(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 373 199 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
11.06.2014 Bulletin 2014/24

(21) Application number: **09835707.2**

(22) Date of filing: **21.12.2009**

(51) Int Cl.:
A47C 27/14 *(2006.01)*

(86) International application number:
PCT/US2009/069017

(87) International publication number:
WO 2010/075293 (01.07.2010 Gazette 2010/26)

(54) **FLIPPABLE MATTRESS TOPPER**

UMDREHBARE MATRATZENAUFLAGE

SURMATELAS RÉVERSIBLE

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR

(30) Priority: **23.12.2008 US 140538 P**
12.02.2009 US 151896 P

(43) Date of publication of application:
12.10.2011 Bulletin 2011/41

(73) Proprietor: **Tempur-Pedic Management, LLC**
Lexington, KY 40511 (US)

(72) Inventor: **JORGENSEN, Rikke, Lund**
DK-5210 Odense NV (DK)

(74) Representative: **Schmitz, Hans-Werner et al**
Hoefer & Partner
Patentanwälte
Pilgersheimer Strasse 20
81543 München (DE)

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EP 2 373 199 B1

Description

Cross-Reference to Related Applications

[0001] Priority is hereby claimed to U.S. Provisional Patent App. No. 61/140,538, filed December 23, 2009, and U.S. Provisional Patent App. No. 61/151,896, filed February 12, 2009.

Background

[0002] Mattress toppers are commonly used on many types of mattresses, and are often used to enhance user comfort provided by the mattress. In particular, mattress toppers provide an additional top layer of cushioning material to the top of a mattress. Such a device is known from US 2006/0112491 A1.

[0003] Despite the advantages provided by conventional mattress toppers, advancements in the design of mattress toppers (such as to enable users to adapt sleeping surfaces to different user tastes, to provide a higher degree of comfort provided by mattress toppers, and the like) remain welcome in the art.

Summary

[0004] A mattress topper according to the invention is described in claim 1.

[0005] In some embodiments, the present invention provides a mattress topper having a core formed of one or more layers of visco-elastic foam and defining a first side and a second side opposite of the first side, a cover encasing the core, the cover including a first cover portion positioned adjacent (i.e., covering) the first side and formed of a first material having material properties capable of providing a relatively warm feeling to a user on the mattress topper, and a second cover portion positioned adjacent (i.e., covering) the second side and formed of a second material having material properties capable of providing a relatively cool feeling to a user on the mattress topper, wherein the first and second cover portions are coupled to one another about a periphery of the core.

[0006] In some embodiments, the present invention provides a topper assembly for a body support includes a foam core, and a cover having a first cover portion formed of a first material having properties that provide a relatively warm feeling, and a second cover portion formed of a second material having properties that provide a relatively cool feeling.

[0007] In some embodiments, the present invention provides a method of making a topper assembly for a body support, including creating a foam core, and covering the foam core with a cover having a first cover portion formed of a first material having properties that provide a relatively warm feeling, and a second cover portion formed of a second material having properties that provide a relatively cool feeling.

[0008] Other aspects of the invention will become apparent by consideration of the detailed description and accompanying drawings.

Brief Description of the Drawings

[0009]

Fig. 1 is a sectioned perspective view of a mattress topper according to an embodiment of the present invention.

Fig. 1A is a detail view of a material defining a first portion of a core of the mattress topper illustrated in Fig. 1.

Fig. 1B is a detailed view of a material defining a second portion of the core of the mattress topper illustrated in Fig. 1.

Fig. 2A is a side view of a core of a mattress topper according to another embodiment of the present invention.

Fig. 2B is a side view of a core of a mattress topper according to yet another embodiment of the present invention.

Fig. 3 is an exploded view of cover portions of the mattress topper illustrated in Fig. 1.

Detailed Description

[0010] Before any embodiments of the present invention are explained in detail, it is to be understood that the invention is not limited in its application to the details of construction and the arrangement of components set forth in the following description or illustrated in the following drawings. The invention is capable of other embodiments and of being practiced or of being carried out in various ways. Also, it is to be understood that the phraseology and terminology used herein is for the purpose of description and should not be regarded as limiting. Also, terms such as "first", "second", and "third" are used herein and in the appended claims for purposes of description and are not intended to indicate or imply relative importance or significance unless otherwise specified. The term "first" does not necessarily refer to the top most layer, rather, it refers to the first of a plurality, without indicating a particular location or position. Similarly, the terms "top" and "bottom" are used for the purpose of description and are not intended to indicate or imply relative importance, significance, unless otherwise specified. The term "top" does not necessarily refer to the top most layer, and "bottom" does not necessarily refer to the bottom most layer.

[0011] The use of "including," "comprising," or "having" and variations thereof herein is meant to encompass the

items listed thereafter and equivalents thereof as well as additional items. Unless specified or limited otherwise, the terms "mounted," "connected," "supported," and "coupled" and variations thereof are used broadly and encompass both direct and indirect mountings, connections, supports, and couplings. Further, "connected" and "coupled" are not restricted to physical or mechanical connections or couplings.

[0012] A flippable mattress topper 102 according to an embodiment of the present invention is illustrated in Figs. 1-1B and 3. The flippable mattress topper 102 can support one or more body parts of a user, and in some embodiments is dimensioned for use upon a bed mattress to support all or substantially all of the body parts of a user. The flippable mattress topper 102 can rest atop an existing mattress or other body support, and can provide a layer of comfort between a user and the existing mattress or other body support. The flippable mattress topper 102 can rest upon a body support having any size and shape, including without limitation mattresses, pillows, cushions, sleeper sofas, box springs, frames, overlays and futons of any type. Further examples of such body supports include without limitation, bed mattresses, head pillows, seat cushions, seat backs, neck pillows, leg spacer pillows, and a floor surface or other ground surface.

[0013] In some embodiments, the flippable mattress topper 102 can rest upon a body support (e.g., a mattress) without being secured thereto. However, in other embodiments, the flippable mattress topper 102 is releasably secured to the body support, such as by hook and loop fastener material, zippers, snaps, and other conventional fasteners, or in any other suitable manner.

