March 12, 1968 M. BELIVEAU ET AL 3,372,695

METHOD OF OVERCOMING INCONTINENCE

Filed April 27, 1965

FIG.1

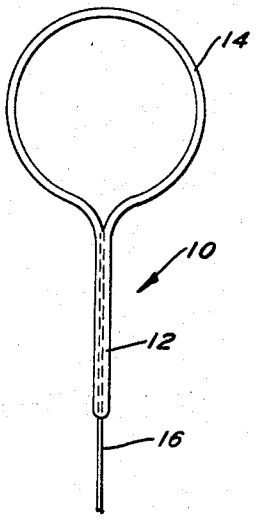


FIG.2

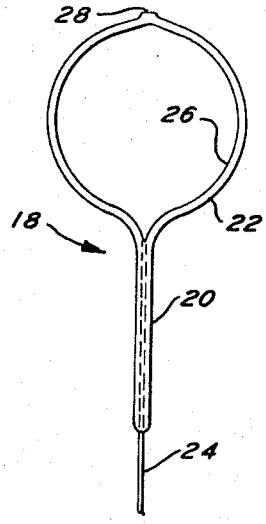


FIG.3

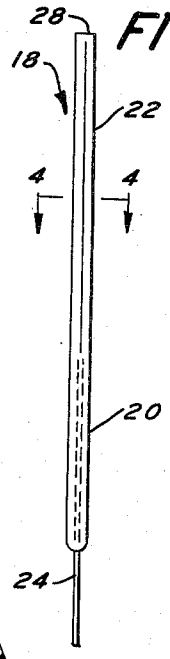


FIG.4

FIG.5

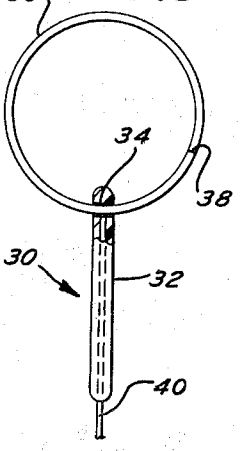


FIG.8

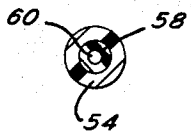
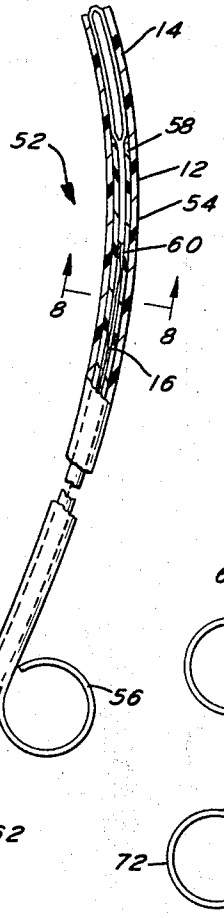


FIG.10



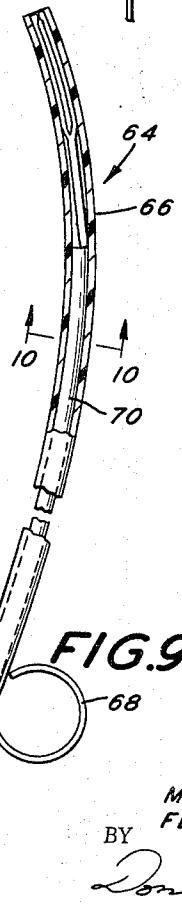
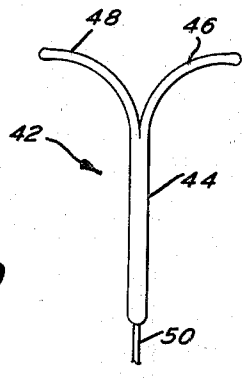


FIG.7

FIG.9

FIG.6



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United States Patent Office 3,372,695
Patented Mar. 12, 1968

3,372,695

METHOD OF OVERCOMING INCONTINENCE

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Filed Apr. 27, 1965, Ser. No. 451,230
1 Claim. (Cl. 128—1)

