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(54) **APPLICATOR HAVING AN INDENTED FINGERGRIP WITH RAISED PORTIONS**

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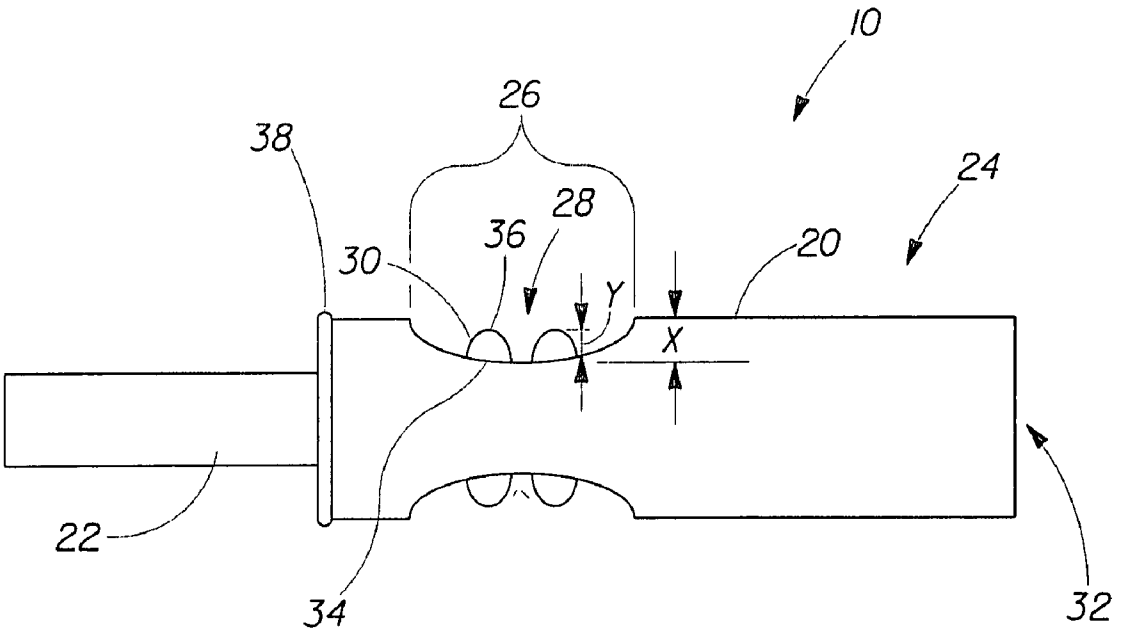
(57) **ABSTRACT**

A tampon applicator is disclosed which includes an insertion member adapted to house an absorbent tampon and receive a plunger. The insertion member has an insertion end and a second end opposite the insertion end, an outer surface and a fingergrip region disposed about the outer surface. The insertion end and/or the second end of the insertion member comprise a lip. The fingergrip region includes an indention region having a depth dimension X. The indention region includes raised portions with a height dimension Y, the height dimension Y being less than or equal to the depth dimension X.



