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(54) **Method for manufacturing a transpirable, permeable, elastic fabric or a non woven fabric and product thus obtained.**

(57) Comprising said fabric or non-woven fabric (3) a first threads or fibres (1) arranged in the direction of the weft and in that of the warp, including, either in the direction of the weft or in that of the warp or both, a second threads or fibres (2), the melting point of which is below that of the melting point of the first threads which is characterised in that it comprises a first phase of stabilization of the fabric (3) and a second phase of heat pre-shaping of the referred fabric resulting from the first phase, blocking the elasticity of the resulting fabric or non-woven fabric taking into account of the higher or lower density of the first threads (1) and of the higher or lower quantity of second threads (2) that are melted.

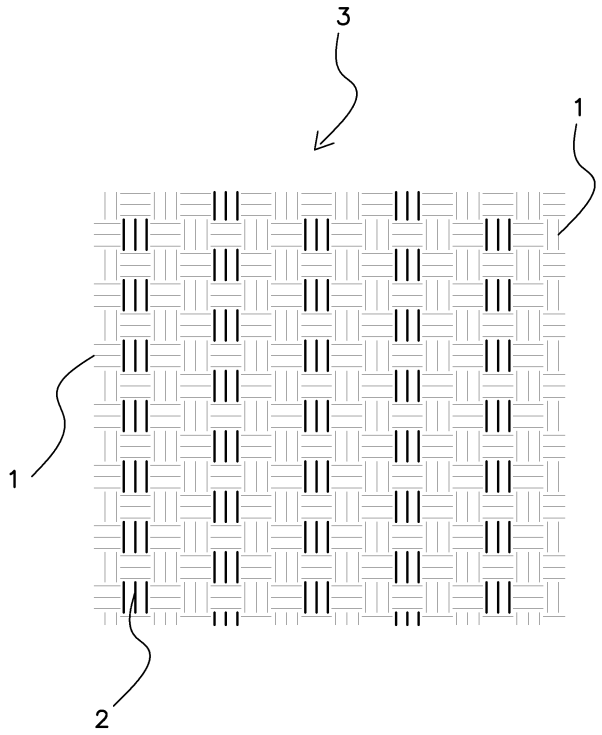

FIG. 1

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Description

[0001] Proceeding for manufacturing a transpirable, permeable, elastic fabric or a non woven fabric of the type in which said fabric or non-woven fabric comprises first threads or fibres arranged in the direction of the weft and in that of the warp, including, either in the direction of the weft or in that of the warp or both, second threads or fibres, the melting point of which is below than the melting point of the first threads or fibres and which is characterised in that it consists of a first stabilisation phase of the fabric or non-woven fabric in which, at least one part of said fabric or non-woven fabric is subjected to a temperature equivalent to the minimum shape memory temperature of the first threads or fibres, with said temperature being below the melting point of the second threads, and a second phase of heat pre-shaping of the referred fabric or non-woven fabric resulting from the first phase in which temperature and pressure is applied over at least part of said fabric or non-woven fabric, with said temperature being equal to or higher than the melting point of the second threads or fibres, thus varying the elasticity of the area of fabric or non-woven fabric to which the mentioned heat is applied, blocking the elasticity of the resulting fabric or non-woven fabric in function of the higher or lower density of the first threads or fibres and of the higher or lower quantity of second threads or fibres that are melted.

BACKGROUND OF THE INVENTION

[0002] The closest document is the German patent n_ DE4206997, of 1992, in the name of Mr Peter Lotear Ernst Möring and Mr Willy A. de Meyer, which refers to a flat textile material, particularly fabrics, knitwear, weft knitwear or textile structures obtained by superposition, part in polyethylene fibres or other similar fibres, which comprise a minimum of two components and which have been subjected to heat and pressure treatment, characterised in that at least one of the fibre components has a higher melting point than the other components or does not melt at all and in that it has been subjected to a heat and pressure treatment at a temperature at which the component with the highest melting point has been taken to a maximum of the beginning of joining by melting.

