

[54] **ARCuate TAMpon APPLICATOR**

[75] Inventor: **Joseph R. Crockford**, Flushing,
N.Y.

[73] Assignee: **Kimberly-Clark Corporation**,
Neenah, Wis.

[22] Filed: **Feb. 24, 1971**

[21] Appl. No.: **118,291**

[52] **U.S. Cl.**..... **128/263, 128/285, 128/290 B**

[51] **Int. Cl.**..... **A61f 15/00, A61f 13/20**

[58] **Field of Search**..... **128/263, 270, 127,
128/130, 131, 285, 261, 260, 290 R, 290 B**

[56] **References Cited**

UNITED STATES PATENTS

1,224,735	5/1917	Gmache et al	128/263
2,879,770	3/1959	Graham, Jr.	128/263
3,372,695	3/1968	Beliveau et al.	128/127 X
3,063,453	11/1962	Brecht	128/285
2,662,527	12/1953	Jacks	128/270 UX

FOREIGN PATENTS OR APPLICATIONS

121,844	8/1946	Australia	128/263
460,123	10/1950	Italy	128/263
104,878	12/1926	Austria	128/263
241,771	12/1911	Germany	128/269
96,307	3/1898	Germany	128/269

Primary Examiner—Richard A. Gaudet

Assistant Examiner—J. C. McGowan

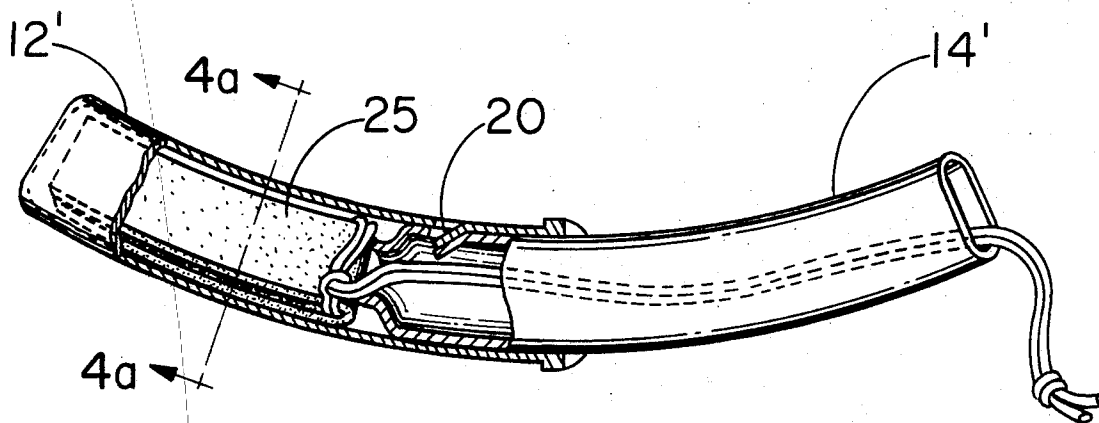
Attorney—Daniel J. Hanlon, Jr., William D. Herrick
and Raymond J. Miller

[57]

ABSTRACT

A preshaped tampon applicator and vaginal tampon in which the applicator is a pair of telescoping elements having an arc of specified radius and the tampon is a compressed and folded strip of the same arcuate shape and radius as the applicator.

