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J. L. JONES

3,347,237

COMPRESSED CATAMENIAL TAMPON OF REGENERATED CELLULOSE

Filed March 9, 1964

FIG. 1.

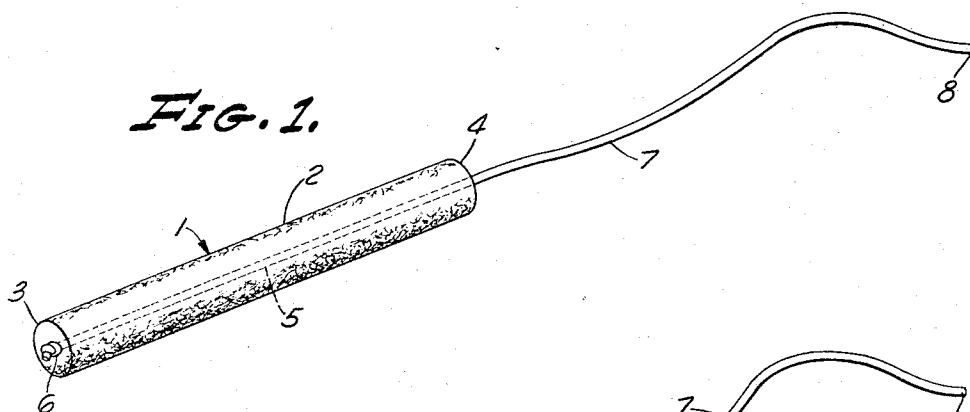


FIG. 2.

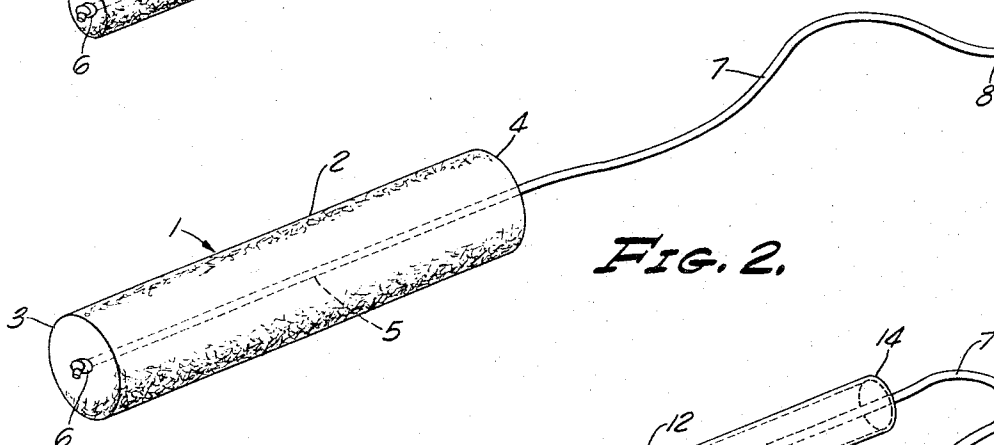


FIG. 3.

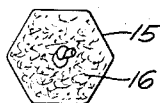
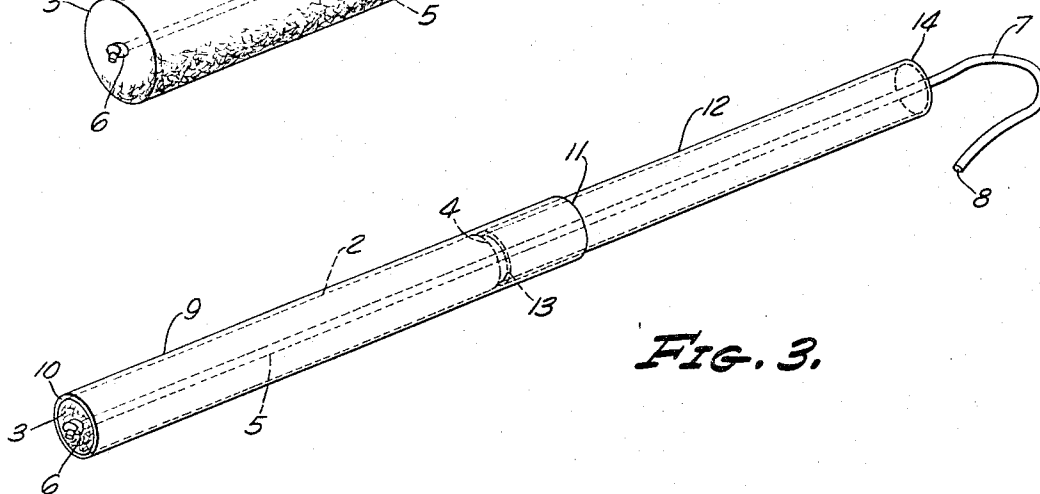


FIG. 4.