[0014] With reference to Figs. 1-1B and 3, the flippable mattress topper 102 includes a core 106 and a cover 114 encasing the core 106. As will be described in greater detail below, the cover 114 is comprised of different materials having different thermal properties on opposite sides (i.e., top and bottom sides) of the cover 114. As will also be described in greater detail below, the core 106 of the topper 102 can have any number of layers of material, such as first and second layers 110, 112 shown in the embodiment of Figs. 1-1 B and 3.

[0015] The core 106 of the mattress topper 102 can have any thickness desired, and as described above, can be defined by any number of layers of material. For example, the cores 106 in the illustrated embodiments are each approximately 7cm in thickness. However, in other embodiments, core thicknesses of no less than about 5cm and/or no greater than about 9cm can be used. In still other embodiments, core thicknesses of no less than about 3cm and/or no greater than about 11cm can instead be used. The layers of material defining the core 106 can have the same or different thicknesses. For example, and as shown in Fig. 2A, the core 106 can have a first layer 110' having a thickness that is less than that of second layer 112'. In other embodiments, the core 106 is defined by fewer or more than two layers of material. For example, and as shown in Fig. 2B, the core 106 includes a single layer 110" of material.

[0016] In some embodiments, the first layer 110 can rest upon the second layer 112 without being secured thereto. However, in other embodiments, the first and second layers 110, 112 are secured to one another by adhesive or cohesive bonding material, by being bonded together during formation of the first and second layers 110, 112 by tape, hook and loop fastener material, conventional fasteners, stitches extending at least partially through the first and second layers 110, 112, or in any other suitable manner.

[0017] Each of the first and second layers 110, 112 can be substantially flat bodies having substantially planar top (first) and bottom (second) surfaces 116, 118, 120, 122 as shown in Fig. 1. For example, the core 106 shown in Figs. 1-1B and 3 is a substantially flat body having substantially planar top (first) and bottom (second) surfaces positioned opposite one another. However, in other embodiments, one or more of the top and bottom surfaces 116, 118, 120, 122 of either or both first and second layers 110, 112 can be non-planar, including without limitation surfaces having ribs, bumps, and other protrusions of any shape and size, surfaces having grooves, dimples, and other apertures that extend partially or fully through the respective layer, and the like. Also, depending at least in part upon the application of the flippable mattress topper 102, either or both of the first and second layers 110, 112 can have shapes that are not flat. By way of example only, either or both layers 110, 112 can be generally wedge-shaped, can have a concave or convex cross-sectional shape, can have a combination of convex and concave shapes, can have a stepped, faceted, or other shape, can have a complex or irregular shape, and/or can have any other shape desired.

[0018] Any or all of the layers defining the core 106 of the flippable mattress topper 102 can comprise visco-elastic foam (sometimes referred to as "memory foam" or "low resilience foam"). For example, the first and second layers 110, 112 in the illustrated embodiment of Figs. 1-1 Band 3 are formed of visco-elastic foam. In some embodiments, the visco-elastic foam layers are interchangeable or replaceable, thereby varying characteristics (e.g., hardness, density, porosity, and the like) of the flippable mattress topper 102. The first and second layers 110, 112 can provide relatively soft and comfortable surfaces for the user's body. Coupled with the slow recovery characteristic of the visco-elastic foam, the layers 110, 112 can also conform to a user's body, thereby distributing the force applied by the user's body upon the layers 110, 112.

[0019] The core 106 (i.e., the layers 110, 112) can have a density providing a relatively high degree of material durability. Also, the density of the visco-elastic foam in the layers 110, 112 can also impact other characteristics of the visco-elastic foam, such as the manner in which the core 106 responds to pressure, and the feel of the

foam.

[0020] The visco-elastic foam(s) of the core 106 can be selected for responsiveness to any range of temperatures. However, in some embodiments, a temperature responsiveness in a range of a user's body temperatures (or in a range of temperatures to which the flippable mattress topper 102 is exposed by proximity to a user's body resting thereon) can provide significant advantages. As used herein, a visco-elastic foam is considered "responsive" to temperature changes if the visco-elastic foam exhibits a change in hardness of at least 10% measured by ISO Standard 3386 through the range of temperatures between 10 and 30 degrees Celsius.

[0021] With reference to Fig. 1B, in some embodiments, the core 106 (and in particular at least one of the layers 110, 112), comprises a cellular structure of flexible visco-elastic polyurethane foam in which the cells of the visco-elastic foam are essentially skeletal structures. This "reticulated" foam can be visco-elastic or non-visco-elastic. The cells of reticulated foam are each defined by a plurality of apertured windows surrounded by cell struts. The cell windows of reticulated foam can be entirely gone (leaving only the cell struts) or substantially gone. In some embodiments, the foam is considered "reticulated" if at least 50% of the windows of the cells are missing (i.e., windows having apertures therethrough, or windows that are completely missing and therefore leaving only the cell struts). Such structures can be created by destruction or other removal of cell window material, or preventing the complete formation of cell windows during the manufacturing process of the foam.

[0022] In some embodiments, the reticulated visco-elastic foam is capable of providing some degree of support or responsiveness that is substantially independent of temperatures experienced by the first layer 110. Therefore, the core 106 can comprise reticulated visco-elastic foam that is substantially insensitive to temperature changes within a range of between about 10°C and about 35°C. As used herein, a visco-elastic foam is "substantially insensitive" to temperature changes if the visco-elastic foam exhibits a change in hardness of less than 10% measured by ISO Standard 3386 through the range of temperatures between 10 and 30 degrees Celsius.

[0023] The reticulation of visco-elastic foam can increase the porosity, thermal conductivity, and thermal diffusivity of the core 106, which can enable significantly higher airflow into, out of, and through at least the layers comprising the reticulated visco-elastic foam (e.g., the second layer 112 in the illustrated embodiment of Figs. 1-1B and 3). Also, in those embodiments in which one or more layers 110, 112 of the core 106 comprise reticulated foam (whether visco-elastic or otherwise), such foam can function as a wick, drawing moisture from a user thereon or from the area around the user into the flippable mattress topper 102 and away from the user. These airflow and moisture wicking properties of reticulated foam can provide an enhanced cooling effect of the flappable mattress topper. Accordingly, some embodiments of the flippable mattress topper 102 can have a visco-elastic or non-visco-elastic foam layer (110 or 112) that is reticulated, and another (112 or 110) that is not, thereby providing different temperature and moisture wicking characteristics of the flippable mattress topper 102 on opposite sides of the flippable mattress topper 102.

