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### (54) PANTYHOSE GARMENT AND METHOD OF MAKING

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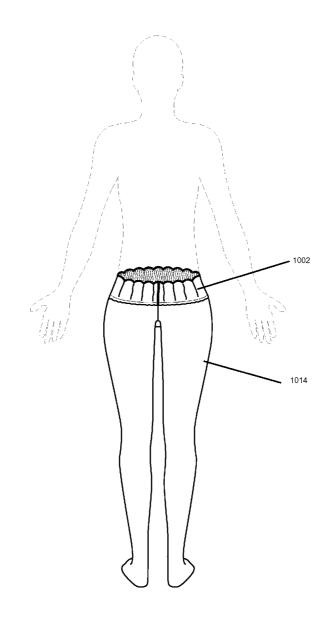
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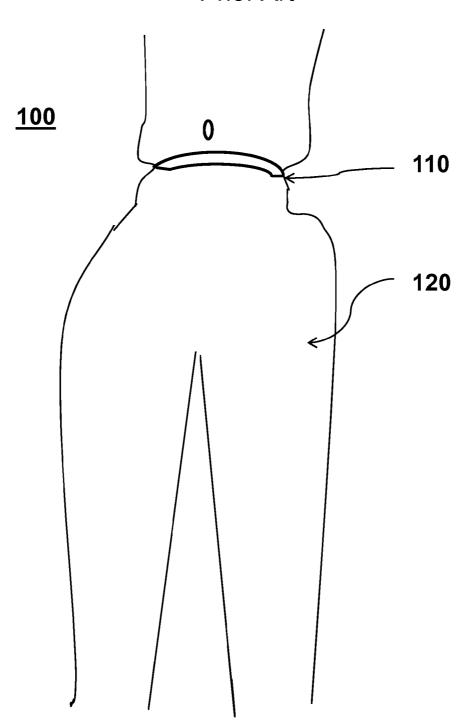
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#### (57) ABSTRACT

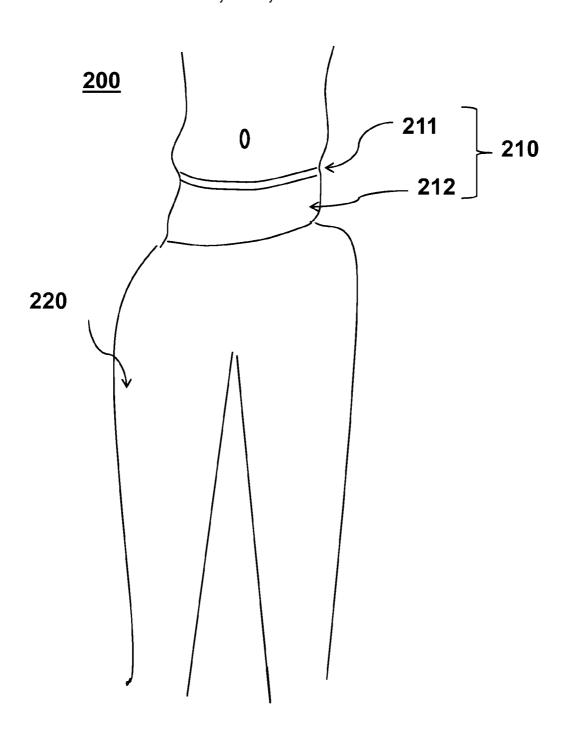
A pantyhose garment, comprising: a topband portion having a top end, a bottom end, inside and outside, wherein the width between the top end and the bottom end is between 2 and 5 inches; a hose portion having a top portion and two leg portions, wherein the hose portion is connected along the top edge of the top portion at a connection point above the bottom end of the topband portion by a seam that gathers the topband portion and creates frills from said seam when unworn such that the top end of the topband portion flares out; wherein the inside of the topband portion is a slip-resistant material.

