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(54) **SYSTEMS AND METHODS FOR HINGED BEDDING ASSEMBLIES**

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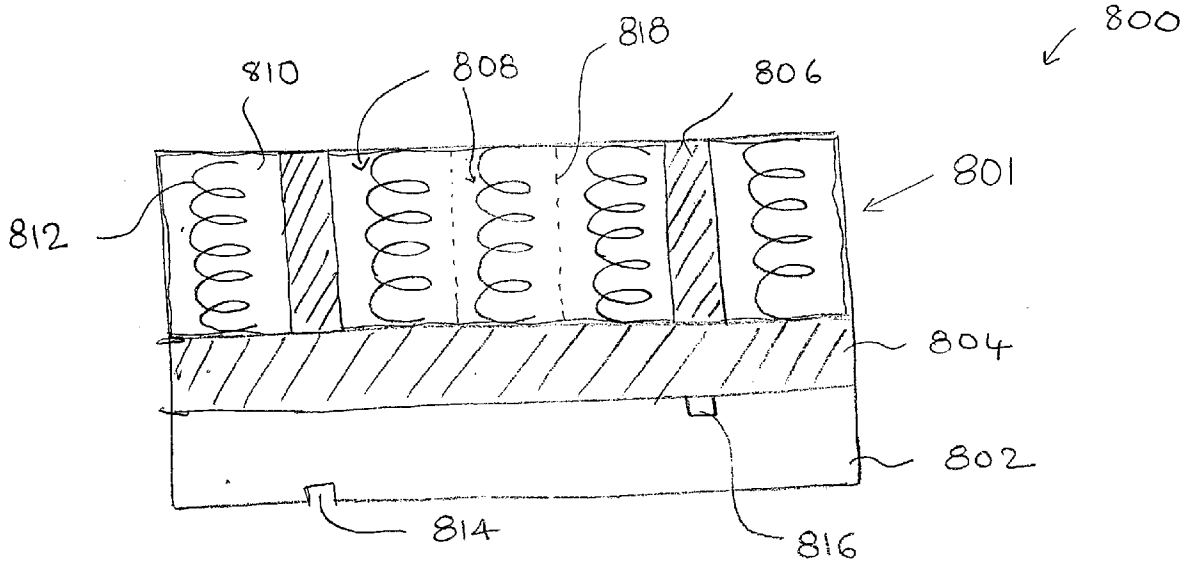
(57) **ABSTRACT**

In many aspects, the systems and methods described herein include mattress having a top sleeping layer disposed on top of a support layer. The support layer includes polyurethane foam having channels comprising one or more slits on both sides of a surface to act as hinges for articulation. The channels may be aligned with the joints of the articulated sections of the foundation or frame of the adjustable bedding assembly. When the sections articulate about the joints, the channels allow the overlying top layer to conform to the sections while reducing wear and tear therein.