[0024] By way of example only, a layer 110 of visco-elastic material closest to the user on one side of the flippable mattress topper 102 can be non-reticulated, whereas another layer of visco-elastic foam on an opposite side of the flippable mattress topper 102 can be reticulated. In such an example, a user resting on the first side (for example, the first layer 110) can feel warmer than the a user resting on an opposite side (for example, the second layer 112) based upon the enhanced heat transport and moisture wicking properties of the reticulated foam. Such a flippable mattress topper 102 can be oriented with either side facing upward (to face a user resting thereon) based upon the desired heating or cooling desired by the user at any given time.

[0025] Although one or more layers of the core 106 can comprise reticulated visco-elastic foam as just described, in some embodiments the core 106 instead or also has one or more layers of reticulated non-visco-elastic foam. Also, in some embodiments, one or more layers of reticulated or non-reticulated visco-elastic foam are used in conjunction with one or more layers of non-viscoelastic foam, such as polyurethane foam, any expanded polymer (e.g., expanded ethylene vinyl acetate, polypropylene, polystyrene, or polyethylene), latex foam, and the like. Such combinations of foam layers can provide a desirable combination of user comfort and support. Although unique advantages are achieved by use of one or more reticulated visco-elastic or non-reticulated visco-elastic foam layers in the core 106, in other embodiments the layer(s) of the core 106 have other types of polyurethane, latex, or other foam.

[0026] As mentioned above, a cover 114 encases the core 106 and provides different thermal properties for the flippable mattress topper 102 on opposite sides of the topper 102. Additionally, the cover 114 can provide protection for the core 106 located therein. With reference to Figs. 1 and 3, the cover 114 includes a first cover portion 126 and a second cover portion 130 positioned opposite the first cover portion 126. The first cover portion 126 is positioned adjacent the first surface of the core 106 (i.e., the top surface 116 of the first layer 110) and the second cover portion 130 is positioned adjacent the second surface of the core 106 (i.e., the bottom surface 122 of the second layer 112). In some embodiments, the first cover portion 126 is secured to (e.g., stitched) and/or integrally formed with the second cover portion 130. However, in other embodiments, the first and second cover portions 126, 130 are releasably secured to one another by hook and loop fastener material, zippers, snaps, and other conventional fasteners, or in any other suitable manner.

[0027] The first cover portion 126 is formed of a first material that is relatively warm to the touch or initial contact, and that in some embodiments has thermally insulative properties. Examples of such materials include, without limitation, cotton, flannel, fleece, wool, and the like, and can include any type of wicking material capable of moisture and heat transport as described in greater detail below. The second cover portion 130 is formed of a second material that is relatively cool to the touch or initial contact, and that in some embodiments has thermally conductive properties. Examples of such materials include, without limitation, satin, silk, and the like. The first and second materials have various characteristics and/or properties that can determine the degree of warming and cooling, respectively, transmitted to and sensed by a user. Examples of the various characteristics and properties of the first and second materials include texture, thermal properties, density and permeability.

[0028] In some embodiments, the color of the first and second materials can be different. Also, in some embodiments, the interface between the first and second materials can include without limitation, a straight, a curved, or other interface design. Furthermore, the interface between the first and second materials can be at any location on the flippable mattress topper 102.

[0029] In some embodiments, the texture of the cover 114 (i.e., of the first and second materials) can at least partially determine the feel of the cover sensed by the user, and can affect the warming and/or cooling capabilities of the flippable mattress topper 102. In response to the user contacting the cover portions 126, 130, the user can sense the smoothness or roughness thereof. The degree of smoothness can determine how well a user's body is warmed and/or cooled by the cover portion 126, 130. A smoother cover portion can feel cooler to body contact than a rougher cover portion. In this regard, it should be noted that in some embodiments, the thread count of the material can at least partially determines the smoothness of the cover portions (i.e., a larger number of threads per unit of surface area resulting in a rougher surface than a smaller number of threads per unit of surface area). Accordingly, in some embodiments, the first cover portion 126 comprises a smoother material than the second cover portion 130.

[0030] Thermal conductivity can at least partially determine whether a cover portion 126, 130 of the cover 114 feels warmer or cooler to a user. In particular, the thermal conductivity of the respective cover portions 126, 130 can at least partially determine the side or surface of the flippable mattress topper 102 that warms and cools the user. The first cover portion 126 can be more insulative to a user by having a low thermal conductivity, which results in the first material feeling warmer against the user's body. In other words, the first cover portion 126 can resist the flow of heat from a user's body, and can reduce the flow and effect of ambient fluid (e.g., air) on the user's body - on the temperature of the user's body, in particular. In contrast, the second cover portion 130 can be less insulative to a user by having a higher thermal conductivity than the first cover portion 126, which results in the second material feeling cooler against the user's body. The second material of the second cover portion 130 can more easily transfer heat from a user's body, and can increase the flow and effect of ambient fluid (e.g., air) on the user's body to cool the user's body.

[0031] In some embodiments, the first cover portion 126 of the cover 114 has a density higher than that of the second cover portion 130. The different densities of the cover portions 126, 130 can provide different porosities of the cover portions 126, 130. In some embodiments, the density of the material is inversely proportional to the porosity of the material. For example, the first material forming the first cover portion 126 (having a warmer feel to the user) can have a relatively high density and a lower porosity. As such, the first material can resist the movement of fluid (e.g., air) and heat therethrough in order to retain and/or store heat therein, which can help warm the user's body. The second material forming the second cover portion 130 (having a relatively cooler feel to the user) can have a lower density and a higher porosity relative to the first material. The second material can allow fluid (e.g., moisture, air, and the like) and heat to flow therethrough more so than the first material in order to help cool the user's body. The second material can therefore function as a wick to draw moisture from a user's body thereon and from a region around the user's body into the core 106, and can perform this function to a greater extent than the first material, thereby providing the user with a greater cooling sensation than the first material. Accordingly, in some embodiments, the greater the porosity of the material of the cover portion 126, 130, the more ambient air and body heat that can flow to and from, respectively, the user's body. In other embodiments, the porosity of these materials is substantially independent of the density of the materials. For example, the first material can have the same porosity with either a low density or a high density.