2 Claims, 6 Drawing Figures



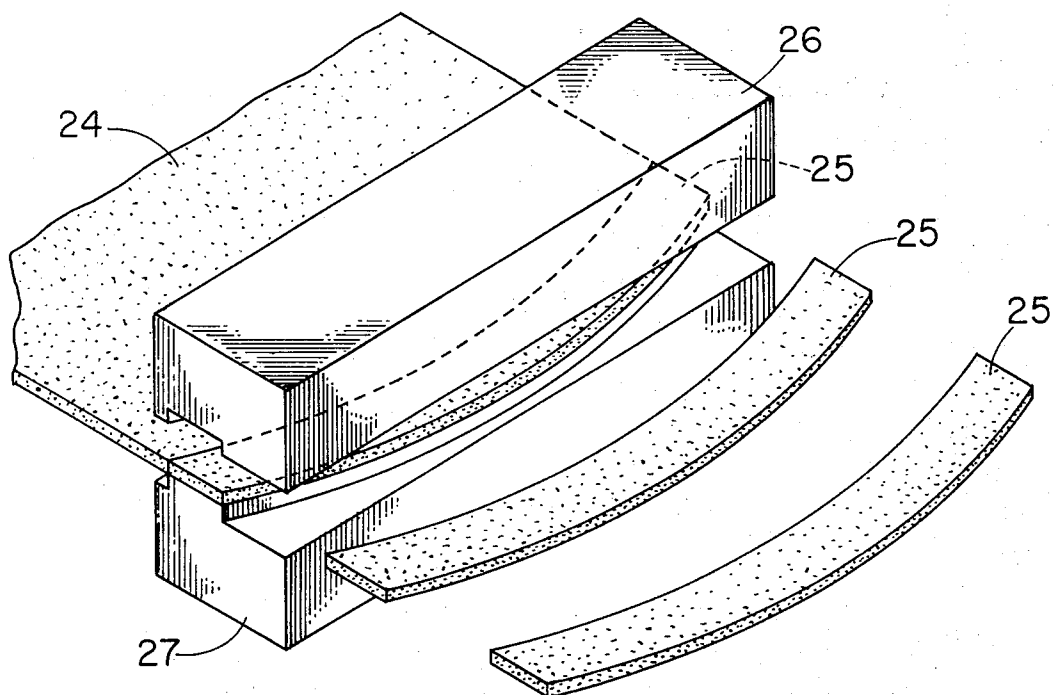


FIG. 1

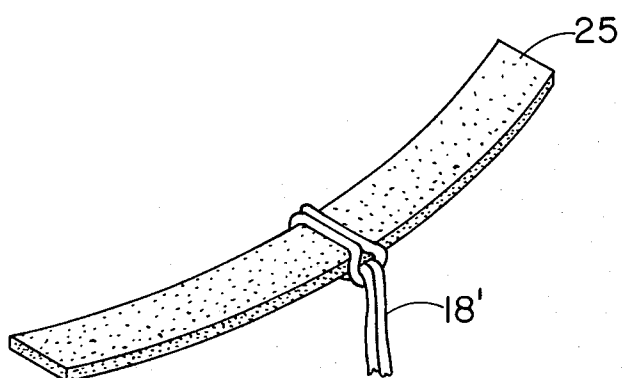


FIG. 2

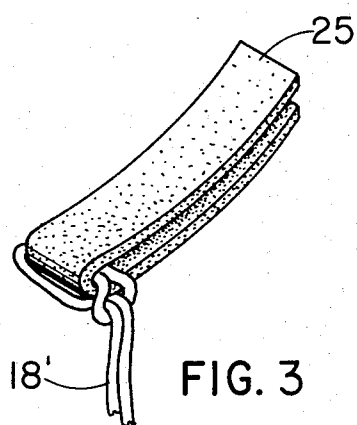


FIG. 3

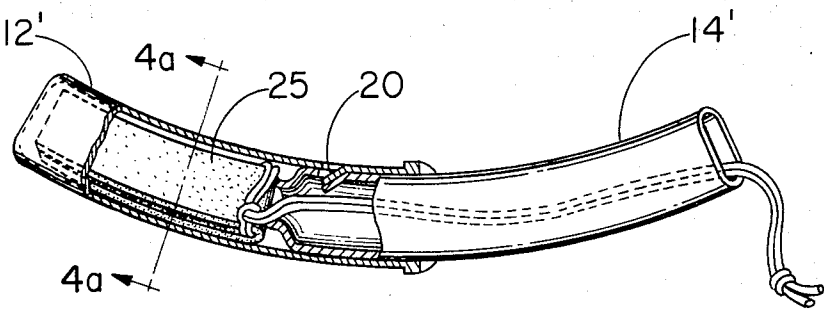


FIG. 4

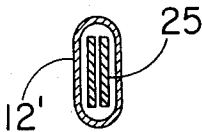


FIG. 4a

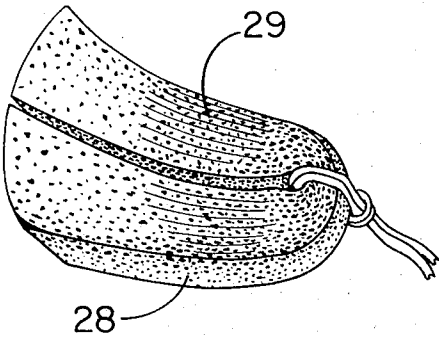


FIG. 5

ARCuate TAMPON APPLICATOR

BACKGROUND OF THE INVENTION

The catamenial tampon art is replete with applicator devices designed to facilitate insertion thereof. A large number of these devices comprise telescoping elements in which the forward element is a tubular member adapted to contain an absorbent tampon or the like and the rearward element comprises a pusher member for expelling the tampon. The pusher member is usually of tubular structure also, but in some cases is solid and may be in the form of a stick. In all of these known devices now on the market, the line defining the common axis of the component members is a straight line when the members are in operating position. Therefore, the insertion of the applicator and ejection of the tampon by the user both are necessarily straight line operations.

SUMMARY OF THE INVENTION

This the invention relates to an improvement in tampon applicators of the type which comprise a pair of telescoping elements having a tampon disposed in the forward portion of the outer element. The improvement lies principally in modifying the structural design of the cooperating elements to give them an arcuate configuration in their longitudinal dimension. This provides the user with an applicator having an easily recognizable directional guide which dictates against improper placement of the tampon. The elements of the curved applicator comprise an outer arcuate tubular member adapted to contain a tampon, and an inner pusher member having the same radius of curvature as the arcuate outer tube, and adapted to eject the tampon by following a curvilinear path when the two members are telescoped together. Various locking means may be used to hold the members together before use. The cross-sectional configuration of the members may be circular or oval.

