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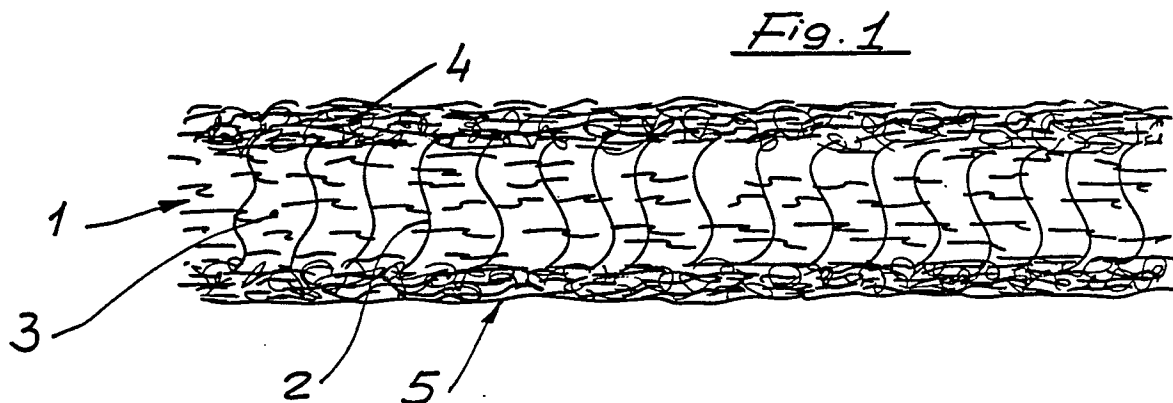
(54) Soft thermally insulating water proofing and perspiring wadding for cloth articles, in particular sports cloth articles.

(57) The present invention relates to a soft thermally insulating waterproofing and perspiring wadding for cloth articles, in particular sports cloth articles.

This wadding is characterized in that it essentially comprises a carded wadding material layer, including thermally insulating air pockets and enclosed, on its two faces, by fibre layers which have been treated by suitable resins.

On the wadding surface provided to be exposed to the outside, moreover, there is provided a poliurethane membrane, optionally coupled to an elasticized fabric, whereas, on the opposite surface, a resilient fabric covering may be applied.

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SOFT THERMALLY INSULATING WATERPROOFING AND PERSPIRING WADDING FOR CLOTH ARTICLES, IN PARTICULAR SPORTS CLOTH ARTICLES

BACKGROUND OF THE INVENTION

The present invention relates to a soft thermally insulating waterproofing and perspiring wadding for cloth articles, in particular sports cloth articles.

As is known, there are available on the market cloth articles which include a suitable wadding at predetermined portions thereof.

This inner wadding is in particular used for ski cloth articles and in general for winter articles in order to provide protection against wind and/or cold weather.

Also known is that commercially available waddings have a comparatively great thickness thereby occupying undesirably a great space, and undesirably altering in a large degree the aesthetic contour of the user wearing cloth articles including such a wadding.

SUMMARY OF THE INVENTION

Accordingly, the aim of the present invention is to overcome the above mentioned drawbacks, by providing a cloth article wadding which has great thermal insulation properties, even if made with a very reduced thickness.

Within the scope of the above aim, a main object of the present invention is to provide such a wadding which also has waterproofing and perspiring properties.

Another object of the present invention is to provide such a wadding which can be directly used for making sports cloth articles.

According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a cloth article wadding, characterized in that said wadding essentially comprises a carded wadding material layer including thermally insulating air pockets and delimited, on two faces thereof, by fibre layers treated by suitable resins, on the face of said wadding to be exposed to the outside, moreover, there being provided a polyurethane membrane, optionally coupled to an elasticized fabric, whereas, on the opposite face, there being provided a resilient fabric covering.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the wadding according to the present invention will become more apparent from the following detailed disclosure of a preferred embodiment thereof, which is illustrated, by way of a merely indicative example, in the figures of the accompanying drawings where:

Figure 1 is a schematic view illustrating a carded wadding layer delimited by resin processed fibre layers;

Figure 2 shows that same carded wadding layer with a polyurethane membrane associated with the top portion thereof; and

Figure 3 is a schematic view illustrating the carded wadding layer having, on the two faces or surfaces thereof, an elasticized fabric and a resilient fabric covering respectively.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the figures of the accompanying drawings, the wadding for cloth articles according to the invention comprising a layer 1 consisting of a wadding material made, preferably by carding, starting from a lap made of a polyester fibre, siliconized polyester fibre, polyamide fibre, polyolefine fibre mixture, the fibres of said mixture having a given denier.

This carded wadding layer, moreover, can be formed with a plurality of transverse needle processed regions 2, and comprises a central portion 3 including a plurality of air pockets, which are advantageously formed during the calendering process of said layer.