[0032] In some embodiments, the degree of permeability or breathability (i.e., permeable, semi-permeable) of the cover 114 can at least partially determine the feel of the cover sensed by the user, and can affect the warming and/or cooling capabilities of the flippable mattress topper 102. The movement of air and/or bodily heat is less restricted through a permeable material in comparison with a less permeable or semi-permeable material. In some embodiments, the first cover portion 126 is formed of a less permeable material than that of the second cover portion 130. For example, the first cover portion 126 can be formed of a semi-permeable (first) material, and the second cover portion 130 can be formed of a permeable (second) material. Thus, the first cover portion 126 can transmit less heat and air to and from the user's body than the second cover portion 130 having a greater permeability. Accordingly, the first cover portion 126 can keep ambient air and the user's body heat proximate the

user, which can help warm or maintain warmth of the user, whereas the second cover portion 130 can provide ventilation for the user's body by allowing ambient air and the user's body heat to easily circulate therethrough.

[0033] In some embodiments, at least one of the materials forming the cover 114 is fluid-resistant or non-permeable. As used herein, "fluid-resistant" refers to a material that does not sustain or absorb substantially any fluid, which can include, but is not limited to, air, perspiration, sweat, water, or any other liquid and vapor.

[0034] To enhance the cooling sensation provided by the second cover portion 130, the second cover portion 130 can be impregnated and/or coated on either or both sides with a phase change material. Such phase change materials (and textiles and other sheet products impregnated and/or coated with the same) can absorb significant heat without elevation in temperature of the phase change material. Therefore, use of phase change material in or on the second cover portion 130 can enhance the cooling effect to a user thereon. Alternatively or in addition, the layer(s) 112 of foam immediately adjacent the second cover portion 130 can be impregnated and/or coated with phase change material to achieve a similar cooling effect for a user on the flippable mattress topper 102. One possible phase change material is paraffin wax. Other phase change materials can be used in combination or in addition to paraffin wax. Paraffin wax is given by way of example only, and is not intended to limit the scope of the present invention.

[0035] In those embodiments in which the core 106 has two or more layers of different material, each of the first and second cover portions 126, 130 can be located adjacent any material desired. However, in some embodiments, the layer comprising a material that is relatively cool to the touch or initial contact (and that in some embodiments has thermally conductive properties or is at least more thermally conductive than the other cover portion) is located adjacent a layer of reticulated visco-elastic or reticulated non-visco-elastic foam to enhance the cooling effect of that side of the flippable mattress topper 102. Similarly, the layer comprising a material that is relatively warm to the touch or initial contact (and that in some embodiments has thermally insulative properties or is at least more thermally insulative than the other cover portion) can be located adjacent a layer of non-reticulated visco-elastic or non-visco-elastic foam to enhance the warming effect of that side of the flippable mattress topper 102.

[0036] In some embodiments, the cover portions can be removed for cleaning or replacement. Also, in some embodiments, the cover 114 is stain-protected in any conventional manner.

[0037] In a first position, the flippable mattress topper 102 is set upon an existing mattress or other body support such that the second cover portion 130 is positioned against or facing the body support, and the first cover portion 126 is faces the user. The first cover portion 126 provides a warming surface for the user to rest against. When a user rests against the first cover portion 126, portions of the user's body in contact with or nearly in contact with the first cover portion 126, are insulated. Accordingly, the first cover portion 126 feels warmer to the user than the second cover portion 130, and provides warming capabilities by way of the various methods and characteristics discussed above. In particular, the first material resists the flow of ambient air and body heat, thereby causing the user to experience a warming sensation when the user contacts the flippable mattress topper 102 in the first position. In this case, when the user rests against the first cover portion 126, the temperature of the user's body can be generally elevated above the ambient temperature.

[0038] In the second position, the flippable mattress topper 102 is set upon an existing mattress or other body support such that the first cover portion 126 is positioned against or facing the body support, and the second cover portion 130 faces the user. The second cover portion 130 provides a cooling surface for the user to rest against. When a user rests against the second cover portion 126, portions of the user's body in contact with or nearly in contact with the second cover portion 130 are provided with greater airflow and/or less insulation compared to the first cover portion 126. Accordingly, the second cover portion 126 feels cooler to the user than the first cover portion 130, and provides cooling capabilities by way of the various methods and characteristics discussed above. In particular, the second material is less resistant to the flow of ambient air and body heat, thereby causing the user to experience a cooling sensation when the user contacts the flippable mattress topper 102 in the second position. In this case, when the user rests against the second cover portion 130, the temperature of the user's body can be maintained relatively close to the ambient temperature and/or the temperature of the flippable mattress topper 102.

[0039] Accordingly, the cover 114 and mattress topper 102 can be flipped by a user to different orientations upon a mattress or body support based upon the user's preference, such as based upon the temperature of the room in which the flippable mattress topper 102 is to be used. For example, the flippable mattress topper 102 can be flipped to different positions based upon the season of the year, such as to the first position during winter or in cooler temperatures, and to the second position during summer or warmer temperatures.

[0040] In some embodiments, the flippable mattress topper 102 can have warming and cooling capabilities when in the same position (e.g., the first position). The first cover portion 126 of the cover 114 can comprise warming and cooling sections, such that two users desiring different heat regulating capabilities (one warmer and one cooler) are satisfied. The first cover portion 126 can include two sections, wherein one of the sections is formed of a material that provides cooling capabilities for one of the users as described above, and the other section is formed of another material that provides warming

capabilities for the other user as also described above. As such, a single flippable mattress topper 102 can be used by multiple users (two or more) as well as a single user.