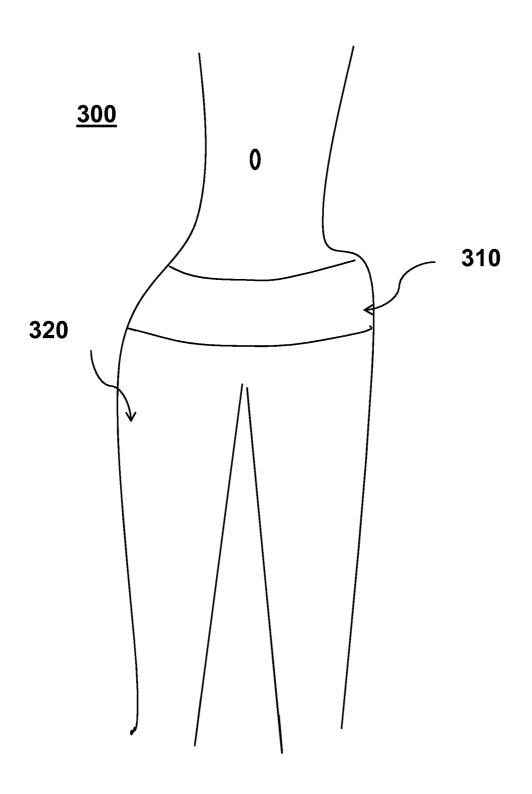


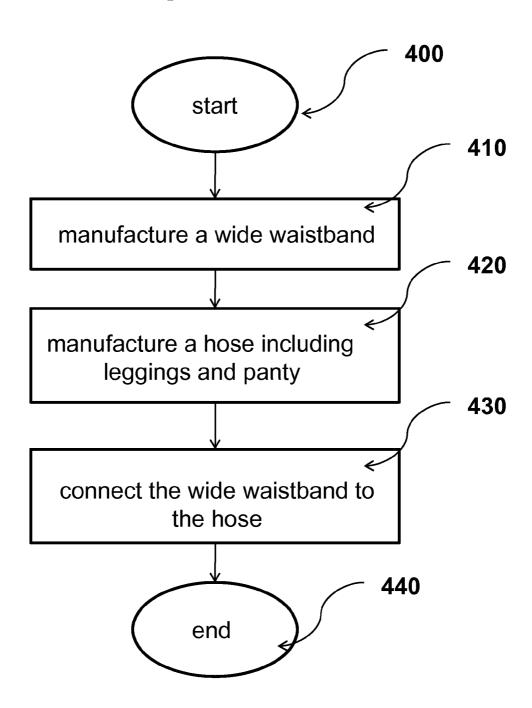




Prior Art 5,280,652







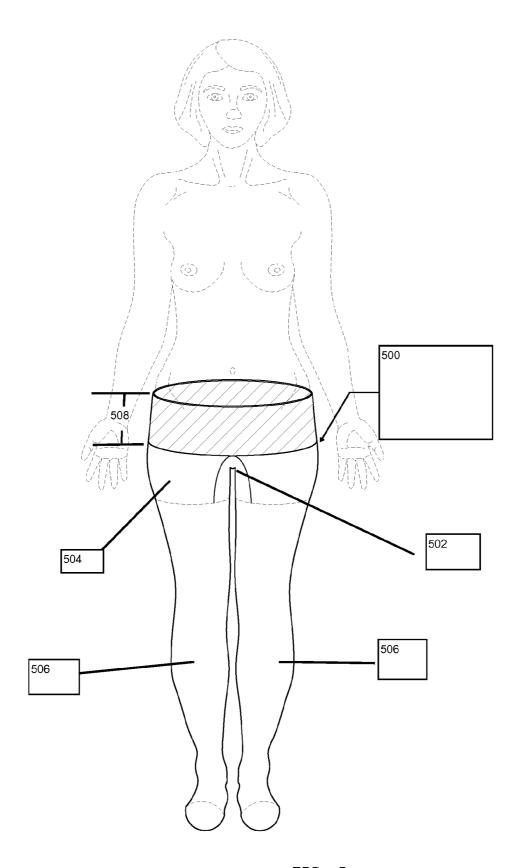


FIG. 5

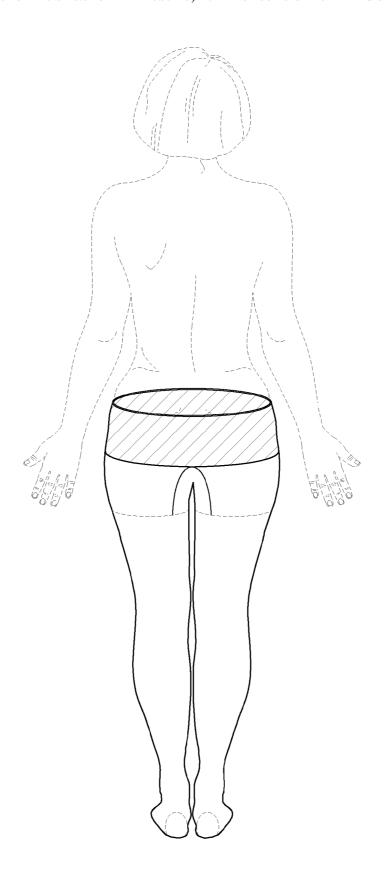
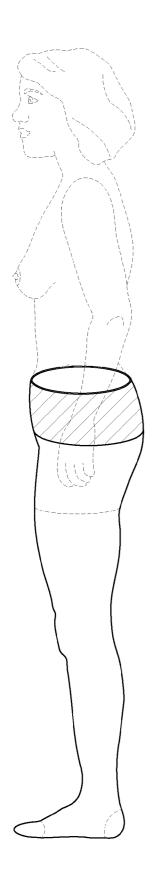


