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(19) **United States**(12) **Patent Application Publication**
CHEUNG(10) **Pub. No.: US 2011/0076906 A1**(43) **Pub. Date: Mar. 31, 2011**(54) **NOVEL FABRIC MADE OF ALL
ELASTOMERIC FIBER AND ITS
APPLICATIONS**(76) Inventor: **Jacky CHEUNG**, Machong Town
(CN)(21) Appl. No.: **12/824,183**(22) Filed: **Jun. 27, 2010****Related U.S. Application Data**(60) Provisional application No. 61/221,018, filed on Jun.
26, 2009.**Publication Classification**(51) **Int. Cl.**
D03D 15/08 (2006.01)(52) **U.S. Cl.** **442/184**(57) **ABSTRACT**

The present invention relates to a knitted fabric which adopts a novel weaving principle of changing knitting material structure to realize functions and effects which can not be achieved by ordinary fabric. The knitted fabric comprises the main component of novel woven 100 percent spandex fabric made of 100 percent spandex filament. Presently, elastic rubber pieces, rubber bands, etc., are applied to the underwear at the market for enhancing the elasticity and supporting effect. The common features is that they all have a poor elastic resilience, unstable structure, and prone to distortion and raveling. The present novel knitted fabric changes the principle of crocheting of the ordinary material of the traditional knitted fabric, adopting 100 percent spandex filament as the main material to change the elastic resilience, force, and structure stability of the traditional knitted fabric. The mutual double pulling effect of the knitted fabric in the spandex filament after crocheting is to remedy the defaults of the fabric of which the structure is deformed and the elastic resilience and the force are weakened after the fabric is elongated. Compared with the original fabric, the elastic recovery and the elastic force of the fabric are greatly increased and improved.

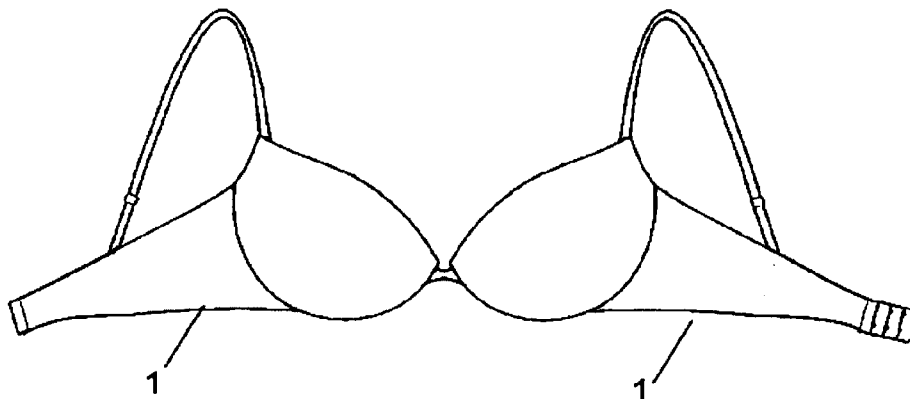
The weaving process and the features of the novel 100 percent spandex fabric are as follows:

- (1) Warp yarn and weft yarn which are made of 100% spandex filament material are mutually crocheted.
- (2) The back weft of the spandex filament is required to pass through a filament packaging frame and a weft yarn accelerating conveyer device is provided.
- (3) Curling is required to be avoided. The specification of the spandex filament of which the warp yarn used required to be considered, so is the specification and constituents of the back weft made of the spandex filament.

The preset novel 100% spandex fabric can completely replace the elastic woven band and rubber piece in the prior underwear to play a role of enhancing the elasticity and strength. It can also completely replace the prior common elastic woven band and rubber piece, providing good hand feel, flatness, smoothness, close fit, sound elastic resilience, comfort wear, etc. It can be widely applied to garment industry, particularly to the underwear, such as brassiere, swimwear, briefs, etc.

A strap having a memory function, comprising yarns of substantially 100% spandex. The rubber band and ordinary strap applicable in the present market provide a poor elastic resilience, which would easily deform. The said strap having a memory function weaved with warp yarn made of 100% spandex and weft yarn made of 100% spandex, whose structure could be not only plain weave, but also twill or tracery. The fabric has the "memory" function by which it returns to substantially its original shape after being stretched many times it original size. It can provide excellent hand feel, good flatness, smoothness, close fit, sound elasticity, and comfortable wear when used to replace the existing ordinary elastic rubber bands. It can be widely applied in the garment industry, especially in the field of underwear such as brassiere, swimwear, briefs, lingerie, etc.

The present patent for utility model discloses a laminable elastic fabric whose main components are 100% spandex elastic woven band and warp knitted shell fabric or weft knitted cloth, and the elastic fabric is formed through laminating processing. The laminated fabric currently used on the market does not have good elastic resilience and is thus easily deformed and is relatively thick. The new laminated elastic fabric of the present patent is relatively light and thin, and the



elastic woven band is formed by interweaving 100% spandex warp threads and 100% spandex weft threads, and the elastic fabric is formed by laminating it to the inner side of the shell fabric. The fabric has a recovery of nearly 100% after many times of use. The fabric laminated with said woven band has

the characteristics of excellent hand feel, good levelness, softness and smoothness, close fit, good elasticity, comfortable wear, etc. Meanwhile, the processing is simple, and mechanical automation and mass production can be realized, which complies with the efficiency of market economy.

