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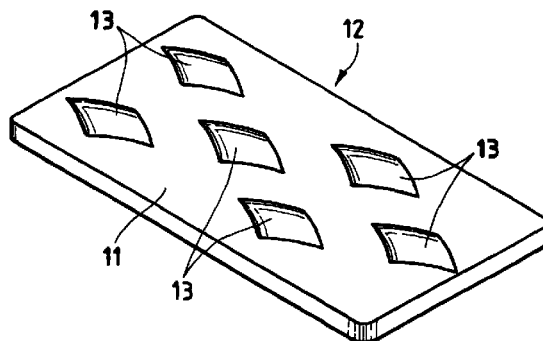
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(54) **Supporting article for household and medical uses**

(57) A supporting article for household and medical uses, comprising a rubber latex of an initially pasty consistency, baked on supports in pressure vessels or presses, fitted with a number of initially for the largest part open and to a minor extent closed cells capable of opening up under compression, so as to produce a supporting body (12), in which the rubber latex is treated with at least one deodorizing agent. An antiallergenic and fungicidal component may also be included.

Fig.1



EP 1 013 201 A1

Description

[0001] This invention refers to a supporting article for household and medical uses, in particular for the production of mattresses, pillows and general padding for sitting purposes.

[0002] It should above be considered that latex materials of various types are currently used both for the production of general padding as for general industrial purposes.

[0003] In this respect it must be pointed out that today's production processes and their results, while starting out from the same raw material being natural rubber latex, greatly diverge, i.e. that the resulting products are vastly different.

[0004] The best known production line covers foamed latex articles, known as foam rubber, derived from the processing of rubber latex in the form of a semi-liquid foam. The material in this form is baked and stabilized, i.e. vulcanized. This produces an extremely light and soft material having some partially opened and for the most part closed cells with an outer skin. This foamed material assumes its shape directly in the forms (or molds) in which it is poured, and undergoes no further processing. This generates "moldings" in a single piece, used for mattresses, pillows, soft protective materials, or slabs and rolls with a thickness in the range of a few millimeters. All these articles formed with the mentioned surface skin tend to crumble after a number of years' extended usage, and are incapable of transpiring as they lack aeration.

[0005] A less known type of production supplies articles made of latex foam, known in this case as sponge rubber. This additional production is obtained in blocs from the rubber latex in a paste form, spread over metallic trays and inserted in particular pressure vessels or presses for baking. In this hot and humid environment the pasty mass swells up, thanks to appropriate additives, to a height of 100-200 millimeters. The blocs thus obtained by swelling are marked by a rounded surface, have a non-porous surface skin and internal cells which are mostly open and to a minor extent closed. The mechanical compressing process of the bloc between two metallic rollers leads to a total destruction of the closed cells, thus achieving a highly transpiring and absorbent product of varying specific weight depending on the prescription used but in any case higher than that of air foam, generally in the range from 130 kg/m³ to 600 kg/m³.

[0006] The sponge rubber thus produced must necessarily be processed on tooling machines in order to produce some technical articles which are so far exclusively destined for industrial uses. For this purpose the blocs are, depending on their application, "split op" into slabs of greater or smaller thickness, which are in turn cut up into pieces to produce for example plastering trowels for masons, sponges used in the building trade for the finishing of walls or the cleaning of floors, ribbons

for the cleaning of tiles and sheets for the moistening of fingers and for the washing of fruit. The sponge rubber is also processed on tooling machines to produce spheres of various diameters used for the cleaning of pipes (for instance for the piping of concrete or plaster pumps), rollers for gluing, bottle labeling machines and the like.

[0007] The mechanical characteristics of this product are peculiar; in addition to an exceptional elasticity lasting in time, it exhibits in fact a high strength against tear, abrasion, cutting and deformation.

[0008] The purpose of this invention is to point out a particular product capable of being beneficially employed for household and medical uses, of solving the drawbacks caused by latex foam, and of possessing some of the characteristics expected from a latex sponge.