[0041] In some embodiments, the cover 114 is formed of a single material that is treated, processed or manufactured to have at least two different groups of characteristics and/or properties (as described above), such that the flippable mattress cover has warming and cooling capabilities.

[0042] In some embodiments, the cover 114 is also used in conjunction with non-foam and/or non-visco-elastic cores materials. Examples of such cores materials include feather, wool, cotton, fleece, and any pad-like substance.

[0043] Although the invention has been described in detail with reference to certain preferred embodiments, variations and modifications exist within the scope and spirit of one or more independent aspects of the invention described.

[0044] Various features and advantages of the invention are set forth in the following claims.

Claims

1. A topper assembly (102) for a body support, the topper assembly (102) comprising:

a foam core (106); and
a cover (114) having a first cover portion (126) formed of a first material having properties that provide a relatively warm feeling, and a second cover portion (130) formed of a second material having properties that provide a relatively cool feeling and
wherein the foam core (106) includes a first side (110) adjacent the first cover portion (126) and a second side (112) adjacent the second cover portion (130), and wherein the assembly (102) further comprises a phase-change material positioned adjacent the second side of the foam core (106).

2. A topper assembly (102) as defined in claim 1, wherein the foam core (106) comprises a visco-elastic foam.

3. A topper assembly (102) as defined in claim 1, wherein the foam core (106) comprises a first layer and a second layer having properties different than the first layer.

4. A topper assembly (102) as defined in claim 3, wherein the first layer comprises a visco-elastic foam and the second layer comprises a non-visco-elastic foam.

5. A topper assembly (102) as defined in claim 1, wherein the first cover portion (126) has a thermal conductivity that is less than a thermal conductivity of the second cover portion (130).

6. A topper assembly (102) as defined in claim 1, wherein the first cover portion (126) has an outer surface that has a smoothness that is less than a smoothness of an outer surface of the second cover portion (130).

7. A topper assembly (102) as defined in claim 1, wherein the first cover portion (126) has a density that is greater than a density of the second cover portion (130).

8. A topper assembly (102) as defined in claim 1, wherein the first cover portion (126) has a permeability that is less than a permeability of the second cover portion (130).

9. A topper assembly (102) as defined in claim 1, wherein the second cover portion (130) includes a phase-change material.

10. A topper assembly (102) as defined in claim 1, wherein the phase-change material comprises paraffin wax.

11. A topper assembly (102) as defined in claim 1, wherein the first cover portion (126) comprises a material selected from the group consisting of cotton, flannel, fleece, and wool.

12. A topper assembly (102) as defined in claim 1, wherein the second cover portion comprises a material selected from the group consisting of satin and silk.

13. A method of making a topper assembly (102) for a body support, the method comprising:

creating a foam core (106) having first and second sides (110, 112);
covering the foam core (106) with a cover (114) having a first cover portion (126) formed of a first material having properties that provide a relatively warm feeling, and a second cover portion (130) formed of a second material having properties that provide a relatively cool feeling, further comprising the steps of
positioning the first cover portion (126) adjacent the first side (110) of the foam core (106), and the second cover portion (130) adjacent the second side (112) of the foam core (106); and
positioning a phase-change material adjacent the second side (112) of the foam core (106).

14. A method as defined in claim 13, wherein creating includes positioning a first foam layer adjacent a second foam layer that has properties different than the first foam layer.

Patentansprüche

1. Auflagenanordnung (102) für eine Körperabstützung, wobei die Auflagenanordnung (102) umfasst:

einen Schaumkern (106); und
eine Abdeckung (114) mit einem ersten Abdeckungsbereich (126), der aus einem ersten Material mit Eigenschaften ausgebildet ist, die ein relativ warmes Gefühl vermitteln, und einem zweiten Abdeckungsbereich (130), der aus einem zweiten Material mit Eigenschaften ausgebildet ist, die ein relativ kühles Gefühl vermitteln und
wobei der Schaumkern (106) eine erste Seite (110) benachbart zum ersten Abdeckungsbereich (126) und eine zweite Seite (112) benachbart zum zweiten Abdeckungsbereich (130) umfasst, und wobei die Anordnung (102) ferner ein Phasenwechselmaterial umfasst, das benachbart zur zweiten Seite des Schaumkerns (106) angeordnet ist.

2. Auflagenanordnung (102) nach Anspruch 1, wobei der Schaumkern (106) einen viskoelastischen Schaum aufweist.

3. Auflagenanordnung (102) nach Anspruch 1, wobei der Schaumkern (106) eine erste Lage und eine zweite Lage umfasst, die andere Eigenschaften als die erste Lage aufweist.

4. Auflagenanordnung (102) nach Anspruch 3, wobei die erste Lage einen viskoelastischen Schaum aufweist und die zweite Lage einen nichtviskoelastischen Schaum aufweist.

5. Auflagenanordnung (102) nach Anspruch 1, wobei der erste Abdeckungsbereich (126) eine Wärmeleitfähigkeit aufweist, die geringer als eine Wärmeleitfähigkeit des zweiten Abdeckungsbereichs (130) ist.

6. Auflagenanordnung (102) nach Anspruch 1, wobei der erste Abdeckungsbereich (126) eine Außenfläche aufweist, die eine Glattheit aufweist, die geringer als eine Glattheit auf einer Außenfläche des zweiten Abdeckungsbereichs (130) ist.

7. Auflagenanordnung (102) nach Anspruch 1, wobei der erste Abdeckungsbereich (126) eine Dichte aufweist, die größer als eine Dichte des zweiten Abdeckungsbereichs (130) ist.

8. Auflagenanordnung (102) nach Anspruch 1, wobei der erste Abdeckungsbereich (126) eine Durchlässigkeit aufweist, die geringer als eine Durchlässigkeit des zweiten Abdeckungsbereichs (130) ist.

9. Auflagenanordnung (102) nach Anspruch 1, wobei der zweite Abdeckungsbereich (130) ein Phasenwechselmaterial aufweist.

10. Auflagenanordnung (102) nach Anspruch 1, wobei das Phasenwechselmaterial ein Paraffinwachs aufweist.

11. Auflagenanordnung (102) nach Anspruch 1, wobei der erste Abdeckungsbereich (126) ein Material aufweist, das aus der Gruppe bestehend aus Baumwolle, Flanell, Vlies und Wolle ausgewählt ist.