FIG. 6



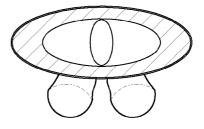


FIG.8

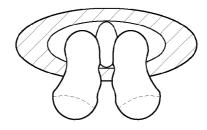


FIG. 9

FIGURE 10

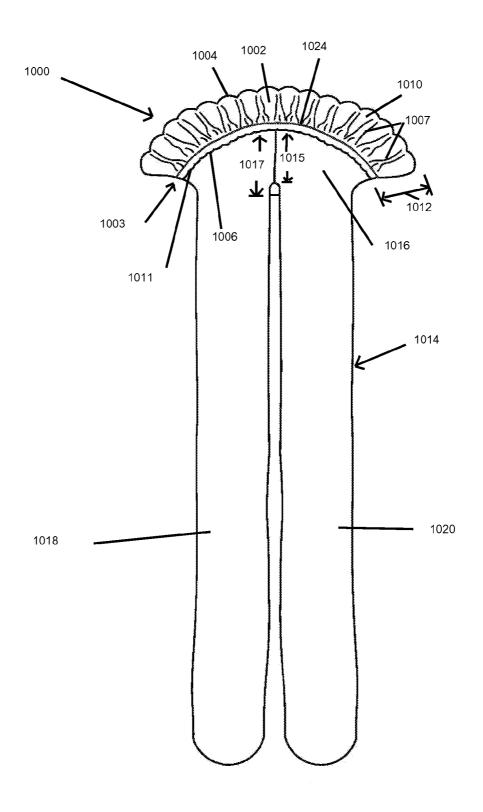


FIGURE 11

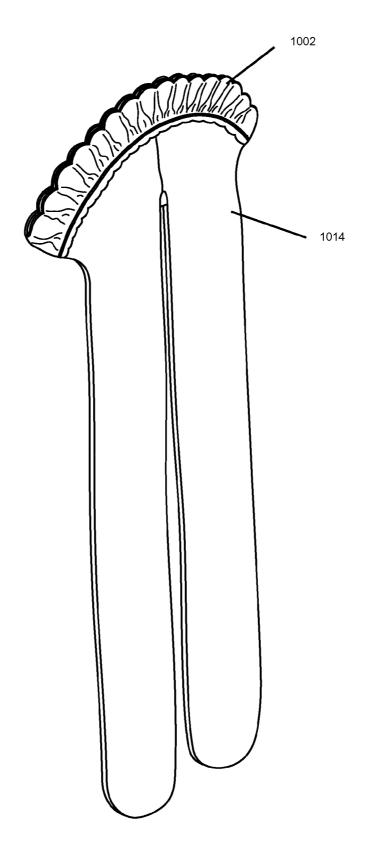
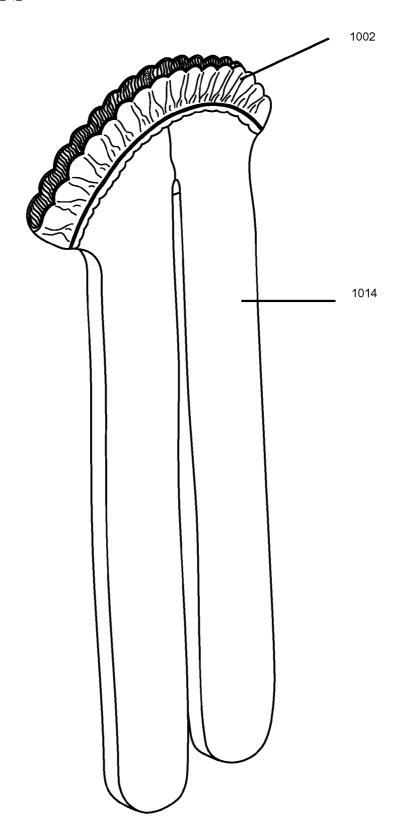
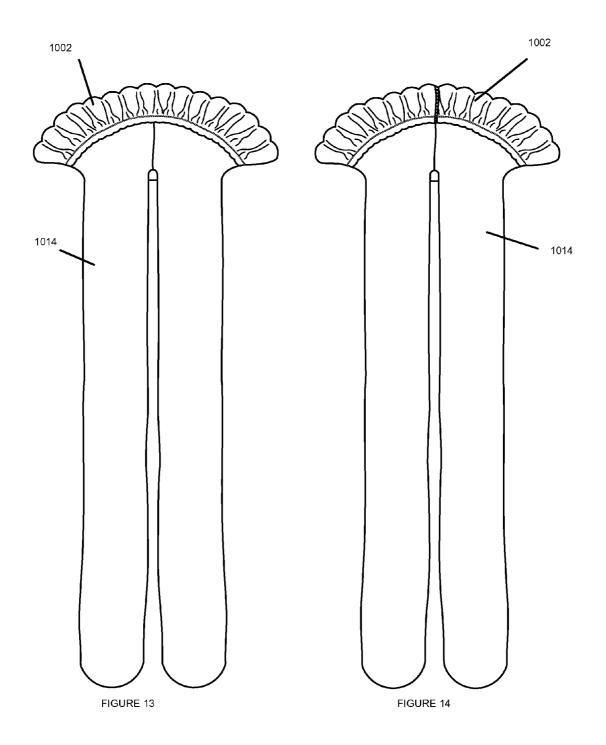
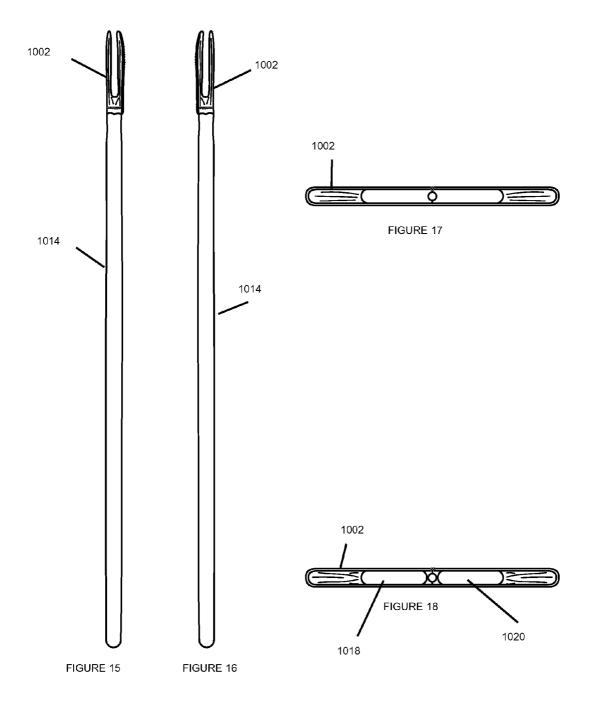
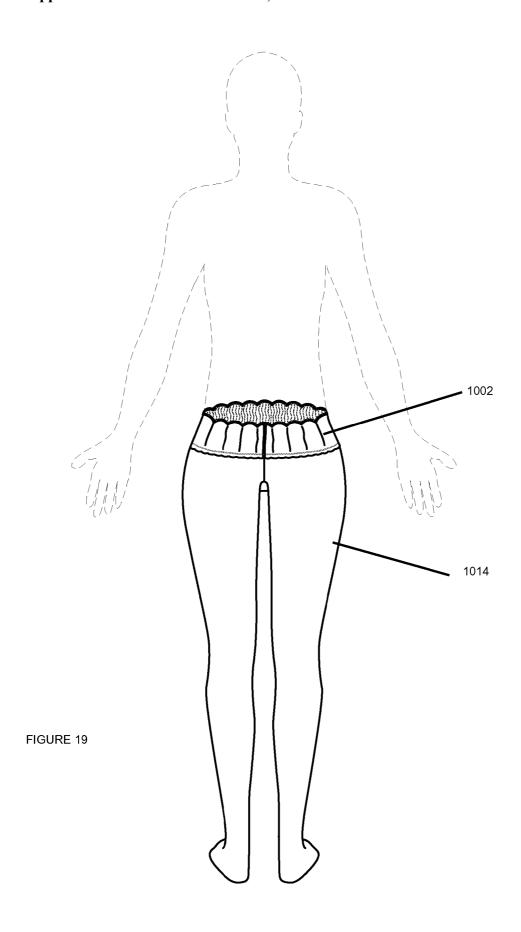