[0003] A procedure is also claimed that consists of a proceeding for manufacturing of a flat textile material of at least two components used to particularly produce a fabric, knitwear, weft knitwear or textile structures obtained by superposition of synthetic fibres and the material produced is subjected to heat and pressure treatment, in which the threads melt, characterised in that the flat material is produced using threads, with at least one polyethylene or poly propylene component with a melting point that is lower than the other components and that the material is subjected to heat and pressure values that take the highest melting point component to the beginning of melting or which does not melt at all, or a maximum of commencing joining by melting and a minimum the other component is also taken to melting.

BRIEF DESCRIPTION OF THE INVENTION

[0004] As can be shown, is known the application of synthetic threads at various temperatures in order to melt some and not others.

[0005] The problem lies in the fact that it is not possible to shape them, in other words, until now it was not known how to stabilise them.

[0006] Moreover, the previous inventions do not clearly state how transpiration is achieved when they are occasionally impermeable.

[0007] Lastly, it is not possible to apply the melting threads in a specific determined fashion, consequently, it is not possible to apply melting to already manufactured garments, in other words, using the Santoni procedure or melting partial applications, for example, blocking the threads in a specific area of the fabric or non-woven fabric garment.

[0008] The present invention is a considerable advance in the textile sector. It is necessary to point out that the textile sector evolves only slowly, techniques are being employed that have been known for decades, so that any changes "per se" represent a revolution in a quite immobile industrial area.

[0009] The advantage of this invention is that in a first phase, the threads or fibres are stabilised, giving them a shape memory and, in a second phase, determined threads or fibres are melted so that they are fixed to the fabric or non-woven fabric or garment. This means that it pre-shapes first then fixes. This allows its application to underwear, in joint areas, etc.

[0010] Initially at least two different type of threads or fibres are used (more than two can also be used) that have different melting points, but with the characteristic of the melting point of one is equal to or higher than the shape memory temperature of the other, in other words, it shapes and blocks at the same time.

[0011] In order to obtain maximum colour similarity in dyeing the fabric or non-woven fabric, it is recommended that fibres or filaments with the same base composition are used in the two types of threads. Polyamides with polyamides and polyester with polyester etc.

[0012] One objective of the present invention is a procedure for the production of a permeable, elastic, transpirable fabric or non-woven fabric of the type in which said fabric or non-woven fabric comprises first threads or fibres arranged in the direction of the weft and in that of the warp of the type, including, either in the direction of the weft or in that of the warp or both, second threads or fibres, the melting point of which is below that of the first threads or fibres and which is characterised in that it consists of a first stabilisation phase of the fabric or non-woven fabric in which, at least one part of said fabric or non-woven fabric is subjected to a temperature equivalent to the minimum shape memory temperature of the

first threads or fibres, with said temperature being below the melting point of the second threads, and a second phase of heat pre-shaping of the referred fabric or non-woven fabric resulting from the first phase in which temperature and pressure is applied over at least part of said fabric or non-woven fabric, with said temperature being equal to or higher than the melting point of the second threads or fibres, thus varying the elasticity of the area of fabric or non-woven fabric to which the mentioned heat is applied, blocking the elasticity of the resulting fabric or non-woven fabric in function of the higher or lower density of the first threads or fibres and of the higher or lower quantity of second threads or fibres that are melted.

[0013] Another objective of the present invention is a fabric in accordance with the previously described proceeding, in which said fabric or non-woven fabric comprises first threads or fibres arranged in the direction of the weft and in the direction of the warp, consisting of, either in the direction of the weft or in that of the warp or both, second threads or fibres, the melting point of which is below that the melting point of the first threads or fibres, characterised in that the melting point of the second threads or fibres is equal to or higher than the minimum shape memory temperature of the first threads or fibres.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] In order to facilitate the description, the present report is accompanied by three sheets of drawings that show a practical case exemplary embodiment, which is cited as a non-limiting example of the scope of the present invention:

- Figure 1 is a view of a fabric, the object of this invention, with the arrangement of two types of threads or fibres.
- Figure 2 is an embodiment of the previous fabric for a woman's corset
- Figure 3 is an embodiment that shows the various arrangements of the threads and fibres.
- Figure 4 is the applications of melting to a garment based on the arrangement of Figure 3.

