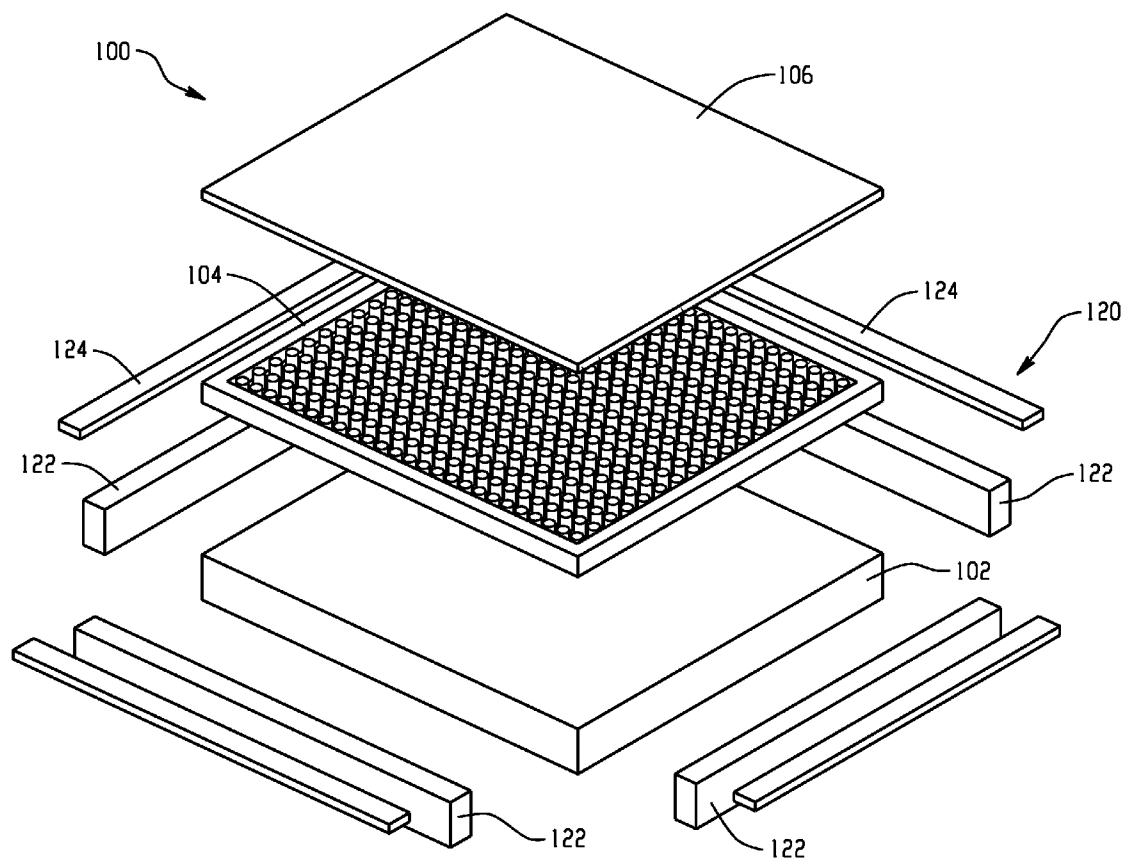




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RUEHLMANN et al.(10) **Pub. No.: US 2013/0025069 A1**(43) **Pub. Date: Jan. 31, 2013**(54) **FOAM MATTRESS ASSEMBLY WITH
INCREASED AIRFLOW AND INDEPENDENT
SUSPENSION****Publication Classification**(51) **Int. Cl.**
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NV (US)(21) Appl. No.: **13/558,092**(22) Filed: **Jul. 25, 2012****Related U.S. Application Data**(60) Provisional application No. 61/513,091, filed on Jul.
29, 2011.(57) **ABSTRACT**

Mattress assemblies that provide user comfort via independent suspension and increased airflow generally include a first foam layer; a second foam layer configured with an independent response system overlaying the first foam layer, wherein the second foam layer comprises a floor and a plurality of spaced apart support structures extending at about similar lengths from the floor; and a third foam layer overlaying the second foam layer having a planar top surface facing a user resting on the mattress assembly. In some embodiments, the first foam layer further includes a plurality of channels extending from a top planar surface to a bottom planar surface.