12. Auflagenanordnung (102) nach Anspruch 1, wobei der zweite Abdeckungsbereich ein Material aufweist, das aus der Gruppe bestehend aus Satin und Seide ausgewählt ist.

13. Verfahren zum Herstellen einer Auflagenanordnung (102) für eine Körperabstützung, wobei das Verfahren umfasst:

Erstellen eines Schaumkerns (106) mit ersten und zweiten Seiten (110, 112);
Abdecken des Schaumkerns (106) mit einer Abdeckung (114), die einen ersten Abdeckungsbereich (126) aufweist, der aus einem ersten Material mit Eigenschaften ausgebildet ist, die ein relativ warmes Gefühl vermitteln, und einem zweiten Abdeckungsbereich (130), der aus einem zweiten Material mit Eigenschaften ausgebildet ist, die ein relativ kühles Gefühl vermitteln, ferner umfassend die Schritte des
Positionieren des ersten Abdeckungsbereichs (126) benachbart zur ersten Seite (110) des Schaumkerns (106) und des zweiten Abdeckungsbereichs (130) benachbart zur zweiten Seite (112) des Schaumkerns (106); und
Positionieren eines Phasenwechselmaterials benachbart zur zweiten Seite (112) des Schaumkerns (106).

14. Verfahren nach Anspruch 13, wobei das Erstellen ein Positionieren einer ersten Schaumlage benachbart zu einer zweiten Schaumlage umfasst, die andere Eigenschaften als die erste Schaumlage aufweist.

Revendications

1. Ensemble de surmatelas (102) pour un support de corps, l'ensemble de surmatelas (102) comprenant :

une âme en mousse (106) ; et
un revêtement (114) ayant une première partie de revêtement (126) formée d'un premier matériau ayant des propriétés qui fournissent une sensation de chaleur relative, et une deuxième partie de revêtement (130) formée d'un deuxième matériau ayant des propriétés qui fournissent une sensation de fraîcheur relative et
dans lequel le l'âme en mousse (106) comporte un premier côté (110), situé de manière adjacente à la première partie de revêtement (126) et un deuxième côté (112) situé de manière adjacente à la deuxième partie de revêtement (130), et dans lequel l'ensemble (102) comprend en outre un matériau à changement de phase positionné de manière adjacente au deuxième côté de l'âme en mousse (106).

2. Ensemble de surmatelas (102) tel que défini dans la revendication 1, dans lequel l'âme en mousse (106) comprend une mousse viscoélastique.

3. Ensemble de surmatelas (102) tel que défini dans la revendication 1, dans lequel l'âme en mousse (106) comprend une première couche et une deuxième couche ayant des propriétés différentes de celles de la première couche.

4. Ensemble de surmatelas (102) tel que défini dans la revendication 3, dans lequel la première couche comprend une mousse viscoélastique et la deuxième couche comprend une mousse non viscoélastique.

5. Ensemble de surmatelas (102) tel que défini dans la revendication 1, dans lequel la première partie de revêtement (126) a une conductivité thermique qui est inférieure à une conductivité thermique de la deuxième partie de revêtement (130).

6. Ensemble de surmatelas (102) tel que défini dans la revendication 1, dans lequel la première partie de revêtement (126) a une surface externe qui a un lissé qui est inférieur à un lissé d'une surface externe de la deuxième partie de revêtement (130).

7. Ensemble de surmatelas (102) tel que défini dans la revendication 1, dans lequel la première partie de revêtement (126) a une densité qui est supérieure à une densité de la deuxième partie de revêtement (130).

8. Ensemble de surmatelas (102) tel que défini dans la revendication 1, dans lequel la première partie de revêtement (126) a une perméabilité qui est inférieure à la perméabilité de la deuxième partie de revêtement (130).

9. Ensemble de surmatelas (102) tel que défini dans la revendication 1, dans lequel la deuxième partie de revêtement (130) comporte un matériau à changement de phase.

10. Ensemble de surmatelas (102) tel que défini dans la revendication 1, dans lequel le matériau à changement de phase comprend de la paraffine.

11. Ensemble de surmatelas (102) tel que défini dans la revendication 1, dans lequel la première partie de revêtement (126) comprend un matériau choisi dans le groupe constitué du coton, de la flanelle, du molleton et de la laine.

12. Ensemble de surmatelas (102) tel que défini dans la revendication 1, dans lequel la deuxième partie de revêtement comprend un matériau choisi dans le groupe constitué de satin et de soie.

13. Procédé de fabrication d'un ensemble de surmatelas (102) pour un support de corps, le procédé comprenant les étapes qui consistent :

à créer une âme en mousse (106) ayant des premier et deuxième côtés (110, 112) ;
à revêtir l'âme en mousse (106) d'un revêtement (114) ayant une première partie de revêtement (126) formée d'un premier matériau ayant des propriétés qui fournissent une sensation de chaleur relative, et une deuxième partie de revêtement (130) formée d'un deuxième matériau ayant des propriétés qui fournissent une sensation de fraîcheur relative, comprenant en outre les étapes qui consistent :

à positionner la première partie de revêtement (126) d'une manière adjacente au premier côté (110) de l'âme en mousse (106), et la deuxième partie de revêtement (130) de manière adjacente au deuxième côté (112) de l'âme en mousse (106) ; et
à positionner un matériau à changement de phase de manière adjacente au deuxième côté (112) de l'âme en mousse (106).

14. Procédé tel que défini dans la revendication 13, dans lequel l'étape de création comporte le positionnement d'une première couche de mousse de manière de manière adjacente à une deuxième couche de mousse qui possède des propriétés différentes de celles de la première couche de mousse.