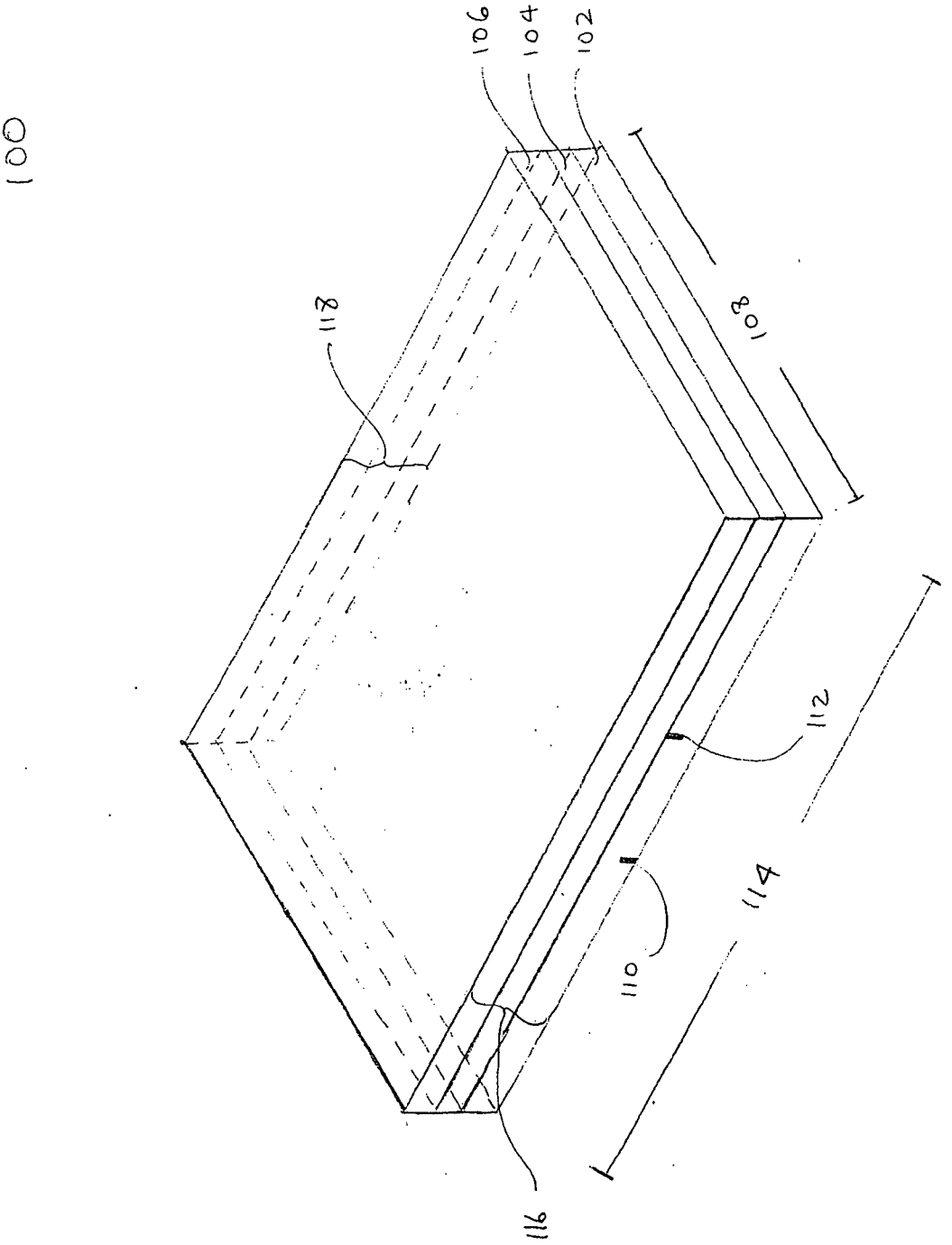


FIG. 1

FIG. 2

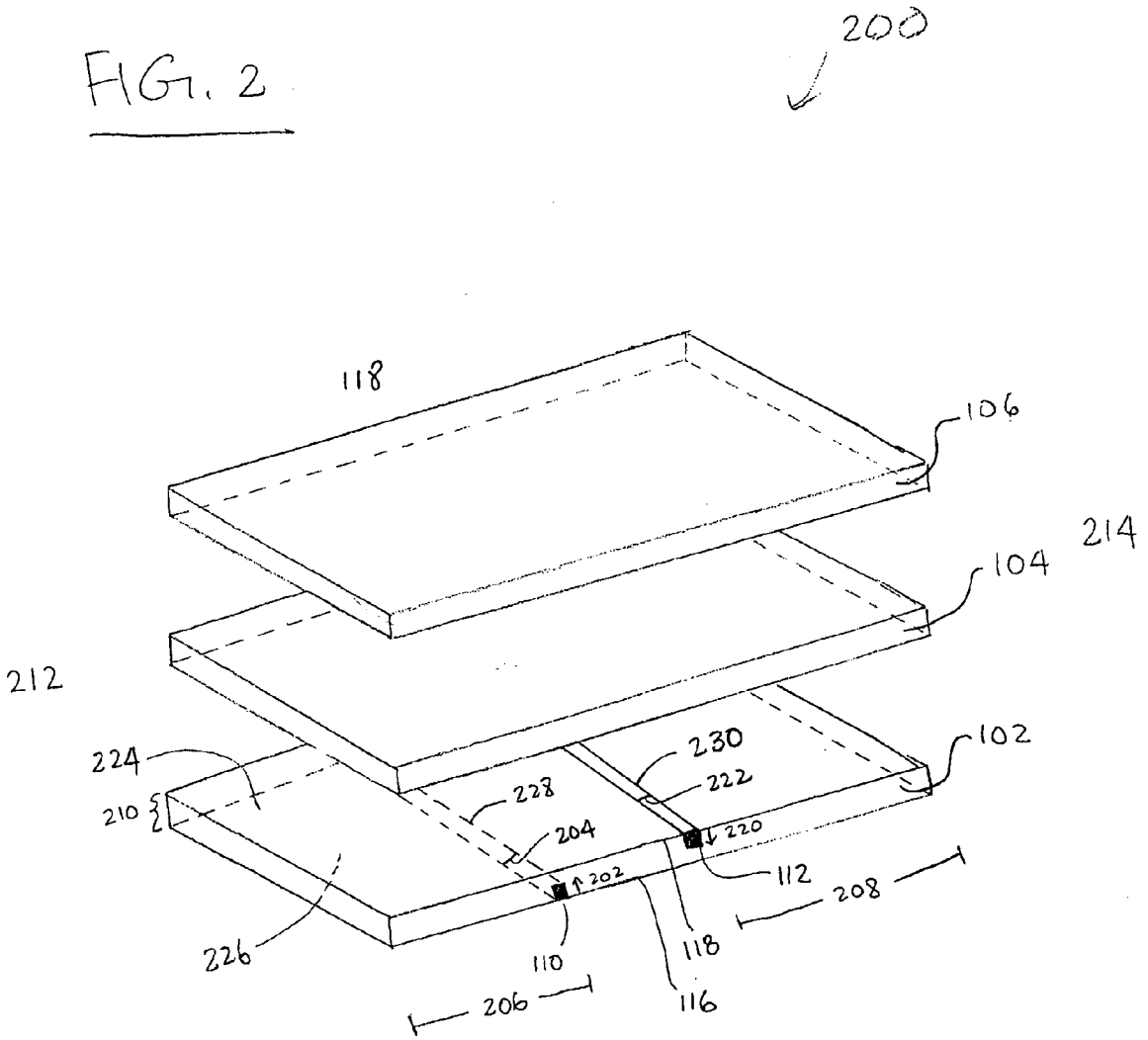
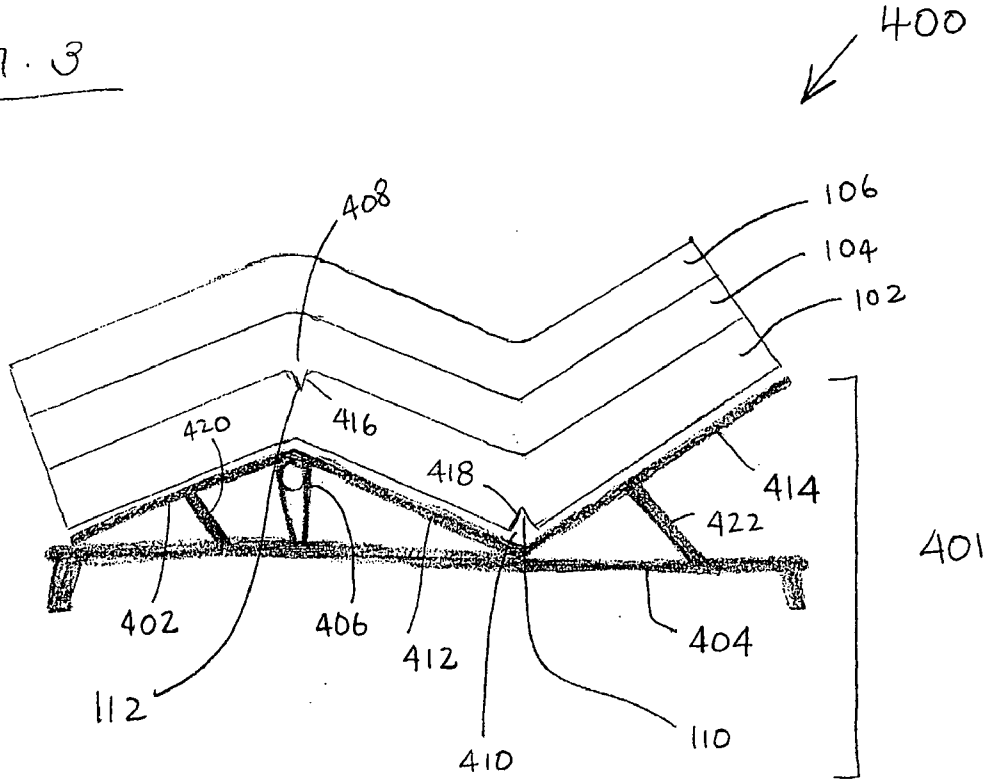

