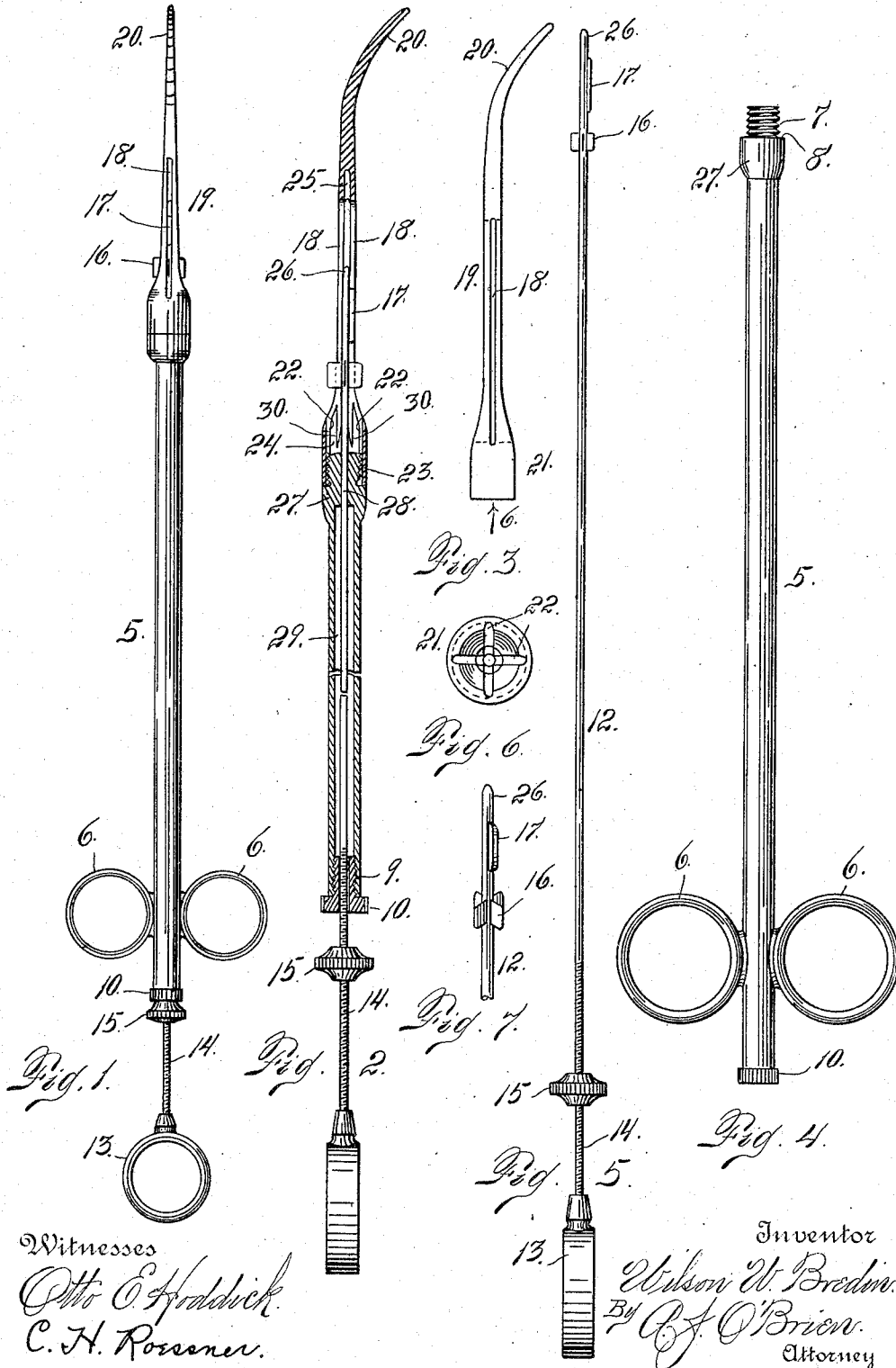


W. W. BREDIN.
 URETHROTOME.
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UNITED STATES PATENT OFFICE.

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URETHROTOME.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILSON W. BREDIN, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Urethrotomes; and I do declare the following to be a full, clear, and exact description of the invention, such as 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 letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in urethrotomes or instruments for cutting strictures in the urethra. This instrument possesses the following advantages over anything in the prior art so far as I am aware. The knives operate within a guide from which they cannot possibly escape, said guide being made sufficiently small for a distance of an inch and a half at the end, so that any stricture, no matter how narrow, can readily be made sufficiently patent to admit it, the guide at the same time being sufficiently long so that it must pass several inches through the stricture before it reaches the bulb in which the knives are concealed, thus making it absolutely certain that the knives when protruded must come directly in contact with the walls of the stricture and nothing else. Furthermore, the healthy walls of the urethra at the points where the knives enter the stricture, are pushed out by the bulb and stretched, whereby they are absolutely protected from any possibility of coming in contact with the knives. The knives cannot cut anything but the strictured portions of the urethra. The bulb is sufficiently large to conceal knives with sufficient cutting caliber to cut any stricture of the urethra to a sufficient depth to make the operation thorough and effective. The instrument has four knives, enabling the operator to make four incisions at one time, of sufficient depth to do effective work. The instrument has a bulb following the knives as they pass through the stricture, sufficiently large to prove that the stricture has been successfully divided. It is simple in construction, easily taken apart and easily sterilized. By its use a stricture can be successfully divided in any part of the urethra. It is a meatotome as well as a urethrotome.

Every adult male urethra of normal caliber will admit the bulb of this urethrotome, and if not it can readily be made to admit it. The knives glide readily backward and forward in the slots with which the instrument is provided, their edges being protected from contact with the edges adjacent the slots by a feather or spline on the rod carrying the knives, which keeps the knives always in the center of the slots. The travel of the knives while cutting the stricture is under the control of a stop nut threaded on the rod, and which may be adjusted to allow the inward movement of the knives to the desired predetermined degree.

Having set forth what I consider the main advantages of my improved instrument, and in so doing having briefly outlined the construction, I will proceed to describe the same in detail, reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing: Figure 1 is an elevation of the complete instrument with the parts assembled for use, the knives being partly exposed protruding through the slots formed in the guide member of the instrument. Fig. 2 is a longitudinal sectional view of the instrument viewed at right angles to the position shown in Fig. 1, and shown on a larger scale. It is shown broken intermediate its extremities for lack of room on the sheet to make the view of the proper