

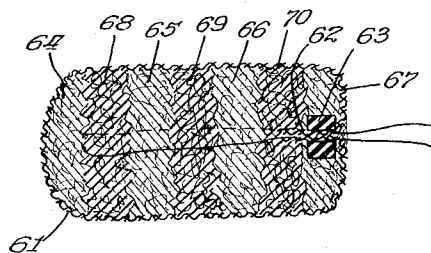
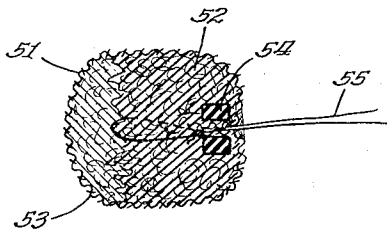
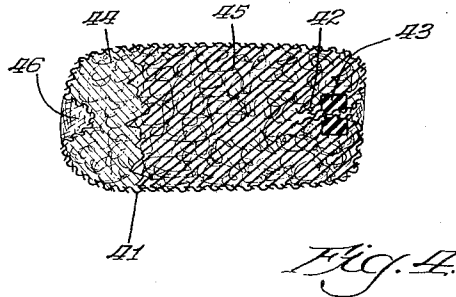
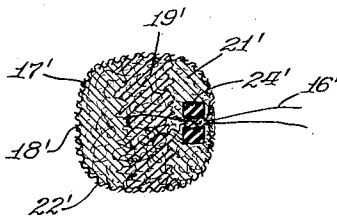
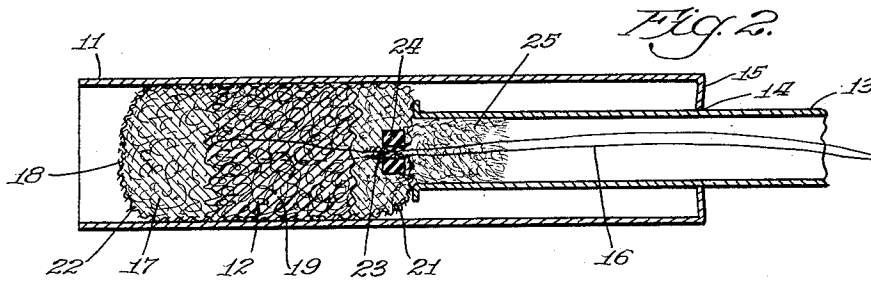
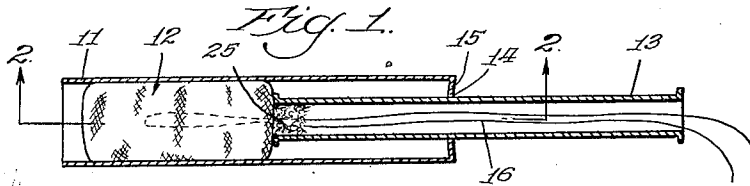
May 15, 1951

H. C. RIORDAN

2,553,382

TAMPON

Filed Aug. 4, 1948



INVENTOR.
Howard C. Riordan

BY

W. H. R. Riordan

Atty.

UNITED STATES PATENT OFFICE

2,553,382

TAMPON

Howard C. Riordan, Oak Park, Ill.

Application August 4, 1948, Serial No. 42,447

2 Claims. (Cl. 128-270)

1

This invention has to do with tampons and relates more particularly to a tampon adapted for vaginal use.

A principal object of the invention is the provision of a stratified tampon having proximal and distal portions and strata of material extending transversely of an axis intersecting the proximal and distal portions, and the material in adjacent of the strata being relatively absorbent and non-absorbent of moisture. This structural characteristic of the tampon unit has the advantage of providing a portion or portions capable of absorbing body liquids discharged into the vaginal tract and other portions which, because of their non-absorbing character, obstruct or materially limit discharge of accumulated liquid therepast. The structure has the further advantage of constituting an efficient medicament carrier, particularly when the distal portion thereof is composed of the moisture absorbing material. Such material at the distal end of the unit is capable of being saturated with a prescribed amount of liquid medicament and maintaining localized application thereof.

A further object is the provision of a stratified tampon unit wherein the distal end contains a medicament-receiving recess. The tampon unit having a distal end recess is particularly adapted for the application of medicament in powder or tablet form which can be placed within the recess in prescribed quantities. When a recess is formed within the distal end of the unit it is contemplated that the distal end portion can be comprised of either the moisture absorbent or moisture repellent material.

