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(54) BLANKET WITH VENTILATION HOLES

(57) The utility model is related to light industry, to bedclothes in particular, and more specifically - to the design of blankets for household use that create optimal microclimate under the blanket and thereby provide more comfortable sleeping.

The blanket includes a flexible layer consisting of upper 1 and lower 2 fabric with a filler 3 between them. The blanket is quilted with intersecting stitched seams 4, which may be both vertical and horizontal or made at a certain angle to each other. The centres 6 of the holes 5 in the flexible layer coincide with the points of intersection of the stitched seams 4.

The blanket is made with stitched seams the intersections of which coincide with the centers of the ventilation holes, wherein the holes of smaller dimensions occupy up to two thirds of the blanket length and the holes of larger dimensions occupy the space of up to one third of the blanket length with all of the holes finished around the perimeter with blanket stitches.

The technical result consists in enhancing comfort during sleep due to consistent temperature conditions for corresponding parts of the body.

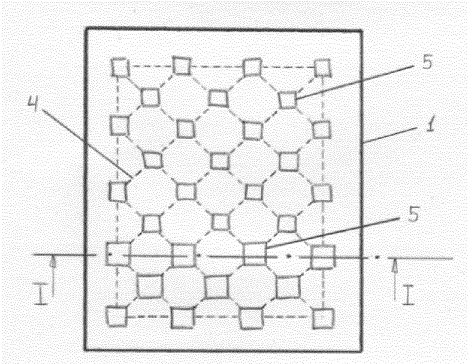

Fig.2

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Description

[0001] The utility model is related to light industry, to bedclothes in particular, and more specifically - to the design of blankets for household use that create optimal microclimate under the blanket and thereby provide more comfortable sleeping.

[0002] A quilted blanket with ventilation holes arranged at intersections of stitched seams is designed for everyday use during sleep to protect the human body against overheating.

[0003] A ventilated blanket comprising a sheet of material with a lot of holes spaced apart (application US No. 20030028964) is known from the prior art. Each hole allows the air to pass through the blanket. The blanket may also include a strengthening section integrated into the perimeter of the sheet of material. The strengthening section may be a tube that contains entrapped air. The blanket may comprise supports joined with a collar section. The supports allow the blanket to be lifted to a certain distance over the person laying under it. A drawback of this solution is non-uniform air circulation over different parts of the body that creates discomfort during sleep.

[0004] Another thermal insulation article provided with ventilation (patent US5181287A) is also known. It has intermediate thermal insulating layer with a lot of through-thickness holes. A heat-releasing ring is inserted into each hole and can open and close in response to temperature increase or decrease inside the article in order to keep the sleeping person warm or to release excessive heat.

[0005] At night, the human body produces up to approximately 500 ml of water as sweat. This water or water vapor must leave the entire bedding set to avoid moisture residing directly at the skin or the inner side of the blanket. As major portion of moisture must be removed through the cover, in the existing embodiment, the heat-releasing rings will account for major load. Exposure of mechanisms (including heat-releasing rings) to moisture is detrimental to them, therefore they cannot remain serviceable for long time, and as a result, the blanket will lose its function.

[0006] Thus, the **drawback** of the existing blanket is that it does not provide for long-term retention of its functional properties due to short life of the heat-releasing rings.

[0007] The most similar technical solution chosen as a prototype is a bedcover (patent No. 2287312 RU, holder Zanders GmbH (DE)) which comprises at least one flexible layer of light-weight insulating material provided with ventilation holes.

[0008] According to the invention, the ventilation holes of the bedcover are sheathed with a broad network or coarse-meshed material in order to assure integrity of the bedcover with large or elongated holes.

[0009] A drawback of this solution is a complexity of its design, in particular, the network which covers the holes is susceptible to looping and deformation during use that jeopardize comfort of a person during sleep. A great deal of discomfort is associated with the fact that the filler creates significant volumes and sections adjoining the perimeter of ventilation holes, partly overlaps the holes and restricts heat exchange with surrounding air, and as a result, the person eventually starts to feel uncomfortable.

[0010] The technical task of the proposed utility model is to design a blanket which provides comfort due to creation of optimal microclimate for every body part.

[0011] The technical result consists in enhancing comfort during sleep due to consistent temperature conditions for corresponding body parts.

[0012] In order to solve the set task, we propose a blanket with ventilation holes, which includes at least one flexible layer comprising upper and a lower fabric with a fiber filler between them; in accordance with the utility model, the blanket is made with stitched seams, the intersections of which coincide with the centers of ventilation holes, wherein the holes of smaller dimensions occupy up to two thirds of the blanket length and the holes of larger dimensions occupy the space of up to one third of the blanket length with all of the holes finished around the perimeter with blanket stitches.