200
118
106
214
104
212
102
224
230
222
210
228
204
220
112
202
208
226
110
118
116
206

FIG. 3


400
408
106
104
102
420
416
418
414
422
401
402
406
412
404
112
410
110

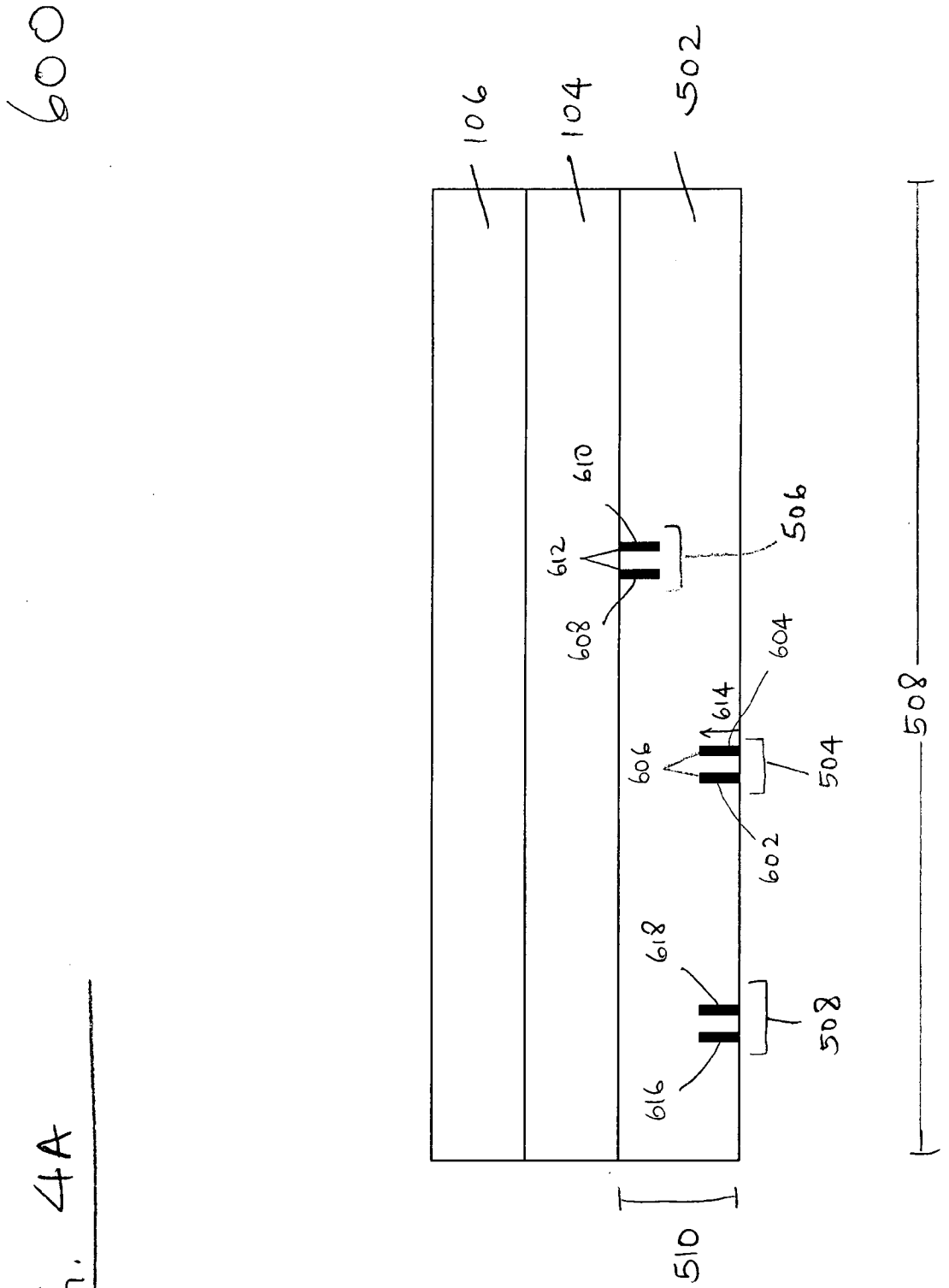

600
106
104
502
610
612
608
506
604
614
606
504
602
618
616
508
510
508

FIG. 4A

700

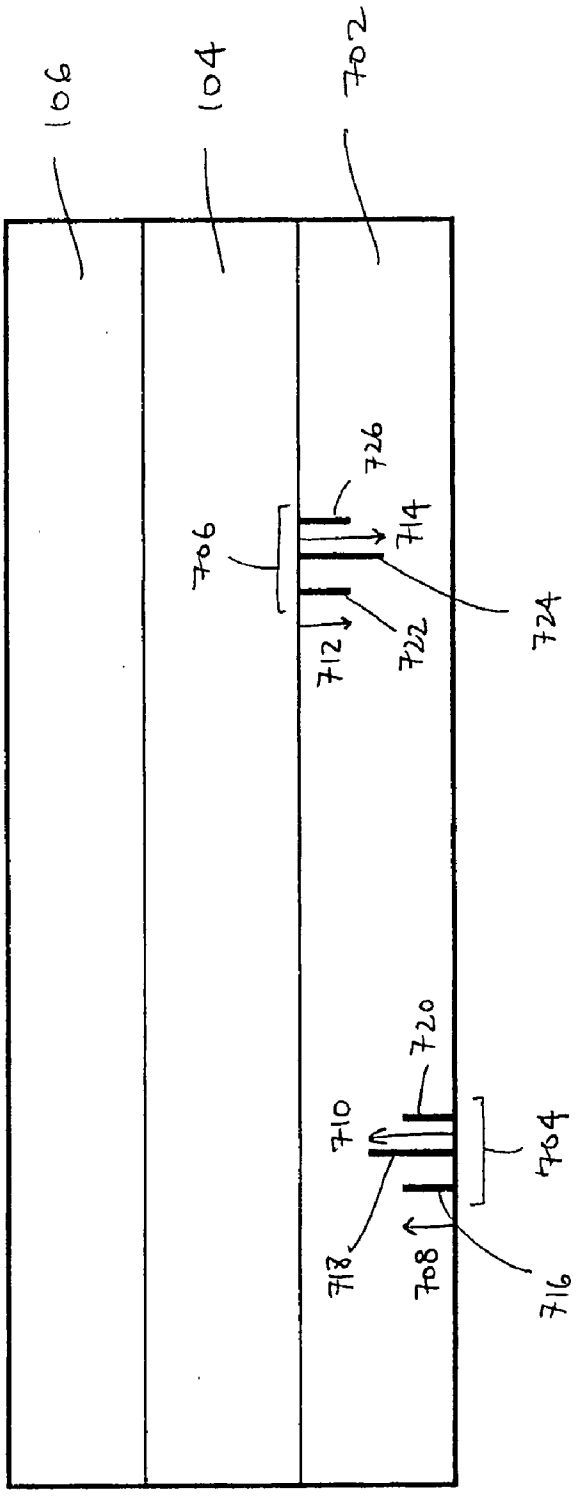


FIG. 4B

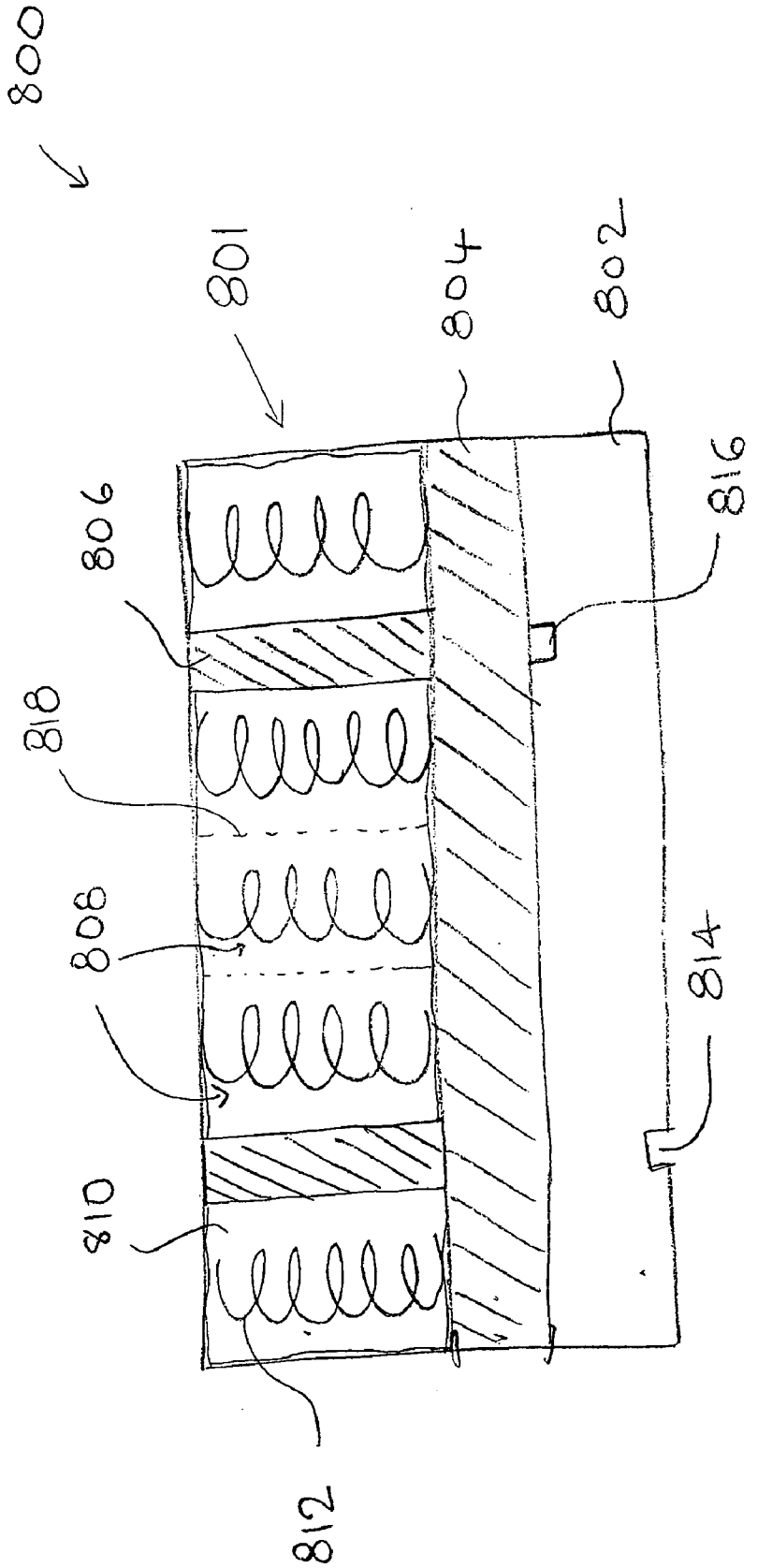


FIG. 5

SYSTEMS AND METHODS FOR HINGED BEDDING ASSEMBLIES

FIELD OF THE INVENTION

[0001] This invention relates to mattresses and mattress assemblies for adjustable beds, and more generally, assemblies for adjustable furniture.

BACKGROUND OF THE INVENTION

[0002] Adjustable bed constructions typically include a mattress placed on top of a rigid foundation having articulating arms that move the entire mattress or portions thereof. The foundation includes a plurality of sections that may be adjusted relative to one another such that mattresses that are disposed on the foundation, bend and conform with the articulated sections of the rigid foundation to provide comfort or therapy as needed. However, repeated bending and articulation of the mattresses near the joints of the articulated sections often cause wear and tear and reduce the lifespan of the mattresses.

