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C. R. HILL

2,267,030

TAMPON

Filed July 13, 1940

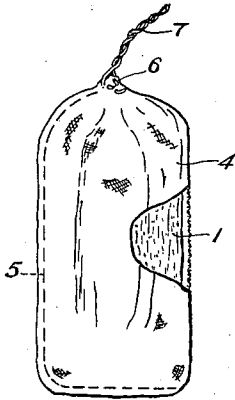


Fig. 1

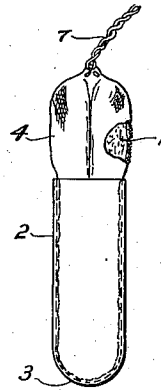


Fig. 2

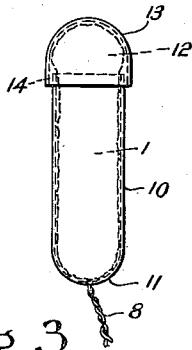


Fig. 3

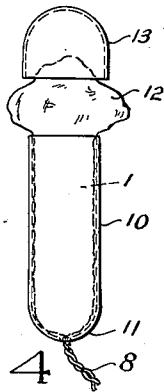


Fig. 4

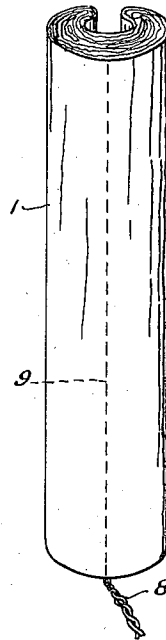


Fig. 5

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TAMPON

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Application July 13, 1940, Serial No. 345,270
In Canada December 1, 1939

3 Claims. (Cl. 128—285)

This invention relates to tampons, particularly of the catamenial type adapted for use within the vagina, and this application is a continuation in part of copending application, Serial No. 242,496, filed November 26, 1938.

The object of the invention is to provide a tampon which may be conveniently and readily inserted in the vagina without danger of frictional irritation of the vaginal walls and which is on insertion substantially immediately effective for its intended purpose. Another object is to provide a tampon including an absorbent pad which, after use, may be readily and wholly withdrawn from the vagina without danger of any portion thereof clinging to the walls of the vaginal cavity.

With these objects in view, the invention comprises the provision, with a pad of high liquid absorptive capacity constituting the core, of a non-toxic soluble tubular member of a gelatinous or like type partially enclosing the pad to expose a portion of the latter, the member being provided with a rounded end portion. The invention also includes, in a tampon of the structure referred to, a bag-like covering completely enclosing the absorbent pad, the covering consisting of a thin fabric, such as cotton cloth, which is permeable with respect to liquids but impermeable with respect to the fibres constituting the absorbent pad.

The invention will be more particularly described with reference to the accompanying drawing, in which,

Figure 1 is an elevation of an absorbent pad structure in accordance with the invention;

Figure 2 is an elevation of one form of tampon;

Figure 3 is an elevation of another form of tampon;

Figure 4 is an elevation of the tampon shown in Figure 3 illustrating its condition a short time after its insertion in the vagina, and

Figure 5 is a perspective view of an absorbent pad structure in expanded condition.

Referring to Figures 1 and 2 of the drawing, 1 is an absorbent pad folded or otherwise shaped into a substantially cylindrical form for endwise insertion into a tubular member or capsule section 2 having a closed rounded end 3. As shown, the capsule section may but partially enclose the pad with one end of the latter extending outwardly from the open end of the section.

The pad 1 may be formed of any suitable material such as cotton or cellulose fibres, and is of a highly absorbent nature. It may be con-

structed as a flat pad of long fibred material sewn down the center, as indicated at 9, for stability and prevention of fibre disintegration. The sewing material may terminate in a pull cord 8 whereby an effective connection between the pull cord and pad is provided. A pad of suitable dimensions, say, two inches in length and approximately $\frac{3}{16}$ inch in diameter when compressed and rolled into cylindrical form, should have a liquid absorbency capacity of approximately three quarters of a fluid ounce. In fully expanded condition, as shown in Figure 5, it will be approximately double its compressed dimensions.

The capsule section is of gelatinous or like material and is adapted to dissolve when placed in the vagina or at approximately body temperature. The wall of the section is of a thickness which will impart necessary rigidity to the tampon for ease of insertion but should not be thicker than is necessary to impart such rigidity so that it will quickly dissolve within the vagina. A suitable wall thickness has been found to be .007 to .011 inch.

While the pad, provided with the pull cord 8 suitably stitched thereto, may be employed without additional structure in conjunction with its capsule section 2, the invention contemplates a further important element in association therewith. This element consists of a liquid permeable sheath or covering 4 for the pad adapted to prevent disintegration of the latter or, in other words, the floating away or picking off of the relatively loosely joined fibres making up the pad.