In a preferred embodiment of this invention the tampon employed comprises a thin strip of highly compressed material, such as fine pore cellulose sponge, in which the longitudinal dimension of the strip has the same curvature as the applicator tube and the transverse dimension of the strip is substantially equal to the tube diameter. The strip is folded on itself with the folded portions aligned to maintain the above-described curvature, and the folded strip is disposed in the outer tube ready for ejection along the curved line defined by the tube and ejector. A folded strip tampon of this type may be used in a tube of circular cross-section but preferably is used in one of oval or elliptical section with the transverse dimension of the tampon coincident with the widest cross-sectional dimension of the tube.

It is an object of this invention, therefore to provide a tampon applicator having a specified arcuate shape which facilitates tampon insertion and placement.

Another object is to provide a tampon especially adapted for use with the improved applicator.

Other objects and advantages will become apparent to those skilled in the art from the following detailed specification and attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a schematic representation illustrating the die-cutting of a thin compressed sheet to produce

curved strips suitable for folding into arcuate tampons of a configuration especially adapted for use with the improved applicator.

FIG. 2 is a perspective view of a die-cut curved strip of compressed material with a withdrawal string looped around the middle.

FIG. 3 is a perspective view of the curved strip of FIG. 2 folded into arcuate form ready for insertion in the applicator.

FIG. 4 is a perspective view partly broken away of the FIG. 3 tampon in place in an arcuate applicator of oval cross-section.

FIG. 4a is a section through line 4a—4a of FIG. 4.

FIG. 5 is a perspective view from above of the cup-like shape the tampon of FIG. 3 assumes after expansion.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the embodiment of the invention illustrated in FIGS. 1-5, the preferred material for the preferred tampon comprises a fine pore regenerated sponge sheet which in its normal expanded form is about 1 inch thick. This sheet is first compressed by known methods into a thin self-sustaining sheet of about one-sixteenth inch thickness as represented at 24 in FIG. 1. The compressed 1/16 inch sheet is die cut into a series of arcuate strips 25 by suitable die cutting elements 26 and 27. The strips 25 as shown are about 4 inches long, and one-half inch wide. The arc defining the curvature of the strip in this instance is part of a circle having a radius of about 6 inches.

