Jan. 26, 1960 C. I. RICKARD ET AL 2,922,423

TAMPON EJECTOR

Filed May 10, 1956

Fig. 1.

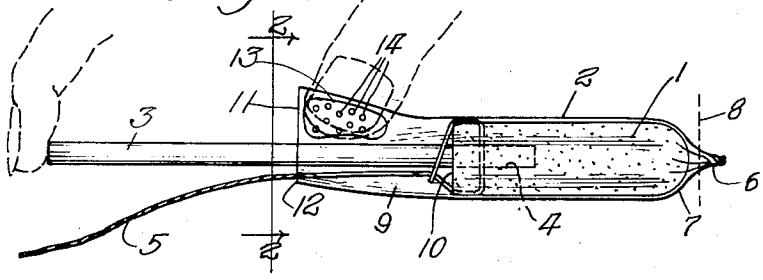


Fig. 2.

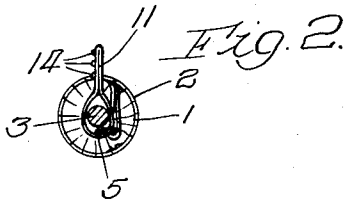


Fig. 3.

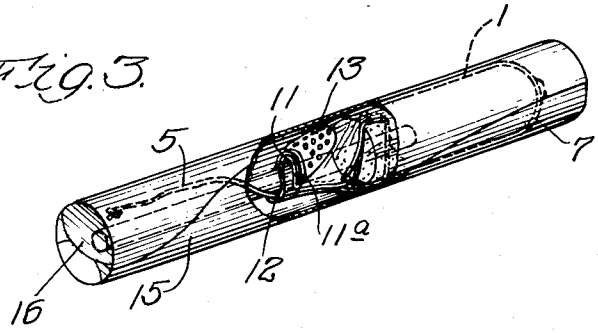
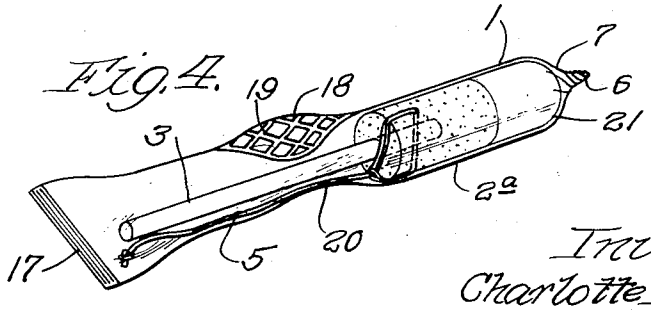


Fig. 4.



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TAMPON EJECTOR

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5 Claims. (Cl. 128—263)

This invention relates to an improvement in a cellulosic product or a product which comprises largely cellulosic material, and more particularly to an improvement relating to a tampon and inserting means therefor, i.e., a means for inserting a tampon into a body opening. The invention is especially applicable to catamenial tampons but it may also be used for medicated and other tampons.

The main objects of the invention are to provide a simple but efficient tampon inserting means; to provide tampon inserting means which will cause a minimum of discomfort when the tampon is being inserted; to provide a single use inserting means which may be discarded after use, such single use being made practical both in respect of the disposability of the discarded elements and in respect of the cost thereof; to provide an inserting means which will also provide a guide for indicating the proper extent of insertion, especially as applied to a catamenial or other vaginal tampon; to provide an inserting means which is very easy to use and which may be characterized as a one hand inserting means; and in general it is the object of the invention to provide an improved tampon inserting means.

Other objects and advantages of the invention will be understood by reference to the following specification and accompanying drawing (1 sheet) in which there is described and illustrated a selected embodiment of the invention and a modification thereof.

In the drawing:

Fig. 1 is a side elevation of a tampon provided with inserting means according to the present invention;

Fig. 2 is a cross sectional illustration on a plane represented by the line 2—2 of Figure 1;

Fig. 3 is a perspective illustration of the tampon with its insertion means enclosed in an outer wrapper according to one desirable arrangement; and,

Fig. 4 is a perspective illustration of a modification of the structure shown in Figs. 1 and 2.

As shown in Fig. 1, a catamenial (or other) tampon 1 of any desired construction is enclosed in a sheath or tube 2, a stick 3 being provided (more or less as in Milcent U.S. Patent 2,607,346) for ejecting the tampon from said sheath 2 to deliver the tampon into place in the body cavity.

