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FABRIC AND METHOD OF MAKING SAME

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This invention relates to textiles and more particularly to a fabric and method of making same that is suitable for blankets, overcoating or the like, wherein a material having great warmth without excessive weight or bulk and of a high water resisting character, is desired.

An object of this invention is to provide a material suitable for blankets and the like of maximum warmth.

Another object is to provide a material of light weight.

A further object is to provide a material of minimum bulk.

Another object is to provide a material of a water resisting character.

A further object is to provide a material suitable for the purposes specified, and possessing all the above characteristics, having a comparatively smooth outer surface.

Finally the object being to provide such a material at comparatively low cost.

The present standard commercial blanket depends for its warmth on its surface construction.

The present method of constructing blankets is, after weaving, the fabric is worked, felted or processed, which causes the felting or matting together of the warp and weft threads into a compact core.

The outer surfaces of the blanket are then napped into a fluffy fibrous condition consisting of interlaced curly fibers raised from the surface of the material.

On the amount of napping or picking up, of the surface fibers into said fluffy condition, the warmth of the blanket largely depends, and it is in the spaces, chambers, or interstices formed in the disturbed fluffy fibrous surface above described that air is held and forms air spaces that block the passage of air through the blanket and provides its warmth.

It is a well known fact that the present commercial or household blanket is relatively light yet very warm, as a result of a very highly napped surface and thin core, which while it is at the expense of strength owing to a relatively thin core and deeply napped fibrous surface, provides the maximum air chambers or spaces and therefore the maximum warmth, due to the maximum retardation to the passage of air and radiation through the blanket.

Blankets such as above described are not suitable for use for instance by the Army, sporting public, or under other conditions where a strong warm yet light blanket of small bulk having a comparatively smooth surface, is desired.

A wool thread is a comparatively loose structure, wherein long and short staple may be used, which is processed in such a way as to cause the fibers to lie crossed and tangled in various directions, no attempt being made to parallel them, the purpose being to attain a loosely felted yarn. A worsted thread is one in which the short staple is combed out, thus leaving only the longer staple, arranged all in the same direction, which when twisted provides a much stronger thread than a wool thread, having a relatively smooth surface.
that, due to the fibers lying parallel to each other, will not have the same felting properties as for instance a wool or other thread having a loosely matted fibrous surface.

The structure of applicant's blanket broadly provides for the use of threads of different surface characteristics, for instance a mixture of cotton and wool may be used in either or both the warp and weft threads, or all wool may be used, it being necessary only, in order to bring about the desired result, to use threads having different surface or felting characteristics, the specific form of weave being of little importance, some weaves, however, producing better results than others.

For the purposes of disclosure, specific types of threads will be referred to, as used in a specific manner, the arrangement and character of threads being variable to provide the fabric desired.

By reference to the drawings, 1 indicates the warp threads, in this instance worsted threads of long staple, twisted and having comparatively smooth surfaces which are relatively strong, and give the blanket the desired strength.

The warp threads 2 are preferably wool threads, having the usual soft, loose fibrous surface, distinctly different from the surface of the worsted threads.

The threads 1 and 2 are woven together in any preferred manner as for instance as shown, wherein warp threads 1 lie between three consecutive weft threads, then spread and lie on opposite sides of weft threads, said weft threads being tied in to the fabric and occupying an internal position adjacent to each other, corresponding to that of the above described warp threads. It will be noted by reference to Fig. 1 of the drawings that adjacent warp threads do not pass over the same weft thread, the weave providing for the tying in of the weft threads, at separated intervals.

The weave above described in a three layer fabric of cellular construction wherein cavities or air cells 3 are provided. When the fabric is used or subjected to higher than the ordinary storage temperature, the air cells or spaces 3 within the fabric expand causing the fabric to become thicker, and the air cells to provide additional insulation and warmth. The normal thickness of the blanket being less than the commercial highly napped blanket.

The processing or working of the fabric in the old method is performed to bring about a comparatively solid felted core produced by the close intermingling of the fibers constituting the adjacent surfaces of the warp and weft threads. The surfaces of the fabric are theniggled or napped to raise the fibers for the purpose of producing the desired warmth, whereas, the improved fabric after weaving, is processed and felted, but this felting is not for the purpose of matting together the warp and weft but rather to mat together the weft and using the warp to keep the surfaces apart, thus creating the cellular structure in the core of the fabric. It may or may not then be gigged to a relatively slight degree as compared to the amount of gigging required with the old method.

The warmth of the blanket instead of being provided by the raised fibers as in the old method is provided in this instance by matting the weft threads into a relatively tight structure, thus offering resistance to the passage of air to and from the air spaces or cells, within the blanket.

The matted or felted core of the ordinary standard blanket is not only avoided in the improved blanket, but the relative surface differences of the warp and weft threads are provided to prevent the formation of a solid core when the improved blanket is processed.

Up to the completion of the processing of the blanket, with the old method, which is expensive and consumes considerable time, the blanket has comparatively no warmth and the element of warmth depends largely on the degree of napping, picking up or fluffing of the outer surface of the blanket, the latter being expensive, consuming time, is wasteful, and produces a blanket having an objectionable surface, and impracticable for use if exposed to foreign matter. Blankets for rough usage in the open must have a comparatively smooth surface to prevent the collection of foreign matter.

Under the old method of blanket construction the desired comparatively smooth outer surface has been produced by reducing the napping which, however, diminishes the warmth of the blanket. An effort has been made to provide the desired warmth with reduced napping, by increasing the weight of threads and necessarily bulk, both of which are objectionable, especially so for Army purposes, and further do not provide the desired warmth, since it is the air trapped by the nap produced by gigging that provides the warmth and by reducing the nap the warmth is correspondingly diminished.