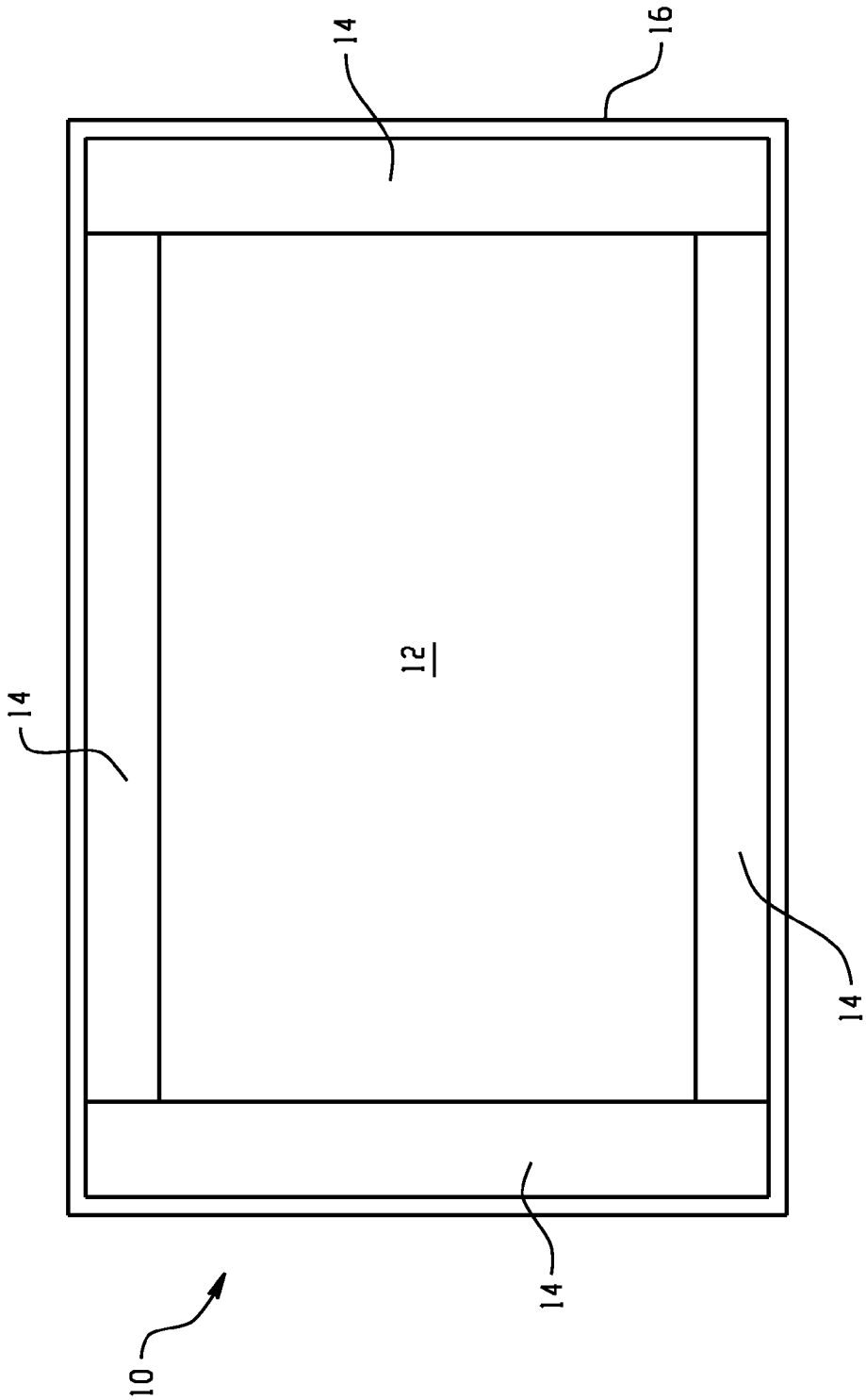


Fig. 1

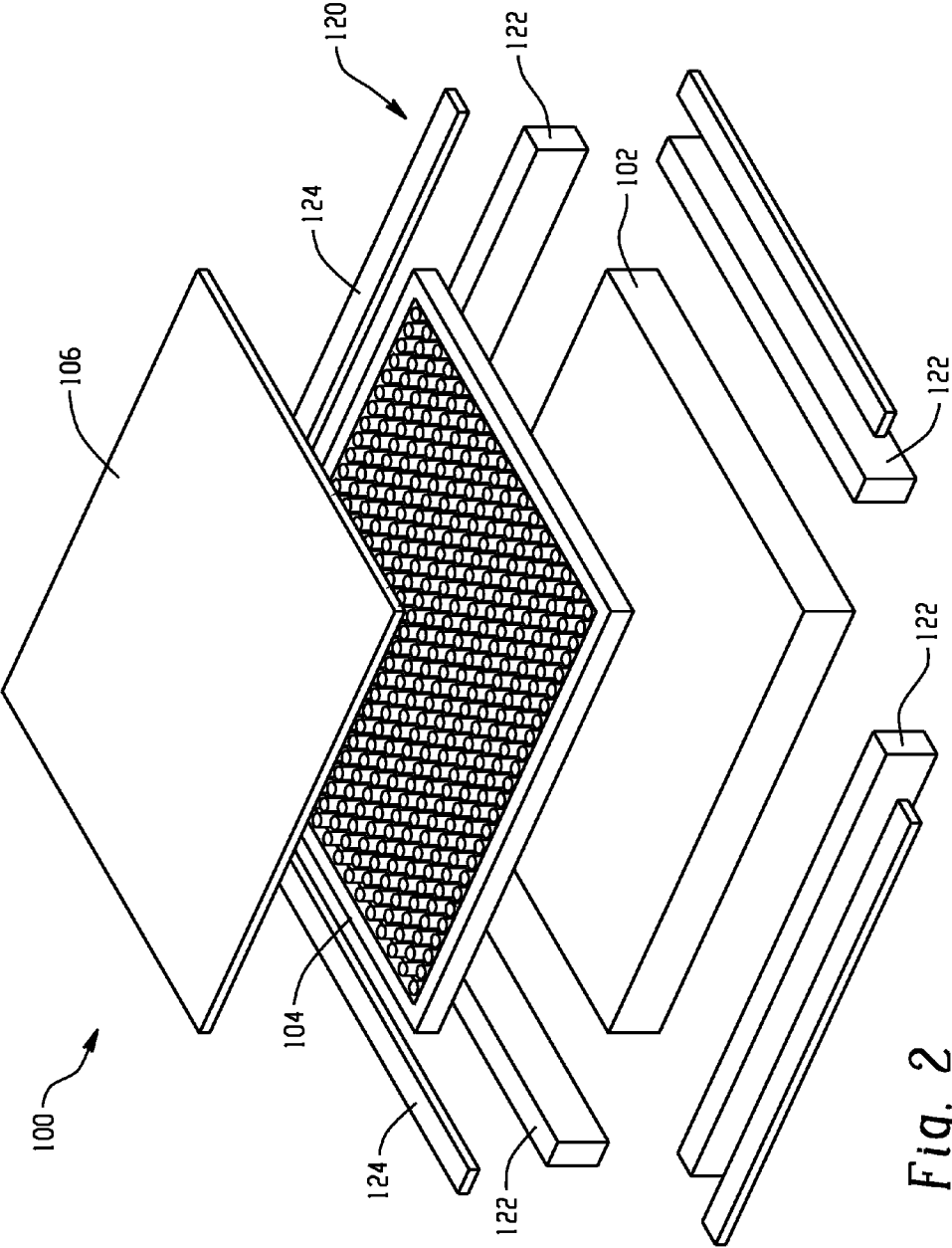


Fig. 2

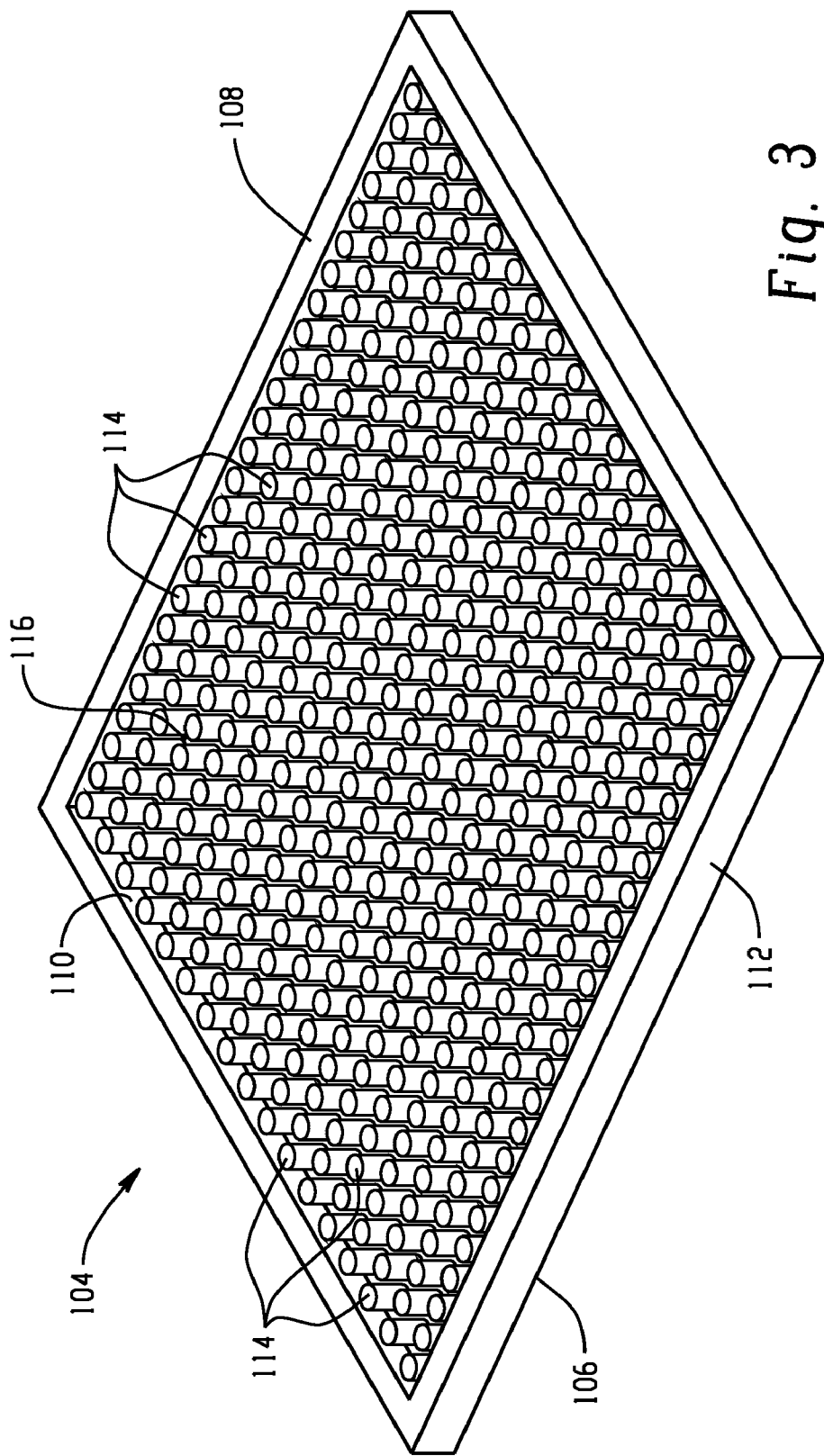


Fig. 3

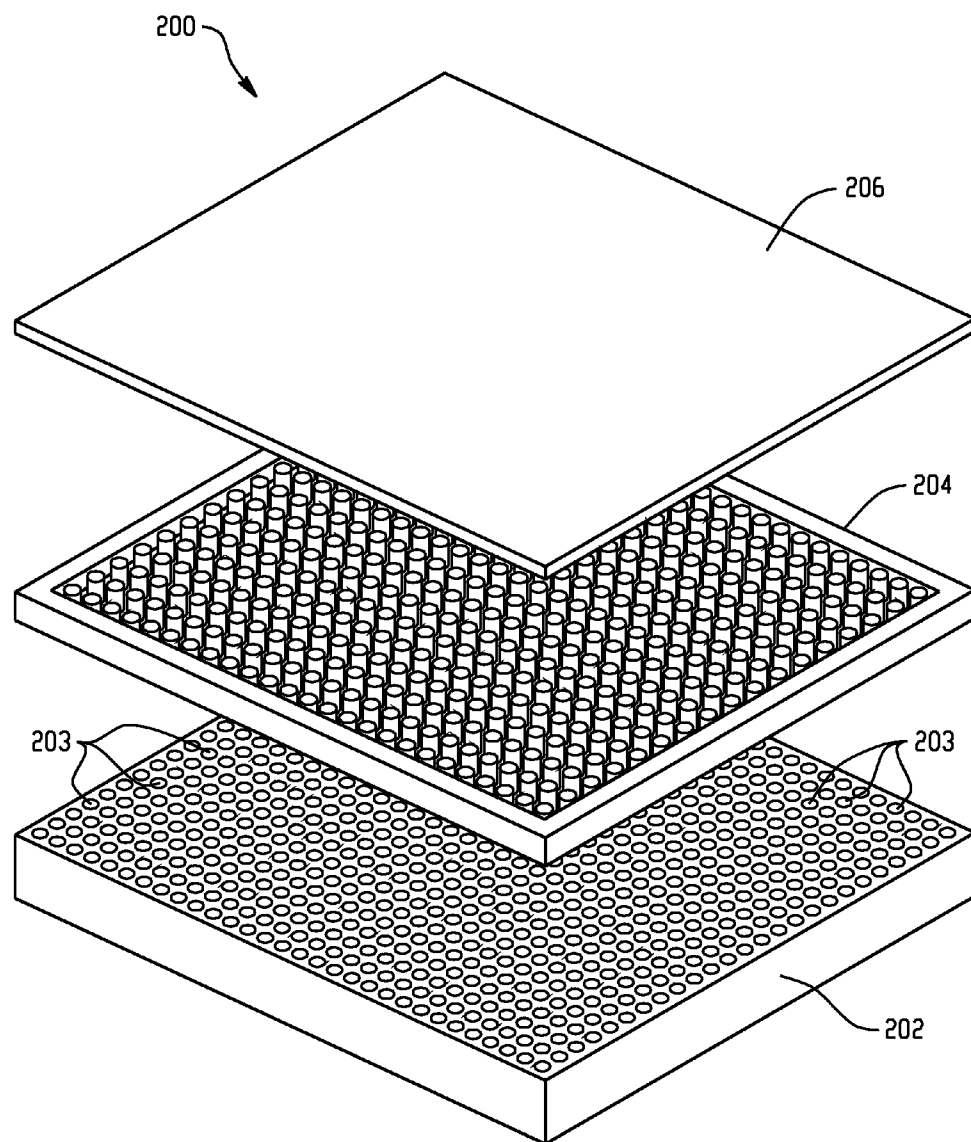


Fig. 4

FOAM MATTRESS ASSEMBLY WITH INCREASED AIRFLOW AND INDEPENDENT SUSPENSION

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Application No. 61/513,091, filed on Jul. 29, 2011, incorporated herein by reference in its entirety.

BACKGROUND

[0002] The present disclosure generally relates to foam mattress assemblies exhibiting increased airflow and independent suspension.

[0003] Foam mattresses such as those formed of polyurethane foam, latex foam, and the like, are generally known in the art. One of the ongoing problems associated with foam mattress assemblies is user comfort. To address user comfort, these mattresses are often fabricated with multiple foam layers having varying properties such as density and hardness, among others, to suit the needs of the intended user. More recently, manufacturers have employed so called memory foam, also commonly referred to as viscoelastic foams, which are generally a combination of polyurethane and one or more additives that increase foam density and viscosity, thereby increasing its viscoelasticity. These foams are often open cell foam structures having both closed and open cells but in some instances may be reticulated foam structures. The term “reticulated” generally refers to a cellular foam structure in which the substantially all of the membrane windows are removed leaving a skeletal structure. In contrast, open cell structures typically include both open cell (interconnected cells) and closed cells.

