

May 30, 1967

E. A. GRISWOLD ET AL

3,322,123

TAMPONS

Filed June 17, 1964

FIG. 1

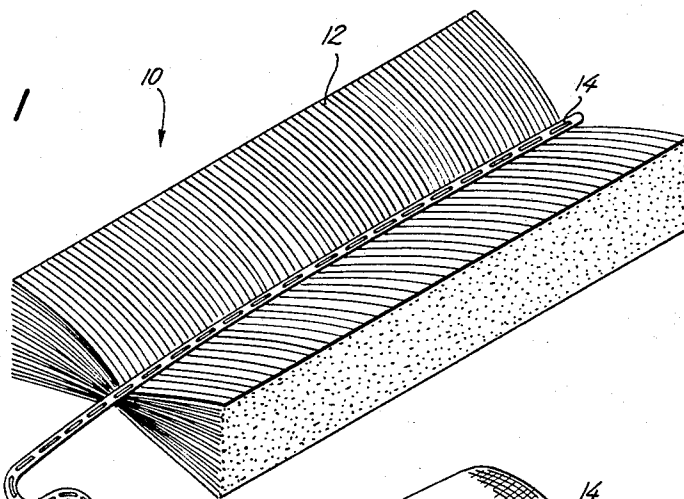


FIG. 2

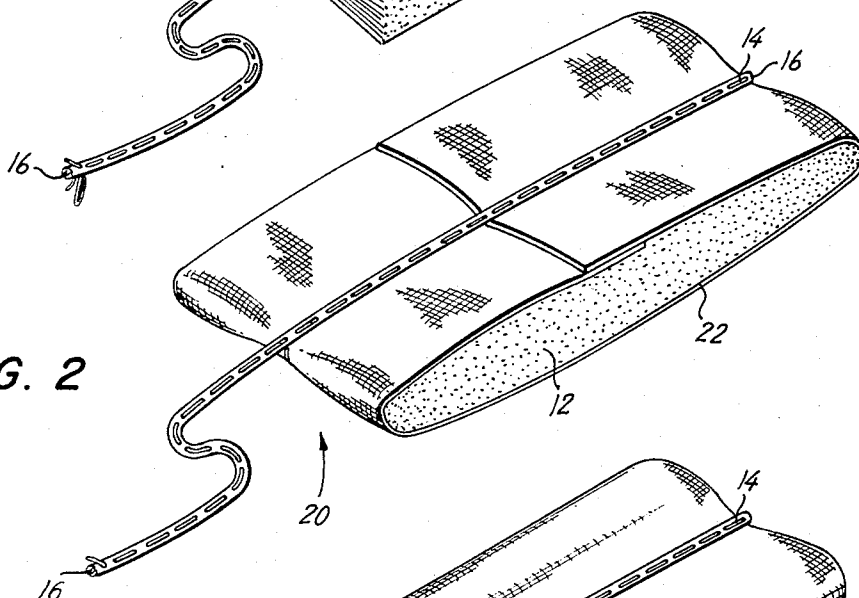
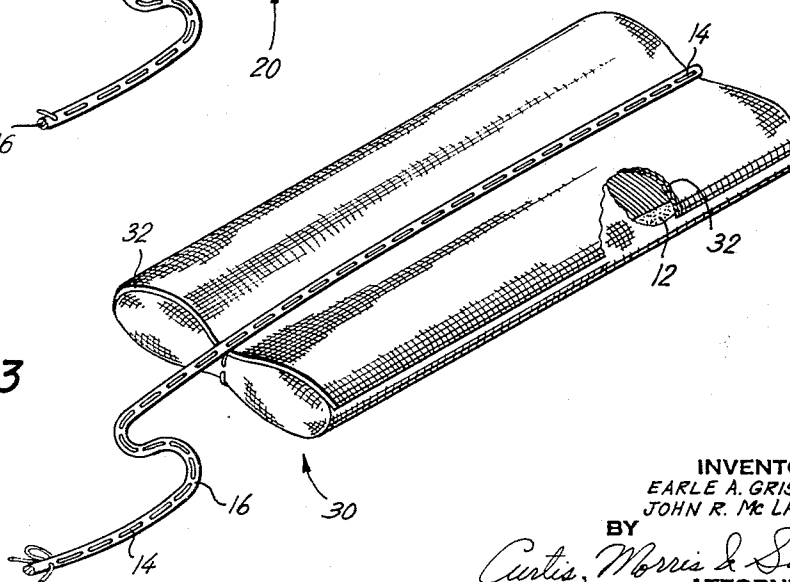


FIG. 3



INVENTORS
EARLE A. GRISWOLD
JOHN R. Mc LAUGHLIN

BY

Curtis, Morris & Safford
ATTORNEYS

1

3,322,123
TAMPONS

Earle A. Griswold, Palmer, Mass., and John R. McLaughlin, Rutland, Vt., assignors to Tampax Incorporated, New York, N.Y.