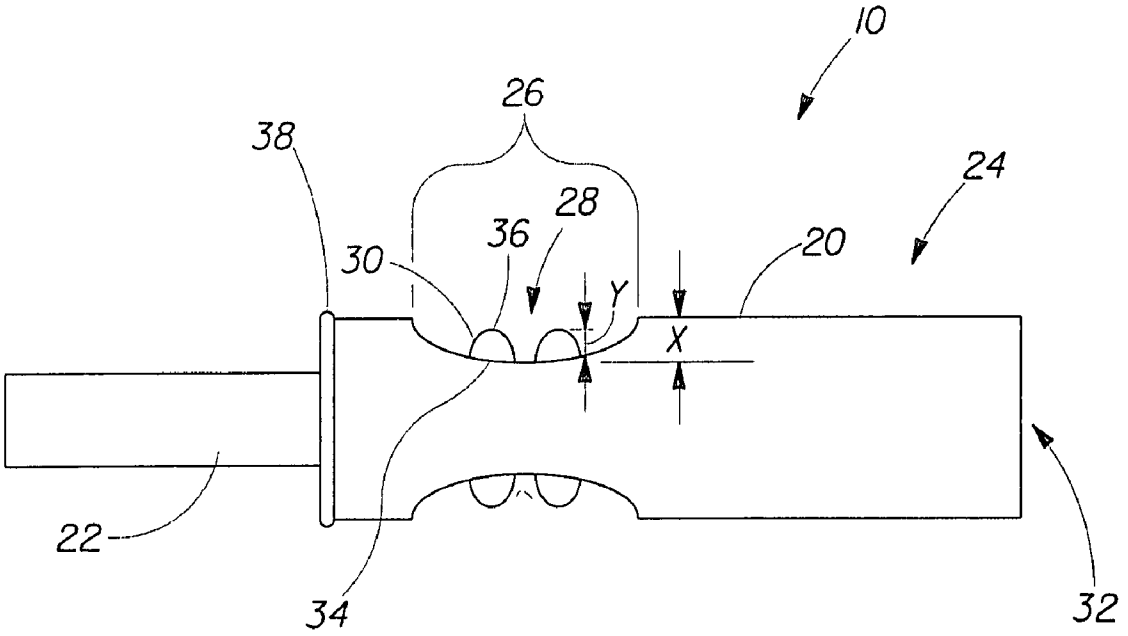


Fig. 1

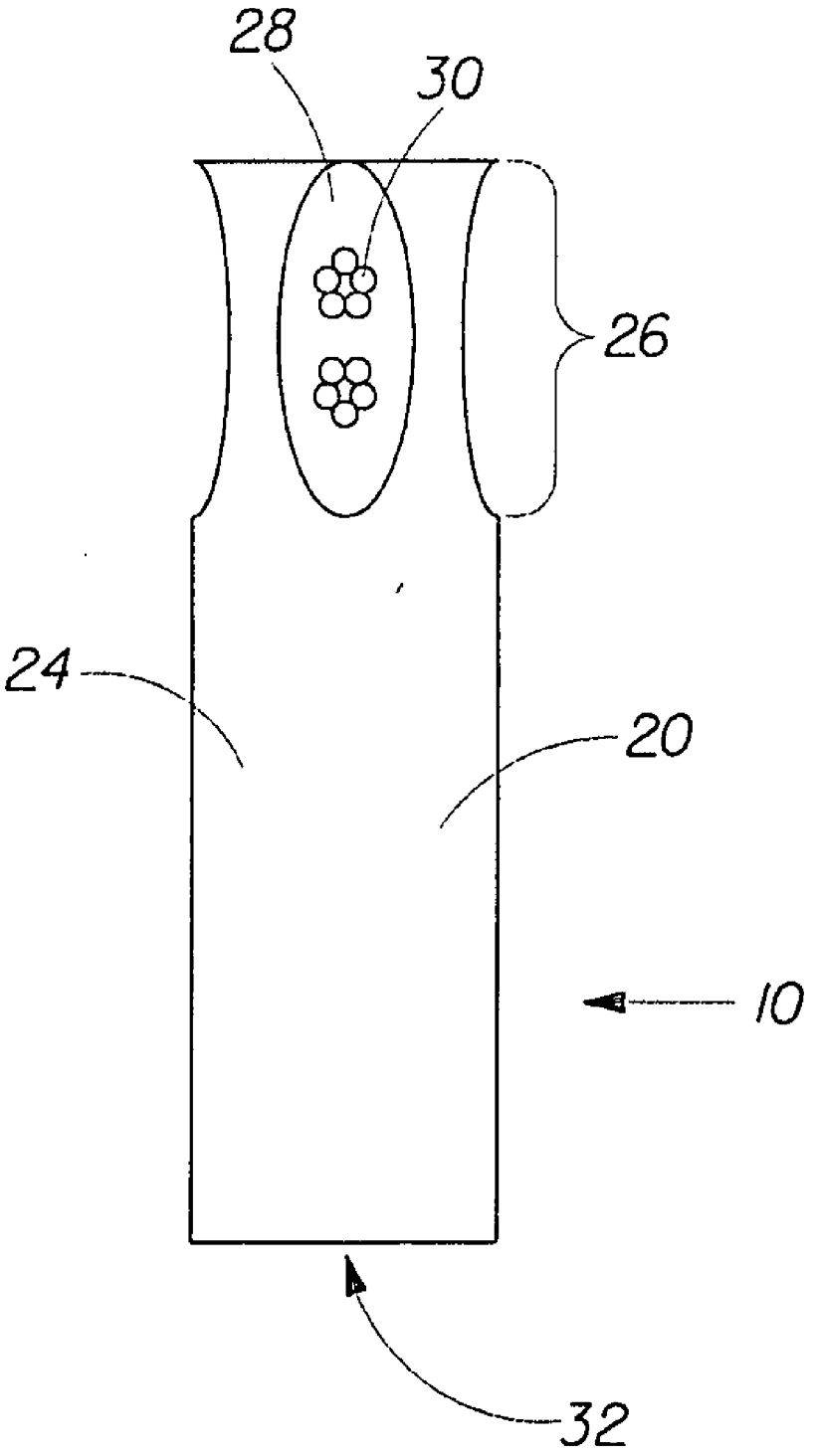


Fig. 2

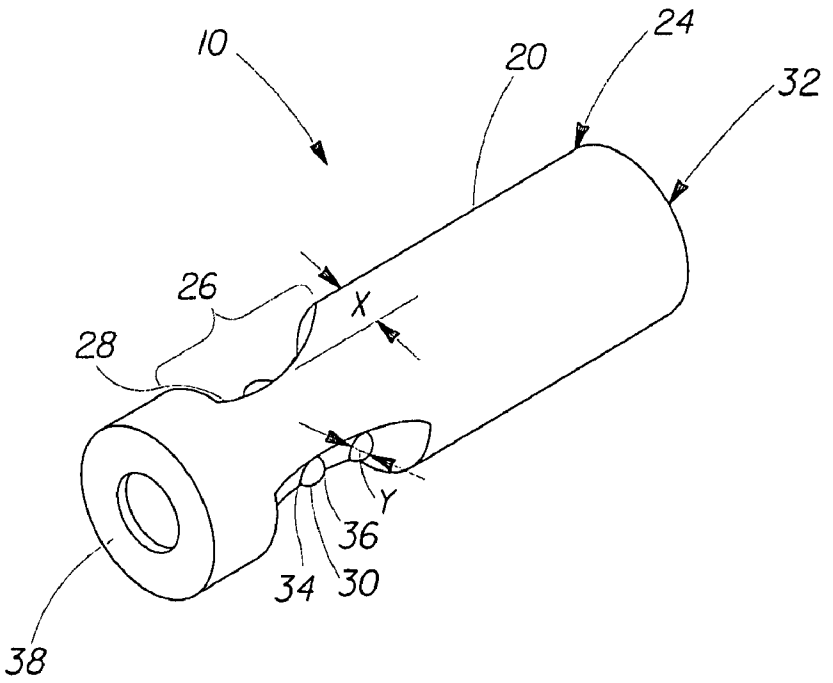


Fig. 3

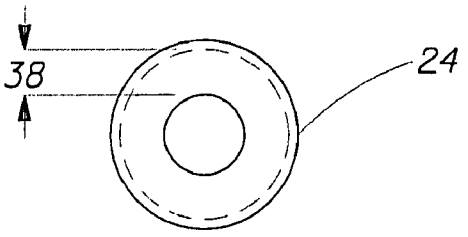


Fig. 4

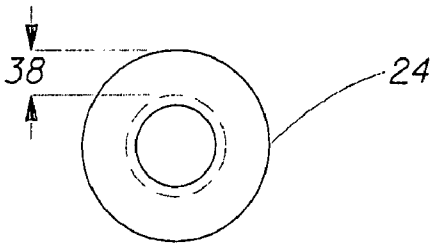


Fig. 5

APPLICATOR HAVING AN INDENTED FINGERGRIP WITH RAISED PORTIONS

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application is a continuation of U.S. application Ser. No. 11/472,738, filed on Jun. 22, 2006, which is a continuation of U.S. application Ser. No. 10/621,709, filed on Jul. 17, 2003, now U.S. Pat. No. 7,081,110.

