Aug. 20, 1968 C. I. RICKARD 3,397,696

SANITARY PANTY HAVING A GATHERED CROTCH PORTION

Filed Aug. 27, 1965 2 Sheets-Sheet 1

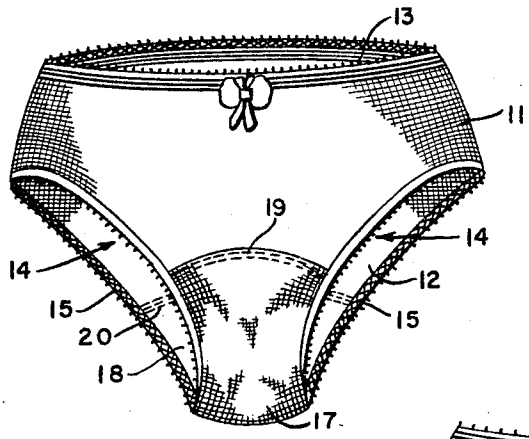


FIG. 1.

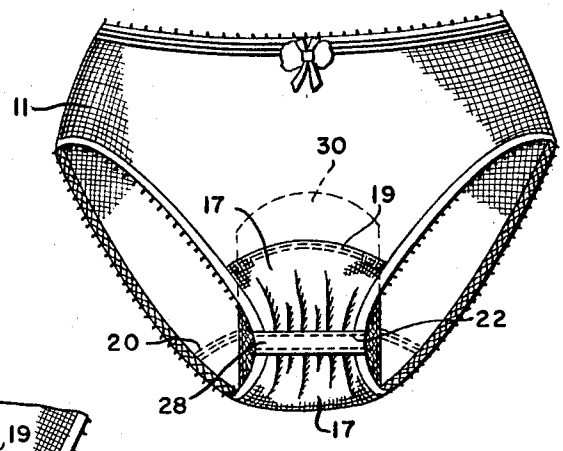


FIG. 2.

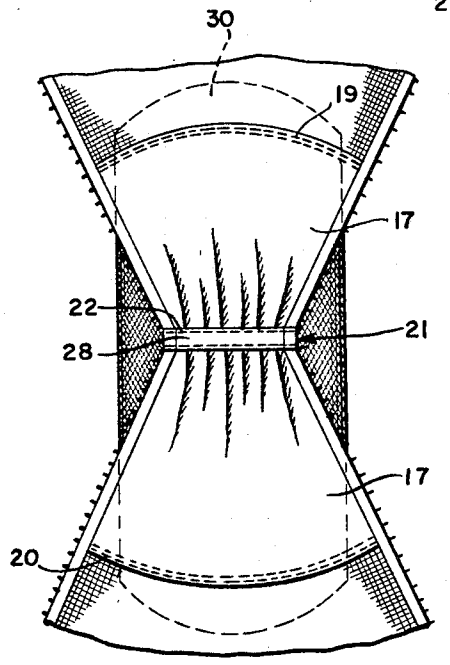


FIG. 3.

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SANITARY PANTY HAVING A GATHERED CROTCH PORTION

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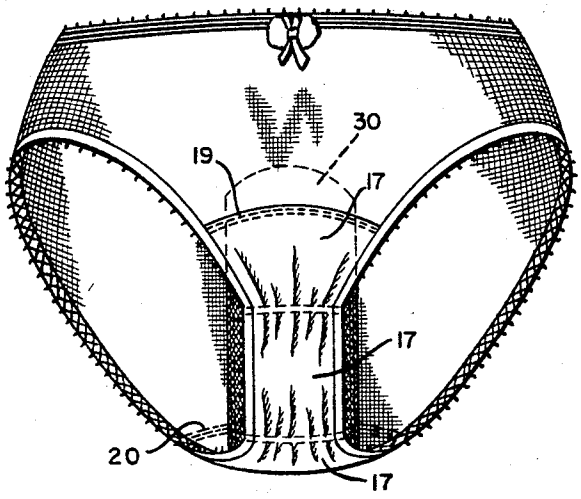


FIG. 4.