SPECIFIC EMBODIMENT OF THE PATENT APPLICATION

[0015] Thus, Figure 1 illustrates a fabric 3, first threads or fibres 1 and second threads or fibres 2.

[0016] Figure 2 shows a corset 6, a first area 4 with only the first threads or fibres and a second area 5 with the second threads or fibres once the second phase of the present invention is completed.

[0017] Figure 3 shows a fabric 3, with second threads or fibres 1 and second threads or fibres 2.

[0018] Lastly, Figure 4 represents the application of the proceeding of the present invention to Figure 3 in which can be seen the first threads or fibres 1, together with the second threads or fibres 2 and a second areas 5 with the second threads or fibres once the second phase of the present invention is completed.

[0019] Thus, in an specific embodiment, the proceeding for manufacturing a transpirable, permeable, elastic fabric or a non woven fabric, the object of the present invention, comprises said fabric 3, the first threads or fibres 1 arranged in the weft and in the warp, together with second threads or fibres 2 in the warp (Fig 1).

[0020] The melting point of the second threads or fibres 2 is lower than the melting point of the first threads or fibres 1.

[0021] Thus, in a first phase, called fabric stabilisation, part of said fabric 5 is subjected to a temperature equivalent to the minimum shape memory of the second threads or fibres 2.

[0022] Said temperature is lower than the melting point of the second threads 2.

[0023] In the second phase, called pre-shaping by heat of the referred fabric resulting from the first phase, temperature and pressure are applied over at least in a part of said fabric 4, 5, with said temperature being equal to or higher than the melting point of the second threads or fibres 2, varying the elasticity of the area of fabric or non-woven fabric over which the mentioned heat was applied.

[0024] In this way, the elasticity of the resulting fabric or non-woven fabric is blocked in function of the higher or lower density of the first threads or fibres 1 and of the higher or lower quantity of second threads of fibres 2 that are melted.

[0025] In other words, if there is a large number of second threads or fibres, when the second threads or fibres 2 melt, a level of mesh is achieved that provides rigidity but flexibility to area 5 (Figure 4) because they are joined to the threads by the cross stitch. If, on the other hand, the density of the second threads or fibres 2 is lower, the rigidity is reduced.

[0026] Figure 2 shows how the application of the second phase allows the preforming of the first area 4 and the elasticity of the second area 5 is blocked.

[0027] As was previously described, the temperature of the second phase is equal to or higher than the shape memory temperature of the first threads or fibres.

[0028] It is possible to incorporate a third phase in which a softener is applied to the product obtained at the end of the second phase. This is because it is possible for the end product to be rough and unpleasant to the touch due to the melted threads or fibres.

[0029] The versatility of this proceeding permits its application to woven and knitted fabrics, with one or two sides.

[0030] Another possibility (Figures 3 and 4) is to carry out the first and second phases simultaneously by applying different pressure and temperature values at the same time and by areas and, in the case of employing a high frequency machines, being able to cut and weld the piece at the same time.

[0031] There is also the possibility of applying the flat procedure (Figure 4) to previously cut pieces or com-

pletely or partially manufactured garments (in either the first or second phase or both simultaneously) or there is the possibility of being able to use flat plates for it or mould/counter-mould with shape.

[0032] This proceeding can be equally applied to tubular garments produced by the so-called Santoni procedure. This procedure versatility and options are not covered by any of the previous documents of the state of the art, especially those referring to completely or partially manufactured garments, since these procedures have to be applied to all the fabric and not partially as in this case.

[0033] Thus, the fabric resulting from the previously described proceeding comprises a fabric 3, the first threads of fibres 1 of which are arranged in the weft and the warp, with the warp consisting of second threads or fibres 2, the melting point of which is lower than the melting point of the first threads or fibres 1 and in which the melting point of the second threads or fibres 2 is equal to or higher than the shape memory temperature of the first threads or fibres 1. This allows that when the previous process is applied, there are at least two different elasticities in the same fabric.