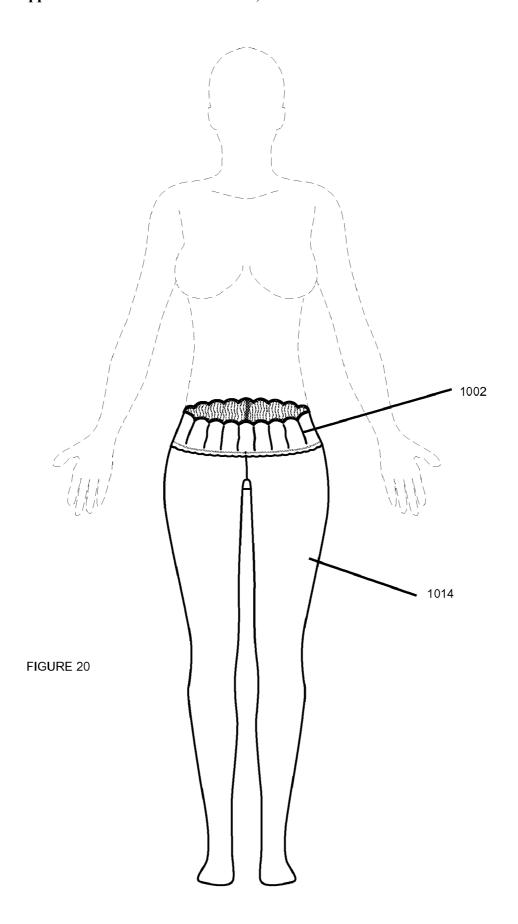
FIGURE 12











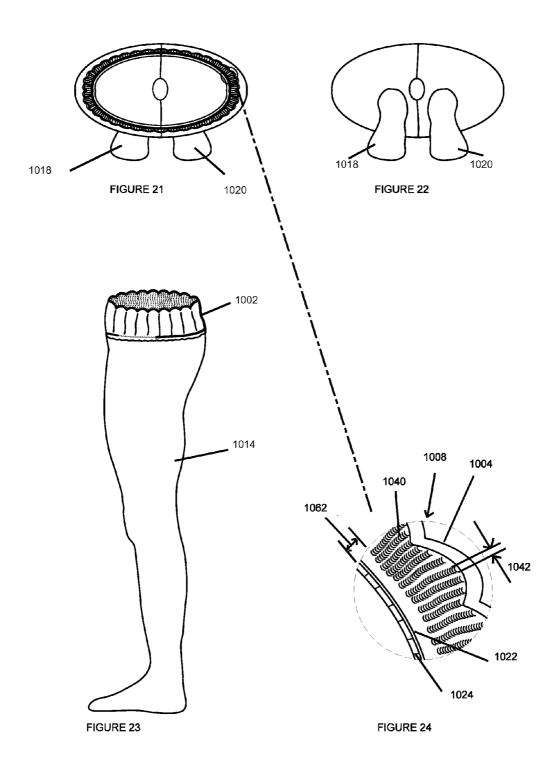
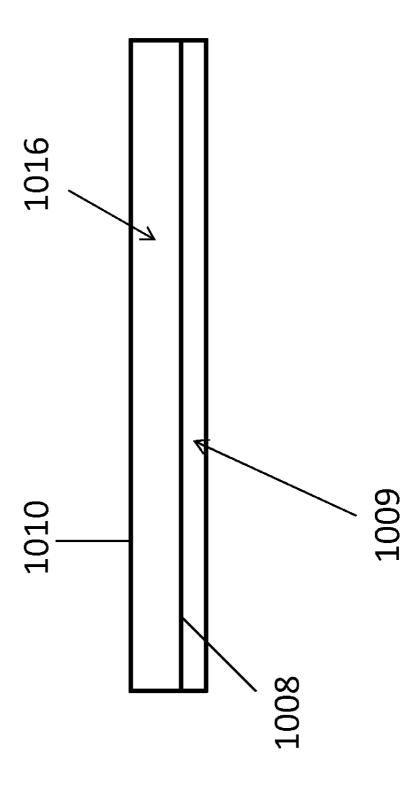


FIGURE 25



### PANTYHOSE GARMENT AND METHOD OF MAKING

### CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application is a continuation-in-part of U.S. patent application Ser. No. 12/544,462 filed Aug. 20, 2009 entitled "Waistband and pantyhose garment and method of making" which claims priority to and the benefit of U.S. design patent application Ser. No. 29/341,725 entitled "Pantyhose and tights" and filed in the U.S. Patent and Trademark Office on Aug. 11, 2009, the entire contents of both of which are incorporated by this reference.

#### BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention pertains generally to garments and, in particular, to pantyhose and tights and methods of making such garments.