FIELD OF THE INVENTION

[0002] The present invention relates to an insertion device capable of housing an insertable element having an improved fingergrip region to improve the consumer's ability to securely hold the applicator during insertion of an insertable element.

BACKGROUND OF THE INVENTION

[0003] As known in the art, applicators are used to both house materials intended to be inserted in a body cavity, such as a tampon or medicaments and to expel the material into the intended orifice. Typically applicators comprise an insertion member and a plunger. The material to be expelled from the applicator, such as an absorbent tampon, is positioned within the insertion member. The insertion member has a first end for insertion of the tampon and a second end for receipt of the plunger. To use the applicator, the consumer will position the first end appropriately, grasp the insertion member, and move the plunger in the insertion member towards the first end to insert the tampon. Some applicators also include a fingergrip configuration that is located on the insertion member, which allows the consumer to more securely hold the applicator during insertion of a material into the body cavity.

[0004] Various fingergrip configurations have been proposed to facilitate the handling of the applicator and to improve the insertion experience. One approach is a tampon applicator having an integral fingergrip that is formed by embossing the outside surface of the insertion member of the tampon applicator. The embossed portion of the applicator may take the form of a series of circumferential rings or a series of discrete raised dots. Examples of such fingergrips can be found in U.S. Pat. No. 6,045,526 issued to Jackson; U.S. Pat. No. 5,395,308 issued to Fox, et al.; U.S. Pat. No. 5,290,501 issued to Klesius; U.S. Pat. No. 4,573,964 issued to Huffman; U.S. Pat. No. 4,573,963 issued to Sheldon; U.S. Pat. No. 4,891,042 issued to Nelvin, et al.; U.S. Pat. No. 4,412,833 issued to Weigner, et al.; U.S. Pat. No. 3,895,634 issued to Berger; U.S. Pat. No. 3,628,533 issued to Berger; U.S. Pat. No. 3,628,533 issued to Leyer; U.S. Pat. No. 2,922,423 issued to Rickard; U.S. Pat. No. 2,587,717 issued to Fourness; and U.S. Pat. No. 2,489,502 issued to Ruth.

[0005] Another approach to the gripping problem is found in U.S. Pat. No. 3,575,169 issued to Voss, et al., which provides separate raised elements that are applied to an outer tube of a tampon applicator to provide a fingergrip. The elements can be formed of plastic, rubber, ceramic, or other materials, and can be affixed to the outer tube by interference fit or by bonding.

[0006] While many have tried to design and manufacture tampon applicators having these improved qualities, there still remains a need for a tampon applicator that has gripping features that provide limited resistance to finger slip during the insertion and the expulsion of the tampon applicator.

SUMMARY OF THE INVENTION

[0007] A tampon applicator is provided which comprises an insertion member adapted to house an absorbent tampon and receive a plunger, said insertion member having an outer surface and a fingergrip region extending inwardly from said outer surface and disposed between an insertion end and a second end opposite said insertion end of said insertion member, said fingergrip region comprising an indention region having a depth dimension X, wherein said depth dimension X is measured from the outer surface of said insertion member to lowest point of said indentation region, said indention region comprising protruding, three-dimensional raised portions that are positioned within said indentation region and having a height dimension Y, wherein said height dimension Y is measured from base to highest point of an individual three-dimensional raised portion, said height dimension Y being less than or equal to said depth dimension X, and wherein at least one of said insertion end or said second end of said insertion member comprises a lip.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. **1** is a side view of an applicator of the present invention.

[0009] FIG. **2** is a side view of an applicator of the present invention.

