

[54] **MEATAL DILATOR**

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[58] Field of Search.....128/261, 341, 347

[56] **References Cited**

UNITED STATES PATENTS

1,014,128	1/1912	Crowe	128/347
1,242,314	10/1917	Bean	128/341 UX
1,879,307	9/1932	Kennedy	128/341
2,120,367	6/1938	Lewis	128/261
3,459,189	8/1969	Alley et al.	128/347
3,505,988	4/1970	Deane	128/341

FOREIGN PATENTS OR APPLICATIONS

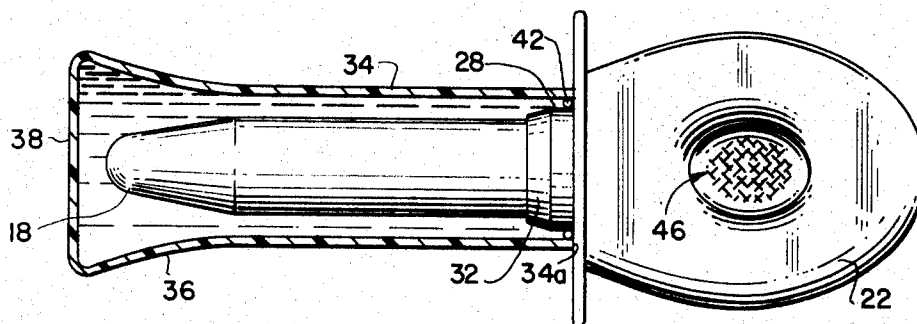
72,831	3/1855	France.....	128/347
145,938	11/1881	France.....	128/347
14,428	11/1885	Great Britain.....	128/341

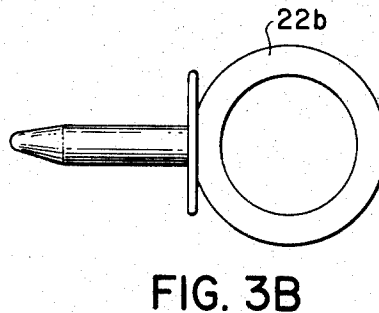
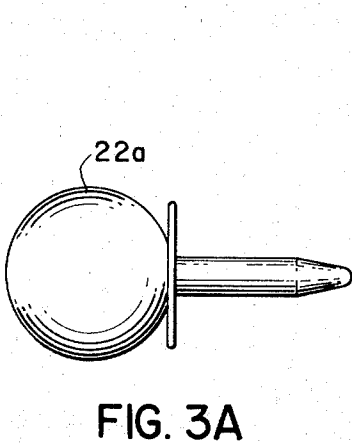
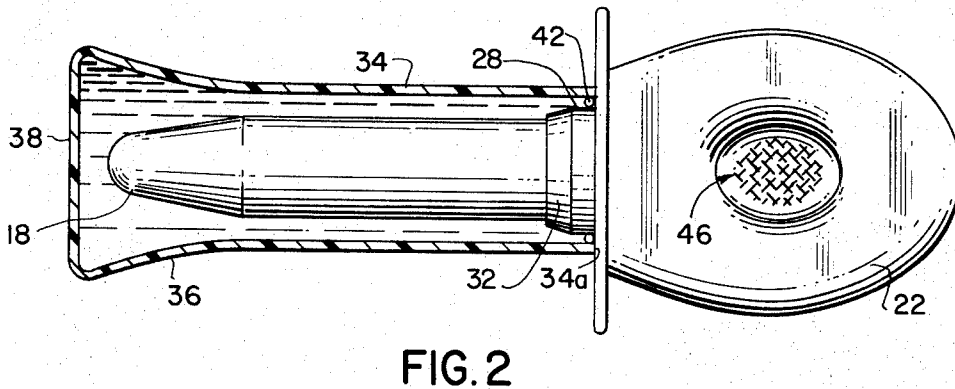
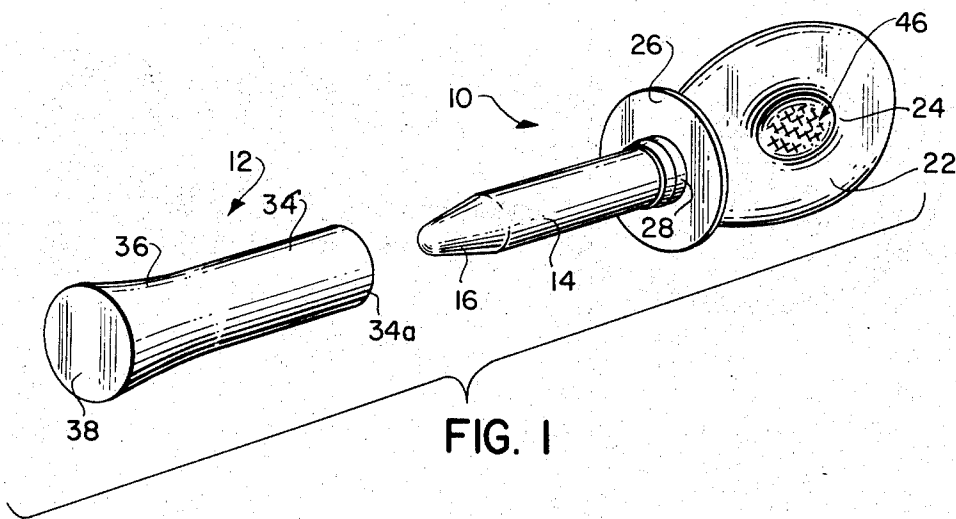
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[57] **ABSTRACT**

