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(54) **PAD FOR PROVIDING SUPPORT FOR AN
ACTIVE WOMAN**

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(57) **ABSTRACT**

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A pad is disclosed that may be sewn into women's undergarments to provide support and protection during physical activity. The pad may include a ridge that is configured to support the labia. In one embodiment, the pad is comprised of a flexible laminated foam. According to some embodiments, the pad may prevent an embarrassing appearance for the wearer.

Related U.S. Application Data

(60) Provisional application No. 61/657,453, filed on Jun. 8, 2012.

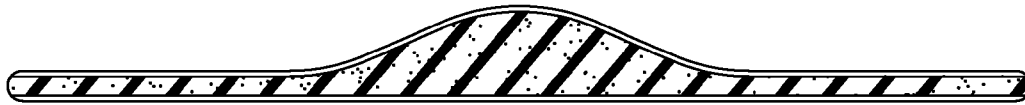


FIG. 1

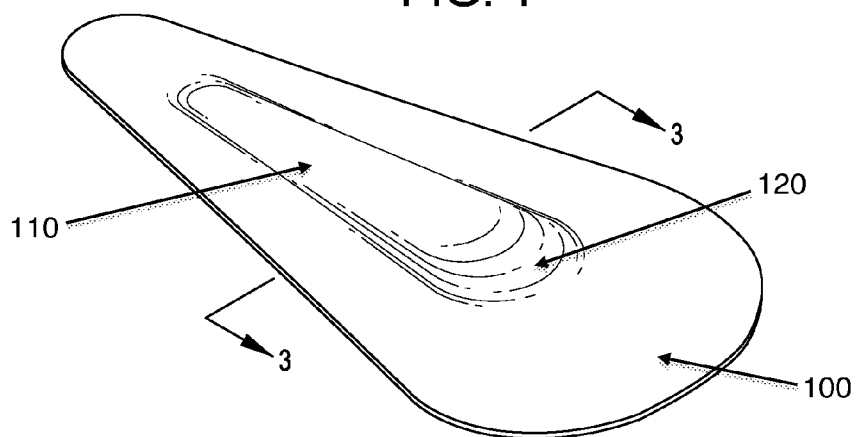


FIG. 2



FIG. 3



FIG. 4

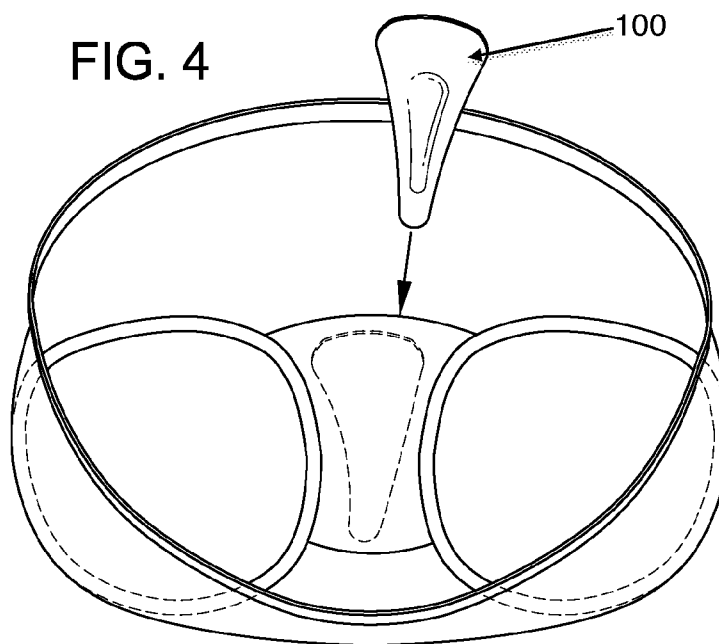


FIG. 5

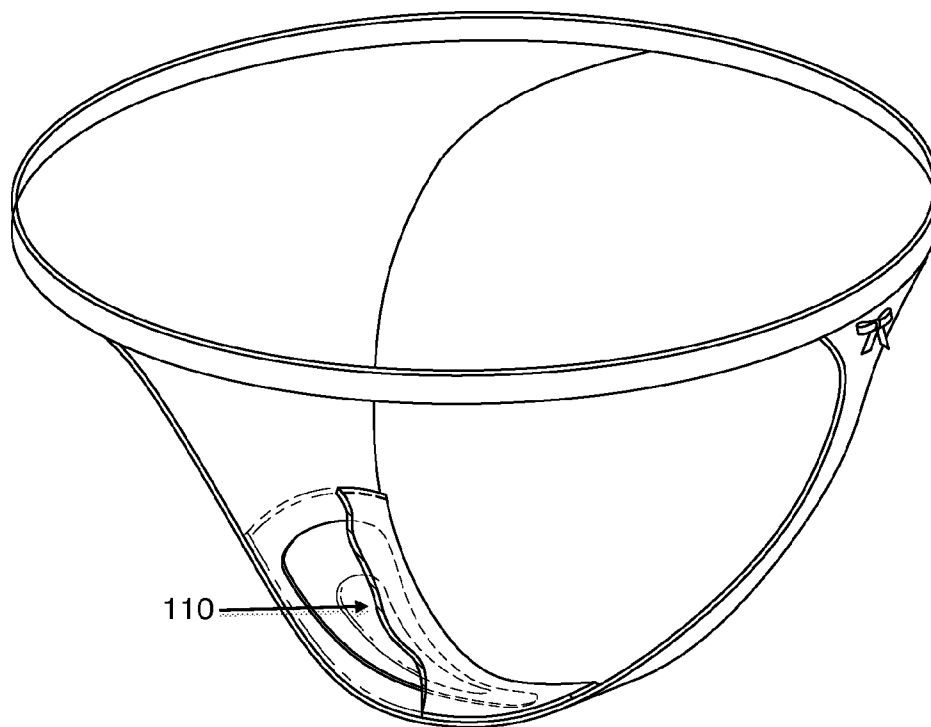


FIG. 6

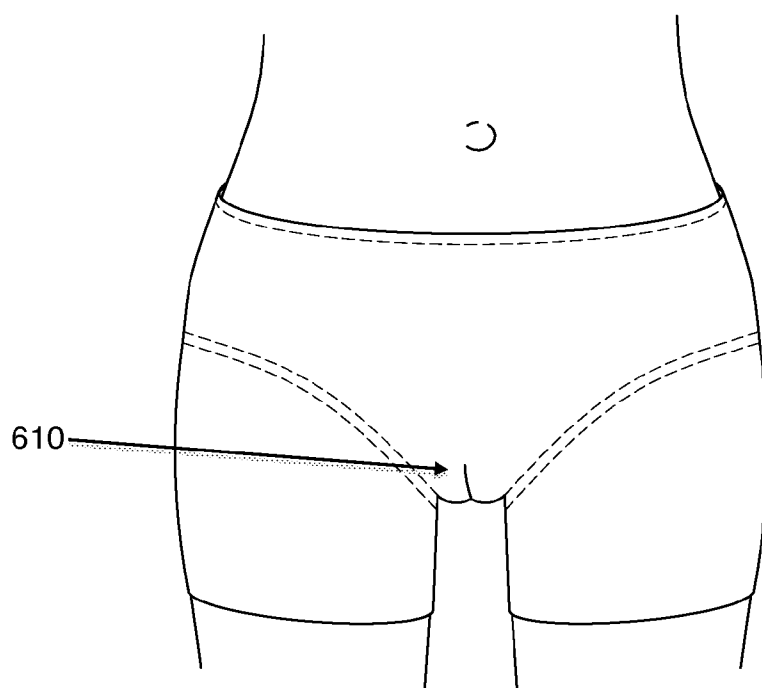
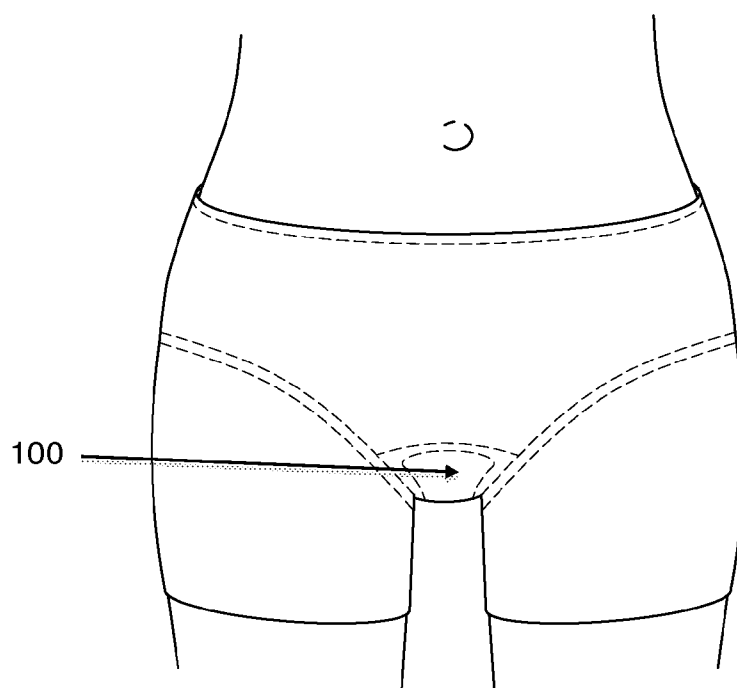