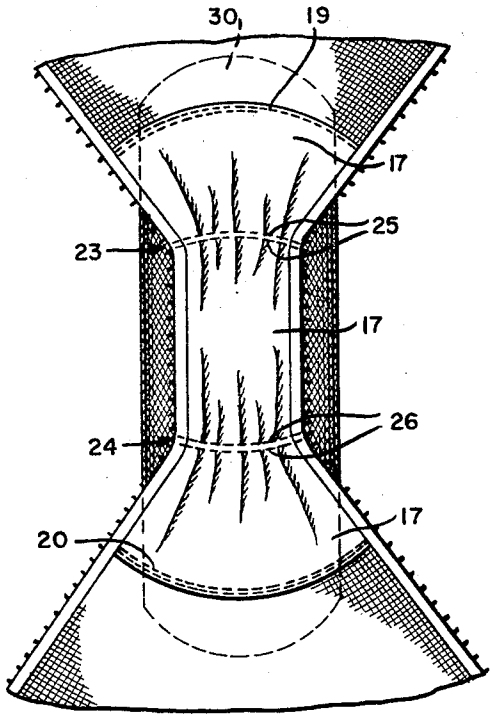


FIG. 5.

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SANITARY PANTY HAVING A GATHERED CROTCH PORTION

Charlotte I. Rickard, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis., a corporation of Delaware

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ABSTRACT OF THE DISCLOSURE

An improved stretch panty for use with sanitary napkins. The panty has substantially conventional dimensions and is composed of fabric which stretches in all directions. A minor transverse portion of the crotch section is gathered and made narrower across its full width to give that portion a dimension not more than the width of a sanitary napkin. The gathered portion is restricted from transverse stretching while the remaining crotch portions are unrestricted. This construction holds napkins more securely in place while substantially eliminating edge soiling in the crotch section.

This invention relates to an improvement in devices for holding an absorbent pad such as a catamenial napkin in snug association with the body of the wear. More particularly it relates to improvements in the construction of so-called stretch panties or briefs whereby sanitary napkins are more securely and comfortably held in place when worn in conjunction therewith. The intended function of the sanitary napkin is also improved by the use of this panty, since the improved construction enables the napkin to be held in closer contact with the body where it may more effectively receive body exudates during its entire period of use.

A principal object of the present invention is to modify the construction of a conventional stretch panty in a manner to provide positive support for a sanitary napkin while retaining the close fitting body-conforming comfort normally associated with stretch panties when worn at times other than during the menses.

An additional object is to provide a simplified sanitary napkin supporting arrangement which may be used without the encumbrances commonly required.

Still another object is to modify a stretch panty in a manner to substantially eliminate soiling of the edges of the crotch portion of the panties when worn in conjunction with a sanitary napkin.

Other objects and advantages of the invention will appear in connection with the following description and accompanying drawings.

In the drawings:

FIGURE 1 is a front elevation of a conventional stretch panty approximately in the position it assumes when on a person's body;

FIGURE 2 is a front elevation similar to FIGURE 1 showing one embodiment of the panty modified in accordance with the invention and also showing the placement of a sanitary napkin worn in conjunction therewith;

FIGURE 3 is a fragmental enlarged bottom view of the crotch portion of the panty of FIGURE 2 showing the modification in more detail;

FIGURE 4 is a front elevation similar to FIGURE 1 showing another embodiment of the panty modified in accordance with the invention and also showing a sanitary napkin in position;

FIGURE 5 is a fragmental enlarged bottom view of the crotch portion of the panty of FIGURE 4 showing that modification in more detail.

With the recent development stretch yarns and undergarments made therefrom, stretch panties have become popular as means for holding catamenial napkins in place, and often are used without supplementary pins, fasteners or other encumbrances. These garments are small and relatively inconspicuous and because of the properties provided by the stretch construction, which allow substantial stretching or elongation in all directions, conform closely to body contours when worn. The uniform stretch characteristics permits the entire garment to exert a light pressure against the body including the crotch area, the latter faculty enabling such garments to be employed as supporting means for sanitary napkins.

However, because these panties are of extremely lightweight construction the fabric stretches readily when small forces are applied thereto. Thus when a sanitary napkin is worn in conjunction therewith, the weight of the napkin, which increases when body exudates are absorbed therein, causes the crotch portion of the panty to sag slightly under the weight, with the resultant disadvantage that the absorbent napkin does not remain in as close contact with the body during the entire period of wear, as is desirable for efficient functioning.

Another disadvantage is that the suspended napkin often causes the crotch portion of the panty to form a pocket around the napkin, causing the napkin to fall away from the body and lose contact therewith. When conditions are such that a pocket develops in the crotch portion, the panty edges tend to creep up over the sides of the napkin onto the top surface thereof, where the edges can be easily soiled by body exudates, either by direct contact or by reabsorption from the napkin itself.

