into the urethra, a reduced section 80 of sufficient width to cover the top window 19 and a handle 81.

5 The operating tool with which this improved urethroscope is vitally linked is as named for the present purpose the "Folliculotome".

10 The "Folliculotome", of a very small cross section, is shown in Figures 1 and 8 as formed of a tube 82, the front end of which is provided with a finger loop handle 88 or other suitable gripping device.

15 The rear or operating end of the "Folliculotome" is cut away for a suitable distance to form a semicircular channel 83 as shown in Figures 8 and 9.

20 This channel 83 holds and guides a knife 84 made integral with an operating rod 85 passing through tube 82 and protruding through the front end of same.

25 The front end of operating rod is provided with a knob 86 secured thereto by a screw connection and with an expansion spring 87.

30 While we have shown the instrument having an ovoid cross section of tubes it can also be made of a round cross section as shown in Figure 14, all other parts and functions remaining the same.

The operation of this instrument with the above description in view will be readily understood.

35 The medical operating technique requiring this instrument is the splitting of the follicle or lacunæ without injuring the adjacent urethral mucosa, in cases of chronic anterior urethritis, removing thereby the inflammatory process in the mucous glands, the glands of Littre and the lacunæ of Morgagni.

40 This operation is performed by the knife 84 being moved toward the end 83^a after said end has been introduced into the follicle.

45 The action of the knife is secured by the pressure of knob 86 against the spring 87 and grip ring 88 and transmitting said longitudinal motion, to the knife through rod 85.

50 This knife is operated through windows 19 and 23 of the urethroscope, or through the end windows 18 and 21.

55 Preliminary to this operation the instrument is introduced into the urethra by the aid of the obturator in Figure 7 which is afterwards removed leaving the main tube 15 in position.

60 The secondary tube 20 is then introduced into the main tube 15, with the reflecting parts in position, including light carrier 60, rear mirror 69, front mirror 53 and focusing lenses 41 and 42.

65 The rear mirror 69 can be moved longitudinally by sliding light carrier back and forth the required distance to place both light and mirror in required position.

The rear mirror 69 can be tilted to any desired angle by introducing a wire hook through front opening 44 and engaging holes 76 of mirror plate, moving back and forth as required.

70 The rear mirror may thus be laid flat as shown by dotted lines at 100 and thereby offer a clear endoscopic view allowing at the same time the sliding of the lamp 66 nearer the end of the tube and under the mirror 75 plate. The rear reflecting mirror is preferably of a slightly convex form to secure a small reduction of the membranes under observation.

80 The lenses 41 and 42 are of such focal caliber as to receive and correct the reflection presented by the rear mirror.

85 The front reflecting mirror is preferably of a slightly concave form to secure a small enlargement of the projection from the lenses 42 and 41.

90 When a direct view is desired through the instrument, the front reflecting mirror may be lowered against the light carrier rod or it can be removed entirely with its supporting frame.

95 When desired, the front cover or funnel can be entirely removed and the operating tools can then be handled through the open front end.

100 The "Folliculotome" is introduced into the tubes through the opening 47 and hole 48 of plug 45; it is then passed under the flange 29 of chair 27 and thereby secures two supporting points to steady it. In certain instances the omission of this chair would be desirable.

105 Its angular position relative to the axis of the tubes or the field of operation can be varied by the radial rotation of plug 45.

110 Through the plug 44 additional instruments or tools can be introduced such as, aeroscopic dilating tube, canulas for irrigating or aspirating, filliforms or probes, galvanic needles applicators or fluid and solid medicinal agents.

115 For cystoscopic examinations or treatment the inner tube 20 is elongated by an attachment (the basis of a future application) and is pushed back its full length and passed through the end 18 of main tube 15.

120 By reversing the inner tube or by turning the entire instrument around and adjusting its mirror lateral observations or the examination and treatment of vital parts such as urethral openings through the capacious window 23 can be accomplished.