The improved blanket requires little or no napping, the dead air spaces or so called air pockets are produced by the fabric construction and are within the blanket itself, whereas, in the old method air spaces were formed in the nap on the outer surface of the blanket.

The present invention further provides a water resisting or semi water proof fabric, there being no closely matted or felted core composed of a mixture of the fibers of the warp and weft threads.

In the application, a moisture conveyed element is provided in the warp threads of worsted, which, should moisture reach same through the wool weft threads, will follow the line of said warp threads much more
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readily than it will pass on through the opposite layer of wool threads. A worsted thread is as stated above, combed out, long staple with its fibers all extending in one direction which are twisted and are not matted or felted into or with the wool weft threads, said warp threads providing practically isolated wicks along which moisture readily passes and from which it does not readily pass to the adjoining weft threads.

With a moisture conveying medium not intimately connected or felted into close contact with the outside wool thread layers, with air chambers or broken air spaces between them, the moisture will not readily pass from the outer layer to the inner layer, and when it does it will follow same more readily and with less resistance than out through the other layer, thus making the fabric at least moisture resisting.

It is further noted that the internal air cells or dead air spaces of the improved blanket are disposed in such a manner as to cause air, in its passage through the blanket, to follow a circuitous route and encounter dead air spaces on its way which are out of line through the blanket, thus adding retardation to the passage of air and increased warmth.

The above may be illustrated by holding sections of the old and improved blankets, up to the light. In the old form of blanket day light may be observed through aligning air passages in the blanket, which are increased in size when the material is stretched.

The improved blanket shows little or no light passages which are either unaffected or closed by stretching the material.

The improved blanket is of three or more layers, consisting of layers of wool threads with films of dead air cells or interstices between, thus providing:

A blanket of maximum warmth, due to the internal dead air spaces, formed by the warp threads, which are of such a surface structure, as to prevent felting, and the formation of a solid core, when processed.

A blanket of minimum bulk, as a result of dispensing with practically all napping of the surface of the blanket.

A blanket of maximum moisture resisting qualities, due to the presence of moisture carrying threads whereby same is absorbed or carried off and not permitted to penetrate the blanket.

A blanket of low cost, resulting from the use of material of low cost, reduction in the amount of gigging or processing and a reduction of entirely dispensing with the napping of its surface.

Having thus described my invention what I claim and desire to secure by Letters Patent is:

1. A multiple layer fabric comprising weft threads of high felting properties and warp threads of low felting properties arranged when woven together, to provide outer planes composed of a large percentage of weft threads and an inner plane composed of a large percentage of warp threads, said warp threads lying in pairs between groups of weft threads of said outer planes then separating and tying in weft threads of said planes, the threads of said pairs crossing and alternately tying in threads of different outer planes, adjoining pairs of warp threads lying between different groups of, and tying in different weft threads of different outer planes, adapted when milled, to provide a fabric having an unfelted cellular interior and felted outer surfaces.

2. A multiple layer fabric comprising weft threads of high felting properties and warp threads of low felting properties arranged when woven together, to provide outer planes of weft threads and an inner plane of warp threads said warp threads lying in pairs between groups of weft threads of said outer planes then separating and tying in weft threads of said outer planes, the threads of said pairs crossing and alternately tying in threads of said outer planes, adjoining pairs of warp threads lying between different groups of and tying in different weft threads, adapted when milled to provide a fabric having an unfelted cellular interior and felted outer surfaces.

3. A multiple layer fabric comprising weft threads of high felting properties and warp threads of low felting properties arranged when woven together, to provide outer planes of weft threads and an inner plane of warp threads, pairs of said warp threads lying between groups of weft threads of said outer planes then separating and tying in weft threads of said outer planes, the threads of each pair crossing and alternately tying in threads of said outer planes, adapted when milled to provide a fabric having an unfelted cellular interior and felted outer surfaces.

4. A multiple layer fabric comprising weft threads of high felting properties and warp threads of low felting properties arranged when woven together, to provide outer planes of weft threads and an inner plane of warp threads, pairs of said warp threads lying between groups of weft threads of said outer planes and tying in weft threads of said outer planes at intervals, each thread of said pairs alternately tying in weft threads of said outer layers, adapted when milled to provide a fabric having an unfelted cellular interior and felted outer surfaces.

5. A multiple layer fabric comprising weft threads of high felting properties and warp threads of low felting properties arranged when woven together, to provide outer planes of weft threads and an inner plane of warp threads, pairs of said warp threads lying between groups of weft threads of said outer planes and tying in weft threads of said out-
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6. A multiple layer fabric comprising weft threads of high felting properties and warp threads of low felting properties arranged when woven together, to provide outer planes of weft threads and an inner plane of warp threads, adjoining pairs of said warp threads arranged to lie between groups of weft threads and tie in weft threads of said outer planes alternately at separated intervals, and adapted when milled to provide a fabric having an unfelted cellular interior and felted outer surfaces.

7. A multiple layer fabric comprising weft threads of high felting properties and warp threads of low felting properties woven together, groups of said weft threads passing over pairs of warp threads, said warp threads tying in weft threads of said outer planes at separated intervals, providing outer planes consisting of a large percentage of weft threads having high felting properties and an inner plane consisting of a large percentage of warp threads having low felting properties, adapted when milled to permit free felting together of the threads of each outer plane and prevent felting together of said outer planes, and provide a fabric having an unfelted cellular interior and felted outer surfaces.

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