[0003] For example, in conventional innerspring mattresses, springs distort near the joints and at the edges from bending. Conventional innerspring mattresses include stabilizing and reinforcing structures such as sturdy border wires along top and bottom edges to prevent sagging and increase lifespan. These stabilizing and reinforcing structures make the mattress uniformly resilient in the direction required to support the horizontal body. However, these structures resist bending as required on an articulated bed. Consequently, such stabilizing and reinforcing structures are limited in their use in articulated beds. As a result, articulated mattresses of the prior art may have a shorter useful life and do not provide the uniform body support necessary for this application.

[0004] Conventional foam mattresses that are currently being used in adjustable bed constructions, also suffer from the similar drawbacks. In particular, foam mattresses are typically disposed on top of the rigid articulated foundation and experience significant wear and tear near the joints that compromise the integrity of the foam structure and reduce its lifespan. In addition, since the mattresses are artificially forced to bend along the joints of the foundation, they tend to not fully conform with the articulated sections. Consequently, portions of the foam mattress, when articulated, may be raised or lowered unevenly or slide out of position.

[0005] Accordingly, there is a need for an improved mattress construction that can be used in an articulated bed.

SUMMARY OF THE INVENTION

[0006] The systems and methods described herein are directed to mattresses and mattress assemblies for adjustable beds, and more generally, articles for adjustable furniture. For purposes of clarity, and not by way of limitation, the systems and methods may be described herein in the context of providing mattresses for adjustable bedding assemblies. However, it may be understood that the systems and methods described herein may be applied to provide for any cushioning article associated with any type of adjustable furniture. For example, the systems and methods of the invention may be used to provide futon mattresses, seat cushions, including automotive seat cushions, sofa cushions, pillows and other such cushions and supports.

[0007] More particularly, the mattresses described herein include a top layer disposed on top of a support layer of polyurethane foam having channels including one or more slits on both sides of its surface to act as hinges for articulation. The channels may be aligned with the joints of the articulated sections of the foundation or frame of the adjustable bedding assembly. When the foundation sections articulate about the joints, the channels allow the mattress to conform to the sections while reducing wear and tear therein. The channels are beneficial in that they help minimize tearing near the bending regions.

[0008] In one aspect, the mattress of the present invention comprises a top layer, and a support foam layer disposed below the top layer. The support foam layer has a top surface, a bottom surface, a first side wall, and a second side wall. Also, the support layer includes a first channel extending from the first side wall to the second side wall along the bottom surface, and a second channel extending from the first side wall to the second side wall along the top surface. In certain embodiments, the mattress includes a third layer disposed between the support foam layer and the top layer, and may further include a plurality of layers disposed between the support foam layer and the top layer, wherein at least one of the layers includes at least one of foam or springs. In addition, the top layer and/or at least one of the plurality of layers may include a spring layer having foam disposed in between a plurality of coil springs, wherein the spring layer comprises wrapped coil spring. Furthermore, the top layer and/or at least one of the plurality of layers and support foam layer includes at least one of polyurethane, latex, and visco foam.

[0009] As described above, the support foam layer of the mattress of the present invention includes a first channel and a second channel. In certain embodiments, the support foam layer includes more than two channels. Additionally, at least one of the first channel and the second channel has a depth that extends partially into the thickness of the support foam layer, extending about 1/15 to about 13/15 of the thickness of the support foam layer. The first channel and the second channel may have a depth from about 1/10 to 7/10 of the thickness of the support foam layer, or about 1/4 to about 1/2 of the thickness of the support foam layer. The depth of at least one of the first channel and second channel extends perpendicular from the bottom and top surface, respectively, of the support foam layer. In certain embodiments, the channel is sufficiently deep to allow flexing and to reduce mechanical stress on the point of articulation of the mattress. Further, at least one of the first channel and the second channel has a width that allows for consistent firmness in the top layer, and may be about 1/8 inch to about 1.5 inches wide. The width of the channels may range from about 1/6 inch to about 1 inch, or about 1/4 inch to about 1/2 inch.

[0010] In certain embodiments, at least one of the first channel and the second channel in the support foam layer may comprise a plurality of parallel slits, wherein the slits are spaced apart by about 1/8 inch to about 2 inches. Alternatively, the distance between the slits may range from about 1/6 inch to about 1.5 inches, or about 1/3 inch to about 1 inch. Likewise, the plurality of parallel slits of at least one of the first channel and the second channel has a depth that extends partially into the thickness of the support foam layer, wherein the depth of each slit is the same as or different from each other. The dimensional requirements that lend to the functional characteristics of the channels described above also apply to the plurality of slits of each channel.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENT

[0011] The foregoing and other objects and advantages of the invention will be appreciated more fully from the following further description thereof, with reference to the accompanying drawings wherein;

[0012] FIG. **1** is a perspective view of an adjustable mattress, according to an illustrative embodiment of the invention.

[0013] FIG. **2** illustrates an unassembled view of the mattress of FIG. **1**, according to an illustrative embodiment of the invention.

[0014] FIG. **3** is a perspective view of the mattress in operation, according to an illustrative embodiment of the invention.

[0015] FIGS. **4**A and **4**B depict a cross-section view of mattresses, according to an illustrative embodiment of the invention.

[0016] FIG. **5** depicts a cross-section view of mattresses, according to an illustrative embodiment of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0017] To provide an overall understanding of the invention, certain illustrative embodiments will now be described, including an articulated hinged mattress having channels in the support foam layer. However, it will be understood by one of ordinary skill in the art that the systems and methods described herein may be adapted and modified for other suitable applications and that such other additions and modifications will not depart from the scope hereof.

[0018] In many aspects, the systems and methods described herein provide an articulated mattress suitable for use with an adjustable mattress foundation. The mattress described herein includes one or more padding layers disposed on top of a support foam layer. The top surface and the bottom surface of the support foam layer include channels comprising one or more slits that may function as hinges for articulation. The channels may help to reduce wear and tear on the hinging portions of the mattress.