[0004] 2. Description of Related Art

[0005] Conventional pantyhose include a waistband that is usually narrow and sits on the waist. This waistband creates a muffin top effect by pushing the flesh and fat above and below the waistband. In addition to creating an undesirable appearance, the narrow waistband that falls in a soft area of the body cuts into the waist and creates discomfort for both the skin and the internal organs that are being squeezed by it. Pain in the stomach area is a common consequence of pantyhose waistband. If the waistband is not sufficiently tight, then the pantyhose is likely too big for the person wearing the pantyhose and may slide down.

[0006] FIG. 1 shows a prior art pantyhose and the muffin top effect created by such pantyhose.

[0007] In FIG. 1, a prior art pantyhose 100 includes a narrow waistband 110 that is connected to hoses 120 that in turn include both a panty and two stockings. The drawing shows the bunching up of the skin and fat above and below the waistband that is unsightly, uncomfortable and unhealthy.

[0008] FIG. 2 shows another prior art pantyhose that includes a modified waistband.

[0009] The pantyhose 200 of FIG. 2 includes a modified waistband 210 that includes a turned welt anchor section 211 and a wideband section 212 in addition to the panty and stockings that form the hose section 220. This modified waistband 210 was the subject of U.S. Pat. No. 5,280,652 (the '652 patent) issued to Davis et al. The waistband of FIG. 2 still cuts into the waist and creates a bunching effect that appears unsightly and is likely uncomfortable and unhealthy.

[0010] According to the disclosure of the '652 patent, a conventional two ply, turned welt waistband includes spandex or other suitable type of elastic yarn for providing an inward compressive force against the waist of a wearer to aid in maintaining the waistband in position when the pantyhose garment is worn. According to this patent, a normal waistband has a width of approximately ½ inch to ¾ inch and a tendency to slip down the waist and hips of a wearer as a result of movements performed in ordinary day-to-day activities. The '652 patent attempts to overcome the slippage problem by constructing a new and improved topband comprising a relatively narrow anchor section of a turned welt construction and a relatively wide band section of a single layer. According to the '652 patent such a waistband construction, which may

range in width up to five inches, eliminates the binding and cutting problem of the prior waistbands and resists slippage. [0011] The wider two-part waistband of the '652 falls on the softer parts of the body. It still includes the narrow anchor section 211 that can cut into the waist and create a muffin top effect. The wider lower part 212 is liable to create another dent on the skin and into the fat where its lower border falls.

#### SUMMARY OF THE INVENTION

[0012] Aspects of the present invention provide a panty-hose topband that overcomes the problems associated with the waistbands of prior art, a panty-hose including the panty-hose topband and a method of making the panty-hose.

[0013] One aspect of the present invention provides a pantyhose garment, comprising: a topband portion having a top end, a bottom end, inside and outside, wherein the width between the top end and the bottom end is between 2 and 5 inches; a hose portion having a top portion and two leg portions, wherein the hose portion is connected along the top edge of the top portion at a connection point above the bottom end of the topband portion by a seam that gathers the bottom end of the topband portion and creates at least one frill when unworn such that the top end of the topband portion flares out; wherein the inside of the topband portion is a slip-resistant material, for example, at least ten lengthwise rows of threaded loops.

[0014] Another aspect of the present invention provides a pantyhose garment, comprising: a topband; and a hose connected to the topband and including a panty and stockings, wherein the topband is between 2.5 and 5 inches wide to provide a top rim that is the end of the topband and falls at the hip bone of the wearer and a bottom rim of the topband connected to the hose and falling where the hip bone connects to leg bones of the wearer.

[0015] Another aspect of the present invention provides a method for manufacturing a pantyhose, the method including: manufacturing a topband between 2.5 and 5 inches wide and having a top rim that is the end of the topband and a bottom rim; manufacturing a hose section, the hose section including a panty and stockings; and forming the pantyhose from the bottom rim of the topband and the hose section, wherein the topband includes a cylindrical elastic material measured to cover a body of a pantyhose wearer from a top of hip bone downward over the hip bone.

**[0016]** Another aspect of the present invention provides a topband for a pantyhose, the topband being 2.5 to 5 inches wide and including a cylindrical elastic material measured to cover a body of a pantyhose wearer from a top of hip bone downward over the hip bone.

[0017] One aspect of the present invention provides a pantyhose garment that includes a topband, and a hose connected to the topband and including a panty and stockings. The topband is manufactured to sit on a body of a wearer starting from top of hip bone of the wearer and downward along the hip bone. A lower rim of the topband stops where the hip bone ends. The topband may be 2.5 to 5 inches wide. The lower rim of the topband may be located at least 1.5 inches above a crotch line of the panty. The topband may be cylindrical in shape. The topband may be made from material that is lace on the outside of the topband and slip resistant elastic on the inside of the topband. The topband and the hose may also be separately manufactured and subsequently connected together. A width of the topband may be custom-determined according to a size and shape of the wearer such

that a top rim of the topband falls at the hip bone and a bottom rim of the topband falls where the hip bone connects to leg bones. Alternatively, a width of the topband may be determined according to measurements available in garment industry for a target population to have a top rim of the topband falling at the hip bone and a bottom rim of the topband falling where the hip bone connects to leg bones.

[0018] One aspect of the present invention provides a method for manufacturing a pantyhose. The method includes manufacturing a topband, manufacturing a hose section, the hose section including a panty and stockings, and forming the pantyhose from the topband and the hose section. The topband includes a cylindrical elastic material measured to cover a body of a pantyhose wearer from a top of hip bone downward over the hip bone. Forming the pantyhose may include connecting the topband to the hose.