Filed June 17, 1964, Ser. No. 375,764
6 Claims. (Cl. 128—285)

This invention relates to devices adapted for fluid absorption and retention, and more particularly to an improvement in such devices, including a compressed mass of unspun staple cotton and like absorbent fibers used as catamenial tampons and the like.

The highest quality vaginal tampons have been made, and continue to be made, from high quality staple cotton fibers. Such fibers have a natural resilience, absorbency, and length, which ideally suit them for use in such compressed tampons. The resilience ensures that the tampon expands upon being wetted, so as to open up the fiber spacing, thereby sucking fluids into, and holding them in, spaces between inner fibers by wetting and capillary action and restoring the tampon to its full body and potential of absorbency. The use in the tampon of fibers of staple length has the double advantage of preserving the effective resiliency of the tampon and of providing a coherent mass of interlocked fibers, which mass can be readily anchored by running a chain of stitches through the fibrous mass. This is illustrated by the patents of applicants' assignee, Tampax Incorporated, Nos. 1,926,900 and 2,024,218. Advantageously, such stitching runs along the long axis of the pad with the staple fibers lying predominantly perpendicular thereto. Long staple fiber cotton is normally employed in this type of pad and such cotton in the trade could be designated as about a 1-inch fiber length.

Much research and many inventions have been directed toward substitution of a cheaper fiber for staple cotton. Such attempts have occasionally improved such cheaper fibers in one or more aspects, but invariably have proven far inferior overall.

Most competitive efforts have been directed toward utilizing cheap short fibers (generally $\frac{1}{2}$ inch or less in average length) such as low-grade cotton, cotton linters, wood pulp, and the like, which sometimes have been treated for better imitation in one way or another, of the superior staple cotton tampon product. The effectiveness of such treatment has always been limited because (1) in curing one defect, it often introduced several new ones and (2) the short fibers, being inherently inferior, could not justify the cost of any but the cheapest treatments, or they would be priced out of competition.

One of the most objectionable problems in using short fiber stock for such tampons is the shedding or sloughing off of short fibers from the compressed mass when in use, and especially the tendency to disintegrate after being wetted, but before being withdrawn.

In an attempt to overcome this objection, it has been the practice for well over a quarter of a century to enclose sanitary napkins, tampons, and the like, in woven, knitted, and even fused fiber non-woven fluid-pervious fabric covers which hold the short fibers to the tampon and within the overwrap.

One of the continuing problems in using an overwrap is how to anchor it to the tampon for subsequent compression and use. One method has been to use a fabric tube for enclosing the cotton pad with at least one end sealed by using a draw-string, or more often just simply tucking the loose ends into the bulk of the pad before compression (see for example U.S. Patent No. 2,710,007) or between folded over pads, sometimes being further se-

2

cured with spots of adhesive (see U.S. Patent No. 2,926,667).

In the present invention, an overwrap is applied to a tampon of positively anchored staple cotton fibers, e.g. where they lie predominantly transverse and are anchored together by a chain of stitches running the length of the pad and binding the fibers together with ample longitudinal tensile strength in addition to the inherent transverse strength of the staple fibers lying across the tampon (for the purposes of this specification this type of tampon will be referred to as a transverse staple pad). As exemplified by U.S. Patent No. 2,761,449 (see column 4, lines 18 to 28), liquid-pervious overwraps and transverse staple pads have existed together in the art of catamenial tampons for many decades, but the two have not been used together and have not appeared suitable for use in combination, particularly as: (1) In normal use the transverse staple pad does not slough-off detectable amounts of cotton fibers, so that need for the overwrap has not been apparent, and (2) since the use of staple fibers represent substantially higher costs, in comparison with the cheaper short fibers used in some tampons, an overwrap (particularly a leno-woven fabric and the like), which would add still more to the cost of a tampon, did not seem to be justified.

According to the present invention, we have shown that an improved absorption tampon of the character described can be produced by using a liquid-pervious overwrap on a tampon where the overwrap is secured to the tampon by the same chain of stitches which anchors the fibers of the tampon itself. Such construction of this novel combination has several unexpected advantages: For example, the stitching more effectively and completely secures the overwrap to the pad, thereby adding to that of the tampon the tensile strength of the stitching and of the overwrap and enabling the use of less expensive material for the liquid-pervious outer covering. Furthermore, this overwrap, once in position on the pad, is secured thereto without expense, because the same stitching as has always been used in tampons made and sold by our company, is utilized here without any modification. Another advantage resides in the fact that this construction by effectively anchoring the overwrap against creeping or sliding reduces the tendency of prior overwraps to bunch or tear during use. A further advantage can be gained by using an overwrap which has an advantageously smoother surface, which facilitates insertion and removal and includes the retention of the staple fiber against working free of stray fibers which might not otherwise be effectively retained in the tampon pad.