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3,347,237 COMPRESSED CATAMENIAL TAMPON OF REGENERATED CELLULOSE

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4 Claims. (Cl. 128—285)

This invention relates to new and useful improvements in a catamenial device or tampon.

Included in the objects of my invention are:

First, to provide a very compact catamenial device, easily carried by women in their purses prior to insertion in the vagina.

Second, to provide a simple, very compact, tampon easily inserted in the vagina.

Third, to provide a very compact catamenial device capable of rapid absorption of menses.

Fourth, to provide a very compact catamenial device capable of absorbing large quantities of menstrual fluid flow.

Fifth, to provide a tampon capable of being flushed down a toilet bowl after being used.

Sixth, to provide an economical tampon, suitable for single use and easy disposal.

Further objects and advantages of my invention will become apparent in the following description, to be read in connection with the accompanying drawing.

FIGURE 1 is a perspective view of the catamenial device or tampon of my invention.

FIGURE 2 is a perspective view on the same scale as FIGURE 1, of the tampon catamenial device of my invention, after it has absorbed menstrual fluid.

FIGURE 3 is a perspective view of an applicator containing the catamenial device of my invention.

FIGURE 4 is an end view of the vaginal hexagonal shaped insertion end of a tampon prior to compression into a catamenial device of my invention.

Referring to FIGURE 1 in detail, there is illustrated a catamenial device comprising a dry, fine pore, regenerated cellulose sponge tampon 1 in which the sponge 2 has been tightly, semi-permanently compressed, greatly decreasing the volume of the fine pores characteristic of regenerated cellulose sponge. In my invention the tampon 1 comprises a dry, compressed regenerated cellulose sponge 2, having a vaginal insertion end 3, and an opposite end 4. A withdrawal string 5 is located along the cylindrical axis of the compressed sponge cylinder 2, having a knotted anchoring end 6 coterminous with the vaginal tampon insertion end 3, and a string handle 7 of suitable length terminating at end 8. In my invention I compress the dry fine pore, regenerated cellulose sponge from a normal cylindrical diameter of approximately one-half to $\frac{1}{16}$ inch down to $\frac{1}{4}$ inch or less diameter. Thus I produce a compressed tampon approximately the diameter of a cigarette. The length of my tampon is that which is necessary to insert in a vagina.

Referring to FIGURE 2 in detail, I show the relative enlarged diameter to which my tampon of FIGURE 1 can expand after absorbing menstrual fluid. My tampon of FIGURE 2, swollen with menstrual fluid is approximately $\frac{1}{16}$ inch in diameter. It is wet, soft and easy to withdraw from a vagina by the string handle 7.

In FIGURE 3 I illustrate my compressed tampon invention 1 enclosed in a pair of paper telescoping tubes of conventional design, useful for inserting my tampon in a vagina. The exterior tube 9, of the pair of telescoping tubes enclosing my compressed tampon 1 has a vaginal insertion end 10, coterminous with the tampon insertion end 3. The opposite end 11 of the tube 9, is about one-half inch longer than the compressed tampon end 4,

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in order to provide a telescoping piston arrangement for the second paper tube 12. Tube 12 acts as a piston for the removal of my tampon 1 by forcing the tube end 13 against the tampon end 4, on applying finger force to the opposite tube end 14, of the tube 12. Other tampon insertion means are known.

I use the term "semi-permanently compressed" in my invention to specifically refer to the physical state which regenerated cellulose sponge of fine pore structure can be made to assume while dry, or substantially free from water. In the dry state the regenerated cellulose sponge can be compressed to a state in which the porous volume proportion of the sponge is substantially reduced from its normal volume. The compressed regenerated cellulose sponge will retain its compressed structure, without appreciable elastic rebound to its original volume, as long as it is kept dry. It does not need a constraining tube to maintain the compressed state. The "semi-permanently compressed" state of the regenerated cellulose as I term it, permits my invention of a menstrual fluid tampon absorbent device, or a catamenial device, with substantially smaller volume per individual applicator, as compared with the uncompressed sponge devices.