[0019] One aspect of the present invention provides a topband for a pantyhose, where the topband includes a cylindrical elastic material measured to cover a body of a pantyhose wearer from a top of hip bone downward over the hip bone.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0020] FIG. 1 shows a prior art pantyhose and the muffin top effect created by such pantyhose;

[0021] FIG. 2 shows another prior art pantyhose that includes a modified topband;

[0022] FIG. 3 shows a pantyhose topband and a pantyhose according to aspects of the present invention;

[0023] FIG. 4 shows a method of making a pantyhose according to aspects of the present invention;

[0024] FIG. 5 shows a front view of pantyhose according to aspects of the present invention;

[0025] FIG. 6 shows a back view of pantyhose according to aspects of the present invention;

[0026] FIG. 7 shows a side view of pantyhose according to aspects of the present invention;

[0027] FIG. 8 shows top view of pantyhose according to aspects of the present invention;

[0028] FIG. 9 shows a bottom view of a pantyhose according to aspects of the present invention;

[0029] FIG. 10 depicts a front view of pantyhose according to the present invention;

[0030] FIG. 11 is a perspective view according to the present invention shown unworn and laying flat;

[0031] FIG. 12 is a perspective view according to the present invention shown unworn and slightly opened for the purposes of fully depicting the present invention;

[0032] FIG. 13 is a front view according to the present invention shown unworn, the slightly opened portions not visible from this view;

[0033] FIG. 14 is a rear view according to the present invention shown unworn, the slightly opened portions not visible from this view;

[0034] FIG. 15 is a right side view according to the present invention shown unworn and slightly opened for the purposes of fully depicting the present invention;

[0035] FIG. 16 is a left side view according to the present invention shown unworn and slightly opened for the purposes of fully depicting the present invention;

[0036] FIG. 17 is a is a bottom view according to the present invention shown unworn and slightly opened for the purposes of fully depicting the present invention;

[0037] FIG. 18 is a top view according to the present invention shown unworn and slightly opened for the purposes of fully depicting the present invention;

[0038] FIG. 19 is a rear view according to the present invention shown as worn, the broken lines forming no part of the claimed design;

[0039] FIG. 20 is a front view according to the present invention shown as worn, the broken lines forming no part of the claimed design;

[0040] FIG. 21 is a top view according to the present invention shown as worn:

[0041] FIG. 22 is a bottom view according to the present invention shown as worn;

[0042] FIG. 23 is a right side view according the present invention shown as worn, the left side view is not shown but would be the mirror image of this view;

[0043] FIG. 24 is a close up of the circle in FIG. 21 depicting a portion of the inside of the topband portion; and

[0044] FIG. 25 is depicts a slip-resistant material as a film applied to the inside of the top portion.

#### DETAILED DESCRIPTION OF THE INVENTION

[0045] Aspects of the present invention provide a panty-hose and a method of making the pantyhose.

[0046] FIG. 3 shows a pantyhose topband and a pantyhose according to aspects of the present invention.

[0047] The pantyhose 300 of FIG. 3 includes a topband 310 that is connected to a hose section 320 that in turn includes a panty and stockings. The topband 310 may be manufactured in a cylindrical shape and from an elastic material. It may be of a double layered material which would be thicker and have a greater resistance to stretching. This will appreciated by those skilled in the art. An example of the material that may be used for the waistband may be 60 denier LYCRA® SOFT varn.

[0048] The topband 310 is between 3 to 5 inches wide in order to cover the upper portion of the hip and lower back without reaching the softer portions of the buttocks. There is a distance between the lower rim of the topband and the crotch which may be 1.5 inches or more.

[0049] Because the upper rim of the topband 310 falls on the hip bone, little or no indentation line is formed along the upper rim of the wearer's abdomen topband. Because of the width of the topband, it will resist stretching and fall in generally the same position. Further, because the upper rim falls below the abdomen, it is not in a position to cut through the softer part of the body that has no bone support and cause pain in the stomach or the skin. Regular waistbands would create an indentation that is apparent from over the clothing even for a thin person.

[0050] The topband 310 follows the hip bone down such that the lower rim of the topband 310 is still supported by this bone and the lower back. A lower rim of the topband may end at or before the hip bone connects to the leg bones. Therefore, the lower rim of the topband is still supported by bone and, subject to the fat distribution of the wearer, is not in a position to create an indentation.

[0051] The topband 310 connects to the hose portion of the pantyhose which includes the panty and the stockings. The topband 310 and the hose portion 320 may be manufactured separately and connected together.

[0052] The width of the topband holds the topband and the associated pantyhose in place without having to exert excessive pressure along a narrow band on the body.

[0053] The location of the topband over the hip bone but not lower than the joint between the hip and the leg also helps to hold the topband and the pantyhose in place on the body. The topband ends before the legs that move and dislodge the pantyhose begin. Therefore, ending the topband above the joint also helps prevent the pantyhose from sliding down.

[0054] FIG. 4 shows a method of making a pantyhose according to aspects of the present invention.

[0055] The method begins at 400. At 410 a topband according to aspects of the present invention is manufactured that has a substantially cylindrical shape. At 420, a hose portion including a panty and stockings is manufactured. At 430, the topband is connected to the hose portion. At 440, the method ends

[0056] Because sizes and shapes of the people wearing the pantyhose vary, the industry standards that are used for measurements of clothing and hosiery are used to determine the topband width with the goal of substantially achieving the results mentioned above. In other words, the industry standards are used to manufacture a pantyhose having a substantially wide topband that falls near the top of the hip bone and continues downward on the bone ending before the hip bone ends. With individual wearers, the topband may not fall in the spot exactly intended unless the pantyhose is custom made for that wearer. However, the width of the topband may be approximately determined for target populations of potential customers based on the measurements and sizes available in the garment industry. For example, the topband may be designed such that for ninety percent of people who wear that size the top end of the topband stops where the hip bone of the wearer ends.