[0010] FIG. **3** is a perspective view of an applicator of the present invention.

[0011] FIG. **4** is an end view of an applicator of the present invention.

[0012] FIG. **5** is an end view of an applicator of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0013] As used herein "applicator" refers to a device or implement that facilitates the insertion of a tampon, medicament, treatment device, visualization aid, or other into an external orifice of a mammal, such as the vagina, rectum, ear canal, nasal canal, or throat. Non-limiting specific examples of such include any known hygienically designed applicator that is capable of receiving a tampon may be used for insertion of a tampon, including the so-called telescoping, tube and plunger, and the compact applicators, an applicator for providing medicament to an area for prophylaxis or treatment of disease, a spectroscope containing a microcamera in the tip connected via fiber optics, a speculum of any design, a tongue depressor, a tube for examining the ear canal, a narrow hollow pipe for guiding surgical instruments, and the like.

[0014] The term "joined" or "attached," as used herein, encompasses configurations in which a first element is directly secured to a second element by affixing the first element directly to the second element; configurations in which the first element is indirectly secured to the second element by affixing the first element to intermediate member(s) which in turn are affixed to the second element; and

configurations in which the first element is integral with the second element; i.e., the first element is essentially part of the second element.

[0015] As used herein the term "tampon," refers to any type of absorbent structure that is inserted into the vaginal canal or other body cavities for the absorption of fluid and/or gas therefrom, to aid in wound healing, or for the delivery of active materials, such as medicaments, or moisture. The tampon may be compressed into a generally cylindrical configuration in the radial direction, axially along the longitudinal axis or in both the radial and axial directions. While the tampon may be compressed into a substantially cylindrical configuration, other shapes are possible. These may include shapes having a cross section that may be described as rectangular, triangular, trapezoidal, semi-circular, hourglass, serpentine, or other suitable shapes. Tampons have an insertion end, withdrawal end, a length, a width, a longitudinal axis and a radial axis. The tampon's length can be measured from the insertion end to the withdrawal end along the longitudinal axis. A typical compressed tampon for human use is 30-60 mm in length. A tampon may be straight or non-linear in shape, such as curved along the longitudinal axis. A typical compressed tampon is 8-20 mm wide. The width of a tampon, unless otherwise stated in the specification, corresponds to the length across the largest cylindrical cross-section, along the length of the tampon.

[0016] The term "vaginal cavity,""within the vagina," and "vaginal interior," as used herein, are intended to be synonymous and refer to the internal genitalia of the mammalian female in the pudendal region of the body. The term "vaginal cavity" as used herein is intended to refer to the space located between the introitus of the vagina (sometimes referred to as the sphincter of the vagina or hymeneal ring,) and the cervix. The terms "vaginal cavity,""within the vagina" and "vaginal interior," do not include the interlabial space, the floor of vestibule or the externally visible genitalia.

[0017] As used herein, "cm" is centimeters, and "mm" is millimeters.

[0018] FIG. **1** and FIG. **2** show the tampon applicator of the present invention. The tampon applicator **10** includes an insertion member **20** adapted to house an absorbent tampon and a plunger **22**. The insertion member has an outer surface **24** and a fingergrip region **26** disposed about the outer surface **24**. The fingergrip region **26** comprises an indention region **28** having a depth dimension X. The indention region **28** comprises raised portions **30** having a height dimension Y, the height dimension Y being less than or equal to the depth dimension X. When a consumer inserts the insertion member **20** into her vaginal cavity, her fingers and/or thumb are urged towards the insertion end **32** due to frictional forces between the insertion member **20** and the walls of the body cavity. The combination of the indention region **28** and the raised portions **30** and their respective dimensions in relation to each other provides a secure hold and improved handling of the applicator during insertion.