ABSTRACT OF THE DISCLOSURE

A plug for insertion in the urethra to overcome incontinence of urination comprising an elongated stem of a length substantially greater than its thickness and width having a retainer member fixedly secured to the stem at one end thereof and projecting beyond said end of the stem. The retainer member has portions which are flexible and which extend away from each other from the stem. The plug is adapted to be inserted within the urethra with the retainer member extending into and engaging the walls of the bladder to retain the stem in position in the urethra. A fine cord may be attached to the other end of the stem and extend to the outer end of the urethra. The cord serves to properly position the stem in the urethra and to remove the plug from the urethra.

The present invention relates to an incontinence plug, and more particularly to a plug for insertion in the urethra to overcome incontinence of urination.

One urinary problem that many people have is the inability to control the flow of urine or urinary incontinence. One way of handling this problem heretofore used was by means of a catheter which drained into a bottle carried by the user. However, this treatment is not only uncomfortable for the user, but the drainage bottle becomes odoriferous and obnoxious. Therefore, it would be desirable to have a manner for overcoming this problem which permits the person to control urination in the normal manner.

It is an object of the present invention to provide a medical instrument which would permit a person with urinary incontinence to control urination in the normal manner.

It is another object of the present invention to provide a plug for insertion in the urethra to permit a person with urinary incontinence to control the flow of urine in a normal manner.

It is a further object of the present invention to provide a urinary incontinence control plug which can be easily inserted and removed from the urethra and which can be used without any discomfort to the user.

Other objects will appear hereinafter.

For the purpose of illustrating the invention, there is shown in the drawings forms which are presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

FIGURE 1 is a side elevational view of one form of the incontinence plug of the present invention.

FIGURE 2 is a side elevational view of another form of the incontinence plug of the present invention.

FIGURE 3 is a side elevational view of the incontinence plug of FIGURE 2 in folded condition.

FIGURE 4 is a sectional view taken along line 4—4 of FIGURE 3.

FIGURE 5 is a side elevational view of still another form of the incontinence plug of the present invention.

FIGURE 6 is a side elevational view of a further modification of the incontinence plug of the present invention.

FIGURE 7 is a side elevational view, partially in section, of an insertion tool for the incontinence plugs of the present invention.

FIGURE 8 is a sectional view taken along line 8—8 of FIGURE 7.

FIGURE 9 is a side elevational view, partially in section, of a modification of the insertion tool.

FIGURE 10 is a sectional view taken along line 10—10 of FIGURE 9.

The present invention is based on the fact that urinary incontinence often results from the person's inability to contract the urethra sphincter muscle sufficiently to completely close the urethra and thereby completely stop the flow of urine. However, many of such persons can partially contract the urethra sphincter muscle. Therefore, the present invention in general comprises a plug which is inserted and retained in the urethra and is of a diameter slightly smaller than the inner diameter of the urethra. Thus, when the urethra sphincter muscle is relaxed, urine can flow through the urethra around the plug. However, the plug fills the urethra sufficiently so that only a partial contraction of the urethra sphincter muscle is necessary to stop the flow of the urine. This permits the person to normally control the flow of the urine.

Referring initially to FIGURE 1, an incontinence plug of the present invention is generally designated as **10**. Plug **10** comprises a stem **12**, a retainer ring **14** integral with one end of the stem **12**, and a fine cord **16** secured to and extending from the other end of the stem. The entire plug **10** is made of a material which is inert to urine and which does not irritate the human membrane. Such materials include such plastics as polymers or copolymers of tetrafluoroethylene, trifluorochloroethylene or polyamide or a wire coated with one of these plastics, or such urine-resistant metals as stainless steel and chromium plated metals. The stem **12** is approximately 2 inches in length and of a diameter between 1/16 inch to 3/16 inch. The diameter of the stem can vary depending on the internal diameter of the urethra in which the plug is to be inserted, and the amount the person can contract his or her sphincter muscle. The length of the stem **12** may vary depending on the length of the user's sphincter muscle. The retainer ring may be of a diameter between 1 and 2 inches, and the cord **16** is of a length long enough to extend out of the urethra.