Withdrawal string 18' is looped about the center of the arcuate strip 25 and the strip folded in half as shown in FIG. 3 while still retaining its arcuate form. This folded strip with string attached comprises the preferred tampon embodiment and is shown in place in the improved tampon applicator in FIGS. 4 and 4a. Other methods of string attachment may, of course, be used.

In the preferred embodiment of the tube shown in the drawings, the arcuate outer tube member 12' and arcuate inner tube member 14' have an oval cross-sectional configuration as more clearly shown in FIG. 4A. It will be understood that when a tube of oval cross-section is used the folded tampon conforms more closely to the walls of the oval tube 12' than would be the case if the tube were of circular section. Nevertheless, a tube of circular cross-section may be used for this folded tampon and still perform satisfactorily.

When the arcuate applicator containing tampon 25 comprising this thin, folded, arcuate strip is readied for insertion into the vaginal tract by the user, the curved configuration of the applicator is such that the concave portion will naturally be held uppermost. As a result, when the tampon is ejected after insertion of the applicator, the tampon, too, will have its concave surface facing upwardly. Then, when the tampon expands upon contact with body fluid, it will assume the shape shown in FIG. 5. The sides 28 of the expanded tampon retain the same arcuate form they had as a compressed folded strip. The concave portion of the tampon is automatically positioned to face upward because of the natural disposition of the curved applicator by the user, and the two strip-like members in their expanded state will then form a channel-blocking, cup-like, catch basin 29 for

menstrual fluid, enabling this tampon to be especially effective in absorbing fluid and preventing leakage.

The arcuate tubes forming the applicator may comprise conventional paper tubes of preformed rigid structure, but are more effectively constructed from moldable flexible or non-flexible plastics. Any suitable moldable plastic may be used, including polyolefins, polyesters, nylon, polyacrylics and the like.

The locking arrangement between telescoping members may comprise an indented portion as shown as well as other known means. For example, a snap-on cap with a central aperture through which the cooperating pusher member is inserted may be used. In such an arrangement a second aperture must also be provided through which the withdrawal string may extend. The preferred pusher member as shown in the drawings is of tubular construction. However, the pusher member may be solid and take on a variety of smaller cross-sectional configurations to provide room for the withdrawal string.

The forward end of the outer tube may also comprise flexible petal-like members which open outward when the tampon is ejected. Such an arrangement provides improved insertion ease, as well as improved hygienic protection for the tampon.

In the preferred strip type tampon, fine pore regenerated cellulose sponge is the preferred material. However, other absorbent materials may be used which are capable of being compacted into a self-sustaining compressed form while being readily re-expandable in the presence of fluids.

The particular strip of sponge as shown and described in the preferred embodiment had an expanded or precompressed thickness of about 1 inch. When compressed to self-sustaining form it was about one-sixteenth inch thick, had a length of about 4 inches and a width of about one-half inch. It will be seen that these dimensions are only exemplary and they may be varied

within reasonable limits.

In the preferred embodiment the radius of the circle defining the arcuate axis of the telescoping members was also described as being about 6 inches. Experiments have shown that tubes having longitudinal axis conforming to arcs of circles having radii of from about 4 inches to 6 inches are preferred over applicator tubes with shallower or sharper curves. However, arcs with radii outside this preferred range may still be used for the purposes defined even though they are less effective.

What is claimed is:

1. In combination, an arcuate applicator for tampons and a preformed arcuate tampon disposed therein; said applicator comprising a pair of tubular members in telescoping association including an outer member adapted to contain a tampon in the leading end thereof and an inner member disposed in the trailing end of said outer member and adapted to eject said tampon from said outer member by a telescoping movement therein, the longitudinal axis of each of said outer and inner members describing an arc of the same radius, said radius being in the range of about 4 to about 6 inches; said tampon comprising a thin strip of absorbent material in compressed self-sustaining form, the longitudinal side edges of said strip being arcuate and substantially parallel and the longitudinal center line of said strip being of the same radius as the arc describing the longitudinal axis of said members; said strip being transversely folded on itself while retaining its arcuate shape and having a withdrawal string attached at the fold.

2. The combination of claim 1 wherein said elements are elliptical in cross section and wherein the long dimension of said cross section is substantially coincident with the radius of said arc.

* * * * *

40

45

50

55

60

65