Even when the original transverse dimension of the crotch portion of the panty is made narrower than the width of the sanitary pad as taught in the first embodiment of the panty construction shown in U.S. Patent No. 3,038,474, which is assigned to the assignee of this invention, the tendency remains for the crotch to sag under the weight of the napkin, and the extremely elastic nature of the yarns used, permits the crotch portion to expand laterally sufficiently to cause the edges of the crotch portion to creep over the top and become soiled.

If the crotch portion of the panty is narrowed and made of flexible but relatively inelastic material as shown in the second embodiment of the panty shown in Patent No. 3,038,474, creeping of the edges of the crotch section of the panty over the sides of a sanitary napkin worn in conjunction therewith is prevented, but because of the inelastic properties of the crotch portion in such construction, upwardly exerted tension is lacking, and the sanitary napkin is not held as snugly in place as would be desired.

By modifying the construction of a conventional stretch panty in the manner herein defined the above disadvantages are overcome without compromising the advantages of comfort and snug fit attributable to the unmodified panty.

In brief, the invention comprises taking a conventional stretch panty, gathering transversely at least one minor

portion of the crotch to give that portion a dimension not more than the width of a sanitary napkin, and permanently restricting the gathered narrowed portion only to avoid transverse elongation thereof, while permitting normal longitudinal elongation of the unrestricted crotch area to occur. The gathered portion of the crotch is held against transverse elongation by some permanent means, such as lines of stitching which may be further supplemented with an inelastic tape or the like. While stitching, with or without a supplemental tape are preferred means for achieving restriction, other suitable means, including adhesive bonding, may be employed. It is important that the gathering and restricting comprise at least one narrow transverse area in the crotch portion of the panty. The gathered and restricted strip is located in the crotch section somewhere between the front and back body portions of the panty, and preferably is located nearer to the front portion of the panty than it is to the back portion. More than one line of restriction may be used; however, no matter how many lines are used, a major part of the crotch portion should preferably remain free to expand longitudinally. If more than one line of restriction is employed, it is preferred that at least one of the lines be nearer to the front body portion of the panty than it is to the back body portion. As noted above, in gathering and restricting the crotch transversely care should be taken that the normal stretch properties of the remaining crotch fabric in the longitudinal direction are not hampered. The longitudinal dimension of the gathered and restricted area may be wider than is shown in the drawings, i.e., on the order of 1" to 2", as long as the ability of the crotch area to stretch longitudinally is not materially affected.

In FIGURE 1, a conventional stretch panty is shown in the configuration it normally assumes on the body of the wearer. Such panties usually comprise front and back body portions **11** and **12** respectively, a crotch portion **17** joining the body portions, a stretchable waist band **13** and leg openings **14** surrounded by stretchable tape bindings **15**. The panty is characterized by being stretchable in all directions, and may be of one piece or multi-piece construction. The crotch portion **17** is usually reinforced by being of double layered construction as shown in the drawings, with an interior piece **18** joined to the panty by stretchable front and back lines of stitching **19** and **20** respectively.

A panty of this construction in its initial unstretched condition may have a waistline circumference of about 14 inches, and is capable of stretching to encircle a waist as large as 40 inches or more. The unrestricted width of the crotch portion is usually about 2½" to 3". The dimension of the initial unstretched garment from waistline to the bottom of the crotch is also much less than the corresponding measurement when worn. As a result, the yarns in the garment when in place on the body are always in tensioned, stretched condition and because of elastic memory try to retract in all directions whereby the entire garment elastically conforms to the body contours.

When a stretch panty of conventional construction is worn with a sanitary napkin, the napkin is urged against the body and appears to be held snugly in position when first placed above the crotch portion of the panty. However, it has been found that because of the very fact that the fabric stretches so easily and conforms to the contours of the body and/or any objects which might be placed between the body and the fabric, that when the crotch is unmodified, instead of continuing to hold the sanitary napkin snugly in place, as it first appears to do, the unrestricted nature of the crotch construction reacts to downward forces exerted by the increasing weight of the napkin, and sags slightly to form a pocket into which the napkin drops. This tends to draw the napkin away from its snug fit against the body, and the intended absorptive function of the napkin is hindered. The edges

of the panty crotch portion in trying to retract, then tend to creep over the top of the napkin and may become soiled. Even when the original transverse dimension of the crotch is made narrower than the pad, as indicated previously, the large amount of stretch inherent in the fabric still results in the above described undesirable pocketing and concomitant panty edge soiling.

The latter disadvantages are overcome by the panty modified in accordance with this invention.