[0019] More particularly, FIG. **1** depicts an adjustable mattress **100**, according to an illustrative embodiment of the invention. Although the mattress **100** is depicted as having a rectangular plan, it will be understood that the mattress may be sized and shaped as desired without departing from the scope of the invention. The mattress **100** includes a top layer **106** and a middle layer **104** that are disposed on a support foam layer **102**. The mattress **100** may have standard dimensions, with a length **114**, a width **108**, a side **116**, and another side **118** corresponding to at least the dimensions of a king, queen, double, or twin mattress. The support foam layer **102** includes a channel **110** formed on the bottom surface and a channel **112** formed on the top surface. The channels **110** and **112** may extend from the sidewall **116** to the sidewall **118** in transverse direction along the mattress **100**. In an exemplary bed assembly, the mattress **100** may be disposed on top of an adjustable foundation or frame having articulating sections. The channels **110** and **112** may be aligned with one or more joints of the articulating sections of the foundation. During operation, as the articulating sections of the foundation are moved relative to one another, one or more regions of the support foam layer **102** articulate about the channel **110** and/or channel **112**, thereby allowing one or more regions of the top layer **106** and middle layer **104** to be raised or lowered. In one example, the channels **110** and **112** are positioned near the head and foot regions, respectively, of the mattress. In such an example, the head portion may be raised and the foot portion may be lowered to bring a person from a laying down position to a sitting position. In certain embodiments, as described further with reference to FIG. **4**A, the support foam layer **102** includes an additional channel near the neck region to offer added head/neck support for the user.

[0020] The support foam layer **102** may be a polyurethane foam. The support foam layer **102** may be formed from other suitable materials without departing from the scope of the invention. In certain embodiments, the support foam layer **102** is formed from a material having an IFD (or ILD) value from about 30 to about 50. The support foam layer **102** may have a weight and/or density of about 1 lb to about 5 lbs. In certain embodiments, the support foam layer **102** may have a weight and/or density of greater than 2 lbs. The support foam layer **102** may have weight, rigidity, density, and flexibility values as desired depending on the nature of the application. In certain embodiments, the support foam layer **102** includes polyurethane foam having a substantially consistent and relatively uniform density across the length and width of the layer. As noted earlier, the support foam layer **102** includes a channel **110** formed on the bottom surface and a channel **112** formed on the top surface. The channels **110** and **112** may be formed by cutting, slicing or carving portions of the support foam layer **102** as desired, or by molding foam with channel structures. The channels **110** and **112** may include one or more slits that allow the support foam layer to articulate about region of the channels **110** and **112**, thereby minimizing stretching and tearing of the support foam layer **102** or layers **104** and **106**. Certain illustrative characteristics of the channels in the support layer will be further described with reference to FIG. **2**.

[0021] In certain embodiments, the top layer **106** and/or the middle layer **104** includes the mattress core. In such embodiments, the mattress core includes an innerspring mattress comprising coils, encased coils (such as POCKETED COIL® springs) or Marshall Coils. The top layer **106** and/or the middle layer **104** may include polyurethane materials. In certain embodiments, the top layer **106** and/or the middle layer **104** include foam, visco-elastic foam and/or latex foam. The top layer **106** and/or the middle layer **104** may include a combination of an innerspring mattress core combined with foam material, as described with reference to FIG. **5**.

[0022] The top layer **106** and/or the middle layer **104** may be formed from a sheet of fabric, felt, or polymer, a cotton, nylon, or polyester batting, or from a layer of foam, plastic, polymer, natural fiber, synthetic fiber, or any other material or a combination thereof. In one optional embodiment, the mattress **100** may have cover panel that comprises a non-quilted mattress cover with an optional smooth sleeping surface. In this embodiment, a multi-layer, typically three layer, crowned mattress panel may be provided over the upper surface of the mattress. For example, a crowned cover panel may be formed from a top fabric layer, an intermediate filler layer and a backing layer. Optionally, there may be a layer of flame retardant material or combination of materials. In either embodiment, the top layer may be a fabric layer of cotton, linen, synthetic fibers or some other material of combination of materials.

[0023] The top layer **106**, middle layer **104** and any additional layers may be formed from any suitable materials without departing from the scope of the invention. In certain

embodiments, the mattress **100** further includes one or more filler layers. The filler layer can be formed from any padding material, such as foam, cotton batting, gel, latex foam, viscoelastic foam or other known padding materials and or combination of padding materials. Optionally, the filler layer provides a layer of conventional filling and padding material that may be laid over the mattress.

[0024] An optional fire resistant layer may be disposed in mattress **100** in between at least two of the top layer **106**, middle layer **104** and support foam layer **102**. The fire resistant layer optionally extends over the at least entire upper surface of the mattress panel and around the borders of the panel. The flame resistant material may be any suitable material, such as for example polyaramid material (such as KEVLAR™), PET (polyester) binder fiber, organophosphorous materials, halogenated organic materials (typically halogenated with chlorine or more popularly bromine) or nitrogen based compounds. Commercially available materials are sold under the trade names NOMEX, KEVLAR™, INDURA and the actual material employed may depend upon the particulars of the application, including mattress type (e.g. open coil, encased coil, foam, water), mattress size, material costs and other such design considerations.

[0025] Under the fire resistant layer, a backing layer may be attached. The backing layer may be formed from a sheet of material, such as natural fibers such as cotton or linen, aluminum, fiberglass, synthetic fibers or a mixture thereof. These three layers may be joined together to form a crowned panel and that panel may be placed over the upper surface and joined to the mattress to provide a smooth sleeping surface. In addition, the mattress **100** typically includes a fabric or plastic covered structure having an internal construction configured to provide comfort for a user resting on the surface. Finally, the mattress **100** may also include a removable cover that helps prevent allergens on the surface.

[0026] FIG. **2** illustrates an unassembled view **200** of the mattress **100** having a top layer **106**, a middle layer **104** and a support layer **102**. The support layer **102** includes a top surface **224** and bottom surface **226**, and has a thickness **210** which may be about 1 inch to about 8 inches. In certain embodiments, the support layer **102** has a thickness from about 2 inch to about 7 inches, or about 3 inches to about 5 inches. The first channel **110** lies at a distance **206** away from the edge of the head region **212**, and the second channel **112** lies at a distance **208** away from the edge of the foot region **214** of the mattress **100**. In one example, the first channel **110** may be from about 25 inches to about 40 inches from the head region **212**, or about 29 inches to about 38 inches, or further, about 33 inches to about 35 inches. Similarly, the second channel **112** may be from about 22 inches to about 37 inches from the foot region **214**, or about 25 inches to about 34 inches, or further, about 28 inches to about 31 inches. The distance **206** or **208** may be adjusted to suit the dimension, mechanical, and/or functional requirements of the mattress. For example, the distances **206** and **208** may be selected based on whether the mattress is sized as a king, queen or twin. In certain embodiments, these dimensions may be customized to an individual's body size.