FIG. 1

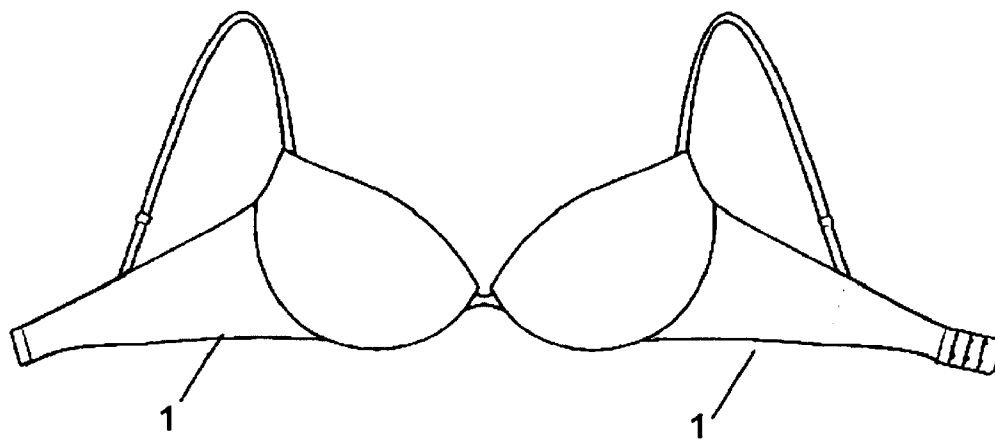


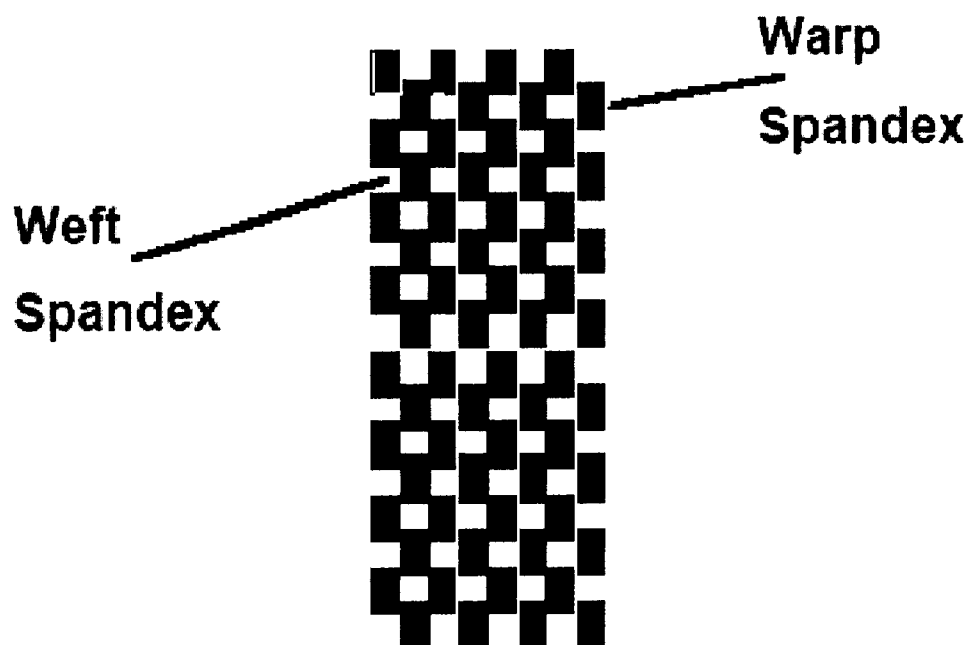
FIG. 2

FIG. 3

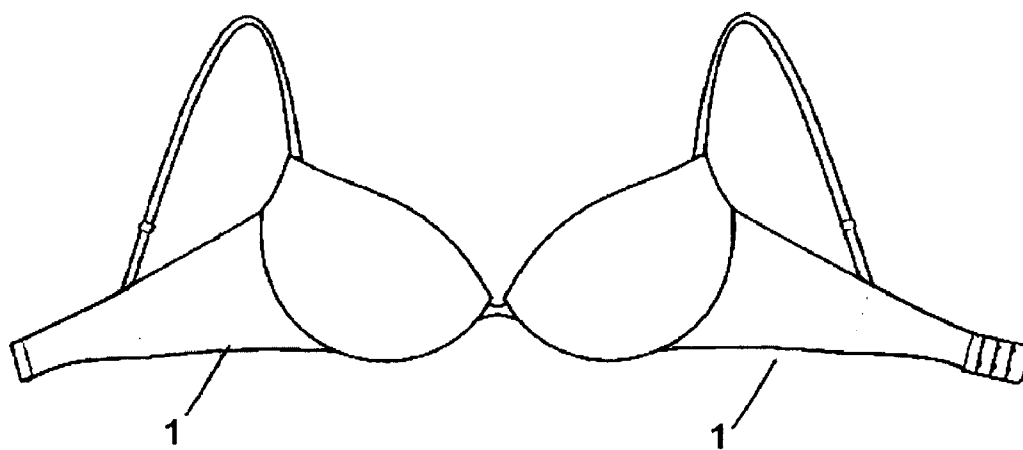


FIG. 4

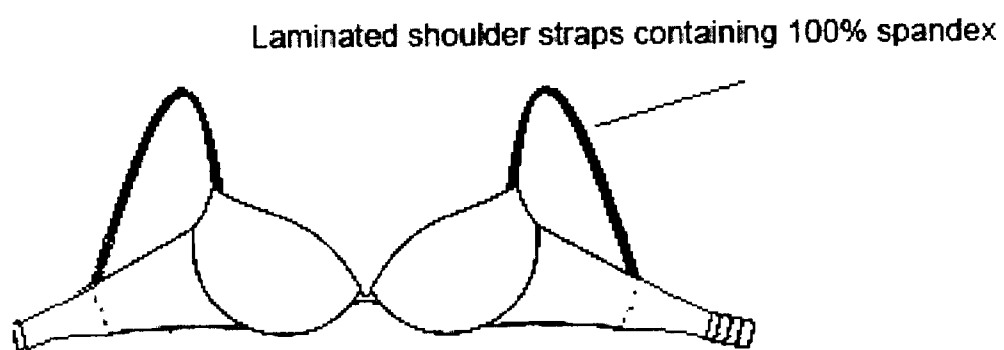


FIG. 5