[0004] When used in a mattress, the memory foam conforms to the shape of a user when the user exerts pressure onto the foam, thereby minimizing pressure points from the user's body. The memory foam then returns to its original shape when the user and associated pressure are removed. However, the return to the original shape is a relatively slow process because of the viscoelastic cellular structure of these types of foams.

[0005] Unfortunately, the high density of the various types of foams used in current mattress assemblies, particularly those employing memory foam layers, generally prevents proper ventilation. As a result, the foam material can exhibit an uncomfortable level of heat to the user after an extended period of time. Additionally, these foams can retain a high level of moisture, further causing discomfort to the user and potentially leading to foul odors.

[0006] Reticulated memory foams, i.e., foams in which the cellular walls are substantially removed, are known to provide greater airflow. However, because substantially all of the cellular walls have been removed leaving behind a skeletal structure, these foams are inherently weak, provide less load-bearing capabilities relative to other non-reticulated viscoelastic foams, and are subject to fatigue at a rate faster than partially or completely closed cell foam structures. Moreover, reticulated viscoelastic foams require special processing to remove the cellular walls to form the skeletal structure making these foams relatively expensive.

[0007] Still further, as noted above, prior mattress assemblies generally include multiple stacked layers. The layers typically have planar top and bottom surfaces. In some

instances, these mattresses may have convoluted surfaces. These surfaces are generally static in terms of motion response to a user.

[0008] Accordingly, it would be desirable to provide a mattress assembly, with an improved airflow to effectively dissipate user heat. Still further, it would be desirable to provide foam mattress assemblies with motion separation so as to independently respond to each specific body part for increased user comfort.

