United States Patent

Friese et al.

TAMPON FOR FEMININE HYGIENE

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Filed: Aug. 9, 1973

Appl. No.: 387,078

Foreign Application Priority Data

Aug. 18, 1972 Germany.......................... 2240753

U.S. Cl. . 128/285, 128/263, 128/270

Int. Cl. . A61f 13/20, A61f 15/00

Field of Search . 128/263, 270, 285; 19/144.5, 149

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ABSTRACT

A tampon for feminine hygiene which comprises a plurality of rolled members of a unitary continuous absorbent sheet material, said rolled members positioned in juxtaposition side by side one another, said plurality of rolled members existing together in a radially, pressed final form shape, especially a generally cylindrical shape.

38 Claims, 9 Drawing Figures
The present invention has several different embodiments as more fully explained below. For instance, there can be two or more rolled members in a single tampon. These rolled members can be rolled in the same direction as one another or the rolling can be done in opposite directions. If the tampon has only two rolled members, each tampon can be rolled in the same direction or they can be rolled in opposite directions. If three rolled members are present in a single tampon the rolled members can be positioned in a common plane in juxtaposition to one another or they can be positioned in a triangular form as viewed from the side, or in a lateral cross section.

The present invention is also directed to means for further securing the individual rolled members of the tampon together and to a withdrawal string or tape. The invention utilizes a withdrawal tape which forms a loop facing one end of a rolled member. The pair of free ends can run through such rolled member and thence in the opposite direction through a second rolled member to terminate in laterally extending free ends which can pass through the loop facing the first mentioned rolled member. Similarly, the withdrawal tape can be secured to the rolled member merely by passing it through one such rolled member around and in the opposite direction through the second rolled member. Such tape is thereafter knotted near its front end close to the body of the tampon.

The invention distinguishes itself in that a blank is formed by rolling a strip of absorbent material at least from its two extremities towards its longitudinal center. In this manner the two extremities of the strip of batting, at which the fiber ends freely project, are located in the interior of the roll and consequently they will not, under any circumstances, come in contact with the walls of the body cavity.

In a further embodiment, an additional roll is provided by rolling a central portion of the length of the strip. The stability of the tampon is improved in this manner because in the event of a one-sided stressing of the tampon when same is removed from the body cavity the rolls joined together by the strip of batting can support one another.

The sense of rotation of the winding of the two ends of the strip may be either opposed or identical, as desired.

To aid in cylindrical shaping by radial pressing it is desirable to make the diameter of the rolls in the blank approximately equal. If desired, the diameters of the coils may, however, be different.

In an additional embodiment the axes of the rolls may be located in a common plane. This offers advantages to the effect that in this manner the construction of the tampon can be adapted to the cross-sectional shape of the female body cavity regardless of how the tampon is pressed.

With respect to the withdrawal tape, the tampon may be provided with a removal tape, portions of a single removal tape extending through the rolls and its extremities being joined together at the removal end of the tampon. The removal tape may be in the form of a doubled removal tape whose loop is located at the removal end of the tampon and which extends approximately through the longitudinal axis of one roll, the free ends being brought back from the insertion end of
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the tampon through at least one additional roll to the removal end.

If a doubled removal tape is used in conjunction with a tampon composed of three rolls, there is provided an additional embodiment based on having the doubled removal tape pass through a center roll and each free end of the removal tape brought back from the insertion end through one of the other two rolls. It is advantageous to pass the free ends through the loop at the removal end. In this manner an especially high rate of production may be achieved. In addition, the two ends of the removal tape at the removal end can be knotted together. Each of the above-described methods of fastening the removal tape offers the advantage that the rolls are not joined together by the batting alone but also by the removal tape itself, so that the cohesion of the tampon is assured without impairing the expandability and absorption capacity of the tampon.

BRIEF DESCRIPTION OF DRAWINGS

Referring to the accompanying drawings, FIGS. 1 to 8 are perspective views of blanks of various embodiments in rolled condition, and FIG. 9 is a perspective representation of a radially pressed tampon made from the blanks of rolled members of FIGS. 1 to 8.

FIG. 9 shows a tampon 1 for feminine hygiene which consists of at least one strip of fluid-absorbing material which is rolled substantially on itself into a blank, and is then radially pressed to its final shape. If desired, a slight axial pressing may be provided, in which for example the insertion end of the tampon is rounded off. The rolled members are radially pressed together to form a final tampon of compressed, expandable fibers which absorb fluid.

Blanks for such a tampon are represented in FIGS. 1 to 8. These blanks are formed in accordance with the invention by winding a strip of fluid-absorbing material, e.g. a wadding composed of random laid natural and/or synthetic fibers, at least from its two extremities towards its longitudinal center.

DESCRIPTION OF SPECIFIC EMBODIMENTS

In the embodiment shown in FIG. 1, such a strip batting is identified as 2, and its two ends are rolled on one side towards the center of the length of the strip until they come into contact with one another. The sense in which the two rolls 2a and 2b are wound is thus opposed, so that a section of batting 2c joins the two rolls together in a plane tangential thereto. The axes of the two rolls are parallel to one another and located in a plane which is parallel to and remote from the outer central section of batting 2c.