[0027] As shown, the first channel **110** extends from sidewall **116** to sidewall **118** creating a slit **228** along the bottom surface **226**. Likewise, the second channel **112** extends from sidewall **116** to sidewall **118** creating a slit **230** along the top surface **224** of the support foam layer **102**. In certain embodiments, the channels may include a plurality of parallel slits which may also further delay tearing, as will be described with reference to FIGS. **4**A and **4**B. Further, the first channel **110** cuts into the support foam layer **102** to a height **202**, and therefore depth, from the bottom surface **226**. Similarly, the second channel **112** cuts into the support foam layer **102** to a depth **220** from the top surface **224**. In certain embodiments, the depth of each slit may be about 1/15 to about 13/15 of the thickness of the support foam layer **102**. Alternatively, the range of the depth may be from about 1/10 to 7/10, or about 1/4 to about 1/2 of the thickness of the support foam layer **102**. In one example, a support layer **102** that is about 4 inches thick may have a slit ranging in depth from about 1/4 inch to about 3.5 inches. The depths **202** and **220** may be selected as desired to allow for the articulation of the mattress while also maintaining the integrity of the hinge areas, especially when used in combination with an articulating platform/foundation. Further, the depth of each slit **202** and **220** may be the same or different for one or more slits in either channel **110** and **112**.

[0028] The channels **110** and **112** have a width **204** and **222**, respectively, and may be from about 1/8 inch to about 1.5 inches. The width of the channels may further range from about 1/6 inch to about 1 inch, or about 1/4 inch to about 1/2 inch. The width **204** and **222** of slits may be selected as desired to allow, among other things, improved articulation of the mattress by minimizing soft spots on the top layer **106** of the mattress, and improving the integrity of the mattress. In certain embodiments, the axes along which the slits **228** and **230** extend on the top surface **224** and the bottom surface **226** are perpendicular with respect to the sides **116** and/or **118** of the mattress **100**.

[0029] As such, the slits **228** and **230** in channels **110** and **112**, respectively, have a depth and width to allow for ease of articulation suitable for the dimensions and material of the mattress. Additionally, the dimensions of the depth and width of the channels, in combination with their placement at distances **206** and **208** from the head and foot regions, respectively, may be determined based on the application, degree and nature of the articulation needed. Moreover, in an alternative embodiment of the invention, the mattress is suited to offer better conformability when used in combination with an articulated base, as will be described with reference to FIG. **3**.

[0030] Depicted in FIG. **3** is an adjustable bed assembly **400** in operation, according to an illustrative embodiment of the invention. The bed assembly **400** includes a mattress **100** (FIG. **1**) disposed on an adjustable foundation **401** comprising an articulating platform having articulating sections **402**, **412** and **414** connected to a rigid base **404** via the actuating system **420** and **422**. As shown, the channels **110** and **112** open to allow, among other things, articulation of the mattress and to reduce the mechanical stress that results on the pressure points **408** and **410** when the mattress is caused to articulate. The channels may also act to localize the pressure points **408** and **410** to the joints of the articulating sections **416** and **418**, thereby minimizing unwanted tearing that may otherwise happen in several places. Additionally, the channels may ensure suitable flexing of the mattress to better conform with the articulating platform. For example, this feature may be particularly appreciated by users of different weights and sizes. The channels encourage the full range of articulation without the need for a heavier user's mass to conform the mattress against the articulating sections **402**, **412**, **414**, for example. As such, small and large users may experience similar levels of comfort during articulation that may be independent of their size and weight. In certain embodiments, a

rubberized material may be sprayed at the point **408** and **410** to further retard tearing. The rubberized material may be applied to the channels **110** and **112** at, among other places, along the interior of the slits.

[0031] In certain embodiments, the mattress **100** may be adjusted to other possible configurations to allow the user to choose the position of the head and foot of the bed for maximum comfort. In an alternative embodiment of the invention, the actuating system **420** and **422** may be programmed to an array of custom configurations.

[0032] FIGS. **4**A and **4**B illustrate a cross-section views of mattresses in which the support foam layer **502** or **702** includes channels having a plurality of parallel slits **504** and **506** or **704** and **706**. Mattress **600** and **700** of FIGS. **4**A and **4**B may be similar to mattress **100** of FIG. **1**. Similarly, the mattress **600** or **700** includes a top layer **106**, a middle layer **104**, and a support foam layer **502** or **702** comprised of foam material as described previously.

[0033] More particularly, FIG. **4**A depicts the channels **504** and **506** that extend through the support foam layer **502** having a thickness **510** of about 1 inch to about 8 inches. Alternatively, the support layer **502** may have a range of thickness, from about 1.5 inches to about 6.5 inches, or about 2 inches to about 5 inches. As shown, each channel includes two slits: slits **602** and **604** included in channel **504**, and slits **608** and **610** included in channel **506**. The slits included in each channel may be parallel to each other and are separated by a distance that is measured from the inner adjacent edges of each slit, as shown in **606** and **612**. In one example, the distance between the slits may be from about ⅛ inch to about 2 inches. The distance between the slits may range from about ⅙ inch to about 1.5 inches, or about ⅓ inch to about 1 inch, and may vary according to the dimensions of the mattress, and the degree of articulation desired. Further, similar to that described in FIG. **2**, each slit of the channel has a height **614** that is a measure of its depth into the thickness of the support foam layer. By way of illustration, the height of only one slit **614** is depicted. However, all slits that comprise the channels have a height, and therefore depth, in the support foam layer **502**. In certain embodiments, the depth of each slit may or may not be the same for all slits. Each slit may have a width which may be determined according to the criteria described in FIG. **2**. Additionally, although two slits are illustrated for each channel in FIG. **4**A, the invention may include a plurality of slits per channel, as shown in FIG. **4**B. In certain embodiments, the support foam layer **502** may include an additional channel **508**. The channel **508**, includes two parallel slits **616** and **618**, and lies at the head/neck region of the mattress. However, the placement of additional channels is not restricted to this configuration; instead, additional channels may be placed to suit the needs of the user and/or the configuration of the foundation. Slit dimensions for all channels may be selected as desired depending on at least the criteria of the aforementioned descriptions.