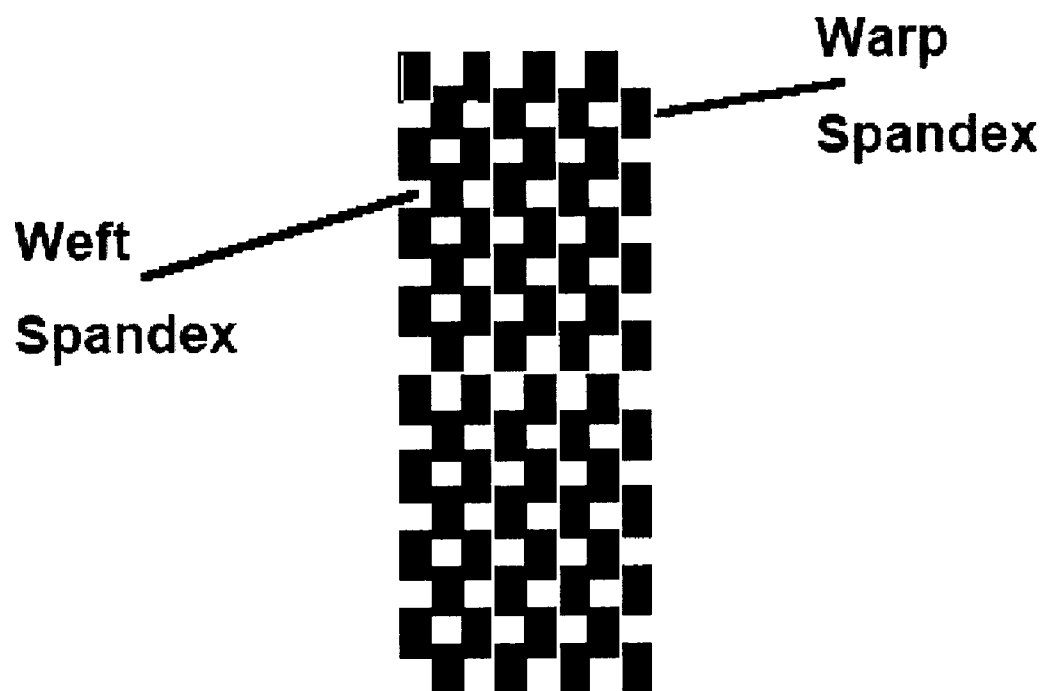


FIG. 6

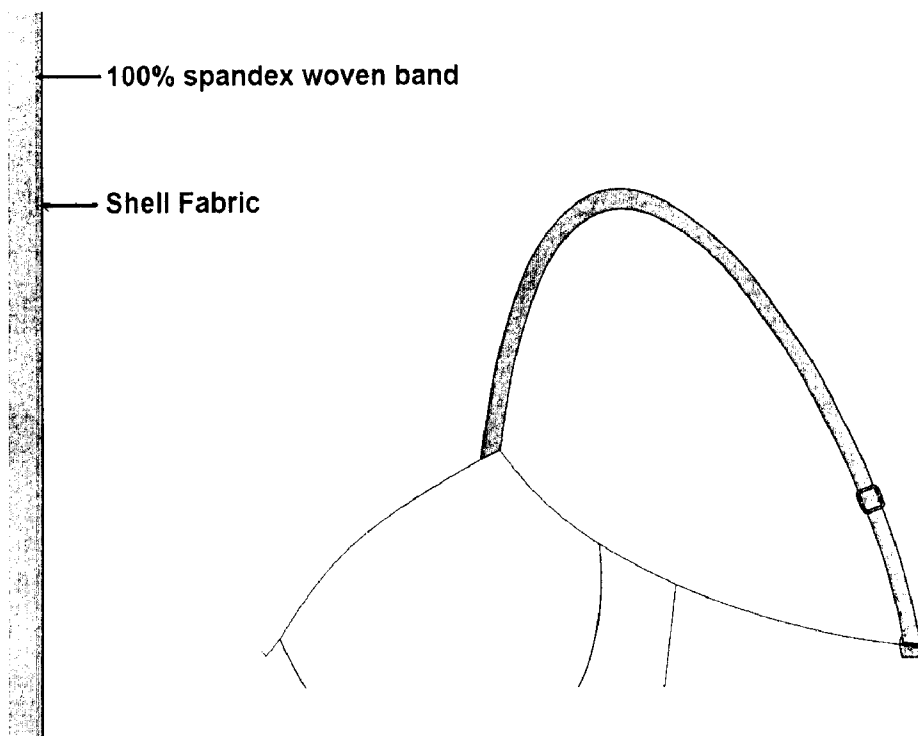
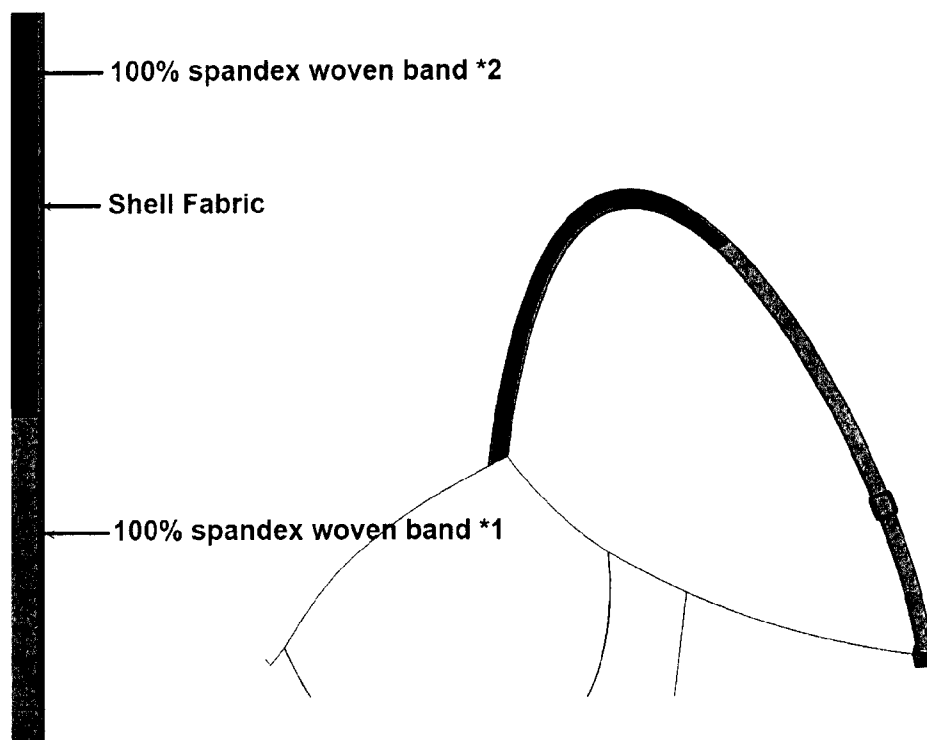
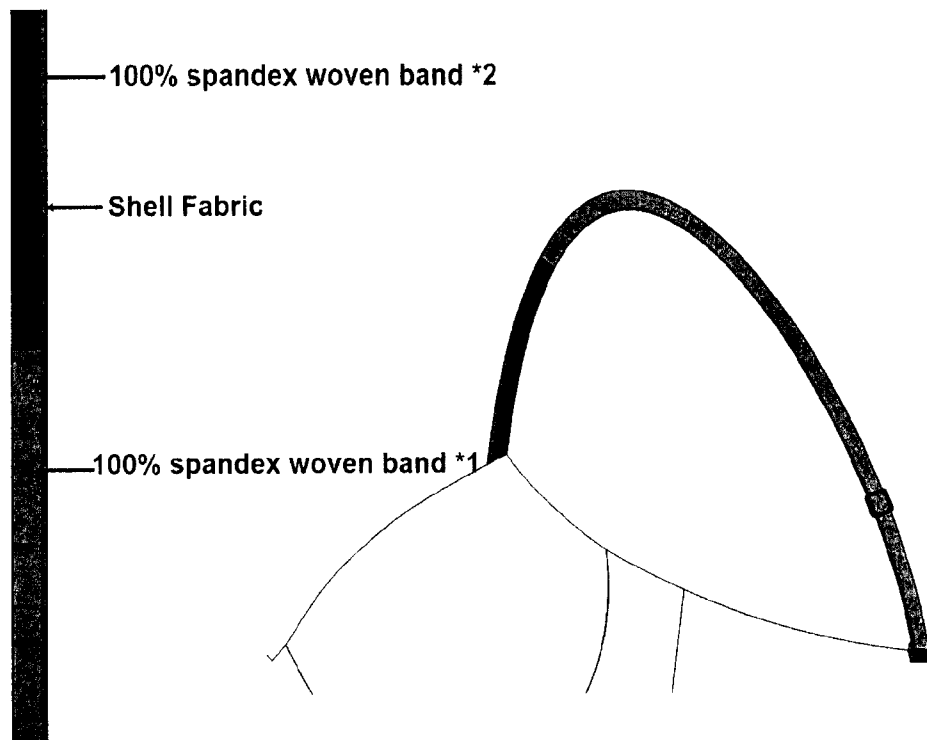
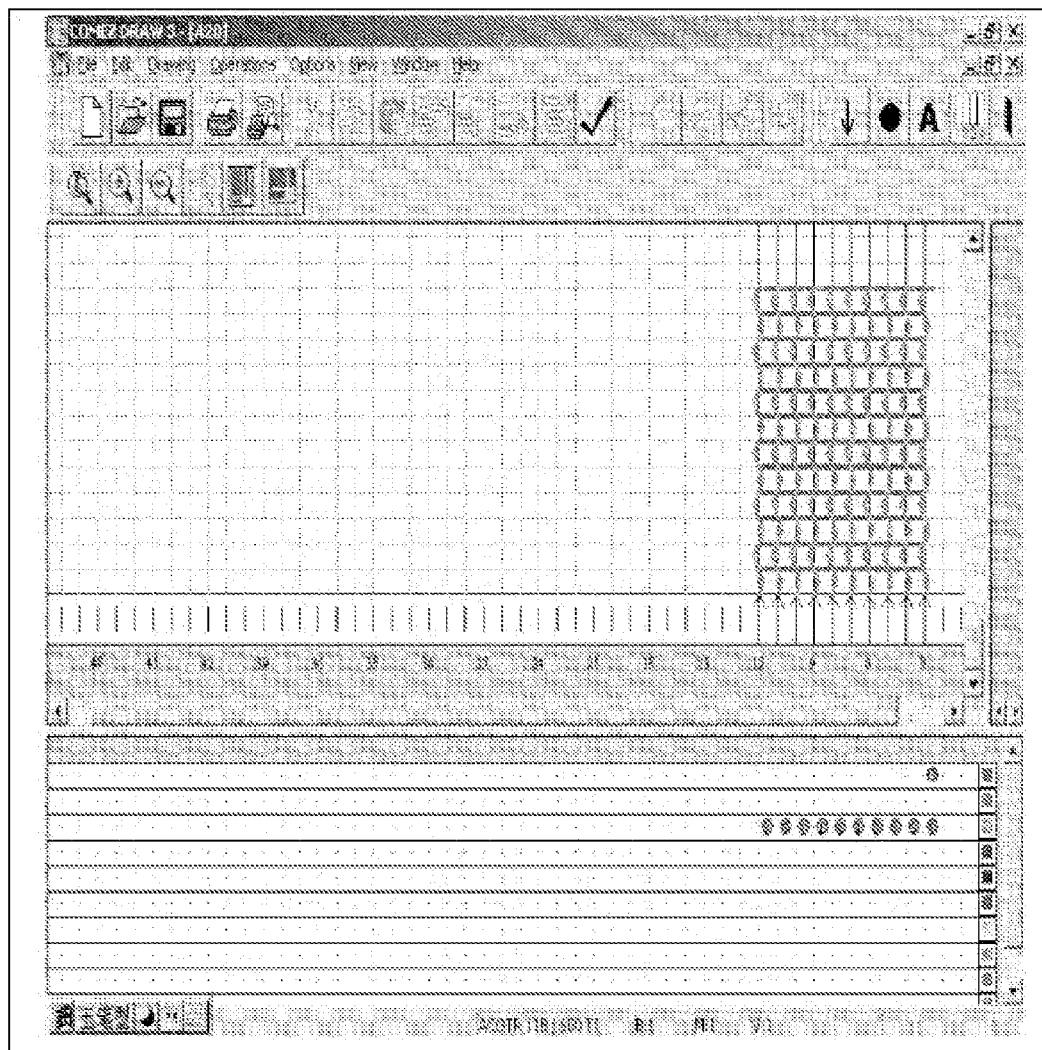