[0034] The first threads or fibres 1 and the second threads or fibres 2 are synthetic threads or fibres. This is to facilitate thread melting. In fact, they could be selected from the following:

[0035] For the first threads or fibres 1, there are NUREL®, GRILON®, TACTEL®, PA 6.10, PA 6.12, polyethylenterepthalates, polybutylenterepthalates, polyesters in general and cellulose acetate etc., which in general are above 215°C.

[0036] For the second threads or fibres 2, there are PA 12, SARAN®, VINYON®, LACTRON® and polypropylene fibres which, in general, do not exceed 180°C.

[0037] As indicated for the proceeding, depending on the roughness and feel of the end product, the resulting fabric or garment can incorporate a softener.

[0038] The fabric can be a fabric with one or two sides, a cut piece, a circular tube (Santoni) or even an already manufactured garment.

[0039] The patent describes a new proceeding for the manufacture of a permeable, elastic, transpirable fabric or non-woven fabric and the fabric obtained. The examples cited herein do not limit this invention, and therefore said invention can have various applications and/or adaptations, all of which are included within the scope of the following claims.

Claims

1. Proceeding for manufacturing a transpirable, permeable, elastic fabric or a non woven fabric of the type in which said fabric or non-woven fabric (3) comprises a first threads or fibres (1) arranged in the direction of the weft and in that of the warp, including, either in the direction of the weft or in that of the warp or both, second threads or fibres (2), the melting point of which is below that the melting point of the first threads or fibres and which is **characterised in that** it comprises:

   - a first phase of stabilization of the fabric or non-woven fabric (3) in which, at least one part of said fabric or non-woven fabric is subjected to a temperature equivalent to the minimum shape memory temperature of the first threads or fibres (1), with said temperature being below the melting point of the second threads (2) and
   - a second phase of heat pre-shaping of the referred fabric or non-woven fabric resulting from the first phase in which temperature and pressure is applied over at least part of said fabric or non-woven fabric, with said temperature being equal to or higher than the melting point of the second threads or fibres (2), thus varying the elasticity of the area of fabric or non-woven fabric to which the mentioned heat is applied,

   blocking the elasticity of the resulting fabric or non-woven fabric taking into account of the higher or lower density of the first threads or fibres (1) and of the higher or lower quantity of second threads or fibres (2) that are melted.

2. Proceeding in accordance with claim 1 **characterised in that** the second phase temperature coincides with the minimum shape memory temperature of the first threads or fibres (1).

3. Proceeding in accordance with claim 1 **characterised in that** it incorporates a third phase in which a softener is applied to the product obtained at the end of the second phase.

4. Proceeding in accordance with some of the previous claims **characterised in that** it is applied to woven and knitted fabrics of one or two sides.

5. Proceeding in accordance with some of the previous claims **characterised in that** the second phase is applied on flat and/or shaped.

6. Proceeding in accordance with some of the previous claims **characterised in that** the fabric or non-woven fabric is a cut piece before the second phase is applied.

7. Proceeding in accordance with some of the previous claims, from 1 to 6, **characterised in that** the fabric or non-woven fabric is a garment before the first phase is applied.

8. Proceeding in accordance with some of the previous claims, from 1 to 6, **characterised in that** the fabric

or non-woven fabric is a garment before the second phase is applied.

9. A fabric in accordance with the previously described proceeding of the type in which said fabric or non-woven fabric comprises a first threads or fibres (1) arranged in the direction of the weft and in that of the warp, including, either in the direction of the weft or in that of the warp or both, a second threads or fibres (2), the melting point of which is below that the melting point of the first threads or fibres and which is **characterised in that** the melting point of the second threads or fibres (2) is equal to or higher than the minimum shape memory temperature of the first threads or fibres (1).

10. A fabric in accordance with claim 9 **characterised in that** the first threads or fibres (1) and the second threads or fibres (2) are synthetic threads or fibres.