In particular, one side or face of said layer is sprayed by acrylic resin emulsions, vinylacrylic resin emulsions, styrene-acrylic resin emulsions, and so on, having a cross-linked structure and adapted to substantially form a strong resilient perspiring film 4 properly holding said fibres in place.

On the opposite face, the above mentioned layer is processed by film-forming resin emulsions which, after drying, will provide a resilient perspiring film 5 having good mechanical properties so as to resist against wear, ageing and hydrolisis.

The above mentioned emulsions, in particular, are preferably made of polyurethane resins, ethylene-vinylacetate copolymers and so on.

The resin processed lap, moreover, can be subjected, under controlled pressure, temperature and rate conditions, to calendering operations adapted to provide, inside and wadding layer, the above mentioned air pockets for improving the thermal insulating properties of the wadding layer.

On the exposed face of the thus made wadding layer, a polyurethane resilient porous perspiring membrane 6 is applied, said membrane having waterproofing and anti-wind characteristics.

The coupling or laminating of this membrane, in particular, is performed by an adhesive film 7, preferably of polyurethane type, which is spot applied so as to preserve the perspiring and waterproofing properties of the wadding layer.

Such a coupling procedure, moreover, will provide a perfect binding of the mentioned membrane and pre-existing film 4 while preserving the resiliency, thermal insulation properties of the wadding layer.

More specifically, for carrying out said laminating operation, polyurethane adhesives can be used, as suitably dissolved in a proper solvent or water emulsion; these adhesive materials, in particular, will be of the cross-linkable type, in order to improve the washing resistance or dry-washing resistance of the wadding layer.

In this connection, it should be apparent that the disclosed operation can also be performed by a gravure system or by continuous screen printing methods and the like.

The thus coated structure, is then conveyed into an oven, thereat the adhesive dissolving phase is evaporated, and the adhesive is cross-linked.

More specifically, the polyurethane membrane can be coupled immediately after the application of the adhesive (wet lamination) or after the evaporation of the adhesive dissolving phase (dry lamination).

This coupling operation, however, must be carried out before cross-linking the adhesive, which is carried out at temperatures varying from 100 to 150°C (depending on the used adhesive and cross-linking substance).

Advantageously, according to a further aspect of the present invention, on the top of the mentioned resilient membrane 6 an elasticized fabric 8 can be applied, with the interposition, if desired, of an adhesive layer 9 and, in the inside, a resilient fabric covering 10 can be further applied so as to provide a wadding structure or layer having very good characteristics of:

- resiliency,
- thermal insulation,
- waterproofing,
- water repellency
- perspiring,

and, more specifically, all of the comfort and op-

erating characteristics which are required for a sports cloth article, in particular a winter sports cloth article.

The binding of the mentioned membrane, in particular is made by an adhesive like the above mentioned adhesive materials (polyurethane resins dissolved in a solvent or in water, water dispersed acrylic resins and so on) by known means and methods.

In particular, the coupling fabrics will be selected depending on their characteristics and their suitability for the finished product.

Thus, the above mentioned fabrics will comprise either natural or synthetic fibres, or mixed fibres, processed by suitable hydrophobic material and with a suitable denier to fit the intended cloth articles.

In this connection, it should be pointed out that if a softer cloth article is required, then the outer fabric can be directly coupled to the base structure, that is without the interposition of the above mentioned adhesive film 9.

While the invention has been disclosed and illustrated with reference to a preferred embodiment thereof, it should be apparent that the disclosed embodiment is susceptible to many modifications and variations all of which will come within the scope and spirit of the appended claims.

Claims

1. A soft thermally insulating waterproofing and perspiring wadding for cloth articles, in particular sports cloth articles, characterized in that said wadding essentially comprises a carded wadding material layer including air pockets and delimited, on the two main faces thereof, by layers of fibres processed by suitable resins, on the exposed face of said wadding layer, there being applied a polyurethane membrane, optionally coupled to an elasticized fabric, and on the opposite main face there being provided a resilient fabric covering.

2. A wadding according to claim 1, characterized in that said wadding layer is made by carding a lap consisting of mixture of polyester fibres, siliconized polyester fibres, polyamide fibres, polyolefine fibres having a set denier, said carded wadding layer including moreover a plurality of needle processed transverse regions.