A removal tape 3 folded double has its loop 3a extending from one end of coil 2a which forms a part of the removal end of the tampon. The doubled removal tape is passed through the longitudinal center of roll 2a and, forming a U-shaped loop 3b, returns through roll 2b to the opposite ends of the two coils 2a and 2b which form the insertion end of the tampon. The two extremities 3c, 3d, of the tape emerging from roll 2b are passed through the loop 3a, so that the removal tape itself is tightly anchored and additionally holds the two rolls 2a, 2b, in side by side contact with one another.

The embodiment of the blank shown in FIG. 2 differs from that shown in FIG. 1 only in that a single strand of removal tape 4 joins together the two rolls 2a and 2b in the same manner as in the embodiment of FIG. 1, the thread ends 4a, 4b, being knotted together at 4c. The knot is so formed that the loop 4d joining the rolls 2a, 2b, leaves sufficient play so that the tampon will be able to expand to the shape shown in FIG. 2 when wet with fluid.

In FIG. 3 there is shown a blank consisting of two parallel adjacent rolls 5a, 5b, which are formed by winding the two ends of a strip of batting in the same direction. The section of batting 5c that joins the two rolls 5a, 5b, thus extends S-wise between the two rolls. Here again the two rolls are joined together, as in FIG. 1, by a removal tape folded double, so that the reference numbers and the description relating to FIG. 1 are applicable again here.

In FIG. 4 the embodiment of the blank is the same as the one in FIG. 3, so that the same reference numbers are used therein. However, the two rolls are joined together by the tape in the same manner as the tape 4 in FIG. 2, so that to this extend the description relating to FIG. 2 and the reference numbers used therein also apply to FIG. 4.

In FIG. 5 there is shown a blank consisting of three rolls 6a, 6b and 6c. The winding direction is counterclockwise in all three rolls, so that the sections 6d and 6e which join the rolls together are again S-shaped in cross section. The rolls lie parallelly adjacent one another in a common plane, and so that a tampon pressed from this blank will tend, when wet, to expand to the shape of the blank shown in FIG. 5, and thus is able advantageously to adapt to the cross-section of the female body cavity. The center roll 6b is formed by winding the center section of the length of the strip of batting, e.g., by means of a rotatable winding fork straddling the strip in the center. Consequently, the internal end 6f of the batting in this form has a U-shaped loop in cross section.

The one end of a removal tape 7 forms a loop 7a extending from that end of the middle roll 6b which is associated with the removal end of the tampon. The doubled removal tape 7 is passed through roll 6b to the insertion end of roll 6b, and the two extremities 7b, 7c, of the removal tape are passed back toward the withdrawal end of the blank, one through roll 6a and the other through roll 6c, and through the loop 7a. In this manner, too, the loose but secure coherence of all three rolls of the blank is assured by the removal tape, and so is the securing of the removal tape itself.

The configuration of the blank in FIG. 6 develops if the roll 6c in FIG. 5 is placed upon the two rolls 6a and 6b such that each one of the three rolls touches the other two rolls, and the rolls 6a, 8b and 8c are arranged in the manner of a triangle in cross section. This arrangement of the rolls may be advantageous to the stability of the pressed tampon. The route of the removal tape through the rolls is the same as in FIG. 5, so that the parts relating to the removal tape are identified by the same reference numbers as in FIG. 5.

The embodiment of the blank in FIG. 7 differs from the one in FIG. 6 in that two rolls, 9a, 9b, are wound in opposite directions, while the roll 9c is formed like roll 9a by winding it counterclockwise. The middle roll 9b is, like the middle roll 6b in FIG. 5 and 8b in FIG. 6, by winding the middle section of the length of the middle roll 9b will be in the shape of a loop in cross section. A removal tape 7 joins rolls 9a, 9b and 9c as in
FIG. 5, so that to this extend the same reference numbers are used.

The blank of FIG. 8 is formed by laying roll 9a in FIG. 7 on the two rolls 9e and 9c, so that, as in FIG. 8, rolls 10a, 10b and 10c are in a triangular arrangement in cross section.

The removal tape 7 is passed double through roll 10b while its two extremities 7b and 7c are carried back, one through roll 10a and the other through roll 10c, and through the loop 7a. This arrangement of the removal tape is again the same as those shown in FIGS. 5, 6 and 7.

All of the blanks of FIGS. 1 to 8 can be brought by radial pressing to the cylindrical final shape of the tampon shown in FIG. 9. When the tampon 1 of FIG. 9 is placed in use, it will expand substantially cylindrically when wetted with fluid. It will be seen that in none of the above-described embodiments is an end of the preferably carded strip of batting located on the outer circumference of the blank or of the tampon, and therefore the leaving of fiber fuzz when the tampon is removed from the body cavity is prevented. In addition, any pulling apart of the tampon made from blanks in accordance with FIGS. 1 to 8 upon their removal is reliably precluded, because all of the rolls are joined together by the special routing of the removal tape, without impairing the expendability of the fiber material, such that it is impossible for portions of the fiber material to be pulled away from other fiber material in the direction of withdrawal.