[0057] FIG. 5 shows a front view of a pantyhose according to aspects of the present invention. The panty (504) is above the stockings (506) and below the lower rim (500) of the topband which is above the crotch line (502). As stated previously, the crotch line (502) may be at least 1.5 inches or more from the lower rim (500) of the topband. The width (508) of topband is depicted therein. FIG. 6 shows a back of a pantyhose according to aspects of the present invention. FIG. 7 shows a side view of a pantyhose according to aspects of the present invention. FIG. 8 shows top view a pantyhose according to aspects of the present invention. FIG. 9 shows a bottom view of a pantyhose according to aspects of the present invention.

[0058] FIG. 5, FIG. 6, FIG. 7, FIG. 8 and FIG. 9 show various views of a pantyhose according to aspects of the present invention. In these drawings the anatomy of the person wearing the pantyhose is shown in further detail. The topband is shown in hashed lines, the panty portion and the stocking portions are delimited by dotted lines. This embodiment will be manufactured in parts and assembled The width of the topband, its location that falls on the hip bones and its distance from the crotch line are apparent in the drawings.

[0059] Tights are a version of pantyhose made from thicker material. The above description is applicable to tights as well as to pantyhose.

[0060] FIGS. 10-24 depict one embodiment of the present invention. The pantyhose and tights having a hose portion and topband portion the hose portion being connected along the top edge of the top portion at a connection point above the bottom end of the topband portion by a seam that gathers the bottom end of the topband portion and creates at least one frill when unworn such that the top end of the topband portion flares out as depicted in FIGS. 10-18. When worn the hose

portion and topband portion stretch around the body of the wearer to provide a smooth unflared pantyhose and tight, as depicted in FIGS. 19-23. The hose as shown in FIGS. 10-18 is unstretched, which is to say being unworn. In use, or when worn, the hose portion would be stretched as shown in FIGS. 19-23.

[0061] FIGS. 10-18 depict an unstretched (unworn) pantyhose garment (1000), comprising: a topband portion (1002) having a top end (1004), a bottom end (1006), inside (1008, shown in FIG. 12) and outside (1010), wherein the width (1012) between the top end (1004) and the bottom end (1006) is between 2 and 5 inches. The topband may be cylindrical in shape and made of lace. The topband may be an elastic lace or an elastic fabric. The topband, may be, for example stretch elastic lace trim which is 55% Nylon, 45% Spandex It may have scalloped edges along the top end (1004). According to a preferred embodiment, the width (1012) of the topband is 2.5 to 5 inches wide, preferably approximately 2.7 inches-3 inches. The topband may be made from material that is lace on the outside of the topband and slip resistant elastic on the inside of the topband

[0062] The hose portion (1014) has a top portion (1016) and two leg portions (1018 and 1020), wherein the hose portion (1014) is connected along the top edge (1022) of the top portion (1016) at a connection point (1003) above the bottom end (1006) of the topband portion (1002) by a seam (1024) that gathers (1007) the fabric of the topband portion, which may be by way of example made of a lace material, near the bottom end (1006) of the topband portion (1002) such that the top end (1004) of the topband portion (1002) flares out. The connection point (1003) would typically be between 0.5 cm and 3 cm above the bottom end (1006) of the topband portion (1002), The tern connection point (1003) refers to the imaginary line or location where the seam (1024) is sewn from thread and has gathers (1007) which are formed from bunching the material of the topband portion (1002) to create creates frills (1011) near the bottom end of the topband which are ruffles created by the gathers (1007) at the seam (1024) and being left loose at the other. The flare is because of the seam that gathers the fabric at a connection point (1003) close to the bottom end of the topband portion. This is to say that the connection point (1003) may be no more the thirty percent of the width (1012) of the topband portion from the bottom end (1006). By way of example, if the width of the topband portion is 3 inches, the connection point would be no more than one inch from the bottom end (1006). The term flare should be given its ordinary customary meaning, which is to spread gradually outward, as the end of a trumpet, the bottom of a wide skirt, a peacock tail or a fan shape. When the hose is stretched, or being worn, it will stretch much wider and the flare will be at much less of an angle, if any. The inside (1008 as shown in FIG. 24) of the topband portion may be a slip resistant material of at least ten lengthwise rows (1040) of threaded loops. Also, the topband may be made of a slip resistant material, such as liquid silicone on a fabric or a film applied to a fabric or a polymer tape applied to a tape. Polymer compositions such as polyurethaneurea films and tapes that provide stretch recovery are disclosed in U.S. Pat. No. 7,240,371. Other examples of polymer compositions are polyurethane tapes such as those commercially available from Bemis, and polyolefin resins that can be formed into films such as those commercially available from ExxonMobil under the trade name VISTAMAXX. These films may be bonded to fabric with application of heat. Such films provide

"slip-resistant material". FIG. 25 depicts a slip-resistant material (1009) as a film applied to the inside of the top portion (1016). It is intended to depict that it may be a film layer applied to the inside of the top portion (1016). The entire inside of the top portion (1016) or a portion of the inside of the top portion. For example, it may be desirable to apply the film only along the inside of the top portion close to the top edge (1022).

[0063] Accordingly to one embodiment, as shown in FIG. 24, the entire inside of the topband portion has rows of lengthwise threaded loops. The term lengthwise refers to the fact that the rows (1040) run from near the top end (1004) to near the connection point (1003) of the inside of the topband portion. The rows of lengthwise threaded loops form the slip resistant material in this embodiment.