FIG. 7





NOVEL FABRIC MADE OF ALL ELASTOMERIC FIBER AND ITS APPLICATIONS

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims benefit from U.S. Provisional Application No. 61/221,018, filed Jun. 26, 2009.

FIELD OF THE INVENTION

[0002] The 100% spandex fabric relates to the field of textile, specifically to elastic woven band and underwear, particularly to top-grade elastic fabric, top-grade underwear and other products made of the fabric.

BACKGROUND OF THE INVENTION

[0003] Presently, it is known that elastic materials are used for the upper and lower bundles (i.e. flanks) of bras in order to assist the cups in supporting the breasts and keeping them in position relative to the chest circumference, which is also used for the waists of panties to increase elasticity. In the present market, elastic strap and elastic rubber pieces are mainly used with two methods. One is to enclose them in cloth through flat seams. The other is to directly attach them to cloth. However, the conventional elastic strap have poor elastic resilience and will easily have elastic creep and lose elasticity after being used several times. The elastic strap will cause uneven pressure in some parts regardless whether they are enclosed in or attached to the shell fabrics. It is difficult for them to meet the main requirements on flatness, smoothness, close fit, sound elasticity, etc.

SUMMARY OF THE INVENTION

[0004] 1. The novel 100% spandex fabric has sound elastic resilience to increase the elasticity and strengthen the support for underwear, which particularly can be applied in woman's shoulder strap, meeting the requirements on smoothness, close fit, sound elasticity, high level of wearing comfort, flatness, solid, etc.

[0005] 2. At present, in order to increase the elastic recovery rate and force, most knitted fabric mainly adopts the method of increasing the force or specifications of the spandex filament, and in order to obtain better elastic recovery and elastic force, sometimes double spandex filament or double filament packaging line is adopted. Although the elastic recovery rate and the force of the fabric are obtained, the volume, the thickness and the stiffness of the fabric is increased to a certain extent. The novel 100 percent spandex filament fulfills the requirements of small volume, thinness, softness, large elastic recovery rate and force, and can further replace other elastic fabric and elastic rubber strips for the underwear.

[0006] 3. The technical scheme of the novel 100% spandex fabric is as follows: the fabric's main feature is that 100 percent spandex filament is crocheted to be the main material. As spandex is the fiber with the best elasticity and elongation property out of all of the chemical fibers available, the breaking point of stretching can reach 500 to 800 percent of its original length, the elastic recovery rate can reach more than 95 percent, and the spandex can provide good tenacity, small area and good flexibility. The fabric which takes the 100% spandex filament as the main material can achieve the requirements which can not be achieved by other elastic fab-

ric in the aspects of shape, appearance and practicability. The novel 100% spandex fabric has good elastic resilience, fecundity, durability, softness and thinness, which can replace prior conventional rubber products, and provide flatness, soft hand feel, sound resilience and comfort wear, etc. The present novel 100% spandex fabric can be widely applied to the field of underwear, such as brassiere, shoulder straps, swimwear, briefs, etc.