The tampon 1 may comprise an absorbent compressed fiber body, said body being compressed to such an extent that it is substantially stable under normal atmospheric conditions but will expand when wetted as occurs when the tampon is put to its intended use. The stick 3 is made of wood, paper or any other material and said stick is preferably but not necessarily seated in a socket 4 in the outer end portion of the tampon body. The tampon is also preferably provided with a withdrawal cord 5 which is suitably anchored to the outer end portion of the tampon body and extended therefrom a suitable length.

The tube or sleeve 2 which encloses the tampon and its associated inserter stick and cord, is made of non-

absorbent, soft, flexible flaccid or limp material. This tube may be made of plastic material in thin sheet or film-like form and of other substantially non-absorbent materials which present the said characteristics and others hereinafter referred to. One very satisfactory material for this tube or sleeve is polyethylene having a thickness within the range of about .8 to 2 mils.

The tube 2, whether formed from a sheet of material or extruded as a seamless tube, is of a diameter which slidably receives the tampon within the sleeve.

An end portion of the tube or sheath 2 is partially or wholly closed over the front or inner end of the tampon. In this instance the tube is shown twisted closed at 6 over the adjacent, front end of the tampon, a portion of the tube being conformed as indicated at 7 to at least a peripheral portion of the tampon end so as to resist movement of the tampon out of that end of the sleeve. The closed end portion 6 of the tube may be sealed closed in many ways such as by heat, pressure, adhesive and otherwise and by combinations of two or more thereof. Such a sealed closure is especially useful in connection with medicated tampons but is not usually necessary for most catamenial tampons if the constricted portion 7 is provided or some other provision is made for suitably resisting movement of the tampon out of that end of the sheath. Also, closing of the sheath end may be otherwise effected with or without causing a portion of the tube to be conformed to the tampon end.

Conformation of the tube as at 7 to a peripheral part of the end surface of the tampon, whether said end is of hemispherical, flat or of other shape, may be effected as an incident to said twist-closing of the tube, or by the application of heat, or by stretching the tube lengthwise to cause it to neck down over said tampon end, and otherwise as may be most suitable for the particular kind of material used in making the tube. For example, when the tube is made of properly oriented polyethylene or other material having similar characteristics, the tube end portion may be stretched lengthwise to effect closing or constriction and conformation of the tube over at least a peripheral portion of the end of the tampon. As an alternative, for such stretching, or in combination therewith, the end portion of the tube may be twisted relative to the main body portion thereof to effect stretching of the tube material lengthwise of the tube and constriction thereof as aforesaid. This lengthwise stretching of said end portion also causes the tube material in said stretched portion to be reduced in thickness and weakened so that the constricted tube portion is made easily expandable or rupturable by pressure of the tampon against said necked down or constricted tube portion incident to ejection of the tampon from the tube or sheath through that end thereof.

The end closure or contracted sheath portion 7 may be so formed that it extends inwardly over only a peripheral portion of the end of the tampon and if the formation of such constricted end portion incidentally provides a tip such as the closed tip 6, said tip may be cut off or otherwise detached at a suitable point, for example at the line 8 in Figure 1 or as shown in Figure 3 to leave the sheath with a centrally open constricted end portion 7. Such a peripheral end closure or contracted portion 7 is sufficient to prevent unintended movement of the tampon out of that end of the sheath. If it is preferred to retain said complete closure 6, such closure, for catamenial tampon purposes, should be such that it does not objectionably resist opening of said end of the sheath by the pressure which may be applied thereto in the manner hereinafter explained for ejecting the tampon from the sheath and inserting said tampon into the vaginal canal.

When the end closure is formed as above described

so as to reduce the thickness of the polyethylene or similar material in said end closure, the reduction of tensile strength of the stretched material occurs mainly in respect of strength circumferentially of the tube so that circumferential expansion of said constricted end portion is facilitated. In the event that the thinned material in said end portion is ruptured, the rupture or ruptures will invariably occur along lines which extend axially of the sheath and no portion of the sheath will become detached therefrom. However, other means may be employed to reduce the tensile strength of said closure forming portion of the sheath for said purpose, either throughout the area of the closure portion or in selected places.

The tube or sheath **2** has an end portion **9** which projects rearwardly beyond the rear end **10** of the tampon, the ejector **3** and the withdrawal cord **5** extending out of said projecting sheath portion as illustrated.