BRIEF SUMMARY

[0009] Disclosed herein are mattress assemblies exhibiting increased airflow and independent suspension. In one embodiment, a mattress assembly comprises a first foam layer; a second foam layer configured with an independent response system overlaying the first foam layer, wherein the second foam layer comprises a floor and a plurality of spaced apart support structures extending at about similar lengths from the floor; and a third foam layer overlaying the second foam layer having a planar top surface facing a user resting on the mattress assembly.

[0010] In another embodiment, a mattress assembly comprises a first foam layer comprising top and bottom planar surfaces, the first foam layer further comprising a plurality of channels extending from the top to the bottom planar surfaces; a second foam layer configured with an independent response system overlaying the first foam layer, wherein the second foam layer comprises a floor and a plurality of spaced apart support structures extending at about equal lengths from the floor; and a third foam layer overlaying the second foam layer having a planar top surface facing a user resting on the mattress assembly.

[0011] In another embodiment, a mattress assembly comprises a first foam layer comprising top and bottom planar surfaces, the first foam layer further comprising a plurality of channels extending from the top to the bottom planar surfaces; a second foam layer configured with an independent response system overlaying the first foam layer, wherein the second foam layer comprises a floor and a plurality of spaced apart support structures extending at about equal lengths from the floor; and a third foam layer overlaying the second foam layer having a planar top surface facing a user resting on the mattress assembly.