[0019] The insertion member **20** is in the form of a spirally wound, convolutely wound or longitudinally seamed hollow tube, which is formed from paper, paperboard, cardboard or a combination thereof. The insertion member **20** may also be injection molded or formed from flexible plastic, such as thermoformed from plastic sheet or folded or wound from plastic film. The insertion member **20** may also be formed from a combination of paper and plastic. The insertion member **20**, also commonly referred to as an outer tube, is fairly rigid and has a relatively small diameter of about 10 millimeters to about 20 millimeters. The insertion member **20** has a wall with a predetermined thickness of about 0.1 millimeters to about 0.7 millimeter. The wall can be constructed from a single ply of material or be formed from two or more plies that are bonded together to form a laminate.

[0020] The use of two or more plies or layers is preferred for it enables the manufacturer to use certain materials in the various layers that can enhance the performance of the tampon applicator **10**. When two or more plies are utilized, all the plies can be spirally wound, convolutely wound or longitudinally seamed to form an elongated cylinder. For example, in some embodiments the wall can be constructed using a smooth thin ply of material on the outside or exterior surface that surrounds a coarser and possibly thicker ply. In embodiments where the wall contains at least three plies, the middle ply can be the thicker ply and the interior and exterior plies can be smooth and/or slippery to facilitate expulsion of the tampon and to facilitate insertion of the insertion member **20** into a woman's vagina, respectively. By sandwiching a thick, coarser ply of material between two thin, smooth plies, an inexpensive insertion member **20** can be provided which is very functional. The wall may contain one to four plies, although more plies can be utilized if desired. As well, the ends of the insertion member **20** can be lipped. In such embodiments the insertion end **32** and/or a second end opposite the insertion end **32** of the insertion member **20** may include a lip **38**, as shown in FIGS. **3**, **4** and **5**.

[0021] An adhesive, such as glue, or by heat, pressure, ultrasonics, etc, can hold the plies forming the wall together. The adhesive can be either water-soluble or water-insoluble. A water-soluble adhesive is typically used for environmental reasons in that the wall will quickly break apart when it is immersed in water. Such immersion will occur should the insertion member **20** be disposed of by flushing it down a toilet. Exposure of the insertion member **20** to a municipal's waste treatment plant wherein soaking in water, interaction with chemicals and agitation all occur, will cause the wall to break apart and evenly disperse in a relatively short period of time.

[0022] The inside diameter of the insertion member **20** is usually less than about 0.75 inches (about 19 mm) and may be about 0.394 inches (about 10 mm). Although the exterior diameter, of tampons does vary, most tampons utilized by women have an external of less than about 0.75 inches (about 19 mm). The measure of external diameter excludes the indention region **32** of the fingergrip region **26**. However, if one desires to use this invention to administer medication to an animal, such as a farm animal or other mammal, larger size tampons, which would require insertion members with a larger diameter, could be used.

[0023] Alternatively, the material can be overlapped into a tubular configuration. Spirally or convolutely winding the insertion member **20** into a cylindrical tube is especially advantageous when the insertion member **20** is formed from a laminate. In the case of other tube construction methods such as fiber or plastic molding, or integral tube forming (e.g. thermoforming plastic) no seams will be present and

the corrugations could optionally be formed as part of the tube molding or forming process.

[0024] The insertion member **20** is sized and configured to house an absorbent tampon. As stated above, the insertion member **20** should have a substantially smooth exterior surface that will facilitate insertion of the insertion member **20** into a woman's vagina. When the exterior surface is smooth and/or slippery, the insertion member **20** will easily slide into a woman's vagina without subjecting the internal tissues of the vagina to abrasion. The insertion member **20** can be coated to give it a high slip characteristic. Wax, polyethylene, a combination of wax and polyethylene, cellophane, clay, mica, and other lubricants are representative coatings that can be applied to the insertion member **20** to facilitate comfortable insertion.

