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[54] **MENSTRUAL-LIQUID ABSORPTION TAMPON WITH INSERTION TOOL**

[75] Inventors: **Bengt Axel Wennerblom,** Sundsvall; **Ruth Gunvor Anna Britt Udden; Per Edward Carl Udden,** both of Timra; **John Ivar Lindgren,** Sorberge, all of Sweden

[73] Assignee: **Svenska Cellulosa Aktiebolaget,** Sundsvall, Sweden

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[30] **Foreign Application Priority Data**

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[52] **U.S. Cl.** **128/263**

[51] **Int. Cl.** **A61f 15/00**

[58] **Field of Search** 128/263, 270, 285

[56] **References Cited**

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[57] **ABSTRACT**

An absorption tampon with an insertion tool. The tool has two fingers extending from a common handle, the fingers detachably engaging the tampon in elongated channels therein.

10 Claims, 10 Drawing Figures

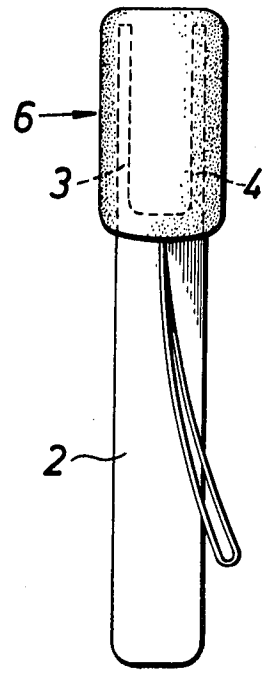


Fig.1

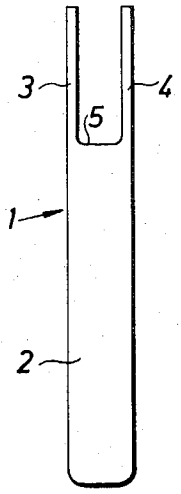


Fig.2

Fig. 4

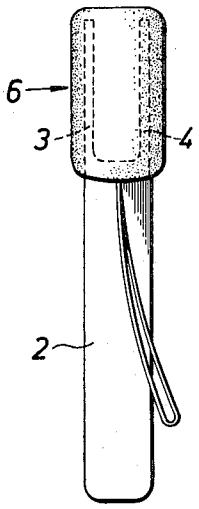


Fig. 3

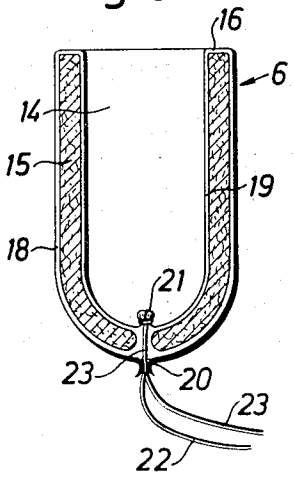


Fig.5

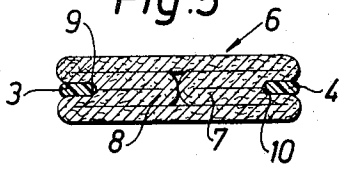


Fig.6

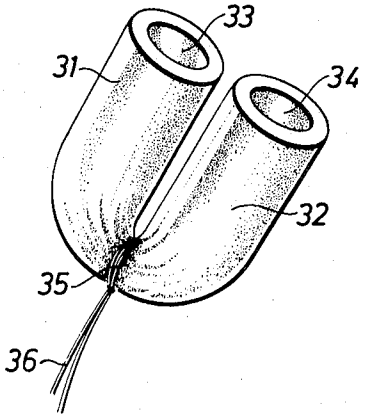


Fig. 7

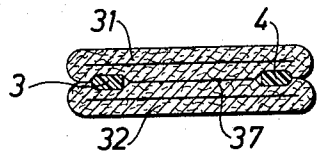


Fig. 8

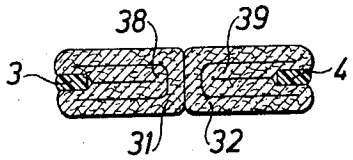


Fig. 9

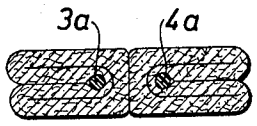
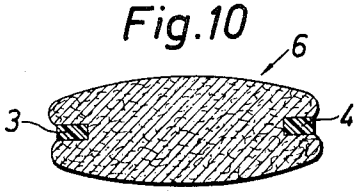


Fig. 10



MENSTRUAL-LIQUID ABSORPTION TAMPON WITH INSERTION TOOL

The present invention relates to a menstrual-liquid absorption tampon with an insertion tool having one end thereof arranged for detachably engaging the tampon.