[0012] The disclosure may be understood more readily by reference to the following detailed description of the various features of the disclosure and the examples included therein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] Referring now to the figures wherein the like elements are numbered alike:

[0014] FIG. 1 illustrates a top down view of a mattress assembly;

[0015] FIG. 2 illustrates an exploded perspective view of a mattress assembly in accordance with an embodiment of the present disclosure;

[0016] FIG. 3 illustrates a perspective view of a foam layer configured to provide a mattress assembly with motion separation; and

[0017] FIG. 4 illustrates an exploded perspective view of a mattress assembly in accordance with an embodiment of the present disclosure;

DETAILED DESCRIPTION

[0018] Disclosed herein are mattress assemblies that provide user comfort with improved airflow to effectively dissipate user heat during use and motion separation to independently respond to each specific body part for increased user comfort. FIG. 1 illustrates a top down view representative of the mattress assemblies, which are generally designated by reference numeral 10. As will be discussed herein, the various embodiments of the mattress assemblies disclosed herein have in common the following components: multiple stacked foam layers, wherein the uppermost foam layer 12 is shown, a side rail assembly 14 about at least a portion of the perimeter of the stacked mattress layers, and an optional fabric covering 16 about the side rail assembly as shown, i.e., mattress border. The uppermost foam layer 12 is generally referred to herein as the cover layer and has a planar top surface adapted to substantially face the user resting on the mattress assembly having a length and width dimensions sufficient to support a reclining body of the user. In some embodiments, the uppermost foam layer 12 may be dimensioned to overlay the side rails. Likewise, the optional foam layer may be configured to cover the side and top surfaces of the mattress assembly.

[0019] FIG. 2 shows an exploded perspective view of an exemplary foam mattress assembly in accordance with one embodiment. The mattress assembly 100 includes a base foam core layer 102 configured with generally planar top and bottom surfaces. For this as well as the other embodiments disclosed herein, the foam core layer 102 is chosen to have a thickness less than or equal to the overall thickness of the mattress assembly. Generally, the thickness of the foam core layer 102 is within a range of 4 inches to 10 inches, with a range of about 6 inches to 8 inches thickness in other embodiments, and a range of about 6 to 6.5 inches in still other embodiments.

[0020] The core foam layer can be formed of open or closed cell natural latex foam although other foams can be used, including without limitation, viscoelastic foams, non-viscoelastic foams, polyurethane foams, and the like. In one embodiment, the foam core layer 102 is pre-stressed. That is, the foam core layer is subjected to a pre-stressing process such as disclosed in U.S. Pat. No. 7,690,096 to Gladney et al., incorporated herein by reference in its entirety. By way of example, a force can be applied to at least a section of the foam core layer in an amount sufficient to temporarily compress its height so as to permanently alter a mechanical property of the foam layer to provide a pre-stressed foam layer having a firmness that is different from the firmness of a similar foam that was not pre-stressed.

[0021] The foam core layer 102 has a density of 1 pound per cubic foot (lb/ft^3) to 6 lb/ft^3 . In other embodiments, the density is 1 lb/ft^3 to 5 lb/ft^3 and in still other embodiments, from 1.5 lb/ft^3 to 4 lb/ft^3 . By way of example, the density can be about 1.5 lb/ft^3 .

[0022] The hardness of the foam core layer, also referred to as the indentation load deflection (ILD) or indentation force deflection (IFD), is within a range of 20 to 40 pounds-force, wherein the hardness is measured in accordance with ASTM D-3574 and is generally defined as the amount of force in pounds required to indent a 50" disc into a 15"×15"×4" foam sample and make a 1" indentation. In other embodiments, the hardness is about 20 to 30 pounds-force.

[0023] Foam layer 104 configured with an independent response system overlays the base foam core layer 102. Advantageously, the independent response system as will be

described in greater detail below provides motion separation to an end user of the mattress assembly as well as improved airflow. The foam layer 104 may be fabricated from a viscoelastic foam or non-viscoelastic foam depending on the intended application. The foam itself can be of any material including without limitation, latex foams, natural latex foams, polyurethane foams, combinations thereof, and the like. Foam layer 104 generally has a thickness equal to or less than 6 inches in some embodiments, equal to or less than 4 inches in other embodiments, and equal to or less than 3 inches in still other embodiments. In other embodiments, the thickness is greater than or equal to 1 inch. The density is generally within a range of 2 to 6 lb/ft^3 in some embodiments, and 3 to 5 lb/ft^3 in other embodiments. Hardness is generally within a range of 10 to 20 pounds-force.

[0024] As shown more clearly in FIG. 3, foam layer 104 includes a planar bottom surface 106 and a generally planar top surface 108 configured with a recessed portion 110 defining a perimeter wall 112, and a plurality of upright spaced apart foam support structures 114 extending from a floor 116 of the recessed portion 110 to a height substantially equal to that of the perimeter wall 112. The upright foam support structures 114 can be of any shape and dimension including, without limitation, cylindrical shapes, truncated cones, cubic shapes, polygonal prism shaped, e.g., triangular prism, hexagonal prism, combinations thereof, and the like. The various shapes can be formed using known techniques by which a plane splitting of a foam block is carried out with opposing outer sides compressed in a corresponding pattern. Alternatively, the upright foam support structures may be individually formed and adhered to the floor, or the like. In these embodiments, it is generally important that the top surface of each upright foam support structure have a planar surface. In some embodiments, the pitch between adjacent upright support structures is generally equal to or less than a diameter of an individual support structure. The individual upright support structures 114 may be randomly disposed within the recess or may be configured as a linear arrangement of rows and columns, or may be configured as offset rows and columns. Still further, the foam layer 104 may be configured to include segments of the upright support structures within the recessed portion that are of a greater density than in other segments of the recessed portions. In still other embodiments, the foam layer 104 may include more than one recessed portion 110 such that recessed portion is divided into multiple portions defined by a wall (not shown) similar to that of the perimeter wall except providing compartmentalization of the upright structures within the interior region defined by the perimeter wall. For example, in some embodiments, two or more sections may be defined by an interior foam wall extending from a selected perimeter wall to an opposing perimeter wall. In still other embodiments, the two or more sections may be defined by an interior wall within the confines of the perimeter wall 112. In these embodiments, the support structures as well as the interior foam walls have a height about equal to the height of the perimeter wall 112.