The sheath is provided with a gripping section which may be merely an integral part of the sheath, such as a tongue-like extension of only a part of the circumference of the sheath extended rearwardly from the sheath, but which is preferably a laterally extending gripping tab or lip **11** formed as an integral part of the rearwardly projecting sheath portion **9**. This tab **11** may be formed by collapsing and flattening a part of said rearwardly projecting sheath portion at one side of the applicator stick **3** and incidentally thereto, pulling or adjusting a diametrically opposed part of the sheath to a fairly close but loose fit about the applicator stick **3** as indicated at **12** (see Fig. 2). The table **11** extends approximately radially of the sheath and said stick **3**, and is preferably secured in tab form so that the tab can easily be grasped between the thumb and middle finger of one hand. Securement of the collapsed sleeve part in tab form may be effected in any suitable area such as indicated at **13** by the application of adhesive between the inside faces of the tab forming portions, or by means of heat and pressure when the sheath is made of heat sealable material such as polyethylene, or in any other suitable manner.

Said gripping section is preferably treated in any suitable manner to roughen, thicken, or otherwise facilitate gripping thereof between fingers. For example said section may be coated with non-slip material, embossed, or perforated to provide edges which afford a friction grip on the gripping section, or the section may be pin pricked to provide perforations and projections such as indicated at **14**. If the sheath is made of heat sealable material, hot pin pricking will not only produce the indicated roughening but will also unite the two plies of the tab to stabilize the tab. Other forms of roughening may be substituted and even mere heat sealing of an area of the tab (when it is of heat sealable material) or of a plurality of small mutually adjacent areas, tends to pucker and roughen the gripping area of the tab.

Roughening of the gripping tab, in effect, increases the bulk or thickness of the tab which is thereby made more substantial and more readily grippable between fingers. This roughness of the tab or other treatment which increases its bulk or thickness is highly desirable in connection with the use of very thin sheath material such as described which would otherwise provide a tab of such thinness that it might be difficult to obtain a secure finger grip on the tab. The roughened and, in effect, thickened tab provides a non-slip grip on the sheath and enables the tab to be securely held.

The provision of a definite gripping tab as described tends to insure that the tab alone will be gripped when so desired, and that the withdrawal cord will be permitted to remain free for movement with the tampon relative to the sheath when the tampon is ejected from the sheath. Similarly, the provision of a definite gripping tab as described, substantially precludes, as a practical matter, unintentional gripping of the sheath and the stick together, or such gripping of the sheath as to close the same so tight around the stick, as to interfere with free movement of the stick relative to the sheath for tampon ejection purposes.

The withdrawal cord **5** is preferably positioned along the length of the ejector stick **3** in diametrically opposed relation to the tab, and emerges from the closed end portion of the sheath through the clearance at **12** around the stick **3**.

The tampon with its associated sheath **2**, withdrawal cord **5**, and ejector stick **3**, may be enclosed in an outer wrapper of paper or other suitable material so as to preserve its cleanliness. As shown in Fig. 3, a paper wrapper **5** is wrapped around the tampon, the tab **11** being bent over or rolled as indicated at **11***a* into an approximately cylindrical extension of the sheath portion which extends around the tampon body **1**. The ends of the paper or other wrapper **15** may be suitably closed or folded over as indicated at **16** to close the wrapper, this being done at both ends thereof. The paper wrapper **15** may readily be removed when it is desired to put the tampon into use.

The closing of the sheath over the front end of the tampon, either partially or completely as aforesaid, and the closing of the sheath about the inserter stick adjacent the rear end of the tampon serves to prevent unintentional removal of the sheath from the tampon, especially as an incident to removal of the paper outer wrap.

When the described sheathed tampon is a catamenial tampon, it is inserted into the vaginal canal by first grasping both the inserter stick and the sheath adjacent the gripping tab **10** between the thumb and first two fingers, the withdrawal cord being permitted to hang free. With the tampon so held, the tampon together with its plastic sheath is pressed into the vaginal opening until the thumb and middle finger rest against the body. The finger grip is then shifted slightly to release the stick and to grip the tab, and the first or index finger is then pressed against the end of the inserter stick and the latter moved into the sheath to eject the tampon from the sheath. The sheath end closure formed by either or both the constricted or closed front end portion of the sheath, is easily automatically opened as hereinabove described, by the pressure of the tampon against said closure.

The location of the tab relative to the tampon in said sheath indicates the preferred position in which the sheath and stick should be gripped to insure insertion of the sheathed tampon the proper distance into the body. Ejection of the tampon from the sheath so positioned insures proper positioning of the tampon in the vaginal canal. Hence said gripping tab constitutes, in effect, a guide for determining the proper extent to which the sheathed tampon should be inserted. The length of the rearwardly projecting sheath portion, and the distance of the gripping tab **10** from the tampon, may be made to permit insertion of the sheathed tampon to whatever extent may be considered desirable.