FIG. 7



PAD FOR PROVIDING SUPPORT FOR AN ACTIVE WOMAN

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Application No. 61/657,453, filed Jun. 8, 2012, which is hereby incorporated by reference in its entirety.

BACKGROUND

[0002] The present disclosure may provide a thin layer of protection for the vagina to provide support while preventing discomfort during rigorous exercise or activity.

[0003] Prior art provides women with pads or undergarments with pads that cover portions of the vagina, but which fail to properly support the anatomy of the wearer (e.g., the wearer's labia). This is especially true for active women. The primary purpose for the prior art pads is to prevent a potentially embarrassing visual appearance for women. Further, current pads are bulky and can be uncomfortable. Even further, they do not properly support the labia; rather they merely cover it with a thick pad that compresses against a woman's body.

[0004] Further, prior art provides pads that are one-time, limited use, and/or disposable, which may be costly. Further, these pads fail to provide the support necessary for active women. The disposable pads have an adhesive on the back of the pad that is designed to stick to a woman's undergarment. However, for active women the pad may shift and may not provide adequate support during activity. Further, the disposable pads are typically one-size. The size of the disposable pads containing the bump is not relative to the size of the undergarment or the woman. This provides little or no support for women of different sizes or support for undergarments of different size and style.

[0005] Even further prior art examples are undergarments that contain a pocket in the crotch area. The woman inserts a pad that consists of hardened cardboard or other minimally flexible material. The goal of this solution is to enable the woman to decide when and where she wants to use the insert. However, since the pad is made up from an inflexible, hard material, it is uncomfortable during activities—and without a ridge, it may not provide adequate support for the labia. Further, the prior art fails to provide support for women of different sizes or support for undergarments of different size and style.

[0006] A pad that includes a ridge that is relative to the size of the undergarment in order to provide proper support for the labia has eluded those skilled in the art, until now.

[0007] It would be advantageous to provide a pad that is relative to the size of the undergarment and provides support for the labia.

[0008] It would also be advantageous to provide a pad that is sewn directly into underwear to prevent undesired movement and maintain proper support during physical activity.

SUMMARY

[0009] In accordance with some embodiments the present disclosure, there is provided a pad that may be sewn into feminine undergarments to provide support and protection during physical activity. The pad may include a ridge that is configured to support the labia. In one embodiment, the pad is comprised of flexible laminated foam.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Other aspects of the disclosure will become apparent upon reading the following detailed description and upon reference to the accompanying drawings which are now described as follows.

[0011] FIG. 1 is a perspective view of one embodiment of a pad for providing support for a woman.

[0012] FIG. 2 is a side view of one embodiment of the pad illustrated in FIG. 1.

[0013] FIG. 3 is a section view of one embodiment of the pad illustrated in FIGS. 1 and 2.

[0014] FIG. 4 is a top view of one embodiment of the pad's location in an undergarment.