[0025] By way of example, which is not intended to be limiting, a foam layer 104 configured for use in queen sized mattress can have a thickness of 3 inches, a width of 59.5 inches and a length of 79.5. The perimeter wall has a width of 3 inches and the upright support structure has a truncated cone shape having a height of 1.5 inches (i.e., the recess floor has a thickness of 1.5 inches) and a diameter of 2 inches. The upright support structures are equally spaced apart at a dis-

tance of about 1 inch as measured from the base and linearly arranged by columns and rows.

[0026] Referring back to FIG. 2, a cover panel **106** is shown disposed on the foam layer **104**. The cover panel layer can be formed from viscoelastic foam or non-viscoelastic foam depending on the intended application. The foam itself can be of any open or closed cell foam material including without limitation, latex foams, natural latex foams, polyurethane foams, combinations thereof, and the like. The cover panel **106** has planar top and bottom surfaces. The thickness of the cover panel is generally within a range of about 0.5 to 2 inches in some embodiments, and less than 1" in other embodiments so as to provide the benefits of motion separation and increased airflow from the underlying foam layer **104**. The density of the cover panel layer **106** is within a range of 1 to 5 lb/ft³ in some embodiments, and 2 to 4 lb/ft³ in other embodiments. The hardness is within a range of about 10 to 20 pounds-force in some embodiments, and less than 15 pounds-force in other embodiments. In one embodiment, the cover panel is at a thickness of 0.5", a density of 3.4 lb/ft³, and a hardness of 14 pounds-force. In some embodiments, multiple foam layers (not shown) can overlay foam layer **104**.

[0027] The various multiple stacked mattress layers **102**, **104**, and **106** may be adjoined to one another using an adhesive or may be thermally bonded to one another or may be mechanically fastened to one another as may be desired for different applications.

[0028] The mattress assembly **100** further includes a side rail assembly **120** about all or a portion of the perimeter of the mattress assembly defined by foam layers **102**, **104**, **106**. The side rails that define the assembly may be attached to or placed adjacent to at least a portion of the perimeter of the stacked mattress layers **102**, **104**, **106**, and may include metal springs, spring coils, encased spring coils, foam, latex, natural latex, latex w/ gel, gel, viscoelastic gel, or a combination, in one or more layers. The side rails may be placed on one or more of the sides of the stacked mattress layers, e.g., on all four sides of the stacked mattress layers, on opposing sides, on three adjacent sides, or only on one side of the stacked mattress layers. In certain embodiments, the side rails may comprise edge supports with a firmness greater than that provided by the stacked mattress layers. The side rails may be fastened to the stacked mattress layers via adhesives, thermal bonding, or mechanical fasteners.

[0029] In one embodiment, the side rail assembly is formed of a natural latex foam having a density generally less than 3 lb/ft³ to 0.5 lb/ft³ and a hardness greater than 30 pounds-force to 80 pounds-force. In one embodiment, the side rails are formed of natural latex foam having a density of 1.65 lb/ft³ and a hardness of 45 pounds-force.

[0030] In some embodiments, the side rail assembly **120** may be formed of multiple layers as is generally shown in FIG. 2. For example, the side rail assembly may include a core layer **122** having a higher hardness than an overlaying relatively thinner edge layer **124** having a lower hardness for improved user comfort. By way of example, the core side rail can have a thickness of 5.5 inches, a hardness of 45 pounds-force, and a density of 1.65 lb/ft³. The edge side rail layer **124**, disposed on core side rail layer **122**, can have a thickness of 1 inch, a hardness of 24 pounds-force, and a density of 1.65 lb/ft³. Optionally, one or more of the side rail assembly layers may be pre-stressed in the manner described above.

[0031] In another embodiment, the side rail assembly **120** is formed of open cell polyurethane foam having a non-random

large cell structure or a random cellular structure with many large cells. The large cell structure can be defined by the number of cells per linear inch. In one embodiment, the large cell structure is about 10 to 40 cells per inch, with about 15 to 30 cells per inch in other embodiments, and with about 20 cells per inch in still other embodiments. The open cell foam structure includes a plurality of interconnected cells, wherein the windows between the adjacent cells are broken and/or removed. In contrast, in closed cell foam there are substantially no interconnected cells and the windows between the adjacent cells are substantially intact. In reticulated foams, substantially all of the windows are removed. By using an open cell structure with a large open cellular structure, movement of moisture and air through a side rail can occur. Also, if the side rail is adhesively or thermally attached to the mattress layers, e.g., **102**, **104**, and **106**, the skeletal struts of the open cell foam will bond to the mattress layers, thereby facilitating air and moisture transfer from the mattress layers through the side layers to the environment. In one embodiment, the side rail assembly includes a natural latex foam, which may be viscoelastic or non-viscoelastic depending on the intended application.

[0032] For ease in manufacturing the mattress assembly, the side rail assembly may be assembled in linear sections that are joined to one another to form the perimeter about the mattress layers. Alternatively, the ends may be mitered or have some other shape, e.g., lock and key type shape.