The covering consists of a thin fabric, such as cotton cloth, woven or knitted from preformed threads or yarns, and is impermeable with respect to the fibres of the absorbent pad while being readily permeable with respect to liquids.

The covering is preferably preformed into a bag-like shape, as shown in Figure 1, stitching 6 completing such form. The pad or core is then inserted into the bag, which is quite loose in relation to the pad to provide room for expansion of the latter under liquid absorption. After insertion of the pad, the open end of the bag is closed by stitching 6 which may terminate in a pull cord 7. It will be noted that the pull cord 7 is attached to the bag itself and not to the core. The yarns forming the stitching 6 and pull cord 7 may be a continuation of the yarns forming the stitching 5.

In use, the rounded capsule section end of the tampon is inserted into the vagina and the tampon placed in proper position therein. The rigid

wall of the capsule section provides support for the relatively soft pad structure and this, combined with the smooth surface of the section, ensures ease and convenience of insertion. Thus there is no irritation of the delicate tissues of the vagina and danger of injury thereto is avoided. The exposed portion of the pad immediately absorbs and blocks any liquid flow which may take place in the vagina prior to complete dissolving of the capsule section, when the tampon is completely effective for absorptive purposes. After use, the tampon is readily withdrawn from the vagina by means of the pull cord 7. Since the latter is secured to the bag, the latter and its entire contents are completely removed. Thus, there is no danger of loose fibres becoming separated from the absorbent pad and remaining within the vagina with consequent discomfort and possibility of infection. This also provides additional convenience and comfort in disposal of the used device.

Referring to Figures 3 and 4 of the drawing, the absorbent pad 1 provided with the pull cord 8 is inserted into a tubular capsule section 10 having a closed rounded end 11 through which the pull cord 8 extends.

The pad may be provided with a bag-like covering and pull cord, such as shown at 4 and 7 and previously described.

As shown in Figure 3, the capsule section 10 but partially encloses the pad, a portion 12 of the latter extending outwardly from the open end of the section 10. A loosely fitting or floating rounded capsule cap section 13 is provided to cover the extending portion 12 of the pad. The cap overlaps the top of the tubular section only a slight distance and, as previously stated, has a loose fit therewith, the inner diameter of the cap being greater than the outer diameter of the tubular section. Thus, the cap has merely a floating connection with the other elements of the structure and a narrow substantially annular duct 14 is provided between the inner wall of the cap and the outer wall of the tubular section to expose a portion of the pad and provide for entrance of liquids.

The capsule sections 10 and 13 are of similar material and thickness to capsule section 2. The dimensions thereof may be as desired. A suitable size for the tubular section 10 is $1\frac{1}{8}$ inches in length and $\frac{1}{8}$ inch outer diameter, and for the cap $\frac{1}{8}$ inch in length and $\frac{1}{16}$ inch in diameter. The pad protrudes from the top of the tubular section about $\frac{3}{8}$ inch and the cap overlaps the tubular section about $\frac{1}{8}$ inch.

In use, the cap 13 provides a non-irritating inserting head for the tampon whereas the tubular section gives necessary rigidity and smoothness of surface for ease and convenience of insertion. Immediately upon insertion into the vagina, liquid flows through duct 14 into contact with the portion 12 of the pad which absorbs the same and expands into the condition shown in Figure 4, thus pushing the cap free of the tubular section and fully exposing the portion 12 of the pad for ready absorption of liquid. The exposed expanded portion 12 effectually blocks and absorbs any liquid flow in the vagina which may take place prior to complete dissolving of the capsule.

The tampon is readily withdrawn after use as previously described.

I claim:

1. A catamenial tampon comprising a dissolvable tubular member having an open end and a closed end with a central opening therein, a cylindrical absorbent pad in said tubular member having a high liquid absorption capacity and having a pull cord extending through said opening and a portion extending outwardly from said open end, and a dissolvable rounded cap member covering said extending portion and slightly overlapping said tubular member, the inner wall of the overlapping portion of the cap member being spaced from the outer wall of the tubular member to provide an annular duct.

2. A catamenial tampon comprising a dissolvable elongated tubular member, an absorbent pad in said tubular member having a high liquid absorptive capacity and having a portion extending outwardly from one end of the tubular member, and a dissolvable rounded short cap member covering said extending portion and slightly overlapping said tubular member, the inner wall of the overlapping portion of the cap member being spaced from the outer wall of the tubular member to provide an annular duct.

3. A catamenial tampon comprising a pad having a high liquid absorptive capacity and a dissolvable gelatinous capsule enclosing said pad, said capsule having a substantially rigid tubular wall section and a rounded cap section slightly overlapping the tubular section, the inner wall of the overlapping portion of the cap section being spaced from the outer wall of the tubular section to provide an annular duct.

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