During the movement of the tampon out of the sheath, the withdrawal cord **5** is pulled through the limited clearance between the rear end of the sheath and the inserter stick **3** and is thereby more or less straightened out so that when the tampon is fully inserted, said withdrawal cord will remain accessible on the outside of the body for easy removal of the tampon.

As the tampon leaves the sheath **2**, said sheath readily collapses under the pressures of the distended walls of the vaginal opening, and the collapsed sheath may be easily withdrawn from the body opening. The small diameter stick **3** may be withdrawn simultaneously with or independently of the withdrawal of the emptied sheath, either before or after withdrawal of the sheath but it is preferable that the sheath be withdrawn first. Should the sheath inadvertently be left in place in the vaginal opening, its removal will necessarily occur when the used

tampon is withdrawn because of the restriction of the sheath incident to the provision of said tab.

Withdrawal of the sheath after the tampon is ejected therefrom does not result in any significant tendency to pull the cord 5 outwardly against the pressure with which the tampon is gripped in the body opening and there is no significant tendency to disturb the fully inserted position of the tampon incident to removal of the emptied sheath and the inserter stick.

Other forms of end closures for the rearwardly extending portion of the sheath 2 may be employed. For example, instead of forming a lip in the manner described, a sleeve or tube of paper or other material and of suitable rigidity, which will slidably receive the ejector stick 3 and withdrawal cord 5 may be positioned in the projected end of the sleeve and sealed thereto either by means of heat sealing or adhesive. The thimble may have an outside groove for slidably receiving the withdrawal cord, or the central stick receiving opening may be made large enough or provided with a special portion for slidably receiving said cord. Such an end closing thimble provides a rigid end portion which may be gripped in the same manner as the tab 10 to permit tampon insertion in the manner described, and will also prevent rearward displacement of the tampon from its sheath.

In some instances, it may be preferred to completely enclose the tampon including the ejector stick in the sheath as shown in Fig. 4. This is entirely possible and practicable, it being merely necessary to employ a longer tube 2*a* which has its front end sealed over the front end of the tampon in the same manner as described in connection with Fig. 1, and its opposite end sealed as indicated at 17 beyond the outer end of the ejector stick 3. In this arrangement, the tampon, the ejector stick, and the withdrawal cord are wholly enclosed in the lengthened sheath. A lip or tab 18 is formed in a manner substantially similar to the manner in which the lip or tab 11 is formed as shown in Figs. 1 and 2 and said tab portion is suitably sealed or secured as indicated at 19 by means of a plurality of mutually crossing lines of heat sealing which not only maintain the offset lip formation but also leave relatively puffed areas to provide a roughened or thickened gripping surface. The tube is incidentally drawn into close fitting condition around the ejector and withdrawal cord as indicated at 20.

When the full length sheath 2*a* is employed, the lip 18 is gripped in the same manner as above described in reference to the lip 11 of the Fig. 1 construction, and the index finger may be brought to bear on the free end of the inserter stick 3 through the adjacent portion of the tube. When the tampon is ejected from the sheath, the portion of the sheath intermediate the lip 18 and the rear end of the ejector will collapse on itself or buckle as the end of the stick approaches said lip 18. Hence, it is not necessary to open up the rear or outer end portion of the tube in order to get access to the ejector 3 for tampon insertion purposes. In some instances, both ends of the sheath may be sealed in the manner indicated at 17 in which case some provision should preferably be made for facilitating opening of the front end of the sheath.

The described tampon, sheath and ejector stick arrangements, in addition to being highly satisfactory catamenial tampon arrangements, are well adapted for use in connection with medicated tampons. A medicated tampon may have its entire absorbent body impregnated with the desired medicine, antiseptic, emollient or other treatment material, or it may be provided with a recess filled with the desired treatment material, or a portion of the tampon such as the front end portion indicated at 21 in Figure 4 may be formed of the desired treatment material or such portion may even be a capsule containing the desired material. Such a capsule may be suitably attached to the front end of the tampon body which may be formed

flat or otherwise shaped to cooperate with the capsule as desired. The tampon fully enclosed in the sheath 2*a* as shown in Figure 4 is especially suited to medicated tampon purposes but this does not mean that it is not useful for catamenial purposes or that the arrangement shown in Figure 1 is not also adaptable to medicated tampon purposes.