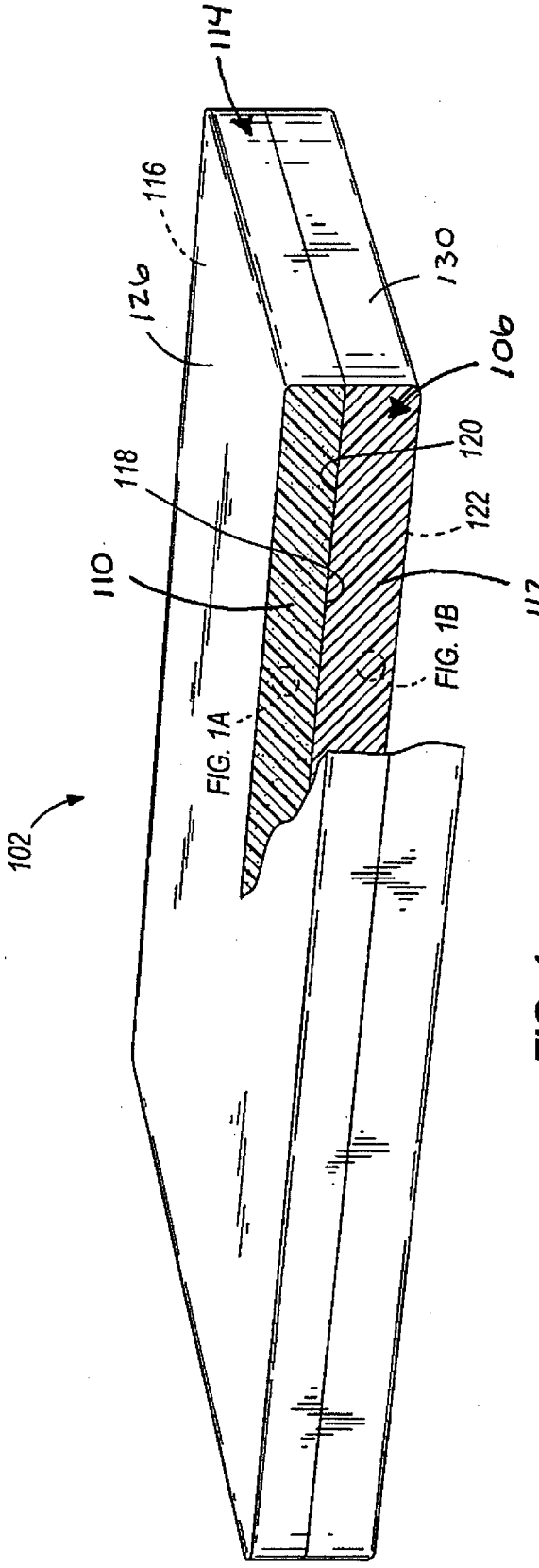


FIG. 1

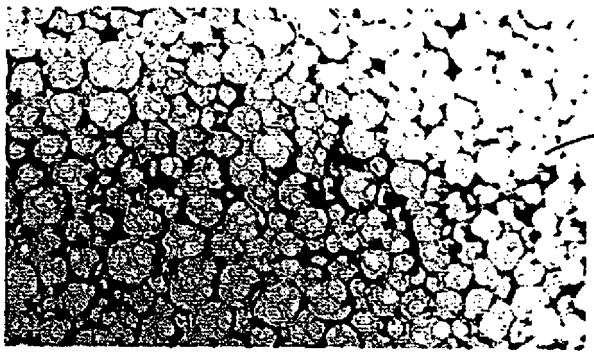


FIG. 1A

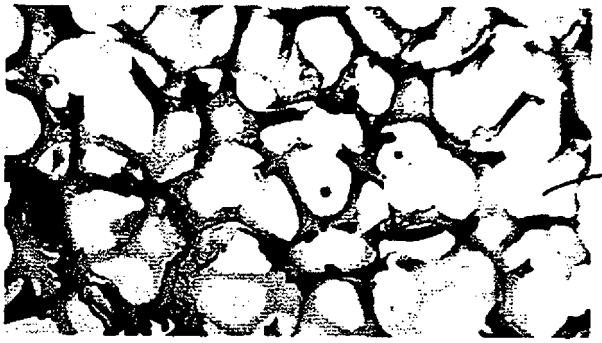


FIG. 1B

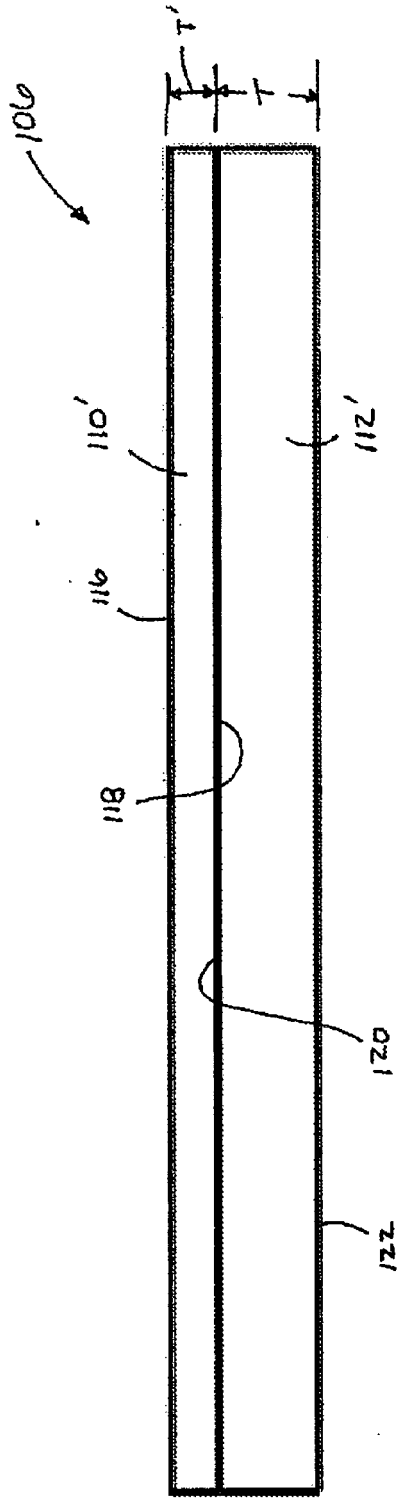