[0025] The insertion member **20** has an outer surface **24** and a fingergrip region **26** disposed about the outer surface **24**. The insertion member **20** has an insertion end **32** opposed to a fingergrip region **26**. The fingergrip region **26** comprises an indention region **28** having a depth dimension X. The indention region **28** may be any geometric shape known including but not limited to oval, circular, rectangular, trapezoidal, triangular, hemispherical and mixtures thereof. In some embodiments, the depth dimension X may range from about 1 mm to about 10 mm as measured from the outer surface of the insertion member **20** to the lowest point of the indention region **28**. In some embodiments, the depth dimension X may range from about 2 mm to about 5 mm as measured from the outer surface of the insertion member **20** to the lowest point of the indention region **28**. In other embodiments, the depth dimension X may range from about 2.5 mm to about 3.5 mm as measured from the outer surface of the insertion member **20** to the lowest point of the indention region **28**.

[0026] The indention region **28** comprises raised portions **30** having a height dimension Y, the height dimension Y being less than or equal to the depth dimension X. The raised portions **30** may be any three-dimensional geometric shape known including but not limited to ovals, circles, rectangles, trapezoids, triangles, cones, alphabet letters, and mixtures thereof. In all embodiments, the height dimension Y is less than or equal to the depth dimension X. In some embodiments, the height dimension Y is less than the depth dimension X. In some embodiments, the depth dimension Y ranges from about to about 0.1 mm to about 10 mm as measured from the base **34** to highest point **36** of the individual raised portion that is adjacent to the outer surface **24** of the insertion member **20**. In some embodiments, the depth dimension Y ranges from about 0.2 mm to about 5 mm as from the base **34** to highest point **36** of the individual raised portion. In other embodiments, the depth dimension Y ranges from about to about 0.5 mm to about 2.5 mm from the base **34** to highest point **36** of the individual raised portion.

[0027] The number of the raised portions **30** may range from 1 to 200 depending on the size of both the indention region **28** and the raised portions **30**. The individual raised portions **30** may be formed to have essentially identical size and shape as compared to other individual raised portions **30**. Alternatively, the individual raised portions **30** may be formed to have to various sizes and shapes as compared to other individual raised portions **30**. The raised portions **30** may be arranged randomly or in a pattern. For example, the raised portions **30** can be arranged to form any three-dimensional geometric pattern known including but not limited to flowers, ovals, circles, rectangles, trapezoids, triangles, cones, alphabet letters, and mixtures thereof. Alternatively, these raised portions **30** may be randomly arranged so that the multiplicity of the molded or attached dimples may comprise merely a surface roughness in no apparent pattern. In addition, raised portions **30** may be arranged such that the areas between the raised portions **30** may form any geometric pattern known including but not limited to flowers, ovals, circles, rectangles, trapezoids, triangles, cones, alphabet letters, and mixtures thereof.

[0028] All documents cited in the Detailed Description of the Invention are, are, in relevant part, incorporated herein by reference; the citation of any document is not to be construed as an admission that it is prior art with respect to the present invention.

[0029] While particular embodiments of the present invention have been illustrated and described, it would be obvious to those skilled in the art that various other changes and modifications can be made without departing from the spirit and scope of the invention. It is therefore intended to cover in the appended claims all such changes and modifications that are within the scope of this invention.

[0030] The dimensions and values disclosed herein are not to be understood as being strictly limited to the exact numerical values recited. Instead, unless otherwise specified, each such dimension is intended to mean both the recited value and a functionally equivalent range surrounding that value. For example, a dimension disclosed as "40 mm" is intended to mean "about 40 mm".

[0031] All documents cited in the Detailed Description of the Invention are, in relevant part, incorporated herein by reference; the citation of any document is not to be construed as an admission that it is prior art with respect to the present invention. To the extent that any meaning or definition of a term in this written document conflicts with any meaning or definition of the term in a document incorporated by reference, the meaning or definition assigned to the term in this written document shall govern.

[0032] It will be understood that the embodiment(s) described herein is/are merely exemplary, and that one skilled in the art may make variations and modifications without departing from the spirit and scope of the invention. All such variations and modifications are intended to be included within the scope of the invention as described hereinabove. Further, all embodiments disclosed are not necessarily in the alternative, as various embodiments of the invention may be combined to provide the desired result.