In this specification and the accompanying drawings we have shown and described a preferred embodiment of our invention and have suggested various alternatives and modifications thereof; but it is to be understood that these are not intended to be exhaustive and that many other changes and modifications can be made within the scope of the invention. These suggestions herein disclosed are selected and included for purposes of illustration, in order that others skilled in the art will be able more fully to understand the invention and the principles thereof and will thus be enabled to modify it and embody it in a variety of forms, each as may be best suited to the conditions of a particular use.

FIGURE 1 is a perspective view of a type of tampon well-known in the prior art having transversely oriented long staple cotton fibers bound together with a withdrawal string by a chain of stitches;

FIGURE 2 is a view similar to FIGURE 1, but embodying the present invention wherein a liquid-pervious overwrap envelops the major portion of the pad;

3

FIGURE 3 is a view similar to FIGURE 2 but illustrating an alternative embodiment having a complete overwrap for the pad.

Referring to FIGURE 2, the preferred embodiment there illustrated is a tampon 20 similar to the prior art tampon 10 of FIGURE 1 but with an overwrap 22 added. This improved tampon 20 is advantageously formed, in one specific example, by continuously wrapping a 4 inch wide web of staple cotton (whose fibers are oriented substantially longitudinally to the web) and then cutting off a standard pad having a width of 1¾ inches. The pad 12 is sewn, preferably with a chain of stitches 14, along the length of the pad 12, securing a withdrawal-string 16 at the overwrap 22 onto said pad 12 (alternatively the chain of stitches 14 alone can double as the withdrawal-string). This method and type of overwrap has the advantage of extreme simplicity lending itself to low costs in manufacturing. The resulting tampon 20 is covered on both faces and both ends, leaving the sides with the cut fiber ends exposed. This type of wrapped tampon with exposed end fibers can have a further advantage in this field where there are many delicate, but strongly held, personal opinions. Whereas customers often like the idea of a smooth protective overwrap, there may be some worry whether absorbency may be reduced by a complete overwrap. Such customers do not realize that a properly chosen material would in no way affect this absorbency.

The overwrap is advantageously made from one of the adhesive bonded, non-woven, cotton or cotton-rayon fabrics which are relatively inexpensive and yet attain a surprising degree of wet-strength due to the bonding. An example of this type of overwrap fabric is the Kendall Company's "Webriil" fabric, a non-woven fabric which is bonded along spaced lines, e.g. in a printed zig-zag pattern, with an acrylic resin. For use on a tampon, the bonding may be made with an adhesive having an attractive contrasting color to alert the user to the presence of the overwrap (which might otherwise be nearly invisible on the tampon except on close inspection) thereby giving the user visual assurance of its presence.

The overwrap can be made alternatively (though possibly not always competitively) from any of a number of commercial liquid-pervious fabrics, for example, gauze, knitted, leno-weave, apertured non-woven, etc.

This invention includes such alternatives as having a complete overwrap 31; for example, as in the tampon 30 illustrated in FIGURE 3. In the preferred embodiment of FIGURE 3 the overwrap 32 is advantageously cut to size and the pre-cut pad 12 centered on it. Then the

4

overwrap 32 is folded first up over the ends and next over the sides with a generous overlap on the center line of the opposite face so that this overwrap is readily anchored to the pad 12 when sewn.

After the overwrap has been sewn in place, the tampon is ready for any further treatment that may be desired or may be directly compressed and packaged with its applicator ready for use according to any of the accepted methods.

We claim:

1. In a compressed tampon the improvement comprising a pad of substantially transversely oriented absorbent resilient staple fibers, a liquid-pervious overwrap for said pad, stitches sewn longitudinally along the length of said pad binding together said fibers and the pad to said overwrap.

2. A tampon as described in claim 1 wherein said overwrap is made from a soft, thin, fibrous, non-woven material formed into a fabric by adhesive bonding.

3. A tampon as described in claim 1 wherein said pad is rectangular and said overwrap envelops the faces and ends of said pad.

4. A tampon as described in claim 1 wherein said overwrap is folded completely to envelop said pad with the overlapping free edges of said overwrap being sewn closed by said stitches.

5. A tampon as described in claim 3 further including a withdrawal-string extending beyond one end of said pad being anchored to said pad along with said overwrap by said stitches.

6. A tampon as described in claim 4 further including a withdrawal-string extending beyond one end of said pad being anchored to said pad along with said overwrap by said stitches.

References Cited

UNITED STATES PATENTS

2,844,150	7/1958	Draghi	128—285
2,926,394	3/1960	Bletzinger et al.	128—285
2,926,667	3/1960	Burger et al.	128—285
2,988,010	8/1961	Griswold et al.	128—285

FOREIGN PATENTS

149,831	2/1953	Australia.
520,209	4/1940	Great Britain.

RICHARD A. GAUDET, *Primary Examiner*.

ROBERT E. MORGAN, *Examiner*.

C. F. ROSENBAUM, *Assistant Examiner*.