125 Although we have illustrated a given form to this instrument and its parts, we do not wish to be restricted to the exact details of construction shown or described, for it is obvious that slight modifications in manufacture may be made in the instrument, embodying an operating urethroscope with large top windows, adjustable reflecting de- 130

vices, a folliculotome and other means for aeroscopic and endoscopic purposes thereby coming within the scope of our principle and invention.

5 Having thus described our invention, what we claim and desire to secure by Letters Patent, is:

1. In an instrument of the character described, the combination with two telescoping urethroscopic tubes having rear end windows; an operating front; and an adjustable illuminated optical system for reflecting the field of operation to the operator at right angles to the axis of the instruments, of a long lateral window in both tubes and a "Folliculotome" operating through said lateral windows.

2. In an instrument of the character described, the combination of two telescoping tubes open at the front and rear ends and both provided with long lateral windows; a "Folliculotome" operating through said lateral windows; an illuminated optical system for reflecting the field of operation to the operator at right angles to the axis of the instrument and means for adjusting the illuminated optical system and for sealing the instrument to facilitate aeroscopic and endoscopic operations.

3. In an instrument of the character described, the combination of a main tube and a secondary telescoping tube, both provided with end and long lateral windows; mechanism at the front of the secondary tube for admitting instruments thereto; an adjustable illuminated optical system for the indirect reflection and observation of the field of operation; and a "Folliculotome," operating through said lateral windows and comprising a tube with a guiding groove at one end; a sliding knife within said guiding groove and a spring controlled operating mechanism at the opposite end extending through said tube to slide said knife relative to the end of said guiding groove.

4. In an instrument of the character described, the combination of two telescoping tubes open at the front and rear ends and both provided with long lateral windows; a "Folliculotome" operating through said lateral windows; mechanism at the front end of the inner tube for admitting instruments therein and for sealing said tube for aeroscopic operation; and an optical system within the inner tube comprising a slidable light carrier; a slidable rear reflecting mirror controlled by said light carrier; mechanism for supporting and varying the angle of said rear mirror; a plurality of lenses at the front end of the inner tube for receiving and correcting the image from rear mirror

and a front reflecting mirror mounted on a removable frame, having mechanism for varying the angle of said mirror relative to the axis of the optical system to facilitate indirect observation of the field of operation.

5. In an instrument of the character described, the combination of a main tube and a secondary tube, both provided with end and long lateral windows; a "Folliculotome" operating through said lateral windows; an adjustable illuminated optical system for the indirect reflection and observation of the field of operation; a protecting shield at the front end of main tube, and operating mechanism at the front end of the secondary tube comprising a removable funnel; with means for securing it to secondary tube; a removable front cover with means for securing it to the large end of said funnel; means upon said front cover for supporting and securing the plurality of lenses of the optical system and the front reflecting mirror; perforations in said cover for admitting to the inner tube the light carrier and operating instruments and plugs for covering said perforation, having eccentric bores for supporting operating instrument and for controlling their angle relative to long axis of inner tube by their rotation in said perforations.

6. In an instrument of the character described, the combination of a main urethroscopic tube and a telescoping secondary tube; rear end windows in both tubes; adjustable lighting and reflecting mechanism at the rear of telescoping tube; adjustable optical mechanism at the front end of telescoping tube for absorbing, correcting and indirectly projecting the image from rear reflector; mechanism at front end of telescoping tube for admitting instruments thereto and sealing said tube for aeroscopic operation; and long lateral windows provided in both tubes having their ends of parabolic form to prevent injury to the membrane of urethra during their telescoping action; and a "Folliculotome" extending through said long lateral windows for splitting the inflamed follicle or lacunæ in the urethra.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

SIMON REISLER, M. D.

Witnesses:

JOHN K. BURGESS,
P. F. TERUSH.

HERMANN B. TOBIAS.

Witnesses:

EDW. N. VOLLER,
B. M. AUCHTER.