What is claimed is:

1. A tampon applicator comprising:

an insertion member, the insertion member having an insertion end, a second end opposite to the insertion end, and a center portion disposed between the insertion end and the second end;

the center portion having a first height and the second end having a second height;

the insertion member having a fingergrip region, the fingergrip region comprising an indentation region, the indentation region having a third height;

the insertion member having a first slope from the first height to the third height, the third height being less than the first height;

the insertion member having a second slope from the third height to a second height, the second height being greater than the third height; and

the insertion member having one or more raised portions positioned within the indentation region.

2. The tampon applicator of claim 1, wherein the one or more raised portions have a height dimension Y that is measured from a lowest point of the indentation region to a highest point of the one or more raised portions.

3. The tampon applicator of claim 1, wherein the insertion member has between about 2 and about 4 raised portions.

4. The tampon applicator of claim 1, wherein the one or more raised portions are formed to have essentially identical size.

5. The tampon applicator of claim 1, wherein the one or more raised portions are formed to have essentially identical shape.

6. The tampon applicator of claim 1, wherein the third height is disposed substantially centrally within the indentation region.

7. The tampon applicator of claim 1, wherein the third height is measured from the outer surface of the insertion member to the lowest point of the indentation region.

8. The tampon applicator of claim 1, wherein the one or more raised portions have a shape selected from the group consisting of ovals, circles, rectangles, trapezoids, triangles, cones, alphabet letters, and mixtures thereof.

9. A tampon applicator comprising:

an insertion member, the insertion member having an insertion end and a fingergrip region opposite the insertion end;

the fingergrip region having an indentation region disposed between a first region and a second region;

the indentation region having a depth dimension X, wherein the depth dimension X is measured from the outer surface of the insertion member to a lowest point of the indentation region;

the indentation region comprising one or more raised portions that are positioned within the indentation region and that have a height dimension Y, wherein the height dimension Y is measured from the lowest point of the indentation region to the highest point of the one or more raised portions, wherein the height dimension Y is less than the depth dimension X; and

wherein a height from the first region to the lowest point of the indentation region and from the second region to the lowest point of the indention region is greater than Y and less than or equal to X, and

wherein the second region is disposed at the portion of the insertion member most distal from the insertion end.

10. The tampon applicator of claim 9, wherein the depth dimension X is from about 1 mm to about 10 mm.

11. The tampon applicator of claim 9, wherein the insertion member has between about 2 and about 4 raised portions.

12. The tampon applicator of claim 9, wherein the one or more raised portions are formed to have essentially identical size.

13. The tampon applicator of claim 9, wherein the one or more raised portions are formed to have essentially identical shape.

14. The tampon applicator of claim 9, wherein the one or more raised portions have a shape selected from the group consisting of ovals, circles, rectangles, trapezoids, triangles, cones, alphabet letters, and mixtures thereof.

15. A tampon applicator comprising:

an insertion member, the insertion member having an insertion end, a second end opposite to the insertion end, and a fingergrip portion;

the fingergrip portion comprising an indentation region having a depth dimension X, wherein the depth dimension X is measured from the outer surface of the insertion member to the lowest point of the indentation region;

the indentation region comprising one or more raised portions that are positioned within the indentation region and that have a height dimension Y, wherein the height dimension Y is measured from the lowest point of the indentation region to the highest point of the one or more raised portions, wherein the height dimension Y is less than the depth dimension X;

the second end having a height less than or equal to X and greater than Y at the portion of the insertion member most distal from the insertion end.

16. The tampon applicator of claim 15, wherein the depth dimension X is from about 1 mm to about 10 mm.

17. The tampon applicator of claim 15, wherein the insertion member has between about 2 and about 4 raised portions.

18. The tampon applicator of claim 15, wherein the one or more raised portions are formed to have essentially identical size.

19. The tampon applicator of claim 15, wherein the one or more raised portions are formed to have essentially identical shape.

20. The tampon applicator of claim 15, wherein the one or more raised portions have a shape selected from the group consisting of ovals, circles, rectangles, trapezoids, triangles, cones, alphabet letters, and mixtures thereof.

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