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SLEEPING BLANKET AND FABRIC FOR LIKE USES

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Fig. 1.

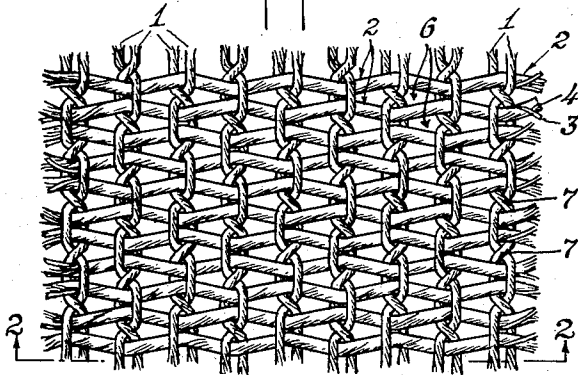


Fig. 2.



Fig. 3.

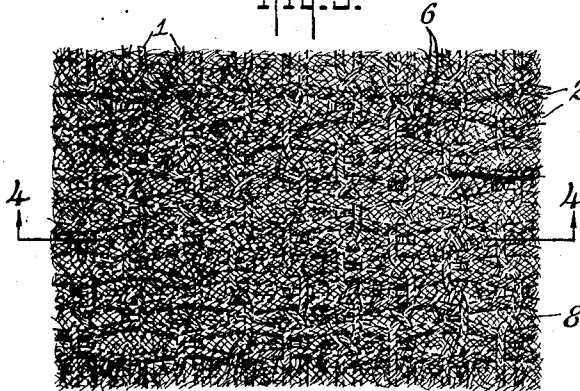


Fig. 4.

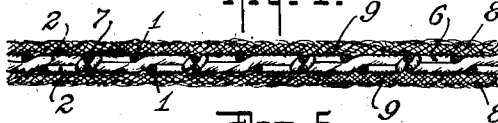


Fig. 5.



WITNESS

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SLEEPING BLANKET AND FABRIC FOR
LIKE USES

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6 Claims. (Cl. 139—391)

This invention relates to fabrics and more particularly to fabric blankets used for sleeping purposes and for other purposes.

The object of the invention is to provide fabrics of extremely light weight and of high insulating characteristics when used in the form of sleeping blankets. Airway systems, including those that provide sleeping accommodations for passengers in airplanes, have for some time been confronted with the problem of reducing the load of the furnishings and equipment normally carried by airplanes. One of the phases of this problem involves the reduction of weight of sleeping blankets with which airplanes are equipped. Airplane engineers have, for some time, been attempting to reduce the weight of sleeping blankets from a present weight of approximately two and one-half pounds to a weight of not more than one and two-fifths pounds for a sleeping blanket 84 inches by 55 inches, without, however, substantially reducing the insulating or warmth values thereof or the strength of the fabric.

This invention provides a fabric or blanket, conforming to the foregoing requirements, by the use of which thousands of pounds of load can be saved yearly by the airplane operating systems, as well as thousands of dollars in fuel and the like.

As an example for setting forth this invention, the details thereof are described in connection with a sleeping blanket, but the fabric is capable of other uses in airplanes, as well as having use as sleeping blankets for ordinary household equipment.

In the drawing, Fig. 1 is a plan view of a suitable fabric capable of being converted into the final product of this invention; Fig. 2 is an edge view along the line 2—2 of Fig. 1, showing the warp in section and indicating the filler threads; Fig. 3 is an illustrative plan view showing the finished fabric; Fig. 4 is an illustrative section on the line 4—4 of Fig. 3; Fig. 5 is illustrative of the compound filler thread. All of the figures of the drawing are representations about six times larger than actual size.

The base fabric, illustrated in Fig. 1, consists of warp threads 1, preferably worsted, and filler threads 2. The filler threads 2 actually comprise a compound thread consisting of a core thread 3 (preferably worsted) and a thicker wool yarn 4. The wool yarn 4 is spirally wound around the worsted core thread 3 (see Fig. 5), each successive convolution providing a space 5. The worsted threads may be either a single thread or made up of two twisted plies. The wool yarn

4 is wound spirally of the core thread 3 in contradistinction to winding the core thread 3 around the wool yarn 4, in order that the core thread 3 should run centrally of the spiral wool yarn 4 so that the latter, rather than the core thread, should be exposed in the fabric. In weaving the material of Fig. 1, the warp and filler threads are spaced slightly apart to provide fairly regular apertures or interstices 6 over the whole of the fabric. In the particular fabric shown in Fig. 1, the warp threads cross one another periodically as at 7, and embrace between each pair of crossings a pair of filler members 2. The filler threads diverge after passing between two crossings 7 to the next pairs of crossings and in their divergence form the apertures or interstices 6, the general course of the warp and filler threads being clearly shown in Fig. 1. Many different types of fabrics can be prepared utilizing a warp and compound filler thread interwoven to provide a regular pattern of apertures or interstices. Actually in the fabric as shown in Fig. 1, the apertures or interstices are generally of the size of the order of pin heads, their contour not being of any material consequence.