[0007] 4. The principle of the traditional knitted weaving structural is as follows: crocheting warp yarn, weft yarn, and elastic filament. Generally, the warp yarn and weft yarn are made of elastic yarn, such as nylon, chevilled silk, polyester yarn, etc. The materials with different properties are crocheted to achieve a certain required effect. The traditional material structural principle was changed by the novel 100% spandex fabric of the present invention, which is formed by completely crocheting 100% spandex materials (namely warp yarn, weft yarn and elastic filament are all the same spandex filament material). Repeated testing by LTD06 proves that machine elongation and recovery of the fabric are raised and retracted almost linearly on the computerized data and not the parabola profile of conventional fabric strips shown during elongation testing. The length of the elongated fabric after retracted is nearly the same as the original length of the fabric. Therefore, compared with the original fabric, the fabric can provide more stability, durability and resistance to raveling in with respect to the structure, and has good elastic recovery rate and strength.

[0008] 5. The weaving process and the features of the present novel 100 percent spandex fabric are as follows:

[0009] I. Warp yarn and weft yarn of 100% spandex filament material are crocheted with each other.

[0010] II. The back weft of the spandex filament is passed through a filament packaging frame and a filling yarn accelerating conveyer device is provided.

[0011] III. The phenomenon of fabric selvedge rolling should be prevented. The specification of the spandex filament for filling yarn should be considered, and the specification and constituents of the back weft of the spandex filament should also be considered.

[0012] The present novel knitted fabric changes the crocheting principle of ordinary material of traditional knitted fabric, adopting 100% spandex filament as the main material to change the elastic resilience, the force and the structure stability of knitted fabric. The mutual double pulling effect of the knitted fabric in the spandex filament after crocheting to remedy the defaults of the fabric that the structure is deformed and the elastic resilience and the force are weakened after the fabric is elongated. Compared with the traditional woven band, which the warp yarn and weft yarn are mainly made of elastic nylon with a 1.2 to 1.5 times elastic recovery rate, the warp yarn and weft yarn made of spandex can have a 5 to 8 times elastic recovery, thus would be easily found that the elastic recovery and force of the present 100% spandex fabric would be greatly increased and improved because its warp yarn and weft yarn are both made of spandex yarn.

[0013] After the test of stretch by hand, the present novel fabric, no matter vertically stretched or horizontally stretched hardly, the fabric can almost recovery to its original shape after the external force is released. Therefore, the fabric crocheted by 100% spandex material has a pretty much better elongation recovery and the elongation force than those ordi-

nary woven band. The testing result of LTD06 is can provide a good illustration by comparing other fabric, which is shown as follows:

[0014] Comparing Explanation in Attached Diagram

[0015] The diagram is the comparing diagram of the elastic resilience and force of the ordinary elastic woven band and the present novel 100% spandex fabric.

[0016] Comparative diagram of the elastic resilience and force of the ordinary elastic woven band and the novel 100% spandex fabric

Types	Items				
	Elongation at 3.3 lbf (%)	Recovery (%)	F (40%) (lbf)	F (60%) (lbf)	F (80%) (lbf)
Ordinary spandex woven band	188.8	92	0.303	0.438	0.559
100% spandex fabric	76.69	97	1.439	2.228	—

Attached knitted fabric structural diagram (see attached sheet)

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] FIG. 1 shows the Application schematic diagram of 100 percent spandex fabric replacing rubber bands or elastic rubber pieces.

DETAILED DESCRIPTION OF PARTICULAR EMBODIMENTS OF THE INVENTION

[0018] Compared with ordinary woven band, the 100% spandex fabric greatly enhances the elastic resilience and force. In addition, the fabric has high wear resistance, maintaining good elastic resilience and force after long-term wear, which can solve the difficulties that the shoulder straps easily become slide and provide a weak elastic resilience and force. Meanwhile, the 100 percent spandex fabric can meet the requirements on flatness, smoothness, close fit, sound elasticity, high level of wearing comfort, good hand feel, etc, which can be applied to brassiere (to aid the elastic supporting effect between cups and the back buckle), shoulder strap, swimwear, briefs, lingerie, etc.

[0019] The concrete weaving process of present novel fabric is as follows:

[0020] I. Warp yarn and weft yarn which are made of 100% spandex filament material are mutually crocheted.

[0021] II. The back weft of the spandex filament is required to pass through a filament packaging frame and a weft yarn accelerating conveyor device is provided.

[0022] III. Curling is required to be avoided. The specification of the spandex filament of which the warp yarn used required to be considered, so is the specification and constituents of the back weft made of the spandex filament.

[0023] Considering that it is difficult for spandex to color and the material is laminated to the inner layer, which is invisible from the outer layer, the material can directly enter the next layer, which is invisible from the outer layer, the material can directly enter the next laminating process without dyeing.

[0024] The greige strap produced is preset at a high temperature. The purpose thereof is to stabilize the specification of the fabric and avoid deformation and curling of fabric. Meanwhile, since there is a large amount of silicone oil on the surface of the spandex, the oil on the fabric surface can vaporize through presetting at a high temperature. The pre-setting temperature must be above 192 degrees Celsius. The optimal setting effect can be achieved by adjusting parameters such as temperature and speed according to different thickness.

[0025] The preset fabric is placed in a vat for fumigation and phenolic yellowing processing so as to prevent unfavorable effect due to yellowing in later storage or use, and is then dried. Since the specification is predetermined in presetting, only a low temperature is required for drying.

[0026] The processed material or cut piece to be laminated is evenly spread on a cutting table, and glue is evenly applied thereon, and then the 100% spandex strap is firmly bonded between the upper and lower layers of other materials at a high temperature and under a high pressure. In the position '1' in the following diagram, before the strengthening between the cups, back buckles and the shoulder straps are increased through rubber bands or elastic rubber pieces, while 100% spandex fabric is adopted in the underwear, which can provide relatively flatness, sound elastic resilience, fashion outlook, good hand feel, convenient use, comfortable wear, etc.

[0027] While the preferred embodiment of the present invention has been described in conjunction with the drawings, the present invention is not limited to the above embodiment. The above embodiment is only illustrative and not limitative. Without departing from the basis of the present invention and the scope sought for protection by the claims, a person skilled in the art can further make many forms, all of which belong to the protection scope of the present invention.

Attached sheet: knitting structural diagram of the 100 percent spandex fabric

FIELD OF THE INVENTION

[0028] The present invention relates to the filed of fabrics, specifically to elastic strap and underwear, particularly to elastic strap.