What is claimed is:

1. A tampon for feminine hygiene which comprises a plurality of rolled members of a unitary continuous absorbent sheet material, said rolled members positioned in juxtaposition side by side to one another and each member having open ends providing means for passing a withdrawal tape axially into and out of each said rolled members, said plurality of rolled members existing together in radially pressed final form shape.

2. A tampon according to claim 1 wherein there are at least two rolled members, each of which is rolled in the same direction and the tampon has a generally cylindrical shape.

3. A tampon according to claim 1 wherein there are two rolled members, each of which is rolled in a direction opposite to that of the other, said rolled members being joined together by a generally planar bridge of said absorbent material, said tampon having a generally cylindrical shape.

4. A tampon according to claim 2 provided with a withdrawal tape having a loop and a pair of free ends, said loop formed at a lateral edge of a first rolled member, the length of withdrawal tape terminating in said loop running laterally through said first rolled member, thence in the opposite direction running through a second rolled member to terminate in laterally extending free ends, said free ends passing through said loop to join said first and second rolled members together and to said withdrawal tape.

5. A tampon according to claim 2 wherein a length of withdrawal tape passes laterally through a first rolled member and thence in the opposite direction through a second rolled member to define laterally extending free ends which are knotted together to join said first and second rolled members together to one another and said withdrawal tape.

6. A tampon according to claim 3 provided with a withdrawal tape having a loop and a pair of free ends, said loop formed at a lateral edge of a first rolled member, the length of withdrawal tape terminating in said loop running laterally through said first rolled member, thence in the opposite direction running through a second rolled member to terminate in laterally extending free ends, said free ends passing through said loop to join said first and second rolled members together and to said withdrawal tape.

7. A tampon according to claim 3 wherein a length of withdrawal tape passes laterally through a first rolled member and thence in the opposite direction through a second rolled member to define laterally extending free ends which are knotted together to join said first and second rolled members together to one another and to said withdrawal tape.

8. A tampon according to claim 4 wherein the rolled members have substantially the same diameter.

9. A tampon according to claim 5 wherein the rolled members have substantially the same diameter.

10. A tampon according to claim 6 wherein the rolled members have substantially the same diameter.

11. A tampon according to claim 7 wherein the rolled members have substantially the same diameter.

12. A tampon according to claim 4 wherein the withdrawal tape passes through the center of the rolled member.

13. A tampon according to claim 5 wherein the withdrawal tape passes through the center of the rolled member.

14. A tampon according to claim 6 wherein the withdrawal tape passes through the center of the rolled member.

15. A tampon according to claim 7 wherein the withdrawal tape passes through the center of the rolled member.

16. A tampon according to claim 4 wherein the diameters of the rolled members are unequal.

17. A tampon according to claim 5 wherein the diameters of the rolled members are unequal.

18. A tampon according to claim 6 wherein the diameters of the rolled members are unequal.

19. A tampon according to claim 7 wherein the diameters of the rolled members are unequal.

20. A tampon according to claim 4 wherein the axes of the rolled member lie in a common plane.

21. A tampon according to claim 5 wherein the axes of the rolled member lie in a common plane.

22. A tampon according to claim 6 wherein the axes of the rolled member lie in a common plane.

23. A tampon according to claim 7 wherein the axes of the rolled member lie in a common plane.

24. A tampon according to claim 4 wherein the axes of the rolled member are parallel to one another.

25. A tampon according to claim 5 wherein the axes of the rolled member are parallel to one another.

26. A tampon according to claim 6 wherein the axes of the rolled member are parallel to one another.

27. A tampon according to claim 7 wherein the axes of the rolled member are parallel to one another.

28. A tampon according to claim 2 wherein there are three rolled members.

29. A tampon according to claim 28 wherein the rolled members lie in the same common plane.
30. A tampon according to claim 28 wherein one of said rolled members is positioned over the other two rolled members.

31. A tampon according to claim 30 wherein at least one rolled member has a different diameter.

32. A tampon according to claim 28 having a withdrawal tape having a loop and a pair of free ends, said loop formed at a lateral edge of a first rolled member, the length of withdrawal tape terminating in said loop running laterally through said first rolled member, one of said free ends running thence in an opposite direction laterally through a second rolled member, the others of said free ends running thence in an opposite direction laterally through a third rolled member, the free ends emerging from said second and third rolled members passing through said loop to join said first, second and third rolled members together and to said withdrawal tape.

33. A tampon according to claim 28 wherein a rolled member formed of a central portion of the absorbent material is rolled in a direction opposite to the direction of the other rolls.

34. A tampon according to claim 33 wherein the rolled members lie in a common plane.

35. A tampon according to claim 33 wherein the rolled members lie in a triangular arrangement in cross section.

36. A tampon according to claim 28 wherein each roll is rolled in the same direction.

37. A tampon according to claim 36 wherein each rolled member lies in a common plane.

38. A tampon according to claim 36 wherein the rolled members lie in a triangular arrangement in cross section.

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