[0013] Wherein:

- large holes are preferably located in the lower part of the blanket;
- holes have a circular shape;
- holes have an elliptical shape;
- holes have a rectangular shape;
- holes have a square shape;
- holes have a triangular shape;
- stitched seams are perpendicular to the blanket edge;
- stitched seams are at a certain angle to the blanket edge.

[0014] The proposed blanket is illustrated in pictures. Fig. 1 shows the cross-section of the blanket. Fig. 2 shows top view. Fig. 3 shows an area of the blanket with a ventilation hole.

[0015] The blanket includes a flexible layer consisting of upper 1 and lower 2 fabric with a filler 3 between them. The blanket is quilted with intersecting stitched seams 4 (Fig. 2) which may be both vertical and horizontal or made at a certain angle to each other. The centers 6 of the holes 5 in the flexible layer coincide with the points of intersection of the stitched seams 4.

[0016] As it has been shown in studies, the air heated by the human body expands and creates an increased pressure in the space under the blanket. The air rises up and due to this pressure tends to escape outside, through any leakage point, through the ventilation holes in particular. In this case, the air at the blanket surface cools down, and air circulation occurs inside the space under the blanket. When the person moves, the space under the blanket continuously changes, and air heating grad-

ually increases. Due to temperature difference between the room and the space under the blanket, moisture condenses on the lower surface of the blanket, creating a greenhouse effect. This significantly reduces air permeability of fabric, which leads to overheating of the body and to further overcooling when the blanket is lifted or flung off, and cold ambient air is allowed to enter the space under the blanket.

[0017] The proposed arrangement of the ventilation holes in the blanket allows for reducing the temperature in the space under the blanket by 4-5°C in the back area and by 3-4°C in the leg area. Combination of ventilation holes of different sizes allows for reducing the temperature by 7-8°C. Relative air humidity in the space under the blanket also reduces from 90-100% to 60-70%. Due to ventilation process enhanced by the movements of the sleeping person, the body is kept dry.

[0018] The ventilation holes on the quilted blanket may have various geometrical shapes and be spaced at a different distance between them. In the preferable embodiment, the holes have square shape. The size of the holes varies from 5 to 10 mm depending on their arrangement on the blanket surface.

[0019] Heat exchange process is very peculiar for every person, and it is difficult to consider individual needs in commercial production. The proposed solution provides for making a generalpurpose bedcover with holes of different sizes. The optimal arrangement is as follows: holes of smaller dimensions (5x5 mm) located in the upper part of the blanket and occupy about 2/3 of the entire volume; holes of larger dimensions (10x10 mm) are located in the lower part of the blanket and occupy about 1/3 of the surface. Thus, the holes in the leg area are larger than those in the upper body area. At consumer's option, depending on whichever way is more comfortable, the blanket may be turned over by placing large holes in the upper part, near the back and neck, and holes of smaller dimensions - in the leg area, depending on human body individual peculiarities.

[0020] Stitched seams with ventilation holes made at their intersections, as well as ventilation hole finishing around the perimeter with blanket stitches provide stiffness to these sections of the blanket allowing it to avoid deformation in these areas thereby enabling unhindered heat exchange between the body and ambient air, which, in turn, provides comfort during sleep.

[0021] The distance between ventilation holes is determined by the blanket size and the stitched seams at the intersections of which they are made.

[0022] The proposed utility model meets the criterion of novelty, as the prior art does not offer any technical solution with the proposed combination of features, which provides for achieving the technical result and meeting the criterion of industrial applicability.

[0023] The ventilation holes are perforations punched through the blanket, finished around the perimeter with blanket stitches and fixed with grommets, thus providing for the adequate air conditioning.

Claims

1. Blanket with ventilation holes, which comprises at least one flexible layer containing upper and lower fabric with a fiber filler between them and is **characterized in that** it is made with stitched seams the intersections of which coincide with the centers of holes, wherein the holes of smaller dimensions occupy up to two thirds of the blanket length, and the holes of larger intersections occupy the space of up to one third of the blanket length, and ventilation holes are finished around the perimeter with blanket stitches.

2. The blanket according to claim 1 **characterized in that** the holes of larger dimensions are preferably arranged in the lower part of the blanket.