11. A fabric in accordance with claim 8 or 9 **characterised in that** it incorporates a softener.

12. A fabric in accordance with claim 8 or 9 **characterised in that** it is a fabric with two sides.

13. A fabric in accordance with some of the previous claims, from 8 to 11, **characterised in that** it is a cut piece.

14. A fabric in accordance with some of the previous claims, from 8 to 11, **characterised in that** the fabric or non-woven fabric is a garment.

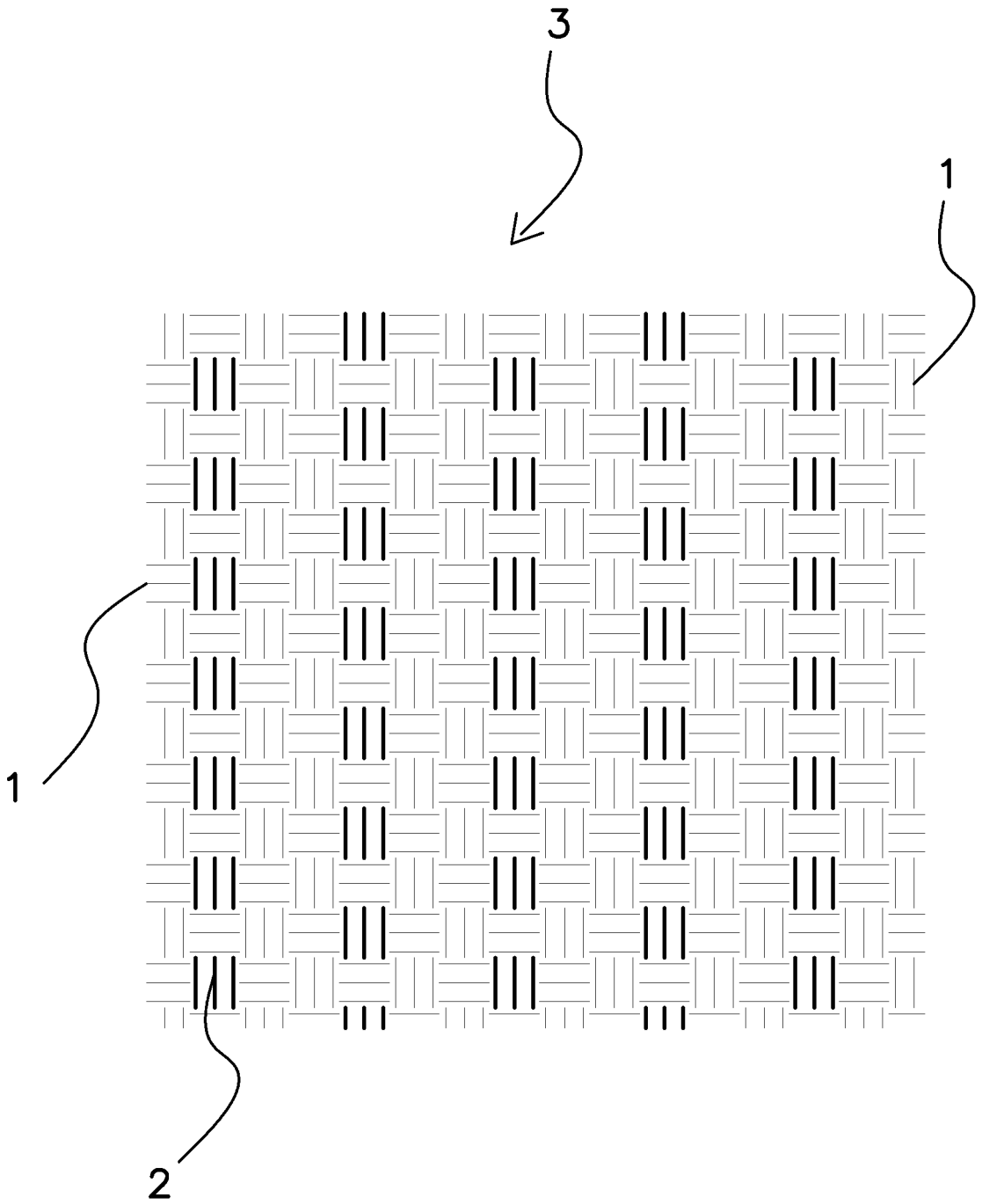

FIG. 1