[0015] FIG. 5 is a side view of one embodiment of the pad's location in an undergarment.

[0016] FIG. 6 is an illustration of one embodiment of an undergarment worn without the pad.

[0017] FIG. 7 is an illustration of one embodiment of an undergarment worn with the pad.

[0018] For purposes of clarity and brevity, like elements and components will bear the same designations and numbering throughout the Figures.

[0019] While the subject matter disclosed herein is susceptible to various modifications and alternative forms, specific embodiments thereof are shown by way of example in the drawings and will herein be described in detail. It should be understood, however, that the drawings and description related thereto are not intended to be limiting to the particular form disclosed, but, on the contrary, is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the present disclosure as defined by the appended claims.

DETAILED DESCRIPTION

[0020] It is to be understood the present disclosure is not limited to particular devices or methods, which may, of course, vary. It is also to be understood that the terminology used herein is for the purpose of describing particular embodiments only, and is not intended to be limiting. As used herein, the singular forms “a”, “an”, and “the” include singular and plural referents unless the content clearly dictates otherwise. Furthermore, the word “may” is used throughout this application in a permissive sense (i.e., having the potential to, being able to), not in a mandatory sense (i.e., must). The term “include,” and derivations thereof, mean “including, but not limited to.” The term “coupled” means directly or indirectly connected.

[0021] Turning now to FIG. 1, a perspective view is shown of one embodiment of a pad 100 for providing support for a woman. In one embodiment, the pad 100 measures 1 millimeter (mm) in thickness and is made with a flexible laminated foam. In some embodiments, a breathable, and/or nontoxic, and/or non-yellowing foam may be used. In some embodiments, the pad 100 may be formed via a mold. The foam may be poured into the mold as a liquid to create the desired shape. Once hardened, the foam may be die cut into the shape of the pad.

[0022] According to some embodiments, foam sold under the trademarks MAYSER BLUEFOAM® and/or Inducon® SBR Duotex (e.g., aliphatic polyurethane coating foams with excellent properties for versatile use in technical products and

the shoe and clothing industry) may be used to create the pad **100**. Data regarding properties of some embodiments may be found in the following tables:

TABLE 1

product name	MAYSER BLUEFOAM ® TG-S	MAYSER BLUEFOAM ® TG-S Tex
chemical basis	ester polyurethane	
thickness, mm	0.5-10.0	0.5-10.0
	layer structure up to 15.0 mm	
compression set, %	20-30	20-30
density, kg/m ³	120-400 ^[4]	120-400 ^[4]
hardness (shore 00)	20	30
washability	40 washes at 40° C. easy to clean	
ultimate elongation, %	300-400	
tensile strength, kPa	>600	
hydrolysis resistance	good	
air permeability	air permeable	
surface	one-sided super matt, antislip	one-side laminated with textile, antislip
light fastness	7 (XENON-Test)	
colour	standard colour: white, special colours on request	
environmental	does not contain toxic substances	
performance	(according REACH and Rohs)	
	produced in an environmentally friendly way	
optional	printed/coated/textile laminated/moulded (2D/3D) finish with microporous carbon → very good odour absorption TG-S Carbon	
areas of application	antislip-products interior shoe insert (cushioning)	

^[4]The density with 400 kg/m³ could diverge from the specified parameters

TABLE 2

product name	MAYSER BLUEFOAM ® TG-T	Inducon ® SBR Duotex
chemical basis	ester polyurethan	styrol-butadien- kautschuk
thickness, mm	0.5-10.0	1.0-4.0
	layer structure up to 15.0 mm	
compression set, %	<10	30
density, kg/m ³	120-400 ^[4]	160-200
hardness (shore 00)	from 15 up to 50	15
washability	40 washes at 40° C. easy to clean	
ultimate elongation, %	300-400	
tensile strength, kPa	>600	
hydrolysis resistance	very good ^[B]	not tested
air permeability	air permeable	
surface	one-sided super matt, antislip	laminated with textile
light fastness	7 (XENON-Test)	
colour	standard colour: white, special colours on request	
environmental	does not contain toxic substances	
performance	(according REACH and Rohs)	
	produced in an environmentally friendly way	
optional	printed/coated/textile laminated/moulded (2D/3D) finish with microporous carbon → very good odour absorption TG-S Carbon	
areas of application	antislip-products interior shoe insert (cushioning)	