length to correspond with the diameter of the parts. In this view the instrument is shown approximately full size except as to length. Fig. 3 is a detail view of the guide member having the bulb for concealing the knives. Fig. 4 is a detail view of the cylindrical body member of the instrument which is shown full size. Fig. 5 is a detail view of the rod equipped with the knives and upon which a stop nut is also shown threaded. In this view the rod is shown nearly full length. Fig. 6 is an end view of the bulb extremity of the guide member, or a view looking in the direction of arrow 6 Fig. 3, shown, however, on a larger scale, being approximately double the diameter of the corresponding part in Fig. 3. Fig. 7 is a perspective view illustrating the forward extremity of the knife-carrying rod, the greater portion of the member being broken away.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate a cylindrical tube constituting the body member of the instrument, the same being equipped with two rings 6 made fast thereon by brazing or otherwise and located on opposite sides of the tube for convenience of operation. The end of the tube 5 remote from the rings 6 is reduced in diameter and threaded as shown at 7 forming a shoulder 8 at the inner end of the threaded portion. This tube is provided at its rear extremity with a screw plug 9 having an exposed milled head 10, the plug being perforated to receive the rod member 12 which passes therethrough when the parts are assembled. This rod member is relatively long, since it passes entirely through the tube 5 and protrudes from both ends thereof. The rear end is provided with a ring 13. The portion of the rod extending rearwardly for some distance from this ring is threaded as shown at 14 to receive a stop nut 15, which when the device is in use may be adjusted to a predetermined distance from the rear end of the tube 5 whereby the forward movement of the rod during an operation is limited by the said nut. Near the forward end of the rod and made fast thereto are four knives 16 which are radially arranged and equidistantly spaced on the rod. The function of these knives is to divide the stricture by forming four incisions therein and therethrough. Between the knives and the forward extremity of the rod is located a feather or spline 17 which follows a slot 18 of the guide member 19, whereby the knives are held in the center of the slots and away from the metal edges of the member, thus preventing the possibility of dulling them when the instrument is in use. This guide member 19 is slightly curved at its forward extremity as shown at 20 to harmonize with the direction of the inner portion of the urethra which this portion of the instrument must enter during every operation for stricture. The forward end of the guide member is provided with a hollow bulb 21, whose walls are interiorly grooved as shown at 22 to allow the knives to enter, for the purpose of concealing them during the insertion of the instrument into the urethra preparatory to cutting the stricture. This bulb is also interiorly threaded as shown at 23, to receive the threaded extremity 7 of the body member 5 when the parts are assembled, the forward extremity of the bulb being then in engagement with the shoulder 8 of the member 5. The hollow portion 24 of the bulb forward of the free end of the part 7, is free to receive and conceal the knives 16. The forward portion of the bulb is provided interiorly with four tongues 30 between two of which the feather 17 on the rod must pass when the rod is properly inserted in the guide member, so that the