I definitely prefer to compress my cellulose sponge tampon only in the radial direction of the sponge tampon cylinder, in order to decrease the tampon circular diameter, while dry. By radially compressing my sponge tampon, I provide a tampon which is sufficiently long to easily insert along the vaginal passage for absorption of menstrual fluid, while at the same time I provide a very small cross-section diameter for easy insertion by young women and the like. My radially compressed tampons require less space in a commercial package, minimizing the problem of carrying tampon supplies during the menstrual period.

I may also provide regenerated cellulose sponge tampons which have been compressed both radially and lengthwise, to produce a product of total minimum pore volume.

On placing my typical catamenial tampon 1 in a vagina, which is easy to do because of its small diameter, my tampon can immediately begin absorption of menstrual fluid. My typical tampon can absorb fluid to attain a soft, swollen, wet sponge diameter of approximately $\frac{1}{16}$ inch, as compared to its original dry, compressed diameter of $\frac{1}{4}$ inch. A typical tampon 1, wet and swollen with menstrual fluid weighs 10 grams, and compares with the compressed original dry weight of 0.3 gram. A typical dry, compressed tampon length is $2\frac{1}{8}$ inches, compared with its wet swollen length of $2\frac{1}{4}$ inches. A typical uncompressed sponge tampon cylinder, $\frac{1}{16}$ inch in diameter by $2\frac{1}{8}$ inch long, may be compressed both in diameter and length to a 1 inch long cylinder which is $\frac{1}{16}$ inch in diameter.

In the interest of conserving cellulose sponge I can make an equilateral polygon cross-section for the wet sponge, as 15 in FIGURE 4. In FIGURE 4, there is shown an equilateral hexagon shaped tampon end 15, with the anchor knot 16 of a withdrawal string. Using an equilateral hexagon or a polygon shaped cross-section of a die, permits the die cutting of a multiplicity of tampons from a single slab of fine pore cellulose sponge, at one time without the loss of sponge material, which would occur if a series of round cutting dies were used. The polygon shaped cross-section of dry sponge can be compressed to a substantially cylindrical cross-section, the same as an original circular cross-section regenerated cellulose sponge.

I use regenerated, fine pore cellulose as a raw material for my sponge. This raw material is easy to prepare synthetically in slabs, clean thoroughly of chemicals, and die cut to a uniform size and shape.

I may pigment my sponge white, with the aid of titanium dioxide pigment or the like white pigment.

I use a cotton string of about 0.1 gram weight per lineal foot, as the basis of the withdrawal string. A length of about four to four and one-half inches of string extending beyond the tampon length furnishes a proper handle for the removal of the wet tampon from the vagina. The string, secured to a needle or awl, can be threaded through the symmetrical long axis of the sponge cylinder, preferably while the cylinder is wet. A knot can be tied in the string terminus, opposite the string handle end, to securely anchor the string in the tampon. Other means of securing the withdrawal string to the sponge are known.

Obviously many modifications and variations of my improvements in catamenial devices are possible in the light of the above teachings. It is therefore understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described or specifically covered by my claims.

I claim:

1. A menstrual tampon comprising: a porous, dry, one-piece, regenerated cellulose sponge tampon having a uniform polygonal cross section area and a cylindrical body length, said regenerated cellulose cylindrical tampon being semi-permanently, uniformly radially compressed in cross section area to minimum size pore openings.

2. A catamenial tampon comprising: a porous, dry, one-piece cylindrical regenerated cellulose sponge tampon having a regular polygonal cross section area, said tampon being semi-permanently uniformly radially compressed

in cross section area to a diameter range of 40 to 50 percent of its original cross section diameter.

3. A menstrual tampon comprising: a one-piece, dry, porous regenerated cellulose sponge cylinder having a uniform polygonal cross section area, said cylinder being semi-permanently, uniformly radially compressed in cross section area to minimum size pore openings; and a tampon withdrawal string means secured within said compressed cylinder.

4. A menstrual tampon comprising: a one-piece, dry, porous, regenerated cellulose sponge cylinder having a uniform polygonal cross section area, said cylinder being semi-permanently, uniformly radially compressed in cross section area to minimum size pore openings; and a tampon withdrawal string longitudinally, coaxially disposed in said cylinder.

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