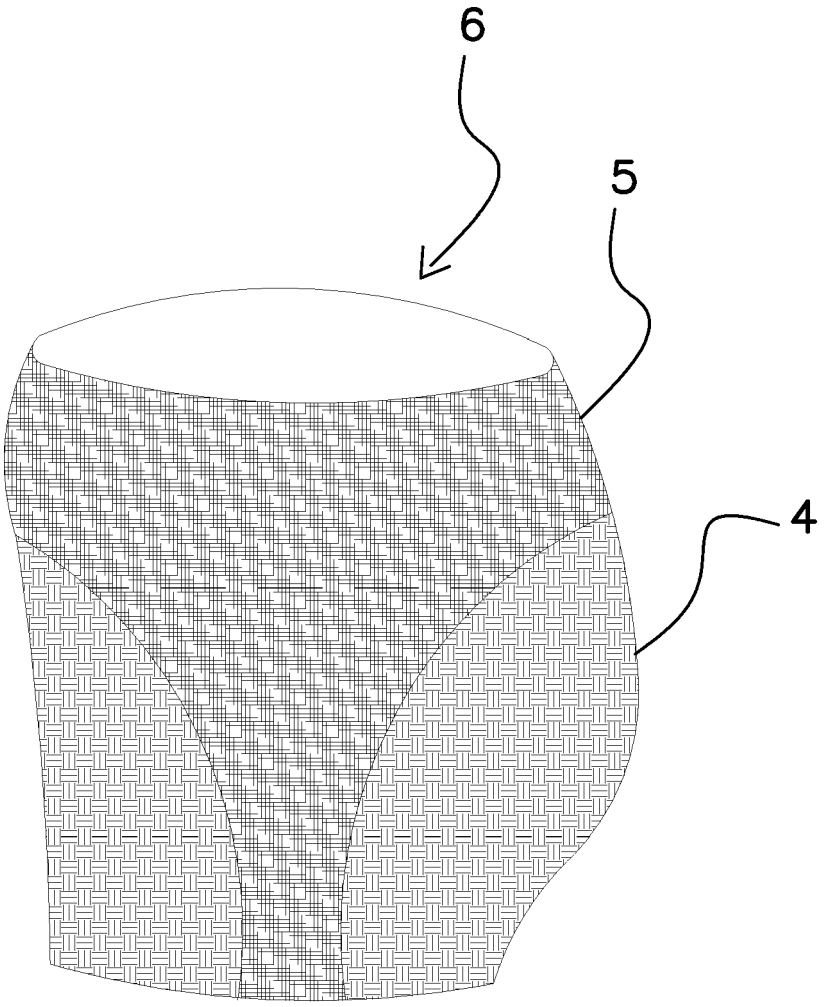

FIG. 2

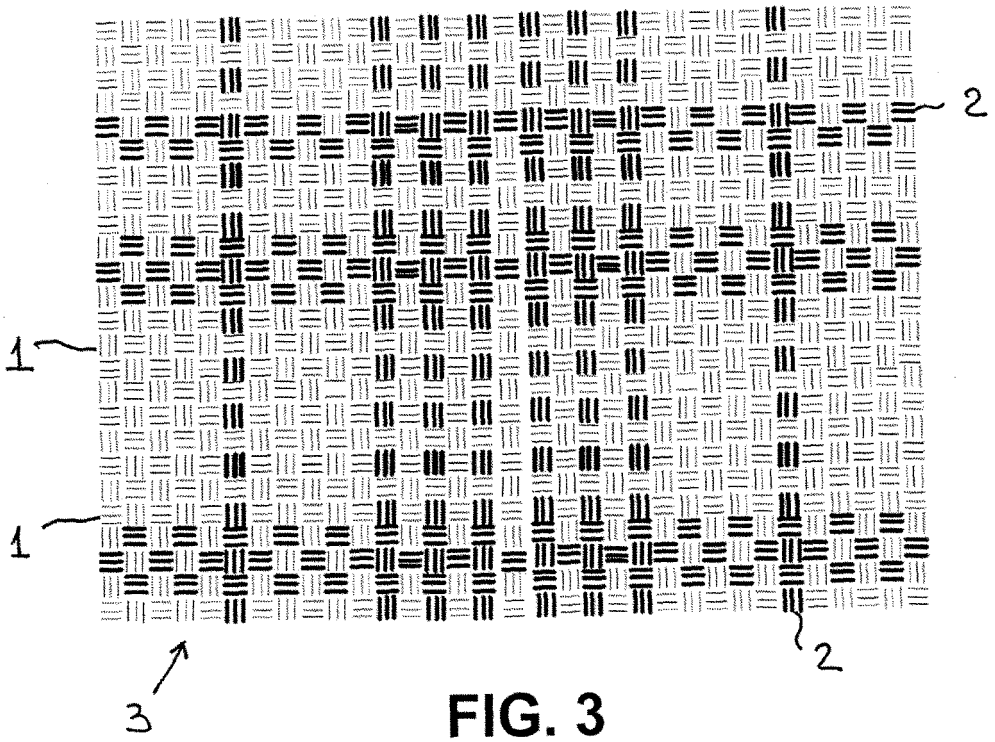

FIG. 3

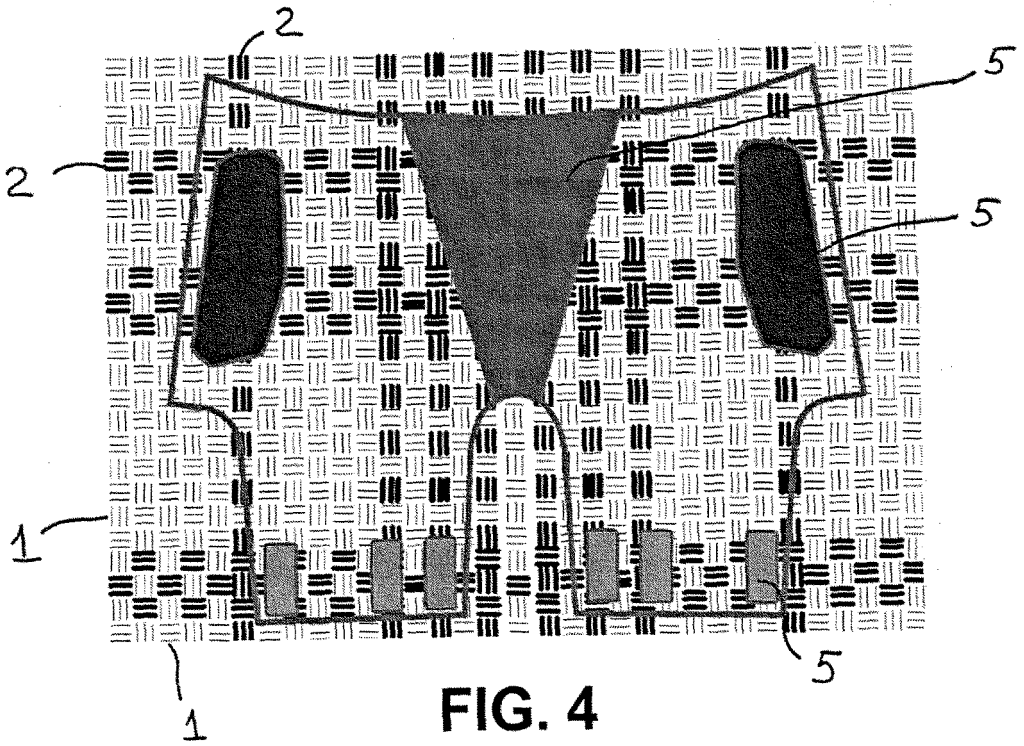

FIG. 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- DE 4206997, Mr Peter Lotear Ernst Möring and Mr Willy A. de Meyer **[0002]**