knives will enter the grooves of the bulb. These tongues are also properly arranged to cause the feather 17 of the rod to enter one of the four slots 18 of the guide member, whereby the knives are properly guided in the said slots during their movement therein when an operation is performed. Attention is called to the fact that the slots 18 of the guide member are in exact alignment with the interior grooves 22 of the bulb so that as the knives are pushed forwardly out of the grooves in which they are normally concealed when not in use, they will enter the slots 18 from which they protrude a sufficient distance for stricture-cutting purposes.

As illustrated in the drawing the forward portion of the guide tube is provided with an interior recess 25 located forward of the forward extremities of the slots 18, the said recess being adapted to receive the forward extremity 26 of the rod 12 when the latter has reached its forward limit of movement in the guide member.

The forward portion of the body member 5 is reinforced as shown at 27, and the perforation 28 therethrough is reduced to fit the rod 12, whereby the latter is accurately and centrally guided by the body of the instrument during an operation. It will thus be observed that the body member of the instrument has the opening therethrough at both extremities reduced to fit the rod quite closely, the plug 9 at the rear end of the instrument serving to accomplish this object as heretofore explained. Between the reinforced part 27 and the plug 9, the opening in the body member is formed relatively large as indicated at 29.

In assembling the parts the ring 13 and the stop nut 15 must be removed from the rod, after which the forward end of the latter is inserted in the front end of the body member 5 and passed therethrough. The nut is then applied to the threaded portion of the rod and the ring also attached. The guide member 19 may then be connected with the forward threaded end 7 of the body member, by screwing the same thereon, the forward portion of the rod being inserted in the guide member preparatory to making this connection. When the guide member is screwed home upon the body member, or so that the forward edge of its bulb engages the shoulder 8, the parts of the instrument are assembled and it is ready for use.

When in use the forward extremity 20 of the guide member is inserted in the urethra, the knives 16 being concealed within the bulb 21, the stop nut being moved forwardly upon the rod until it engages the milled head 10 of the threaded plug at the rear end of the body member 5, thus making it impossible to prematurely move the knives out of their place of concealment. As the for-

ward extremity 20 of the guide member is quite small, the instrument is easily inserted. It is then moved forwardly through the urethra until the bulb 21 engages the strictured portion thereof. This is easily
 5 determined, since the stricture will prevent further movement of the instrument since the bulb is too large to pass therethrough until the walls of the stricture are severed
 10 by the knives. The stricture being then found or located, the stop nut 15 is run back upon the threaded portion of the rod a distance beyond the rear end of the body member 5 equal to the distance which the operator desires that the knives should travel during the stricture-cutting operation. The
 15 body member of the instrument is then held and the rod carrying the knives pushed forwardly until the stop nut 15 engages the rear end of the body member. During this
 20 movement the knives 16 will pass through the stricture forming four incisions in the walls thereof. The rod may then be moved rearwardly to conceal the knives within the
 25 bulb, after which the body member may be moved forwardly in the urethra until the bulb passes through the divided stricture, thus insuring that the operation has been successful, since if the relatively large bulb will pass through the strictured part, the
 30 operator has positive proof that the work of the instrument has been properly accomplished.

Having thus described my invention, what I claim is:

1. A urethrotome comprising a main tube or body member, a guide member connected with the forward extremity of the body member and having a hollow bulb interiorly
 40 grooved, slots extending forwardly from the grooves, a guide portion located forward of the slots, and a rod passing through the body member and entering the guide member which is hollow for the purpose, the rod
 45 being longitudinally movable and having knives adapted to enter the grooves of the bulb, whereby they are concealed, and also adapted to protrude through the slots of the guide member.

2. A urethrotome having a hollow body member, a forwardly located hollow slotted
 50 guide member having a bulb at the rear extremities of the slots, a guide portion extending forward of the slots, the bulb also having interior grooves in alinement with the slots, and a rod passing through the
 55 body member, entering the guide member, longitudinally movable, having knives adapted to be concealed in the grooved portion of the bulb and to protrude through the slots of the guide member, which is reduced in
 60 size forward of the bulb.