3. A wadding according to the preceding claims, characterized in that said layer is processed, on the exposed face thereof, by spraying emulsions of acrylic resins, vinyl-acrylic resins, styrene-acrylic resins having a cross-linked structure and substantially forming a strong resilient perspiring film, the inner side of said layer being processed by emulsions of film-forming resins

which, after drying, form a resilient perspiring film having good mechanical characteristics to provide resistance against wear, ageing and hydrolisis, said film forming emulsion consisting mainly of polyurethane resins, ethylene-vinylacetate copolymers and so on. 5

4. A wadding, according to one or more of the preceding claims, characterized in that said resins treated lap is advantageously subjected, under controlled pressure, temperature and rate conditions, to calendering steps so as to form, inside said wadding, said air pockets to improve the thermal insulation properties of said wadding. 10

5. A wadding according to one or more of the preceding claims, characterized in that on the exposed main face of said wadding there is applied a resilient, porous, perspiring, waterproofing and antiwind polyurethane membrane, said membrane being coupled or laminated by an adhesive film, of polyurethane type, which is spot applied so as to preserve the perspiring and waterproofing characteristics of said wadding. 15 20

6. A wadding, according to one or more of the preceding claims, characterized in that for coupling or laminating said membrane there are used polyurethane adhesives in a solvent or a water emulsion said adhesive being adapted to be cross-linked in order to improve resistance against water and dry washings. 25

7. A wadding, according to claim 6, characterized in that said membrane is applied by means of a gravure method or by a continuous screen printing method. 30

8. A wadding, according to one or more of the preceding claims, characterized in that on the top of said resilient membrane there is applied an elasticized fabric with an optional interposition of an adhesive film and, in the inside, there being applied a resilient fabric covering so as to provide a wadding structure having resiliency, thermal insulation, waterproofing, hydrorepellency, perspiring characteristics and all of the comfort characteristics required for a winter sports cloth article. 35 40

9. A wadding, according to one or more of the preceding claims, characterized in that said coupling fabrics comprise either natural or synthetic fibres, mixed fibres, processed by hydrophobic substances of suitable denier, and adapted for making sports cloth articles. 45 50

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Fig. 1

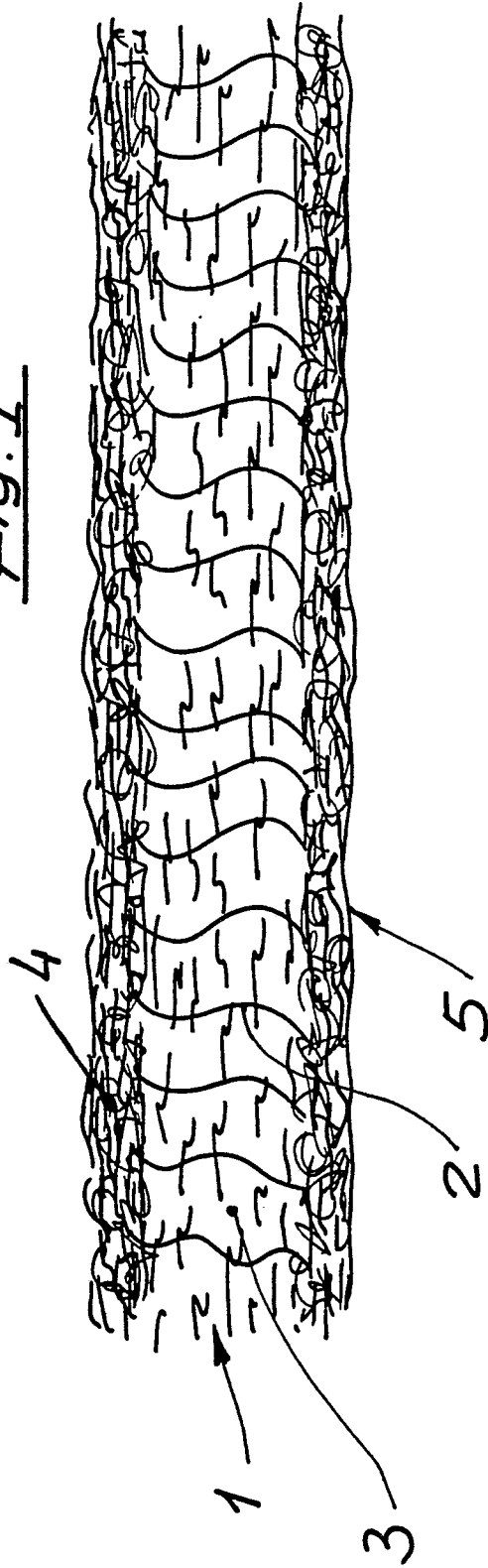
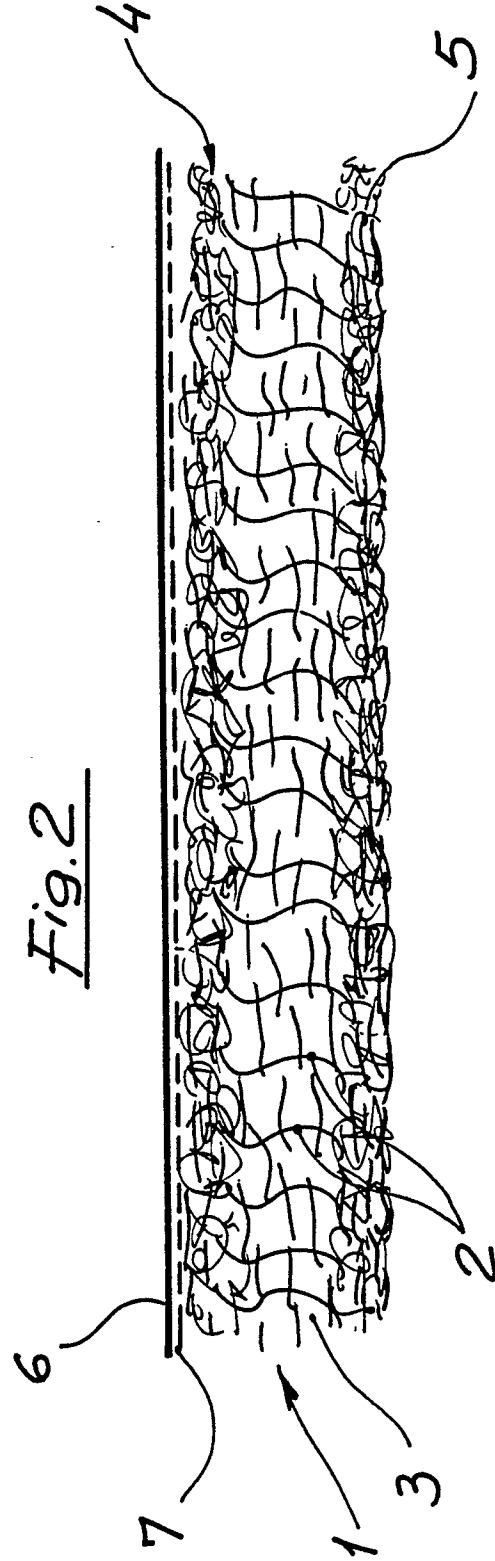