A meatal dilator designed specifically to dilate the urethra has a relatively long dilating shaft one of whose ends is tapered to a blunt tip. The other end of the shaft is connected to a grip designed to fit the hand. A protective diaphragm arranged perpendicularly to the shaft is interposed between the shaft and the grip to limit the depth of penetration of the dilator. Also, a generally cylindrical cap containing an antibiotic and/or lubricant is snugly engaged over the head of the shaft and removably held in place to protectively enclose the shaft.

1 Claim, 4 Drawing Figures





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MEATAL DILATOR

BACKGROUND OF THE INVENTION

This invention relates to a meatal dilator. It relates more particularly to a meatal dilator which is designed specifically to dilate the urethra.

The present dilator is designed to provide satisfactory healing in the post-operative period following urethral meatal surgery by maintaining a satisfactory luminal caliber during the few weeks following an operative procedure designed to correct a stenosis.

The main objective is to provide positive means for preserving the correct luminal caliber for a period of time following the stenosis correction procedure.

Another objective is to provide a dilating apparatus for the urethra which is relatively safe to use.

Yet another object of the invention is to provide a disposable urethral meatal dilator which is relatively inexpensive to make.

A further object of the invention is to provide a dilator of this type which does not cause undue discomfort to the patient.

A more specific object of the invention is to provide a urethral meatal dilator which is easy to use by the patient himself.

Other objects will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the features of construction, combination of elements and arrangement of parts as exemplified in the construction hereinafter set forth and the scope of the invention will be indicated in the claims.

Briefly, the present dilator is used to encourage satisfactory healing in the post-operative period following urethral meatal surgery to correct a stenosis. The dilator has a solid shaft of a characteristic caliber which is tapered at one end to a blunt tip. The dilator also includes a shield or diaphragm at the base of the shaft to prevent insertion of the dilator beyond the desired length. A suitable handle or grip is connected to the base of the shaft beyond the shield to facilitate insertion into the patient. Each dilator has its characteristic caliber which is related to the age of the prospective patient and which is indicated by an appropriate color code.

A generally cylindrical cap containing an antibiotic, antiseptic, disinfectant and/or lubricant is normally engaged over the end of the shaft to protectively enclose it. The cap is removably held in place by engagement around a slight enlargement at the base of the shaft adjacent the shield, or by the natural adherence of the lubricant acting between the shaft and inside wall of the cap. The entire device may be made relatively inexpensively of plastic. Therefore, it is designed to be packaged in sterile packages of a dozen or more and to be disposable.

BRIEF DESCRIPTION OF THE DRAWING

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawing, in which:

FIG. 1 is an exploded perspective view of an urethral meatal dilator package made in accordance with this invention;

FIG. 2 is a vertical sectional view of the FIG. 1 package with parts shown in elevation;

FIG. 3A is a perspective view on a smaller scale of another dilator embodiment; and

FIG. 3B is a similar view of still another dilator embodiment.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Turning now to FIG. 1 of the drawing, my dilator shown generally at 10 is fitted with a protective cover shown generally at 12 when not in use. The dilator includes a generally cylindrical dilating shaft 14 which has a tapered segment 16 at one end which terminates in a relatively blunt tip 18. The taper of segment 16 should be on the order of 10°, and the diameter of the tip 18 should be about one-fourth of the diameter of shaft 14. A grip or handle 22 is secured to the other end of shaft 14. The illustrated grip is relatively flat with concave or excavated center portions 24, 24 on each side so that the grip can easily and securely be grasped by the user's fingers. Typically, the grip 22 would be on the order of 3 cm long and 2.5 cm wide. Obviously, other handle configurations are possible. For example, FIG. 3A shows a dilator with a spherical grip 22a and FIG. 3B depicts a grip 22b in the form of a ring.