[0033] An optional fabric layer (e.g., **16** in FIG. 1) can be disposed about the perimeter of the side rail, i.e., serves as a mattress border. In one embodiment, the fabric border layer is attached at one end to the top planar surface of the uppermost mattress layer **106** and at the other end to the bottom planar surface of the bottom most layer **102**. In one embodiment, at least a portion of the fabric layer can be formed of a spacer fabric to provide a further increase in airflow. As used herein, spacer fabrics are generally defined as pile fabrics that have not been cut including at least two layers of fabric knitted independently that are interconnected by a separate spacer yarn. The spacer fabrics generally provide increased breathability, crush resistance, and a three dimensional appearance relative to other fabrics. The at least two fabric layers may be the same or different, i.e., the same or different density, mesh, materials, and like depending on the intended application. When employing the spacer fabric, a lightweight flame retardant barrier layer may be disposed intermediate to the mattress foam layers and the spacer fabric about the perimeter of the side rail assembly.

[0034] By way of example, an exemplary mattress assembly illustrative of the embodiment shown in FIG. 2 has a 6.5" pre-stressed foam core layer of natural latex foam having a density of 1.65 lb/ft³ and a hardness of 24 pounds-force; a natural latex foam layer having a density of 3.9 lb/ft³ and configured with the independent response system as described above is disposed on the foam core layer. The independent response system layer includes a perimeter wall having a width of 3 inches and a truncated cone shaped upright support structure having a height of 1.5 inches (i.e., the recess floor has a thickness of 1.5 inches) and a diameter of 2 inches. The upright support structures are equally spaced apart at a distance of about 1 inch as measured from the base and linearly arranged by columns and rows. A natural latex foam cover layer having top and bottom planar surfaces is disposed onto the foam layer configured with the independent response system and is at a thickness of 0.5", a density of 3.4

lb/ft³, and a hardness of 14 pounds-force. The side rail assembly is of a two layer construction of natural latex foam and circumscribes a perimeter of the mattress layers **102**, **104**, and **106**. The side rail assembly has a width of 3", a height of 6.5 inches and is formed of a core layer having a height of 5.5 inches, a density of 1.65 lb/ft³ and a hardness of 45 pounds-force. An edge layer having a height of 1 inch is disposed onto the core layer and has a density of 1.65 lb/ft³ and a density of 24 pounds-force. A mattress border and panel of a spacer fabric is utilized as a mattress border.

[0035] FIG. 4 shows a cross sectional view of a mattress assembly in accordance with one embodiment. The mattress assembly **200** includes a base core foam layer **202** configured with planar top and bottom surfaces. Generally, the thickness of the foam core layer **202** is within a range of 4 inches to 10 inches, with a range of about 6 inches to 8 inches thickness in other embodiments, and a range of about 6 inches in still other embodiments. The core foam layer can be formed of standard polyurethane foam although other foams can be used, including without limitation, viscoelastic foams. In one embodiment, the core foam layer is ventilated. Ventilation can be provided by providing open channels **203** extending from the top planar surface to the bottom planar surface. The channels are generally circularly shaped although other shapes can be utilized and have a diameter of less than 2 inches in some embodiments, less than 1 inch in other embodiments, and less than 0.5 inches in still other embodiments. The density of the open channels is generally about 100 to about 800 open channels per square foot in some embodiments, about 300 to about 600 open channels per square foot in other embodiments, and about 400 to about 500 in still other embodiments. The core foam layer **202** has a density of 1 lb/ft³ to 5 lb/ft³. In other embodiments, the density is 1 lb/ft³ to 3 lb/ft³ and in still other embodiments, from 1 lb/ft³ to 2 lb/ft³. By way of example, the density can be 4 lb/ft³. The hardness of the core foam layer is within a range of 20 to 40 pounds-force. In one embodiment, the hardness is about 29 pounds-force.

[0036] Foam layer **204** configured with the independent response system as described above is disposed on the base core foam layer **202**.

[0037] A cover foam layer **206** as described above is disposed on foam layer **204**.

[0038] The mattress assembly may further include the side rail assembly and the optional fabric border as described above.

[0039] By way of example, an exemplary mattress assembly illustrative of the embodiment shown in FIG. 4 has a 6" ventilated foam core layer of natural latex foam having top and bottom planar surfaces, a density of 4 lb/ft³ and a hardness of 29 pounds-force; a natural latex foam layer having a density of 3.9 lb/ft³ and configured with the independent response system as described above is disposed on the foam core layer; and a 1" foam cover layer of natural latex foam having top and bottom planar surfaces, a density of 3.4 lb/ft³ and a hardness of 14 pounds-force. The ventilated foam core has a plurality of equally spaced open channels extending from the top planar surface to the bottom planar surface of the core foam layer at a diameter less than 1 inch and a density of about 400 to 500 channels per square foot. The independent response system foam layer includes a perimeter wall having a width of 3 inches and a truncated cone shaped upright support structure having a height of 1.5 inches (i.e., the recess floor has a thickness of 1.5 inches) and a diameter of 2 inches. The upright support structures are equally spaced apart at a

distance of about 1 inch as measured from the base and linearly arranged by columns and rows. The side rail assembly is of a two layer construction of natural latex foam and circumscribes a perimeter of the mattress layers **102**, **104**, and **106**. The side rail assembly has a width of 3", a height of 6.5 inches and is formed of a core layer having a height of 5.5 inches, a density of 1.65 lb/ft³ and a hardness of 45 pounds-force. An edge layer having a height of 1 inch is disposed onto the core layer and has a density of 1.65 lb/ft³ and a density of 24 pounds-force. A mattress border and panel of a spacer fabric is utilized as a mattress border.

[0040] The various mattress layers in the mattress assemblies described above may be adjoined to one another using an adhesive or may be thermally bonded to one another or may be mechanically fastened to one another. The mattress assemblies may further include one or more upholstery layers to cover mattress assemblies, which may include an outermost ticking layer.