[0009] Another non-secondary scope is to point out an arrangement of a product that may beneficially be applied above all for medical uses, due to its particular characteristics of comfort.

[0010] These scopes according to this invention are achieved by a supporting article for household and medical uses as outlined in the attached claims.

[0011] The characteristics and advantages of a supporting article for household and medical uses according to this invention will become more clearly evident from the following description, of an exemplifying yet non limiting nature, referred to the attached drawings in which:

Figure 1 is a schematic perspective view of a mattress utilizing an article of this invention,

Figure 2 is a sectional view of a second embodiment according to this invention.

[0012] With reference to these figures, it was decided to produce a supporting article for household and medical uses in general, applicable to mattresses, pillows and general padding for seats of any type, form and size.

[0013] It was in fact observed that the sponge rubber, as designed and produced to this date, is not suitable for an application in mattresses and pillows because it feels "cold". Because of its open-celled structure, the product is in fact particularly aerated and acts as a bellows under a moving weight. The air is therefore exchanged, with result of keeping the mass cool and of little comfort for the person in contact with the same. This characteristic is on the contrary of particular interest for the production of wheel chairs and armchairs for elderly and handicapped persons for preventing decubitus. The same reasoning applies to mattresses and the padding of settees and armchairs.

[0014] Moreover, due to the rather heavy weight of the material, it is unthinkable to produce a foam rubber mattress approaching 50 kg, even if using a low-density type of foam rubber, such as of 160 kg/m³. This prop-

erty of high weight and mass elasticity confers the product an excellent ability to carry and distribute the body's weight over the entire surface corresponding to that occupied by an outstretched person. This means that a pillow or mattress will not dip down at the points of maximum body pressure or at any projections such as the heels, the lumbar region and the elbows, meaning the classic points of a development of decubitus. Because there are no locally focalized points of engagement and of squeezing between the capillary vessels and the supporting surfaces, there cannot be a stagnation of blood, leading first to a necrosis and then a sore.

[0015] This helps to prevent capillary obstructions and blood stagnation at the points of greatest pressure, providing the individual with an excellent comfort both in a seated and in an outstretched (supine) position.

[0016] In such a sponge rubber article, which as mentioned tends to emit a disagreeable odor and probably cause some contact allergies so as prove unhygienic and unsuitable for direct contact with a person, some action need to be taken to also eliminate these shortcomings.

[0017] The article made of latex sponge is treated during the manufacturing process with appropriate deodorizing, anti-allergenic and even fungicidal agents, so as to conform it to the new prescriptions valid in hospitals, hotels and public premises in general.

[0018] A sponge rubber produced in this manner leaves no odors of sorts and is compatible with the human skin. Its self-extinguishing property allows a safe usage and the introduction of sanitizing compositions prevents the entering and nesting of germs, mites and bacteria in general.

[0019] This general article can also be modified as shown in the attached figures, the first of which shows a mattress produced from a latex sponge which is deodorized, sanitized and made fire-retardant. In order to enhance the already optimal air exchange provided by the open cells, the outer surface 11 of a mattress 12 is provided with dents 13 or portions profiled and modeled to improve its comfort.

[0020] In a further embodiment, the body of the mattress 12 may provide multiple internal layers, not shown here, capable of improving the breathing and freshness of the mass. A structural variant may be based on inserts of a light cellular material (of 30 kg/m³, for example) made of polyester, polyether or other material. These inserts make the seating article, for instance the mattress, particularly light and easily handled.

[0021] Moreover, the mattress or article thus produced may offer a winter and a summer side. In the first case an outer layer of wool or thermal material ensures comfort where warmth is desired, while in the second case a layer of cotton or similar fabric ensures freshness and avoids overheating.

[0022] Some articles made of various layers are outlined below.

[0023] A valid article for both a mattress and cushion or for the padding of a settee, as shown in Figure 2, is made by providing a sequence from the upper external surface all the way to the lower external surface.