FIG. 2A

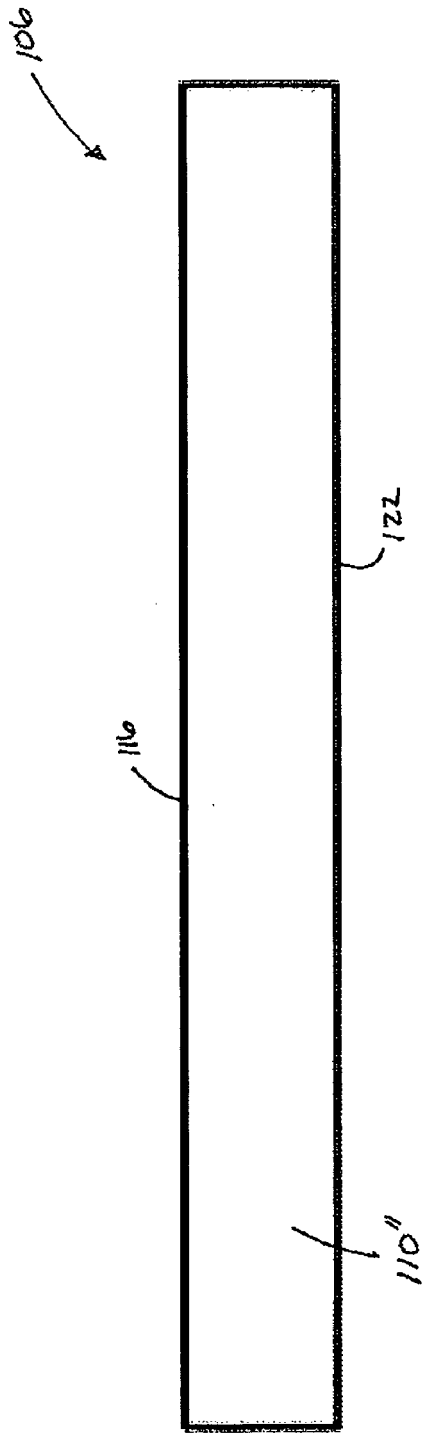


FIG. 2B

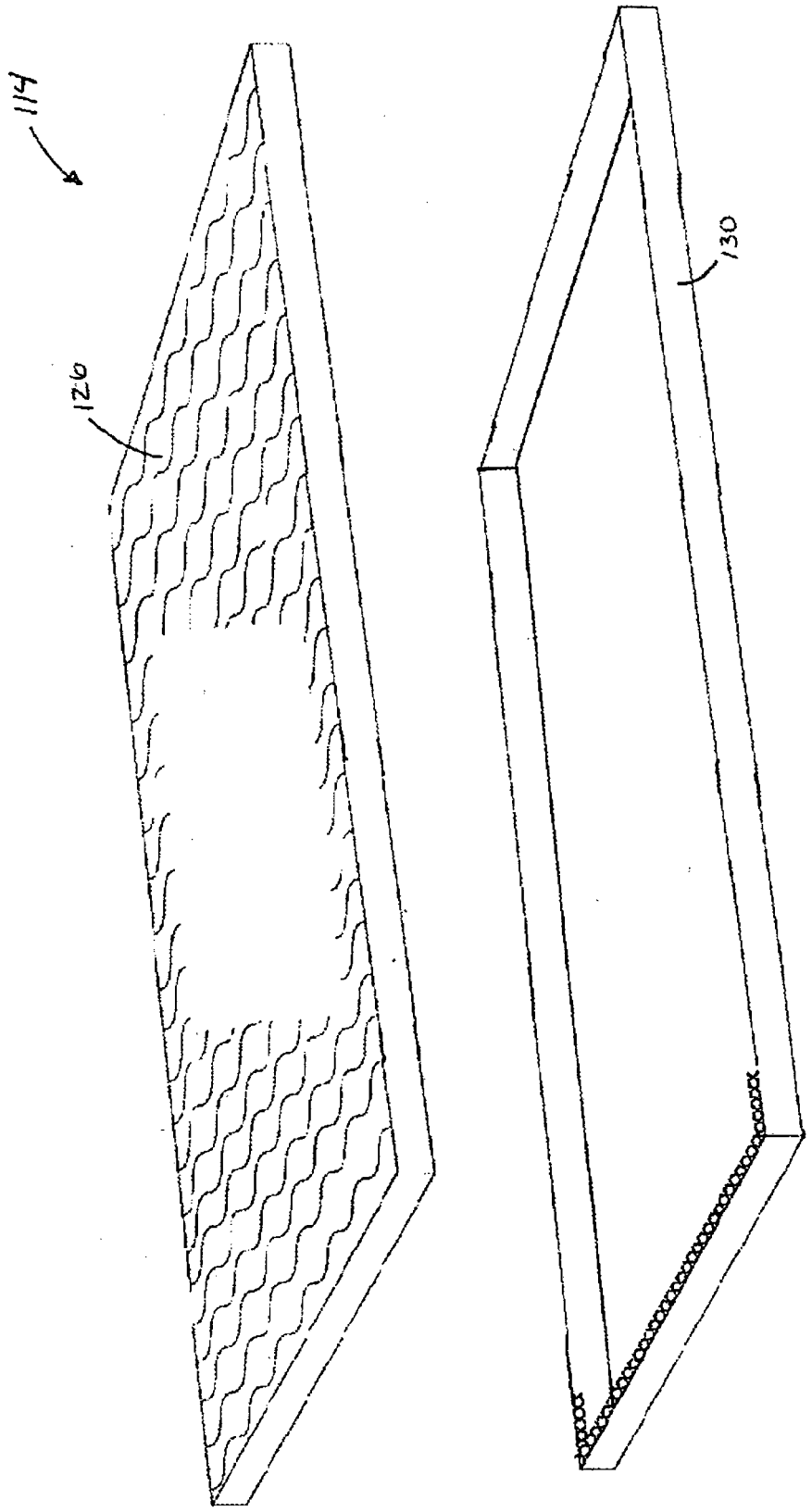


FIG. 3

REFERENCES CITED IN THE DESCRIPTION

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