^[4]The density with 400 kg/m³ could diverge from the specified parameters

^[B]Maximum percentage decrease ultimate elongation < 10% and tensile strength < 15% after a hydrolytic according to DIN EN ISO

[0023] The pad may have an increasing gradient, measured from the top or upper surface of the pad **100**, rising from 0 mm off the top surface (i.e., level with the surface) to approximately 4 millimeters in height, thereby creating a ridge **110**. The ridge **110**, and equivalents thereof, may also be referred to as “support means” (e.g., “support means for filling a space between a wearer’s labia”) for purposes of 35 U.S.C. § 112(f). As shown, the ridge **110** is disposed along a portion of the

longitudinal axis of the pad **100**, forming a raised central portion thereof. The side of the pad **100** opposite the ridge **110** (e.g., the lower surface) may be a flat lower surface, in order to present a relatively flat appearance and obscure the shape of the anatomy of the wearer (e.g., the labia of the wearer). Pad **100** is designed to be worn such that the ridge **110** faces inward (i.e., toward the wearer’s body), and the flat, opposite side faces outward. The ridge **110** may tend to conform to the anatomy of the wearer (e.g. by filling a space between the wearer’s labia, supporting the wearer’s labia, etc.).

[0024] In the illustrated embodiment, the size of the pad may be directly related to the size and style of the undergarment. For example, the pad in an undergarment that is a thong may be smaller than a pad in a bikini-brief style of undergarment. The terms “undergarment” or “feminine undergarment” should be understood to include thongs, panties, swim-suits, bikinis, briefs, hipsters, tangas, g-strings, boyshorts, etc. According to other embodiments, the teachings of this disclosure may be applied to other garments that are not undergarments, such as workout shorts, workout pants, yoga pants, other tight-fitting garments, etc.

[0025] In one embodiment, the ridge **110** measures 3 inches long and 1.25 inches wide at its widest point **120**. The location of the ridge may be relative to the size of the overall pad. The ridge may serve to fill in the space between the labia majora and to support the labia minora. The ridge in the pad may prevent compression of the labia beneath a woman’s undergarments, thereby preventing discomfort, chafing and an embarrassing visual appearance.

[0026] In an alternative embodiment, the ridge can be larger or smaller than 4 millimeters in height to accommodate women of different sizes. Further, the ridge can be located at different positions within the pad.

[0027] In further embodiments, the pad may be constructed in one or more different sizes to accommodate one or more different types of undergarments.

[0028] FIG. 2 is a side view of one embodiment of the pad illustrated in FIG. 1. As described, in one embodiment the ridge **110** may be 4 millimeters in height. However, it is contemplated that the gradient of ridge **110** can be greater or less to accommodate women of different sizes. Further, the size of the ridge can be relative to the size and style of the undergarment.

[0029] FIG. 3 is a section view of one embodiment of the pad illustrated in FIGS. 1 and 2.

[0030] FIG. 4 is a top view of one embodiment of the pad’s location in an undergarment. In one embodiment the pad **100** is sewn into the crotch between two layers of fabric (e.g. into the central or crotch portion of the undergarment). The portion of the undergarment that accepts the pad **100**, and equivalents thereof, may also be referred to as insertion means for receiving the pad **100** for purposes of 35 U.S.C. § 112(f). Sewing the pad between two layers of fabric may disguise the pad and create the appearance of a traditional undergarment. Within the crotch area of the undergarment, the pad can extend to the outer edges of the undergarment. The two pieces of fabric can be stitched together, thereby enabling the pad to adhere between them. It is well known in the art that different types of stitching can be used to accommodate various styles and fabrication of undergarments. The pad can be sewn or bonded into the seams of the leg openings (e.g., along the leg portions of the undergarment) in order to minimize extra seams and irritation to the vagina. In one embodiment, one layer of fabric is the crotch of the underwear and the other

layer covers the pad. This approach provides a clean cosmetic finish and increased sanitary measures.