Fig. 2



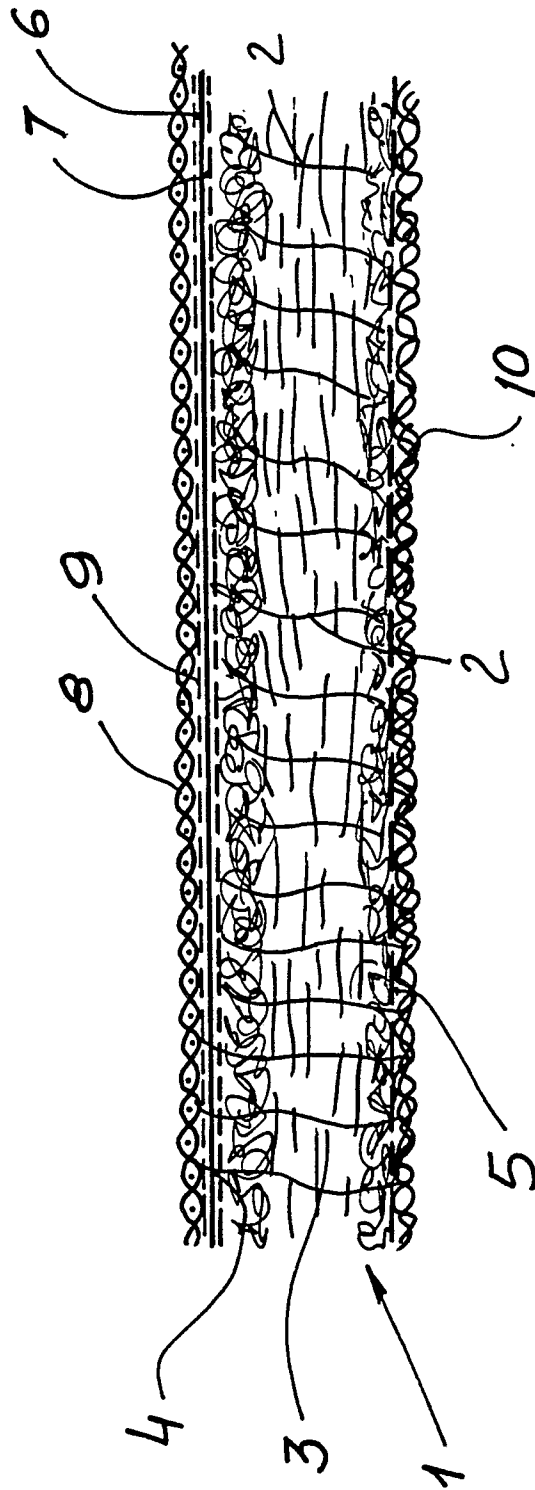


FIG. 3