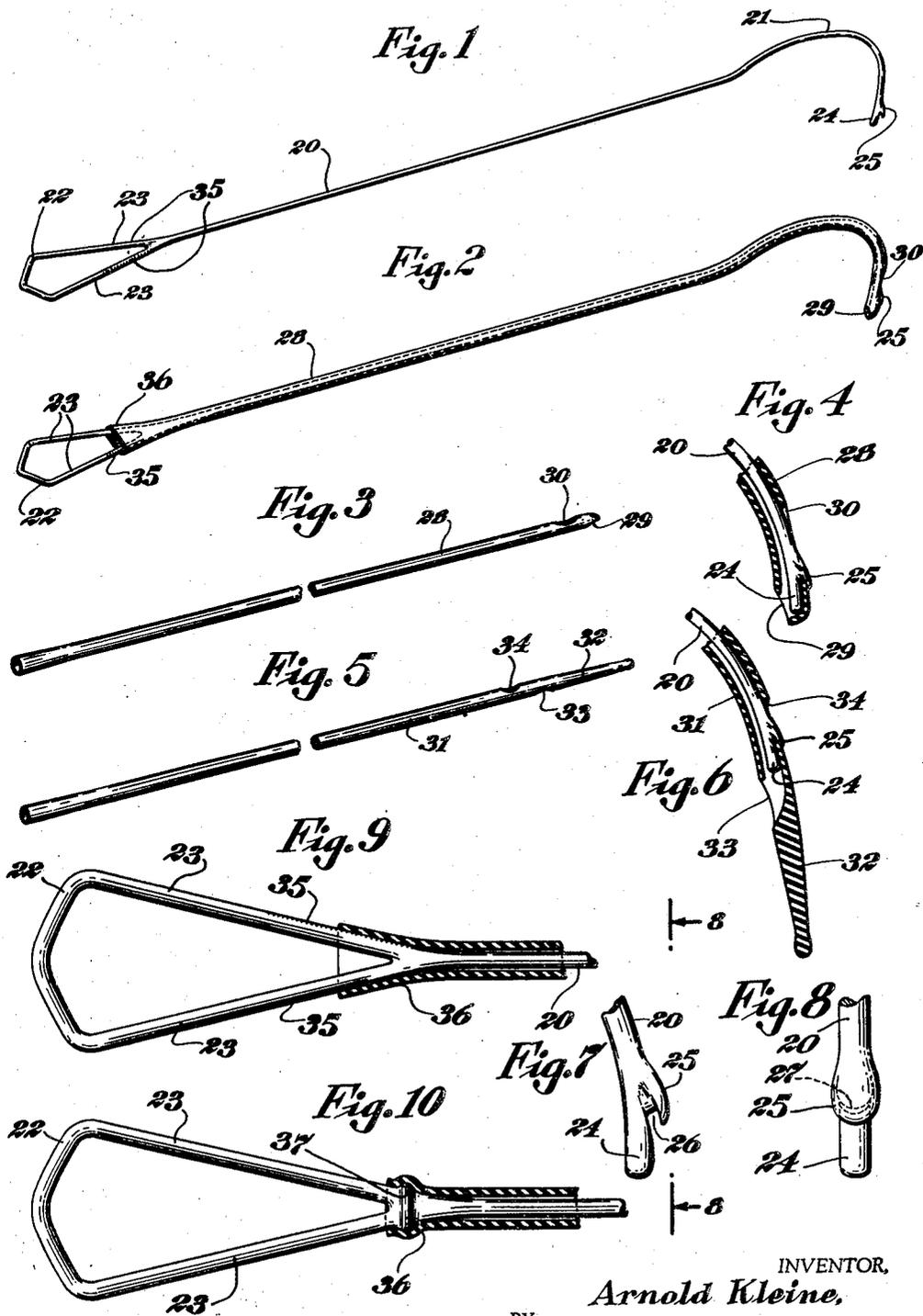


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A. KLEINE
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INVENTOR,
Arnold Kleine,
BY
Friedrich Breitenfeld
ATTORNEY

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CATHETER STYLET

Arnold Kleine, Flushing, N. Y., assignor to American Cystoscope Makers, Inc., New York, N. Y., a corporation of New York

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My present invention relates generally to surgical devices, and has particular reference to an improved catheter stylet.