Another object is the provision of a transversely stratified tampon having a plurality of strata wherein the adjacent strata are relatively respectively absorbent and non-absorbent of moisture, wherein the strata at the distal and proximal ends of the unit are each absorbent, and the unit being encased in a flexible porous sack of which the neck is disposed at the proximal end of the unit, and there being part of the proximal and absorbent material projected outwardly through the sack neck.

Still a further object is the provision of a tampon according to any of the preceding objects, wherein there is a retrieving cord looped about at least one of the strata and extending outwardly through and from the proximal end of the unit.

The above and other desirable objects inherent in and encompassed by the invention will be more fully comprehended from the appended claims and the ensuing description which refers to the drawings, wherein:

Fig. 1 is a longitudinal sectional view of a vaginal tampon applicator device and a side ele-

2

mentary view of a tampon therein embodying a preferred form of the invention.

Fig. 2 is an enlarged fragmentary longitudinal sectional view of a portion of the device shown in Fig. 1 and also showing the tampon in sectional view.

Fig. 3 is an axial sectional view illustrating a modified form of the invention.

Fig. 4 is an axial sectional view showing a third form of the invention.

Fig. 5 is an axial sectional view illustrating a fourth form of the invention.

Fig. 6 is an axial sectional view illustrating a fifth form of the invention having several transverse strata of the filling material of which the adjacent strata differ in their moisture-absorbing capabilities.

With continued reference to the drawings and particularly to Figs. 1 and 2, there will be seen a tubular applicator cartridge 11 containing a tampon unit 12. Such tampon unit is arranged coaxially with the tubular member 11, and while forcibly slideable therein is fitted comparatively tightly therein since the unit is compressed prior to or incident to insertion into this tubular member. Said tubular cartridge member 11 is constructed conventionally as is its coaxial plunger counterpart 13 which is slideably contained within a hole 14 of an end wall 15. A retrieving cord 16 which is looped about filling material within the tampon 12 extends outwardly through and from a proximal end portion of such tampon and extends outwardly through the tubular plunger member 13.

Tampon 12 is transversely stratified, it comprising a stratum 17 of moisture absorbent fibrous material, such as cotton, adjacently to the distal end 18 of the unit, an intermediate stratum 19 of fibrous material which is moisture repellent, and a stratum 21 adjacent to the proximal end opposite to the distal end, this latter stratum also being composed of moisture absorbent fibers. The fibers in the moisture absorbent strata 17 and 21 may consist of ordinary cotton fibers untreated excepting for sterilization. The fibers within the non-absorbent stratum 19 may be made non-absorbent by a treatment pursuant to which such fibers are coated with a non-toxic moisture impervious film. A common way of depositing such a film upon discrete heterogeneously arranged fibers within a mass of fibrous material is to spray the material with a volatile liquid which carries a film-forming substance therein to remain deposited in the form of a film upon the fibers subsequent to evaporation of the carrier liquid.

A jacket or sack 22 enclosing the stratified material is soft, porous and flexible. This jacket may be shaped from a flat piece of gauze of which the central portion registers with the distal end

18 of the tampon unit and of which the edge portions are gathered together at the proximal end of the unit to form a neck 23 which is involuted axially into the unit where such neck is gripped and retained by a small rubber band 24 contracted thereonto.

In forming the tampon unit shown in Figs. 1 and 2 the strata 17, 19, and 21 are inserted into the jacket successively in the order named, and prior to insertion of the middle stratum 19 a midsection of the retrieving cord 16 is looped thereabout. When the proximal end stratum 21 is later inserted into the jacket, subsequent to the edges of the gauze piece having been gathered together into the neck 23 but prior to contraction of the rubber band 24 into such neck, such stratum is inserted in such a fashion that a tail portion 25 thereof is allowed to remain exteriorly of the jacket. Both the tail portion 25 of the stratum 21 and the free ends of the retrieving cord 16 project outwardly through the involute neck 23 at the time the rubber band 24 is allowed to contract.