[0031] According to some embodiments, instead of or in addition to stitching, a sewing-free bonding technology may be used. For example, a bonding technology known as Sew-free® may be employed.

[0032] According to some embodiments, bonding may use a soft, highly elastic adhesive film designed for apparel applications, with designs for intimate apparel, technical outerwear, active wear, casual wear and swimwear. According to various embodiments, the film may be made of polyurethane, ester polyurethane, etc. It may have one or more layers, and it may have various mechanical properties suitable for bonding to different materials. For example, some embodiments may have a low activation temperature useful for continuous processing and use with heat-sensitive fabrics; good adhesion to lace because of low melt flow; good adhesion and wash resistance; softness with a low modulus and high recovery; low-temperature activation to allow for use with heat-sensitive fabrics; good adhesion to lace; a barrier layer exposed for edge trim gripping; low modulus with good recovery and a thin profile; etc.

[0033] Some possible advantages of bonding may be as follows.

[0034] Shape: bonding may offer improved shape retention and support for fabric molded garments, usable with any fabric combination to create spacer fabric. An adhesive film may be used that does not delaminate and may provide longer-lasting shape through typical wash and wear. With various combinations of fabrics and materials, the bonding may hold its shape in garments that rely on shape retention.

[0035] Lace and Sheer: according to some embodiments, bonding may use a continuous film providing full coverage adhesion of fabrics. Lace, mesh, nets and other open fabrics may be fully bonded without delamination or wrinkles. A bonded lace garment may provide the wearer with a smooth, comfortable garment. By eliminating layers of stitching, a smoother profile may be created. Improved stability characteristics may eliminate the need for additional support systems in certain sizes and styles and may make some designs lighter and more comfortable.

[0036] Bonding may feature a low profile and be less abrasive than stitching. Bonded seams can be any size and completed in many different ways. If the edge of the film is left exposed it may be used as an effective gripper.

[0037] Body Shaping: a control garment with panels that are bonded may be created. Eliminating stitched seams may give a sleek profile improving the look, fit, and comfort of control garments. Bonding may enhance control properties, allowing lighter weight, open, and attractive fabrics to be used as the controlling panel. Bonding may be used throughout the entire control garment to create a whole new look and fit to this area of garment design.

[0038] Edge Treatments: Completing a circular knit with a stitched seam defeats the purpose of the seamless knit design. The garment may be complemented by finishing the edges with bonded seams. The bonding film may come in a variety of tape widths and be used in machinery capable of continuous bonding operations. A variety of edge treatments can be achieved.

[0039] Gaskets and Dies: Bonding may serve several functions within a garment. Custom die cut patterns of bonding film not only bond two fabrics and/or components together,

they also provide added performance. Bonding film may serve as a decorative element, improve stability, enhance elasticity, or increase support.

[0040] Bonded Wings: Bonding film adhesive may eliminate discomfort in the wing area of bras by providing the required elasticity while eliminating stitched elastics. The result is a smooth, seamless, comfortable fit while being less noticeable through outerwear.

[0041] In various embodiments, bonding may provide low-profile seams, less abrasion to the end user, lighter-weight garments, and/or improved elasticity.

[0042] A garment's ability to stretch and recover in response to the body's movement is also advantageous. Accordingly, a portfolio of TPU elastomers have been developed.

[0043] These new tapes may offer enhanced recovery while still maintaining the sleek, smooth aesthetics of a bonded seam, band, or hem. High Recovery TPU Elastomers may satisfy the needs for enhanced designs, better performance, and greater flexibility in manufacturing.

[0044] The ability of a bonded hem to stretch to high strains and recover to its original length may be characterized by the hysteresis. The distance between the loading and unloading curve is called hysteresis. The hysteresis for the High Recovery TPU Elastomers (HR TPU) is relatively low.

[0045] Modulus or the overall "stiffness" of the tape may also be selected. This is defined as the force required to pull a sample to 50% elongation. High Recovery TPU Elastomers are available in varying moduli to accommodate the different applications and to match selected fabrics.