The insertion of a urethral catheter (usually composed of soft, flexible rubber or the like) usually requires the aid of a stylet for imparting a certain degree of rigidity to the catheter. It is a general object of the present invention to provide a stylet having certain novel structural characteristics.

Good practice prescribes that a urethral catheter have at least two openings near its extremity, so that if one of them should become clogged, the other would still be available for draining the bladder. At least one of these openings or "eyes" is laterally disposed behind but near the forward extremity of the catheter. In some catheters, the other eye is arranged at the very tip of the catheter; in others, it is arranged on the opposite lateral wall behind the tip.

Where both eyes are laterally disposed, the forward tip of the usual stylet presses forwardly against the extremity of the catheter. Where the catheter does not have an eye at its extremity, an undesirable "pocket" exists within which contaminating material may collect, thereby making it difficult to accomplish reliable and assured sterilization of the catheter. On the other hand, where the catheter has an eye at its extremity, the usual type of stylet is difficult to employ because the tip of the stylet protrudes too readily from the front eye and may thereby impede smooth and reliable insertion of the catheter into the body. Even in the case of so-called "aseptic tip" catheters, i. e., catheters in which the undesirable pocket has been sealed up, the use of the ordinary type of stylet is beset with difficulty, for similar reasons.

The primary object of the present invention is to provide an improved stylet for catheters of the type in which there is no forward pocket within which the tip of the stylet may accommodate itself.

A characterizing feature of the present improved stylet lies in the provision of a bifurcate tip, permitting the notch to engage the forward edge of a lateral eye arranged behind the forward extremity of the catheter.

Another feature of the invention lies in providing a means at the rear end of the stylet for engaging the rearward portion of the catheter so that the latter may be held in tensioned condition.

I achieve the foregoing objects, and such other

objects as may hereinafter appear or be pointed out, in the manner illustratively exemplified in the accompanying drawing, wherein—

Figure 1 is a perspective view of a stylet embodying the features of the present invention;

Figure 2 is a view similar to Figure 1, showing a catheter in position over the stylet;

Figure 3 is a perspective view, broken away for the sake of compactness of illustration, of one form of catheter with which the present stylet may be used;

Figure 4 is an enlarged cross-sectional view of the forward extremity of the catheter of Figure 3, with a stylet of the present character associated therewith;

Figure 5 is a view similar to Figure 3, illustrating a catheter of the so-called "aseptic tip" type;

Figure 6 is a view similar to Figure 4, showing the manner in which the present stylet is used with the catheter of Figure 5;

Figure 7 is an enlarged side view of the bifurcate tip of the present improved stylet;

Figure 8 is a similar view, taken in the direction 8—8 of Figure 7;

Figure 9 is an enlarged view, partly in cross-section, showing the rear portion of a catheter and the rear portion of the present stylet; and

Figure 10 is a view similar to Figure 9, showing a modification.

A stylet of the present kind is customarily in the form of a wire or element of substantial relative rigidity with respect to the soft flexible rubber of the catheter. The stylet illustrated in the drawing is of this general character and has a body portion 20, a curved forward portion 21, and a rearward handle 22. For the purpose hereinafter to be described, the handle 22 preferably includes the rearwardly divergent arms 23 which merge at their forward ends with the body 20 of the stylet.

The forward portion of the stylet has been shown curved because this is the preferable shape for facilitating insertion of the catheter into the body. However, the features of the present invention do not require that the forward portion of the stylet be curved, either in the particular manner shown or at all.

One of the characterizing features of the present stylet is illustrated most clearly in Figures 7 and 8, in which it will be observed that the forward tip of the stylet is bifurcate, comprising the inner tine 24 and the outer tine 25. The tine 24 is longer than the other and is of rounded blunted contour. The other tine is relatively flat, with a convex outer surface, whereby a 55

notch 26 is formed. This notch has a thickness no greater than the thickness of the wall of the catheter with which the stylet is to be used, and the bottom of the notch is preferably of arcuate shape, as indicated most clearly in Figure 8 at 27.

In Figure 3 I have shown one form of catheter for which the present stylet is specially designed. This catheter, designated 28, has an oblique eye 29 at its forward extremity and a lateral eye 30 on the opposite wall slightly behind the extremity. It is not feasible to employ the ordinary type of stylet with a catheter of this kind, because the forward tip of the stylet would too readily protrude from the eye 29 during the procedure of inserting the catheter into the body. The present type of stylet, however, is peculiarly adapted for use with this catheter, as indicated most clearly in Figure 4. The stylet, upon being introduced into the catheter, is arranged so that the notch 26 engages with the forward end of the lateral eye 30. This engagement permits the longer tine 24 to extend forwardly toward the catheter extremity, but prevents this tine from ever protruding in an undesired and dangerous manner from the forward eye 29. The smaller tine 25 is exposed through the eye 30, but its flattened and convexed contour renders this protrusion harmless.