The invention has for its principal object to provide a device of this kind in which the tampon and the insertion tool are each of a design adapted for optimum fulfillment of its special purpose.

Another object of the invention is the provision of a tampon with an insertion tool which enables convenient and safe control of the tampon by means of the insertion tool when the tampon is to be placed in its intended position.

A further object of the invention is the provision of a tampon with an insertion tool, in which the insertion tool is very simple in construction and thus inexpensive.

According to the invention, a menstrual-liquid absorption tampon with an insertion tool having one end thereof arranged for detachably engaging the tampon is characterized in that the tampon comprises two or more, preferably two, longitudinally extending channels or similar spaces, and in that the insertion tool comprises a corresponding number of fingers disposed in individual ones of said channels.

The fingers of the insertion tool preferably are so designed as to be conveniently releasable from the tampon merely by exerting a pull in the longitudinal direction of the insertion tool.

The main portion of the tampon proper consists of a liquid absorptive porous material, the tampon in its dry condition before use being suitably in a compacted state exhibiting an oval or rectangular cross-sectional shape to facilitate insertion of the tampon into the vagina. In this case the longitudinally extending channels or depressions are suitably disposed at the respective narrow edge sides of the tampon, the channels then being arranged at or near the surface of the tampon and may be open towards the exterior, possibly through a slot. It will also be possible, however, to arrange the channels further inward in the tampon.

The insertion tool proper with its fingers will suitably be designed as a unitary structure of small thickness, comprising a handle, for instance flat or round, and a plurality, preferably two, substantially straight and smooth fingers projecting therefrom in the plane of the handl.The insertion tool is preferably made of a plastic material, for instance a thermoplastic resin, such as polyethylene, exhibiting a low friction coeffi-cient in contact with the tampon material forming the surfaces defining the channels or grooves within which the fingers of the insertion tool are disposed, so that the fingers can easily be released from the tampon after the latter has been introduced in place. The insertion tool, and particularly its handle portion, however, alternatively could be made of a different material, for instance by pressing fibrous material, suitably of a nature such that the insertion tool can easily be dissolved after soaking in water, thereby being adapted to be flushed down in an ordinary toilet. This last-mentioned result could also be attained by making the insertion tool completely or partially of a water-soluble plastic material, for instance polyvinyl alcohol or polyethylene oxide. The manufacture of a tampon with insertion tool

according to the invention is suitably carried out by compacting the tampon into its final shape in dry condition, after the fingers of the insertion tool have been disposed in folds or otherwise between flat, liquid-absorptive portions of the tampon which are pressed flat against each other in the compacting operation, whereby the channels for receiving the fingers of the insertion tool are automatically formed.

The invention will be described more in detail hereinafter with reference to the accompanying drawings which illustrate some embodiments by way of example and in which:

FIG. **1** and **2** show one embodiment of an insertion tool in plan view and in edge view, respectively;

FIG. **3** is a longitudinal section through one embodiment of a tampon in a con-compacted condition;

FIG. **4** shows a tampon in a compacted condition and equipped with an insertion tool according to FIGS. **1** and **2**;

FIG. **5** is a cross-sectional view of the tampon and insertion tool shown in FIG. **4**;

FIG. **6** is a perspective view of a further embodiment of a tampon in a non-compacted state, and which may form part of the device according to the invention;

FIG. **7** is a cross-sectional view of a compacted tampon according to FIG. **6**, and equipped with an insertion tool;

FIG. **8** is a cross-sectional view of a compacted tampon according to FIG. **6** with an insertion tool, this tampon, before compacting, having been folded in a different way from that shown in FIG. **7**;

FIG. **9** is a cross-sectional view of a tampon with insertion tool, in which the fingers of the insertion tool are of a different design and a different positioning in the tampon from those of the previous Figures; and

FIG. **10** is a cross-sectional view of a tampon with insertion tool and of a further constructional form in which the tampon is in the form of one single, homogenous piece of an absorbent material.