FIGURES 2 through 5 are illustrative of such modified crotch construction.

In FIGURES 2 and 3, the crotch portion **17** of the panty is gathered transversely as shown at **21** and held permanently restricted by inelastic lines of stitching **22**, or other means of restraint. In these figures, an optional supplementary reinforcing tape **28** is also shown. The transverse restraining means holds the crotch portion in its gathered configuration across the narrowed width but does not materially hamper the stretch characteristics of the crotch portion in the longitudinal direction. For effective performance, when used with sanitary napkins, it is important that the gathering and restriction narrow the crotch portion down to a dimension no more than, and preferably less than, the width of the sanitary napkin **30** to be worn in conjunction therewith. As noted above, by using inelastic lines of restraint in the gathered crotch portion, the panty crotch is prevented from stretching transversely in that area without restricting longitudinal stretch. Restricting transverse stretch in only a limited area as shown, does not deleteriously affect the ability of the panty to conform to the body, since the longitudinally stretching capability remains. The transverse restriction does prevent lateral movement of the edges of the panty in the crotch area, and because sagging is thereby avoided, the restricted section exerts continual pressure against the central portion of the napkin to urge the napkin gently but firmly into close contact with the body. This construction thus assures that the panty will hold the napkin firmly against the body at all times, even after an extended period of wear.

In FIGURES 4 and 5, the crotch portion **17** of the panty is gathered transversely along two strips as shown at **23** and **24** and held permanently restricted by lines of stitching **25** and **26** respectively. Again, it is important that the dimension of the gathered portions transversely of the crotch be no more than the width of the sanitary napkin **30** used in conjunction therewith. As shown, the two lines of restriction also comprise relatively narrow strips of the crotch portion so that in this embodiment too, the crotch portion is prevented from stretching transversely in the gathered and restricted areas, but the unrestricted areas are allowed to stretch freely in the longitudinal direction.

In both embodiments described above, while the crotch portion of the panty is made narrower by gathering and permanently restricted from transverse elongation, the wider unrestricted portions of the crotch adjacent each of the body portions of the panty remain capable of stretching in all directions whereby these portions are free to conform around the ends of the sanitary napkin to hold the napkin from shifting either laterally or longitudinally. The diverging leg openings at these points provide both transverse and longitudinal tension so that there is substantially no chance for the previously described pocketing to occur near the body portions of the panty. At the same time, restricting transverse elongation of the crotch area intermediate the body portions insures that the edges of the panty do not creep over the top of the napkin at any point in the crotch area itself.

The lines of gathering and restriction may be located anywhere within the crotch area between the body portions of the panty. When only a single line of restriction is used it is preferred that such restriction be located closer to the front body portion than to the back body portion of the panty. While the drawings show panties

with either one transversely gathered and restricted strip, or two such strips, it is evident that additional restricting strips may be utilized as long as longitudinal elongation is not substantially eliminated.

When stitching is employed as the means for restricting the gathered area, such stitching may be supplemented by adding an optional inelastic tape **28** or the like to further insure against the possibility of transverse elongation occurring in the event that unusual stress inadvertently breaks a portion of the stitching itself. As noted previously, other means of obtaining permanent restriction may be used.

In using the garment for catamenial purposes, a supplementary fastener, or fasteners, for attaching the tab ends of conventional sanitary napkins to the panty may be used, if desired. Although such fasteners are not necessary, some users prefer to utilize them because of the additional feeling of security provided thereby. When supplementary fasteners are not used, the sanitary napkin need not be provided with the customary tab ends.

With respect to the amount of transverse gathering preferred, napkins presently on the market range in width from about 2 to 3 inches. Accordingly, in a panty designed for universal use, a transverse dimension no more than 2" wide in the gathered and restricted area of the crotch should be satisfactory. Preferably, however, the restricted dimension should be somewhat narrower. The minimum dimension to which the restricted area may be gathered does not appear critical. For example, if a portion of the crotch is gathered to the minimum possible width, by looping a string or thread around the central crotch area and drawing it tightly together, it would still provide the improved function.

Having now described several specific embodiments of the invention, it is to be understood that no limitation upon the scope of the invention is intended except as expressly set forth in the appended claims.

What is claimed is:

1. An improved sanitary panty garment especially adapted for catamenial use, said panty being comprised of a fabric which stretches readily in all directions and having front and back body portions forming a waist opening and a crotch portion of conventional width joining said body portions to provide leg openings, a minor area of said crotch portion being gathered transversely thereof across the full width of said crotch portion to form a narrower section in said crotch portion intermediate said body portions, said narrower portion being permanently restricted from transverse elongation in said gathered area, the remaining major area of said crotch portion being unrestricted longitudinally and transversely thereof.