[0034] By way of example, FIG. **4**B depicts a mattress having three parallel slits per channel in its support foam layer. Slits **716**, **718** and **720** form channel **704** and slits **722**, **724**, and **726** form channel **706**. As indicated, the middle slit **718** or **724** has a height **710** or **714**, respectively, and is flanked by shorter slits **716** and **720** or **722** and **726**, respectively. As described previously, since each height defines the depth of each slit into the support foam layer, the middle slit in this example forms the deepest groove. The slits on either side may be of the same or different depths. As previously described, the distances between slits are designed to be sufficiently wide to allow flexibility, while adequately narrow to maintain the integrity of the mattress as well as to prevent soft spots on the top layer **106**. In certain embodiments, the configuration of the multi-slit channels **704** and **706** may allow for smaller distances between slits to minimize the likelihood of the formation of soft spots on its top layer while maintaining the range of motion needed for the mattress. Moreover, the added slits may act to reduce the mechanical stress on the points of articulation since the pressure may be distributed to several slits.

[0035] In certain embodiments, the one or more top layers disposed on the support foam layer may include features to ease articulation of the mattress along the hinge channels. In one example, the top layer may include reinforcing support structures disposed near the region of the channels. FIG. **5** illustrates a cross section view of a mattress **800** having a top layer **801** that includes an innerspring construction combined with one or more layers of foam **806**. In one example, the top layer **801** is disposed on a middle foam layer **804**. Alternatively, the top layer **801** and the middle foam layer **804** may be unitarily formed as a composite layer, disposed on top of the support foam layer **802**. The support foam layer **802** includes channels **814** and **816** to allow articulation of the mattress **800**. The support foam layer **802** may be similar to support foam layer **102** of FIG. **1**.

[0036] The top layer **801** may include an innerspring encased coil construction having a plurality of coils **812** that are disposed in pockets **808** and **810**. In certain embodiments, the coils **812** may be arranged in rows along a sheet of pocket material (e.g., upholstery or fabric). The pocket material may then be wrapped around the coils **812** and sealed (e.g., by heat-sealing techniques) along lines **818** to seal the coils **812** in the pockets. The encased coils may be arranged on a foam block **804**, which in turn may be disposed on the support foam layer **802**.

[0037] In certain embodiments, foam blocks **806** may be disposed in between a plurality of coil springs, and may be aligned above one or more channels **814** and **816** on the support foam layer **802**. In certain embodiments, the encased coils may be attached to the foam blocks **806** to provide further reinforcement. In other embodiments, foam material is poured into the innerspring coil construction to fill one or more gaps between the coils. In such embodiments, the foam material may be poured in liquid or gel form and may subsequently cure to provide an integrated foam and spring top layer **801**.

[0038] In certain embodiments, the mattress **800** includes one or more sidewalls disposed or attached to at least one of the top layer **801**, middle layer **804** and support layer **802**. The sidewalls may include foam. In such embodiments, the sidewalls may include one or more channels formed thereon. The channels may be configured so as to form a contiguous channel(s) with the support foam layer. The sidewalls may be sized, shaped and cut as desired depending on the dimensions of the mattress. The sidewalls may or may not include one or more channels that are aligned with the one or more channels on the support foam layer **802**. The sidewalls may or may not include one or more channels that are not aligned with the one or more channels on the support foam layer **802**. The channels on the sidewalls may be sized and shaped similar to the channels on the support foam layer **802**.

[0039] Variations, modifications, and other implementations of what is described may be employed without departing

from the spirit and scope of the invention. More specifically, any of the method, system and device features described above or incorporated by reference may be combined with any other suitable method, system or device features disclosed herein or incorporated by reference, and is within the scope of the contemplated inventions. The systems and methods may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The foregoing embodiments are therefore to be considered in all respects illustrative, rather than limiting of the invention. The teachings of all references cited herein are hereby incorporated by reference in their entirety.

1. A mattress, comprising

a top layer, and

a support foam layer disposed below the top layer, having a top surface, a bottom surface, a first side wall, a second side wall,

wherein the support foam layer includes a first channel extending from the first side wall to the second side wall along the bottom surface, and a second channel extending from the first side wall to the second side wall along the top surface.

2. The mattress of claim **1**, further comprising a third layer disposed between the support foam layer and the top layer.

3. The mattress of claim **1**, further comprising a plurality of layers disposed between the support foam layer and the top layer.

4. The mattress of claim **3**, wherein at least one of the layers includes at least one of foam or springs.

5. The mattress of claim **3**, wherein a layer includes a spring layer having foam disposed in between a plurality of coil springs.

6. The mattress of claim **5**, wherein the spring layer comprises wrapped coil spring.

7. The mattress of claim **3**, wherein at least one of the layers and support foam layer includes at least one of polyurethane, latex, and visco foam.

8. The mattress of claim **1**, wherein at least one of the first channel and the second channel comprise a plurality of parallel slits.

9. The mattress of claim **8**, wherein the plurality of slits are parallel to each other, spaced apart by about ⅓ inch to about ½ inch.

10. The mattress of claim **1**, wherein at least one of the first channel and the second channel has a width that allows for consistent firmness in the top layer.

11. The mattress of claim **10**, wherein at least one of the first channel and the second channel is about ⅓ inch to about ¾ inch wide.

12. The mattress of claim **1**, wherein at least one of the first channel and the second channel has a depth that extends partially into the thickness of the support foam layer.

13. The mattress of claim **12**, wherein the depth of at least one of the first and the second channel extends about ⅓ to about ½ of the thickness of the support foam layer.

14. The mattress of claim **8**, wherein at least one of the first channel and the second channel comprises a plurality of parallel slits having a depth that extends partially into the thickness of the support foam layer.

15. The mattress of claim **14**, wherein the depth of the parallel slits are the same as or different from each other.

16. The mattress of claim **12**, wherein the depth of at least one of the first channel and second channel extends perpendicular from the bottom and top surface, respectively, of the support foam layer.

17. The mattress in claim **1**, wherein the channel is sufficiently deep to allow flexing and reduce mechanical stress on the point of articulation of the mattress.

18. The mattress in claim **1**, wherein the support foam layer is sufficiently rigid/firm to accommodate the load of the top layers.

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