In the embodiment of a tampon with insertion tool according to the invention as shown in FIGS. **1** to **5**, this device comprises a forked insertion tool **1** composed of a flat handle **2** and two fingers **3** and **4** projecting from one end **5** of the handle and suitably being formed integral with the handle. The tampon proper **6** has the appearance shown in FIG. **3** before being compacted into the appearance shown in FIG. **5**. The tampon is in the form of a hose-like or tubular unit and is constricted at one end thereof, designated by **20**, and is made of a liquid-absorptive, preferably fibrous material **15**, such as cellulosic fibers, in the form of a hose or the like which is coated by a protective layer comprising an external portion **18** covering the external surfaces of the material **15**, and internal portion **19** covering the internal surface of the material **15**. The portions **18** and **19** are integrally connected with each other at the top end **16** of the tampon and preferably consists of a hose-shaped material with satisfactory internal coherence and capable of preventing dissipation of fibers from the absorbent layer **15**. The hose-shaped protective coating layer is constricted at one end **20** thereof as closely as possible to the bottom end of the hose-shaped absorbent material **15**,and the protective layer is also constricted at its opposite end **21**, which has been moved down into the tampon by turning the hose-shaped protective layer inside out. Tied about the hose-ends **20** and **21** are cords **22** and **23**, respectively,

the cord 23 being threaded outthrough the bottom of the tampon and through hose-end 20. The cords 22 and 23 are intended to facilitate withdrawal of the tampon. The tampon shown in FIG. 3 can be folded and compacted so as, in its dry condition before use, to exhibit the shape shown in FIG. 5. According to FIG. 5, the tampon has folded-in portions or folds 7,8which line up substantially at the middle of the tampon. Before compacting the tampon, the fingers 3 and 4 of of the insertion tool have been introduced into said folds adjacent the narrow longitudinal edge surfaces of the tampon. The end result will be a tampon with insertion tool such as shown in FIG. 4. Here, the fingers 3 and 4 of the insertion tool are disposed in channels or grooves 9 and 10, respectively, which have been formed in the compacting operation and are completely open at their outer side.

After having inserted the tampon, the insertion tool is released from the tampon by pulling the insertion tool out longitudinally, after which the insertion tool is discarded. After removal of the insertion tool, the channels 9 and 10 are open for receiving menstrual liquid, thereby accelerating its penetration into and absorption by the tampon. During this process the tampon will swell up more and more, and the internal cavity 14 of the tampon may open up for receiving a substantial quantity of liquid.

The insertion tool — or the fingers 3 and 4 thereof, at least — are suitably made of a material having low friction coefficient in contact with the material of the tampon, for instance an inexpensive plastic material, such as polyethylene, polypropylene or the like. Owing to the low coefficient of friction against the tampon material, the insertion tool can easily be withdrawn from the tampon after the latter has been introduced in place. The insertion tool, as mentioned hereinbefore, is intended to be discarded after introduction of the tampon. If the insertion tool, completely or in part, is made of a material which is easily disintegratable in water, or of a watersoluble plastic material, such as polyvinyl alcohol or polyethylen oxide, then it might be flushed down in an ordinary toilet.

FIG. 6 shows an embodiment of a tampon in a non-compacted condition and comprising two socket-like portions 31 and 32 having interior cavities 33 and 34, respectively, which portions may be formed integrally from a unitary, hose-shaped material and of a composition similar to that described in connection with the embodiment of FIG. 3. The portions 31 and 32 are integrally connected with each other at a constriction point 35 at which point also a cord 36 for withdrawal of the tampon has been attached.

The tampon of FIG. 6 is to be folded and compacted into its final shape in dry condition before use, an operation which may be effected in various ways. FIG. 7 shows how the two portions 31 and 32 of the tampon have been forced against each other while sandwiching therebetween the fingers 3 and 4 of the insertion tool. In this operation, sufficient adhesion will be created in the interfacial layer between portions 31 and 32 to cause the tampon to retain its intended shape. FIG. 8 illustrates another way of folding and compacting the tampon shown in FIG. 6. In this case, the tampon portions 31 and 32 have been folded over so as to form internal folds 38 and 39, respectively, into which the fingers 3 and 4 of the insertion tool have been placed before the compacting operation. In this embodiment, said fingers will aid in retaining the shape of the tampon in its dry condition.