2. An improved sanitary panty garment especially adapted for catamenial use, said panty being comprised of a fabric which stretches readily in all directions and having front and back body portions forming a top waist opening and a crotch portion of conventional width joining said body portions to form bottom leg openings, said crotch portion being gathered transversely across its full width along at least one narrow band intermediate said body portions and permanently restricted along said band to prevent transverse elongation, the remaining area of said crotch portion being longitudinally and transversely unrestricted.

3. An improved sanitary panty garment especially adapted for catamenial use comprised of a universally stretchable fabric, said panty having front and back body portions forming a top waist opening and a crotch portion of conventional width joining said body portions to form bottom leg openings, said crotch portion being gathered transversely across its full width along narrow bands spaced from each other and from said body portions, said gathered bands being permanently restricted against transverse elongation, said gathered and restricted bands comprising a minor part of the longitudinal area of said crotch portion, the remaining major longitudinal area of said crotch portion being free to expand longitudinally and transversely.

4. An improved sanitary panty garment especially adapted for catamenial use comprised of a fabric which readily stretches in all directions, said panty having front and back body portions forming a top waist opening and a crotch portion of conventional width joining said body portions to provide bottom leg openings, a minor area of said crotch portion being gathered transversely across its full width along at least one line intermediate said body portions and permanently restricted against transverse elongation by stitching along said gathered line, the major areas of said crotch portion being free of any restricting transverse stitching whereby said major areas are free to elongate longitudinally and transversely.

5. The improved panty of claim **4** in which the stitching is supplemented by a reinforcing tape.

6. The combination of a sanitary panty of universally stretchable fabric and an elongate sanitary napkin, said panty having front and back body portions forming a top waist opening and a crotch portion of conventional width joining said body portions to provide bottom leg openings, said sanitary napkin being disposed above and in contact with said crotch portion, a minor area of said crotch portion being gathered transversely across its full width to form a narrower section in said crotch portion intermediate said body portions and being permanently restricted against transverse elongation in said gathered area, the remaining major area of said crotch portion being unrestricted longitudinally and transversely, the dimension of the transversely gathered area across said crotch portion being not more than the width of said napkin.

7. The combination of a sanitary panty of universally stretchable fabric and an elongate sanitary napkin, said panty having front and back body portions forming a top waist opening and a crotch portion of conventional width joining said body portions to form bottom leg openings, said sanitary napkin being disposed above and in contact with said crotch portion, said crotch portion being gathered transversely across its full width along at least one narrow band to a width less than its normal unrestricted width intermediate said body portions and permanently restricted along said band to prevent transverse elongation in said band area, the remaining area of said crotch portion being longitudinally and transversely unrestricted, the transversely restricted dimension across said crotch portion being not more than the width of said napkin.

8. The combination of a sanitary panty of universally stretchable fabric and an elongate sanitary napkin, said panty having front and back body portions forming a top waist opening and an intermediate crotch portion of conventional width joining said body portion to form bottom leg openings, said sanitary napkin being disposed above and in contact with said crotch portion and extending over and in contact with adjoining areas of said body portions, said crotch portion being gathered transversely across its full width along narrow bands spaced from each other and from said body portions, said bands being permanently restricted against transverse elongation, said restricted bands comprising a minor part of the total area of said crotch portion, the remaining major area of said crotch portion being free to stretch longitudinally and transversely, the dimension of said restricted bands across said crotch being not more than the width of said napkin.

9. The combination of a sanitary panty of universally stretchable fabric and an elongate sanitary napkin, said panty having front and back body portions forming a top waist opening and an intermediate crotch portion of conventional width joining said body portion to provide bottom leg openings, said sanitary napkin being positioned above and in contact with said crotch portion and extending over and in contact with an adjoining area of each of said body portions, a minor area of said crotch portion being gathered transversely across its full width along at least one line spaced from said body portions and per-

manently restricted against transverse elongation by stitching along said line, the major longitudinal area of said crotch portion being free of restricting transverse stitching whereby said major area is free to elongate longitudinally and transversely, the length of said transversely restricted line measured across said crotch being no more than the width of said napkin.

10. The combination of claim **9** in which said stitching is supplemented by a reinforcing tape.

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CHARLES F. ROSENBAUM, *Primary Examiner.*