3. The blanket according to claim 1 **characterized in that** the holes have a circular shape.

4. The blanket according to claim 1 **characterized in that** the holes have an elliptical shape.

5. The blanket according to claim 1 **characterized in that** the holes have a rectangular shape.

6. The blanket according to claim 1 **characterized in that** the holes have a square shape.

7. The blanket according to claim 1 **characterized in that** the holes have a triangle shape.

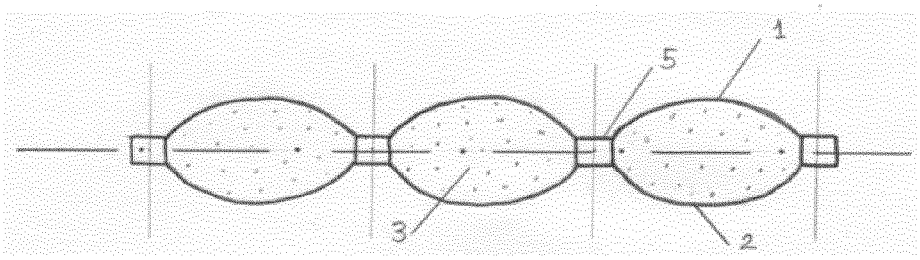

Fig.1

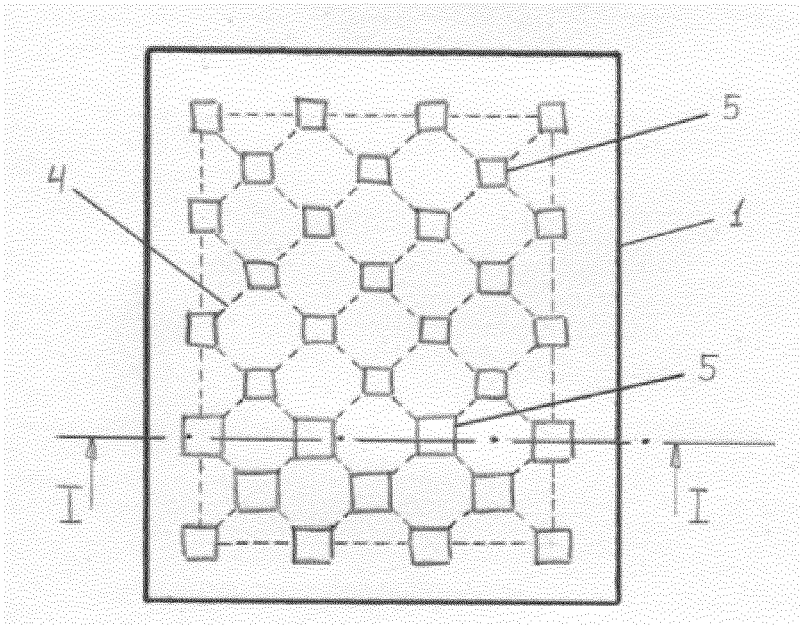

Fig.2

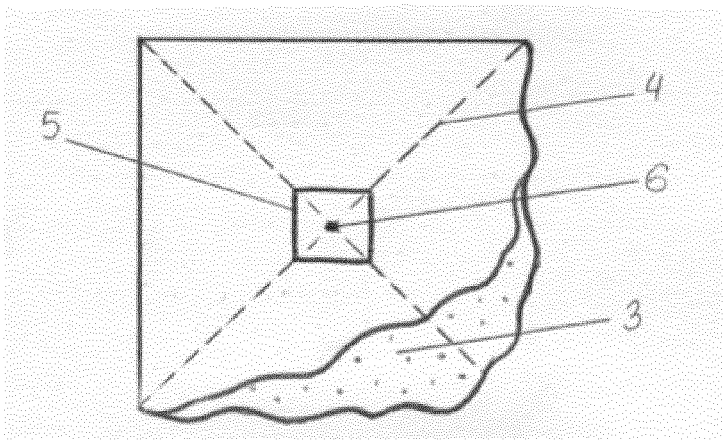

Fig.3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/RU 2020/000681

A. CLASSIFICATION OF SUBJECT MATTER
A47G 9/02 *(2006.01)*

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A47G 9/00 - 9/06

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Espacnet, PatSearch, PAJ, WIPO, USPTO, RUPTO

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
D, A	RU 2287312 C2 (ZANDERS GMBKH) 20.11.2006, abstract, claim 1, fig. 1	1-7
A	WO 2017/189992 A1 (BEDGEAR, LLC) 02.11.2017	1-7
A	RU 2478331 C2 (ZANDERS GMBKH) 10.04.2013	1-7
A	UA 76855 C2 (SANDERS GMBKH) 15.09.2006	1-7
A	RU 2481055 C2 (PNEUMA PJUR AI.PI. LIMITED) 10.05.2013	1-7

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 March 2021 (18.03.2021)	01 April 2021 (01.04.2021)
Name and mailing address of the ISA/ RU	Authorized officer
Facsimile No.	Telephone No.

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 20030028964 A **[0003]**
- US 5181287 A **[0004]**
- WO 2287312 A **[0007]**