In the embodiments thus far described, the fingers of the insertion tool have been shown to be substantially rectangular in cross-sectional shape, substantially in consequence of the insertion tool being made in the form of a flat and thin unit. In addition, the fingers of the insertion tool have been shown disposed at or near the external surface of the tampon. FIG. 9 in cross section illustrates an embodiment in which a tampon according to FIG. 6 has been provided with an insertion tool having fingers which are circular in cross section and are disposed further inwardly within the tampon on either sides of centre line thereof. It is of importance, especially in this last-mentioned embodiment, that the cross-sectional areas of the fingers of the insertion tool are as small as possible in order to enable the insertion tool to be released easily from the tampon after the latter having been introduced in place.

In the embodiment shown, the tampon is elongated in shape with the channels for accomodating the fingers of the insertion tool extending in the longitudinal direction of the tampon. The fingers of the insertion tool should be of a length corresponding to at least one-half, preferably at least two-thirds, of the length of the tampon, and most preferably should be only slightly shorter than the tampon, so that the latter will be securely held by the insertion tool. Owing to the tampon being held by two substantially interspaced fingers of the insertion tool, there will be no danger that the tampon should turn relative to the insertion tool during the manipulation of the tampon to effect proper insertion thereof into its intended position within vagina.

The embodiments illustrated and described are not intended to restrict the scope of protection of the invention since they may be varied and modified in different ways without departing from the invention. Thus, it may be mentioned, that the insertion tool, instead of being fork-shaped as illustrated in the drawing, may be of bracket— or similar shape. The insertion tool could also, in certain cases, have more than two fingers for holding the tampon. In addition, it may be pointed out that the fingers of the insertion tool need not always be equal in length.

The fingers of the insertion tool can be caused to hold the tampon by resiliently clamping the latter between them, in which case it may be unnecessary sometimes to provide very pronounced channels or grooves in the tampon for accomodating the fingers of the insertion tool, since in such case the said channels or grooces can be made very shallow without endangering a safe holding of the tampon during insertion thereof.

We claim:

1. A menstrual-liquid absorption tampon with an insertion tool having one end thereof arranged for detachably engaging the tampon, said tampon being elongated in its compressed state before use thereof, the tampon having two longitudinally extending channels spaced from each other, and the insertion tool having two fingers extending from a common handle portion each of the fingers being disposed in one of said channels.

2. A tampon with insertion tool according to claim 1, in which the fingers of the insertion tool are straight and of a length which is at least one-half of the total length of the tampon.

3. A tampon with insertion tool according to claim 1, in which said channels are arranged near the outer surface of the tampon.

4. A tampon with insertion tool according to claim 1, said tampon being formed by compacting a sheet-like, liquid-absorptive material, in which said fingers are positioned in folds between portions of said sheet-like material.

5. A tampon with insertion tool according to claim 1, in which the tampon is compacted in a manner rendering the same approximately rectangular in cross-section, and the longitudinally extending channels are formed in the respective narrow edge sides of the tampon.

6. A tampon with insertion tool according to claim 1, in which the insertion tool with its fingers is formed as an integral unit of small thickness, comprising a flat handle portion and two substantially straight and smooth fingers projecting therefrom in the plane of the handle.

7. A tampon with insertion tool according to claim 1, in which the fingers of said insertion tool are formed from a plastic material having a low friction coefficient relative to the tampon material defining said channels.

8. A tampon with insertion tool according to claim 1, in which the insertion tool, entirely or in part, consists of a material which is readily disintegratable or dissolvable in water, such as of an easily dissolvable fibrous material or a watersoluble plastic material.

9. A tampon with insertion tool according to claim 1, in which the fingers of the insertion tool are arranged to clamp the tampon resiliently between them.

10. A menstrual-liquid absorption tampon with an insertion tool, comprising a tampon having an elongated body in its compressed state with two outwardly opening longitudinally extending channels, an insertion tool detachably engaging the tampon with two fingers extending from a common handle portion, each finger being disposed in one of the channels.

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