The applicator device is employed conventionally for placing the tampon 12 in the vaginal tract; the open end or left end of the tube 11 as viewed in the drawings is the leading end of the device as it is inserted endwise into the tract, and, thereafter the plunger 13 is forced endwise to the left for discharging the tampon outwardly through the open end of the tube 11. Subsequent to this operation the tube 11 is withdrawn together with the plunger 13 while the retrieving cord 16 slides through the tubular members 13 and 11 and becomes disassociated therefrom.

Prior to placing the tampon in use the moisture absorbing stratum 17 may be at least partially saturated with a prescribed amount of medicament. Localization of the medicament is provided for because of the non-absorbing quality of the fibers within the non-absorbing stratum 19. In addition to precluding propagation of the medicament axially of the tampon unit away from its distal end, such non-absorbing stratum 19 also prevents or materially diminishes the undesired discharge of body fluids. Any such fluids or any of the medicament discharging past the non-absorbing stratum 19 will be accumulated in the stratum 21 of which the fibers have an affinity for fluid. The fibers in the tail 25 are also of moisture-absorbing character and are unimpeded in the exercise of this function by any enclosure jacket or the like.

A substantially spherical tampon unit constructed similarly to the unit illustrated in Figs. 1 and 2, except for size and proportion of parts and the omission of the fibrous tail, is shown in Fig. 3. To expedite the disclosure of this second embodiment of the invention, the parts thereof corresponding to the parts of the first embodiment are designated by the same respective reference characters with the addition of a prime.

A third form of the invention, Fig. 4, is elongated similarly to the first embodiment and has a pervious jacket 41 similar to the jacket 22 having an intumed or involuted neck 42 gripped and held in place by a rubber band. In this third form of the invention however there are only two strata, namely, a moisture absorbing stratum 44 at the distal end of the unit and a relatively long non-absorbing stratum 45. Strata 44 and 45 may be of the same material

respectively as the absorbing stratum and non-absorbing stratum of the first embodiment. A recess 48 is formed at the distal end of the unit and within the absorbing stratum 44, for receiving medicament in such solid form as a tablet, crystals, or powder. Because of the absorbent character of the stratum 44 it may also be charged with a desired amount of liquid medicine.

The Fig. 5 embodiment most closely resembles the Fig. 3 embodiment but distinguishes therefrom by having only an absorbing stratum 51 at the distal portion of the unit and a relatively thick stratum 52, axially of the unit, of non-absorbent material. The jacket 53, the rubber band 54, and the retrieving cord 55, are like the corresponding parts described above.

A fifth embodiment of the invention illustrated in Fig. 6 comprises a moisture pervious jacket 61 of which the free edges are gathered together into an intumed neck 62 contracted onto and held in place by a small rubber band 63. Moisture absorbing strata 64, 65, 66, and 67 are arranged alternately with non-absorbing strata 68, 69, and 70. Each of the non-absorbing strata 68, 69, and 70 constitute obstructions to the flow of fluids axially of the unit and of the vaginal canal. Seepage past the innermost of these non-absorbing strata, 68, will be absorbed by the stratum 65. Ultimate saturation of the stratum 65 and ensuing seepage past the obstructing stratum 69 will cause accumulation in the stratum 66. Stratum 70 will block seepage until the stratum 66 is saturated and thereafter the unit will prevent loss of liquid from the canal until the stratum 67 becomes saturated.

Having thus described a limited number of embodiments of the invention with the view of clearly and concisely illustrating the same and the uses thereof,

I claim:

1. A stratified tampon of which a principal axis extends between oppositely disposed proximal and distal portions thereof, the strata extending transversely of the axis and being formed of fibrous material, the fibers in adjacent strata having respectively affinity and repellent characteristics with respect to moisture, the proximal and distal portions comprising respective strata wherein the fibers have the moisture affinity characteristic, a gauze sack encasing the stratified material in such a fashion that the bottom of the sack is disposed at said distal end portion and the material at the opposite end of the sack being gathered together into an involuted neck.

2. The combination set forth in claim 1, wherein a part of the moisture affinity fibers at the proximal portion of the tampon project outwardly of the sack through the involuted neck.

HOWARD C. RIORDAN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
382,176	Siner	Mar. 17, 1908
1,395,295	Pond	Nov. 1, 1921
1,555,703	Gale	Sept. 29, 1925
1,726,339	Burill	Aug. 27, 1929
2,123,750	Schulz	July 12, 1933