A generally circular shield or diaphragm 26 is positioned between the base of shaft 14 and handle 22. Shield 26 constitutes a protective stop to limit the depth of penetration of shaft 14 in the patient. The outside diameter of shield 26 is comparable to the width of handle 22, e.g. 2.5 cm.

Shaft 14 is formed with a raised collar 28 just ahead of shield 26. Collar 28 is raised approximately 0.5 to 1.0 mm from the shaft 14 proper and has a beveled forward edge 32. The purpose of the collar is to secure the cap 12 to the dilator when the latter is not being used as will be described presently.

Referring to FIGS. 1 and 2, the cap 12 comprises a generally cylindrical tube 34 whose inside diameter is slightly larger than the diameter of shaft 14 and whose length exceeds slightly that of shaft 14 including collar 28. Tube 34 has a flared end portion 36 which terminates in an end wall 38. In use, the cap 12 is slid onto shaft 14 so that the leading end 34a of tube 34 engages over collar 28 on the dilator. The flare facilitates easy removal of the cap.

As best seen in FIG. 2, a bead 42 is formed around the tube end 34a so that it projects radially inward somewhat, e.g. 0.1–1.0 mm. Bead 42 insures that the cap 12 firmly engages collar 28. On the other hand, the bevel 32 at the forward edge of the collar facilitates engagement of the cap on the collar.

Desirably, an antibiotic, antiseptic or sterile medium, a lubricating medium, or a combination of these, indicated at 44 in FIG. 2, is inserted into the cap 12 prior to its engagement on the shaft 14. This insures that the dilator will be maintained in an aseptic condition prior to use and will readily penetrate the patient when being used. In some cases, the natural viscosity or adherence of the lubricant 44 to the inside wall of tube 34 and shaft 14 may be sufficient to maintain the cap 12 on the dilator. In this event, it may not be necessary to provide the collar 28 and bead 42 for this purpose.

The dilator 10 and its cap 12 can be formed out of any suitable plastic. Therefore, the unit can be made relatively inexpensively and in large quantities. Consequently, it can be sold in relatively large quantities,

on the order of a dozen or more units in sterile packaging ready for use. Then, after being used, the dilators are simply thrown away.

Each dilator has a characteristic caliber which may vary from instrument to instrument so that there is always one properly-sized unit available for a patient of a given age and size. The following table lists the appropriate shaft 14 diameters and lengths for a typical series of dilators. Desirably, the handle 22 of each dilator is color-coded at 46 so that one will know immediately the caliber of a particular dilator.

TABLE I
Size Variation in Shaft 14

Code No.	Shaft Diam. (mm)	Length of straight segment of shaft (cm)	Color
10F	3.22	0.6	Yellow
12F	3.81	0.6	Pink
14F	4.46	1.0	Light Blue
16F	5.09	1.0	Light Green
18F	5.73	1.0	Dark Blue
20F	6.37	1.5	Red
22F	7.00	1.5	Purple
24F	7.64	2.0	Dark Green
26F	8.25	2.0	Black

It will be apparent from the foregoing then that my meatal dilator is especially useful for maintaining the proper luminal diameter in the urethra for a relatively long period following a stenosis correction operational procedure. The unit is relatively small and compact and is specially sized for the particular patient. Further-

more, the dilator is safe to use and easy to apply by the patient herself because it is maintained in a septic condition and is thrown away after being used. Yet, with these advantages, my dilator is relatively inexpensive to make and, therefore, should not increase appreciably the cost of urethral operative procedures.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described.

I claim:

1. A urethral meatal dilator comprising an elongated, generally cylindrical shaft which tapers at one end to a relatively blunt tip, a finger-gripping handle attached to the other end of the shaft, a discoid shield formed on the shaft adjacent the handle for limiting the depth of penetration of the dilator, a raised collar on the shaft adjacent the shield, a generally cylindrical cap whose diameter and length are slightly larger than the corresponding dimensions of the shaft and collar so that the cap can be engaged over the shaft to protectively enclose it, a lubricant or antibiotic inside the cap and means for removably securing the cap on the shaft, said securing means including an internal bead extending around the open end of the cap for frictionally engaging the collar.

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