[0041] This written description uses examples to disclose the invention, including the best mode, and also to enable any person skilled in the art to make and use the invention. The patentable scope of the invention is defined by the claims, and may include other examples that occur to those skilled in the art. Such other examples are intended to be within the scope of the claims if they have structural elements that do not differ from the literal language of the claims, or if they include equivalent structural elements with insubstantial differences from the literal languages of the claims.

What is claimed is:

1. A mattress assembly comprising:
 - a first foam layer;
 - a second foam layer configured with an independent response system overlaying the first foam layer, wherein the second foam layer comprises a floor and a plurality of spaced apart support structures extending at about similar lengths from the floor; and
 - a third foam layer overlaying the second foam layer having a planar top surface facing a user resting on the mattress assembly.
2. The mattress assembly of claim 1, wherein the first, second and third foam layers comprise natural latex foam.
3. The mattress assembly of claim 1, wherein the first foam layer has a density equal to or less than 4 lb/ft³ and a hardness equal to or less than about 30 pounds-force.
4. The mattress assembly of claim 1, wherein the spaced apart support structures comprises a truncated cone.
5. The mattress assembly of claim 1, wherein the first foam layer is at a thickness within a range of 4 inches to 10 inches; the second foam layer is at a thickness within a range of 1 inch to 4 inches; and the third foam layer is at a thickness within a range of 0.5 to 2 inches.
6. The mattress assembly of claim 1, wherein the first foam layer has a density within a range of 1 pound per cubic foot (lb/ft³) to 6 lb/ft³ and a hardness within a range of 20 to 40 pounds-force; the second foam layer has a density within a range of 2 to 6 lb/ft³ and a hardness within a range of 10 to 20 pounds-force; and the third layer has a density within a range of 1 to 5 lb/ft³ and hardness within a range of 10 to 20 pounds-force.
7. The mattress assembly of claim 1, further comprising a foam side rail assembly disposed about a perimeter of the first, second and third foam layers, wherein the side rail assembly has a thickness about equal a total thickness of the first, second and third layers.

8. The mattress assembly of claim 7, wherein the side rail assembly is formed of natural latex foam.

9. The mattress assembly of claim 1, wherein the first foam layer includes planar top and bottom surfaces, and a plurality of channels extending from the planar top surface to the planar bottom surface.

10. The mattress assembly of claim 1, wherein the second foam layer comprises a recessed portion defining a perimeter wall about the floor and the upright support structures.

11. The mattress assembly of claim 1, further comprising a spacer fabric about a perimeter of the first, second and third foam layers.

12. The mattress assembly of claim 1, further comprising a spacer fabric overlaying the third foam layer and extending about a perimeter of the first, second and third foam layers.

13. The mattress assembly of claim 1, wherein the upright support structures are oriented to face a user resting on the mattress assembly.

14. A mattress assembly, comprising:

a latex first foam layer having planar top and bottom surfaces;

a latex second foam layer overlaying the latex first foam layer, the second foam layer comprising a planar bottom surface and a top surface configured with a recessed portion defining a perimeter wall, and a plurality of upright foam support structures extending from a floor of the recessed portion to a height substantially equal to that of the perimeter wall, wherein the upright foam support structures comprise a truncated cone shape to provide motion separation to a user of the mattress assembly during use thereof; and

a latex third foam layer having top and bottom planar surfaces overlaying the second foam layer, the third foam layer.

15. The mattress assembly of claim 14, wherein the latex first foam layer further comprises a plurality of open channels extending from the top planar surface to the bottom planar surface.

16. The mattress assembly of claim 14, further comprising a side rail assembly formed of a latex material comprising one or more layers disposed about a perimeter of the first, second, and third foam layers.

17. The mattress assembly of claim 14, wherein the layers defining the side rail assembly and the latex first foam layer are pre-stressed.

18. The mattress assembly of claim 14, wherein the upright foam support structures comprise a truncated cone shape to provide motion separation to a user of the mattress assembly during use thereof

19. The mattress assembly of claim 14, wherein the first foam layer further comprises a plurality of channels extending from the planar top surface to the planar bottom surface.

20. The mattress assembly of claim 14, further comprising a spacer fabric overlaying the third foam layer and extending about a perimeter of the first, second and third foam layers.

21. A mattress assembly comprising:

a first foam layer comprising top and bottom planar surfaces, the first foam layer further comprising a plurality of channels extending from the top to the bottom planar surfaces;

a second foam layer configured with an independent response system overlaying the first foam layer, wherein the second foam layer comprises a floor and a plurality of spaced apart support structures extending at about equal lengths from the floor; and

a third foam layer overlaying the second foam layer having a planar top surface facing a user resting on the mattress assembly.

22. The mattress assembly of claim 21, wherein the plurality of channels are at a density of about 100 to about 800 open channels per square foot.

23. The mattress assembly of claim 21, wherein each one of the plurality of channels has circularly shaped cross section.

24. The mattress assembly of claim 21, the first, second and third foam layers comprise natural latex foam.

25. The mattress assembly of claim 21, wherein the spaced apart support structures comprises truncated cones.

26. The mattress assembly of claim 21, wherein the first foam layer is at a thickness within a range of 4 inches to 10 inches; the second foam layer is at a thickness within a range of 1 inch to 4 inches; and the third foam layer is at a thickness within a range of 0.5 to 2 inches.

28. The mattress assembly of claim 21, further comprising a foam side rail assembly disposed about a perimeter of the first, second and third foam layers, wherein the side rail assembly has a thickness about equal a total thickness of the first, second and third layers.

29. The mattress assembly of claim 28, wherein the side rail assembly is formed of natural latex foam.

30. The mattress assembly of claim 21, further comprising a spacer fabric about a perimeter of the first, second and third foam layers.

31. The mattress assembly of claim 30, further comprising a spacer fabric overlaying the third foam layer and extending about a perimeter of the first, second and third foam layers.

32. The mattress assembly of claim 21, wherein the upright support structures are oriented to face a user resting on the mattress assembly.

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