3. A urethrotome having a relatively large hollow body portion, an interiorly grooved
 65 hollow bulb at the forward end of the body

portion, a reduced hollow slotted portion forward of the bulb, a guide portion forward of the slotted portion, and a rod longitudinally movable in the hollow portions of the instrument and equipped with knives
 70 adapted to be concealed within the grooved portion of the bulb and to protrude through the slots forward of the bulb, for the purpose set forth.

4. A urethrotome having a relatively large
 75 hollow body portion, an interiorly grooved hollow bulb at the forward end of the body portion, a reduced hollow slotted portion forward of the bulb, a guide portion forward of the slotted portion, and a rod longitudinally
 80 movable within the hollow portions of the instrument and equipped with knives adapted to be concealed within the grooved portion of the bulb and to protrude through the slots forward of the bulb, the rod also hav-
 85 ing a guide feather adapted to enter a slot of the slotted portion, for the purpose set forth.

5. A urethrotome having a relatively large hollow body member, an interiorly grooved
 90 bulb at the forward end of the body member, a reduced hollow slotted portion forward of the bulb, the slots being in alinement with the grooves of the bulb, a guide portion located forward of the slotted portion, and a rod adapted to pass through the
 95 body member and enter the guide member, the rod having knives adapted to be concealed within the grooved portion of the bulb and to protrude through the slots forward of the bulb, the rod also having a
 100 feather located forward of the knives, the bulb being also provided with interiorly located tongues spaced to correspond with the grooves and slots, the spaces between the
 105 tongues being adapted to receive the feather on the rod and maintain the knives in alinement with the grooves and slots, substantially as described.

6. A urethrotome having a relatively large
 110 body member, a hollow interiorly grooved bulb at the forward end of the body member, a reduced hollow slotted portion forward of the bulb, a guide portion forward of the slotted portion, the slots being in
 115 alinement with the grooves of the bulb, a rod longitudinally movable in the hollow portions of the instrument and equipped with knives adapted to be concealed within the grooves of the bulb and to protrude
 120 from the slots of the slotted portion, and a stop nut threaded on the rod in the rear of the body portion, for the purpose set forth.

7. A urethrotome comprising a body portion having rings for convenience of manipulation, a guide member having a threaded
 125 connection with the forward extremity of the body member and provided with a bulb interiorly grooved and having a reduced slotted portion forward of the bulb, a guide
 130

portion forward of the slotted portion, and a rod longitudinally movable in the body member and in the hollow portion of the guide member, the rod having four knives adapted to be concealed within the grooved portion of the bulb and to protrude from the slots formed in the guide member forward of the bulb, the rod having a stop nut located in the rear of the body member and having a ring at its rear extremity, substantially as described.

8. A urethrotome having a hollow body portion, an interiorly grooved bulb at the forward end of the body portion, a hollow slotted portion forward of the bulb, the hollow slotted portion being reduced to a smaller size than the bulb and a rod longitudinally movable in the hollow portions of the instrument and equipped with knives adapted to be concealed within the grooved portion of the bulb and to protrude through the slots forward of the bulb.

9. An instrument of the class described having a hollow body portion, a hollow bulb at the forward end of the body portion, a reduced hollow slotted portion forward of the bulb, the hollow of the bulb being larger than the reduced hollow slotted portion and a rod longitudinally movable in the hollow portions of the instrument and equipped with knives adapted to be concealed within

the bulb and to protrude through the slots forward of the bulb.

10. A urethrotome having a relatively large hollow portion, a rod longitudinally movable in the hollow portion of the instrument and equipped with a knife adapted to be concealed within the hollow portion, a reduced hollow slotted portion forward of the knife-concealing portion of the instrument, through which the knife is adapted to protrude after leaving the knife-concealing portion in the rear thereof, and a guide portion forward of the hollow slotted portion substantially as described.

11. A urethrotome having a relatively large hollow body portion, a rod longitudinally movable therein and equipped with knives adapted to be concealed within the said hollow portion, a reduced hollow slotted portion forward of the knife-concealing portion of the instrument, and a guide portion forward of the hollow portion the rod being adapted to enter the slotted portion from which the knives protrude through the slots, for the purpose set forth.

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

WILSON W. BREDIN.

Witnesses:

A. J. O'BRIEN,
HORTENSE UHLRICH.