[0046] In addition to the stretch and recovery, a tape that will adhere well to a fabric is advantageous. Bond strength is an important factor when evaluating durability. High Recovery Elastomer tapes may exhibit improved bond strength both before and after washing.

[0047] The ability to achieve good bond strength at low activation temperatures is advantageous when dealing with heat-sensitive fabrics. High Recovery TPU Elastomer tapes have a wide processing window. They can be bonded at low or high temperatures, enabling greater manufacturing flexibility and allowing for a wide variety in fabric types and weights.

[0048] High Recovery TPU Elastomer tapes may further have excellent resistance to environmental yellowing, for example under exposure to the combustion of natural gases.

[0049] In a further embodiment, the entire undergarment or a portion thereof can be made of a moisture-wicking fabric to reduce perspiration and odor. The pad 100 may optionally also be made of a moisture-wicking material. Further, a moisture wicking fabric can help prevent embarrassing sweat marks on clothing during rigorous activity and in heated environments. The fabric may further comprise stretch material to provide maximum comfort and a better fit.

[0050] FIG. 5 is a side view of one embodiment of the pad's location in an undergarment. As illustrated, the size of the pad is relative to the size of the undergarment. Additionally, the ridge 110 is proportional to the size of the pad 100. Further, the position of the ridge on the pad is relative to the pad size and the style, size and fit of the undergarment.

[0051] FIG. 6 is an illustration of one embodiment of an undergarment worn without the pad 100. As described above, the pad may create support for the labia and prevent an embarrassing appearance 610.

[0052] FIG. 7 is an illustration of one embodiment of an undergarment worn with the pad 100.

[0053] Although specific embodiments have been described above, these embodiments are not intended to limit the scope of the present disclosure, even where only a single embodiment is described with respect to a particular feature. Examples of features provided in the disclosure are intended to be illustrative rather than restrictive unless stated otherwise. The above description is intended to cover such alternatives, modifications, and equivalents as would be apparent to a person skilled in the art having the benefit of this disclosure.

[0054] The scope of the present disclosure includes any feature or combination of features disclosed herein (either explicitly or implicitly), or any generalization thereof, whether or not it mitigates any or all of the problems addressed herein. Various advantages of the present disclosure have been described herein, but embodiments may provide some, all, or none of such advantages, or may provide other advantages.

What is claimed is:

1. A pad, comprising:
an upper surface having a ridge disposed along a portion of a longitudinal axis thereof; and
a flat lower surface;
wherein the pad is attachable to a crotch portion of a feminine undergarment, and wherein the pad is shaped such that, when inserted into the feminine undergarment and worn by a wearer, conforms to and obscures a shape of the anatomy of the wearer.
2. The pad of claim 1, wherein the ridge has a maximum height of 4 millimeters.
3. The pad of claim 1, wherein a non-ridge portion of the pad has a thickness of 1 millimeter.

4. The pad of claim 1, wherein the ridge has a length of 3 inches.

5. The pad of claim 1, wherein the ridge has a maximum width of 1.25 inches.

6. The pad of claim 1, wherein the pad comprises flexible laminated foam.

7. The pad of claim 1, wherein the pad comprises a breathable, non-toxic, non-yellowing foam.

8. The pad of claim 1, wherein when the pad is inserted into the feminine undergarment and worn by a wearer, the pad fills a space between the wearer's labia.

9. A garment, comprising:

a crotch portion; and

a pad coupled to the crotch portion;

wherein the pad includes a raised central portion operable to support a wearer's labia.

10. The garment of claim 9, wherein the crotch portion comprises a moisture-wicking fabric.

11. The garment of claim 9, wherein the pad comprises a moisture-wicking foam.

12. The garment of claim 9, wherein the pad is coupled to the crotch portion via stitching.

13. The garment of claim 12, wherein the stitching is disposed along leg portions of the garment.

14. The garment of claim 9, wherein the pad is coupled to the crotch portion via bonding.

15. The garment of claim 14, wherein the bonding is disposed along leg portions of the garment.

16. A garment, comprising:

support means for filling a space between a wearer's labia; and

insertion means for receiving the support means.

* * * * *