BACKGROUND OF THE INVENTION

[0029] Presently, strap is widely applied in textile industry and people's daily life, particularly in garment industry, which used as essential accessories of underwear. It is known that elastic materials are used for the upper and lower bundles (i.e. flanks) of bras in order to assist the cups in supporting the breasts and keeping them in position relative to the chest circumference. In addition, elastic strap is also used for the bra straps and the waists of panties to increase elasticity. In the present market, elastic strap is mainly used with two methods. One is to enclose them in cloth through flat seams. The other is to directly attach them to cloth. However, the conventional elastic strap have poor elastic resilience and will easily have elastic creep and lose elasticity after being used several times. The elastic strap will cause uneven pressure in some parts regardless whether they are enclosed in or attached to the

shell fabrics. It is difficult for them to meet the main requirements on flatness, smoothness, close fit, sound elasticity, high level of wearing comfort, etc.

SUMMARY OF THE INVENTION

[0030] An object of the present invention is to provide a strap having a “memory” function which has sound elastic resilience to increase the elasticity of and strengthen the support for underwear, meeting the requirements on flatness, smoothness, close fit, sound elasticity, high level of wearing comfort, etc.

[0031] The technical solution used in the present invention is: making a strap having a “memory” function, comprising a woven main body of 100% spandex fabric.

[0032] The main body of the strap having the “memory” function is made by weaving or knitting 100% spandex material.

[0033] In the present invention, the strap having the “memory” function is made of 100% spandex material, which provides sound elastic resilience and can recover its original shape after stretching by 800%. This means the strap can be easily stretched but still closely cling to the surfaces of the human body after returning. It has little binding force on the human body. It can be easily elongated by 2 to 5 times its original length and quickly recover to the original length after the external force is released. It is light and thin, providing good levelness, excellent hand feel, good elastic resilience, and comfortable wear when used to replace the existing ordinary rubber bands. It can be widely applied in the garment industry, especially in the field of underwear such as brassiere, swimwear, briefs, lingerie, etc.

[0034] With a pulling force 3.3 lbf, using the LTD06 method to test and compare the three weaving solution (a. the warp yarn and the weft yarn are both made of 100% spandex; b. the warp yarn is made of 100% spandex and the weft yarn is made of nylon; c. the warp yarn is made of bao gen yarn and the weft yarn is made of nylon) in the specimen of the same parameter and structure, the average value is described as table 1, which shows the strap having the “memory” function can almost recovery its original shape after stretched many times.

[0035] Another significant characteristic of the present strap having the “memory” function is that this kind of strap is not easily torn and bursted. Since the laminating strap the present market required is thin, the weft yarn is easily torn and bursted under the external force and is difficult to recover its original shape after the external force is released. However, the present invention, strap having the “memory” function is not only thin, but also can solve the above mentioned problem because the weft yarn of the new strap is made of 100% nylon, which makes the weft yarn has elasticity, thus making the strap is difficult to be torn and bursted under the external force. Although be torn or bursted, can recovery to the original shape immediately without any marks.

BRIEF DESCRIPTION OF THE DRAWINGS

[0036] FIG. 2 shows the structure of a “memory” strap according to the present invention.

[0037] FIG. 3 shows the underwear made of the strap having the “memory” function, which is flatness, sound elastic-

ity, nice recovery, providing vogue style, excellent hand feel, convenient to use, high level of wearing comfort, etc.

DETAILED DESCRIPTION OF PARTICULAR EMBODIMENTS OF THE INVENTION

[0038] The following is the detailed description of an embodiment of present invention.

[0039] The process of producing the fabric comprises the following steps:

[0040] (1) The 100% spandex warp threads are fed by a beam package such that they pass through shuttle-woven heddles;

[0041] (2) The harness frame drives the heddles to move up and down such that the warp yarns are separated into upper and lower layers to form a space;

[0042] (3) The weft filling hook drives the 100% spandex weft threads across the space, and a latch needle catches the 100% spandex weft threads or 100% spandex edge yarn;

[0043] (4) The reed wobbles back and forth to beat up the weft threads passing through the space so as to form a woven band.

[0044] 100% spandex strap is formed by said stitches, and meanwhile, different tensile requirements can be met by spandex yarn of different structures, density and specification.

[0045] The greige strap produced is preset at a high temperature. The purpose thereof is to stabilize the specification of the fabric and avoid deformation and curling of fabric. Meanwhile, since there is a large amount of silicone oil on the surface of the spandex, the oil on the fabric surface can vaporize through presetting at a high temperature. The pre-setting temperature must be above 192 degrees Celsius. The optimal setting effect can be achieved by adjusting parameters such as temperature and speed according to different thickness.

[0046] The said strap is required for fumigation and phenolic yellowing processing so as to prevent unfavorable effect due to yellowing in later storage or use.

[0047] Considering that it is difficult for spandex to color and the material is laminated to the inner layer, which is invisible from the outer layer, the material can directly enter the next layer, which is invisible from the outer layer, the material can directly enter the next laminating process without dyeing. That is to say, the processed material or cut piece to be laminated is evenly spread on a cutting table, and glue is evenly applied thereon, and then the 100% spandex strap is firmly bonded between the upper and lower layers of other materials at a high temperature and under a high pressure.

[0048] While the preferred embodiment of the present invention has been described in conjunction with the drawings, the present invention is not limited to the above embodiment. The above embodiment is only illustrative and not limitative. Without departing from the spirit of the present invention and the scope sought for protection by the claims, a person skilled in the art can further make a lot of forms, all of which belong to the protection scope of the present invention.

[0049] Table 1 is a comparison of stretching-resilience performance between the ordinary elastic strap and the strap having the “memory” function;

kinds	items				
	Elongation at 3.3 lbf (%)	Recovery (%)	F (20%) lbf	F (40%) lbf	F (60%) lbf
2 cycles of stretching with "1"	82.3	88	0.510	0.688	1.563
2 cycles of stretching with "2"	70.9	92	0.545	0.91	1.87
2 cycles of stretching with "3"	90.2	99.9	0.741	1.431	2.074
10 cycles of stretching with "1"	88	85	0.468	0.625	1.488
10 cycles of stretching with "2"	75	90	0.504	0.845	1.581
10 cycles of stretching with "3"	98	99.6	0.728	1.411	2.000

[0050] Brief Description of the Table:

[0051] "1" shows the strap with warp yarn made of 100% spandex while the weft yarn is made of nylon;

[0052] "2" shows the strap with warp yarn made of bao gen yarn (that is, spandex is wrapped by nylon), while the weft yarn is made of nylon;

[0053] "3" shows the strap having "memory" function, that is, warp yarn and weft yarn are both made of 100% spandex.

FIELD OF THE INVENTION

[0054] The present invention relates to the field of textile, specially to a laminated fabric formed by laminating a 100% spandex elastic woven band and shell fabric.