To use the incontinence plug **10** of the present invention, the user flattens the retainer ring **14** to the form of a substantially straight extension of the stem **12**. The plug **10** is then inserted into the urethra with the end of the flattened retainer ring **14** being inserted first. The plug **10** is inserted up the urethra until the retainer ring **14** enters the bladder. When the retainer ring **14** is entirely within the bladder, it expands under its inherent resiliency back to its ring shape. By pulling outwardly on

the cord 16, the retainer ring 14 is seated against the wall of the bladder at the entrance to the urethra. The stem 12 is then positioned in the urethra and extends through the urethra sphincter muscle. The incontinence plug 10 is then in position to perform the function described above to permit the user to control the flow of urine in a natural manner.

Referring to FIGURE 2, a modification of the incontinence plug of the present invention is generally designated as 18. Incontinence plug 18 comprises a stem 20, a retainer ring 22 integral with one end of the stem 20, and a cord 24 secured to and extending from the other end of the stem 20. As shown in FIGURE 4, the retainer ring 22 is D-shaped in transverse cross section with the flat surface 26 of the retainer ring forming the internal circumference of the ring. A tip 28 projects radially from the outer surface of the retainer ring 22 diametrically opposite the stem 20. The tip 28 is of the same diameter as the stem 20 and has a flat end. The plug 18 is made of the same material and is of the same dimensions as the incontinence plug 10 of FIGURE 1. The incontinence plug 18 is used in the same manner described above with regard to the incontinence plug 10 of FIGURE 1. However, when the retainer ring 22 of the incontinence plug 18 is flattened to permit insertion of the plug, the D-shape of the retainer ring permits the retainer ring to be completely flattened to the form of a rod-like extension of the stem 20 as shown in FIGURES 3 and 4. This provides for greater ease of inserting the incontinence plug 18.

Referring to FIGURE 5, still another modification of the incontinence plug of the present invention is generally designated as 30. Incontinence plug 30 comprises a stem 32 having a diametrically extending hole 34 therethrough adjacent one end thereof. A retainer ring 36 extends through the hole 34 in the stem 32. Retainer ring 36 had a cut 38 therecross to provide a pair of ends for inserting the retainer ring through the hole 34. After the retainer ring 36 is inserted through the hole 34 in the stem 32, the ends of the retainer ring are bonded together to secure the retainer ring to the stem. A cord 40 is secured to the stem 32 and extends from the other end of the stem. The incontinence plug 30 is made of the same materials and is of the same dimensions as the incontinence plug 10 of FIGURE 1. Also, the incontinence plug 30 is used in the same manner as described above with regard to the incontinence plug 10 of FIGURE 1.

Referring to FIGURE 6, a further modification of the incontinence plug of the present invention is generally designated as 42. Incontinence plug 42 comprises a stem 44 and a pair of retainer arms 46 and 48 integral with and projecting from one end of the stem 44. The retainer arms 46 and 48 are curved and extend away from each other. A cord 50 is secured to the stem 44 and extends from the other end of the stem. The incontinence plug 42 is made of the same material as that of the incontinence plug 10 of FIGURE 1. The dimensions of the incontinence plug 44 are similar to those of the incontinence plug 10 with the distance between the ends of the retainer arms 46 and 48 being substantially equal to the diameter of the retainer ring 14 of the incontinence plug 10. The incontinence plug 42 is used in the same manner as described above with the retainer arms 46 and 48 being compressed together for insertion of the plug 42.