In some instances, the sheath 2 (or 2*a*) may have its front end terminated adjacent but rearwardly of the front end of the tampon body so as to omit the contracted closure portion 7; there may be little or no conformation of a sleeve end portion to a peripheral portion of the tampon end, and the fit of the sleeve about the tampon may be tight enough to insure retention of the tampon in the sleeve until predetermined ejecting force is applied to the tampon while the sleeve is held. Various other changes may also be made while employing the principles embodied in the described construction.

We claim:

1. An elongated tampon, a tubular applicator sheath of thin, flexible, non-absorbent material extending transversely around said tampon and having a front end portion closed over the front end of said tampon, said tampon being adapted to be ejected endwise from said front end of the sheath and to open said front end portion as an incident to the pressure of the tampon front end against said front end closure of the sheath, said sheath having a rear portion which is extended beyond the rear end of said tampon, an elongated ejector extending lengthwise in said extended sheath portion and abutting said tampon within said sheath, a withdrawal cord attached to said tampon and extending therefrom within said extended sheath portion, at least a part of said extended sheath portion being collapsed on itself to one side of said ejector and cord and secured in such collapsed condition to form a gripping lip or tab, said extended sheath portion being closed beyond said ejector and cord.

2. An elongated tampon, a tubular applicator sheath of thin, flexible, non-absorbent material extending transversely around said tampon and having a front end portion closed over the front end of said tampon, said tampon being adapted to be ejected endwise from said front end of the sheath and to open said front end portion as an incident to the pressure of the tampon front end against said front end closure of the sheath, said sheath having a rear portion which is extended beyond the rear end of said tampon, an elongated ejector extending lengthwise in said extended sheath portion and abutting said tampon within said sheath, a withdrawal cord attached to said tampon and extending therefrom within said extended sheath portion, at least a part of said extended sheath portion being collapsed on itself to one side of said ejector and cord and secured in such collapsed condition to form a gripping lip or tab, said extended sheath portion being closed beyond said ejector and cord, and said tab being provided with a roughened surface portion facilitating finger gripping thereof.

3. An elongated tampon having medication material associated therewith, a tubular applicator sheath of thin, flexible, non-absorbent material extending transversely around said tampon and having a front end portion closed over the front end of said tampon, said tampon being adapted to be ejected endwise from said front end of the sheath and to open said front end portion as an incident to the pressure of the tampon front end against said front end closure of the sheath, said sheath having a rear portion which is extended beyond the rear end of said tampon, an elongated ejector extending lengthwise in said extended sheath portion and abutting said tampon within said sheath, a withdrawal cord attached to said tampon and extending therefrom within said extended sheath portion, at least a part of said extended sheath portion being collapsed on itself to one side of said ejector and cord and secured in such collapsed condition to form

a gripping lip or tab, said extended sheath portion being closed beyond said ejector and cord.

4. A tampon and applicator comprising an absorbent tampon, a tubular applicator sheath of thin, limp and stretchable plastic extending transversely around said tampon and from which said tampon is adapted to be ejected endwise, said sheath having a front end portion constricted over at least a substantial portion of the adjacent front end of said tampon so that said front portion is openable as an incident to the ejection of said tampon, said sheath having a rear portion which is extended beyond the rear end of said tampon, an elongated ejector extending lengthwise of said extended sheath portion and abutting said tampon within said sheath, a part of said extended sheath portion being collapsed on itself and permanently secured in such collapsed condition to form a gripping tab which is disposed rearwardly of said tampon and to one side of said ejector to provide means affording gripping of said sheath while moving said ejector relative thereto to move said tampon forwardly out of said sheath.

5. A tampon and applicator comprising an elongated compressed absorbent tampon, a thin, limp and stretchable tubular plastic film sheath extending transversely around the length of said tampon and from which said tampon is adapted to be ejected endwise, said sleeve having an end portion which is stretched and constricted over at least a peripheral portion of the adjacent end of said tampon whereby the thickness and tensile strength of said end portion of the sleeve are reduced so as to facilitate opening of said end portion as an incident to ejection of the tampon from said constricted end of the sleeve, the other end of the sleeve projecting beyond the other end of said tampon and including a portion which is collapsed upon itself and permanently secured in such collapsed condition to form a gripping tab, a withdrawal cord attached to said tampon and extending rearwardly therefrom through said rearwardly extending sheath portion in spaced relation to said gripping tab, and an ejector seated in said other end of said tampon and extending rearwardly therefrom within said sleeve in spaced relation to said gripping tab.

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