BACKGROUND OF THE INVENTION

[0055] Presently, woven bands are widely applied in the textile industry and for other uses in people's daily lives, particularly in the garment industry, which used as accessories of underwear. In the present market, woven bands are used with two methods. One is to enclose them in cloth through flat seams. The other is to directly attach them to cloth, which is playing a increasingly vital role. Currently, conventional laminated elastic woven bands are woven integrally by incorporating nylon into different fibers such as spandex, however, due to the limitations of weaving machinery and the nature of the yarns, the woven bands are usually made relatively thick to ensure a relatively good elasticity and elastic resilience thereof, and thus either red impressions will be left on the parts of the skin bearing force, or the wearer may feel uncomfortable after wearing them for a long time. Furthermore, elasticity is easily impaired, resulting in a reduced recovery, and laminating the bands on the inner side of the shell fabric will cause uneven pressure on the force bearing portions, which is difficult for them to meet the main requirements on flatness, smoothness, high level of wearing comfort, close fit, sound elasticity, etc.

SUMMARY OF THE INVENTION

[0056] To solve the aforesaid problem, we have developed a new process of manufacturing laminated elastic fabric by

laminating shell fabric to 100% spandex elastic woven band, which can not only solve the problems resulting from the uneven force on the human body, but also enhance the elastic resilience of the fabric; furthermore, the process can be used to increase the elasticity and strengthen the support for the underwear, meeting the requirements on flatness, smoothness, close fit, sound elasticity, high level of wearing comfort, etc.

[0057] The new laminated elastic fabric main body is formed by laminating shell fabric to 100% spandex elastic woven band.

[0058] The present elastic woven band adopts 100% spandex material, which has good elastic resilience and can be stretched to more than 500% and return to its original shape. That is to say, the fabric can be easily stretched and after returning, it can still closely cling to the surfaces of the human body. It has very little binding force to the human body and can be easily elongated by 2 to 5 times its original length and quickly recover to the original length after the external force is released. Furthermore, said woven band is relatively light and thin, and has the characteristics of being light and thin, providing good levelness, excellent hand feel, good elastic resilience, comfortable wear, etc. when used to replace the existing ordinary woven bands. It can be widely used in the garment industry, especially in the field of underwear such as brassiere, swimwear, briefs, lingerie, etc. Furthermore, the woven band will not easily rip or burst. Since the laminated woven band currently used on the market is required to be relatively thin, it will easily rip or burst weftwise under external force and is difficult to return to its original shape after the external force is released. However, the 100% spandex laminated woven band of the present invention is not only light and thin but can solve said problem. Since the weft threads of the present invention adopt 100% spandex material, it has certain elasticity weftwise so that the woven band will not easily rip or burst under external force. Even if it does rip or burst, it can immediately return to its original shape after the external force is released without leaving any impression and the recovery is nearly 100%.

BRIEF DESCRIPTION OF THE DRAWINGS

[0059] FIG. 4 shows an underwear adopting said 100% spandex laminated shoulder straps, which has the characteristics of relative levelness, good elastic resilience, good recovery, fashionable appearance, excellent hand feel, convenient use, comfortable wear, etc.

[0060] FIG. 5 shows a schematic view of a structure of the 100% spandex laminated woven band.

[0061] FIG. 6 shows a schematic view of the new laminated fabric having a single layer laminated structure as shoulder straps.

[0062] FIG. 7 shows a schematic view of the new laminated fabric having a double layer laminated structure as shoulder straps.

DETAILED DESCRIPTION OF PARTICULAR EMBODIMENTS OF THE INVENTION

[0063] The manufacturing process and use of the new fabric is described in detail as follows.

[0064] The detailed process for manufacturing the 100% spandex laminated elastic woven band comprises the following steps:

[0065] (1) The 100% spandex warp threads are fed by a beam package such that they pass through shuttle-woven heddles;

[0066] (2) The harness frame drives the heddles to move up and down such that the warp yarns are separated into upper and lower layers to form a space;

[0067] (3) The weft filling hook drives the 100% spandex weft threads across the space, and a latch needle catches the 100% spandex weft threads or 100% spandex edge yarn;

[0068] (4) The reed wobbles back and forth to beat up the weft threads passing through the space so as to form a woven band.

[0069] The 100% spandex woven band formed by said structures can be used to meet different requirements using different structures, manufacturing densities and by adopting spandex yarns of different specifications.

[0070] The greige band produced must be preset at a high temperature. The purpose thereof is to stabilize the specification of the fabric and avoid deformation and curling of the fabric. Meanwhile, since there is a large amount of silicone oil on the surface of the spandex, the oil on the fabric surface can vaporize through presetting at a high temperature. The pre-setting temperature must be above 130 degrees Celsius. The optimal setting effect can be achieved by adjusting parameters such as temperature and speed according to the thickness.

[0071] Said woven band must go through fumigation and phenolic yellowing processing so as to prevent unfavorable effect due to yellowing in later storage or use.

[0072] The process of manufacturing the laminated fabric:

[0073] Considering that it is difficult for spandex to color and that it is laminated to the inner layer of the shell fabric and is invisible from the outer layer, it can directly enter the next laminating process without dyeing.

[0074] The processed shell fabric or cut piece to be laminated is evenly spread on a cutting table, and glue is evenly applied thereon, and then the 100% spandex woven band is firmly bonded between the upper and lower layers of the shell fabric at a high temperature and under a high pressure.

[0075] There are mainly two laminating processes:

[0076] 1. Single Layer Processing:

[0077] As shown in FIG. 3.

[0078] The advantages of the product thereof include:

[0079] A. The band is thinner than conventional laminated woven band, more closely clinging to the human body and has a better wearing effect;

[0080] B. The outer layer of the woven band can be selected to match the shell fabric of the underwear to make the style match better;

[0081] C. A better skin-clinging effect which effectively reduces the pressure caused by the pulling force of the woven band to the skin; and

[0082] D. A better elastic resilience than conventional laminated woven band due to a higher spandex content.

[0083] 2. Double Layer Processing:

[0084] As shown in FIG. 4.

[0085] The advantages of the product thereof include:

[0086] A. Lifting for the breasts can be effectively strengthened by adjusting the position of the lining spandex woven bands or doubling or multiplying the area of the woven bands according to the volume of the breasts to increase partial pulling force of the woven bands.

[0087] B. According to the principles of ergonomics and geocentric gravity, the support for the breasts by shoulder straps can be adjusted by increasing the area of the lining spandex woven bands on parts of the shoulder straps.