5 **[0024]** This article is as follows: a first wool layer 14 is followed by a first internal sponge rubber layer 15, a second inner layer made of polyurethane or other light cellular material 16, a further layer facing from the interior to the lower sponge rubber surface 17 and finally a lower external layer made of cotton 18.

10 **[0025]** A further article, for example for a chair cushion, may comprise a wool layer, an inner sponge rubber layer and a cotton layer.

15 **[0026]** In case of a settee padding the article may simply consist in a foam rubber layer above a pre-shaped mass in the settee.

Claims

- 20 1. A supporting article for household and medical uses, characterized in that it comprises a rubber latex of an initially pasty consistency, baked onto supports in a pressure vessel or press, fitted with a number of initially for the largest part open and to a minor extent closed cells, capable of being opened by compression to produce a supporting body (12), where said rubber latex is treated with at least one deodorizing agent.
- 25 2. Article according to claim 1, characterized in that it also comprises a material free of allergenic components. .
- 30 3. Article according to claims 1 or 2, characterized in that it also comprises a fire-retardant component.
- 35 4. Article according to claim 1, characterized in that said supporting body (12) provides some dents or profiled portions (13) on at least one outer surface (11).
- 40 5. Article according to claim 1, characterized in that it comprises at least one layer made of polyester, polyether or other light cellular material inside said supporting body (12).
- 45 6. Article according to claim 1, characterized in that it achieves said supporting body (12) by superimposing a number of layers.
- 50 7. Article according to claim 1, characterized in that said supporting body has opposite outer supporting surfaces made of different materials.
- 55 8. Article according to claim 7, characterized in that said two outer supporting surfaces are made one of wool or a similar thermal material and the other of cotton fabric or the like.

Fig.1

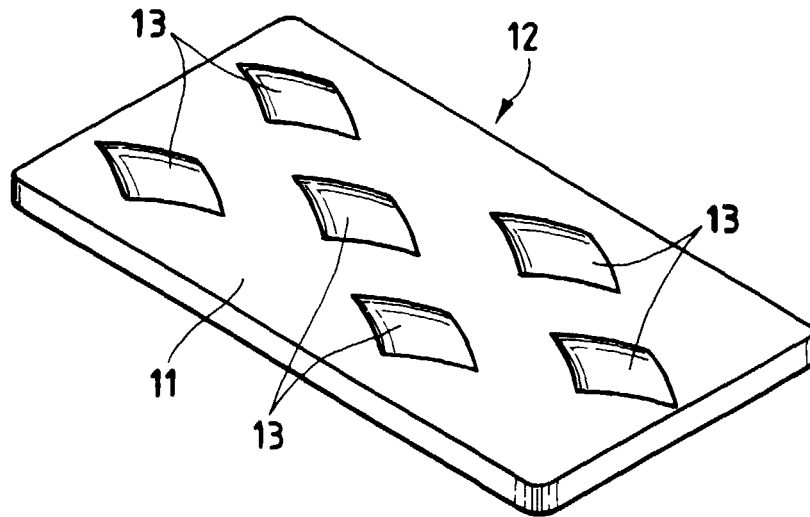
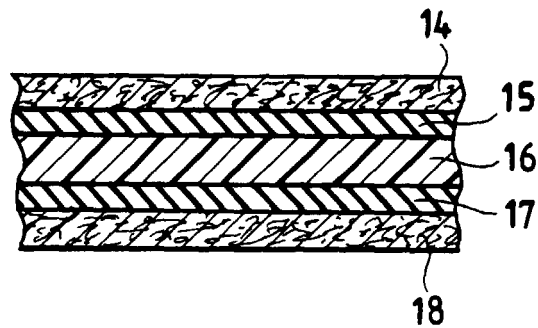


Fig.2





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EUROPEAN SEARCH REPORT

Application Number
EP 99 20 4264

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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 28 February 2000	Examiner Neiller, F
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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