The woven fabric of Fig. 1 is passed through a napping machine in which it is "scratched up" to form a heavy nap 8 over the entire surface of the material and the nap is turned back or has its free ends turned downwardly in contradistinction to standing upright, forming a multiplicity of spaces 9 lying between the top surface of the nap on both sides of the fabric and the main portion of the warp and filler members. By far the major portion of the napping operation is performed on the yarn 4, no large amount of napping operations being done on the threads 1 and 3. The napping operation when completed on both sides of the fabric, provides the entire surface of the fabric with a heavy nap distributed fairly uniformly over the entire fabric surface. Theoretically, the thickness of the solid portion of the wool yarn 4 is reduced, but the thickness of the fabric by reason of the two outer napping layers is substantially increased.

The fabric, after the completion of the napping operation, which can readily be done in long lengths of fabric, can then be cut to size and configuration for whatever purpose it is intended to be used.

The finished fabric is made up of three distinct systems of air spaces—initially, the space 5, provided by winding the wool yarn 4 spirally of the core thread 3. The second system of spaces is provided by weaving the fabric to form or pro-

vide apertures or interstices 6, and the third system, the spaces 9, provided by the turned down and intermingled nap on both sides of the fabric. The nap 8 lies over the spaces 5 and 6, and thus there is provided a multiple air space system from and around the core thread 3 to the surfaces of the nap on both sides of the fabric.

The fabric when converted into blankets has high warmth-characteristics, substantially equaling that of the two-layer type of blankets now widely in use, and in blanket size, 84 inches by 55 inches, weighs approximately one-half of that of the two-layer type of blanket. It has also been experienced that the blanket of this invention loses less of its warmth-producing characteristics on repeated dry cleaning than the two-layer type of blanket.

I claim:

1. A fabric comprising warp members and filler members woven together, the filler members comprising a core and a member spirally wound thereon, successive convolutions of said spirally wound thread being spaced apart to provide spaces between said successive convolutions, pairs of warp members periodically crossing and forming pairs of twists, two compound fillers periodically passing between said twists and, after so passing between said twists, diverging toward adjoining twists, and thereby forming interstices in the fabric, a nap formed on both sides of the fabric, the spaces between convolutions of the spirally-wound filler member and its core, said interstices and the spaces between the nap, forming the systems of air spaces, said nap being raised to a large extent from said spirally-wound filler member and overlying both sides of the air spaces formed by the spirally-wound member and said interstices.

2. A fabric according to claim 1 in which the nap ends are turned back and the ends thereof intermingled.

3. A fabric blanket comprising warp and filler members, the warp members consisting of only two threads periodically twisted one thread over the other, the threads between each adjoining pair of such twists being spaced apart, the filler members comprising a core thread and a thread wound spirally on said core thread, successive

convolutions of said spirally wound thread being spaced apart to provide spaces between such successive convolutions, each filler member in its course in the fabric diverging back and forth and in each diverging course passing with another filler member between two spaced members, each filler member and its companion member, passing between any two given spaced members, being different than in the preceding spaced members, the relation of said filler members to each other and to the warp members forming interstices over the fabric, a nap on the fabric, a large portion of said nap comprising material raised from said spirally wound thread.

4. A blanket comprising warps and fillers woven together, the fillers comprising a plurality of cores and a thread wound spirally on said cores in successive convolutions, such successive convolutions providing air spaces along the outer surfaces of the fillers, warp members periodically crossing and forming spaced twists, each filler in its course in the blanket passing between twists formed by warps and periodically diverging and passing between other twists formed by the warps, thereby forming interstices in the blanket, a nap formed on the blanket to a large extent by napping the filler, the spaces between the convolutions of the twisted filler members, said interstices, and the spaces between the nap, forming a system of air spaces.

5. A blanket comprising a series of warps and fillers, warps periodically crossing, and between such crossings forming loops, fillers in their courses passing through a multiplicity of loops and in their courses periodically diverging, adjoining diverging sections of fillers forming interstices located between pairs of warp loops, the fillers comprising a plurality of cores and a thread wound spirally on said cores, a nap on both sides of the blanket overlying the said fillers and interstices, a large portion of said nap comprising material raised from said fillers.

6. A blanket according to claim 5 in which the fillers comprise a straight core having a heavier wool yarn spirally wound thereon, and the nap being formed to the greater extent from said wool yarn.

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