What is claimed is:

1. The present novel 100% spandex fabric changes the weaving principle of knitting material structure to ensure that the fabric fulfills the functions and effects which can not be achieved by ordinary fabric, which is mainly made of the present novel 100% spandex fabric comprising mainly with 100% spandex filament. The novel fabric material can have one specification or can have two or more different specifications. The material of back weft can be various mixed specifications. The recovery rate of the novel 100% spandex fabric can reach over 95% after repeated stretching test. The present novel 100% spandex fabric can also quickly return to its original shape and provide durability, which giving a good solution to which the prior underwear suffered from a small recovery rate and insufficient elastic force.

2. The weaving process and the features of the novel 100 percent spandex fabric are as follows:

(1) Warp yarn and weft yarn which are made of 100% spandex filament material are mutually crocheted.

(2) The back weft of the spandex filament is required to pass through a filament packaging frame and a weft yarn accelerating conveyer device is provided.

(3) Curling is required to be avoided. The specification of the spandex filament of which the warp yarn used required to be considered, so is the specification and constituents of the back weft made of the spandex filament.

The present novel knitted fabric changes the crocheting principle of ordinary material of traditional knitted fabric, adopting 100% spandex filament as the main material to change the elastic resilience, the force and the structure stability of knitted fabric. The mutual double pulling effect of the knitted fabric in the spandex filament after crocheting to remedy the defaults of the fabric that the structure is deformed and the elastic resilience and the force are weakened after the fabric is elongated.

Considering that it is difficult for spandex to color and the material is laminated to the inner layer, which is invisible from the outer layer, the material can directly enter the next layer, which is invisible from the outer layer, the material can directly enter the next laminating process without dyeing.

The greige strap produced is preset at a high temperature. The purpose thereof is to stabilize the specification of the fabric and avoid deformation and curling of fabric. Meanwhile, since there is a large amount of silicone oil on the surface of the spandex, the oil on the fabric surface can vaporize through presetting at a high temperature. The presetting temperature must be above 192 degrees Celsius. The optimal setting effect can be achieved by adjusting parameters such as temperature and speed according to different thickness.

The preset fabric is placed in a vat for fumigation and phenolic yellowing processing so as to prevent unfavorable effect due to yellowing in later storage or use, and is then dried. Since the specification is predetermined in presetting, only a low temperature is required for drying.

The processed material or cut piece to be laminated is evenly spread on a cutting table, and glue is evenly applied thereon, and then the 100% spandex strap is firmly bonded between the upper and lower layers of other materials at a high temperature and under a high pressure.

3. The production of said woven band adopts elastic nylon, terylene and other elastic materials.

4. The production method of the said woven band comprises all crocheting structure principle in the production of daily life.

5. The said woven band is applied to underwear, briefs swimwear, etc., after high-temperature laminating.

What is claimed is:

1. A strap having a memory function, comprising yarns of 100% elastic spandex, Characteristics in that the whole strap is made of spandex without any other fiber.

2. The strap having a memory function of claim 1, characterized in that the warp yarn of said strap is made of 100% elastic spandex.

3. The strap having a memory function of claim 1, characterized in that the weft yarn of said strap is made of 100% elastic spandex.

4. The strap having a memory of function of claim 1, characterized in that the greige strap produced is preset at a high temperature. The purpose thereof is to stabilize the specification of the fabric and avoid deformation and curling of fabric. Meanwhile, since there is a large amount of silicone oil on the surface of the spandex, the oil on the fabric surface can vaporize through presetting at a high temperature. The presetting temperature must be above 192 degrees Celsius. The optimal setting effect can be achieved by adjusting parameters such as temperature and speed according to different thickness.

The said strap is required for fumigation and phenolic yellowing processing so as to prevent unfavorable effect due to yellowing in later storage or use.

Considering that it is difficult for spandex to color and the material is laminated to the inner layer, which is invisible from the outer layer, the material can directly enter the next layer, which is invisible from the outer layer, the material can directly enter the next laminating process without dyeing. That is to say, the processed material or cut piece to be laminated is evenly spread on a cutting table, and glue is evenly applied thereon, and then the 100% spandex strap is firmly bonded between the upper and lower layers of other materials at a high temperature and under a high pressure.

5. The strap having a memory function of claim 1, characterized in that said woven band is woven band or knitting band.

6. The strap having a memory function of claim 5, characterized in that various strap can be woven into different structure with warp yarn and weft yarn made of 100% elastic spandex.

7. The strap having a memory function of claim 6, characterized in that said strap is regular or irregular.

8. The strap having a memory function of claim 7, characterized in that said strap is plane or patterned.

9. The strap having a memory function of claim 1, characterized in that said strap can be made by spandex yarn of all specifications.

10. The strap having a memory of function of claim 1, characterized in that said strap is applicable in the garment, such as underwear, briefs, swimwear, etc.

What is claimed is:

1. A new laminated elastic fabric, characterized in that the fabric comprises 100% spandex laminated elastic woven band and elastic shell fabric.

2. The new laminated fabric according to claim 1, wherein the laminated elastic woven band is woven using 100% spandex containing no other fibers.

3. The new laminated fabric according to claim 1, wherein warp threads and weft threads used to weave the laminated elastic woven band both adopt 100% spandex yarns.

4. The new laminated fabric according to claim 1, wherein the laminated elastic woven band may adopt spandex yarns of any specification.

5. The new laminated fabric according to claim 1, wherein the greige band produced to make the laminated elastic woven band must be preset at a high temperature, the purpose of which is to stabilize the specification of the fabric and avoid deformation and curling of the fabric; meanwhile, since there is a large amount of silicone oil on the surface of the spandex, the oil on the fabric surface can vaporize through presetting at a high temperature; the presetting temperature must be above 130 degrees Celsius; and the optimal setting effect can be achieved by adjusting parameters such as temperature and speed according to the thickness; Said woven band must go through fumigation and phenolic yellowing processing so as to prevent unfavorable effect due to yellowing in later storage or use.

6. The new laminated fabric according to claim 1, wherein since the laminated elastic woven band is laminated to the inner layer of the shell fabric and is invisible from the outer layer, it can directly enter the next laminating process without dyeing; the processing is that the processed shell fabric or cut piece to be laminated is evenly spread on a cutting table, and glue is evenly applied thereon, and then the 100% spandex woven band is firmly bonded between the upper and lower layers of shell fabric at a high temperature and under a high pressure.

7. The new laminated fabric according to claim 6, wherein the laminated elastic woven band is formed by interweaving 100% spandex warp threads and weft threads according to different structures.

8. The new laminated fabric according to claim 8, wherein at least one face of the laminated elastic woven band is planar.

9. The new laminated fabric according to claim 1, wherein the shell fabric may be elastic or non-elastic.

10. The new laminated fabric according to claim 1, wherein the shell fabric may be patterned or plain.

11. The new laminated fabric according to claim 1, characterized in that the fabric is used after high-temperature lamination for ready-to-wear clothes, including underwear, briefs, swimsuit, etc.

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