In Figure 5, I have illustratively shown a catheter 31 of the so-called "aseptic tip" variety. This catheter has a tapered solid extremity 32, and immediately behind this extremity is the forward eye 33. The eye 33 corresponds to the eye 29 of Figure 3, and slightly behind it, on the opposite wall, is the lateral eye 34. As will be observed in Figure 6, this type of catheter is also difficult to employ with the ordinary type of stylet because the tip of the ordinary stylet has no pocket within which to accommodate itself and, therefore, protrudes undesirably from the forward eye 33. The present stylet, on the other hand, may be used without any such danger. When it is inserted into the catheter, the notch 26 is caused to engage with the forward end of the lateral eye 34. This again permits the inner or longer tine to extend forwardly toward the catheter extremity, but prevents this tine from ever protruding from the front eye 33.

In order to hold the bifurcate tip of the present stylet in proper relationship, as shown in Figures 4 and 6, the present stylet is provided with means at its rear end for engaging the rearward portion of the catheter so that the latter may be held in tensioned condition over the stylet. One way of accomplishing this is shown in Figure 9. The rearwardly diverging arms 23 of the handle 22 are roughened or corrugated, as at 35, on their outer surfaces. This permits the rear end 36 of the catheter to be stretched rearwardly and to be frictionally held in tensioned condition over the corrugations or serrations 35. When the catheter is thus engaged, the bifurcate tip is firmly held in proper relationship to the lateral eye at the forward portion of the catheter, and the assembly of the catheter and stylet may then be expeditiously inserted into the body.

After the insertion has been effected, it is a relatively simple matter to release the rear end 36 of the catheter from the rear end of the stylet, and thereupon to withdraw the stylet rearwardly out of the catheter, thereby leaving the latter in the desired position within the body.

In Figure 10, I have illustrated another possible mode of frictionally engaging within the rearward portion 36 of the catheter to hold the latter in tensioned condition over the stylet. In this figure, I have provided a laterally enlarged portion 37 on the rear portion of the stylet, so that the rear portion 36 of the catheter may be stretched rearwardly and frictionally engaged over this enlarged portion 37.

Other equivalent ways of frictionally engaging the rear end of the catheter will readily suggest themselves to those skilled in the art.

In general, it will be understood that changes in the details, herein described and illustrated for the purpose of explaining the nature of my invention, may be made by those skilled in the art without departing from the spirit and scope of the invention as expressed in the appended claims. It is, therefore, intended that these details be interpreted as illustrative, and not in a limiting sense.

Having thus described my invention, and illustrated its use, what I claim as new and desire to secure as Letters Patent is—

1. A stylet for a catheter having a lateral eye behind its forward extremity, said stylet having a bifurcate tip whose notch is adapted to engage the forward edge of said eye, the inner tine of said stylet tip being of rounded blunted contour and being longer than the other so as to extend forwardly toward the catheter extremity.

2. A stylet for a catheter having a lateral eye behind its forward extremity, said stylet having a bifurcate tip whose notch is adapted to engage the forward edge of said eye, the inner tine of said stylet tip being of rounded, blunted contour and being longer than the other tine so as to extend forwardly toward the catheter extremity, the outer tine being relatively short and flat with a smooth convex outer surface.

3. A stylet for a catheter having a lateral eye behind its forward extremity, said stylet having a bifurcate tip whose notch is adapted to engage the forward edge of said eye, the inner tine of said stylet tip being of rounded blunted contour and being longer than the other so as to extend forwardly toward the catheter extremity, and means at the rear end of the stylet for releasably engaging the rearward portion of the catheter.

4. A stylet for a catheter having a lateral eye behind its forward extremity, said stylet having a bifurcate tip whose notch is adapted to engage the forward edge of said eye, the inner tine of said stylet tip being of rounded blunted contour and being longer than the other so as to extend forwardly toward the catheter extremity, and means at the rear end of the stylet for frictionally engaging within the rearward portion of the catheter, said means comprising rearwardly divergent arms having roughened outer surfaces.

ARNOLD KLEINE.