FIGURE 7 shows an insertion tool, generally designated as 52 which can be used for inserting any of the incontinence plugs of the present invention. Insertion tool 52 comprises an elongated tube 54 of a fairly rigid but flexible material, such as rubber or plastic. Tube 54 is open at both ends and has an internal diameter greater than the external diameter of the stem of the incontinence plug. A pair of handle rings 56 may be secured to the back end of the tube 54 on diametrically opposite sides of the tube. An elongated plunger rod 58 extends into the back end of the tube 54 and is slidable within the tube. Plunger rod 58 may be made of the same material as the tube 54 but is preferably slightly more rigid than the tube 54. The plunger rod 58 has a passage 60 extending longitudinally therethrough from end to end. A handle ring 62 may be secured to the back end of the plunger rod 58.

In the use of the insertion tool 52, the plunger rod 58 is pulled out of the tube 54 until the front end of the rod is spread inwardly from the front end of the tube. An incontinence plug, for example the incontinence plug 10, is inserted in the front end of the tube 54 with the end of the cord 16 being inserted first. The cord 16 is threaded completely through the passage 60 in the plunger rod 58. By pulling on the end of the cord 16 which extends beyond the back end of the plunger rod 58, the stem 12 of the incontinence plug 10 is pulled into contact with the inner end of the plunger rod 58. If the stem 12 is smaller in diameter than the passage 60 in the plunger rod 58, the stem can be pulled into the passage 60 until the folded retainer ring 14 abuts against the front end of the plunger end. The incontinence plug 10 is inserted into the tube 54 until it is entirely within the tube.

With the incontinence plug inserted completely within the tool 52, the front end of the tube 54 is inserted into the urethra until the front end of the tube is at or adjacent the bladder. The plunger rod 58 is then pushed into the tube 54 so that the front end of the plunger rod pushes against either the stem or the retainer ring of the incontinence plug and forces the retainer ring out of the tube 54 and into the bladder. As previously described, as the retainer ring enters the bladder, it expands to its ring shape. The insertion tool 52 is then pulled out of the urethra leaving the incontinence plug behind and seated in the urethra.

If it becomes desirable to remove the incontinence plug from the urethra, the insertion tool 52 can be used for this purpose. This is achieved by inserting the end of the cord, which extends out of the urethra, into the front end of the tube 54 and threading the cord through the tube 54. The front end of the tube 54 is inserted into the urethra until it reaches the stem of the incontinence plug. By pulling on the cord, the stem of the incontinence plug is guided into the tube 54 as the tube 54 is further inserted in the urethra. When the end of the tube 54 reaches the bladder, pulling on the cord pulls the retainer ring into the tube 54. The insertion tool 52 is then removed from the urethra carrying the incontinence plug with it.

Referring to FIG. 9, a modification of the insertion tool is generally designated as 64. Insertion tool 64 comprises an elongated tube 66 identical to the tube 54 of the insertion tool 52 shown in FIGURE 7. A pair of handle rings 68 may be secured to the back end of the tube 66. An elongated, solid plunger rod 70 is inserted in the tube 66. A handle ring 72 may be secured to the back end of the plunger rod 70. Insertion tool 64 is used in substantially the same manner as previously described within regard to the insertion tool 52 of FIGURE 7. However, insertion tool 64 is preferably used with either an incontinence plug that does not have a cord, or with an incontinence plug having a stem of relatively large diameter. By making the diameter of the plunger rod 70 slightly smaller than the internal diameter of the tube 66, there is provided a clearance between the plunger rod and the tube through which the cord of the incontinence plug can pass.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof and, accordingly reference should be made to the appended claim, rather than to the foregoing specification as indicated the scope of the invention.

We claim:

1. A method of overcoming incontinence of urination caused by the inability to contract the urethra sphincter muscle sufficiently to completely close the urethra comprising the step of inserting into the urethra a plug having an elongated stem of a thickness slightly less than the inner diameter of the urethra and a retainer member fixedly secured to said stem at one end of the stem and projecting beyond said one end of the stem, said retainer member having portions which are flexible and which extend away

from each other from the stem, said plug being inserted into the urethra until the stem extends within the sphincter muscle and the retainer member extends into the bladder and engages the walls of the bladder to retain the stem within the urethra.

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