[0064] The threaded loops may be a material such as rubber thread, spandex fiber, and elastane fiber thread. Spandex or elastane is a synthetic fiber known for its exceptional elasticity. It is a polyurethane-polyurea copolymer that was coinvented in 1959 by chemists C. L. Sandquist and Joseph Shivers at DuPont's Benger Laboratory in Waynesboro, Va. Brand names for Spandex include LYCRA®. The threaded loops being made of a spandex fiber provide a grab, or tact that allows the topband to be loose fitting and not bunch (avoiding the dreaded muffin top), yet at the same time not flop over. Having a wider topband that is not tight would typically fold over when the wearer sits or is generally walking around. The loops also provide stability to the topband portion as well as grab, avoiding folding over. Each loop may be less than 1 centimeter in width (1042), according to one embodiment it may be between 1/8 and 1/2 of a centimeter in width. When the topband is not being worn, it will be unstretched and the loops may bunch up and appear curved. When the topband is stretched (such as when it is being worn) the loops may appear wider and as straight lines. This also allows the topband to be comfortable and not pinch. The at least ten lengthwise rows of threaded loops start at least 1/8 of an inch above the seam that gathers near the bottom end of the topband portion. This distance is shown in FIG. 24 as (1062). [0065] When the pantyhose garment is being worn by a wearer, the top end of the topband may stop where the hip bone of the wearer ends. A bottom end of the topband is located at least 1.5 inches above a crotch line of the panty (this dimension is marked 1015 in FIG. 10) when unstretched and is typically between 1.5 and 5 inches and preferably between 2.7 and 3.6 inches. By way of example, a small may have a distance (1015) of 2.7 and an extra large may have a distance (1015) of 3.6 inches. The distances between the crotch line of the panty portion and the bottom end of the topband are measured when the hose is unstretched and lying in a flat position.

[0066] The present invention has been described in relation to particular examples, which are intended to be illustrative rather than restrictive, with the scope and spirit of the invention being indicated by the following claims and their equivalents.

- 1. A pantyhose garment, comprising:
- a topband portion having a top end, a bottom end, inside and outside, wherein the width between the top end and the bottom end is between 2 and 5 inches;
- a hose portion having a top portion and two leg portions, wherein said hose portion is connected along the top edge of the top portion at a connection point above the bottom end of said topband portion by a seam that gath-

- ers the bottom end of said topband portion and creates at least one frill when unworn such that said top end of said topband portion flares out;
- wherein the inside of said topband portion is a slip-resistant material.
- 2. There pantyhose garment as in claim 1, wherein said slip-resistant material is selected from the group consisting of at least ten lengthwise rows of threaded loops, a polyurethaneurea film layer and a liquid silicone layer applied to fabric.
- 3. The pantyhose garment of claim 2, wherein said threaded loops are formed from a material selected from the group consisting of rubber thread, spandex fiber, and elastane fiber thread.
- **4**. The pantyhose garment of claim **1**, wherein the top end of the topband stops where the hip bone of the wearer ends.
- 5. The pantyhose garment of claim 1, wherein a bottom end of the topband is located at least 1.5 inches above a crotchline of the panty.
- **6**. The pantyhose garment of claim **1**, wherein the topband is cylindrical in shape.
- 7. The pantyhose garment of claim 1, wherein the outward side of said topband is made from lace.
- 8. The pantyhose garment of claim 1, wherein a width of the topband is sized to provide the top end of the topband falling at the hip bone of the wearer and a bottom end of the topband falling where the hip bone connects to leg bones.
- 9. The pantyhose garment of claim 1, wherein said at least ten lengthwise rows of threaded loops start at least ½ on an inch above the seam that gathers said topband portion
- 10. The pantyhose garment of claim 1, wherein the width between the top end of the topband and the bottom end of the topband is between 2.5 and 5 inches.
  - 11. A pantyhose garment, comprising:
  - a topband; and
  - a hose connected to the topband and including a panty and stockings, wherein the topband is between 2.5 and 5 inches wide to provide a top rim that is the end of the topband and falls at the hip bone of the wearer and a bottom rim of the topband connected to the hose and falling where the hip bone connects to leg bones of the wearer.
- 12. The pantyhose garment of claim 11, wherein a lower rim of the topband stops where the hip bone ends.
- 13. The pantyhose garment of claim 11, wherein a lower rim of the topband is located at least 1.5 inches above a crotch line of the panty.
- **14**. The pantyhose garment of claim **11**, wherein the topband is cylindrical in shape.
- **15**. The pantyhose garment of claim **11**, wherein the top-band and the hose are separately manufactured and subsequently connected together.
- 16. The pantyhose garment of claim 11, wherein a width of the topband is determined according to measurements available in garment industry for a target population to have a top rim of the topband falling at the hip bone and a bottom rim of the topband falling where the hip bone connects to leg bones.
- 17. The pantyhose garment of claim 11, wherein said topband is a double layered material.
- **18**. A method for manufacturing a pantyhose, the method including:
  - manufacturing a topband between 2.5 and 5 inches wide and having a top rim that is the end of the topband and a bottom rim;

- manufacturing a hose section, the hose section including a panty and stockings; and
- forming the pantyhose from the bottom rim of the topband and the hose section, wherein the topband includes a cylindrical elastic material measured to cover a body of a pantyhose wearer from a top of hip bone downward over the hip bone.
- 19. The method of claim 18, wherein forming the panty-hose includes connecting the topband to the hose.
- **20**. The method of claim **18**, wherein a lower rim of the topband is located at least 1.5 inches above a crotch line of the panty.
- 21. A topband for a pantyhose, the topband being 2.5 to 5 inches wide and including a cylindrical elastic material mea-

- sured to cover a body of a pantyhose wearer from a top of hip bone downward over the hip bone.
- 22. The topband of claim 21, wherein the topband ends at least 1.5 inches above a crotch line of a panty portion of the pantyhose.
- 23. The topband of claim 21, wherein a width of the topband is custom-determined for the pantyhose wearer to cover the hip bone from top to where the hip bone connect to leg bones.
- **24**. The topband of claim **21**, wherein a width of the topband is determined for a target population of pantyhose wearers to substantially cover the hip bone from top to where the hip bone connect to leg bones.

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